EP-3WXA
EP-3WXA4
EP-3WXA4Y

A Celeron™ Socket 370 Processor based Intel 810 Chipset mainboard (100/66MHz)

TRADEMARK

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Manual Revision 3.1
July 7, 1999

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Handling Procedures

Static electricity can severely damage your equipment. Handle the EP-3WXA/4/ 4Y and any other device in your system with extreme care and avoid unnecessary contact with system components on the mainboard. Always work on an antistatic surface to avoid possible damage to the mainboard from static discharge. Always have the power supply unplugged and powered off when inserting and removing devices within the computer chassis. EPoX assumes no responsibility for any damage to the EP-3WXA/4/4Y mainboard that results from failure to follow instruction or failure to observe safety precautions.

> **CAUTION**
>
> **The EP-3WXA/4/4Y mainboard is subject to damage by static electricity. Always observe the handling procedures.**

Technical Support Services

If you need additional information, help during installation or normal use of this product, please contact your retailer. Your retailer will have the most current information about your configuration. If your retailer cannot help, you may visit our online technical support website and/or contact our support technicians at the locations listed below.

Record your serial number before installing your EP-3WXA/4/4Y mainboard. (The serial number is located near the PCI slots at the edge of the board.)

    EP-3WXA/4/4Y serial number: _____

Contacting Technical Support

EPoX technical support is working hard to answer all of your questions online. From our website you can find answers to many common questions, drivers, BIOS updates, tech notes, and important technical bulletins. If you are still unable to locate the solution you are seeking, you always have the option to contact our support technicians directly.

North American website (English language)
http://www.epox.com
sales@epox.com
support@epox.com

European website (Multi-language)
http://www.epox.nl
sales@epox.nl
support@epox.nl

Taiwan website (Chinese language)
http://www.epox.com.tw
sales@epox.com.tw
support@epox.com.tw

Thank you for using EPoX mainboards!

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INTRODUCTION

Components Checklist

- ✔ A. (1) EP-3WXA/4/4Y mainboard

- ✔ B. (1) EP-3WXA/4/4Y user's manual

- ✔ C. (1) Floppy ribbon cable

- ✔ D. (1) Hard drive for UltraATA66/33 an 80 conductor cable

- ✔ E. (1) RS-232 9-PIN ribbon cable

-   F. (1) PS/2 to AT keyboard connector adapter (optional)

- ✔ G. (1) Onboard Graphic and Sound Driver

Overview
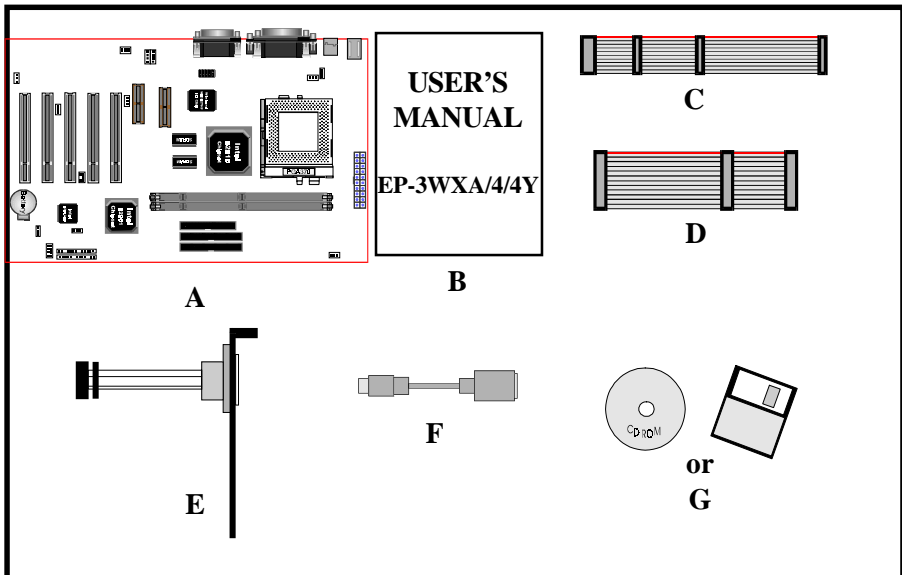
Intel Celeron processors, the plastic pin grid array (P.P.G.A.) 370

The Intel Celeron processors provide power to handle the internet, educational programs, interactive 3D games, and productivity applications. The Intel Celeron processors at 466, 433, 400, 366, 333 and 300A MHz include integrated L2 cache 128Kbyte. The core for the 466, 433, 400, 366, 333 and 300A MHz processors have 19M transistors due to the addition of the integrated L2 cache 128Kbyte. All the Intel Celeron processors are available in the plastic pin grid array (P.P.G.A.) form factor. The P.P.G.A. form factor is compatible with the 370 pin socket. All the Intel Celeron processors are available in the plastic pin grid array (PPGA) package. The PPGA package is compatible with the 370 pin socket and provides more flexibility to design low cost systems by enabling lower profile and smaller systems and providing the potential for reducing costs of processor retention and cooling solutions. Like the Intel Celeron processors that utilize S.E.P.P., the Intel Celeron processors that use P.P.G.A., feature a P6-microarchitecture-based core processor on a single-sided substrate without BSRAM componentry.

The Intel Celeron processor at 466, 433, 400, 366, 333, and 300A MHz. Includes Intel MMX[tm] media enhancement technology. Offers Dynamic Execution technology.
Includes a 32Kbyte (16Kbyte/16Kbyte) non-blocking, level-one cache that provides fast access to heavily used data. Intel Celeron processors at 466, 433, 400, 366, 333 and 300A MHz include integrated L2 cache 128Kbyte. All the Intel Celeron processor utilize the Intel P6 microarchitecture's multi-transaction system bus at 66MHz. The 466, 433, 400, 366, 333 and 300A MHz processors utilize the Intel P6 microarchitecture's multi-transaction system bus with the addition of the L2 cache interface. The combination of the L2 cache bus and the processor-to-main-memory system bus increases bandwidth and performance over single-bus processors.

Intel MMX technology includes new instructions and data types that allow

applications to achieve a new level of performance. Intel's MMX technology is designed as a set of basic, general-purpose integer instructions that are easily applied to the needs of a wide diversity of multimedia and communications applications. The highlights of the technology are:

  * Single Instruction, Multiple Data (SIMD) technique
  * 57 new instructions
  * Eight 64-bit wide MMX technology registers
  * Four new data types

The plastic pin grid array (P.P.G.A.) 370 processor Installation and Removal

Installation:

Install the processor and the fan heatsink using the Installation Notes provided with the boxed processor. First, raise the handle of the 370-pin socket. Carefully install the processor into the 370-pin socket making sure that none of the pins are bent. Then close the handle of the socket. Next install the fan heatsink. Make sure to install the heatsink onto the processor after the processor has been inserted into the 370-pin socket. Place the fan heatsink onto the processor such that the integrated clip lines up with the socket's attach tabs. This will align the fan cable with the PGA370 mark on the 370-pin socket. Remember not to damage the thermal interface pad. Attach the clip onto the socket's attach tabs. (A small tool, such as a pen, may make this process easier.) Take care to consider potential scraping of the motherboard underneath the 370-pin socket attach tabs. Connect the attached fan power cable to the motherboard connector and quickly power on the system to verify that the processor fan is running.
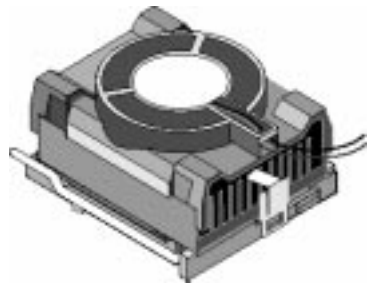
Removal:

To simplify the following process, consider removing the motherboard from the chassis before removing the processor. First, unplug the fan power cable from the motherboard's connector. Then pull the integrated clip away from the socket's tab nearest the fan cable. (A small tool, such as a pen or screwdriver, may make this process easier.) Once the clip is free, slowly lift the fan heatsink straight up away from the socket and the processor. (If the processor has been in operation for a long period of time, then this step may require some extra force; this is because the heat dissipated from the processor will have affected the thermal interface pad) Next, lift up the handle of the 370-pin socket. Finally, carefully remove the processor from the socket making sure not to bend any of the processor pins.

Intel(R) 810 chipset features

The Intel(R) 810 chipset that Built on the strong foundation of Intel(R) 440BX AGPset technology, the Intel(R) 810 chipset has re-engineered the Value PC, providing next generation features and great graphics performance.

The 82810 Graphics Memory Controller Hub (GMCH) features : Intel(R) graphics technology and software drivers, using Direct AGP (integrated AGP) to create vivid 2D and 3D effects and images. The 82810 chip feature integrated Hardware Motion Compensation to improve soft DVD video quality.

The Inte(R) 82810 chipset use Intel(R) Dynamic Video Memory Technology (D. V.M.T.) is an architecture that offers breakthrough performance for the (motherboard) PC through efficient memory utilization and Direct AGP. The system OS uses the Intel software drivers and intelligent memory arbiter to support richer graphics applications.

The 82801 I/O Controller Hub (ICH) employs the Intel(R) Accelerated Hub Architecture to make a direct connection from the graphics and memory to the integrated AC97 controller, the IDE controllers (ATA/66 or ATA/33), dual USB ports, and PCI add-in cards.

The Accelerated Hub Architecture provides twice the bandwidth of the PCI bus at 266 MB per second. This allows a wider flow of rich information from the I/O controller to the memory controller, with optimized arbitration rules allowing more functions to run concurrently, enabling more life-like audio and video.

The Integrated Audio-Codec 97 controller enables software audio and modem (AMR Riser Optional) by using the processor to run sound and modem software. By reusing existing system resources, this feature adds flexibility, improves sound and modem quality.

The 82802 Firmware Hub (FWH, 4MB) stores system BIOS and video BIOS, eliminating a redundant nonvolatile memory component. In addition, the 82802 contains a hardware Random Number Generator (RNG). The Intel(R) RNG provides truly random numbers to enable fundamental security building blocks supporting stronger encryption, digital signing, and security protocols for the future application program .

EP-3WXA/4/4Y Form-Factor

The EP-3WXA/4/4Y is designed with ATX form factor - the new industry standard of chassis. The ATX form factor is essentially a Baby-AT baseboard rotated 90 degrees within the chassis enclosure and a new mounting configuration for the power supply. With these changes the processor is relocated away from the expansion slots, allowing them all to hold full length add-in cards. ATX defines a double height aperture to the rear of the chassis which can be used to host a wide range of onboard I/O. Only the size and position of this aperture is defined, allowing PC manufacturers to add new I/O features (e.g.; TV input, TV output, modem, LAN, etc.) to systems. This will help systems integrators differentiate their products in the marketplace, and better meet your needs.

• Smaller size promotes a smaller system size.

• I/O shield does not need to be retooled in an ATX 2.01 or later. Mainboard could be used in an ATX 2.01-compliant.

• A smaller power supply cam be used. High integration on mainboard reduces the system costs.
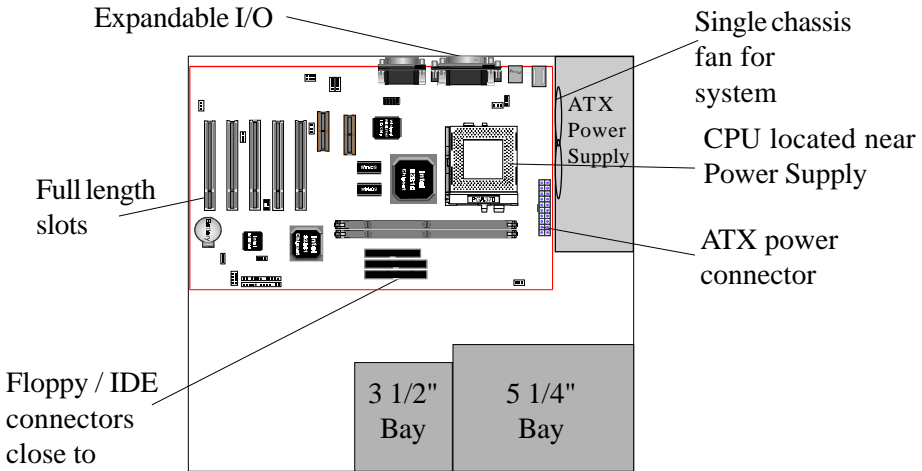
Figure 2: Summary of ATX chassis features

I/O Shield Connector

The **EP-3WXA/4/4Y** is equipped with an I/O back panel. Please use the appropriate I/O shield (figure 3).

parallel port   *Joystick/Midi port*

PS/2 Mouse   *USB port*

*PS/2
KEYBOARD*

COM1   *VGA1*   *Speaker*
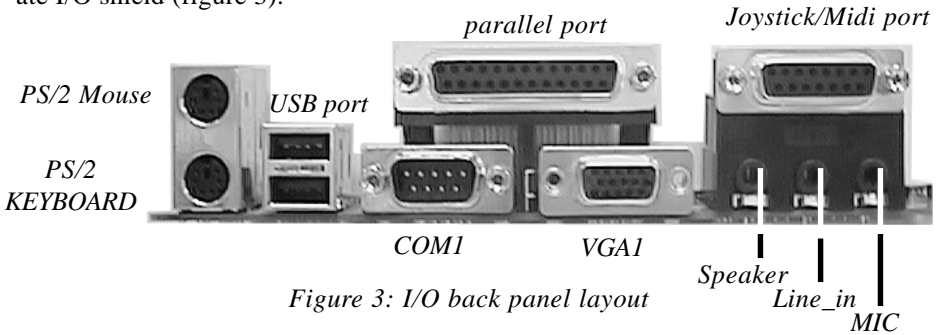
Figure 3: I/O back panel layout   *Line_in*

MIC

Power-On/Off (Remote)

The EP-3WXA/4/4Y has a single 20-pin connector for ATX power supplies. For ATX power supplies that support the **Remote On/Off** feature, this should be connected to the systems front panel for system Power On/Off button. The systems power On/Off button should be a momentary button that is normally open.

The EP-3WXA/4/4Y has been designed with "Soft Off" functions. You can turn Off the system from one of two sources: The first is the front panel Power On/Off the button, and the other is the "Soft Off" function (coming from the EP-3WXA/4/4Y's onboard circuit controller) that can be controlled by the operating system. Windows 95/98 will control this when the user clicks that they are ready to Shutdown the system.

J3

*Case (chassis) Power
ON/OFF button*

*ATX
POWER SUPPLY*
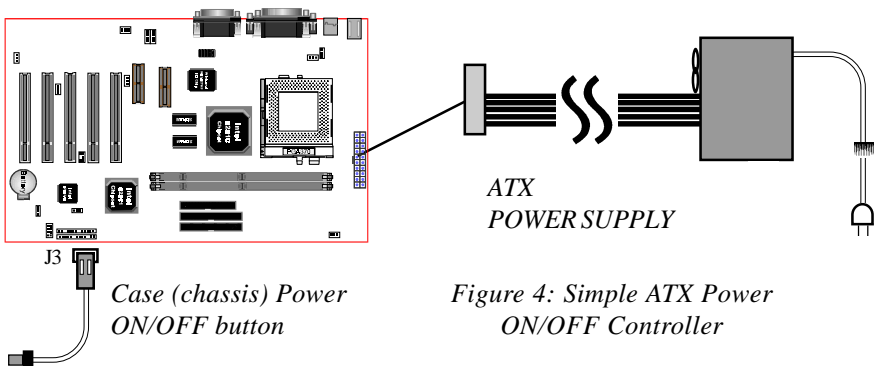
*Figure 4: Simple ATX Power
ON/OFF Controller*

System Block Diagram
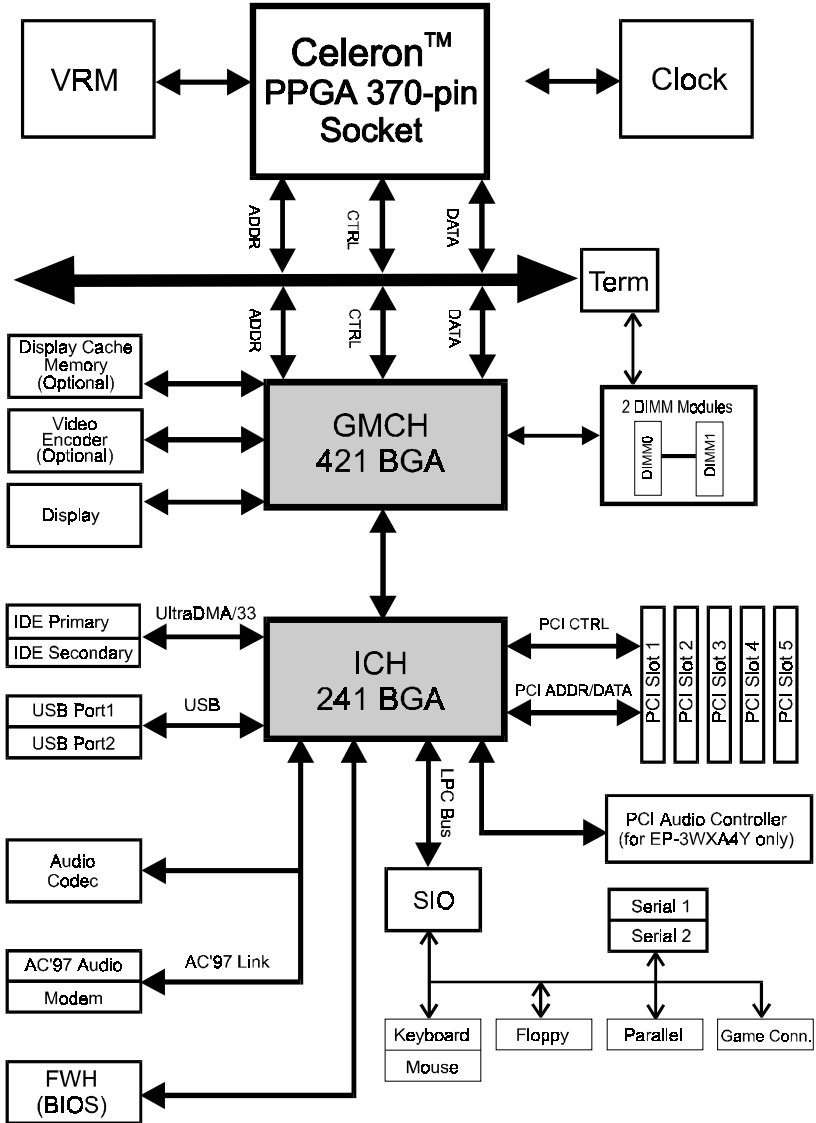
Figure 5: System Block Diagram

Section 2
FEATURES

EP-3WXA/4/4Y Features:

- EP-3WXA/4/4Y is based on the Intel Celeron™ Processor operating at 300A ~ 466MHz (66MHz) or 100MHz FSB for feature processor on PPGA 370 socket. The board is configured by an Easy-Setting-Single-Jumper (E.S.S.J.) to match your CPU clock speed.

- CPU clock ratio from 3x~8x setting in BIOS.

- Designed with Intel's 810 chipset.

- Supports up to 512 MB of DRAM (minimum of 16 MB) on board, You can use 168-pin DIMM x 2. It will run Synchronous DRAM memory (SDRAM) at 100MHz.

- 64-bit system memory interface with optimized support for SDRAM at 100MHz.

- Integrated 2D & 3D Graphics Engine, H/W Motion Compensation Engine, 230MHz DAC, Digital Video Out Port (Optional) and 4MB Display Cache (EP-3WXA4/3WXA4Y only).

- AC'97 2.1 Audio CODEC onboard.

- Supports (5) 32 bit PCI slots, provides (2) independent high performance PCI IDE interfaces capable of supporting PIO Mode 3/4 and Ultra DMA 66 devices. The EP-3WXA/4/4Y supports (5) PCI Bus Master slots and a jumperless PCI INT# control scheme which reduces configuration confusion when plugging in PCI card(s).

- Supports ATAPI (e.g. CD-ROM) devices on both Primary and Secondary IDE interfaces.

- Designed with Winbond W83627HF LPC (Low Pin Count) I/O: (1) floppy port, (1) parallel port (EPP, ECP), and (2) serial ports (16550 Fast UART)

- Includes a PS/2 mouse connector.

- Allows use of a PS/2 keyboard.

- Features Award Plug & Play BIOS. With 4MB(FWH) Flash Memory you can always upgrade to the current BIOS.

- EP-3WXA/4/4Y utilizes a Lithium battery which provides environmental protection and longer battery life.

- Supports the Universal Serial Bus (USB) connector. The onboard ICH (82801) chip provides the means for connecting PC peripherals such as; keyboards, joysticks, speaker, and mouse.

- Built-in ATX 20-pin power supply connector.

- Software power-down when using Windows® 95/98.

- Supports ring-in feature (remote power-on through external modem, allow system to be turned on remotely.

- Resume by Alarm - Allow your system to turn on at a preselected time.

- Supports CPU Hardware sleep and SMM (System Management Mode).

- Supports Hot key, Any key or password Keyboard power ON function (KBPO).

- Supports the CPU, PWR and Chassis fan Auto stop in the sleep mode.

- Supports the System Power LED (PANEL) blinks in the sleep mode.

- Built-in WOL (Wake On Lan) Connector.

- Supports the AMR Connector for enables the software modem.

- Built-in YAMAHA YMF744 PCI Sound Onboard (EP-3WXA4Y only).

- Ture Full Duplex playback and Capture with different Sampling Rate(EP-3WXA4Y only).

- Maximum 64-voice XG captital Wave table (EP-3WXA4Y only).

- Synthesizer including GM Compatibility (EP-3WXA4Y only).

- Supports OPL3, Sound Blaster Pro, MPU401 UART mode and Joystick function(EP-3WXA4Y only).

- Supports TV-Out and Flat Panel Connector (optional), provides TV-Out, Flat Panel Card. You can use TV or LCD Monitor or CRT Monitor for best choice.

Section 3
INSTALLATION
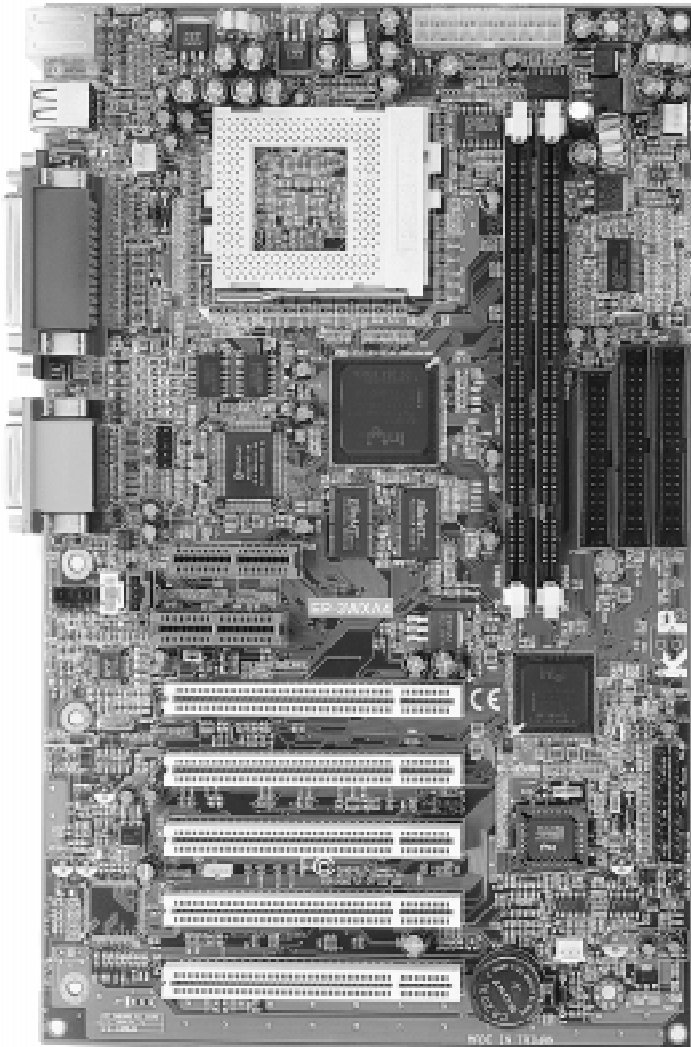
EP-3WXA/4/4Y Detailed Layout
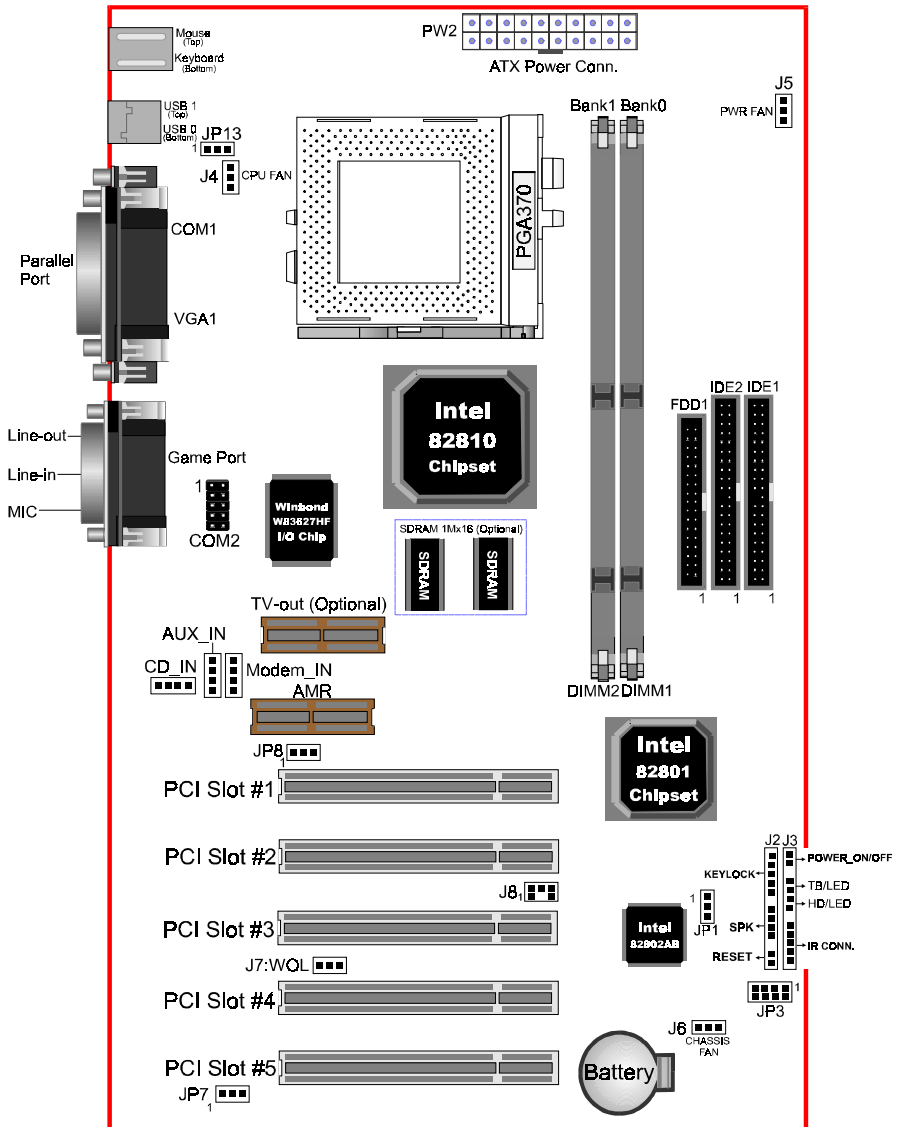
Figure 1

Easy Installation Procedure

Easy Installation Procedure

The following must be completed before powering on your new system:

- **3-1.** **Configure Jumpers to match your hardware**
- **3-2.** **System Memory Configuration**
- **3-3.** **Device Connectors**
- **3-4.** **External Modem Ring-in Power ON and Keyboard Power ON Functions (KBPO)**
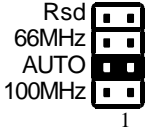
Section 3-1
Configure Jumpers

The EP-3WXA/4/4Y designs all motherboards with the fewest jumpers to make your installation fast and easy.

The following will describe all of the jumpers that you are required to set before moving on to step 3-2.

Note: The jumpers as depicted as shown (Figure 1) in their correct physical orientation.

JP1   CMOS Clear
           JP1 = 1-2 Normal (Default)
                 = 2-3 Clear CMOS

JP3   Rsd / 66MHz / AUTO (Default) / 100MHz   CPU Speed Selection

* Note: If CPU is S-Spec processor, than ignore the CPU ratio setting, otherwise the CPU ratio setting in BIOS (Frequency/Voltage Control).
       Rsd: Reserved

JP7   On Board PCI Sound (Default for EP-3WXA4Y)
           JP7 = 1-2 Enabled PCI Sound (Default)
                 = 2-3 Disabled PCI Sound

* Note: In the BIOS setting, "AC97 Audio" of "Integrated Peripherals" must be changed from "Enabled" to "Disabled" as well to come with JP7 setting (at "2-3" position). (refer to page 4-14).

JP8   1   On Board AC'97 Codec Audio
       ■■□   JP8 = 1-2 Enabled (Default for EP-3WXA/EP-3WXA4)
                  = 2-3 Disabled

AC'97/MR Configuration Table

JP8	EP-3WXA	EP-3WXA4
1-2	AC'97 Onboard (Primary) MR or MC (Secondary)	AC'97 Onboard (Primary) MR or MC (Secondary)
2-3	Disabled Onboard AC'97 MR or MC or AMC (Primary)	Disabled Onboard AC'97 MR or MC or AMC (Primary)

	EP-3WXA4Y
None	MR or MC or AMC must be (Primary) only

*   Audio Codec'97 (AC'97)

**   Audio Codec (AC)

***   Modem Codec (MC)

****   Audio/Modem Codec (AMC)

***** Modem Riser Card (MR)

*Note: In the BIOS setting, "AC97 Audio" of "Integrated Peripher-
       als" must be changed from "Enabled" to "Disabled" as well to
       come with JP8 setting (at "2-3" position). (refer to page 4-14).*
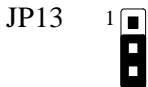
JP13   1 ■   Keyboard Power-ON Function
         ■   JP13 = 1-2 Enabled
         ■   = 2-3 Disabled (Default)

Section 3-2
System Memory Configuration

Memory Layout

The EP-3WXA/4/4Y supports (2) 168-pin DIMMs (Dual In-line Memory Module). The DIMMs can be either EDO (Extended Data Out) or SDRAM (Synchronized DRAM).

- 100MHz system memory bus frequency. Even if the system host bus is 66MHz.

- 8MB to 256MB using 16MB/64MB technology (512MB using 128MB technology).

- 256MB Support Registered synchronous DRAM Memory Modules.

- We recommend to installed the "PC/100MHz SDRAM Spec.", using DIMM SDRAM must be 125MHz (-8ns) bus speed. If used 100MHz (-10ns) SDRAM may be critical timing for the motherboard.

- DIMM SDRAM may be 100MHz (-10ns) or 125MHz (-8ns) bus speed.

Figure 2 and Table 1 show several possible memory configurations using

DIMM 2	Bank 2/3
DIMM 1	Bank 0/1

-Synchronous
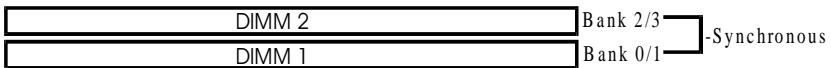
Figurre 2

Total Memory	DIMM 1 (Bank 0/1)	DIMM 2 (Bank 2/3)
= 256MB Maximum	SDRAM* 16MB, 32MB, 64MB, 128MB, 256MB X 1	None
= 512MB Maximum	SDRAM* 16MB, 32MB, 64MB, 128MB, 256MB X 1	SDRAM* 16MB, 32MB, 64MB, 128MB, 256MB X 1

* SDRAM only supports 16, 32, 64, 128, 256MB DIMM modules.

Table 1

DIMM Module Installation

Figure 3 displays the notch marks and what they should look like on your DIMM memory module.

DIMMs have 168-pins and two notches that will match with the onboard DIMM socket. DIMM modules are installed by placing the chip firmly into the socket at a 90 degree angle and pressing straight down (figure 4) until it fits tightly into the DIMM socket (figure 5).

LEFT KEY ZONE
(UNBUFFERED)

CENTER KEY ZONE
(3.3 V DRAM)

Figure 3

Figure 4

DIMM Module clip before installation
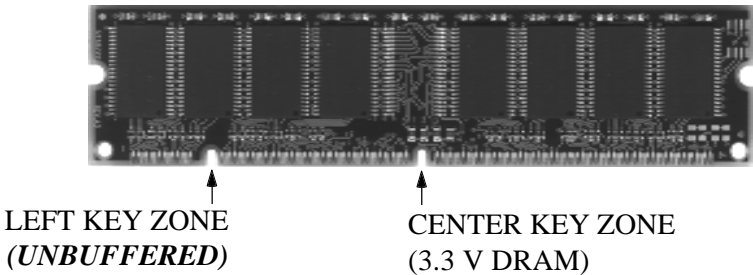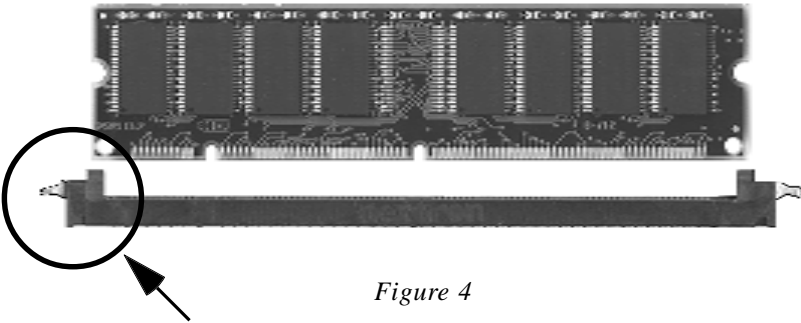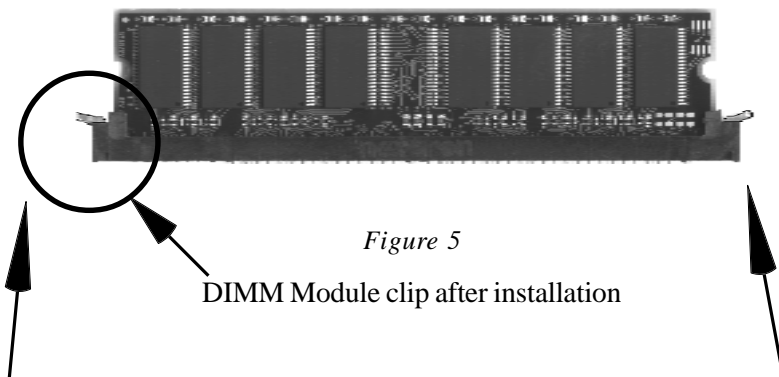
Figure 5

DIMM Module clip after installation

To remove the DIMM module simply press down both of the white clips on either side and the module will be released from the socket.

Section 3-3
Device Connectors

Please install the motherboard into the chassis.
Now that your motherboard is installed you are ready to connect all your connec-
tions (figure 6).

parallel port   *Joystick/Midi*

PS/2 Mouse   *USB port*

*PS/2
KEYBOARD*

COM1   *VGA1*   *Speaker*
                           Line_in
                                MIC
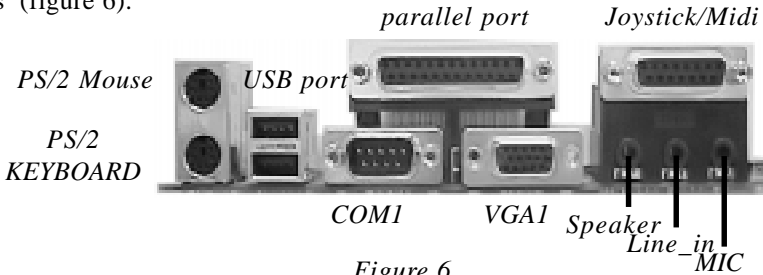
Figure 6

J2,J3:   Chassis Panel Connector
         • Keylock, Speaker, Reset, Sleep, Turbo LED and HDD LED
J4:   CPU Fan Power
         • A plug-in for the CPU Fan Power
J5:   Power Supply Fan Monitoring
         • A plug-in for the Power supply so that BIOS can monitor the RPM's
J6:   Chassis Fan Power
         • A plug-in for the chassis Fan Power
J7:   WOL (Wake On Lan) Connector
J8:   SB-LINK Connector
         • 5-PIN Header for PCI Sound Card.
PW2:   ATX Power Connector
         • 20-pin power connector
IDE1:   Primary IDE Connector
IDE2:   Secondary IDE Connector
FDD1: Floppy Controller Connector
CD-IN: CD Audio_IN Connector
         • Pin1(CD_IN_Left), Pin2/Pin3(GND), Pin4(CD_IN_Right)
AUX_IN: Auxiliary Line_IN Connector
           • Pin1(Left Line_IN), Pin2/Pin3(GND), Pin4(Right Line-IN)
MODEM_IN: Telephony Connector
              • Pin1(Audio_in), Pin2/Pin3(GND), Pin4(Mic-out to Modem)

Device Connectors (continued)

(This is connected to the power button on the case. Using the Soft-Off by Pwr-BTTN feature, you can choose either Instant Off (turns system off immediatly), or 4 sec delay (you need to hold the button down for 4 seconds before the system turns off). When the system is in 4 sec delay mode, there is a special feature to make the system to go into suspend mode when the button is pressed momentarily.)

J3   **Power On/Off**

         1
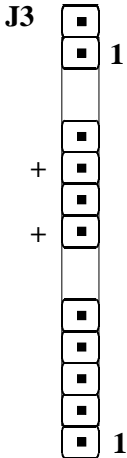
Turbo LED indicator - LED ON when higher speed is selected

+   **IDE LED indicator** - LED ON when Onboard PCI IDE Hard disks

+   is activate

IR Connector
1. VCC	4. GND
2. NC	5. IRTX
3. IRRX	

      1
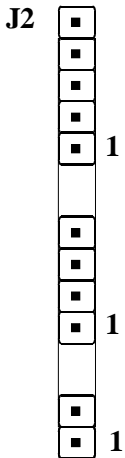
J2   **Power LED** - Power LED connector
1. Power LED(+)	4. KeyLock
2. N/C	5. GND
3. GND	

      1

Speaker - Connect to the system's speaker for beeping
1. Speaker	3. GND
2. N/C	4. GND

      1

Reset - Closed to restart system.

      1

Section 3-4
External Modem Ring-in Power ON and Keyboard Power ON Functions (KBPO)

On the basis of bounded functions in I/O chipset, the two serial ports are able to support the External Modem Ring-in Power ON function. Once users connect the external modem to COM1 or COM2, the EP-3WXA/4/4Y mainboard allows users to turn on their system through the remote and host's dial-up control.

Exclusive Keyboard Power ON Function

To innovate a unique feature to benefit users, we devoted the easiest and most convenient way to turn on your system based on the the ATX power supply.

How to work with it

Step 1: Please check JP13 at the position 1-2 after you finished the system installation.

JP13 1 *Keyboard Power-ON Function Selection*
1-2 : Enabled
3 *2-3 : Disabled (Default)*

Step 2: Push the momentary switch (J3 PW-ON) to turn on your system and then push again to hold for more than 4 seconds to turn it off affter counting memory as soon as you turn it on.

Step 3: You can enjoy the Keyboard Power ON function (KBPO) by *pressing any 1 key, Hot key (Ctrl-F1, F2.....F12), Password (A maximum of 5 charac ters can be entered.) and BUTTON only to turn on your system. Please refer to the BIOS Integrated peripherals setup for detail (Page 4-23).The BIOS Default is keyboard Hot key <Ctrl> - <F1> to turn on the system*. Your system will be turned on automatically, after releasing the keys. To power off you system, you can use the Soft-OFF function under Windows 95.

Notes:

1. Intel ATX version 2.0 specification has recommended you use the power supply with 1.0A in 5.0VSB. With our EP-3WXA/4/4Y mainboard, *the 5.0VSB standby power only has to be > = 0.1A (100mA)* then you can enjoy this unique benefit. However, the ATX power supply which is < 0.1 (100mA) is still applicable to your system by placed JP13 at the position 2-3 to disable this feature.

2. We recommended you use the power supply with 1.0A in 5.0VSB. Because this supported PCI 2.1 specification for remote power-on and wake-up function.

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Section 4
BIOS SETUP

Main Menu

Once you enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

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Standard CMOS Feature	Frequency/Voltage Control
Advanced BIOS Feature	Load Fail-Safe Defaults
Advanced Chipset Feature	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving

Esc : Quit	↑↓ ← → : Select Item
F10 : Save & Exit Setup	

Time, Date, Hard Disk Type….

Note that a brief description of each highlighted selection appears at the bottom of the screen.

Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

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

This item is only show the system health status (include Voltage, Fan speed, CPU temperature...)

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.

Supervisor / User Password

Use this menu to set User and Supervisor Passwords.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Save

Abandon all CMOS value changes and exit setup.

4-1 Standard CMOS Setup

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.

.
Standard CMOS Features

```
   Date:                Mon, Feb 8 1999                Item Help
   Time:                16:19:20          _____

➢  IDE Primary Master     2557 MB        Menu Level    ➢
➢  IDE Primary Slave      None
➢  IDE Secondary Master   None           Change the day,  month,
➢  IDE Secondary Slave    None           year and century

   Drive A               1.44M, 3.5 in.
      None

   Video                 EGA/VGA
   Halt On                All Errors

   Based Memory               640K
   Extended Memory          64512K
   Total Memory             65536K
```

↑↓←→Move   Enter: Select   +/-/PU/PD: Value   F10:Save   ESC: Exit   F1:General Help
F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

Figure 1: The Main Menu

Main Menu Selections

This table shows the selections that you can make on the Main Menu

Item	Options	Description
Date	Month DD YYYY	Set the system date. Note that the 'Day' automatically hanges 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 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
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 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.

Figure 2 shows the IDE primary master sub menu.

CMOS Setup Utility – Copyright © 1984-1998　Award Software
IDE Primary Master

```
IDE HDD Auto-Detection        Press Enter        Item Help

                                                 Menu Level    ➢➢
IDE Primary Master            Auto 2557 MB
Access Mode                   Auto
                                                 To auto-detect the HDD's size,
Cylinder                      4956               head... on this channel
Head                            16
Precomp                          0
Landing Zone                  4955
Sector                          63
```

↑↓←→Move　　Enter: Select　　+/-/PU/PD: Value　　F10:Save　　ESC: Exit　　F1:General Help
　　　　F5:Previous Values　　F6:Fail-safe defaults　　　　F7:Optimized Defaults

Figure 2 IDE Primary Master sub menu

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
IIDE 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
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
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 1 Hard disk selections

4-2 Advanced BIOS Features

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.

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Advanced BIOS Features

Virus Warning	Enabled	Item Help
CPU Internal Cache	Enabled	
External Cache	Enabled	
CPU L2 Cache ECC Checking	Enabled	Menu Level ➢
Quick Power On Self Test	Enabled	
First Boot device	Floppy	Allows you to choose the VIRUS warning
Second Boot device	HDD-0	feature for IDE Hard Disk boot sector
Third Boot device	Floppy	protection. If this function is
Boot other device	Disabled	enabled and someone attempt to write
Swap Floppy Drive	Disabled	data into this area, BIOS will show a
Boot Up Floppy Seek	Disabled	warning message on screen and alarm
Boot Up NumLock Status	Off	beep
Gate A20 Option	Normal	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
OS Select For DRAM > 64MB	Non-OS2	
Report NO FDD For Win 95	No	

↑↓←→Move   Enter: Select   +/-/PU/PD: Value   F10:Save   ESC: Exit   F1:General Help
F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

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.

CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled: Enable cache

Disabled: Disable cache

CPU L2 Cache ECC Checking

This item allows you to enable/disable CPU L2 Cache ECC checking.

The choice: Enabled, Disabled.

Quick Power On Self Test

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

Enabled: Enable quick POST

Disabled: Normal POST

First/Second/Third/Other Boot Device

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

The Choice: Floppy, LS/ZIP, HDD, SCSI, CDROM, Disabled.

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: Enabled/Disabled.

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 GateA20

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.*

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.

Report No FDD For Win 95

Whether report no FDD for Win 95 or not.

The choice: Yes, No.

4-3 Advanced Chipset Features

```
                 CMOS Setup Utility – Copyright © 1984 – 1998   Award Software
                                  Advanced Chipset Features
┌─────────────────────────────────────────────┬──────────────────────────┐
│ SDRAM CAS Latency Time      3                │       Item Help          │
│ SDRAM Cycle Time Tras/Trc   6/8              │                          │
│ SDRAM RAS-to-CAS Delay      2                │ Menu Level    ➢          │
│ SDRAM RAS Precharge Time    2                │                          │
│ System BIOS Cacheable       Enabled          │                          │
│ Video BIOS Cacheable        Enabled          │                          │
│ Memory Hole At 15M-16M      Enabled          │                          │
│ Delay Transaction           Disabled         │                          │
│ On-Chip Video Window Size   64MB             │                          │
│ * Onboard Display Cache Setting *            │                          │
│   CAS# Latency              3                │                          │
│   Paging Mode Control       Close            │                          │
│   RAS-to-CAS Override       by CAS# LT       │                          │
│   RAS# Timing               Slow             │                          │
│   RAS# Precharge Timing     Slow             │                          │
│                                              │                          │
│                                              │                          │
│                                              │                          │
├─────────────────────────────────────────────┴──────────────────────────┤
│ ↑↓←→Move   Enter: Select  +/-/PU/PD: Value  F10:Save  ESC: Exit  F1:General Help │
│      F5:Previous Values    F6:Fail-safe defaults     F7:Optimized Defaults       │
└─────────────────────────────────────────────────────────────────────────┘
```

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.

DRAM Settings

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.

SDRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.

The Choice: 2, 3

SDRAM Cycle Time Tras/Trc

Select the number of SCLKs for an access cycle.

The Choice: 5/7, 6/8.

SDRAM RAS-to-CAS Delay

This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

The Choice: 2, 3.

SDRAM RAS Precharge Time

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

The Choice: 2, 3.

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.

Video BIOS Cacheable

Select Enabled allows caching of the video BIOS , resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The Choice: Enabled, Disabled.

Memory Hole At 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use

this area of system memory usually discusses their memory requirements.
The Choice: Enabled, Disabled.

Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transac-
tions cycles. Select *Enabled* to support compliance with PCI specification
version 2.1.
The Choice: Enabled, Disabled.

On-Chip Video Window Size

Select the on-chip video window size for VGA drive use.
The Choice: 32MB, 64MB, Disabled.

Onboard Display Cache Setting (Optional for 82810-DC100 only)

Setting the onboard display cache timing.

CAS # Latency

Select the local memory clock periods.
The Choice: 2, 3

Paging Mode Control

Select the paging mode control.
The Choice: Close, Open.

RAS-to-CAS Override

Select the display cache clock periods control.
The Choice: by CAS# LT, Override(2).

RAS# Timing

This item controls RAS# active to Protegra, and refresh to RAS# active delay (in
local memory clocks).
The Choice: Fast, Slow.

RAS# Precharge Timing

This item controls RAS# precharge (in local memory clocks).
The choice: Fast, Slow.

4-4 Integrated Peripherals

CMOS Setup Utility – Copyright © 1984 – 1998   Award Software
Integrated Peripherals

```
 OnChip Primary   PCI IDE      Enabled          Item Help
 OnChip Secondary PCI IDE      Enabled    _____
 IDE Primary Master PIO        Auto       Menu Level    ➢
 IDE Primary Slave  PIO        Auto       If your IDE hard drive supports block
 IDE Secondary Master  PIO     Auto       mode select Enabled for automatic
 IDE Secondary Slave   PIO     Auto       detection of the optimal number of
 IDE Primary Master UDMA       Auto       block read/write per sector the drive
 IDE Primary Slave  UDMA       Auto       can support
 IDE Secondary Master  UDMA    Auto
 IDE Secondary Slave   UDMA    Auto
 USB Controller                Enabled
 USB Keyboard Support          Disabled
 Init Display First            PCI Slot
 AC97 Audio                    Enabled
 AC97 Modem                    Enabled
 IDE HDD Block Mode            Enabled
 Onboard FDC Controller        Enabled
 Onboard Serial Port 1         3F8/IRQ4
 Onboard Serial Port 2         2F8/IRQ3
```

↑↓←→ Move   Enter: Select   +/-/PU/PD: Value   F10:Save   ESC: Exit   F1:General Help
F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

OnChip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.

The choice: Enabled, Disabled.

IDE 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, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33 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/33, select Auto to enable BIOS support.

The Choice: Auto, Disabled.

USB Controller

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

The choice: Enabled, Disabled.

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.

Init Display First

This item allows you to decide to active whether PCI Slot or on-chip VGA first

The choice: PCI Slot, Onboard .

AC97 Audio/Modem

This item allows you to decide to enable/disable the 810 chipset family to support AC97 Audio/Modem.

"AC97 Audio" function must be set "Enable" if JP7 or JP8 is at "1-2" position; in other words, if JP7 or JP8 is at "2-3" position, then "AC97 Audio" function must be set "Disable" to come with the hardware setting.

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

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, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART Mode Select

This filed allows the users to configure what IR mode the 2nd serial port should use.
The default is Normal.

Optional: Normal, IrDA and ASKIR.

Onboard Parallel port

This field allows the user to configure the LPT port.
The default is 378H / IRQ7.

   378H: Enable Onboard LPT port and address is 378H and IRQ7.
   278H: Enable Onboard LPT port and address is 278H and IRQ5.
   3BCH: Enable Onboard LPT port and address is 3BCH and IRQ7.
   Disabled: Disable Onboard LPT port.

Onboard Parallel Mode

This field allows the user to select the parallel port mode.
The default is ECP+EPP.

   Normal: Standard mode. IBM PC/AT Compatible bidirectional parallel   port.
   EPP: Enhanced Parallel Port mode.
   ECP: Extended Capabilities Port mode.
   EPP+ECP: ECP Mode & EPP Mode.

ECP Mode USE DMA

This field allows the user to select DMA1 or DMA3 for the ECP mode.
The default is DMA3.

   DMA1:   This field selects the routing of DMA1 for the ECP mode.
   DMA3:   This field selects the routing of DMA3 for the ECP mode.

Game Port Address

Select an address for the Game port.
The choice: 201, 209, Disabled.

Mida Port Address

Select an address for the Mida port.
The choice: 300, 330, Disabled.

Midi Port IRQ

Select an interrupt for the Mida port.
The choice: 5, 7.

4-5 Power Management Setup

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

```
              CMOS Setup Utility – Copyright © 1984 – 1998   Award Software
                               Power Management Setup
┌──────────────────────────────────────────────┬──────────────────────────────┐
│  ACPI function             Enabled            │        Item Help             │
│  Power Management          User Define        │                              │
│  Video Off Method          V/H SYNC_Blank     │  Menu Level      ➤           │
│  Video Off In Suspend      Suspend -> Off     │                              │
│  Suspend Type              Stop Grant         │                              │
│  MODEM Use IRQ             3                  │                              │
│  Soft-Off by PWRBTN        Instant-off        │                              │
│  CPU THRM-Throttling       50.0%             │                              │
│  Resume by Alarm           Disabled           │                              │
│                                               │                              │
│   ** Reload Global Timer Events **            │                              │
│  Primary IDE 0             Disabled           │                              │
│  Primary IDE 1             Disabled           │                              │
│  Secondary  IDE 0          Disabled           │                              │
│  Secondary  IDE 1          Disabled           │                              │
│  FDD, COM, LPT Port        Disabled           │                              │
│  PCI PIRQ [A-D]#           Disabled           │                              │
├──────────────────────────────────────────────┴──────────────────────────────┤
│ ↑↓←→Move   Enter: Select   +/-/PU/PD: Value   F10:Save   ESC: Exit   F1:General Help │
│       F5:Previous Values      F6:Fail-safe defaults       F7:Optimized Defaults      │
└──────────────────────────────────────────────────────────────────────────────┘
```

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. Doze Mode

3. Suspend Mode

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

Disable (default)	No power management.　Disables all four modes
Min. Power Saving	Minimum power management.　Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- **ONLY AVAILABLE FOR SL CPU's**.　Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually.　When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

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	Initial display power management signaling.

Video Off In Suspend

This determines the manner in which the monitor is blanked.
The choice: Yes, No.

Suspend Type

Select the Suspend Type.
The choice: PWRON Suspend, Stop Grant.

MODEM Use IRQ

This determines the IRQ in which the MODEM can use.
The choice: 3, 4, 5, 7, 9, 10, 11, NA.

Suspend Mode

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

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: Enabled, Disabled.

Soft-Off by PWRBTN

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.

CPU THRM-Throttling

Select the CPU THRM-Throttling rate.

The choice: 25.0%, 37.5%, 50.0%, 62.5%, 75.0%, 87.5%.

Resume by Alarm

This option allows you to have the system turn on at a present time each day or on a certain day.

The choice: Disabled, Enabled.

** *PM Events* **

PM events are I/O 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 IDE 0**
> **Primary IDE 1**
> **Secondary IDE 0**
> **Secondary IDE 1**
> **FDD, COM, LPT Port**
> **PCI PIRQ[A-D] #**

4-6 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, 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.

```
                 CMOS Setup Utility – Copyright © 1984-1998 Award Software
                                  PnP/PCI Configurations
┌─────────────────────────────────────────────┬────────────────────────────────┐
│    PnP OS Installed            No             │        Item Help               │
│    Reset Configuration Data    Disabled       │ ------------------------       │
│                                               │ Menu Level      ➢              │
│    Resources Controlled By     Manual         │                                │
│ ➢ IRQ Resources                Press Enter    │ Default is Disabled.  Select   │
│ ➢ DMA Resources                Press Enter    │ Enabled to reset Extended System│
│ ➢ Memory Resources             Press Enter    │ Configuration Data(ESCD) when you│
│                                               │ exit Setup if you have installed│
│    PCI/VGA Palette Snoop       Disabled       │ a new add-on and the system    │
│                                               │ reconfiguration has caused such a│
│                                               │ serious conflict that the OS   │
│                                               │ cannot boot                    │
│                                               │                                │
│                                               │                                │
│                                               │                                │
│                                               │                                │
├─────────────────────────────────────────────┴────────────────────────────────┤
│ ↑↓←→Move   Enter: Select   +/-/PU/PD: Value  F10:Save   ESC: Exit   F1:General Help│
│       F5:Previous Values      F6:Fail-safe defaults       F7:Optimized Defaults│
└───────────────────────────────────────────────────────────────────────────────┘
```

PNP OS Installed

This item allows you to determine install PnP OS or not.
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 and the system reconfiguration has caused such a serious conflict that the operating system can not boot.
The choice: Enabled, Disabled .

Resource 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 WindowsÒ95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "Ø"). The choice: Auto(ESCD), Manual.

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

IRQ3/4/5/7/9/10/11/12/14/15 assigned to

This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.
 The Choice: *Legacy ISA* and *PCI/ISA PnP*.

DMA Resources

When resources are controlled manually, assign each system DMA channel a type, depending on the type of device using the DM channel.

DMA 0/1/3/5/6/7 assigned to

Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.
Choices are *Legacy ISA* and *PCI/ISA PnP*.

Memory Resources

This sub menu can let you control the memory resource.

Reserved Memory Base

Reserved a low memory for the legacy device(non-PnP device).
Choices are C800, CC00, D000, D800, DC00, D400, N/A.

Reserved Memory Length

Reserved a low memory length for the legacy device(non-PnP device).
Choices are 8K, 16K, 32K, 64K.

PCI/VGA Palette Snoop

Leave this field at *Disabled*.

Choices are Enabled, Disabled.

4-7 PC Health Status

CMOS Setup Utility – Copyright © 1984-1998 Award Software
PC Health Status

```
    CPU Warning Temperature          :70℃          Item Help
   Current System Temperature        :38℃      ------------------------
   Current System CPU1 Temperature   :50℃      Menu Level    ➤
   Current CPUFAN1 Speed             :0
   Current PWRFAN Speed              :0
   Current ChassisFAN Speed          :0
   Vcore                             :2.00V
   Vtt                               :1.50V
   Vio                               :3.36V
   +5V                               :5.16V
   +12V                              :12.28V
   -12V                              :11.90V
   -5V                               :5.20V
```

↑↓←→ Move   Enter: Select   +/-/PU/PD: Value   F10:Save   ESC: Exit   F1:General Help
F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

Current System Temp

This is the Current temperature of the system.

Current CPU Temperature

This is the current temperature of the CPU.

Current CPU FAN Speed

The current CPU fan speed in RPMs.

Current Chassis FAN Speed

The current chassis fan speed in RPMs.

CPU(V)

The voltage level of the CPU(Vio/Vcore).

Vtt, +5V, +12V, -12V, -5V: The voltage level of the switch power supply.

4-8 Frequency/Voltage Control

CMOS Setup Utility – Copyright © 1984-1998 Award Software
Frequency/Voltage Control

```
  Auto Detect DIMM/PCI CMK    Enabled             │       Item Help
   Spread Spectrum Modulated  Disabled            │ ------------------------
  CPU Speed                   266Mhz(66x4)        │ Menu Level    ➢
  CPU Ratio                   X 3                  │
   CPU Frequency              66 MHz               │
                                                   │
                                                   │
                                                   │
                                                   │
                                                   │
                                                   │
                                                   │
                                                   │
                                                   │
                                                   │
                                                   │
                                                   │
                                                   │
```

↑↓←→ Move   Enter: Select   +/-/PU/PD: Value   F10:Save   ESC: Exit   F1:General Help
F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

Auto Detect

This item allows you to enable/disable auto detect DIMM/PCI Clock.
The choice: Enabled, Disabled.

Spread Spectrum Modulated

This item allows you to enable/disable the spread spectrum modulate.
The choice: Enabled, Disabled.

CPU Speed

This item allows you to select the CPU speed.

CPU Ratio

This item allows you to select the CPU ratio.

CPU Frequency

This item allows you to select the CPU frequency.

4-9 Defaults Menu

Selecting "Defaults" from the main menu shows you two options which are described below

Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

     Load Fail-Safe Defaults (Y/N) ? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

     Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

4-10 Supervisor/User Password Setting

You can set either supervisor or user password, or both of then. 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.

4-11 Exit Selecting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

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Section 5
810 VGA and Sound Driver Installation

Easy Driver Installation

Step 1 : To Click the Intel 810 and 820 Chipset INF Files that enable the Intel(R) 810 Chipsets to be recognized by listed operating systems. This installer will unpack updated .INF files into a specified folder. Supported operating systems: Microsoft Windows* 95 OSR 2.1+ and Windows* 98 operating systems.

Step 2 : To Click the Intel 810 and 820 INF Installation Utility. This installer will install updated .INF files onto the target machine. Supported operating systems: Microsoft Windows* 95 OSR 2.1+ and Windows* 98 operating systems. This procedure will Re-start the system.

Step 3 : To Click the Intel 810 VGA Driver to installation the Graphics resolution.

Step 4 : To Click the Audio Driver/Utilities to installation the Audio Sound Driver in operating system.

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Appendix A

A-1 MEMORY MAP

Address Range	Size	Description
[00000-7FFFF]	512K	Conventional memory
[80000-9FBFF]	127K	Extended Conventional memory
[9FC00-9FFFF]	1K	Extended BIOS data area if PS/2 mouse is installed
[A0000-C7FFF]	160K	Available for Hi DOS memory
[C8000-DFFFF]	96K	Available for Hi DOS memory and adapter ROMs
[E0000-EEFFF]	60K	Available for UMB
[EF000-EFFFF]	4K	Video service routine for Monochrome & CGA adaptor
[F0000-F7FFF]	32K	BIOS CMOS setup utility
[F8000-FCFFF]	20K	BIOS runtime service routine (2)
[FD000-FDFFF]	4K	Plug and Play ESCD data area
[FE000-FFFFF]	8K	BIOS runtime service routine (1)

A-2 I/O MAP

[000-01F]	DMA controller.(Master)
[020-021]	INTERRUPT CONTROLLER.(Master)
[022-023]	CHIPSET control registers. I/O ports.
[040-05F]	TIMER control registers.
[060-06F]	KEYBOARD interface controller.(8042)
[070-07F]	RTC ports & CMOS I/O ports.
[080-09F]	DMA register.
[0A0-0BF]	INTERRUPT controller.(Slave)
[0C0-0DF]	DMA controller.(Slave)
[0F0-0FF]	MATH COPROCESSOR.
[1F0-1F8]	HARD DISK controller.
[278-27F]	PARALLEL port 2.
[2B0-2DF]	GRAPHICS adapter controller.

[2F8-2FF]	SERIAL port 2.
[360-36F]	NETWORK ports.
[378-37F]	PARALLEL port 1.
[3B0-3BF]	MONOCHROME & PARALLEL port adapter.
[3C0-3CF]	EGA adapter.
[3D0-3DF]	CGA adapter.
[3F0-3F7]	FLOPPY DISK controller.
[3F8-3FF]	SERIAL port 1.

A-3 TIMER & DMA CHANNELS MAP

TIMER MAP:

TIMER Channel 0	System timer interrupt.
TIMER Channel 1	DRAM REFRESH request.
TIMER Channel 2	SPEAKER tone generator.

DMA CHANNELS:

DMA Channel 0	Available.
DMA Channel 1	Onboard ECP (Option).
DMA Channel 2	FLOPPY DISK (SMC CHIP).
DMA Channel 3	Onboard ECP (default).
DMA Channel 4	Cascade for DMA controller 1.
DMA Channel 5	Available.
DMA Channel 6	Available.
DMA Channel 7	Available

A-4 INTERRUPT MAP

NMI :

Parity check error.

IRQ (H/W):

0	System TIMER interrupt from TIMER 0.
1	KEYBOARD output buffer full.
2	Cascade for IRQ 8-15.
3	SERIAL port 2.
4	SERIAL port 1.
5	PARALLEL port 2.

6   FLOPPY DISK (SMC CHIP).
7   PARALLEL port 1.
8   RTC clock.
9   Available.
10   Available.
11   Available.
12   PS/2 Mouse.
13   MATH coprocessor.
14   Onboard HARD DISK (IDE1) channel.
15   Onboard HARD DISK (IDE1) channel.

A-5 RTC & CMOS RAM MAP

RTC & CMOS:
00   Seconds.
01   Second alarm.
02   Minutes.
03   Minutes alarm.
04   Hours.
05   Hours alarm.
06   Day of week.
07   Day of month.
08   Month.
09   Year.
0A   Status register A.
0B   Status register B.
0C   Status register C.
0D   Status register D.
0E   Diagnostic status byte.
0F   Shutdown byte.
10   FLOPPY DISK drive type byte.
11   Reserve.
12   HARD DISK type byte.
13   Reserve.
14   Equipment type.
15   Base memory low byte.

16   Base memory high byte.

17   Extension memory low byte.

18   Extension memory high byte.

19-2d

2E-2F

30   Reserved for extension memory low byte.

31   Reserved for extension memory high byte.

32   DATE CENTURY byte.

33   INFORMATION FLAG.

34-3F   Reserve.

40-7F   Reserved for CHIPSET SETTING DATA.

Appendix B

B-1 POST CODES

For BIOS 6.0 Code

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.
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 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 PURIOUS_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	1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute.
	2. Load CMOS settings into BIOS stack. If CMOS

checksum fails, use default value instead.

3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information.

4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots.

5. Early PCI initialization:
   - Enumerate PCI bus number
   - Assign memory & I/O resource
   - Search for a valid VGA device & VGA BIOS, and put it into C000:0.

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
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.
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_Onbaord_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) 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:
	◆Clear EPA or customization logo.
80h	Reserved
81h	Reserved

E8POST.ASM   starts

82h	1. Call chipset power management hook.
	2. Recover the text fond 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
	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	1. Enable L2 cache
	2. Program boot up speed
	3. Chipset final initialization.
	4. Power management final initialization
	5. Clear screen & display summary table
	6. Program K6 write allocation
	7. Program P6 class write combining
95h	1. Program daylight saving
	2. Update keyboard LED & typematic rate
96h	1. Build MP table
	2. Build & update ESCD
	3. Set CMOS century to 20h or 19h
	4. Load CMOS time into DOS timer tick
	5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)

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Appendix C

NOTE:
The "**LOAD Optimized DEFAULTS**" function loads the system default data directly from ROM and initializes the associated hardware properly. This function will be necessary when you accept this mainboard, or the system CMOS data is corrupted.

CMOS Setup Utility - Copyright (C)   1984-1998

Standard CMOS Feature	Frequency/Voltage Control
Advanced BIOS Feature	Load Fail-Safe Defaults
Advanced Chipset Feature	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management S	Load Optimized Defaults (Y/N)? Y
PnP/PCI Configuratio	
PC Health Status	Exit Without Saving
Esc : Quit	↑ ↓ ← → : Select Item
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type….	

LOAD Optimized DEFAULTS

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