EP-V370Y

A Mendocino® Socket 370 Processor based AGP mainboard (100/66MHz)

Manual Revision 1.0
February 2, 1999

Technical Support Services

If you need additional information, help during installation or normal use of this product, please contact your retailer. If your retailer can not help, you may E-Mail us with any questions at the following address tech@epox.com

Record your serial number before installing your EP-V370Y mainboard. (the serial number is located near the ISA slots at the edge of the board)

EPoX EP-V370Y serial number:

_____

BIOS Upgrades

Please use either our Web Site for current BIOS Upgrades.

Internet Access

http://www.epox.com
sales@epox.com
tech@epox.com

Thank you for using EPoX mainboards!

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The product name and revision number are both printed on the mainboard itself.

Handling Procedures

Static electricity can severely damage your equipment. Handle the EP-V370Y and any other device in your system with care and avoid unneccessary contact with system components on the mainboard.

Always work on an antistatic surface to avoid possible damage to the motherboard from static discharge.

We assume no responsibility for any damage to the EP-V370Y mainboard that results from failure to follow installation instructions or failure to observe safety precautions.

	CAUTION	
	The EP-V370Y mainboard is subject to damage by static electricity. Always observe the handling procedures.	

Table of Contents

Section 1
INTRODUCTION

Components Checklist

✓   A.   (1)   EP-V370Y mainboard

✓   B.   (1)   EP-V370Y user's manual

✓   C.   (1)   Floppy ribbon cable

✓   D.   (1)   Hard drive ribbon cables

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

✓   F   (1)   Bus master drivers

           (1)   USDM

           (1)   PCI Sound drivers

USERS MANUAL EP-V370Y

A   B   C   D   E

or

F
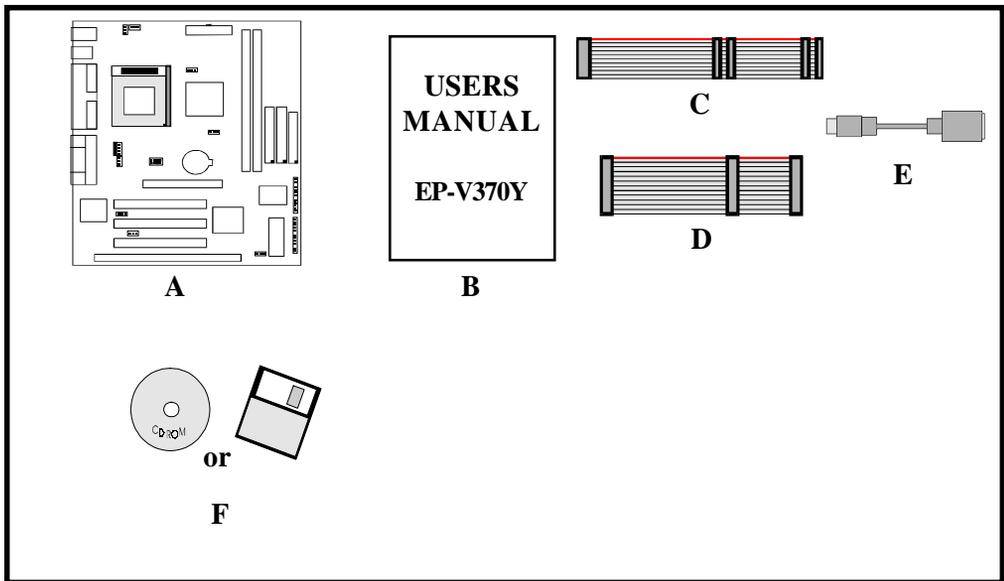
EP-V370Y Form-Factor

The EP-V370Y is designed with MicroATX form factor - the new industry standard of chassis. The MicroATX 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. MicroATX 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, joystick, 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.
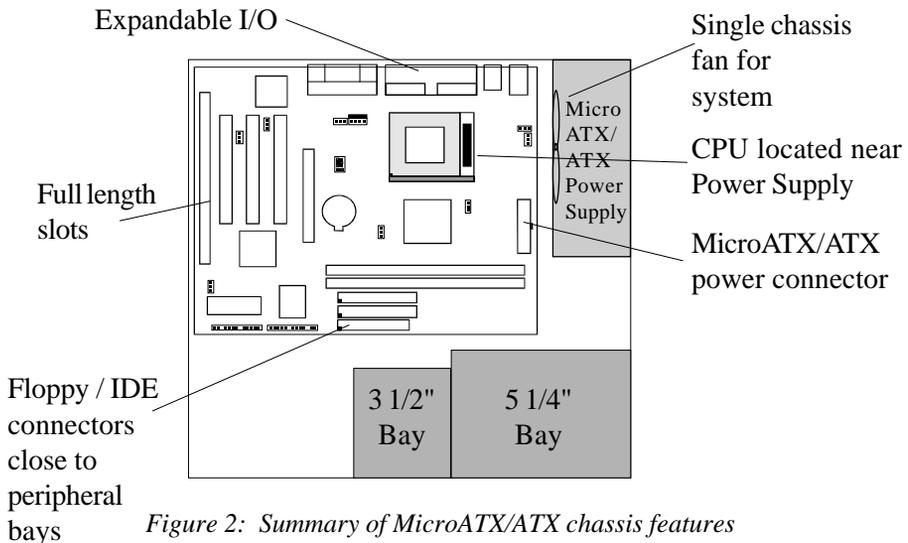
Figure 2: Summary of MicroATX/ATX chassis features

I/O Shield Connector

The EP-V370Y is equipped with an I/O back panel. Please use the appropriate I/O shield (figure 3).

PS/2 Mouse

PS/2 KEYBOARD

USB port

parallel port

Joystick/Midi port

COM1   *COM2*   *Speaker*
Line_in
MIC
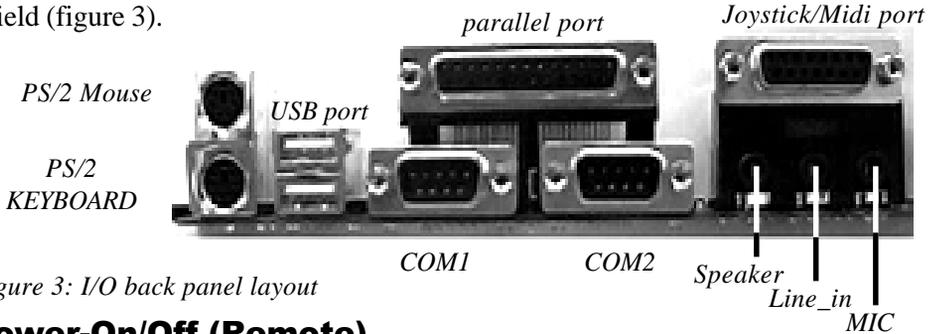
Figure 3: I/O back panel layout

Power-On/Off (Remote)

The EP-V370Y has a single 20-pin connector for MicroATX power supplies. For MicroATX/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-V370Y 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-V370Y'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

MicroATX POWER SUPPLY
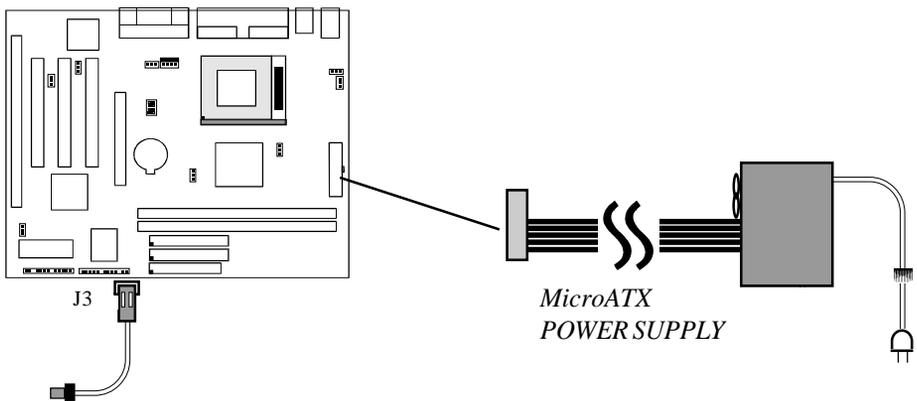
EP-V370Y Board

Case (chassis) Power ON/OFF button

Figure 4: Simple MicroATX/ATX Power ON/OFF Controller

System Block Diagram

Mendocino®
socket 370
Processor

100/66MHz

66MHz
AGP Bus

AGP Slot

PAC
PCI Bridge
and memory
controller
VT82C693

MA [0:13]
MD [0:63]
MPE [0:7]

100/66MHz

PCI
Sound

AC
97

Graphic
Video

PCI Slots

VT82C596A
I/O Bridge

CD-Rom

USB 0 USB 1

HDD

ISA Slots

BIOS
Flash Memory

Serial Port 1
Serial Port 2
LPT Port
PS/2 Mouse
PS/2 Keyboard

Winbond
83C977

Figure 5: System Block Diagram

Section 2
FEATURES

EP-V370Y Features:

- EP-V370Y is based on the Mendocino® Processor operating at 300 ~ 433MHz (66MHz) on PPGA 370 socket. The board is configured by a Jumper to match your CPU clock speed.

- Designed with VIA APOLLO PRO+ 693/596A AGPset.

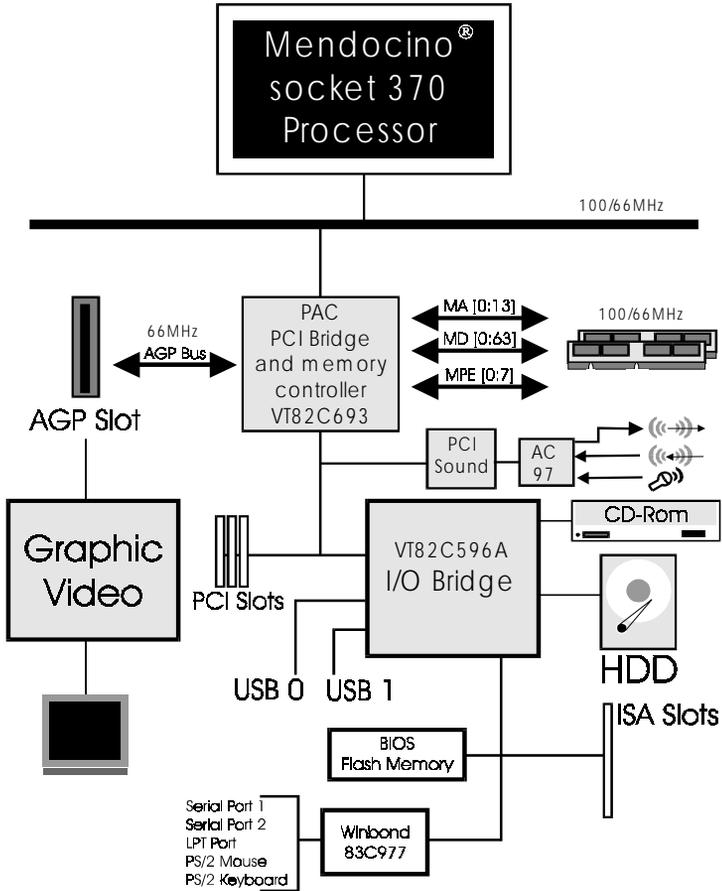- Supports up to 256 Mega of DRAM (minimum of 16 MB) on board, You can use 168-pin DIMM x 2. It will automatically detect Extended Data Output (EDO) DRAM or Synchronous DRAM memory (SDRAM) at 66MHz (please see Section 3-2).

- EP-V370Y will support Error Checking and Correcting (ECC) when using paritys DRAM memory modules. No Reqistered DIMM Support.

- Supports (1) 16 bit ISA slots, (3) 32 bit PCI slots, (1) AGP slot and provides (2) independent high performance PCI IDE interfaces capable of supporting PIO Mode 3/4 and Ultra DMA 33 devices. The EP-V370Y supports (3) 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 W83977EF Multi I/O: (1) floppy port, (1) parallel port (EPP, ECP), and (2) serial ports (16550 Fast UART).
  Note: Japanese "Floppy 3 mode" is also supported

- Includes a PS/2 mouse connector.

- Allows use of a PS/2 keyboard.

- Features Award Plug & Play BIOS. With Flash Memory you can always upgrade to the current BIOS as they are released. (http://www.epox.com please visit our Technical Support section for the latest updates)

- EP-V370Y utilizes a Lithium battery which provides environmental protec

    tion and longer battery life.

- Supports the Universal Serial Bus (USB) connector. The onboard PIIX4E chip provides the means for connecting PC peripherals such as; keyboards, joysticks, telephones, and modems.

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

- Software power-down when using Windows® 95.

- 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.

- Power Loss Recovery - In the event of a power outtage your system will automatically turn itself back on without user intervention.

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

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

- Supports USDM software to offer motherboard various status on Windows® 95/98.

- Supports the CPU 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.

- Built-in YAMAHA YMF740 PCI Sound Onboard.

- Ture Full Duplex playback and Capture with different Sampling Rate.

- Maximum 32-voice XG captital Wave table

- Synthesizer including GM Compatibility.

- Supports OPL3, Sound Blaster Pro, MPU401 UART mode and Joystick function.

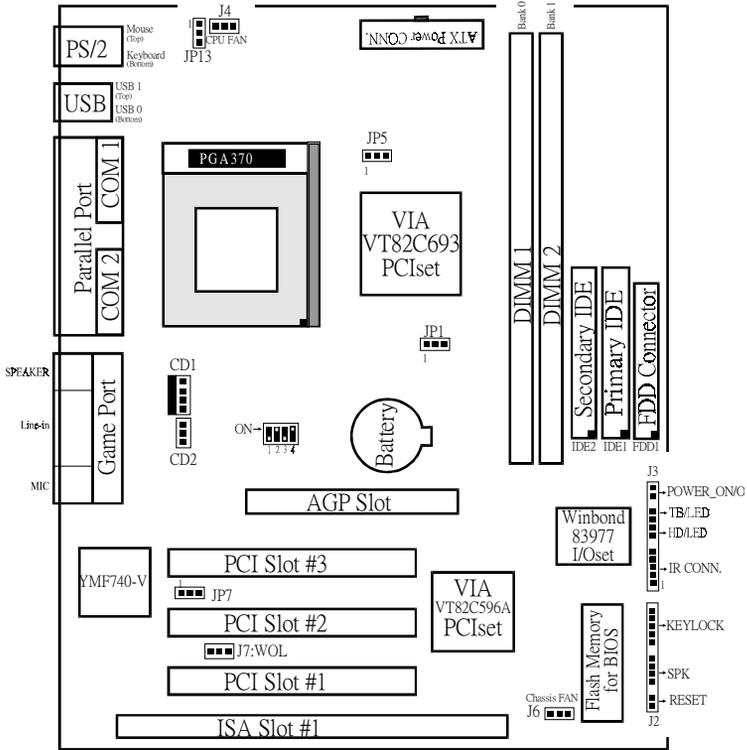# Section 3
INSTALLATION

EP-V370Y Detailed Layout

Figure 6

Easy Installation Procedure

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

3-1. **Configure Jumpers to match your hardware**
3-2. **Install memory chips**
3-3. **Device Connectors**
3.4 **External Modem Ring-in Power ON and Keyboard Power ON**
 Functions (KBPO)

Section 3-1
Configure Jumpers

EPoX 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 6) in their correct physical orientation.

JP1
CMOS Clear
JP1 = 1-2 - Run Mode (Default)
= 2-3 - Clear CMOS (momentarily)

JP5
CPU HOST Frequency
1-2 : AUTO (66MHz/100MHz) (Default)
2-3 : 100MHz *
* : RSD (Reserved)

JP7
PCI Sound (Onboard Sound Chip)
JP7 = 1-2 - Enabled PCI Sound (Default)
= 2-3 - Disabled PCI Sound

JP13
Keyboard Power-ON function (refer to the section 3-4)
JP13 = 1-2 - Enabled
= 2-3 - Disabled(Default)

J7
WOL (Wake On Lan) Connector
Reserved for NIC (Network Interface Card) to
Wake the System.

ON → 1 2 3 4
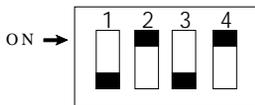
SW1				CPU	
RATIO	1	2	3	4	66MHz	100MHz
3X **	ON		ON	ON	200 *	300 *
3.5X **	ON			ON	233	350 *
4X **		ON	ON	ON	266	400 *
4.5X **		ON		ON	300	450 *
5X **			ON	ON	333	500 *
5.5X **				ON	366	550 *
6X **	ON	ON	ON		400	600 *
6.5X **	ON	ON			433	650 *
7X **	ON		ON		466 *	700 *

* :RSD (Reserved)
**:If CPU fixed the Ratio, than SW1 is No function.

Section 3-2
System Memory Configuration

Memory Layout

The EP-ZX370A supports (2) 168-pin DIMMs (Dual In-line Memory Module). The DIMMs can be either EDO (Extended Data Out) or SDRAM (Synchronized DRAM). The DIMMs may be installed using just one chip.

- **We recommend using SDRAM DIMM can not mixing with EDO DIMM modules.**
- The EDO DIMM only support Mendocino® PPGA370 Processor at 66MHz.
- DIMM SDRAM may be 83MHz (-12ns), 100MHz (-10ns) or 125MHz (-8ns) bus speed.
- Maximum of 2 DIMM sockets (256MB memory).
- No Registered DIMM support.

Figure 2 and Table 1 show several possible memory configurations using
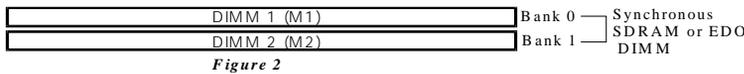
```
┌─────────────────────────────────────┐  Bank 0 ── Synchronous
│          DIMM 1 (M1)                 │            SDRAM or EDO
├─────────────────────────────────────┤  Bank 1 ── DIMM
│          DIMM 2 (M2)                 │
└─────────────────────────────────────┘
              Figure 2
```

Total Memory	DIMM 1 (Bank 0)	DIMM 2 (Bank 1)
= 256MB Maximum	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB X 1	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MB X 1
= 128MB Maximum	EDO/SDRAM* 8MB, 16MB, 32MB, 64MB, 128MBX 1	None

Table 1

SDRAM only supports 8, 16, 32, 64, 128MB DIMM modules.

DIMM Module Installation

Figure 7 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 8) until it fits tightly into the DIMM socket (figure 9).

LEFT KEY ZONE
(UNBUFFERED)

CENTER KEY ZONE
(3.3 V DRAM)
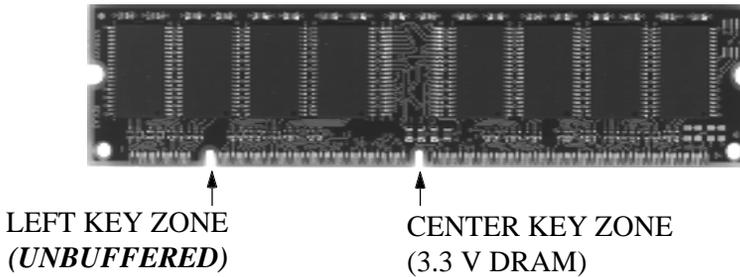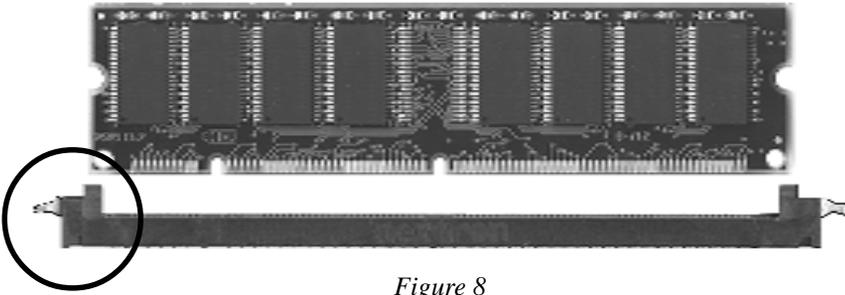
Figure 7

Figure 8

DIMM Module clip before installation
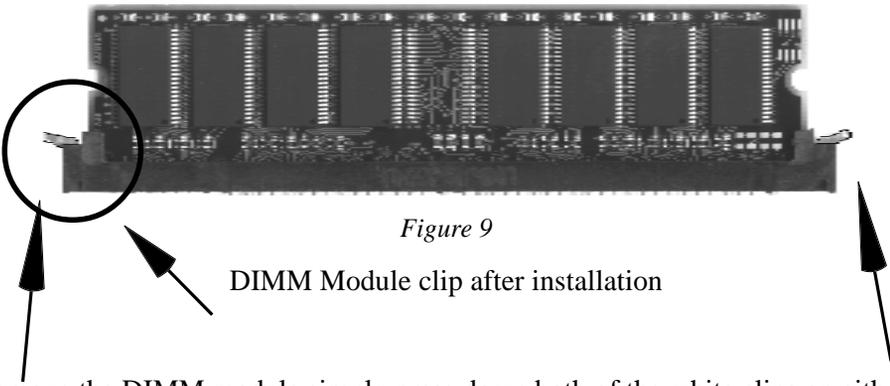
Figure 9

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 connections (figure 14).

parallel port   *Joystic/Midi port*

PS/2 Mouse   *USB port*

*PS/2
KEYBOARD*

COM1   *COM2*   *Speaker*
                                  Line_in
                                       MIC
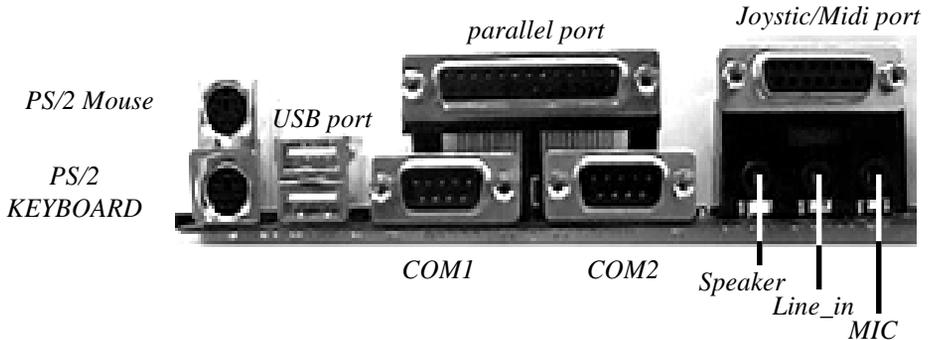
Figure 14

J4:   CPU Fan Power
   • A plug-in for the CPU Fan Power
J6:   Chassis Fan Power
   • A plug-in for the chassis Fan Power
J7:   WOL (Wake On Lan) Connector
PW2: ATX Power Connector
   • 20-pin power connector
J2,J3:Chassis Panel Connector
   • Keylock, Speaker, Reset, Sleep, Turbo LED and HDD LED
IDE1:Primary IDE Connector
IDE2:Secondary IDE Connector
FDD1:Floppy Controller Connector

Section 3-3
Device Connectors (continued)

J2   ▪ **1**   **Reset** - Closed to restart system.
         ▪

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

         ▪   **KeyLock** - Keyboard lock switch & Power LED connector
         ▪   1. Power LED(+) 4. Keylock
         ▪   2. N/C   5. GND
         ▪   3. GND   * The power LED lights when the
         ▪   system is powered on and blinks in
                                             SLEEP MODE (Suspend mode).

J3   ▪ **1**   **IR Connector**
         ▪   1. VCC   4. GND
         ▪   2. NC   5. IRTX
         ▪   3. IRRX
         ▪
         ▪

      + ▪   **IDE LED indicator** - LED ON when Onboard PCI IDE Hard disks is
         ▪   activate
      + ▪   **Turbo LED indicator** - LED ON when higher speed is selected
         ▪

         ▪   **Power On/Off -** 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.

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-V370Y 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 characters can be entered.) and BUTTON only to turn on your system. Please refer to the BIOS Integrated peripherals setup for detail (Page 4-19). 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 0.72A(720mA) in 5.0VSB. With our EP-V370Y 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.

Section 4
AWARD BIOS SETUP

BIOS Instructions

Award's ROM BIOS provides a built-in Setup program which allows user to modify the basic system configuration and hardware parameters. The modified data will be stored in a battery-backed CMOS, so that data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM will stay un-changed unless there is a configuration change in the system, such as hard drive replacement or a device is added.

It is possible for the CMOS battery to fail, this will cause data loss in the CMOS only. If this does happen you will need to reconfigure your BIOS settings.

To enter the Setup Program :

Power on the computer and press the <Del> key immediately, this will bring you into the BIOS CMOS SETUP UTILITY.

ROM PCI / ISA BIOS (2A6LFPAE)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	SUPERVISOR PASSWORD
BIOS FEATURES SETUP	USER PASSWORD
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	HDD LOW LEVEL FORMAT
PNP/PCI CONFIGURATION	SAVE & EXIT SETUP
INTEGRATED PERIPHERALS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	

ESC : QUIT   ↑ ↓ → ← : SELECT ITEM
F10 : Save & Exit Setup   (Shift)F2 : Change Color

Time, Date, Hard Disk Type...

Figure 1: CMOS Setup Utility

The menu displays all the major selection items. Select the item you need to reconfigure. The selection is made by moving the cursor (press any direction key) to the item and pressing the 'Enter' key. An on-line help message is displayed at the bottom of the screen as the cursor is moved to various items which provides a better understanding of each function. When a selection is made, the menu of the selected item will appear so that the user can modify associated configuration parameters.

4-1 Standard CMOS Setup

Choose "Standard CMOS Setup" in the CMOS SETUP UTILITY Menu (Figure 2). The Standard CMOS Setup allows the user to configure system settings such as the current date and time, type of hard disk drive installed, floppy drive type, and display type. Memory size is auto-detected by the BIOS and displayed for your reference. When a field is highlighted (use direction keys to move the cursor and the <Enter> key to select), the entries in the field can be changed by pressing the <PgDn> or the <PgUp> key.

```
                          ROM PCI/ISA BIOS(2A6LFPAE)
                             STANDARD CMOS SETUP
                            AWARD SOFTWARE, INC.
```

Date (mm:dd:yy) : Wed, Apr 17 1996								
Time (hh:mm:ss) : 14 : 30 : 50								
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZONE	SECTORS	MODE
Primary Master : **Auto**	0	0	0	0	0	0	**Auto**
Primary Slave : **Auto**	0	0	0	0	0	0	**Auto**
Secondary Master : **Auto**	0	0	0	0	0	0	**Auto**
Secondary Slave : **Auto**	0	0	0	0	0	0	**Auto**

Drive A : 1.44M, 3.5 in.
Drive B : None
Floppy 3 Mode Support : Disabled   Base Memory   :   640K
Video : EGA/VGA   Extended Memory :   64512K
Halt On : All, But Keyboard   Other Memory   :   384K

                                       Total Memory   :   65536K

ESC : Quit   ↑ ↓ → ← : Select Item   PU/PD/+/- : Modify
F1 : Help   (Shift) F2 : Change Color

Figure 2: Standard CMOS Setup

NOTE: If the hard disk Primary Master/Slave and Secondary Master/Slave are set to Auto, then the hard disk size and model will be auto-detected.

NOTE: The "Halt On:" field is used to determine when to halt the system by the BIOS if an error occurs.
NOTE: Floppy 3 Mode support is a mode used to support a special 3.5" drive used in Japan. This is a 3.5" disk that stores only 1.2 MB, the default setting for this is disabled.

4-2 BIOS Features Setup

Selecting the "BIOS FEATURES SETUP" option in the CMOS SETUP UTILITY menu allows users to change system related parameters in the displayed menu. This menu shows all of the manufacturer's default values for the EP-V370Y.

Pressing the [F1] key will display a help message for the selected item.

ROM PCI/ISA BIOS(2A6LFPAE)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
CPU L2 Cache ECC Checking	: Disabled	D0000-D3FFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D4000-D7FFF Shadow	: Disabled
Boot Sequence	: A, C, SCSI	D8000-DBFFF Shadow	: Disabled
Swap Floppy Drive	: Disable	DC000-DFFFF Shadow	: Disabled
Boot Up Floppy Seek	: Enabled		
Boot Up NumLock Status	: On		
Gate A20 option	: Fast		
Memory Parity/ECC Check	: Disabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Type matic Delay (Msec)	: 250		
Security Option	: Setup	Esc : Quit ↑ ↓ → ← : Select Item
PCI/VGA Palette Snoop	: Disabled	F1 : Help PU/PD/+/- : Modify
OS Select For DRAM > 64MB	: Non-OS2	F5 : Old Values (Shift) F2 : Color
Report NO FDD For Win 95	: Yes	F7 : Load Setup Defaults

Figure 3: BIOS Features Setup

Virus Warning: During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and an error message will appear.

You should then run an anti-virus program to locate the virus. Keep in mind that this feature protects only the boot sector, not the entire hard drive.
The default value is Disabled.

Enabled: Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector.
Disabled: No warning message will appear when anything attempts to access the boot sector.

Note: Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first disable the virus warning.

CPU Internal Cache: This controls the status of the processor's internal cache area.
The default is Enabled.

Enabled: This activates the processor's internal cache thereby increasing performance.
Disabled: This deactivates the processor's internal cache thereby lowering performance.

CPU L2 Cache ECC Checking: This controls the CPU's L2 cache to supports Error Checking and Correcting(ECC).

The default is Disabled

Enabled: Enabled the CPU's L2 cache to Support ECC function. When enabled this item the performance should be impact 2% ~4%.

Disabled: Disabled the CPU's L2 cache to support ECC function.

External (L2) Cache: This controls the status of the external (L2) cache area.
The default is Enabled.

Enabled: This activates the motherboard's L2 cache thereby increasing performance.
Disabled: This deactivates the motherboard's L2 cache thereby lowering performance.

Quick Power On Self Test: This category speeds up the Power On Self Test (POST).
The default is Enabled.

Enabled: This setting will shorten or skip of the items checked during POST.
Disabled: Normal POST.

Boot Sequence: This category determines which drive is searched first by the O/S (Operating System).
The default is A,C,SCSI.

The following is your list of options:
[A, C, SCSI] - [C, A, SCSI] - [C, CD-ROM, A] - [CD-ROM, C, A]
[D, A,CD-ROM],[E, A, CD-ROM] - [F, A, CD-ROM] - [SCSI, A, C]
[SCSI C, A] - [C Only]

Swap Floppy Drive: This will swap your physical drive letters A & B if you are using two floppy disks.
The default is Disabled.

Enabled: *Floppy A & B will be swapped under the O/S.*
Disabled: *Floppy A & B will be not swapped.*

Boot Up Floppy Seek: During Power-On-Self-Test (POST), BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. Only 360K type is 40 tracks while 760K, 1.2MB and 1.44MB are all 80 tracks.
The default is Enabled.

Enabled: *The BIOS will search the floppy disk drive to determine if it is 40 or 80 tracks.*
Disabled: *The BIOS will not search for the type of floppy disk drive by track number.*

NOTE: BIOS can not tell the difference between 720K, 1.2MB and 1. 44MB drive types as they are all 80 tracks.

Boot Up NumLock Status: This controls the state of the NumLock key when the system boots.
The default is On.

On: *The keypad acts as a 10-key pad.*
Off: *The keypad acts like the cursor keys.*

Gate A20 Option: This refers to the way the system addresses memory above 1MB (extended memory).
The default is Fast.

Normal: *The A20 signal is controlled by the keyboard controller or chipset*

hardware.
Fast: The A20 signal is controlled by Port 92 or chipset specific method.

Typematic Rate Setting: This determines the keystrokes repeat rate.
The default is Disabled.

Enabled: Allows typematic rate and typematic delay programming.
Disabled: The typematic rate and typematic delay will be controlled by the
keyboard controller in your system.

Typematic Rate (Chars/Sec): This is the number of characters that will be re-
peated by a keyboard press.
The default is 6.

6: 6 characters per second.   8: 8 characters per second.
10: 10 characters per second. 12: 12 characters per second.
15: 15 characters per second. 20: 20 characters per second.
24: 24 characters per second. 30: 30 characters per second.

Typematic Delay (msec): This setting controls the time between the first and the
second character displayed by typematic auto-repeat.
The default is 250.

250: 250 msec.
500: 500 msec.
750: 750 msec.
1000: 1000 msec.

Security Option: This category allows you to limit access to the System and Setup,
or just to Setup.
The default is Setup.

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

PCI/VGA Palette Snoop: This field controls the ability of a primary PCI VGA
controller to share a common palette (When a snoop write cycles) with an ISA video
card.
The default is Disabled.

Enabled: If an ISA card is connected to a PCI VGA card via the VESA
connector, and that ISA card connects to a VGA monitor, then that ISA card

uses the RAMDAC of the PCI card.
***Disabled**: Disables the VGA card Palette Snoop function.*

OS Select For DRAM > 64MB: Some operating systems require special handling.
Use this option only if your system has greater than 64MB of memory.
The default is Non-OS2.

*   ***OS2**: Select this if you are running the OS/2 operating system with greater than 64MB of RAM.*
    ***Non-OS2**: Select this for all other operating systems and configurations.*

Report No FDD For WIN95: This option allows BIOS to indicate whether
WIN95 is with FDD or not. The Default value is Yes.

*   ***NO**: Report No FDD for WIN95.*
    ***YES**: Report FDD for WIN95*

Video BIOS Shadow: This option allows video BIOS to be copied into RAM.
Video Shadowing will increase the video performance of your system.
The default is Enabled.

*   ***Enabled**: Video shadow is enabled.*
    ***Disabled**: Video shadow is disabled.*

C8000 - CBFFF Shadow:
CC000 - CFFFF Shadow:
D0000 - D3FFF Shadow:
D4000 - D7FFF Shadow:
D8000 - DBFFF Shadow:
DC000 - DFFFF Shadow:

These categories determine whether ROMs from option cards will be copied into
RAM. This will be in 16K byte or 32K byte units, and the size will depend on chipset
of the option card.

*   ***Enabled**: Optional shadow is enabled.*
    ***Disabled**: Optional shadow is disabled.*

4-3 Chipset Features Setup

Choose the "CHIPSET FEATURES SETUP" in the CMOS SETUP UTILITY menu to display following menu.

ROM PCI/ISA BIOS(2A6LFPAE)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Bank 0/1 DRAM Timing	: Fast	System/CPU Warning Temp.	: 50°C/122°
Bank 2/3 DRAM Timing	: Fast	Current CPU Temp.	: 39°C/102°
Bank 4/5 DRAM Timing	: Fast	Current System Temp.	: 29°C/84°
		Current CPU Fan Speed	: 4272 RPM
SDRAM Cycle length	: Auto	Current CPU Fan Speed	: 0 RPM
Memory Hole At 15Mb Addr.	: Disabled	Current Chasiss Fan Speed	: 0 RPM
Read Around write	: Disabled	CPUcore :2.76 V CPUI/O : 1.47 V	
Concurrent PCI/Host	: Enabled	+3.3V : 3.28 V +5V : 4.89 V	
Video RAM Cacheable	: Disabled	+12V : 12.09 V -12V : -11.98 V	
AGP Aperture Size	: 64M	-5V : -5.07 V	
Delay DRAM Read Latch	: 2.0ns		
Auto Detect DIMM/PCI Clk	: Enabled		
Spread Spectrum Modulated	: Enabled		
CPU Host Clock	: Default		
Press<Ins> Key while Power-On if			
system can not boot normally.		Esc : Quit ↑ ↓ → ← : Select Item	
		F1 : Help PU/PD/+/- : Modify	
		F5 : Old Values (Shift) F2 : Color	
		F7 : Load Setup Defaults	

Figure 4: Chipset Features Setup

SDRAM Cycle length: This setting defines the CAS timing parameter of the SDRAM in terms of clocks.
The default is Auto.

2: Provides faster memory performance.
3: Provides better memory compatibility.

Video RAM Cacheable: This option allows the CPU to cache read/writes of the video RAM.
The default is Enabled.

Enabled: This option allows for faster video access.
Disabled: Reduced video performance.

Memory Hole at 15M-16M: You can reserve this memory area for the use of ISA adaptor ROMs.
The default is Disabled.

> *Enabled: This field enables the main memory (15~16MB) to remap to ISA BUS.*
> *Disabled: Normal Setting.*
>
> *NOTE: If this feature is enabled you will not be able to cache this memory segment.*

AGP Aperture Size: The amount of system memory that the AGP card is allowed to share.
The default is 64.

> *4: 4MB of systems memory accessable by the AGP card.*
> *8: 8MB of systems memory accessable by the AGP card.*
> *16: 16MB of systems memory accessable by the AGP card.*
> *32: 32MB of systems memory accessable by the AGP card.*
> *64: 64MB of systems memory accessable by the AGP card.*
> *128: 128MB of systems memory accessable by the AGP card.*
> *256: 256MB of systems memory accessable by the AGP card.*

Auto Detect DIMM/PCI Clk: Allows you to stop DIMM/PCI Clock drive when the DIMM site or PCI Slot are not plug. This item may help reduce EMI.

The default is Enabled.

> *Enabled: Provides unused DIMM/PCI to stop.*
> *Disabled: Provides the clock generator always driving.*

Spread Spectrum Modulated: Allows you to active the Spread Spectrum Modulation function for reduce EMI. (Note: When Enabled the item that performance will be impacted).

The default is Enabled.

> *Enabled: Provides the Spread Spectrum function from clock generator.*
> *Disabled: NO Spread Spectrum function.*

Current CPU Temperature: This is the current temperature of the CPU.

Current Power FAN Speed: The current power fan speed in RPMs.

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.

+1.5V: The voltage level of the CPU's GTL+ Bus.

+3.3V, **+5V, +12V**: The voltage level of the switch power supply.

4-4 Power Management Setup

Choose the "POWER MANAGEMENT SETUP" in the CMOS SETUP UTILITY to display the following screen. This menu allows the user to modify the power management parameters and IRQ signals. In general, these parameters should not be changed unless it's absolutely necessary.

```
                         ROM PCI/ISA BIOS (2A6LFPAE)
                         POWER MANAGEMENT SETUP
                          AWARD SOFTWARE, INC.

 Power Management      : User Define   Primary INTR          : ON
 PM Control by APM     : Yes           IRQ3  (COM 2)         : Primary
 Video off Option      : Suspend -> Off IRQ4  (COM 1)        : Primary
 Video off Method      : V/H SYNC+Blank IRQ5  (LPT  2)       : Primary
 MODEM Use IRQ         : 3             IRQ6  (Floppy Disk)   : Disabled
 Soft-off by PWRBTN    : Delay 4 Sec   IRQ7  (LPT   1)       : Primary
 ** RM Timers **                       IRQ8  (RTC Alarm)     : Disabled
 HDD Power Down        : Disable       IRQ9  (IRQ2 Redir)    : Primary
 Doze Mode             : Disable       IRQ10(Reserved)       : Primary
 Suspend Mode          : Disable       IRQ11(Reserved)       : Primary
 ** RM Events **                       IRQ12(PS/2 Mouse)     : Primary
 VGA                   : OFF           IRQ13(Coprocessor)    : Primary
 LPT & COM             : LPT /COM      IRQ14(Hard Disk)      : Primary
 HDD & FDD             : OFF           IRQ15(Reserved)       : Disabled
 DMA /master           : OFF
 Modem Ring Resume     : Disabled     Esc : Quit      ↑ ↓ → ← : Select Item
 MODEM Use IRQ         : Enabled      F1  : Help       PU/PD/+/- : Modify
 RTC Alarm Resume      : Disabled     F5  : Old Values  (Shift) F2  : Color
                                      F7  : Load Setup Defaults
```

Figure 5: Power Management Setup

You can only change the content of Doze Mode, Standby Mode, and Suspend Mode when the Power Management is set to 'User Define'.

Power Management: Use this to select your Power Management selection. The default is User define.

Disabled: The system operates in NORMAL conditions (Non-GREEN), and the Power Management function is disabled.
Max. saving: Maximum power savings. Inactivity period is 1 minute in each

mode.
Min. saving: Minimum power savings. Inactivity period is 1 hour in each
mode.
User define: Allows user to define PM Timers parameters to control power
saving mode.

PM controlled APM: This option shows whether or not you want the Power
Management to be controlled the Advanced Power Management (APM).
The default is Yes.

> *Yes: APM controls your PM*
> *No: APM does not control your PM*

Video Off Method: This option allows you to select how the video will be disabled
by the power management.
The default is V/H Sync + Blank

> *V/H Sync + Blank: System turns off vertical and horizontal synchronization*
> *ports and writes blanks to the video buffer.*
> *DPMS: Select this option if your monitor supports the Display Power*
> *Management Signaling (DPMS) standard of the Video Electronics Stan-*
> *dards Association (VESA). Use the software supplied for your video sub-*
> *system to select video power management values.*
> *Blank Screen: System only writes blanks to the video buffer.*

Video Off option: Tells you what time frame that the video will be disabled under
current power management settings.
The default is Standby.

> *Standby: Video powers off after time shown in standby mode setting.*
> *Doze: Video powers off after time shown in doze mode setting.*
> *Suspend: Video powers off after time shown in suspend mode setting.*
> *N/A: Video power off not controlled by power management.*

MODEM Use IRQ: Name the interrupt request (IRQ) line assigned to the modem
(if any) on your system. Activity of the selected IRQ always awakens the system.
Default is IRQ 3.

> *N/A: No IRQ is used.*   *3: IRQ 3*
> *4: IRQ 4*   *5: IRQ 5*
> *7: IRQ 7*   *9: IRQ 9*
> *10: IRQ 10*   *11: IRQ 11*

The EP-V370Y supports HDD Power Down, Doze and Standby power saving functions when using the Intel Pentium II Processor.
The default is Disabled

Doze Mode: The "Doze" mode timer starts to count when no "PM events" have occurred.

Suspend Mode: This function works only when the Pentium II Processor is installed. The timer starts to count when "System Standby" mode timer is timed out and no "PM Events" are occurring. Valid range is from 1 minute up to 1 hour.

HDD Power Down: HDD Standby timer can be set from 1 to 15 minute(s).

VGA Active Monitor: Use this option if your monitor has advanced power saving features.
The default is Enabled

Enabled: Your monitor's power features will be included in power management.
Disabled: Your monitor's power features will not be included in power management.

Soft-Off by PWR-BTTN: Use this to select your soft-off function.
The default is Delay 4 sec.

Instant Off: Turns off instantly.
Delay 4 Second : Turns off after a 4 second delay. If momentary press of button, the system will go into Suspend Mode. Press again to take system out of Suspend Mode.

Resume by Alarm: This option allows you to have the system turn on at a preset time each day or on a certain day. This option is only available when Power Loss Recovery is Enabled.
The default is Enabled.

Enabled: The system will turn on at the preset time.
Disabled: The system will not turn on until you turn it on.

Date (of month) Alarm: This is how you set the date that the system will turn on.
The default is 0.

0: Setting this to 0 will turn the system on everyday at the preset time.
1-31: Represents the day of the month that you need the system to turn on.

Time (hh:mm:ss) Alarm: This sets the time that you need the system to turn on. The deault is 08:00:00.

4-5 PNP/PCI Configuration

The PNP/PCI configuration program is for the user to modify the PCI/ISA IRQ signals when various PCI/ISA cards are inserted in the PCI or ISA slots.

WARNING: Conflicting IRQ's may cause the system to not find certain devices.

ROM PCI/ISA BIOS(2A6LFPAE)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

PNP OS Installed	: No	CPU to PCI Write Buffer	: Enabled
Resources Controlled By	: Manual	PCI Dynamic Bursting	: Enabled
Reset Configuration Data	: Disabled	PCI Master 0 WS Write	: Enabled
		PCI Delay Transaction	: Disabled
IRQ-3 assigned to	: Legacy ISA	PCI Master Read Prefetch	: Disabled
IRQ-4 assigned to	: Legacy ISA	PCI#2 Access #1 Retry	: Disabled
IRQ-5 assigned to	: PCI/ISA PnP	AGP Master 1 WS Write	: Enabled
IRQ-7 assigned to	: Legacy ISA	AGP Master 1 WS Read	: Disabled
IRQ-9 assigned to	: PCI/ISA PnP		
IRQ-10 assigned to	: PCI/ISA PnP	PCI IRQ Actived By	: Level
IRQ-11 assigned to	: PCI/ISA PnP	Assign IRQ For USB	: Enabled
IRQ-12 assigned to	: PCI/ISA PnP	Assign IRQ For VGA	: Enabled
IRQ-14 assigned to	: Legacy ISA		
IRQ-15 assigned to	: Legacy ISA		
DMA-0 assigned to	: PCI/ISA PnP		
DMA-1 assigned to	: PCI/ISA PnP		
DMA-3 assigned to	: PCI/ISA PnP	Esc : Quit ↑ ↓ → ← : Select Item	
DMA-5 assigned to	: PCI/ISA PnP	F1 : Help PU/PD/+/- : Modify	
DMA-6 assigned to	: PCI/ISA PnP	F5 : Old Values (Shift) F2 : Color	
DMA-7 assigned to	: PCI/ISA PnP	F7 : Load Setup Defaults	

Figure 6: PCI Configuration Setup

PNP OS Installed: Do you have a PNP OS installed on your system. The default is No.

> *Yes: Select if you are using a PNP OS*
> *No: Select if your OS does not support PNP.*

Resources Controlled By: Who controlled the system PNP/PCI resources. The default is Manual.

> *Manual: PNP Card's resources will be controlled manually. You can set which IRQ-X and DMA-X are assigned to PCI/ISA PNP or Legacy ISA*

Cards.
Auto: If your ISA card and PCI card are all PNP cards, BIOS will assign the interrupt resource automatically.

Reset Configuration Data: This setting allows you to clear ESCD data. The default is Disabled

Disabled: Normal Setting.
Enabled: If you have plugged in some Legacy cards to the system and they were recorded into ESCD (Extended System Configuration Data), you can set this field to Enabled in order to clear ESCD.

PCI IDE IRQ Map To: This item allows the user to configure the system for the type of IDE hard disk controller in use. By default, the BIOS assumes that the hard drive controller is an ISA device rather than a PCI controller. If you are using a PCI controller, then you will need to change this to specify which PCI slot has the controller and which PCI interrupt (A, B, C, or D) is associated with the connected IDE devices.

Assign IRQ For USB: This item allows BIOS to assign whether IRQ is with USB or not. If you have not connect the USB device. Can release the IRQ for other device.

The default is Enabled.

Enalbed: Provides IRQ for USB device.
Disabled: Release IRQ for other device.

4-6 Load Setup Defaults

The "LOAD SETUP DEFAULTS" function loads the system default data directly from ROM and initializes the associated hardware properly. This function will be necessary only when the system CMOS data is corrupted.

4-7 Integrated Peripherals

ROM PCI/ISA BIOS(2A6LFPAE)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

OnChip IDE Channel0	: Enabled	Onboard Parallel Port	: 378/IRQ7
OnChip IDE Channel1	: Enabled	Onboard Parallel Mode	: ECP / EPP
IDE Prefetch Mode	: Enabled	ECP Mode Use DMA	: 3
IDE HDD Block Mode	: Enabled	Parallel Port EPP Type	: EPP1.9
Primary Master PIO	: Auto	OnChip USB	: Enabled
Primary Slave PIO	: Auto	USB Keyboard Support	: Disabled
Secondary Master PIO	: Auto		
Secondary Slave PIO	: Auto	POWER ON Method	: Hot Key
Primary Master UDMA	: Auto	KB Power ON Password	: Enter
Primary Slave UDMA	: Auto	Hot Key Power ON	: Ctrl-F1
Secondary Master UDMA	: Auto		
Secondary Slave UDMA	: Auto		
Init Display First	: PCI Slot		
Onboard FDD Controller	: Enabled		
Onboard Serial Port 1	: 3F8/IRQ4	Esc : Quit	↑ ↓ → ← : Select Item
Onboard Serial Port 2	: 2F8/IRQ3	F1 : Help	PU/PD/+/- : Modify
UART 2 Mode	: Standard	F5 : Old Values	(Shift) F2 : Color
		F7 : Load Setup Defaults	

Figure 8: Integrated Peripherals

Note: If you do not use the Onboard IDE connector, then you will need to set Onboard Primary PCI IDE: Disabled and Onboard Secondary PCI IDE: Disabled
Note: The Onboard PCI IDE cable should be equal to or less than 18 inches (45 cm.).

IDE HDD Block Mode: IDE Block Mode allows the controller to access blocks of sectors rather than a single sector at a time.
The default is Enabled.

Enabled: Enabled IDE HDD Block Mode. Provides higher HDD transfer rates.
Disabled: Disable IDE HDD Block Mode.

Onchip IDE First Channel: The default value is Enabled.

Enabled: Enables Onboard IDE primary port.
Disabled: Disables Onboard IDE primary port.

Onchip IDE Second Channel:
The default is Enabled.

Enabled: Enables Onboard IDE secondary port.
Disabled: Disables Onboard IDE secondary port.

Primary Master PIO
The default is Auto.

Auto: BIOS will automatically detect the Onboard Primary Master PCI IDE HDD Accessing mode.
Mode 0~4: Manually set the IDE Programmed interrupt mode.

Primary Slave PIO
The default is Auto.

Auto: BIOS will automatically detect the Onboard Primary Slave PCI IDE HDD Accessing mode.
Mode 0~4: Manually set the IDE Programmed interrupt mode.

Secondary Master PIO:
The default is Auto.

Auto: BIOS will automatically detect the Onboard Secondary Master PCI IDE HDD Accessing mode.
Mode 0~4: Manually set the IDE Programmed interrupt mode.

Secondary Slave PIO:
The default is Auto.

Auto: BIOS will automatically detect the Onboard Secondary Slave PCI IDE HDD Accessing mode.
Mode 0~4: Manually set the IDE Programmed interrupt mode.

Primary Master UDMA: This allows you to select the mode of operation for the hard drive.
The default is Auto.

Auto: The computer will select the optimal setting.
Disabled: The hard drive will run in normal mode.

Primary Slave UDMA: This allows you to select the mode of operation for the hard drive.
The default is Auto.

Auto: The computer will select the optimal setting.
Disabled: The hard drive will run in normal mode.

Secondary Master UDMA: This allows you to select the mode of operation for the hard drive.
The default is Auto.

Auto: The computer will select the optimal setting.
Disabled: The hard drive will run in normal mode.

Secondary Slave UDMA: This allows you to select the mode of operation for the hard drive.
The default is Auto.

Auto: The computer will select the optimal setting.
Disabled: The hard drive will run in normal mode.

USB Keyboard Support: This controls the activation status of an optional USB keyboard that may be attached.
The default is disabled.

Enabled: Enable USB keyboard support.
Disabled: Disable USB keyboard support.

Onboard FDD Controller: This controls the state of the onboard floppy controller.
The default value is Enabled.

Enabled: Enable the Onboard Winbond Chips's floppy drive interface controller.
Disabled: Disable the Onboard Winbond Chip's floppy drive interface controller.

Onboard Serial Port 1: This field allows the user to configure the 1st serial port.
The default is Auto.

AUTO: Enable Onboard Serial port 1 and address is Auto adjusted
COM1: Enable Onboard Serial port 1 and address is 3F8H/IRQ4.
COM2: Enable Onboard Serial port 1 and address is 2F8H/IRQ3.
COM3: Enable Onboard Serial port 1 and address is 3E8H/IRQ4.
COM4: Enable Onboard Serial port 1 and address is 2E8H/IRQ3.

Disabled: Disable Onboard SMC CHIP's Serial port 1.

Onboard Serial Port 2: This field allows the user to configure the 2nd serial port.
The default is Auto.

AUTO: Enable Onboard Serial port 2 and address is Auto adjusted
COM1: Enable Onboard Serial port 2 and address is 3F8H/IRQ4.
COM2: Enable Onboard Serial port 2 and address is 2F8H/IRQ3.
COM3: Enable Onboard Serial port 2 and address is 3E8H/IRQ4.
COM4: Enable Onboard Serial port 2 and address is 2E8H/IRQ3.
Disabled: Disable Onboard SMC CHIP's Serial port 2.

UART Mode Select: The mode of the IR Controller.
The default is Normal.

IrDA: Support a Serial Infrared Inferface IrDA.

ASKIR: Support a Sharp Serial Infrared Interface formats.

Normal: The IRRX and IRTX pins of IR function in normal condition.

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 Winbond Chip's LPT port.

Parallel Port 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.

Power On Method: There are "**Button Only**", "**Hot Key**" and "**Any key**" can be chosen by this field that allows users to select one of these various functions as Power On Method for their requirement.
The default value in this selection is " Hot Key". (Ctrl-F1)

*Hot Key: User can press "**Control Key**" (Ctrl) and "**Function Key**" (from F1 to F12) individually to power on the system.*

The interval between "Ctrl" key and function Key (F1-F12) must be short.

Anykey: Press anykey to power on the system.

Button Only: This power on method is controlled by J3 (pw-on.) Use Power On Button to power on the system.

Password: User can Power On the System by password, the password can be entered from 1 to 5 characters. The maximum of password is 5 characters.

If user forget / lost the password, please go into BIOS setting to change the Power On Method, or keyin another words as password instead of original one.

4-8 Change Supervisor or User Password

To change the password, choose the "SUPERVISOR PASSWORD or USER PASSWORD" option from the CMOS SETUP UTILITY menu and press [Enter].

NOTE: Either "Setup" or "System" must be selected in the "Security Option" of the BIOS FEATURES SETUP menu.

1. If CMOS is corrupted or the option was not used, a default password stored in the ROM will be used. The screen will display the following message:

   Enter Password:

   Press the [Enter] key to continue after the proper password is given.

2. If the CMOS is corrupted or the option was used earlier and the user wishes to change the default password, the SETUP UTILITY will display a message and ask for a confirmation.

   Confirm Password:

3. After pressing the [Enter] key (ROM password if the option was not used) or current password (user-defined password), the user can change the password and store new one in CMOS RAM. A maximum of 8 characters can be entered.

4-9 IDE HDD Auto Detection

The "IDE HDD auto detection" utility is a very useful tool, especially when you do not know which kind of hard disk type you are using. You can use this utility to detect the correct disk type installed in the system automatically. But now you can set HARD DISK TYPE to Auto in the STANDARD CMOS SETUP. You don't need the "IDE HDD AUTO DETECTION" utility. The BIOS will Auto-detect the hard disk size and model on display during POST.

ROM PCI/ISA BIOS(2A6LFPAE)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

HARD DISKS	TYPE	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
Primary Master :								

Select Secondary Slave Option (N=Skip) : N

OPTIONS	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
2 (Y)	4310	524	255	0	14847	63	LBA
1	4310	14848	9	65535	14847	63	NORMAL
3	4310	928	144	65535	14847	63	LARGE

Note: Some OSes (like SCO-UNIX) must use NORMAL for installation

ESC : Skip

Figure 8: IDE HDD Auto Detection

NOTE: HDD Modes

The Award BIOS supports 3 HDD modes : NORMAL, LBA & LARGE NORMAL mode

Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing.

The maximum number of cylinders, head & sectors for NORMAL mode are.

```
          1024, 16 & 63
          no. Cylinder          (1024)
          x no. Head            ( 16)
          x no. Sector          ( 63)
          x no. per sector      ( 512)
                                528 Megabytes
```

If user set his HDD to NORMAL mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that!

LBA (Logical Block Addressing) mode: A new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD. During HDD accessing, the IDE controller will transform the logical address described by sector, head & cylinder into its own physical address inside the HDD. The maximum HDD size supported by LBA mode is 8.4 GigaBytes which is obtained by the following formula:

```
          no. Cylinder          (1024)
          x no. Head            ( 255)
          x no. Sector          ( 63)
          x bytes per sector    ( 512)
                                8.4 GigaBytes
```

LARGE mode: Extended HDD access mode supported by Award Software.

Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not want LBA). The Award BIOS provides another alternative to support these kinds of LARGE mode.

CYLS	HEADS	SECTOR	MODE
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside

INT 12h in order to access the right HDD address!

Maximum HDD size:

no. Cylinder	(1024)
x no. Head	(32)
x no. Sector	(63)
x bytes per sector	(512)
	1 GigaByte

Note: To support LBA or LARGE mode of HDDs, there must be some software involved. All the software is located in the Award HDD Service Routine (INT 13h). It may fail to access a HDD with LBA (LARGE) mode selected if you are running under an Operating System which replaces the whole INT 13h.

UNIX operating systems do not support either LBA or LARGE and must utilize the Standard mode. UNIX can support drives larger than 528MB.

4-10 HDD Low Level Format

Interleave: Select the interleave number of the hard disk drive you wish to perform a low level format on. You may select from 1 to 8. Check the documentation that came with the drive for the correct interleave number, or select 0 for automatic detection.

Auto scan bad track: This allows the utility to scan first then format by each track.

Start: Press<Y>to start low level format.

4-11 Save & Exit Setup

The "SAVE & EXIT SETUP" option will bring you back to the boot up procedure with all the changes you just recorded in the CMOS RAM.

4-12 Exit Without Saving

The "EXIT WITHOUT SAVING" option will bring you back to normal boot up procedure without saving any data into CMOS RAM.

All old data in the CMOS will not be destroyed.

Section 5
Yamaha PCI Sound

Driver Installation

Installing the DS-XG Device Driver Software for Windows 95/98

1. Introduction

This guide describes the necessary procedures for installing the DS-XG device driver software for Windows 95/98. The following procedures will be covered in each section:

- Installing the DS-XG Device Driver Software
- Adjusting the DS-XG Mixer Control Settings

In order to properly install the DS-XG device driver to your computer, please follow the sections contained in this guide.

2. Installing the Driver

1) Before the Driver installed into Windows 95/98, you will find a Yellow question mark still exits in the "Other Devices" of the "Device Manager "of "System Properties" show in Figure 2-1 below.
   Please **do not** remove it and then follow the steps below.

Figure 2-1 The Device Manager of System Properties

2)   Please insert Manual & Driver CD into CD-ROM device, select the
     "Audio Driver/Utilities" then click "Y724 Driver For Win95/98"
3)   Follow the Screen instructions to install the program. Click "Finish" to Restart
     your computer.

2.1. Verifying the DS-XG Device Driver Installation

This section explains how to verify if the DS-XG device driver and software were installed successfully. To see if the DS-XG device driver has been installed successfully, complete the following steps:

1)   Click the **Start** button on the Windows Taskbar.
2)   Highlight **Settings** and click on the **Control Panel** icon.
3)   The Control Panel now appears. Double-click the **System** icon.
4)   The System Properties window now appears. Click on the **Device Manager**
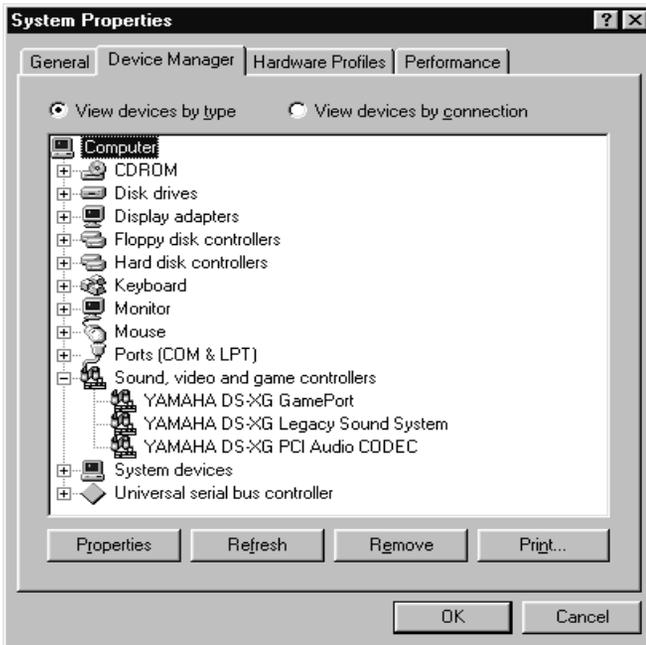   table as shown in Figure 2-2 below.

Figure 2-2 The system properties for Device Manager

3.   Adjusting the DS-XG Mixer Control Settings

Once all DS-XG device drivers and software were installed, you can use the Windows standard volume control to adjust the volume level of selected audio or recording devices by following the procedures in this section.

3.1. Adjusting the Volume of Audio Devices

This section explains how to use the Windows standard volume control to adjust the volume of audio devices in your computer.

1)   Click on the Speaker icon located in the bottom rightmost corner of the Windows taskbar.
2)   The DS-XG mixer control starts and the *Volume Control* window is displayed as shown in Figure 3-1 below.
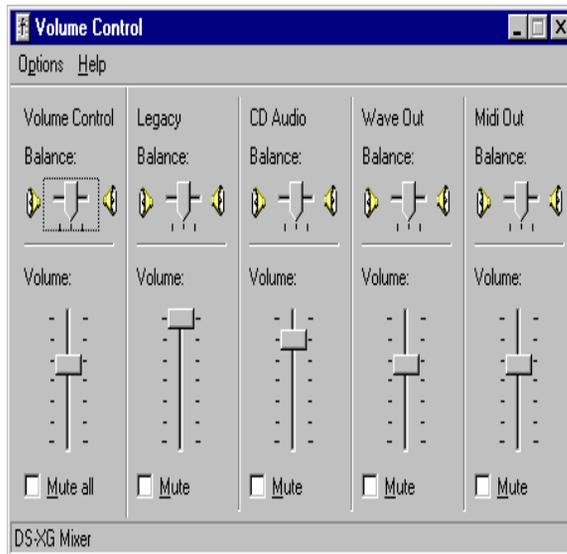

Figure 3-1 The Volume Control Window

3)   Adjust the volume as desired for each audio device by dragging the slide-bars vertically. You may also click on **Options** in the menu bar and then click on **Properties**.

4) To access Advanced control of the Microphone device, first click on Mute and then click the Advanced button as shown in Figure 3-2 below.
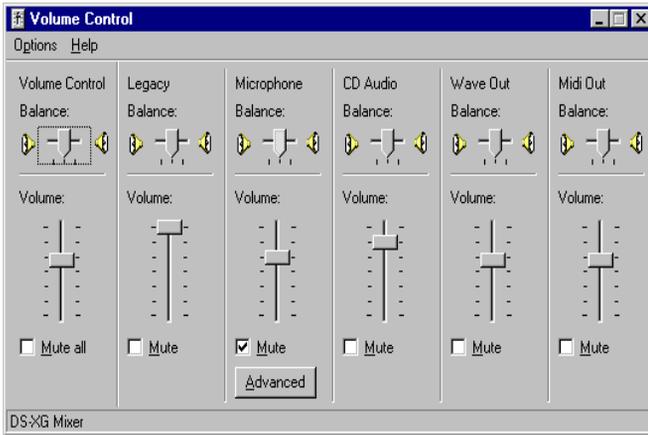

Figure 3-2. The Volume Control window.

5) The Advanced Control for Microphone window will now appear as shown in Figure 3-3 below. Adjust the Bass and Treble as desired by dragging the slide-bars horizontally. If you wish to enable the Mic20dB setting for your microphone, then click on **Mic20dB Enable**.
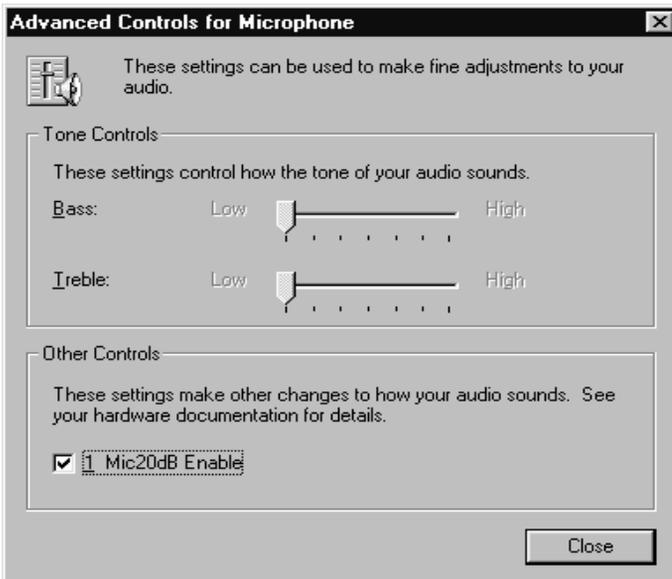

Figure 3-3. The Advance Controls for Microphone Windows.

3.2. Adjusting the Volume of Recording Devices
This section explains how to use the Windows standard volume control to adjust the volume of recording devices in your computer.

> The procedures in this section assume that the DS-XG Mixer is already started and the *Volume Control* window is already displayed. If this not the case, refer to Section 3.1 for the necessary steps to reach this stage.

1)   To access the volume control for recording device, click on **Options** in the menu bar and then click on **Properties**.
2)   Click on **Recording**. The Recording Control window will now appear as shown in Figure 3-4 below.

Figure 3-4. The Recording Control window.

3)   Adjust the volume as desired for each recording device by dragging the slide-bars vertically.

Installing the DS-XG Device Driver Software for Windows NT 4.0

1. Introduction

This guide describes the necessary procedures for installing the DS-XG device driver software for Windows NT 4.0. The following procedures will be covered in each section:

- Installing the DS-XG Device Driver Software
- Adjusting the DS-XG Mixer Control Settings

In order to properly install the DS-XG device driver to your computer, please follow in order the sections contained in this guide.

2. Installing the DS-XG Device Driver Software

This section contains the procedures for installing the DS-XG device driver software into your computer.

2.1 Installing the DS-XG Device Driver

This section explains how to install the DS-XG device manager.

1. Please insert Y Manual & Driver CD into CD-ROM device, select the "Audio Driver/Utilities" then click "Y724 Driver For Win NT"
2. Follow the screen instructions to install the program, Click "OK".

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.

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Appendix B:

B-1 POST CODES

ISA POST codes are typically output to I/O port address 80h.

POST (hex)	DESCRIPTION
01-02	Reserved.
C0	Turn off OEM specific cache, shadow.
03	1. Initialize EISA registers (EISA BIOS only).
	2. Initialize all the standard devices with default values
	Standard devices includes.
	- DMA controller (8237).
	- Programmable Interrupt Controller (8259).
	- Programmable Interval Timer (8254).
	- RTC chip.
04	Reserved
05	1. Keyboard Controller Self-Test.
06	2. Enable Keyboard Interface.
07	Reserved.
08	Verifies CMOS's basic R/W functionality.
C1	Auto-detection of onboard DRAM & Cache.
C5	Copy the BIOS from ROM into E0000-FFFFF shadow RAM so that POST will go faster.
08	Test the first 256K DRAM.
09	OEM specific cache initialization. (if needed)
0A	1. Initialize the first 32 interrupt vectors with corresponding Interrupt handlers. Initialize INT numbers from 33-120 with Dummy (Spurious) Interrupt Handler.
	2. Issue CPUID instruction to identify CPU type.
	3. Early Power Management initialization. (OEM specific)
0B	1. Verify the RTC time is valid or not.
	2. Detect bad battery.
	3. Read CMOS data into BIOS stack area.
	4. PnP initializations including. (PnP BIOS only)
	- Assign CSN to PnP ISA card.
	- Create resource map from ESCD.
	5. Assign IO & Memory for PCI devices. (PCI BIOS only)

0C	Initialization of the BIOS Data Area. (40:ON - 40:FF)
0D	1. Program some of the Chipset's value according to Setup. (Early Setup Value Program)
	2. Measure CPU speed for display & decide the system clock speed.
	3. Video initialization including Monochrome, CGA, EGA/VGA. If no display device found, the speaker will beep.
0E	1. Test video RAM. (If Monochrome display device found)
	2. Show messages including.
	- Award Logo, Copyright string, BIOS Data code & Part No.
	- OEM specific sign on messages.
	- Energy Star Logo. (Green BIOS ONLY)
	- CPU brand, type & speed.
	- Test system BIOS checksum. (Non-Compress Version only)
0F	DMA channel 0 test.
10	DMA channel 1 test.
11	DMA page registers test.
12-13	Reserved.
14	Test 8254 Timer 0 Counter 2.
15	Test 8259 interrupt mask bits for channel 1.
16	Test 8259 interrupt mask bits for channel 2.
17	Reserved.
19	Test 8259 functionality.
1A-1D	Reserved.
1E	If EISA NVM checksum is good, execute EISA initialization. (EISA BIOS only)
1F-29	Reserved.
30	Detect Base Memory & Extended Memory Size.
31	1. Test Base Memory from 256K to 640K.
	2. Test Extended Memory from 1M to the top of memory.
32	1. Display the Award Plug & Play BIOS Extension message. (PnP BIOS only)
	2. Program all onboard super I/O chips (if any) including COM ports, LPT ports, FDD port ... according to setup value.
33-3B	Reserved.
3C	Set flag to allow users to enter CMOS Setup Utility.
3D	1. Initialize Keyboard.
	2. Install PS2 mouse.

3E	Try to turn on Level 2 cache.
	Note: Some chipset may need to turn on the L2 cache in this stage. But usually, the cache is turn on later in POST 61h.
3F-40	Reserved.
BF	1. Program the rest of the Chipset's value according to Setup. (Later Setup Value Program)
41	2. If auto-configuration is enabled, program the chipset with pre-defined Values.
42	Initialize floppy disk drive controller.
43	Initialize Hard drive controller.
45	If it is a PnP BIOS, initialize serial & parallel ports.
44	Reserved.
45	Initialize math coprocessor.
46-4D	Reserved.
4E	If there is any error detected (such as video, kb...), show all error messages on the screen & wait for user to press <F1> key.
4F	1. If password is needed, ask for password.
	2. Clear the Energy Star Logo. (Green BIOS only)
50	Write all CMOS values currently in the BIOS stack area back into the CMOS.
51	Reserved.
52	1. Initialize all ISA ROMs.
	2. Later PCI initializations. (PCI BIOS only)
	- assign IRQ to PCI devices.
	- initialize all PCI ROMs.
	3. PnP Initialzations. (PnP BIOS only)
	- assign IO, Memory, IRQ & DMA to PnP ISA devices.
	- initialize all PnP ISA ROMs.
	4. Program shadows RAM according to Setup settings.
	5. Program parity according to Setup setting.
	6. Power Management Initialization.
	- Enable/Disable global PM.
	- APM interface initialization.
53	1. If it is NOT a PnP BIOS, initialize serial & parallel ports.
	2. Initialize time value in BIOS data area by translate the RTC time value into a timer tick value.
60	Setup Virus Protection. (Boot Sector Protection) functionality according to Setup setting.

61	1. Try to turn on Level 2 cache.
	Note: If L2 cache is already turned on in POST 3D, this part will be skipped.
	2. Set the boot up speed according to Setup setting.
	3. Last chance for Chipset initialization.
	4. Last chance for Power Management initialization. (Green BIOS only)
	5. Show the system configuration table.
62	1. Setup daylight saving according to Setup value.
	2. Program the NUM Lock, typematic rate & typematic speed according to Setup setting.
63	1. If there is any changes in the hardware configuration, update the ESCD information. (PnP BIOS only)
	2. Clear memory that have been used.
	3. Boot system via INT 19H.
FF	System Booting. This means that the BIOS already pass the control right to the operating system.

B-2 Unexpected Errors:

POST (hex)	DESCRIPTION
B0	If interrupt occurs in protected mode.
B1	Unclaimed NMI occurs.0

Appendix C

NOTE:
The "**LOAD SETUP 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.

ROM PCI/ISA BIOS(2A69KPA9)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	SUPERVISOR PASSWORD
BIOS FEATURES SETUP	USER PASSWORD
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	HDD LOW LEVEL FORMAT
PNP/PCI CONFIGURA	ETUP
INTEGRATED PERIPH	SAVING
LOAD SETUP DEFAULTS	

Load SETUP Default (Y/N)? Y

ESC: QUIT   ↑ ↓ → :SELECT ITEM
F10:Save & Exit Setup   (Shift)F2 :Change Color

Load Setup Defaults Except Standard COMS SETUP

LOAD SETUP DEFAULTS

Appendix D

CPU Clock Frequency Selection In BIOS Setting.

There is a special function for CPU over-clocking requirement which can be chosen and set by BIOS or set by JP5(The undocumented jumper setting from 75MHz to 83MHz or 103MHz to 133MHz), please refer to the following steps for adjustment.
1. Enter the BIOS CMOS setup program. (If your system was operated at 66MHz)
2. Choose "Chipset Features Setup" in main menu.
3. Move Cursor to "CPU HOST Clock:Default" item.
4. Use "Page down" (or+) / "Page up (or -) to choose CPU clock frequency as one of 66.8, 75MHz and 83.3MHz.
   (Note: There are 66.8, 75 and 83.3MHz for 66MHz CPU CLOCK frequency show, there are 103, 112, 124 and 133MHz for 100MHz CPU Clock frequency show).
5. Press "Save & Exit setup" to complete BIOS setting.

If the screen becomes blank or the system locks up after above Setting, which means the CPU you are using is unable to over clock.
Please refer to the followings to recover the CPU clock frequency.

Step 1: Power the system off. (J3 PW-ON)

Step 2: Power the system on again. And then, you will find the message of "CPU over-clocking fail previously. Please setup" CPU host clock again" is shown during the BIOS post section. You may press "F1" key to make the CPU frequency as the same as JP5 setting (either 66MHz or 100MHz), or press "enter" key to set the host frequency to meet your CPU in the BIOS setting.

Warning:
We do not guarantee all CPUs can be over-clocked (When the undocumented set by BIOS[75 and 83.3MHz] or by JP5[103 to 133MHz]), it depends on CPU design and the peripherals you are using; it's vitally important to use faster peripherals (faster SDRAM, AGP, I/O card...) to come with the higher CPU clock frequency.
Please set apporpriate CPU CLOCK frequency to make the system stable.