

# **NEX 6620A**

## **ATX Industry Server Board**

### **User's Guide**

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# How to use this guide

This manual is written to help you use NEX 6620A. It describes how to arrange various settings on the Pentium CPU board to meet your requirements. It is briefed as follows:

**Chapter 1, "Introduction"** gives an overview of the product's specifications. It also tells you what are included in the product package.

**Chapter 2, "Switches and Connectors"** describes the definitions and positions of Jumpers and Connectors that you may easily configure and set up per your requirement.

**Chapter 3, "Capability Expanding"** describes how to change or expand the CPU Board by changing the system memory, cache memory, and CPU to get more power out from the CPU board.

**Chapter 4, "Award BIOS Setup"** describes how to use the advanced PCI/Green BIOS to control almost every feature of the NEX 6620A, including the watchdog timer.

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## Chapter 1      Introduction

NEXCOM has developed a brand new product in its history, the Dual Pentium III FC-PGA, VIA Apollo Pro 266 Chipset based all in one board with the ATX form factor. The NEX 6620A is the first model to be available.

NEXCOM has developed a brand new product in its history, the Dual Pentium III FC-PGA; VIA Apollo Pro 266 based all-in-one main board with the ATX form factor. A new product family called the NEX series is created. The NEX 6620A, name of this new product, is the first model to be available.

The major features of the NEX 6620A are as follows:

1. Dual Pentium III FC-PGA architecture with 133 MHZ FSB up to 1 G+Hz CPU clock.
2. **Support DDR SDRAM with 4 DIMMs, memory size up to 4 GB.**
3. On board built with VGA×1, intel 82559 Ethernet controller×2, PCI based Adaptec AIC 7899 dual channel Ultra/ 160m.
4. AGP slot×1 for 4×AGP, and 32 bit/ 33 MHz PCI slot×5.

With all above features equipped on board, The NEX 6620A is one of the top performance DP server boards in the world. So far, it's still the smallest main board with so many features integrated on the standard ATX form factor. Without any add on cards, the NEX 6620A could out perform most of the server boards because there are 2x 100 Base TX Ethernet ports and 2x Ultra/ 160m SCSI channels on board. NEX6620A is particularly suitable for the ISP server applications. A 2U chassis could easily accommodate the NEX 6620A. For larger server chassis, like the big tower, 5U, 6U, or even 8U rack mounted chassis, the NEX 6620A could also be applied in these cases that are ATX compatible. The reason to create the ATX server line is based on the fact that most producers use ATX form factors. With rigidly complying with ATX specifications, the NEX 6620A could be applied in any case requiring the top server performance, as long as it's ATX compatible.

The NEX 6620A could also be positioned as the top performing workstation. With the on board AGP, the 4X AGP slot reserved for any next generation 3D VGA/ Video accelerator cards, the NEX 6620A could out perform any other DP architectures. Again, the standard ATX form factor is the greatest advantage of the NEX 6620A for any workstation chassis, and it will help a lot for the NEX 6620A to be widely accepted by the power users in the compute-intensive workstation applications or the I/O intensive server applications.

## 1-1 Specifications

### Specification

- **Model Available**

- NEX 6620A -- ATX Dual Socket 370 Pentium III DDR Full Function Server Board
- NEX 6620 -- ATX Dual Socket 370 Pentium III DDR Server Board Basic Model
- NEX 6620VL2 -- ATX Dual Socket 370 Pentium III DDR Server Board for 1U Server

- **System Architecture**

- Standard ATX form factor with Dual Pentium III CPU support
- AIO board with dual channel Ultra 160 SCSI, dual channel Ethernet and VGA
- Next generation server board with industry specification

- **CPU Support**

- Intel Dual Pentium III CPU with 128/256K cache on die
- Brand New Socket 370 FC-PGA CPU running at 100/133MHz FSB up to 1G+Hz
- Support streaming SIMD instruction

- **Main Memory**

- Support DDR up to **4GB** (Max.)
- DDR Socket x **4**
- ECC support (single bit error correction/Multiple bit errors reporting)

- **BIOS**

- Award System BIOS
- Plug & Play support
- Advanced Power Management support
- Advanced Configuration & Power Interface support
- Jumper less for CPU FSB
- **2M bits flash ROM**

- **Chip Set**

- VIA Apollo PRO 266 Chipset ( VT 8633 and VT8233)
- 100/133MHz FSB support
- PCI V2.2 complied
- Intel 21150AB PCI to PCI Bridge

- **On Board VGA**

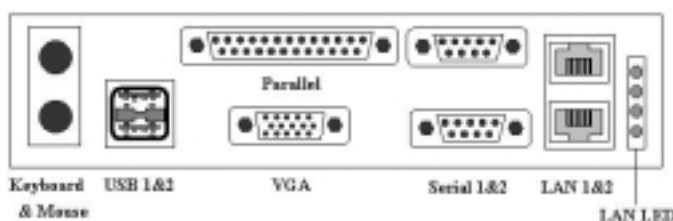
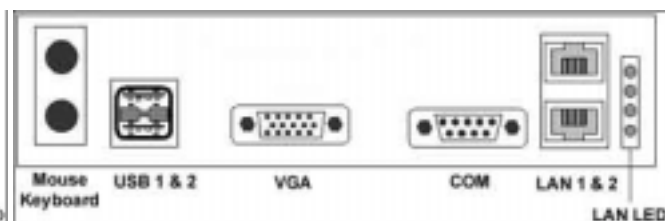
- C&T 69000/69030 PCI mode VGA controller
- 2MB/4MB SDRAM on die
- Driver support : Windows 95/98/2000, Windows NT4.0

- **On Board LAN**

- Intel 82559 Single Ethernet controller x2
- 10 Base T/100 Base TX support, full duplex
- Complied with PCI V2.1, IEEE802.3, IEEE 802.3U

- Drivers support : DOS/Windows, Windows 95/98/2000, Windows NT4.0, Netware, SCO Open Server 5.0
- Rear Panel 4 LAN LED (active/link ×2, speed ×2)
- **On Board SCSI**
  - Adaptec AIC 7899 dual channel Ultra 160 SCSI controller
  - Brand New Ultra 160 SCSI support
  - 160MB/s (Max.) transfer rate, up to 12 meter cable
  - Backward compatible with Ultra Wide SCSI, SCSI II, etc.
  - Drivers support : Windows 95/98/2000, Windows NT4.0, SCO Open Server 5.0
  - 68 pin SCSI connector ×2
  - On board 4 pin header for LED
- **On Board I/O**
  - SMsC LPC 47B 272 super I/O
  - SIO ×2, with 2×16C550 UARTs,
  - PIO ×1, Bi-directional, EPP/ECP support
  - Floppy Disk controller: 5.25" 360KB/1.2MB, 3.5" 720KB/1.2MB/1.44MB/2.88MB support, 34 pin connector ×1
  - On chip enhanced IDE ×2, PIO up to mode 4, DMA master up to mode 2, Ultra DMA/33/66/100 support, total 4 E.IDE Devices support, 40 pin connector ×2
  - On chip keyboard, mouse controller
  - On board USB port ×4 ( 2 front 2 rear )
  - On board buzzer ×1
  - IrDA connector × 1
  - On board 2 pin header for I<sup>2</sup>C
  - GPIO (4 in 4 out)
  - On board 2 pin header for reset SW, 4 pin for speaker, 5 pin for keylock and power LED
- **ACPI Function**
  - Soft off
  - Wake On LAN
  - Wake On Keyboard
  - Wake On Ring
  - RTC alarm wake up
  - Suspend to Disk
- **On Board Slot**
  - Total 6 slots, include AGP slot ×1, 32bit/33MHz PCI slot ×5
- **On Chip RTC**
  - VT8233 Internal High precision real time clock/calendar with battery back up
- **On Board Solid State Disk Socket**
  - On board reserved power pin for DOM (DiskOnModule) : 4MB~160MB, etc
- **System Monitor**

- Winbond W83782D system monitor controller x 2
- 8 voltage (For +3.3V, +5V, +12V, -12V, Vtt , Vcore x2 and V-DIMM 2.5V)
- Two Fan speed (For CPU) and Three FAN Speed ( For System )
- Two temperature (For CPU)
- Drivers support : Windows 95/98, Windows NT4.0/2000
- **Power Input**
  - ATX power connector x1, ATX V2.03 specification AUX power connector x 1
- **Dimensions**
  - Dimensions : 305mm(L) x 244mm(W)
- **Back Panel**
  - PS2 connector x2 (for Keyboard/Mouse)
  - USB port x2
  - RJ45 connector x2 (for LAN)
  - 15 pin D-type connector x1 (for VGA)
  - 9 pin D-type connector x2 (for SIO)
  - 25 pin D-type connector x1 (for PIO)
  - LAN LED x4 (active/link x2, speed x2)

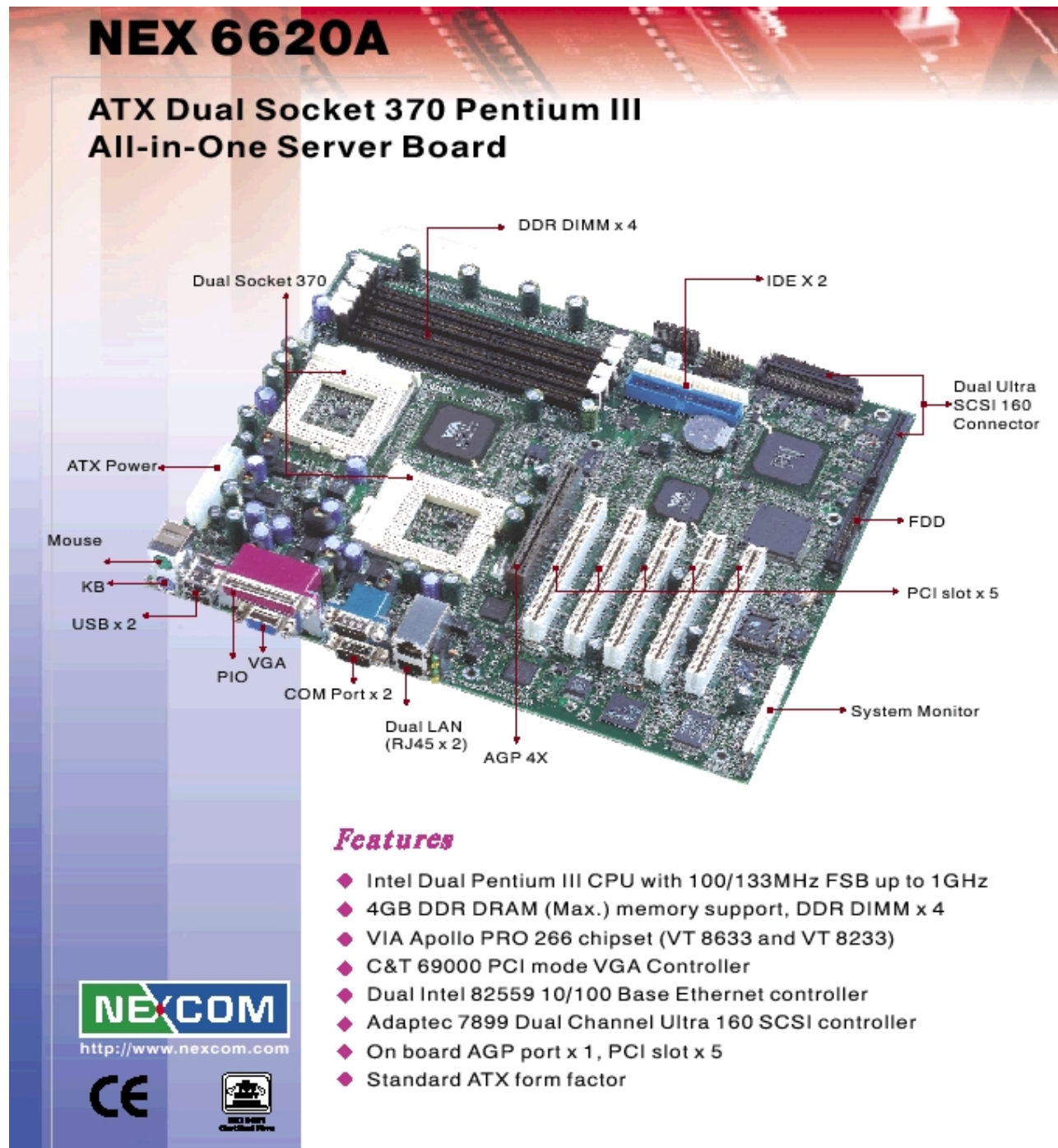
**NEX 6620A / NEX 6620****NEX 6620VL2**

- **Power Requirements ( With Basic configuration running Windows 2000 WIN HCT system stress )**
  - +3.3V : 1A
  - +5V : 13A
  - +12V : 0.8A
  - 5VSTBY : 0.13A
- **Environments**
  - Operating temperatures : 0°C to 60°C
  - Storage temperatures : -20°C to 80°C
  - Relative humidity : 10% to 90% (Non-condensing)
- **Certification**
  - CE approval
  - FCC Class A

## Chapter 2 Switches and Connectors

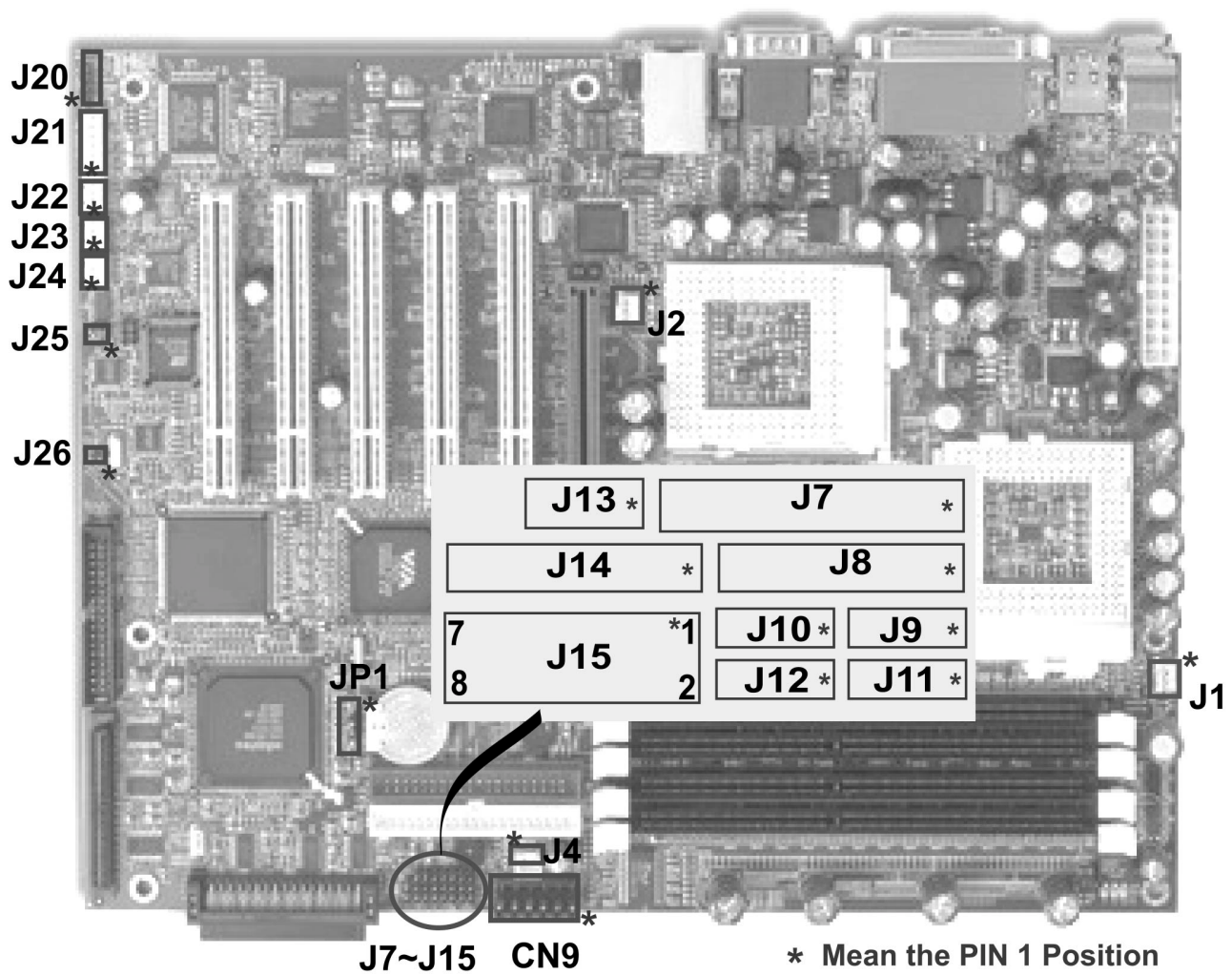
### 2-1 Main Board Layout

This chapter gives the definitions and shows where to locate the positions of switches and connectors.





## 2-2 Connector Pin Define & Jumper Setting



● **CN1 : Dual High PC99 Complied PS/2 Connector**

Pin No.	Description	Pin No.	Description
K1	Keyboard Data	M1	Mouse Data
K2	NC	M2	NC
K3	Chassis Ground	M3	Chassis Ground
K4	+5V Standby	M4	+5V Standby
K5	Keyboard Clock	M5	Mouse Clock
K6	NC	M6	NC
K7	Chassis Ground	M7	Chassis Ground
K8	Chassis Ground	M8	Chassis Ground

● **CN2 : ATX Power Connector**

Pin No.	Description	Pin No.	Description
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PS_ON
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	PWR_OK	18	-5V
9	5V_Standby	19	+5V
10	+12V	20	+5V

● **CN3 : Dual High PC99 Complied USB Connector for USB1, USB2**

Pin No.	Description	Pin No.	Description
1	+5V Standby	2	USB1 Plus
3	USB1 Minus	4	Chassis Ground
5	+5V Standby	6	USB2 Plus
7	USB2 Minus	8	Chassis Ground

● **CN4 : Parallel Port & VGA ( DB25 + DB15 Connector )**

Pin No.	Description	Pin No.	Description
1	Strobe#	2	Data 0
3	Data 1	4	Data 2
5	Data 3	6	Data 4
7	Data 5	8	Data 6
9	Data 7	10	Acknowledge
11	Busy	12	Paper Empty
13	Printer Select	14	Auto Form Feed#
15	Error#	16	Initialize
17	Printer Select IN#	18	Chassis Ground
19	Chassis Ground	20	Chassis Ground
21	Chassis Ground	22	Chassis Ground
23	Chassis Ground	24	Chassis Ground
25	Chassis Ground	26	Red
27	Green	28	Blue
29	N/A	30	Ground
31	Chassis Ground	32	Chassis Ground
33	Chassis Ground	34	+5V
35	Ground	36	Pull-up
37	DDC Data	38	Horizontal Sync.
39	Vertical Sync.	40	DDC Clock
41	Chassis Ground	42	Chassis Ground
43	Chassis Ground	44	Chassis Ground

● **CN5 : Stand-alone VGA DB-15 Connector**

Pin No.	Description	Pin No.	Description
1	Red	2	Green
3	Blue	4	N/A
5	Ground	6	Chassis Ground
7	Chassis Ground	8	Chassis Ground
9	+5V	10	Ground
11	Pull-up	12	DDC Data
13	Horizontal Sync.	14	Vertical Sync.
15	DDC Clock	16	Chassis Ground
17	Chassis Ground		

● **CN6 : SIO Dual High DB-9 Connector**

Pin No.	Description	Pin No.	Description
1	Data Carrier Detect 2	2	Receive Data 2
3	Transmit Data 2	4	Data Terminal Ready 2
5	Chassis Ground	6	Data set Ready 2
7	Request to Send 2	8	Clear to Send 2
9	Ring Indicator 2	10	Data Carrier Detect 1
11	Receive Data 1	12	Transmit Data 1
13	Data Terminal Ready 1	14	Chassis Ground
15	Data set Ready 1	16	Request to Send 1
17	Clear to Send 1	18	Ring Indicator 1
19	Chassis Ground	20	Chassis Ground
21	Chassis Ground	22	Chassis Ground

● **CN7 : Stand-alone SIO DB-9 Connector**

Pin No.	Description	Pin No.	Description
1	Data Carrier Detect 2	2	Receive Data 2
3	Transmit Data 2	4	Data Terminal Ready 2
5	Chassis Ground	6	Data set Ready 2
7	Request to Send 2	8	Clear to Send 2
9	Ring Indicator 2	10	Chassis Ground
11	Chassis Ground		

● **CN8: Dual High RJ45 LAN Connector**

Pin No.	Description	Pin No.	Description
1	LAN1 TX+	2	LAN1 TX-
3	LAN1 RX+	4	TERMPANE
5	TERMPANE	6	LAN1 RX-
7	TERMPANE	8	TERMPANE
9	LAN2 TX+	10	LAN2 TX-
11	LAN2 RX+	12	TERMPANE
13	TERMPANE	14	LAN2 RX-
15	TERMPANE	16	TERMPANE
17	Chassis Ground	18	Chassis Ground
19	Chassis Ground	20	Chassis Ground
21	Chassis Ground	22	Chassis Ground
23	Chassis Ground	24	Chassis Ground

● **CN9 : ATX AUX Power Connector**

Pin No.	Description	Pin No.	Description
1	Ground	2	Ground
3	Ground	4	+3.3V
5	+3.3V	6	+5V

● **CN10, CN11 : IDE Connector**

Pin No.	Description	Pin No.	Description
1	Reset #	2	Ground
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Ground	20	NC
21	DMA REQ	22	Ground
23	IOW	24	Ground
25	IOR	26	Ground
27	IOCHRDY	28	Pull Down
29	DMA ACK	30	Ground
31	Interrupt 14	32	NC
33	Disk Address 1	34	DMA66 Detect
35	Disk Address 0	36	Disk Address 2
37	HDC CS100	38	HDC CS300
39	HDD Active Led	40	Ground

● **CN12, CN14 : SCSI 68 Pin Connector**

Pin No.	Description	Pin No.	Description
1	Plus Data12	2	Plus Data13
3	Plus Data14	4	Plus Data15
5	Plus High Byte Parity	6	Plus Data0
7	Plus Data1	8	Plus Data2
9	Plus Data3	10	Plus Data4
11	Plus Data5	12	Plus Data6
13	Plus Data7	14	Plus Low Byte Parity
15	Ground	16	Differential Sense
17	+5V	18	+5V
19	NC	20	Ground
21	Plus Attention	22	Ground
23	Plus Busy	24	Plus Acknowledge
25	Plus Reset	26	Plus Message
27	Plus Select	28	Plus Command / Data
29	Plus Request	30	Plus In / Out
31	Plus Data8	32	Plus Data9
33	Plus Data10	34	Plus Data11
35	Minus Data12	36	Minus Data13
37	Minus Data14	38	Minus Data15
39	Minus High Byte Parity	40	Minus Data0
41	Minus Data1	42	Minus Data2
43	Minus Data3	44	Minus Data4
45	Minus Data5	46	Minus Data6
47	Minus Data7	48	Minus Low Byte Parity
49	Ground	50	Ground
51	+5V	52	+5V
53	NC	54	Ground
55	Minus Attention	56	Ground
57	Minus Busy	58	Minus Acknowledge
59	Minus Reset	60	Minus Message
61	Minus Select	62	Minus Command / Data
63	Minus Request	64	Minus In / Out
65	Minus Data8	66	Minus Data9
67	Minus Data10	68	Minus Data11

● **CN13 : Floppy Disk Connector**

Pin No.	Description	Pin No.	Description
1	Ground	2	Drive Density Select 0
3	Ground	4	NC
5	Ground	6	Drive Density Select 1
7	Ground	8	Index Pulse Input
9	Ground	10	Motor On 0
11	Ground	12	Drive Select 1
13	Ground	14	Drive Select 0
15	Ground	16	Motor On 1
17	Ground	18	Step Direction
19	Ground	20	Step Pulse
21	Ground	22	Write Disk Data
23	Ground	24	Write Gate
25	Ground	26	Track 0
27	Ground	28	Write Protected
29	NC	30	Read Disk Data
31	Ground	32	Head Select
33	NC	34	Disk Change

● **J1, J2 : 2.54mm Single Ramp CPU FAN Connector**

Pin No.	Description	Pin No.	Description
1	Ground	2	+12V
3	Sense		

● **J4 : 2.54mm 1x2 JST for Disk On Module Power Connector**

Pin No.	Description	Pin No.	Description
1	Ground	2	+5V

● **J7 : 1x5 Pin Header for Keylock & Power LED**

Pin No.	Description	Pin No.	Description
1	Pull High	2	NC
3	Ground	4	Active Signal
5	Ground		



● **J8 : 1x4 Pin Header for SCSI LED**

Pin No.	Description	Pin No.	Description
1	Pull-up	2	Channel A Active#
3	Pull-up	4	Channel B Active#

● **J9 : 1x2 Pin Header for ACPI Function S0\_LED**

Pin No.	Description	Pin No.	Description
1	Ground	2	Pull-up

● **J10 : 1x2 Pin Header for IDE LED**

Pin No.	Description	Pin No.	Description
1	Pull-up	2	Active signal

● **J11 : 1x2 Pin Header for Intruder SW**

Pin No.	Description	Pin No.	Description
1	Active signal	2	Ground

● **J12 : 1x2 Pin Header for Reset SW**

Pin No.	Description	Pin No.	Description
1	Ground	2	Reset

● **J13 : 1x2 Pin Header for Power Button**

Pin No.	Description	Pin No.	Description
1	Active signal	2	Ground

● **J14 : 1x4 Pin Header for Buzzer / External Speaker ( \* Pin 3-4 Short For Internal Buzzer )**

Pin No.	Description	Pin No.	Description
1	+5V	2	NC
3	Onboard BZ Active Signal	4	External Speaker Active Signal

● **J15 : 2x4 Pin Header for Digital I/O ( Refer to Appendix for Control Table )**

Pin No.	Description	Pin No.	Description
1	Digital input 1	2	Digital output 1
3	Digital input 2	4	Digital output 2
5	Digital input 3	6	Digital output 3
7	Digital input 4	8	Digital output 4

● **J20 : 1x5 Pin Header for External IrDA**

Pin No.	Description	Pin No.	Description
1	+5V	2	NC
3	IR Receiver	4	Ground
5	IR Transceiver		

● **J21 : 2.54mm 1x6 JST Connector for USB3, USB4**

Pin No.	Description	PIN No.	Description
1	+5V Standby	2	USB3 Minus
3	USB3 Plus	4	USB4 Minus
5	USB4 Plus	6	EMI Ground

● **J22, J23, J24 : 2.54mm 1x3 JST CASE FAN Connector**

Pin No.	Description	Pin No.	Description
1	Sense	2	+12V
3	Ground		

● **J25 : 1x2 Pin Header for BIOS Hardware Protection**

Pin No.	Description	Pin No.	Description
1	Ground	2	Active signal

● **J26 : 1x2 Pin Header for I<sup>2</sup>C (SMBUS)**

Pin No.	Description	Pin No.	Description
1	Data	2	Clock

- **JP1 : 1x3 Jumper for On Board RTC ( \* = Default )**

Pin No.	Description
*1, 2 Short	Operation Mode
2, 3 Short	Clear CMOS

## Chapter 3      Capability Expanding

This chapter explains how you can expand capability of your CPU board in such aspects as system memory and CPU.

### **3-1 System Memory**

NEX 6620A series can install to 4 Double Data Memory Module (DDR) DIMM sockets and supports the maximum memory size up to 4GB. The architecture to provide the best choice for performance vs. stability



**184 pins DDR SDRAM DIMM Module.**  
**Please check the Position before Install the Module.**

#### **Installing DDR DIMM**

To install the DDR DIMM's, first make sure the two handles of the DIMM socket are in the "open" position, i.e. the handles stay outward. Slowly slide the DIMM modules along the plastic guides in the both ends of the socket. Then press the DIMM module down right into the socket, until a click is heard. That means the two handles automatically locked the memory modules into the right position of the DIMM socket

#### **Remove DDR DIMMs**

To take away the memory module, just push the both handles outward, the memory module will be ejected by the mechanism in the socket.

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## Chapter 4      **AWARD BIOS Setup**

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM (CMOS RAM) so that it retains the Setup information when the power is turned off.

**The Chapter show the currently BIOS setup picture is for reference only, which may change by the BIOS modification in the future. Any Major updated items or re-version, user can download from NEXCOM web site <http://www.nexcom.com.tw>, or any unclear message, can contact NEXCOM Customer Service people for help <http://www.nexcom.com.tw/contact/contact.htm>**

### **4-1 BIOS Setup**

#### ***Entering Setup***









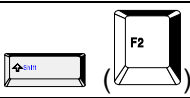








Power on the computer and press **<Del>** immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer, when the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press **<Del>** key or simultaneously press **<Ctrl>**, **<Alt>**, and **<Esc>** keys.

**TO ENTER SETUP BEFORE BOOT  
PRESS <CTRL-ALT-ESC> OR <DEL> KEY**

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing **<Ctrl>**, **<Alt>**, and **<Delete>** keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to,

**PRESS <F1> TO CONTINUE,  
<CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP**

**Control Keys**

Up arrow		Move to previous item
Down arrow		Move to next item
Left arrow		Move to the item in the left hand
Right arrow		Move to the item in the right hand
Esc key		Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp / "+" key		Increase the numeric value or make changes
PgDn / "-" key		Decrease the numeric value or make changes
F1 key		General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift)F2 key		Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key		Reserved
F4 key		Reserved
F5 key		Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key		Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key		Load the Setup default , only for Option Page Setup Menu
F8 key		Reserved
F9 key		Reserved
F10 key		Save all the CMOS changes, only for Main Menu

**Table 4-1 Control Keys**

## **Getting Help**

### **Main Menu**

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

### **Sub-Menu**

If you find a right pointer symbol appears to the left of certain fields (as shown in the right view), that means a sub-menu containing additional options for the field can be launched from this field.

▶ IDE Primary Master
▶ IDE Primary Slave
▶ IDE Secondary Master
▶ IDE Secondary Slave

To enter the sub-menu, highlight the field and press <Enter>. Then you can use control keys to move between and change the settings of the sub-menu.

To return to the main menu, press <Esc>.

### **Status Page Setup Menu/Option Page Setup Menu**

Press <F1> to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <F1> or <Esc>.



## **The Main Menu**

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press **<Enter>** to accept or enter the sub-menu.



### **Standard CMOS Features**

Use this menu for basic system configuration.

### **Advanced BIOS Features**

Use this menu to set the Advanced Features available on your system.

### **Advanced Chipset features**

Use this menu to change the values in the chipset registers and optimize your system's performance.

### **Integrated Peripherals**

Use this menu to specify your settings for integrated peripherals.

### **Power Management setup**

Use this menu to specify your settings for power management

**PNP/PCI Configuration**

This entry appears if your system supports PnP / PCI.

**PC health Status**

Display CPU/System Temperature, Fan speed.

**Frequency/Voltage Control**

Use this menu to specify your settings for frequency/voltage control.

**Load Fail-Safe Defaults**

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

**Load Optimized Defaults**

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

**Set User Password**

Change, set, or disable password of supervisor or user. It allows you to limit access to the system and Setup, or just to Setup.

**Save & Exit Setup**

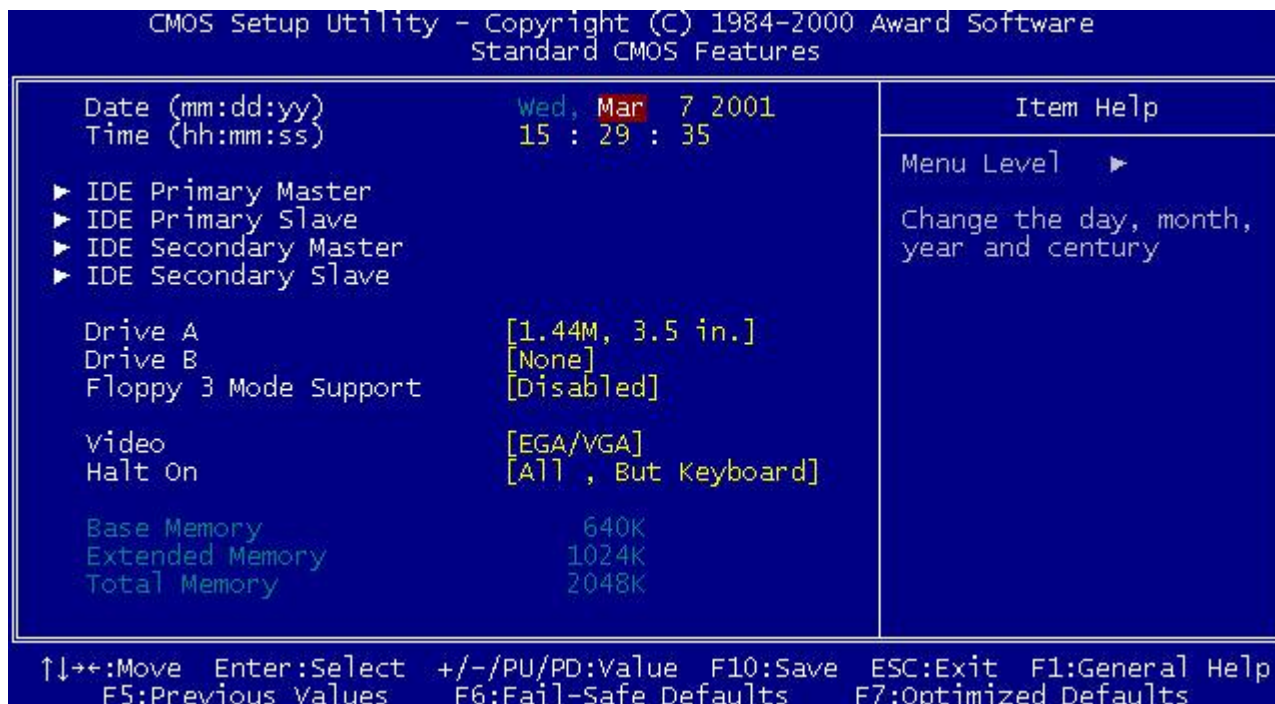
Save CMOS value changes to CMOS and exit setup.

**Exit Without Saving**

Abandon all CMOS value changes and exit setup.

## Standard CMOS Features

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the **<PgUp>** or **<PgDn>** keys to select the value you want in each item.



## Main Menu Selections

Item	Options	Description
Date	Month DD YYYY	Set the system date. Note that the 'Day' automatically changes when you set the date
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu (Described in Table 4-3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (Described in Table 4-3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (Described in Table 4-3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (Described in Table 4-3)	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in	Select the type of floppy disk drive installed in your system

	1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	
Floppy 3 Mode Support	Disabled Drive A Drive B Both	3 Mode floppy disk drives (FDD) are 3 1/2" drives used in Japanese computer systems. If you need to access data stored in this kind of floppy, you must select this mode, and of course you must have a 3 Mode floppy drive.
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

Table 4-2 Main Menu Selections

## IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive.

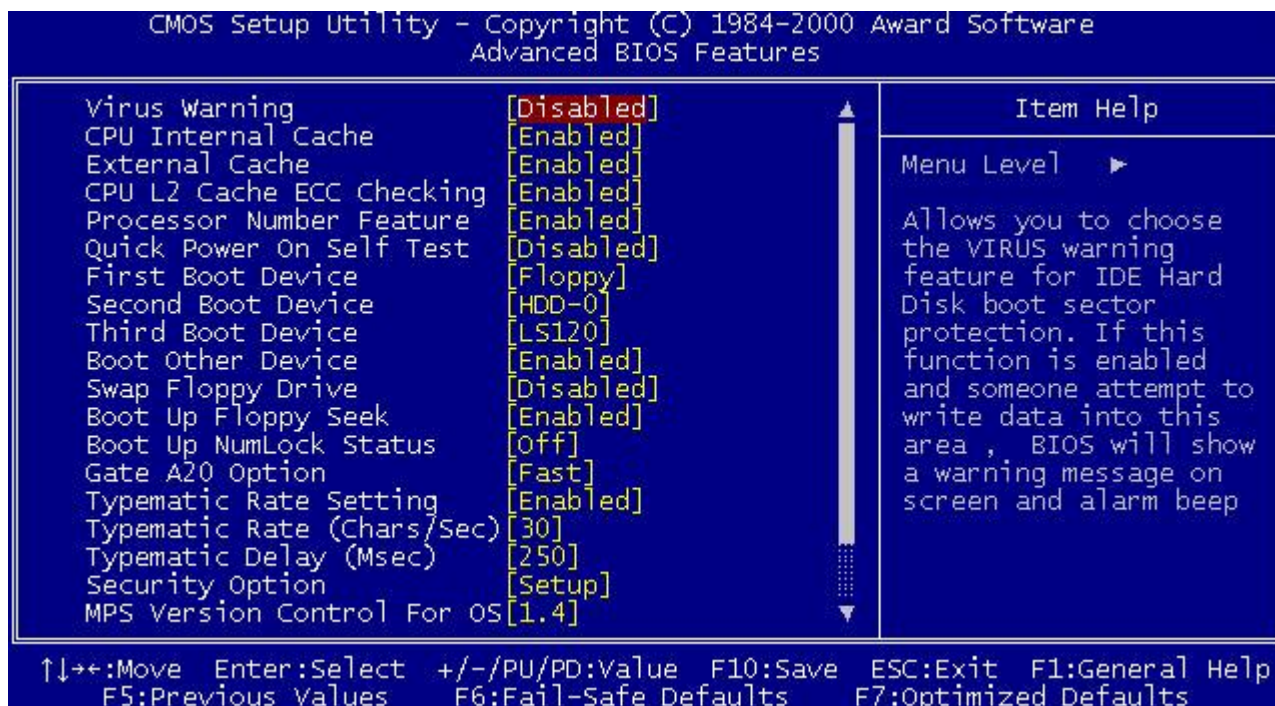
Use the legend keys to navigate through this menu and exit to the main menu. Use Table 3 to configure the hard disk.

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	Normal LBA Large Auto	Choose the access mode for this hard disk
<b>The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'</b>		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** Warning: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

**Table 4-3 Hard disk selections**

## Advanced BIOS Features Setup Menu

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.



### Virus Warning

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

**! WARNING!**

Disk boot sector is to be modified

Type "Y" to accept write or "N" to abort write

Award Software, Inc.

Note: This function is available only for DOS and other OSes that do not trap INT13.

**CPU Internal Cache/External Cache**

These two categories speed up memory access. However, it depends on CPU/chipset design. The default value is Enable. If your CPU without Internal Cache then this item "CPU Internal Cache" will not be show.

The Choice: Enabled, Disabled

**CPU L2 Cache ECC Checking**

This category could turn on the ECC of Pentium III L2 Cache or just disable it.

The Choice: Enabled/Disabled

**Processor Number Feature**

Intel included a serial number in their Pentium III processors as a unique system identifier. For privacy reasons, you can disable this setting to prevent the release of this identifier.

The Choice: Enabled, Disabled

**Quick Power On Self Test**

This category speeds up Power On Self Test (POST) after you power on the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

The Choice: Enabled, Disabled

**First / Second / Third Boot Device**

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The Choice: Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, Hdd-2, HDD-3, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, Disabled.

**Boot Other Device**

If all the selected boot devices failed to boot, select **Enabled** the BIOS will try to boot from the other boot devices (in a predefined sequence) which are present but not selected as boot devices in the setup (and hence have not yet been tried for booting). If select **Disabled**, that may be present but not selected as boot devices in setup.

**Swap Floppy drive**

If the system has two floppy drives, you can swap the logical drive name assignments.

The Choice: Enabled, Disabled.

**Boot Up Floppy Seek**

Seeks disk drives during boot up. Disabling speeds boot up.

The Choice: Enabled, Disabled.

**Boot Up NumLock Status**

Select power on state for NumLock.

The Choice: On/Off.

**Gate A20 Option**

Select if chipset or keyboard controller should control GateA20.

Normal	A pin in the keyboard controller controls GateA20
Fast	Lets chipset control Gate A20

**Typematic Rate Setting**

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

The Choice: Enabled, Disabled.

**Typematic Rate (Chars/Sec)**

Sets the number of times a second to repeat a key stroke when you hold the key down.

The Choice: 6, 8, 10, 12, 15, 20, 24, 30

**Typematic Delay (Msec)**

Sets the delay time after the key is held down before it begins to repeat the keystroke.

The Choice: 250, 500, 750, 1000.

**Security Option**

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

**Note:** To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press **<Enter>**, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

**MPS Version control For OS**

This field specifies the version of MPS used by the motherboard.

The Choice: 1.1, 1.4

**OS Select for DRAM > 64MB**

Select the operating system that is running with greater than 64MB of RAM on the system.

The Choice: Non-OS2, OS2



**HDD S.M.A.R.T. Capability**

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a technology developed to manage the reliability of the hard disk by predicting future device failures. The hard disk needs to be S.M.A.R.T. capable. The settings for this option are Disabled or Enabled.

\* Note: S.M.A.R.T. cannot predict all future device failures. S.M.A.R.T. should be used as a warning tool, not as a tool to predict the device reliability.

The Choice: Enabled/Disabled.

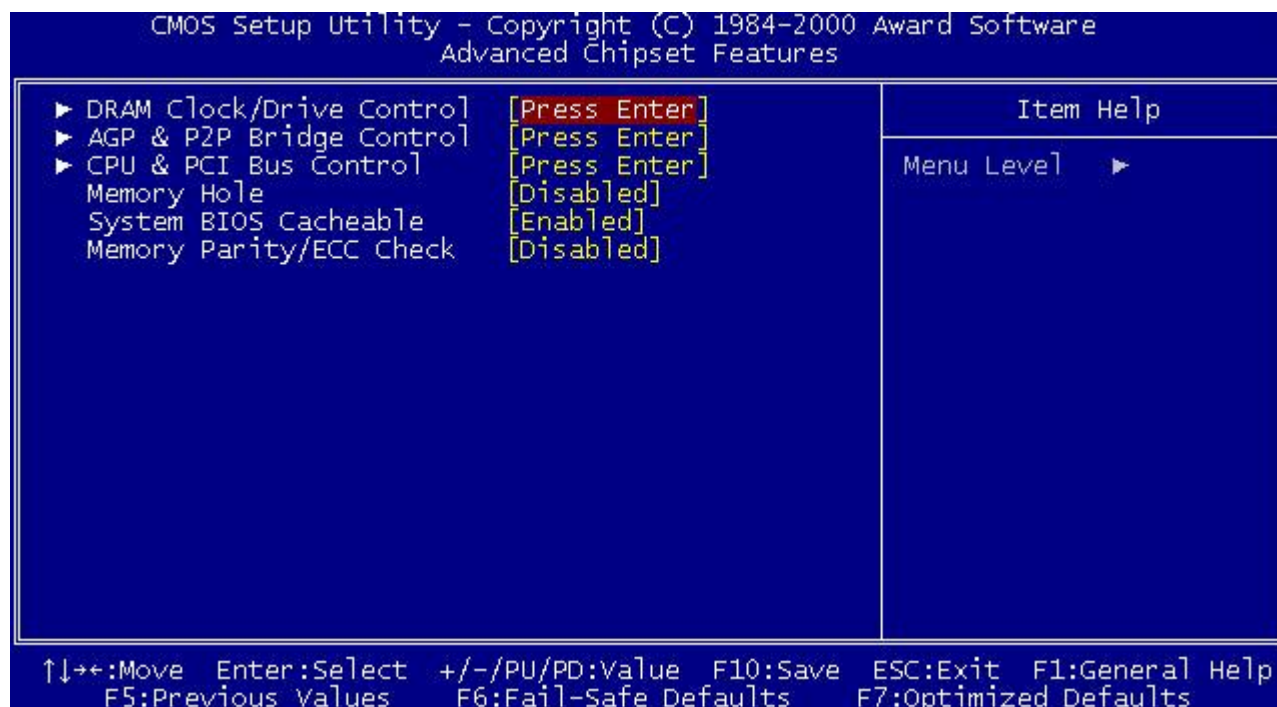
**Video BIOS Shadow**

It determines whether video BIOS will be copied to RAM, however, it is optional from chipset design. Video Shadow will increase the video speed.

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

## **Advanced Chipset Features Setup Menu**

Since the features in this section are related to the chipset in the CPU board and all are optimized, you are not recommended to change the default settings in the setup table, unless you know very detailed of the chipset features.



This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

### **▶▶ DRAM Clock/Drive Control**

Press <Enter> to enter the sub-menu, and you will see a sub-menu.

#### **Current FSB Frequency**

Displays current Host Clock frequency.

### **DRAM Clock**

The chipset supports synchronous and asynchronous mode between host clock and DRAM clock frequency.

Host CLK	The DRAM clock will be equal to the Host Clock.
HCLK-33M	The DRAM clock will be equal to the Host Clock minus 33MHz. For example, if the Host Clock is 133MHz, the DRAM clock will be 100MHz.
HCLK+33M	The DRAM clock will be equal to Host Clock plus 33MHz. For example, if the Host Clock is 100MHz, the DRAM clock will be 133MHz.
By SPD	BIOS automatically determine the DRAM clock frequency by SPD IC on the DRAM card.

### **DRAM Timing**

Selects whether the SPD IC on the DRAM card or Manual controls DRAM timing.

Selecting **Manual** allows you to control SDRAM Cycle Length and Bank Interleave by yourself.

It is strongly suggested to select **By SPD** to avoid causing any system error.

The Choice: Manual, By SPD.

### **SDRAM Cycle Length**

Controls the time delay (in clock cycles) before SDRAM starts a read command after receiving it.

The Choice: 3, 2.5, 2.

### **Bank Interleave**

Enables or disables bank interleave feature.

The Choice: Disabled, 2 Bank, 4 Bank.

## **►► AGP & P2P Bridge Control**

Press <Enter> to enter the sub-menu, and you will see a sub-menu.

### **AGP Aperture Size**

Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

The Choice: 4M, 8M, 16M, 32M, 64M, 128M, 256M.

### **AGP Mode**

The Choice: 1X, 2X, 4X.

### **AGP Driving Control**

This field is used to adjust the AGP driving force. Selecting **Manual** allows you to type an AGP driving force in **AGP Driving Value**.

It is strongly suggested to select **Auto** to avoid causing any system error.

### **AGP Driving Value**

Specifies the AGP driving force.

### **AGP Fast Write**

Enable this function only if the AGP Card supports Fast Write Function. Enable this function can increase AGP performance.

The Choice: Enabled, Disabled.

### **AGP Master 1 WS Write**

AGP Master One Wait State Write control.

The Choice: Enabled, Disabled.

### **AGP Master 1 WS Read**

AGP Master One Wait State Read control.

The Choice: Enabled, Disabled.

## **► CPU & PCI Bus Control**

Press <Enter> to enter the sub-menu, and you will see a sub-menu.

### **CPU to PCI Write Buffer**

Enables or disables CPU to PCI Post-Write function.

The Choice: Enabled, Disabled.

### **PCI Delay Transaction**

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

The Choice: Enabled, Disabled.

## **Memory Hole**

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB.

The Choice: Disabled, 15M - 16M.

### **System BIOS Cacheable**

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

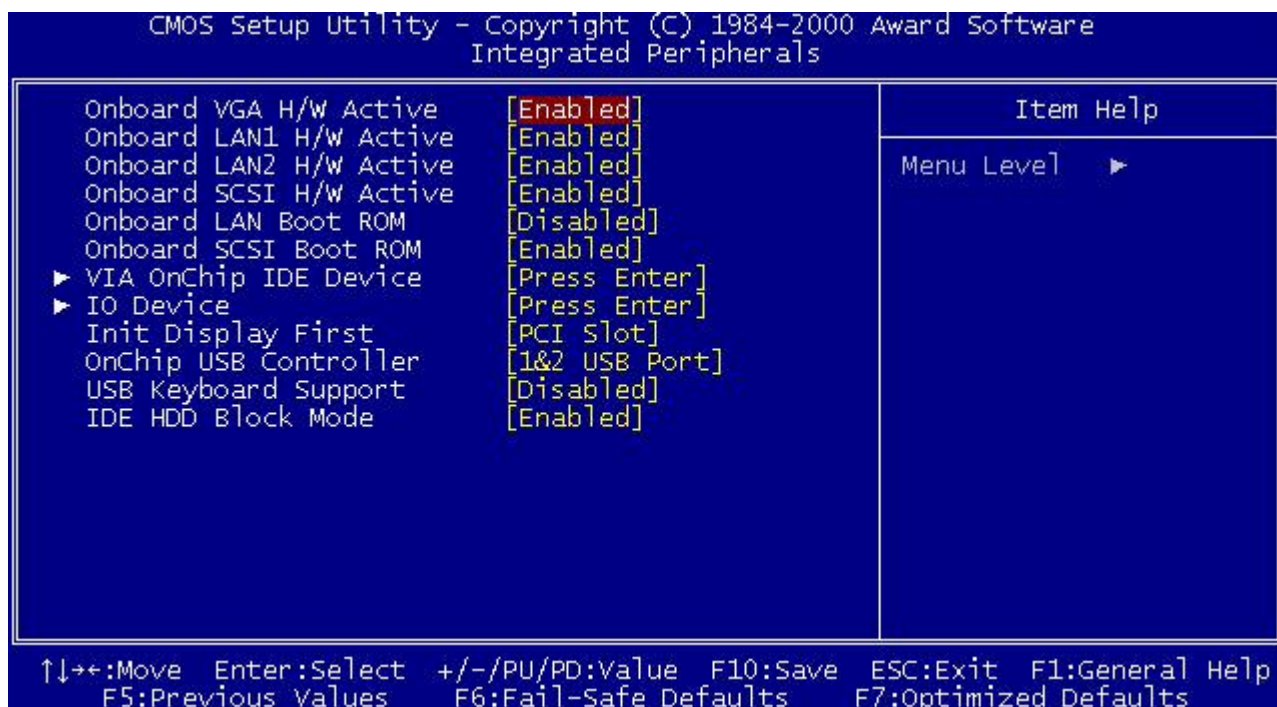
The Choice: Enabled, Disabled.

### **Memory Parity/ECC Check**

Select Parity/ECC (error-correcting code) according to the type of installed DRAM.

The Choice: Enabled, Disabled.

## **Integrated Peripherals**



### **Onboard VGA/LAN1/LAN2/SCSI H/W Active**

Select the enabled if there is a H/W active installed on the system board and you wish to use it.

The Choice: Enabled, Disabled.

### **Onboard LAN Boot ROM**

Select enabled if you wish to run the LAN Boot ROM as boot-up your computer.

The Choice: Disabled, LAN1, LAN2.

### **Onboard SCSI Boot ROM**

Select enabled if you wish to run the SCSI Boot ROM as boot-up your computer.

The Choice: Enabled, Disabled.

### **▶ VIA OnChip IDE Device**

Press <Enter> to enter the sub-menu, and you will see a sub-menu.

### **OnChip IDE Channel0/Channel1**

The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate this IDE interface. Select Disabled to deactivate this interface

The Choice: Enabled, Disabled.

**IDE Prefetch Mode**

The onboard IDE drive interfaces supports prefetching, for faster drive accesses. Set to Disabled if your primary and/or econdary add-in IDE interface does not support prefetching.

The Choice: Enabled, Disabled.

**Primary/Secondary Master/Slave PIO**

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The Choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3 and Mode 4.

**Primary/Secondary Master/Slave UDMA**

Ultra DMA implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA, select Auto to enable BIOS support.

The Choice: Auto, Disabled.

**► IO Device**

Press <Enter> to enter the sub-menu, and you will see a sub-menu.

**POWER ON Function**

This item allows you the select power on event.

The Choice: Any Key, Button Only, Keyboard 98.

**Onboard FDC Controller**

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field.

The Choice: Enabled, Disabled.

**Onboard Serial Port 1/Port 2**

Select an address and corresponding interrupt for the first and second serial ports.

The Choice: 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Disabled, Auto.

**UART Mode Select**

This item allows you to select second serial port mode.

The Choice: Normal, IrDA, ASKIR.

**UR2 Duplex Mode**

This item allows you to select the IR half/full duplex function.

The Choice: Half, Full.

### **TxD, RxD Polarity Active**

This item allows you to determine the active of IR. TxD, RxD signal.

The Choice: "Hi, Hi", "Lo, Lo", "Lo, Hi", "Hi, Lo".

### **Onboard Parallel Port**

This item allows you to determine access On-Board parallel port controller with which I/O address.

The Choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled.

### **Parallel Port Mode**

Select an operating mode for the On-Board parallel (printer) port. Select *Normal*, *Compatible*, or *SPP* unless you are certain your hardware and software both support one of the other available modes.

The Choice: SPP, ECP, PRINTER, EPP1.9+SPP, EPP1.9+ECP, EPP1.7+SPP, EPP1.7+ECP.

### **ECP Mode Use DMA**

Select a DMA channel for the parallel port for use during ECP mode.

The Choice: 3, 1.

### **Init Display First**

This item allows you to decide to active whether PCI Slot, AGP, or on-board VGA first.

The Choice: PCI Slot, Onboard, AGP.

### **USB Controller**

The item specifies which USB (Universal Serial Bus) Port is enabled.

The Choice: All Disabled, All Enabled, 1&2 USB Port, 2&3 USB Port, 1&3 USB Port, 1 USB Port, 2 USB Port, 3 USB Port.

### **USB Keyboard Support**

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

The Choice: Enabled, Disabled.

### **IDE HDD Block Mode**

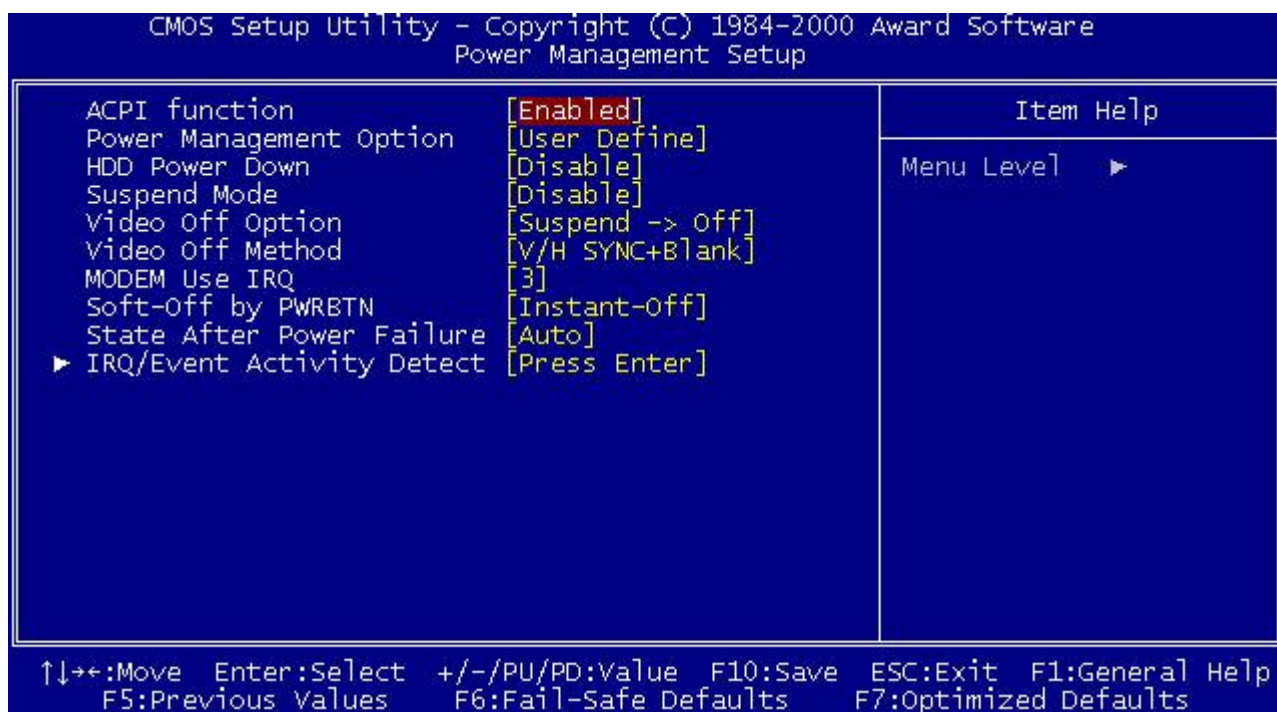
Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select **Enabled** for automatic detection of the optimal number of block read/writes per sector the drive can support.

The Choice: Enabled, Disabled.



## **Power Management Setup**

The Power Management Setup allows you to configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.



### **ACPI Function**

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The Choice: Enabled, Disabled.

### **Power Management**

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down
2. Suspend Mode

There are four selections for Power Management, three of which have fixed mode settings.

Min. Power Saving	Minimum power management. Suspend Mode = 1 hr.
Max. Power Saving	Maximum power management. Suspend Mode = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

### **HDD Power Down**

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

The Choice: ranges from 1 min. to 15 min. and Disable.

### **Suspend Mode**

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

The Choice: ranges from 1 min. to 1 hr. and Disable.

### **Video Off Option**

This determines the manner in which the monitor is blanked.

The Choice: Always On, Suspend -> Off.

### **Video Off Method**

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS Support	Initial display power management signaling.

### **MODEM Use IRQ**

This determines the IRQ in which the MODEM can use.

The Choice: 3, 4, 5, 7, 9, 10, 11, NA.

### **Soft-Off by PWR-BTTN**

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung."

The Choice: Delay 4 Sec, Instant-Off.

### **► IRQ/Event Activity Detect**

Press <Enter> to enter the sub-menu, and you will see a sub-menu.

### **USB Resume / VGA / LPT & COM / HDD & FDD / PCI Master**

These items specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

### **Wake Up On LAN**

The Choice: Enabled, Disabled.

### **PowerOn by PCI Card**

When enabled, you can “wake-up” your system using a PCI rev.2.2 card, when a “PME” event occurring.

The Choice: Enabled, Disabled.

### **Modem Ring Resume**

An input signal on the serial Ring Indicator(RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state..

The Choice: Enabled, Disabled.

### **RTC Alarm Resume**

This is to enable or disable the feature of booting up the system on a scheduled time/date.

The Choice: Enabled, Disabled.

### **Date (of Month)**

Specifies the date for **RTC Alarm Resume**.

The Choice: 0~31.

### **Resume Time (hh:mm:ss)**

Specifies the time for **RTC Alarm Resume**.

Format is <hour><minute><second>.

## **► IRQs Activity Monitoring**

Press <Enter> to enter the sub-menu, and you will see a sub-menu.

PM events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as Enabled, even when the system is in a power down mode.

### **Primary INTR**

When this is set to On, any event occurring will wake up the system which has been powered down.

The Choice: ON, OFF.

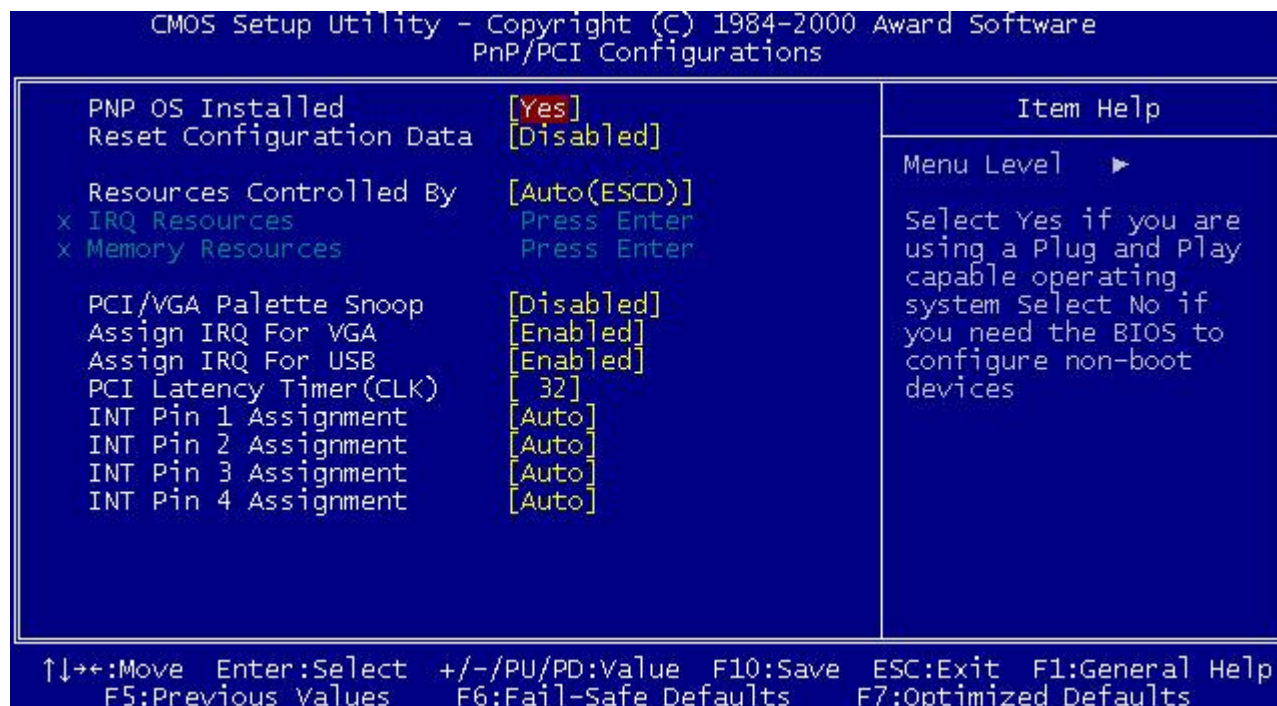
### **IRQ [3-15]**

Enables or disables the monitoring of the specified IRQ line. If set to Enabled, the activity of the specified IRQ line will prevent the system from entering power saving modes or awaken it from power saving modes.

The Choice: Enabled, Disabled.

## **PnP/PCI Configuration**

This section describes configuring the PCI bus system. PCI, or **Peripheral Component Interconnect**, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



### **PNP OS Installed**

Select **Yes** if the system operating environment is Plug-and-Play aware (e.g. Windows 95).

The Choice: Yes, No.

### **Reset Configuration Data**

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on Card and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

The Choice: Enabled, Disabled.

### **Resources Controlled by**

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field.

The Choice: Auto (ESCD), Manual.

### **▶ IRQ Resources**

Press <Enter> to enter the sub-menu, and you will see a sub-menu.

### **IRQ Assigned To**

This item allows you to determine the IRQ assigned to PCI Device or Reserved.

The Choice: PCI Device, Reserved.

## **► Memory Resources**

Press <Enter> to enter the sub-menu, and you will see a sub-menu.

### **Reserved Memory Base**

Some add-in cards ask for a specific address space in the system memory. This field specifies the memory base (start address) of the reserved memory space.

The Choice: N/A, C800, CC00, D000, D400, D800, DC00.

### **Reserved Memory Length**

This item is available only when the Used MEM Base Addr has been assigned a base address. It specifies the memory size for the add-in card used.

The Choice: 8K, 16K, 32K, 64K

### **PCI/VGA Palette Snoop**

Leave this field at Disabled.

The Choice: Enabled, Disabled.

### **Assign IRQ For VGA/USB**

Enable/Disable to assign a IRQ for VGA/USB.

The Choice: Enabled, Disabled.

### **PCI Latency Timer(CLK)**

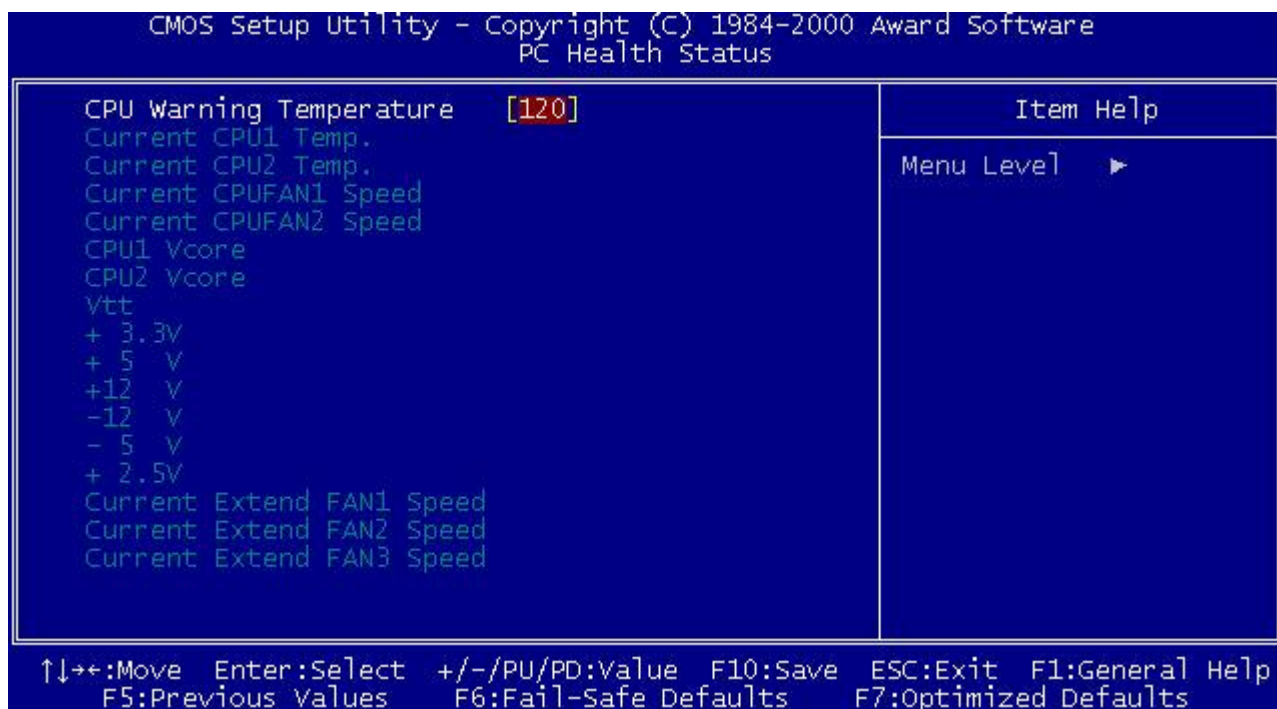
This item is used to specify assign PCI Latency Timer value.

The Choice: 0-255.

### **INT Pin 1~4 Assignment**

This item is used to specify assign PCI device Interrupt line use IRQ number. BIOS will show that what PCI device will be assign in Item Help.

The Choice: Auto, 3, 4, 5, 7, 9, 10, 11, 12, 14, 15.

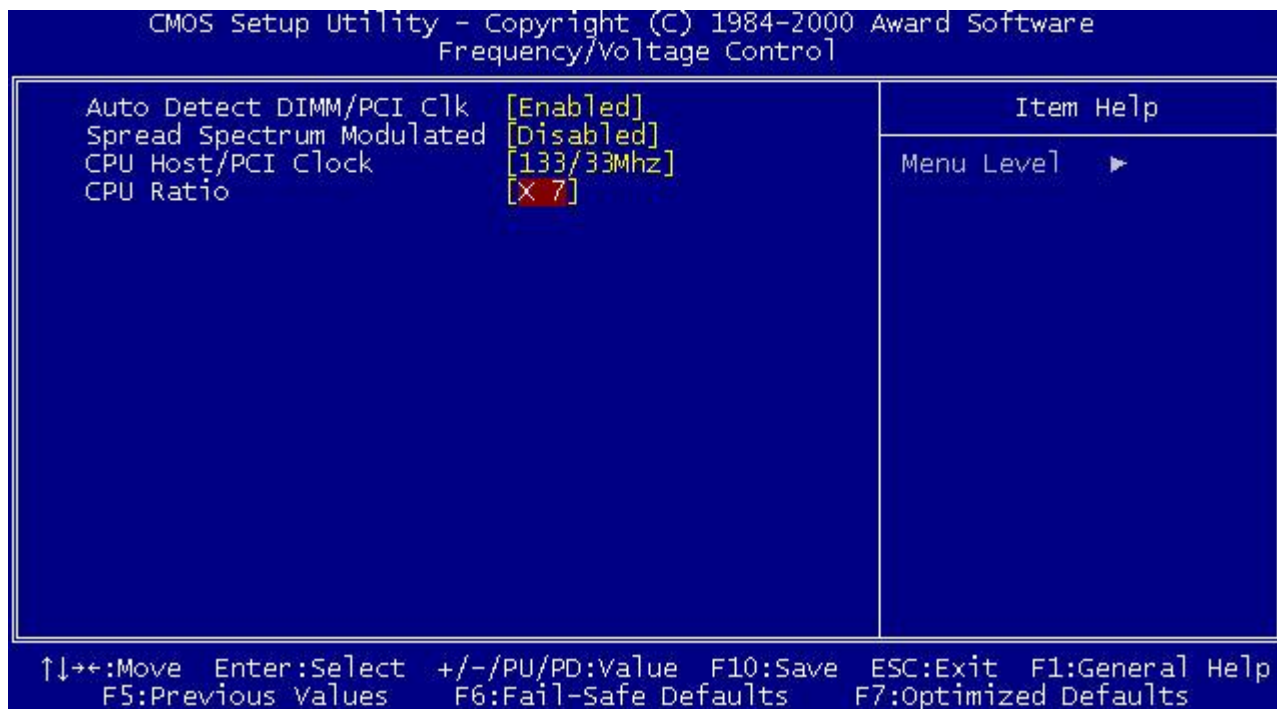
**PC Health Status****CPU Warning Temperature**

This item is used to specify a thermal standard for CPU. If CPU temperature reaches the specified standard, the system will issue a warning and allows you to prevent the CPU overheat problem.

The Choice: 30-120.

**Current CPU1/CPU2 Temp., Current CPUFAN1/2 Speed, CPU1/2 Vcore, Vtt, +3.3/+ 5/+ 12/- 12/- 5/+2.5V, Current Extend FAN1/2/3 Speed**

These items display the current status of all of the monitored hardware devices/components such as CPU voltages, temperatures and fans's speed.

**Frequency/Voltage Control****Auto Detect DIMM/PCI Clk**

Use this item to enable or disable the feature of auto detecting the clock frequency of the installed DRAM DIMMs and PCI cards.

The Choice: Enabled, Disabled.

**Spread Spectrum Modulated**

This item is used to enable or disable the clock generator's Spread Spectrum feature.

The Choice: Enabled, Disabled.

**CPU Host/PCI Clock**

This item allows you to set up the CPU/PCI clock, but this function depends on different CPU performance.

It is highly recommended to use the default setting by the CPU ID auto detect. The standard CPU Clock will be 100MHZ or 133MHZ. If you set the wrong CPU clock cause the system can't power on, please do hardware clear the CMOS to reset the BIOS default value then setup the correct CPU clock. Or you can press INSERT key to power on system to restore the BIOS default.

The Choice: Default, 100/33Mhz, 133/33Mhz.

**CPU Ratio**

This item allows you to set up the CPU clock ratio, but this function depends on different CPU performance. It is only effective for those clock ratio haven't been locked.

The Choice: X3.0~X8.0.

### **Supervisor/User Password Setting**

You can set either supervisor or user password, or both of them. The differences between are:

**supervisor password** : can enter and change the options of the setup menus.

**user password** : just can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

#### **ENTER PASSWORD:**

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

#### **PASSWORD DISABLED**

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.



**Power-On Boot**

After you have made all the changes to CMOS values and the system cannot boot with the CMOS values selected in Setup, restart the system by turning it OFF then ON or Pressing the "RESET" button on the system case. You may also restart by simultaneously press **<Ctrl>**, **<Alt>**, and **<Delete>** keys.

Upon restart the system, immediately press **<Insert>** to load BIOS default CMOS value for boot up.

## **4-2 BIOS Reference - POST Message**

During the Power On Self Test (POST), if the BIOS detects an error requiring you to do something to fix, it will either sound a beep code or display a message.

If a message is displayed, it will be accompanied by:

**PRESS <F1> TO CONTINUE, <CTRL>-<ALT>-<ESC> OR <DEL> TO ENTER SETUP**

### **POST Beep**

Currently there is only one beep code in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps.

### **Error Messages**

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

#### **BIOS ROM checksum error-System halted.**

The checksum of ROM address F0000H-FFFFFH is bad.

#### **CMOS BATTERY HAS FAILED**

CMOS battery is no longer functional. It should be replaced.

#### **CMOS CHECKSUM ERROR**

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

#### **DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER**

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

#### **DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP**

Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

#### **DISPLAY SWITCH IS SET INCORRECTLY**

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

**DISPLAY TYPE HAS CHANGED SINCE LAST BOOT**

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

**EISA Configuration Checksum Error****PLEASE RUN EISA CONFIGURATION UTILITY**

The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Also be sure the card is installed firmly in the slot.

**EISA Configuration Is Not Complete****PLEASE RUN EISA CONFIGURATION UTILITY**

The slot configuration information stored in the EISA non-volatile memory is incomplete.

Note: When either of these errors appear, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

**ERROR ENCOUNTERED INITIALIZING HARD DRIVE**

Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

**ERROR INITIALIZING HARD DISK CONTROLLER**

Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

**FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT**

Cannot find or initialize the floppy drive controller. make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

**FLOOPY DISK(S) fail (80)**

Unable to reset floppy subsystem.

**FLOOPY DISK(S) fail (40)**

Floppy Type mismatch.

**Hard Disk(s) fail (80)**

HDD reset failed

**Hard Disk(s) fail (40)**

HDD controller diagnostics failed.

**Hard Disk(s) fail (20)**

HDD initialization error.

**Hard Disk(s) fail (10)**

Unable to recalibrate fixed disk.

**Hard Disk(s) fail (08)**

Sector Verify failed.

**Invalid EISA Configuration****PLEASE RUN EISA CONFIGURATION UTILITY**

The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

**KEYBOARD ERROR OR NO KEYBOARD PRESENT**

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

**Keyboard is locked out-Unlock the key**

BIOS detect the keyboard is locked. P17 of keyboard controller is pulled low.

**Manufacturing POST loop**

System will repeat POST procedure infinitely while the P15 of keyboard controller is pull low. This is also used for M/B burn in test.

**Memory Address Error at ...**

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

**Memory test fail**

BIOS reports the memory test fail if the onboard memory is tested error.

**Memory parity Error at ...**

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

**MEMORY SIZE HAS CHANGED SINCE LAST BOOT**

Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

**Memory Verify Error at ...**

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

**OFFENDING ADDRESS NOT FOUND**

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

**OFFENDING SEGMENT:**

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

**PRESS A KEY TO REBOOT**

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

**PRESS F1 TO DISABLE NMI, F2 TO REBOOT**

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

**RAM PARITY ERROR - CHECKING FOR SEGMENT ...**

Indicates a parity error in Random Access Memory.

**Should Be Empty But EISA Board Found  
PLEASE RUN EISA CONFIGURATION UTILITY**

A valid board ID was found in a slot that was configured as having no board ID.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

**Should Have EISA Board But Not Found  
PLEASE RUN EISA CONFIGURATION UTILITY**

The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

**Slot Not Empty**

Indicates that a slot designated as empty by the EISA Configuration Utility actually contains a board.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

**SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...**

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

**Wrong Board In Slot  
PLEASE RUN EISA CONFIGURATION UTILITY**

The board ID does not match the ID stored in the EISA non-volatile memory.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

### 4-3 BIOS Reference - POST Codes

POST (hex)	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
0h1	Expand the Xgroup codes locating in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	1. Disable PS/2 mouse interface (optional). 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). 3. Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000

POST (hex)	Description
	for ESCD & DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	<ol style="list-style-type: none"> <li>1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute.</li> <li>2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead.</li> <li>3. Prepare BIOS resource map for PCI &amp; PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information.</li> <li>4. Onboard clock generator initialization. Disable respective clock resource to empty PCI &amp; DIMM slots.</li> <li>5. Early PCI initialization: <ul style="list-style-type: none"> <li>-Enumerate PCI bus number</li> <li>-Assign memory &amp; I/O resource</li> <li>-Search for a valid VGA device &amp; VGA BIOS, and put it into C000:0.</li> </ul> </li> </ol>

POST (hex)	Description
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	1. Program CPU internal MTRR (P6 & PII) for 0-640K memory address. 2. Initialize the APIC for Pentium class CPU. 3. Program early chipset according to CMOS setup. Example: onboard IDE controller. 4. Measure CPU speed. 5. Invoke video BIOS.
2Ah	Reserved
2Bh	Reserved
2Ch	Reserved
2Dh	1. Initialize multi-language 2. Put information on screen display, including Award title, CPU type, CPU speed ....
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips.
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved



POST (hex)	Description
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	1. Calculate total memory by testing the last double word of each 64K page. 2. Program write allocation for AMD K5 CPU.
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	1. Program MTRR of M1 CPU 2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	1. Display PnP logo. 2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.

POST (hex)	Description
5Ah	Reserved
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	1. Initialize Init_Onboard_Super_IO switch. 2. Initialize Init_Onboard_AUDIO switch.
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 Mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Eh	Reserved
6Fh	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware.
70h	Reserved
71h	Reserved
72h	Reserved
73h	(Optional Feature)

POST (hex)	Description
	Enter AWDFLASH.EXE if : -AWDFLASH is found in floppy drive. -ALT+F2 is pressed
74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM.....
76h	Reserved
77h	Detect serial ports & parallel ports.
78h	Reserved
79h	Reserved
7Ah	Detect & install co-processor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	1. Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: 2. Clear EPA or customization logo.
80h	Reserved
81h	Reserved
<b>E8POST.ASM starts</b>	
82h	1. Call chipset power management hook. 2. Recover the text font used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	1. USB final Initialization 2. NET PC: Build SYSID structure 3. Switch screen back to text mode 4. Set up ACPI table at top of memory. 5. Invoke ISA adapter ROMs 6. Assign IRQs to PCI devices 7. Initialize APM

POST (hex)	Description
	8. Clear noise of IRQs.
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	<ol style="list-style-type: none"> <li>1. Enable L2 cache</li> <li>2. Program boot up speed</li> <li>3. Chipset final initialization.</li> <li>4. Power management final initialization</li> <li>5. Clear screen &amp; display summary table</li> <li>6. Program K6 write allocation</li> <li>7. Program P6 class write combining</li> </ol>
95h	<ol style="list-style-type: none"> <li>1. Program daylight saving</li> <li>2. Update keyboard LED &amp; typematic rate</li> </ol>
96h	<ol style="list-style-type: none"> <li>1. Build MP table</li> <li>2. Build &amp; update ESCD</li> <li>3. Set CMOS century to 20h or 19h</li> <li>4. Load CMOS time into DOS timer tick</li> <li>5. Build MSIRQ routing table.</li> </ol>
FFh	Boot attempt (INT 19h)

## Appendix : Digital I/O

**Digital I/O Control Table:**

IO Port (hex)	Bit	Pin Name		Bit = 1	Bit = 0	Locate
84B	0	Digital Input	1	Input High	Input Low	J15.1
84B	1	Digital Input	2	Input High	Input Low	J15.3
84B	2	Digital Input	3	Input High	Input Low	J15.5
84B	3	Digital Input	4	Input High	Input Low	J15.7
84B	4	Digital Output	1	Output High	Output Low	J15.2
84B	5	Digital Output	2	Output High	Output Low	J15.4
84B	6	Digital Output	3	Output High	Output Low	J15.6
84B	7	Digital Output	4	Output High	Output Low	J15.8

### Programming Example:

Example 1: Set Digital\_Output\_1 output High

```

Mov  DX, 84Bh      ; Set I/O Port
In    AL, DX        ; Read Register Data
Or    AL, 00010000b ; Set bit4 = 1 let Digital_Output_1 output High
Out   DX, AL        ; Set Register Data

```

Example 2: Read Digital\_Output\_1 output High

```

Mov  DX, 84Bh      ; Set I/O Port
In    AL, DX        ; Read Register Data, Bit 0 is Digital_Input_1 data.

```