



DP5

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 one appendix.

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, **Award 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, **NS PC87410 Device Drivers**, tells how to install the NS PC87410 software drivers that come with the board.

About this Manual

Conventions

The following conventions are used in this manual:

Text entered by user,
default settings

message displayed

a, e, s, etc



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

Denotes actual messages that appear
on screen

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

NOTE

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

WARNING

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

CAUTION

Suggests precautionary measures to
avoid potential hardware or software
problems.

IMPORTANT

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

TIP

Tells how to accomplish a procedure
through little shortcuts.

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Appendix A Jumper Summary

Appendix B NS PC87410 Device Drivers

Features 1

The DP5 is a dual-Pentium™ (3.3V) system board that utilizes the PCI/ISA architecture. It has two zero-insertion force (ZIF)-type CPU sockets that accommodate Pentium CPUs. It also has three ISA-AT slots, two PCI slots, one ISA/PCI-shared slot, and six 72-pin single in-line memory module (SIMM) sockets that can accommodate a maximum memory of 384 MB. The second-level cache is upgradable to 512 KB.

Four Intel Neptune application-specific integrated circuit (ASIC) chipsets, a SMC665 super I/O controller, a PC87410 enhanced local-IDE controller, a AIC-7870 SCSI chip and a single-chip Fast SCSI-2 host adapter are also incorporated in the motherboard to further enhance system performance. The board also conforms to the EPA “green” standards.

The board measures 220 mm x 330 mm (full baby-AT size).

Features

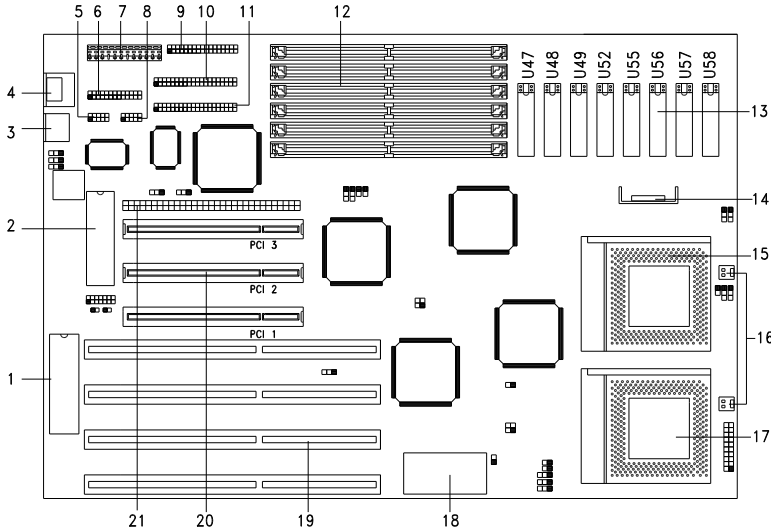
Specifications

Microprocessor	Pentium™ (3.3V) Processor 75/90/100 MHz
Memory	384 MB
SIMM Sockets	Six 72-pin, 32-bit
ASIC Chip	Intel Neptune 82434NX 82433NX (2 pcs) 82379AB
Bus Architecture	ISA, PCI
Expansion Slots	Three ISA slots, two PCI slots and one ISA-/PCI shared slot
Ports	One parallel port (SPP/ECP/EPP) Two serial ports (UART 16C550) Dual-channel PCI mode 3 IDE One Fast SCSI-II port One floppy disk controller port
Secondary Cache	256 KB/512 KB
BIOS	Award
RTC Type	Dallas 12887A
Board Size	220 mm x 330 mm (full baby-AT)

Features

Board Layout

- 1. Keyboard controller
- 2. System BIOS
- 3. PS/2 mouse connector*
- 4. AT keyboard connector / PS/2 keyboard connector*
- 5. COM1 connector
- 6. Printer port
- 7. Power connector
- 8. COM2 connector
- 9. Floppy drive connector
- 10. IDE2 connector
- 11. IDE1 connector
- 12. SIMM sockets
- 13. Second-level cache
- 14. Voltage regulator
- 15. Primary CPU socket
- 16. 2-pin fan connectors
- 17. Secondary CPU socket
- 18. RTC/battery
- 19. ISA slots
- 20. PCI slots
- 21. SCSI connector



* Optional

Features

System Board Components

Microprocessor

The DP5 system board uses dual Pentium (P54C) processors running at 50, 60 or 66 MHz (75/90/100 MHz core clock). Chapter 2 gives details on how to upgrade the Pentium processor.

ASICs

The ASICs onboard are the Intel Neptune 82434NX, 82433NX, and 82379AB. The 82434NX serves as the host/PCI bridge, DRAM controller and second-level cache controller. The 82433NX functions as the local bus accelerator. The 82379AB 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.

Features

Expansion Slots

The board expansion slots consist of three ISA-AT, two PCI and one ISA-PCI-shared slots. These expansion slots are the parallel bars on the system board. Each slot has rows of golden pins 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 six 72-pin DRAM sockets that expand system memory to a maximum of 384 MB. These sockets accept single- and double-sided SIMMs. Chapter 2 discusses the available memory configurations.

Dual-channel PCI Mode 3 IDE

The board utilizes the enhanced integrated drive electronics (IDE) interface that improves the data transfer rate. It also allows the system to support four E-IDE mode 3 devices, including fixed 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 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 and 512-KB second-level, write-back and write-through cache.

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

Features

SCSI Feature

The system board features a single-chip Fast SCSI-2 host adapter that adds SCSI I/O capability to the system. The chipset consists of all the components found on a SCSI host adapter such as an onboard microcontroller, bus master interface controller and SCSI controllers, and allows a full 20 MB/second burst transfer rate.

To use the feature, connect any SCSI device to the SCSI interface on the system board. Enter the BIOS utility to set the PCI slot parameters. See Chapter 3 for details on PCI configuration. Refer to the SCSI manual or diskette for more information on using SCSI.

Power Management

The DP5 conforms to the power-saving standards of the U.S. Environmental Protection Agency (EPA) Energy Star program. The system board features four system power-saving modes that reduce power consumption. For more information on the power-saving modes, see Chapter 3.

Hardware Setup **2**

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

Install the CPU, memory, and set the jumpers before you install the board into a 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 before handling components. If a wrist strap is not available, maintain contact with a metal part of the system unit throughout any procedure requiring ESD protection.

Hardware Setup

Installing a Microprocessor

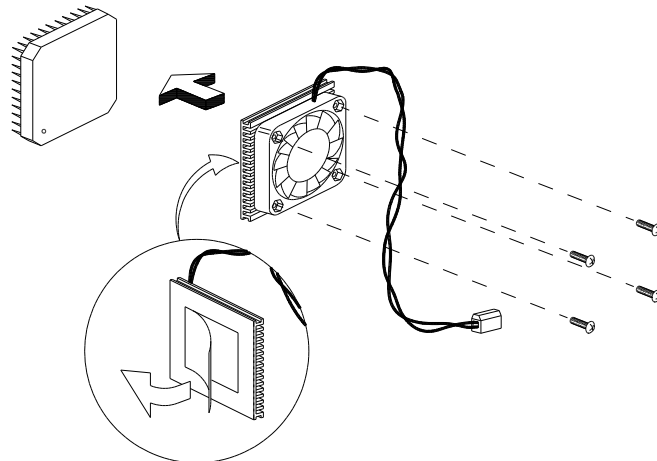
The system board comes with two zero-insertion force (ZIF)-type CPU sockets. Follow these steps to install a Pentium CPU in a ZIF-type upgrade socket:



Read the ESD Precautions before you unpack and install the CPU.

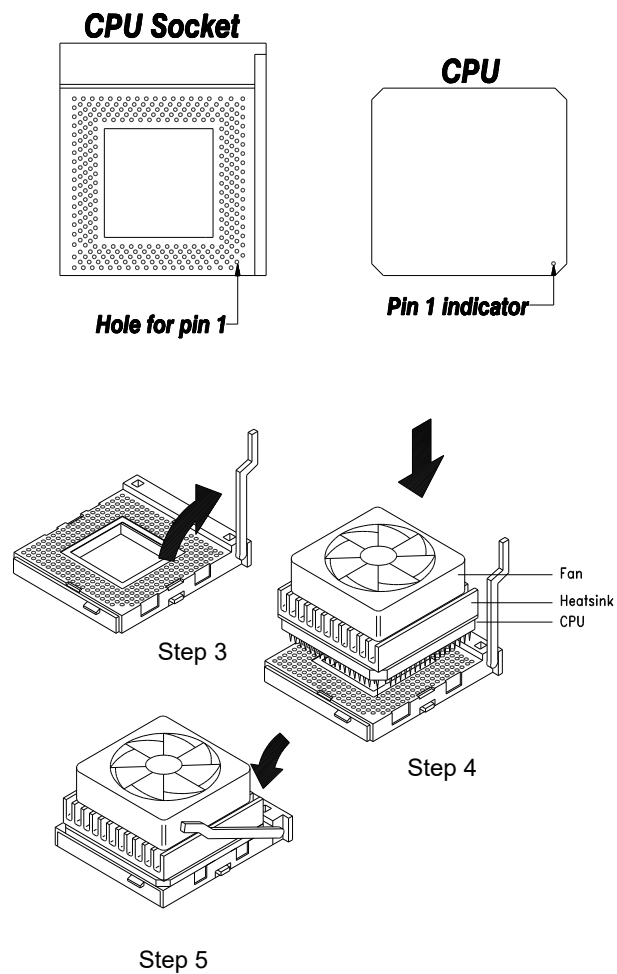
Make sure that the system power is off before you install any component.

1. Locate the CPU sockets on the motherboard.
2. Attach the heatsink and the fan to the CPU. Secure the fan with the required screws. The fan prevents the CPU from overheating and the heatsink dissipates the excess heat.



Hardware Setup

3. Pull up the CPU socket lever. See Step 3 in illustration.
4. Insert the Pentium CPU into the socket. Make sure that pin 1 of the CPU matches the hole 1 of the socket. See Step 4.



Hardware Setup

5. Pull down the socket lever to lock the CPU into the socket. See Step 5.
6. Plug-in the fan cable into the onboard fan connector.
7. Set the jumpers properly. See the following sections for the correct jumper settings.

Upgrading the Microprocessor

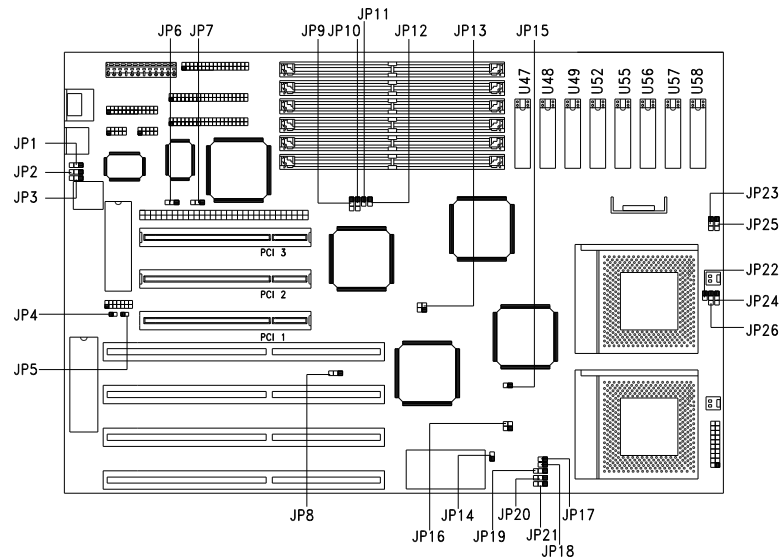
Follow these steps to upgrade the Pentium CPU:

1. Turn off the system power.
2. Remove the CPU from the socket.
3. Detach the heatsink and the fan.
4. Install the upgrade CPU. Refer to the section *Installing a Microprocessor* for the directions.

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.

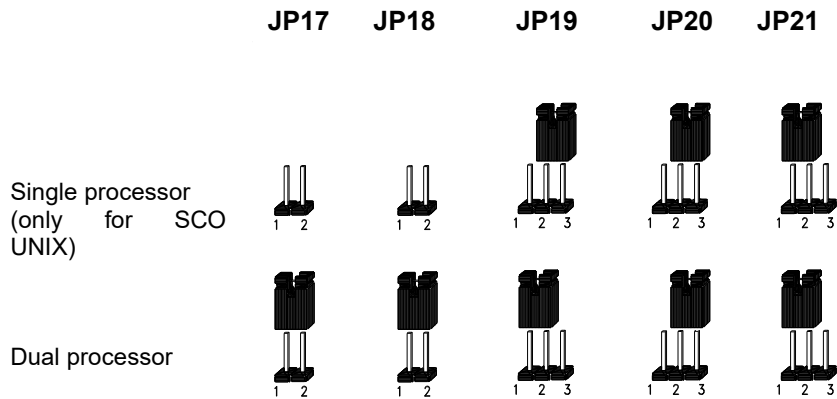


Jumpers JP8, JP15 and JP25 are reserved for manufacturer use. See Appendix A for the default settings.

Hardware Setup

Dual-processor/ Single-processor Operation Select

The DP5 dual Pentium board supports both dual-processor and single-processor operation. Set jumpers **JP17**, **JP18**, **JP19**, **JP20** and **JP21** according to the number of processors operating.









The jumper settings for single-processor operation are applicable only for the SCO UNIX environment. For other environments, the jumpers must be set for dual-processor operation regardless of the number of processors installed.

Hardware Setup

Changing the CPU Type and Speed

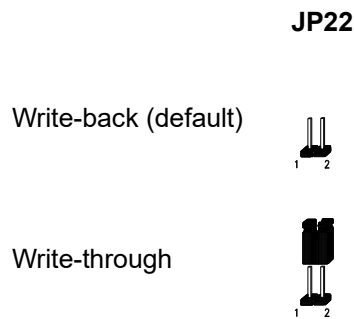
You must reset jumpers **JP16** and **JP23** if you change the CPU type and speed. See the following figure for the correct settings.

	JP16	JP23
P54C-75		
P54C-90		
P54C-100		

Hardware Setup

Selecting the Primary-level Cache Mode

The jumper **JP22** allows you to select the primary-level cache (L1) mode. The L1 may support either write-back or write-through mode, depending on the CPU installed.



Selecting the Cache Size

The system board supports 256-KB and 512-KB second-level cache. When upgrading cache, install the SRAM chips and reset jumpers **JP24** and **JP26**.



Hardware Setup

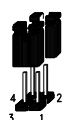
Enabling the Second-level Cache Parity

The jumper **JP13** lets you enable or disable the second-level cache parity. To enable the L2 cache, close pins 1-3 and 2-4. To disable, close pins 1-2 and 3-4.

JP13

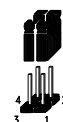
Enabled

(default)



(1-3, 2-4)

Disabled



(1-2, 3-4)



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

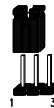
Hardware Setup

Changing the Flash ROM Type

The 3-pin jumper marked **JP1** on the system board allows you to choose the flash ROM type.

JP1

5V Flash ROM Mode
(default)



12V Flash ROM Mode



Enabling the Enhanced-IDE Controller

The 3-pin jumper **JP7** is used to enable or disable the E-IDE controller. See the following figure for the correct settings.

JP7

Enabled
(default)



Disabled

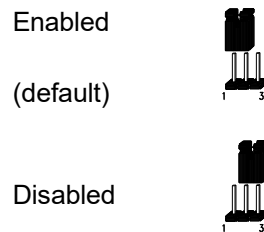


Hardware Setup

Enabling the FDC and Super I/O Chip

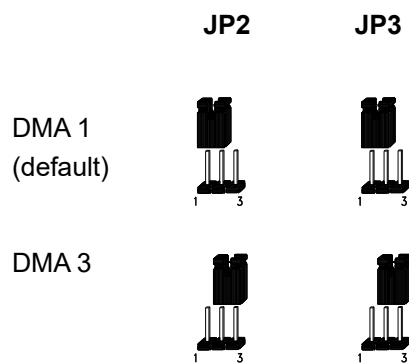
The 3-pin jumper **JP6** enables or disables the super I/O chip. The SMC665 onboard I/O chip supports two serial ports, one parallel port and FDD functions. Set the jumper to `Disabled` if you want to use a separate I/O card.

JP6



Selecting the ECP DMA Channel

The jumpers **JP2** and **JP3** select the DMA channel for extended capabilities port (ECP) function.



Hardware Setup

Enabling the SCSI Chip Termination

The onboard SCSI chip is the AIC-7870. The jumper **JP4** lets you enable or disable the onboard SCSI chip termination.

JP4

Enabled

(default)



Disabled



Selecting the SCSI Device Size

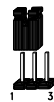
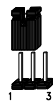
If the SCSI chip is enabled, you must select the SCSI device size. The jumpers **JP9**, **JP10**, **JP11** and **JP12** enable you to set the SCSI size. The SCSI chip supports both 8 and 16 bits.

JP9 JP10 JP11 JP12

8-bit SCSI
(default)



16-bit SCSI



Hardware Setup

Enabling the PS/2 Mouse (optional)

The system board accepts both AT and PS/2 mice. To enable the PS/2 mouse, set the 2-pin jumper **JP5** open. To disable, close pins 1-2.

JP5

Enabled



Disabled



Clearing the CMOS

The jumper **JP14** is a 2-pin jumper 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 JP14 for a few seconds. Then set the jumper to normal by leaving JP14 open. Enter Setup to specify a new password.

JP14

Normal (default)



Clear CMOS



Hardware Setup

Memory Configuration

The system board supports a maximum memory of 384 MB. The six 72-pin SIMM sockets accommodate 1-, 4-, 16- and 64-MB single-sided SIMMs, and 2-, 8- and 32-MB double-sided SIMMs. All SIMMs support a DRAM speed of 70/80 ns or less.

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

SIMM	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

The following table shows the possible SIMM combinations:

Bank 0		Bank 1		Bank 2		Total Memory
SIMM 0	SIMM 1	SIMM 2	SIMM 3	SIMM 4	SIMM 5	
#	#					
		#	#			
				#	#	
#	#	#	#			
#	#			#	#	
		#	#	#	#	
#	#	#	#	#	#	

SIMM location

Hardware Setup

You can install SIMMs in any bank. However, make sure that you install the same SIMM type in a given bank. For example:

Bank 0		Bank 1		Bank 2		Total Memory
SIMM 0	SIMM 1	SIMM 2	SIMM 3	SIMM 4	SIMM 5	
1 MB	1 MB					2 MB
		4 MB	4 MB			8 MB
				1 MB	1 MB	2 MB
1 MB	1 MB	32 MB	32 MB			66 MB
64 MB	64 MB			4 MB	4 MB	136 MB
		8 MB	8 MB	1 MB	1 MB	18 MB
64 MB	64 MB	64 MB	64 MB	64 MB	64 MB	384 MB

Installing a SIMM



Observe the ESD precautions when installing components.

Follow these steps to install a SIMM:

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



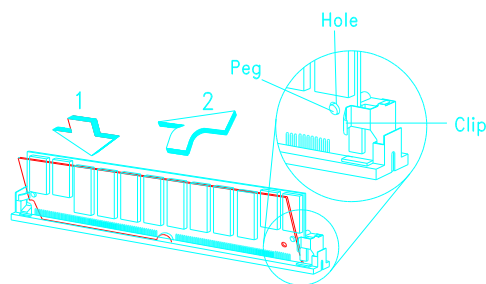
Be careful when inserting or removing SIMMs. Forcing a SIMM in or out of a socket can damage the socket or the SIMM (or both).

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

Hardware Setup

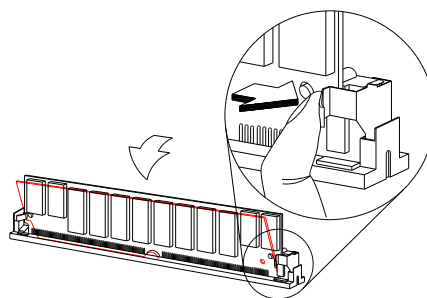


The SIMM should be at a 90° angle when installed.



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° angle.
3. Gently pull the SIMM out of the socket.



Hardware Setup

Upgrading Cache Memory

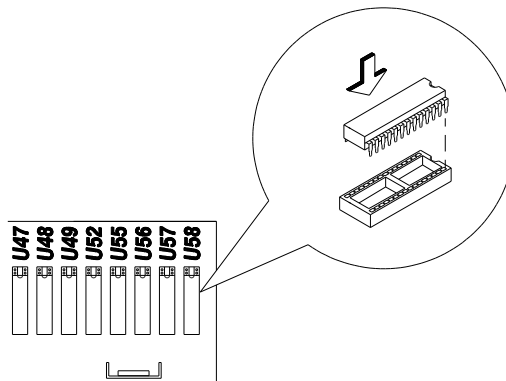
The second-level cache is upgradable from 256 KB to 512 KB. The system supports both write-back and write-through modes. See the table below for the possible cache configurations.

Cache Size	Data SRAM	Location
256 KB	32 Kb x 8 x 8 pcs	U47, U48, U49, U52 U55, U56, U57, U58
512 KB	64 Kb x 8 x 8 pcs	U47, U48, U49, U52 U55, U56, U57, U58

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.

Hardware Setup



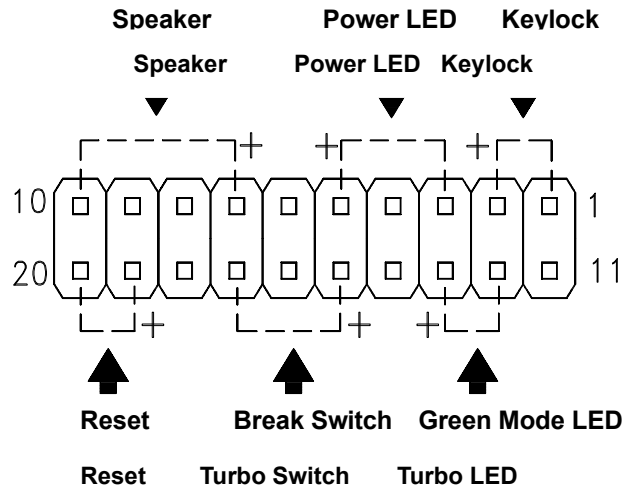
Press the SRAM chip gently but firmly into place. Be careful not to bend the pins.

Connectors

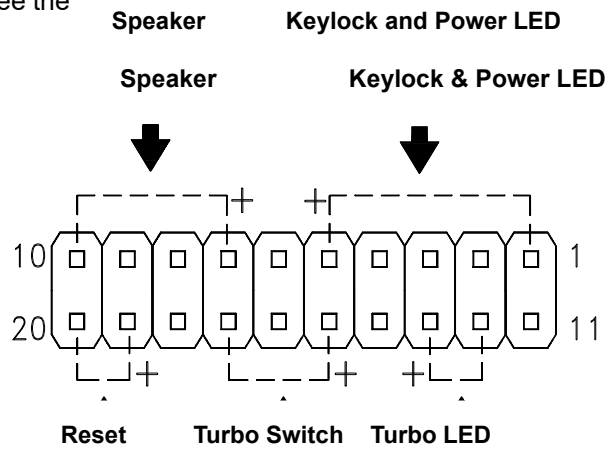
Multifunction Connector

This 20-pin connector is marked **CON5** 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.

Hardware Setup

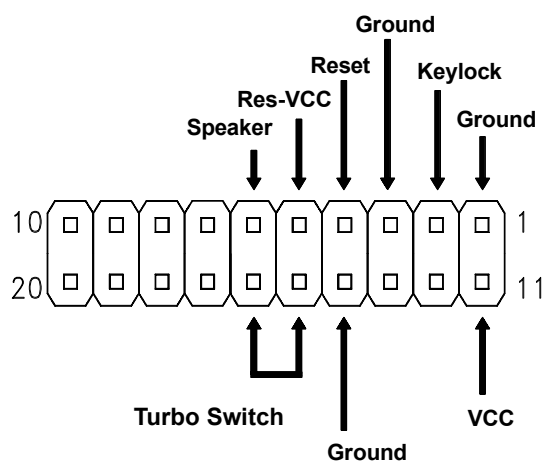


Some housings have a five-pin connector for the keylock and power LED. See the following illustration.



Hardware Setup

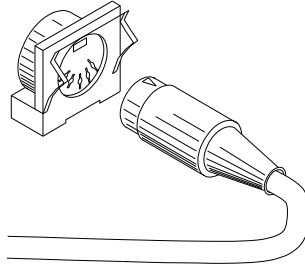
Other housings may have a 12-pin connector. If your housing has this type of connector, plug it into CON5 as shown in the following figure. Make sure that the red wire of the connector connects to pin 11.



Keyboard Connector

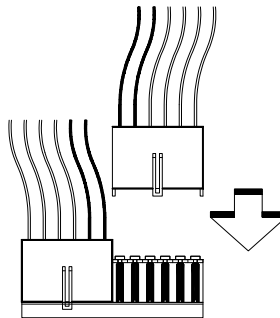
The system board accepts both PS/2- and AT-keyboard interfaces. The following figures show how to connect the AT keyboard.

Hardware Setup



Power Connector

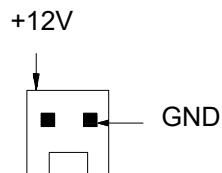
A standard power supply has two cables with six wires each. Attach these cables to the power connector on the board in such a way that all the black wires are in the center.



Hardware Setup

CPU Fan Connector

The DP5 system board has two two-pin CPU fan connectors marked **J5** and **J6**. To connect a CPU fan connector, simply plug it into the fan connector onboard. Take note of the pin assignments of the connector. See the following figure.



Installation

The full baby-AT size DP5 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 with the board installation.

Hardware Setup

Installing the System Board

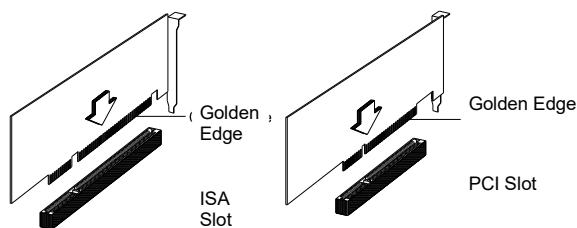
1. Open the system housing.
2. Use at least two of the screws that come with the housing to secure the board.
3. Attach the power supply cables to the power connector and the front panel connectors to the multifunction connector. See the section *Connectors*.
4. Install any additional components that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

Installing Expansion Boards

Install expansion boards after you have installed the system board in 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.

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



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

Award BIOS

The section at the bottom of the screen tells how to control the menu. Press the arrow keys to move between items, **j** to color scheme of the display, **^** to exit, and **u** to save the changes before exiting. Another section at the bottom gives 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. Press the arrow keys to highlight an item and **{** or **}** to select the value for each item.

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								
HARD DISK	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
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					Base Memory: 640 K			
Drive B: None					Extended Memory: 15360 K			
Video : EGA/VGA					Other Memory: 384 K			
Halt On: All Errors					Total Memory : 16384 K			
ESC : Quit			↓→← : Select Item			PU/PD/+/- : Modify		
F1 : Help			(Shift) F2 : Change Color					

Award BIOS

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 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.

Award BIOS

Floppy Drive Types

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

- 360K, 5.25 in.
- 1.2M, 5.25 in.
- 720K, 3.5 in.
- 1.44M, 3.5 in.
- 2.88M, 3.5 in.

Select `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

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

Award BIOS

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.

Award BIOS

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 (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		
Gate A20 Option	: Fast		
Memory Parity Check	: Disabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: Setup		
IDE Second-Channel Control	: Enabled		
		ESC : Quit	↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values (Shift)	F2 : Color
		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.

Award BIOS

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

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*.

Award BIOS

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. The default setting is `High`.

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`.

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`.

Award BIOS

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, you must set this parameter to `Enabled`.

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.

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`.

Award BIOS

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

IDE Second-channel Control

Set this parameter to `Enabled` if the system uses 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	Memory Hole at 15 MB Addr:	: Disabled
DRAM Burst of 4 Refresh	: Enabled		
DRAM RAS# Active	: Asserted		
DRAM Refresh Mode	: Normal		
DRAM R/W Burst Timing	: X444/X333		
CPU to DRAM write buffer	: Enabled		
CPU to PCI write buffer	: Enabled		
PCI to DRAM write buffer	: Enabled		
PCI Memory Burst Write	: Enabled		
Add Extra Wait for CAS#	: Disabled		
Add Extra Wait for RAS#	: Disabled		
System BIOS Cacheable	: Enabled		
Video BIOS Cacheable	: Enabled		
L2 Cache Zero Wait State	: Disabled		
CPU to PCI Byte Merge	: Disabled		
VGA 128K Range Attribute	: Disabled		
		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. The Disabled setting unlocks the settings without changing them. The default setting is `Enabled`.

Award BIOS



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

Power-management Setup

The Power-management Setup controls the mainboard's green features.

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

Power Management	: Disabled	IRQ1 (Keyboard)	: ON
PM Control by APM	: Yes	IRQ3 (COM2)	: OFF
Video Off Method	: V/H SYNC+Blank	IRQ4 (COM1)	: OFF
		IRQ5 (LPT2)	: OFF
Doze Mode	: Disabled	IRQ6 (Floppy Disk)	: OFF
Standby Mode	: Disabled	IRQ7 (LPT1)	: OFF
Suspend Mode	: Disabled	IRQ8 (RTC Alarm)	: OFF
HDD Power Down	: Disabled	IRQ9 (IRQ2 Redir)	: OFF
		IRQ10 (Reserved)	: OFF
IRQ3 (Wake-Up Event)	: OFF	IRQ11 (Reserved)	: OFF
IRQ4 (Wake-Up Event)	: OFF	IRQ12 (PS/2 Mouse)	: OFF
IRQ8 (RTC Alarm)	: ON	IRQ13 (Coprocessor)	: OFF
IRQ12 (Wake-Up Event)	: OFF	IRQ14 (Hard Disk)	: OFF
		IRQ15 (Reserved)	: OFF
Power Down Activities		ESC : Quit ↓ → ← : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults	
COM Ports Accessed	: ON		
LPT Ports Accessed	: ON		
Drive Ports Accessed	: ON		

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:

Setting	Description
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 1 min.
Min Saving	A power-saving assignment which activates after a moderate period of system inactivity. The minimum saving defaults are 15 min and 1 hour.
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`.

Award BIOS

Video-off Method

If your video display adapter supports the green features, then you can 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.



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.

Doze Mode, Standby Mode, Suspend Mode

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

HDD Power Down

This time-out setting indicates when to shut down the IDE hard disk. The settings range from 20 sec. to 15 min. or Disabled.

Award BIOS



HDD Power Down does not affect SCSI hard disks.

IRQ3, 4, 8 and 12

This function allows you to monitor IRQ3, 4, 8 and 12 activities. An activity detected from any enabled ports returns the system to normal mode.

Power-down Activities

COM, LPT, Drive Ports Accessed

These parameters allow you to monitor the activities of the COM, LPT and Drive ports. An activity detected from any enabled ports returns the system to normal mode.

IRQ1 to IRQ15

These lines allow you to set the IRQs individually. An activity from any enabled IRQ returns the system to normal mode.

Award BIOS

PCI Configuration 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 CONFIGURATION SETUP
AWARD SOFTWARE, INC.

PnP BIOS Auto-config : Disabled	Onboard PCI SCSI Chip : Enabled
Slot 1 Using INT# : AUTO	Onboard PCI IDE Chip : Enabled
Slot 2 Using INT# : AUTO	Onboard FDC Controller : Enabled
Slot 3 Using INT# : AUTO	Onboard Serial Port 1 : COM1
Onboard SCSI : AUTO	Onboard Serial Port 2 : COM2
	COM3 & COM 4 Address : 338H, 238H
	Onboard Parallel Port : 278H
	Parallel Port Mode : Normal
1st Available IRQ : 10	
2nd Available IRQ : 11	
3rd Available IRQ : 9	
4th Available IRQ : 5	
PCI IRQ Activated By : Level	
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

PnP BIOS Configuration

Setting this parameter to `Enabled` automatically sets the available IRQ for each slot. Setting it to `Disabled` lets you select the IRQ to assign for each PCI slot and for the onboard SCSI. The default setting is `Disabled`.

Award BIOS

Slots 1, 2, and 3 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.

Onboard SCSI

This parameter lets you select which interrupt pin to assign for the onboard SCSI. The selections are interrupt pins A, B, C, D and Auto. The default setting is `Auto`. This automatically sets the system IRQ for the SCSI function.

Available IRQs

These parameters appear and are configurable only if the PnP BIOS Auto-configuration parameter is disabled. These let you assign a system IRQ to each PCI slot and for the onboard SCSI. 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.

Setting the Slot 1/2/3 Using INT# and the Onboard SCSI parameters to `Auto` automatically sets the IRQ for each slot function. You may also change the default to another setting. If you do, make sure that the IRQs do not conflict.

Award BIOS

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 `Level`.

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 SCSI Chip

This parameter lets you enable or disable the onboard PCI SCSI chip. The default setting is `Enabled`.

Onboard PCI IDE Chip

This parameter lets you enable or disable the onboard PCI IDE chip. The default setting is `Enabled`.

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`.

Award BIOS

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	338H
COM4	238H
Disabled	Disables the onboard port



Make sure that the ports have different assignments.

COM3 & COM4 Address

These lines allow you to set the COM3 and COM4 addresses. The available options are as follows:

- 3E8H, 2E8H
- 2E8H, 2E0H
- 220H, 228H

Award BIOS

- 338H, 238H

The default settings are 338H and 238H.

Parallel Port

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

- 378H
- 3BCH
- 278H
- Disabled

The default setting is 278H.



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 (P/I-54SP4)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	HDD LOW LEVEL FORMAT
POWER MANAGEMENT	SAVE & EXIT SETUP
PCI CONFIGURATION	LOADING
LOAD BIOS DEFAULTS	Load BIOS Defaults (Y/N)?
LOAD SETUP DEFAULTS	
ESC : Quit	↓→← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Loads BIOS Defaults except Standard CMOS SETUP	

Award BIOS

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

ROM PCI/ISA BIOS (P/I-54SP4)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	HDD LOW LEVEL FORMAT
POWER MANAGEMENT	SAVE & EXIT SETUP
PCI CONFIGURATION	
LOAD BIOS DEFAULTS	Load SETUP Defaults (Y/N)? ^G
LOAD SETUP DEFAULTS	
ESC : Quit	↓→← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Load SETUP Defaults except Standard CMOS SETUP	

Award BIOS

Award BIOS

Password Setting

This option lets you set a password. A 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	HDD LOW LEVEL FORMAT
POWER MANAGEMENT	SAVE & EXIT SETUP
PCI CONFIGURATION	Enter Password: ***** G
LOAD BIOS DEFAULTS	
LOAD SETUP DEFAULTS	
ESC : Quit	
↓→← : Select Item	
F10 : Save & Exit Setup	
(Shift) F2 : 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 consist of 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.

Award BIOS



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 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	

Award BIOS



*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.

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.

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	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	HDD LOW LEVEL FORMAT
POWER MANAGEMENT SETUP	SAVE & EXIT SETUP
PCI CONFIGURATION SETUP	EXIT WITHOUT SAVING
LOAD BIOS DEFAULTS	
LOAD SETUP DEFAULTS	
ESC : Quit	↓→← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Description of each function	



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

Award BIOS

The section at the bottom of the screen tells how to control the screen. Use the arrow keys to move between items, **j** 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.

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

Date (mm:dd:yy) : Mon. Jan 4 1995							
Time (hh:mm:ss) : 00:00:00							
<u>HARD DISK</u>	<u>TYPE</u>	<u>SIZE</u>	<u>CYLS</u>	<u>HEADS</u>	<u>PRECOMP</u>	<u>LANDZONE</u>	<u>SECTORS</u> <u>MODE</u>
Primary Master	: User	307 MB	790	15	65535	790	57 NORMAL
Primary Slave	: None	0 MB	0	0	0	0	0 ---
Secondary Master	: None	0 MB	0	0	0	0	0 ---
Secondary Slave	: None	0 MB	0	0	0	0	0 ---
Drive A: 1.44M, 3.5 in				Base Memory : 640 K			
Drive B: None				Extended Memory: 15360 K			
Video : EGA/VGA				Other Memory : 384 K			
Halt On: All Errors				Total Memory : 16384 K			
ESC : Quit		↓→← : Select Item			PU/PD/+/- : Modify		
F1 : Help		(Shift) F2 : Change Color					

Award BIOS

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 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.

Award BIOS

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

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

Award BIOS

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.

Award BIOS

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 (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	E0000-E3FFF Shadow	: Disabled
Boot Up System Speed	: High	E4000-E7FFF Shadow	: Disabled
IDE HDD Block Mode	: Disabled	E8000-EBFFF Shadow	: Disabled
Gate A20 Option	: Fast	EC000-EFFFF Shadow	: Disabled
Memory Parity Check	: Enabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
IDE Second-Channel Control	: Enabled		
		ESC : Quit	↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values (Shift)	F2 : Color
		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.

Award BIOS

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

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*.

Award BIOS

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.

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`.

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`.

Award BIOS

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, then you must set this parameter to `Enabled`.

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.

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.

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.

Award BIOS

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 EC000-EFFFF Shadow

These ten 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.

DRAM Burst of 4 Refresh	: Enabled	Memory Hole Start Address	: 15 MB
DRAM RAS# Active	: Deassert	Memory Hole Size	: Disabled
DRAM Refresh Mode	: Normal		
DRAM R/W Burst Timing	: X444/X444		
CPU to DRAM write buffer	: Disabled		
CPU to PCI write buffer	: Disabled		
PCI to DRAM write buffer	: Disabled		
PCI Memory Burst Write	: Disabled		
Add Extra Wait for CAS#	: Disabled		
Add Extra Wait for RAS#	: Disabled		
System BIOS Cacheable	: Disabled		
Video BIOS Cacheable	: Disabled		
L2 Cache Zero Wait State	: Disabled		
CPU to PCI Byte Merge	: Disabled		
VGA 128K Range Attribute	: Disabled		
		ESC : Quit	↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	



Do not change the values of the Chipset parameters unless you are a qualified technician. To configure, select either Load BIOS Defaults or Load Setup Defaults from the main menu.

Award BIOS

Power Management Setup

The Power Management Setup controls the mainboard's green features.

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

Power Management : Disabled	IRQ1 (Keyboard) : OFF
PM Control by APM : Yes	IRQ3 (COM2) : OFF
Video Off Method : V/H SYNC+Blank	IRQ4 (COM1) : OFF
	IRQ5 (LPT2) : OFF
Doze Mode : Disabled	IRQ6 (Floppy Disk) : OFF
Standby Mode : Disabled	IRQ7 (LPT1) : OFF
Suspend Mode : Disabled	IRQ8 (RTC Alarm) : OFF
HDD Power Down : Disabled	IRQ9 (IRQ2 Redir) : OFF
	IRQ10 (Reserved) : OFF
IRQ3 (Wake-Up Event) : OFF	IRQ11 (Reserved) : OFF
IRQ4 (Wake-Up Event) : OFF	IRQ12 (PS/2 Mouse) : OFF
IRQ8 (RTC Alarm) : OFF	IRQ13 (Coprocessor) : OFF
IRQ12 (Wake-Up Event) : OFF	IRQ14 (Hard Disk) : OFF
	IRQ15 (Reserved) : OFF
Power Down Activities	
COM Ports Accessed : OFF	ESC : Quit ↓ → ← : Select Item
LPT Ports Accessed : OFF	F1 : Help PU/PD/+/- : Modify
Drive Ports Accessed : OFF	F5 : Old Values (Shift) F2 : Color
	F6 : Load BIOS Defaults
	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:

Setting	Description
Max Saving	Maximize energy conservation by putting the system into power-saving mode after a brief period of system inactivity. The maximum saving defaults are 1 Min and 20 sec.
Min Saving	A power-saving assignment which activate after a moderate period of system inactivity. The minimum saving defaults are 20 Min and 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`.

Award BIOS

Video Off Method

If your video display adapter supports the green features, then you can 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.



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.

Doze Mode, Standby Mode, Suspend Mode

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

HDD Power Down

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

Award BIOS



HDD Power Down does not affect SCSI hard disks.

IRQ3, 4, 8 and 12

This function allows you to monitor IRQ3, 4, 6 and 12 activities. An activity detected from any enabled ports resumes the system to normal mode.

Power Down Activities

COM, LPT, Drive Ports Accessed

These parameters allow you to monitor the activities of the COM, LPT and Drive ports. An activity detected from any enabled ports returns the system to normal mode.

IRQ1 to IRQ15

These lines allow you to set the IRQs individually. An activity from any enabled IRQ resumes the system to normal mode.

Award BIOS

PCI Configuration 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 CONFIGURATION SETUP
AWARD SOFTWARE, INC.

Slot 1 Using INT# : AUTO	Onboard PCI SCSI Chip : Enabled
Slot 2 Using INT# : AUTO	Onboard PCI IDE Chip : Enabled
Slot 3 Using INT# : AUTO	Onboard FDC Controller : Enabled
Slot 4 Using INT# : AUTO	Onboard Serial Port 1 : COM1
	Onboard Serial Port 2 : COM2
	COM3 & COM 4 Address : 338H, 238H
1st Available IRQ : 10	Onboard Parallel Port : 278H
2nd Available IRQ : 11	Parallel Port Mode : Normal
3rd Available IRQ : 9	
4th Available IRQ : 5	
PCI IRQ Activated By : Level	
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

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.

Award BIOS

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

Available IRQs

These parameters 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.

Setting the Slot 1/2/3/4 Using INT# parameter to `Auto` automatically sets the IRQ for each slot. You may also change the default to another setting. If you do, make sure that the IRQs do not conflict.

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 `Level`.

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 SCSI Chip

This parameter lets you enable or disable the onboard PCI SCSI chip. The default setting is `Enabled`.

Award BIOS

Onboard PCI IDE Chip

This parameter lets you enable or disable the onboard PCI IDE chip. The default setting is `Enabled`.

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	338H
COM4	238H
Disabled	Disables the onboard port

Award BIOS



Make sure that the ports have different assignments.

Award BIOS

COM3 & COM4 Address

These lines allow you to set the COM3 and COM4 addresses. The available options are as follows:

- 3E8H, 2E8H
- 2E8H, 2E0H
- 220H, 228H
- 338H, 238H

The default settings are 338H and 238H.

Parallel Port

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

- 378H
- 3BCH
- 278H
- Disabled

The default setting is 278H.



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

Award BIOS

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 (P/I-54SP4)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	HDD LOW LEVEL FORMAT
POWER MANAGEMENT	SAVE & EXIT SETUP
PCI CONFIGURATION	LOADING
LOAD BIOS DEFAULTS	Load BIOS Defaults (Y/N)?
LOAD SETUP DEFAULTS	
ESC : Quit	↓→← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Loads BIOS Defaults except Standard CMOS SETUP	

Award BIOS

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

ROM PCI/ISA BIOS (P/I-54SP4)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	HDD LOW LEVEL FORMAT
POWER MANAGEMENT	SAVE & EXIT SETUP
PCI CONFIGURATION	
LOAD BIOS DEFAULTS	Load SETUP Defaults (Y/N)?
LOAD SETUP DEFAULTS	
ESC : Quit	↓→← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Load SETUP Defaults except Standard CMOS SETUP	

Award BIOS

Award BIOS



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 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	

Award BIOS



*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.

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.

Jumper Summary **A**

Dual-processor/Single-processor Operation Select

Selection	JP17	JP18	JP19	JP20	JP21
Single processor	Open	Open	2-3	2-3	1-2
Dual processor	Closed	Closed	1-2	2-3	1-2

Changing the CPU Type and Speed

CPU Type-Speed	JP16	JP23
P54C-75	Open	1-2
P54C-90	1-3	1-2
P54C-100	1-3	1-2

Selecting the Primary-level Cache (L1) Mode

Mode	JP22
Write-back	Open
Write-through	Closed

Selecting the Cache and Size

Cache Size	JP24	JP26
256 KB	1-2	2-3
512 KB	2-3	2-3

Jumper Summary

Enabling the Second-level Cache Parity

Function	JP13
Enabled	1-3, 2-4
Disabled	1-2, 3-4

Selecting the Flash ROM Type

Flash ROM Type	JP1
5V Flash ROM	1-2
12V Flash ROM	2-3

Enabling the Enhanced IDE Controller

Function	JP7
Enabled	1-2
Disabled	2-3

Enabling the Super I/O Chip

Function	JP6
Enabled	1-2
Disabled	2-3

Selecting the ECP DMA Channel

Selection	JP2	JP3
DMA 1	1-2	1-2
DMA 3	2-3	2-3

Jumper Summary

Enabling the SCSI Chip Termination

Function	JP4
Enabled	Open
Disabled	Closed

Selecting the SCSI Device Size

	JP9	JP10	JP11	JP12
8-bit SCSI	2-3	2-3	Open	Open
16-bit SCSI	1-2	1-2	Closed	Closed

Enabling the PS/2 Mouse (optional)

Function	JP5
Enabled	Open
Disabled	Closed

Clearing the CMOS

Function	JP14
Normal	Open
Clear CMOS	Closed

Default Settings for Reserved Jumpers

Jumper	Default Setting
JP8	Open
JP15	Open
JP25	1-2

Jumper Summary

NS PC87410 Device Drivers B

The system board comes with a NS PC87410 software package that includes two diskettes. The first diskette contains the software drivers for DOS, Windows 3.1, Windows NT, Novell 3.1X, 4.X and OS/2. The second diskette contains the software driver for SCO UNIX 3.X.

The following sections tell how to install the device drivers. For more detailed information, refer to the README file in Diskette 1.

DOS

We recommend that you install the DOS drivers in order to make use of the special features such as Track Remapping and More than two Drives support.

To install, simply insert Diskette 1 into drive A and type `A: e`. Enter `INSTALL e`.

Windows v3.1X

1. Make sure that the DOS drivers are already installed.
2. Enter Windows. Click on File Manager. Run `A:\WINDRV\INSTALL.EXE`.

The 32-bit Windows driver supports the following:

- A maximum of four drives (two drives per channel)
- Track Remapping, to support a hard disk capacity over than 528 MB

NS PC87410 Device Drivers



The Microsoft driver does not support the secondary channel and the Track Remapping feature. Therefore, do not enable the 32-bit disk access during installation if the target disk is connected to the secondary channel. The 32-bit disk access will be enabled after the Windows driver installation.

NetWare 3.11, 3.12 SFT-III 4.00, 4.01

Make sure that the DOS drivers are already installed. Refer to the NetWare Installation manual for the procedure.

Windows NT v3.X

1. Insert Diskette 1 into drive A.
2. Type `A:\INSTALL e`.
3. When prompted where to copy the files, do not select drive C. Follow the instructions on screen.
4. After installing Windows NT, enter Windows and click on File Manager.
5. Click on `A:\NTDRV\SETUP`.

NS PC87410 Device Drivers

OS/2 v2.1X

1. Insert Diskette 1 into drive A.
2. Type `A:\INSTALL e`.
3. When prompted where to copy the files, do not select drive C. Follow the screen instructions.
4. After you install OS/2, click on the Drive Setup icon to complete the instructions.

SCO UNIX

1. Insert Diskette 2 into drive A.
2. Copy the `\DOSDRV\DEVICE.LOG` to `/ETC` under the UNIX environment. To do this, type:

```
#DOSCP A:\DOSDRV\DEVICE.LOG /ETC e
```
3. Type `INSTALLPKG` and follow the screen instructions.