

# **Features 1**

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The AP5CS is a Pentium™-based system board that utilizes the PCI/ISA architecture. It integrates the SiS application-specific integrated circuit (ASIC) chipsets that enable the System Management Mode (SMM) function of the Pentium chip. It also features the Green power management that extends energy conservation from system components to display monitors. The system board supports a 3.3V Pentium Processor. It has four ISA-AT and four 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 also upgradable to 1 MB and supports both the write-back and write-through modes.

A super I/O controller and a two-channel PCI mode 3 IDE are also incorporated in the motherboard to further enhance system performance.

The board measures 22 x 33 cm (full baby-AT size).

# Features

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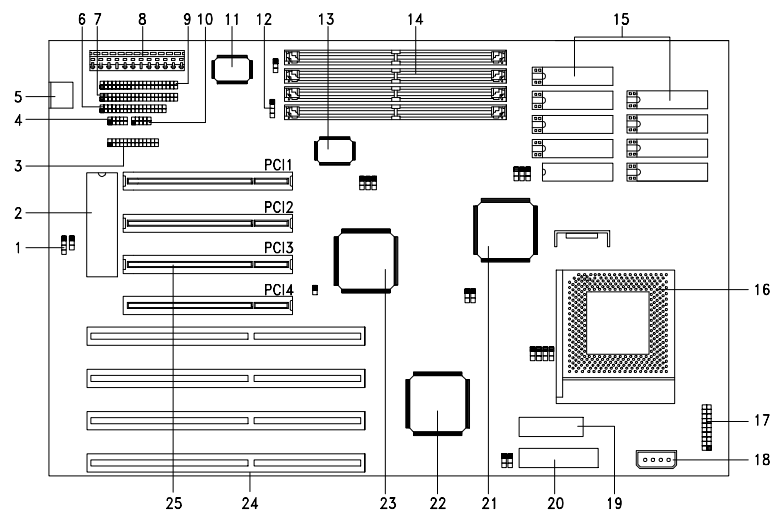
## Specifications

<b>Microprocessor</b>	Pentium™ (3.3V) Processor 75/90/100/120/133 MHz
<b>Memory</b>	128 MB
<b>SIMM Sockets</b>	Four 72-pin, 32-bit
<b>ASICs</b>	SiS5501 SiS5502 SiS85C503
<b>Bus Architecture</b>	ISA, PCI
<b>Expansion Slots</b>	Four ISA and four PCI slots
<b>Ports</b>	One parallel port (SPP/ECP/EPP) Two serial ports Two-channel PCI mode 3 IDE
<b>Secondary Cache</b>	256 KB/512 KB/1 MB
<b>BIOS</b>	Award
<b>RTC</b>	Dallas 12887A
<b>Board Size</b>	22 x 33 cm (full baby-AT)

# Features

## Board Layout

1. External battery connector
2. Keyboard controller
3. Parallel port
4. Serial port (COM2)
5. Keyboard connector
6. FDD connector
7. IDE2 connector
8. Power connector
9. IDE1 connector
10. Serial port (COM1)
11. HDD controller
12. HDD LED connector
13. Super I/O controller
14. 72-pin SIMM sockets
15. Second-level cache
16. ZIF-type CPU socket
17. Multifunction connector
18. Fan connector
19. RTC/Battery
20. BIOS
21. SiS5502 chip
22. SiS85C503 chip
23. SiS5501 chip
24. ISA slots
25. PCI slots



# Features

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## System Board Parts

### ***Microprocessor***

The AP5CS system board uses an Intel Pentium (3.3V) processor running at speeds of 75, 90, 100, 120 or 133 MHz. Chapter 2 gives details on how to upgrade the Pentium processor.

### ***ASICs***

The three ASICs (application-specific integrated circuits) onboard are the SiS5501, SiS5502, and SiS85C503. The SiS5501 serves as the PCI/ISA cache memory controller that supports write-back and write-through cache modes, and 1 MB maximum cache memory. It also acts as a PCI bridge that translates CPU cycles into PCI cycles.

The SiS5502 functions as a PCI local bus data buffer that offers 64-bit DRAM and 32-bit PCI bus interfaces to support the 64-bit Pentium processor data bus.

The SiS85C503 acts as the ISA/PCI bus bridge that translates the PCI bus cycles into ISA bus cycles or vice-versa. It also functions as an ISA arbiter, DMA cycle and interrupt controller.

### ***Award BIOS***

The Award 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 Award BIOS.

### ***Expansion Slots***

The board expansion slots consist of four ISA-AT and four 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 the expansion boards.

# Features

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## ***DRAM Sockets***

The system board has four 72-pin DRAM sockets that expand system memory to a maximum of 128 MB. These sockets accept single- and double-density single in-line memory modules (SIMMs). Chapter 2 discusses the different memory configurations available.

## ***Two-Channel PCI Mode 3 IDE***

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

## ***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 diskette 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 accepts any AT-compatible keyboard. PS/2 keyboard and mouse connectors are optional.

## ***SRAM***

The system board supports 256-KB, 512-KB, and 1-MB second-level, write-back and write-through cache.

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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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## ***Power Management***

The AP5CS conforms to the Green power-saving standards of the U.S. Environmental Protection Agency (EPA) Energy Star program. The system board features four system power-saving modes that decrease power consumption to less than 30 watts. For more information on the power-saving modes, see Chapter 3.

## Hardware Setup 2

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This chapter tells how to set jumpers, change the system battery, 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.

### ESD Precautions

Electrostatic discharge (ESD) can damage your processor, 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

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## Installing a Microprocessor

### **ZIF Microprocessor Socket**

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

Follow these steps to install a Pentium 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 the hole 1 of the socket. The notched corner on the CPU indicates pin 1.

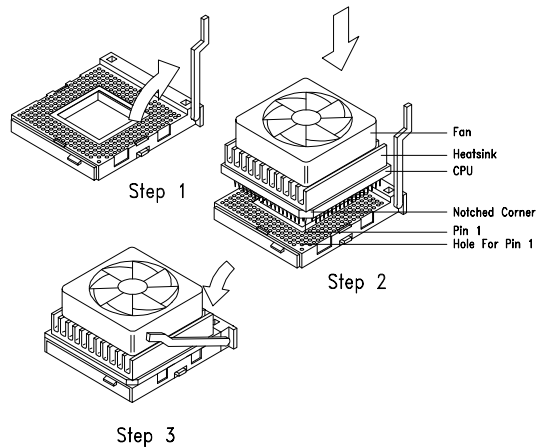


*Press the CPU gently but firmly into place. Be careful not to bend the pins.*



# 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 4-pin fan connector.
5. Set the jumpers accordingly. See the following sections for the correct jumper settings.

## Upgrading the Microprocessor

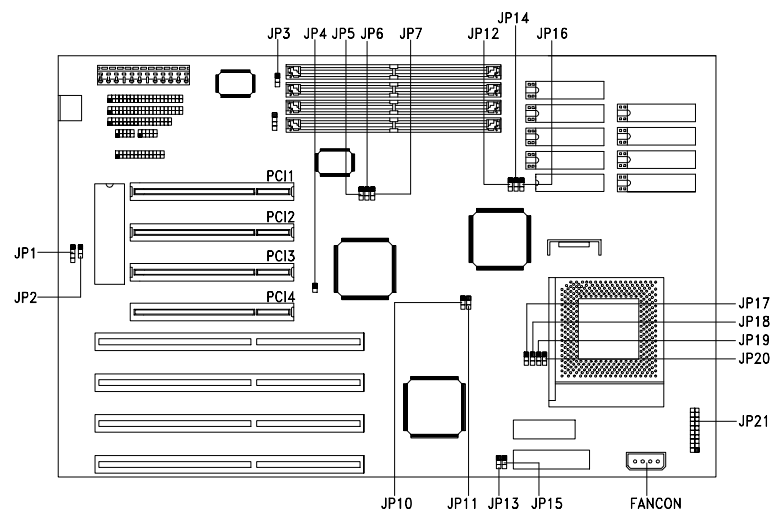
Follow these steps to upgrade the Pentium CPU from 75 MHz to 133 MHz:

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* on how to install the Pentium CPU.

# Hardware Setup

## Jumper Settings

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

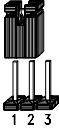
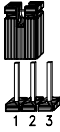

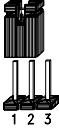





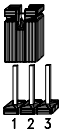
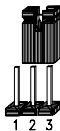

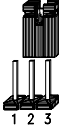
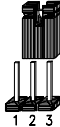



*JP3, JP12, JP18, JP19 and JP20 are reserved for manufacturer use. See Appendix A for the default settings.*

# Hardware Setup

## ***Changing the CPU Type and Speed***

Set jumpers **JP10**, **JP11** and **JP17** according to the CPU type and speed.  
See the figure below.

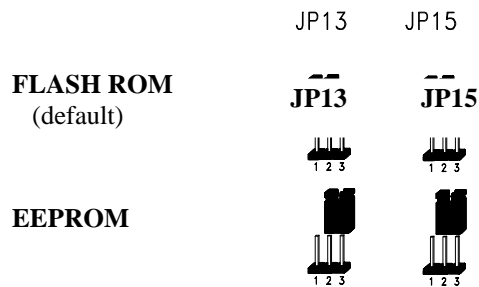
CPU TYPE	JP10	JP11	JP17
P54C-75			
P54C-90			
P54C-100			
P54C/CS/CQS-120			
P54C/CS/CQS-133			

# Hardware Setup

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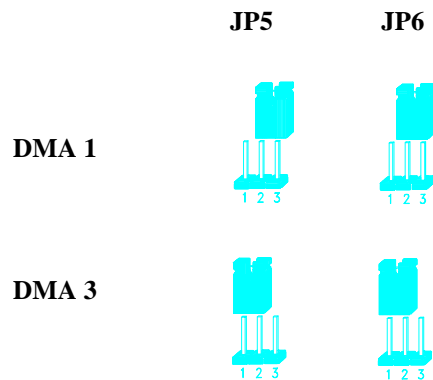
## ***Changing the Flash ROM Type***

Set jumpers **JP13** and **JP15** according to the type of Flash ROM in use. If the system uses EEPROM instead of Flash ROM, you must adjust the jumpers to 2-3. The default setting depends on the BIOS ROM type.



## ***Selecting the ECP DMA Channel***

The jumpers **JP5** and **JP6** are used to select the DMA channel for ECP function.



# Hardware Setup

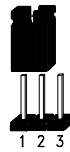
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## ***Enabling the FDC and Super I/O Chip***

The jumper **JP7** 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 in case you want to use a separate I/O card.

**ENABLED      DISABLED**

**JP7**

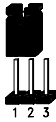





# Hardware Setup

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## Selecting the Cache Size

The system board supports 256-KB, 512-KB, and 1-MB second-level cache. When upgrading the cache, install the SRAM chips and set jumpers **JP14** and **JP16** accordingly.

CACHE SIZE	JP14	JP16
256 KB		
512 KB		
1 MB		



*For details on how to install and configure cache memory, see the section [Upgrading the Cache Memory](#).*

# Hardware Setup

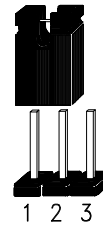
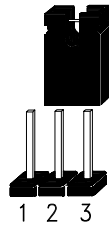
## ***Clearing the CMOS***

The 3-pin jumper **JP2** 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 1-2 of JP2 for a few seconds. Then set the jumper to normal setting by shorting pins 2-3 with a jumper cap. Enter Setup to specify a new password.

**NORMAL**

**CLEAR CMOS**

**JP2**



# Hardware Setup

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## Memory Configuration

The system board supports a maximum memory of 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 or without the Extended Data Output (EDO) function. The EDO feature extends the data transfer cycle, thus improves memory performance. All SIMMs support a DRAM speed of 70/80 ns or less.

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

<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 following are the possible SIMM configurations.

Bank 0		Bank 1		Total Memory
SIMM 0	SIMM 1	SIMM 2	SIMM 3	
1 MB	1 MB			2 MB
1 MB	1 MB	1 MB	1 MB	4 MB
2 MB	2 MB			4 MB
2 MB	2 MB	2 MB	2 MB	8 MB
2 MB	2 MB	8 MB	8 MB	20 MB
2 MB	2 MB	16 MB	16 MB	36 MB
4 MB	4 MB			8 MB
4 MB	4 MB	4 MB	4 MB	16 MB
4 MB	4 MB	16 MB	16 MB	40 MB
8 MB	8 MB			16 MB
8 MB	8 MB	8 MB	8 MB	32 MB
8 MB	8 MB	16 MB	16 MB	48 MB
8 MB	8 MB	32 MB	32 MB	80 MB
16 MB	16 MB			32 MB
16 MB	16 MB	16 MB	16 MB	64 MB
32 MB	32 MB			64 MB
32 MB	32 MB	32 MB	32 MB	128 MB
64 MB	64 MB			128 MB

# Hardware Setup

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## ***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. Always install SIMMs beginning with Bank 0.

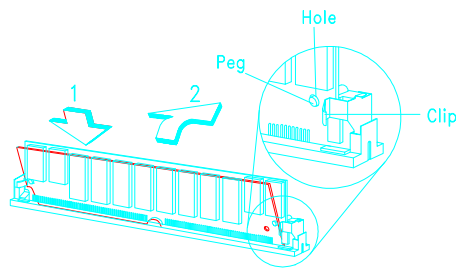


*Be careful when inserting or removing SIMMs. Forcing a SIMM in or out of a socket can damage the socket or the SIMM (or both).*

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.*

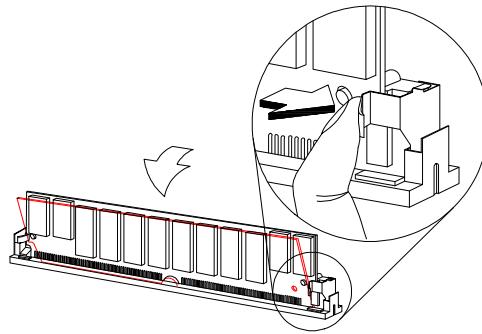


# Hardware Setup

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## ***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

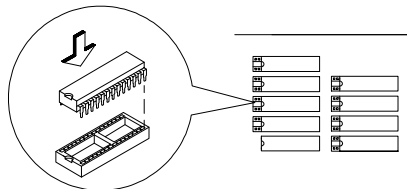
## Upgrading Cache Memory

The second-level cache is upgradable from 256 KB to 1 MB. Both write-back and write-through modes are supported by the system. See the table below for the possible cache configurations.

Cache Size	TAG SRAM <sup>1</sup> (U31)	Data SRAM <sup>2</sup>
256 KB	32 Kb x 8	32 Kb x 8 x 8 pcs
512 KB	32 Kb x 8	64 Kb x 8 x 8 pcs
1 MB	32 Kb x 8	128 Kb x 8 x 8 pcs

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 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.



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

<sup>1</sup> Use a 5V SRAM for TAG RAM.

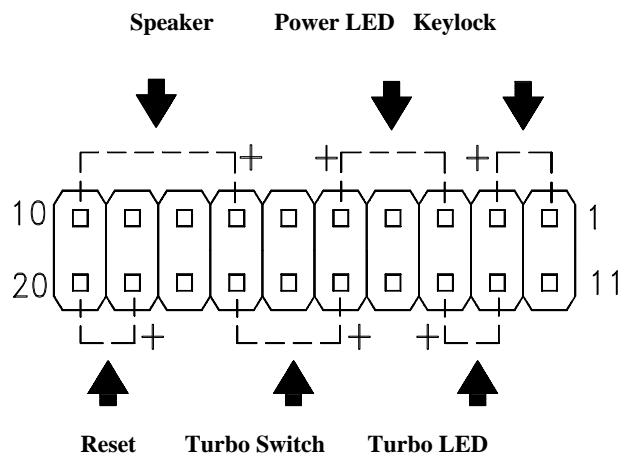
<sup>2</sup> Use a 5V/3.3V mix mode SRAM for Data RAM.

# Hardware Setup

## Connectors

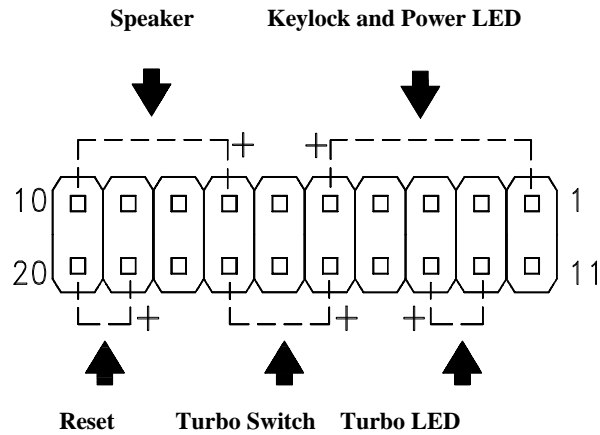
### *Multifunction Connector*

This 20-pin connector is marked **JP21** 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.

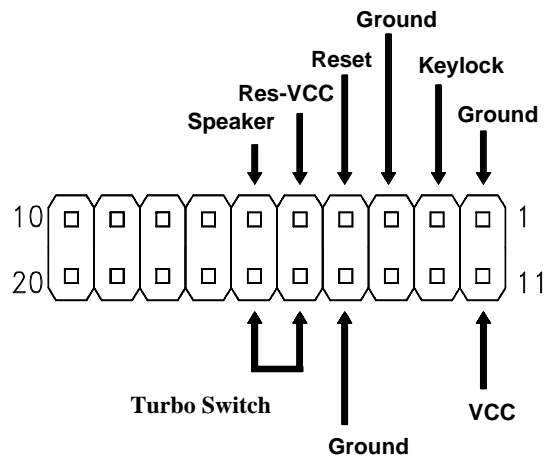


Some housings have a five-pin connector for the keylock and power LED. See the following illustration.

# Hardware Setup



Other housings may have a 12-pin connector. If your housing has this type of connector, plug it into JP21 as shown in the following figure. Make sure that the red wire of the connector connects to pin 11.

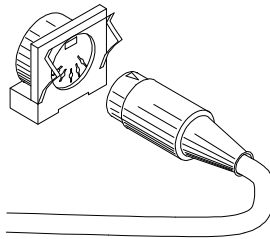


# Hardware Setup

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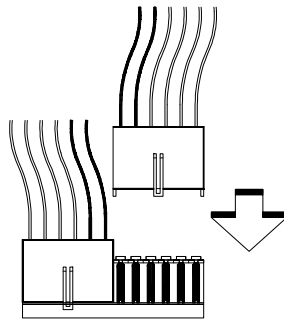
## **Keyboard Connector**

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

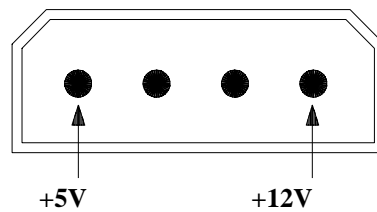


# Hardware Setup

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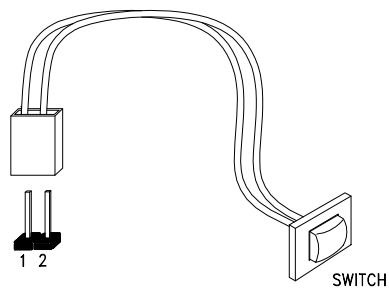
## ***Fan Connector***

The 4-pin fan connector is marked **FANCON** on the system board. To connect, plug the connector to its corresponding pin as shown in the following figure.



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

The Break/Suspend connector is a 2-pin connector labeled **JP4** 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.

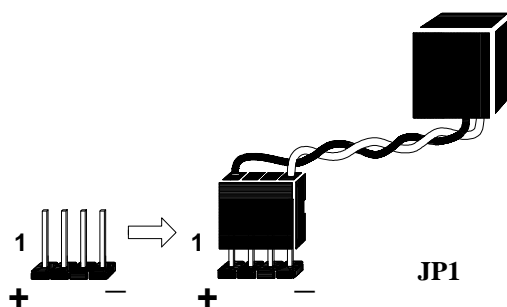




# Hardware Setup

## ***External Battery Connector***

The 4-pin external battery connector is marked **JP1** on the system board. This is used to connect the external battery in case your system board does not have an onboard battery or the DS12887A RTC/battery.



# Hardware Setup

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## Installation

The full baby-AT size of the AP5CS 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.

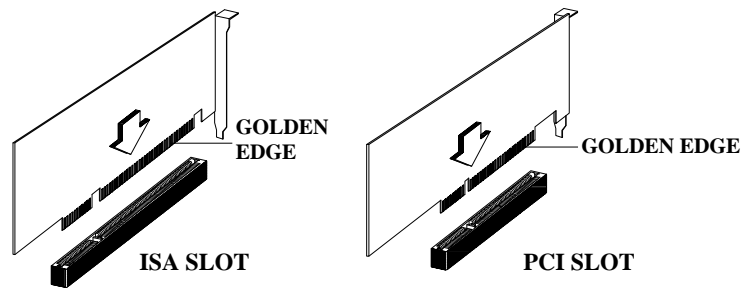
# Hardware Setup

## ***Installing Expansion Boards***

Install 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.



4. Secure the board bracket with the screw.

## Award BIOS 3

This chapter explains the Setup Utility for the Award BIOS and tells how to configure the system by setting the BIOS parameters.

### Award BIOS Setup Main Menu

The Award BIOS Setup Main Menu appears below. During booting, a prompt asks you to enter the system menu. To enter the system menu, press **C**.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PCI & ONBOARD I/O SETUP LOAD BIOS DEFAULTS LOAD SETUP DEFAULTS	PASSWORD SETTING IDE HDD AUTO DETECTION SAVE & EXIT SETUP EXIT WITHOUT SAVING
ESC : Quit F10 : Save & Exit Setup	↑↓→← : Select Item (Shift) F2 : Change Color
Description of each function	



*Choosing Load BIOS Defaults or Load Setup Defaults at this point modifies all applicable settings.*

The section at the bottom of the screen tells how to control the screen. Use the arrow keys to move between items, **j/m** to color scheme of the display, **^** to exit, and **u** to save the changes before exit. Another section at the bottom of the screen displays a brief description of the highlighted item.

After selecting an item, press **e** to select or enter a submenu.

### Standard CMOS Setup

Standard CMOS Setup sets the basic system parameters such as the date, time, and the hard disk type. Use the arrow keys to highlight an item and { or } to select the value for each item.

# Award BIOS

ROM PCI/ISA BIOS  
STANDARD CMOS SETUP  
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Wed. Jan 4 1995								
Time (hh:mm:ss) : 00:00:00								
<u>HARD DISK</u>	<u>TYPE</u>	<u>SIZE</u>	<u>CYLS</u>	<u>HEAD</u>	<u>PRECOMP</u>	<u>LANDZ</u>	<u>SECTORS</u>	<u>MODE</u>
Primary Master	: User	345	790	15	65535	790	57	NORMAL
Primary Slave	: None	0	0	0	0	0	0	---
Secondary Master	: None	0	0	0	0	0	0	---
Secondary Slave	: None	0	0	0	0	0	0	---
Drive A: 1.44M, 3.5 in								
Drive B: None								
Video : EGA/VGA								
Halt On: All Errors								
ESC : Quit		↑↓→← : Select Item			PU/PD/+/- : Modify			
F1 : Help		(Shift) F2 : Change Color						

## Date

To set the date, highlight the Date parameter. Press { or } to set the current date. The date format is month, date, and year.

## Time

To set the time, highlight the Time parameter. Press { or } to set the current time in hour, minute, and second format. The time is based on the 24-hour military clock.

## Hard Disks

The four hard disk parameters listed in the menu are Primary Master, Primary Slave, Secondary Master and Secondary Slave. These parameters allow you to configure the drives that you connect into your IDE connectors. To configure, press { or } to select a hard disk drive type, or type the number and press e. Select User to define your own hard disk type manually. You

# Award BIOS

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can use the IDE HDD Auto-Detection function in the Main Menu to automatically configure your hard disk drive parameters. If your system does not have a hard disk drive, select **None** and press **e**.



*For an IDE hard disk, we recommend that you use the Auto-Detection utility to enter the drive specifications automatically. See the section IDE HDD Auto-Detection.*

*Select the User option if you want to enter the specifications manually.*

## **Floppy Drive Types**

Press { or } to select a floppy disk drive type. The settings are:

- 360 KB 5.25-inch
- 1.2 MB 5.25-inch
- 720 KB 3.5-inch
- 1.44 MB 3.5-inch
- 2.88 MB 3.5-inch.

Choose **None** if you have no floppy drive.

## **Video**

This parameter allows you to configure the video display card present in your system. The video settings are:

- EGA/VGA
- CGA 40
- CGA 80
- MONO

# Award BIOS

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Select the adapter type setting that matches your video display card and monitor.

# Award BIOS

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## **Error Halt**

This parameter enables you to control the system stops in case of error. The available settings are:

- No Errors
- All Errors
- All, But Keyboard
- All, But Diskette
- All, But Disk/Key

The default setting is All Errors.

## **Memory**

The Memory parameters are for display only. These are determined by the BIOS power-on self-test.

### **Base Memory**

The POST detects the amount of base (or conventional) memory installed in the system. The value of the base memory is 640 KB for systems with 640 KB or more memory installed on the mainboard.

### **Extended Memory**

The BIOS detects the amount of extended memory present during the POST. This is the amount of memory located above 1 MB in the CPU memory address map.

### **Expanded Memory**

Expanded memory is the memory defined by the Lotus/Intel/Microsoft (LIM) standard as EMS. Since a number of standard DOS applications can not utilize memory above 640 KB, the Expanded Memory Specification



# Award BIOS

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(EMS) swaps the memory which is not utilized by DOS with a section, or frame. This allows access to the total system memory. The memory range that can be swapped by EMS depends on the chipset design.

An expanded memory device is required to use memory as expanded memory.

## **Other Memory**

This refers to the memory located in the 640 KB to 1024 KB address space. This is the memory that can be used for different applications. DOS uses this area to load device drivers to keep as much base memory free for application programs.

# Award BIOS

## BIOS Features Setup

This screen appears when you select BIOS Features Setup from the Main Menu.

ROM PCI/ISA BIOS  
BIOS FEATURES SETUP  
AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
Quick Power On Self Test	: Disabled	D0000-D3FFF Shadow	: Disabled
Boot Sequence	: A, C	D4000-D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up Floppy Seek	: Enabled	DC000-DFFFF Shadow	: Disabled
Boot Up NumLock Status	: On		
Boot Up System Speed	: High		
IDE HDD Block Mode	: Disabled		
IDE 32-bit Transfer Mode	: Disabled		
Gate A20 Option	: Fast		
Memory Parity Check	: Disabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec) : 250		ESC : Quit	↑ ↓ → ← : Select Item
Security Option	: Setup	F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
IDE Second-Channel Control	: Enabled	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

### Virus Warning

Set this parameter to **Enabled** to activate the warning message. This feature protects the boot sector and partition table of your hard disk from virus intrusion. Set it to **Disabled** to disregard the message.

Any attempt during boot-up to write to the boot sector of the hard disk drive stops the system and the following warning message appears on the screen. Run an anti-virus program to locate the problem.

<p><b>! WARNING !</b> Disk Boot Sector is to be modified Type "Y" to accept write, or "N" to abort write Award Software, Inc.</p>
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# Award BIOS

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## **CPU Internal Cache/External Cache**

The CPU Internal Cache/External Cache default setting is **Enabled**. Turning the cache off slows down the system. Leave it enabled unless you are troubleshooting a problem.

## **Quick Power-on Self-test**

This parameter speeds up the power-on self-test by skipping some items that are normally checked. The default setting is **Disabled**.

## **Boot Sequence**

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

## **Swap Floppy Drive**

Enabling this parameter tells your system to read the current floppy disk drive in use regardless of the drive designation. The system may read drive A as drive B or vice-versa. The default setting is **Disabled**.

## **Boot-up Floppy Seek**

Set this parameter to **Enabled** to detect the type of floppy disk drive by tracks. Set it to **Disabled** to disregard searching. Note that in the **Disabled** setting, no warning message appears if the drive installed is 360 KB. The default setting is **Enabled**.

## **Boot-up NumLock Status**

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**.

## **Boot-up System Speed**

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

# Award BIOS

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## ***IDE HDD Block Mode***

This feature enhances hard disk performance by allowing multiseCTOR transfers instead of one sector per transfer. Most IDE drives, except those with old designs, can support this feature. The default setting is Disabled.

## ***IDE 32-bit Transfer Mode***

Enabling this parameter improves system performance by allowing the use of 32-bit fixed disk access. This enhanced IDE feature only works under DOS, Windows 3.X and Novell NetWare. If your system or hard disk does not support this function, set this parameter to Disabled. The default setting is Disabled.

## ***Gate A20 Option***

The settings for this parameter are Normal and Fast. If the data transfer is controlled by the 8042 chip, set the parameter to Normal. The Fast setting transfers the control to the ASICs. The default setting is Fast.

## ***Memory Parity Check***

This parameter lets you enable or disable the optional parity DRAM. The default setting is Disabled. If you install SIMMs with parity bit chips, set this parameter to Disabled.

## ***Typematic Rate Setting***

Set this parameter to Enabled to determine the typematic rate. Set it to Disabled to disregard the rate setting. The default setting is Disabled.

## ***Typematic Rate***

This parameter allows you to control the speed at which the system registers repeated keystrokes. The typematic rate settings are 6, 8, 10, 12, 15, 20, 24, and 30 chars/sec. The default setting is 6 chars/sec.

# Award BIOS

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## ***Typematic Delay***

This parameter allows you to control the display time between the first and the second characters. The typematic delay settings are 250, 500, 750, and 1000 msec. The default setting is 250 msec.

## ***Security Option***

The security option settings are **System** and **Setup**. The System option limits access to both the System and Setup. A prompt asking you to enter your password appears on the screen everytime you boot the system. The Setup option limits access only to setup. The default setting for this parameter is **Setup**.

To disable the security option, select **Password Setting** from the Main Menu and press **e**.

## ***IDE Second-Channel Control***

This parameter is set to **Enabled** if the system is using the second IDE channel. Disable the parameter if only the primary IDE channel is in use.

## ***Video BIOS Shadow***

If enabled, this copies the video display card BIOS into the system DRAM to improve system performance. The default setting for this parameter is **Enabled**.

## ***C8000-CBFFF Shadow to DC000-DFFFF Shadow***

These six lines are for shadowing other expansion cards with ROMs. The default setting for these areas is **Disabled**. You need to know the specific addresses that ROMs use to shadow the expansion cards. If you do not know this information, enable all the ROM shadow settings. This ensures shadowing of any present ROMs. Also, enabling all the settings reduces the available memory by 640 KB to 1024 KB.

# Award BIOS

## Chipset Features Setup

This screen appears when you select Chipset Features Setup from the Main Menu.

ROM PCI/ISA BIOS  
CHIPSET FEATURES SETUP  
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	Latency from ADS# status	: 3T
Read CAS Pulse Width	: 3T	Refresh when CPU Hold	: Disabled
DRAM Write CAS Width	: 3T	Snoop Filter	: Disabled
L1 Cache Update Mode	: WB	Post Write CAS Active	: 2T
L2 Cache Update Mode	: WB	CPU/PCI Post Write Delay	: 2T
SRAM Speed Option	: Faster	PCI Clock Frequency	: CPUCLK/1.5
SRAM Burst R/W Cycle	: 3T	Max. Burstable Range	: 0.5 Kb
Memory Hole At 15M - 16M	: Disabled	CPU/PCI Burst Mem. Write	: Enabled
Refresh RAS Active Time	: 5T	CPU/PCI Post Memory Write	: Enabled
DRAM RAS to CAS Delay	: 3T	ISA Bus Clock Frequency	: PCICLK/4
DRAM RAS Precharge Time	: 4T	DRAM Type of Bank 0 & 1	: FP DRAM
Gate A20 Emulation	: Enabled	DRAM Type of Bank 2 & 3	: FP DRAM
Fast Reset Emulation	: Enabled	EDO CAS RD Pulse Width	: 2T
Slow Refresh (1:4)	: Disabled	EDO CAS WS Pulse Width	: 1T
System BIOS Cacheable	: Enabled		
Video BIOS Cacheable	: Enabled		
		ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

### Auto-configuration Function

This parameter automatically enters and locks the optimum settings for the chipset. If enabled, the entries on the left side of the screen are automatically set for the mainboard's optimum performance. The Disabled setting unlocks the settings without changing them. The default setting is Enabled.



*Do not change the values of the Chipset parameters unless you are a qualified technician. To configure, simply set the Auto-configuration function to Enabled.*

# Award BIOS



*If you install EDO DRAMs, you must change the setting of the DRAM Type of Bank 0 and 1 or Bank 2 and 3 parameter (depending on the location of the SIMMs) to EDO (Extended Data Out). The default setting is FP (Fast Page) DRAM.*

## Power Management Setup

The Power Management Setup screen enables you to control the mainboard's green features. See the following screen.

ROM PCI/ISA BIOS  
POWER MANAGEMENT SETUP  
AWARD SOFTWARE, INC.

Power Management	: Disabled	VGA Activity	: Enabled
PM Control by APM	: Yes	IRQ3 (COM2)	: Enabled
Video Off Option	: Susp, Stdby→Off	IRQ4 (COM1)	: Enabled
Video Off Method	: V/H SYNC+Blank	IRQ5 (LPT2)	: Enabled
Suspend Switch	: Enabled	IRQ6 (Floppy Disk)	: Enabled
Doze Speed (div by)	: 2	IRQ7 (LPT1)	: Enabled
Stdby Speed (div by)	: 3	IRQ8 (RTC Alarm)	: Disabled
		IRQ9 (IRQ2 Redir)	: Enabled
** PM Timers**		IRQ10 (Reserved)	: Enabled
HDD Power Down	: Disabled	IRQ11 (Reserved)	: Enabled
Doze Mode	: Disabled	IRQ12 (PS/2 Mouse)	: Enabled
Standby Mode	: Disabled	IRQ13 (Coprocessor)	: Enabled
Suspend Mode	: Disabled	IRQ14 (Hard Disk)	: Enabled
		IRQ15 (Reserved)	: Enabled
** PM Events**			
COM Ports Activity	: Enabled	ESC : Quit	↑ ↓ → ← : Select Item
LPT Ports Activity	: Enabled	F1 : Help	PU/PD/+/- : Modify
HDD Ports Activity	: Enabled	F5 : Old Values	(Shift) F2 : Color
PCI/ISA Master Activity	: Enabled	F6 : Load BIOS Defaults	
IRQ-15 Activity	: Enabled	F7 : Load Setup Defaults	

# Award BIOS

## **Power Management**

This function enables you to control the power-saving modes, display turn off and HDD power down. The four settings are as follows:

<b>Setting</b>	<b>Description</b>
Max Saving	Maximize energy conservation by putting the system into power-saving mode after a brief period of system inactivity. The maximum saving default is 20 sec.
Min Saving	A power-saving assignment which activate after a moderate period of system inactivity. The minimum saving default is 40 Min.
Disabled	Turns off power-saving.
User Defined	Allows you to set the power-saving options according to your requirements.

## **PM Control by APM**

If your system supports the Advanced Power Management (APM) feature, set this parameter to Yes.

## **Video Off Option**

This parameter determines when the video off feature activates. The default is *Susp, Stdbby*→*Off*.

## **Video Off Method**

If your video display adapter supports the green features, set this parameter to its default setting which is *V/H SYNC+Blank*. If not, then set this to *Blank Setting*.

The default setting saves more power since it turns off the CRT vertical and horizontal scanning once the monitor screen blanks. However, with non-green monitors, CRT scanning does not stop even if the monitor screen blanks.



# Award BIOS

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*Screen saver software does not work with this feature. It is used only to prevent burning in a static image on the CRT while the monitor is on. A screen saver cannot display while the monitor is shut down to save both energy and the screen.*

## **Suspend Switch**

Enabling this parameter also enables the SMI connector on the mainboard which connects to the lead from a Suspend switch mounted on the system case. The default setting is Enabled.

## **Doze & Standby Speeds**

These lines allow you to set the speed at which the CPU will operate during each mode. The number indicates the normal CPU speed divisor.

## **PM Timers**

These parameters enable you to control the time-out settings for the Power Management Scheme.

## **HDD Power Down**

This time-out setting indicates when to shut down the IDE hard disk. The settings are from 1 Min to 15 Min or Disabled.



*HDD Power Down does not affect SCSI hard disks.*

## **Doze Mode, Standby Mode, Suspend Mode**

These modes set the period of time after which each of these modes activates.

# Award BIOS

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## ***PM Events***

This function allows you to monitor system activities. Enabling the items under this function resumes system to full power.

## ***IRQ3 to IRQ15***

These lines allow you to set the IRQs individually. An activity from any enabled IRQ resumes the system to normal mode if the IRQ 15 Activity item in the PM Events is enabled.

# Award BIOS

## PCI and Onboard I/O Setup

This screen configures the PCI Bus slots. All the slots use INTA#. If you install a card, you should set the card to INTA#.

ROM PCI/ISA BIOS  
PCI & ONBOARD I/O SETUP  
AWARD SOFTWARE, INC.

PnP BIOS Auto-config : Enabled	Onboard PCI/IDE Chip : Enabled
Slot 1 Using INT# : AUTO	Onboard FDC Controller : Enabled
Slot 2 Using INT# : AUTO	Onboard Serial Port 1 : COM1
Slot 3 Using INT# : AUTO	Onboard Serial Port 2 : COM2
Slot 4 Using INT# : AUTO	Onboard Parallel Port : 3BCH
	Parallel Port Mode : Normal
1st Available IRQ : 10 *	
2nd Available IRQ : 11 *	
3rd Available IRQ : 9 *	
4th Available IRQ : 12 *	
PCI IRQ Activated By : Edge	
PCI IDE IRQ Map To: : ISA	
	ESC : Quit           ↑↓→← : Select Item
	F1 : Help            PU/PD/+/- : Modify
	F5 : Old Values     (Shift) F2 : Color
	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults



*The items with asterisks appear only if the PnP BIOS Auto-configuration function is disabled. See the following sections for the description of the parameters.*

### PnP BIOS Auto-configuration

When enabled, the BIOS automatically sets the Slots 1, 2, 3 and 4 Using INT# parameters AUTO and assigns an IRQ for each PCI slot. When disabled, the 1st, 2nd, 3rd and 4th Available IRQ parameters appear onscreen allowing you to set an IRQ for each slot manually. The default setting is Enabled.

# Award BIOS

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## **Slots 1, 2, 3 and 4 Using INT#**

Each PCI slot supports four interrupt pins. These parameters let you select which interrupt pin to use. The selections are interrupt pins A, B, C, D and Auto. However, you must always start with interrupt pin A. The INTA pin is automatically reserved for master function of the PCI device. The remaining interrupt pins (INTB, INTC, and INTD) are reserved for multifunction cards.

The default setting for these parameters is `Auto`. This automatically sets the system IRQ for the PCI slot.

## **Available IRQs**

These parameters appear only if the PnP BIOS Auto-Configuration parameter is set to `Disabled`. These let you assign a system IRQ to each PCI slot. The available settings are 3, 4, 5, 7, 9, 10, 11, 12, 14, 15 and NA. The NA setting means no IRQ is assigned to the slot. When assigning, make sure that the IRQs do not conflict.

Enabling the PnP BIOS Auto-Configuration to `Enabled` automatically sets the IRQ for each slot. Therefore, these parameter do not appear onscreen.

## **PCI IRQ Activated By**

This option lets the user set when to activate the PCI IRQ. The available settings are `Edge` and `Level`. The `Edge` is the start of the signal and `Level` is the point at which the signal is high. The default setting for this parameter is `Edge`.

## **PCI IDE IRQ Map To**

This feature enables you to control the PCI IDE IRQ mapping. The available options are `ISA`, `PCI-Slot 1`, `PCI-Slot 2`, `PCI-Slot 3`, `PCI-Slot 4` and `PCI-Auto`. The default is `ISA`.

## **Onboard PCI/IDE Chip**

This parameter allows you to enable or disable the PCI/IDE chip on board. The default setting is `Enabled`.

# Award BIOS

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## **Onboard FDC Controller**

If enabled, this parameter allows you to connect your floppy disk drives to the onboard floppy disk connector instead of a separate controller card. Change the setting to **Disabled** if you want to use a separate controller card. The default setting is **Enabled**.

## **Onboard Serial Ports 1 and 2**

These lines allow you to assign addresses for the board's serial connectors. The serial ports can be assigned as follows:

Port	Address
COM1	3F8H (onboard serial port 1 default)
COM2	2F8H (onboard serial port 2 default)
COM3	3E8H
COM4	2E8H
Disabled	Disables the onboard port



*Make sure that the ports have different assignments.*

# Award BIOS

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## **Parallel Port**

This parameter controls the onboard parallel port connector. The options for this parameter are:

- 378H
- 3BCH
- 278H
- Disabled

The default setting is 3BCH.



*If you are using an I/O card with a parallel port, make sure that the addresses don't conflict.*

## **Parallel Port Mode**

The default setting for this function is Normal. If your system has a parallel interface peripheral device, set this function according to the enhanced mode that your device supports. The available options are:

- Normal
- EPP (Enhanced Parallel Port)
- ECP (Extended Capabilities Port)
- ECP/EPP

# Award BIOS

## Load BIOS Defaults

This option loads the default values permanently stored in the BIOS ROM. If the values specified in the Setup utility become corrupted, these defaults load automatically when you turn on the system power. These settings are non-optimal and bypass all high-performance features. This is useful if you are having problems with your current system configuration and need to determine the cause.

The defaults loaded only affect the BIOS Features Setup and Chipset Features Setup screens. There is no effect on the Standard CMOS Setup. To use this feature, highlight this option on the main menu and press **e**. A line appears on the screen asking if you want to load the BIOS default values. To load, press **Y** then **e**. Press **N** to disregard. See the following screen.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	SAVE & EXIT SETUP
POWER MANAGEMENT	EXIT WITHOUT SAVING
PCI & ONBOARD I/O SETUP	
LOAD BIOS DEFAULTS	
LOAD SETUP	
Load BIOS Defaults (Y/N)?	
ESC : Quit	Select Item
F10 : Save & Exit	: Change Color
Loads BIOS Defaults except Standard CMOS SETUP	

## Load Setup Defaults

The Load Setup Defaults option loads settings which are a combination of the BIOS defaults and higher-performance settings your system can use as detected during POST.

The auto-configured settings only affect the BIOS Features Setup, Chipset Features Setup and PCI Configuration Setup. There is no effect on the Standard CMOS Setup. To use this feature, highlight this option on the main screen and press **e**. A line appears on the screen asking if you want to load

# Award BIOS

the Setup default values. To load, press **Y** then **e**. Press **N** to disregard.  
See the screen below.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT PCI & ONBOARD I/O SETUP LOAD BIOS DEFAULTS LOAD SETUP DEFAULTS	PASSWORD SETTING IDE HDD AUTO DETECTION SAVE & EXIT SETUP EXIT WITHOUT SAVING
ESC : Quit F10 : Save & Exit S	Load SETUP Defaults (Y/N)?
Load SETUP Defaults except Standard CMOS SETUP	



# Award BIOS

## Password Setting

This option lets you set a password. Password prevents unauthorized use of your computer.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	SAVE & EXIT SETUP
POWER MANAGEMENT	EXIT WITHOUT SAVING
PCI & ONBOARD I/O SETUP	
LOAD BIOS DEFAULTS	
LOAD SETUP DEFAULTS	
ESC : Quit	Enter Password: *****
F10 : Save & Exit S	Change Color
Change/Set/Disable Password	

To set a password, highlight the password type that you want and press **e**. At the prompt, type your password. Your password can be up to 8 alphanumeric characters. Press **e** to enter your password. At the next prompt, re-type your password and press **e** again to confirm the new password. After the password entry, the screen automatically reverts to the main screen.

To disable the password, press **e** when prompted to enter the password. The screen displays a message confirming that the password has been disabled.



*If you use the Password features, the Security Option line in the BIOS Features Setup determines when to enter the password.*

## IDE HDD Auto-detection

If your system has an IDE hard drive, you can use this utility to detect its parameters and enter them into the Standard CMOS Setup automatically.

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY

# Award BIOS

AWARD SOFTWARE, INC.

HARD DISK	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master								
Select Primary Master Option (N=Skip) : N								
OPTIONS	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE	
1 (Y)	426	826	16	65535	825	63	NORMAL	



*This utility only detects one set of parameters for your IDE hard drive. Some IDE drives can use more than one set of parameters. If your hard disk is formatted using different parameters than those detected, you have to enter the parameters manually. If the parameters listed don't match the ones used to format the disk, the information on that disk won't be accessible. If the auto-detected parameters displayed do not match those that used for your drive, ignore them. Press N to reject the values and enter the correct ones manually from the Standard CMOS Setup screen.*

## Save & Exit Setup

This function automatically saves all CMOS values before leaving Setup.

# Award BIOS

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## **Exit without Saving**

Use this function to exit Setup without saving the CMOS value changes. Do not use this option if you want to save the new configuration.

# Award 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 a 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 Award Flash Memory Writer Utility which allows you to upgrade the system BIOS. For more information on this utility, contact your local distributor.*

# Jumper Summary **A**

## CPU Type

CPU Type	JP9	JP10	JP11
P54C-75	1-2	1-2, 3-4	1-2, 3-4
P54C-90	2-3	1-2, 3-4	1-2
P54C-100	2-3	1-2, 3-4	3-4
P54C/CS/CQS-120	2-3	3-4, 5-6	1-2
P54C/CS/CQS-133	2-3	3-4, 5-6	3-4
P54CS/CQS-150	2-3	5-6, 7-8	1-2
P54CS/CQS-166	2-3	5-6, 7-8	3-4

## SRAM Type (Optional)

SRAM	JP14	JP16
3.3V SRAM	Off	On
3.3V/5V Mix Mode SRAM	On	Off

## Cache Size

Cache Size	JP12
256 KB	1-2
512 KB	2-3

## Flash ROM Type

Flash ROM	JP13
5V	1-2
12V	2-3

# Jumper Summary

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## CMOS

Function	JP15
Default (Normal)	1-2
Clear CMOS	2-3

## PS/2 Mouse (Optional)

Function	JP6
Enabled	Closed
Disabled	Open

## Onboard Super I/O Controller

SMC 665GT	JP5
Enabled	1-2
Disabled	2-3

## ECP DMA Channel

ECP DMA Channel	JP3	JP4
DMA 3	1-2	1-2
DMA 1	2-3	2-3

# Jumper Summary

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## Onboard Connectors

Connector	Function
CN1	AT-keyboard connector
CN2	PS/2 keyboard connector (optional)
CN3	PS/2 mouse connector (optional)
CN4	Power connector
CN5	Parallel port connector
CN6	COM 2 connector
CN7	COM 1 connector
CN8	FDC connector
CN9	IDE 2 connector
CN10	IDE 1 connector
CN11	4-pin fan connector
CN12	2-pin fan connector
CN13	HDD LED connector
CN14	Multifunction connector