370A-VP

Motherboard

User's Manual

Product Name: 370A-VP
Manual Revision: English, 1.2

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Table of Contents

Chapter 1. Introduction

1.1 Product Overview

Thank you for purchasing the **370A-VP** motherboard. This motherboard utilizes **VIA**'s latest technology, namely **Apollo Pro133 VT82C693A & VT82C596B** chipset. We have conducted a motherboard compatibility test with a variety of hardware and software, such as CPUs, memory, display cards, CD ROMs, Novell, MS Office….etc and has passed NSTL Year 2000 certification test program.
We have set high standards on our quality control, with absolute confidence, we believe this product is the wisest choice.
This manual is composed of three sections. The first section is the introduction of this motherboard, and the second section explains the proper procedure to setup the motherboard, the third section provides information on how to setup the CMOS. The last section states the installation of device driver.

1.2 Features

- Wake up on LAN.
- Modem Remote Ring On.
- Support NCR SCSI BIOS.
- Support Ultra DMA 33/66.
- Support 66/100/133MHz FSB frequency.
- Support Advanced Configuration Power Interface (ACPI)
- BIOS Green feature function, and "Plug & Play" Flash ROM.
- Support Desktop Management Interface (DMI) through BIOS.
- Support Accelerated Graphics Port (AGP) cards for high performance.
- RTC Wake Up Alarm: Program the date/time to wake up your system.
- Both the BIOS and hardware levels of the motherboard meet PC '99 compliant.

1.3 Specifications

<u>**CPU**</u> :

- Supports Intel Socket 370, Celeron and Pentium III with 66/100/133MHz Front Side Bus CPU.

<u>**Chipset**</u> :

- VIA VT82C693A & VT82C596B.

<u>**DIMM**</u> :

- Supports 3.3V EDO or SDRAM in 3 168-pin banks, each bank consists of 1x168-pin 64-bit DIMM socket, which can support memory sizes of 8/16/32/64/128/256/512 MB modules.
- Supports up to a maximum of 1.5GB system memory.

IDE :

- Dual channel PIO and PCI Bus Master IDE ports support up to 4 EIDE devices for HDD or CD-ROM
- Supports PIO Mode 4 with data transfer rate up to 14 MB/ Sec
- Supports Multiword DMA Mode 0, 1, 2
- Supports Ultra DMA 33/66 with data transfer rate up to 33/66 MB/Sec

BIOS :

- Award BIOS with built-in Anti-Virus, DMI, ACPI support, and green function（Plug-and-Play BIOS）
- Supports CD-ROM, SCSI, and LS120/ZIP boot up

I/O Devices :

- One FDD control port supports two of the 5.25" or 3.5" floppy drives up to 2.88 MB.
- Two high-speed 16550 UART compatible serial ports
- One parallel ports with ECP/ EPP compatibility.
- One PS/2 mouse port
- One PS/2 Keyboard connector

IR Port :

- One IrDA/ASKIR compatible Infrared interface port.（Cable optional）

USB Ports :

- Two Universal Serial Bus（USB）ports support up to 127 peripheral devices.

Sound (optional) **:**

- ALS4000 PnP Sound Chip
- Built-in 3D Sound Effect Processor
- AC-Link Interface
- Built-in ALSFM synthesizer
- PPMI Power Management
- Enhanced normal & digital game port
- 16-bit full-duplex for concurrent recording and playback
- Compatible with DirectSound, DirectSound3D, Blaster, Sound Blaster Pro, and Sound Blaster 16 Emulation
- PC98 Specifications Compliant
- PCI Bus Master for PCI Audio/PCI 2.1/2.2 Compliant PCI Interface
- Support DDMA, Avance Legacy Support for legacy DMAC Emulation
- 64-Voice Wavetable Synthesis w/DLS-1 Support
- Support Sound Blaster ADPCM decompression
- Sample record/playback rates up to 48KHz

ATX Power :

- Supports Modem remote Ring-On function
- Supports software power off function
- Supports RTC Wake-Up.
- Supports Wake up on LAN.

Expansion Slots :

- Four 32-bit PCI expansion slots
- One 16-bit ISA expansion slots
- One 32-bit AGP expansion slot

Operating System :

- Supports Windows 95/98/2000, Windows NT, MS-DOS V6.22, OS/2, Novell, Unix, SCO UNIX...

Dimension :

- 305 mm x 170 mm ATX Form factor

1.4 Content

The motherboard box contains the following items:

- One Motherboard
- One IDE Ribbon Cable
- One Floppy Ribbon Cable
- One CD Driver Disk
- User's Manual & Quick Installation Chart

1.5 MotherBoard Layout
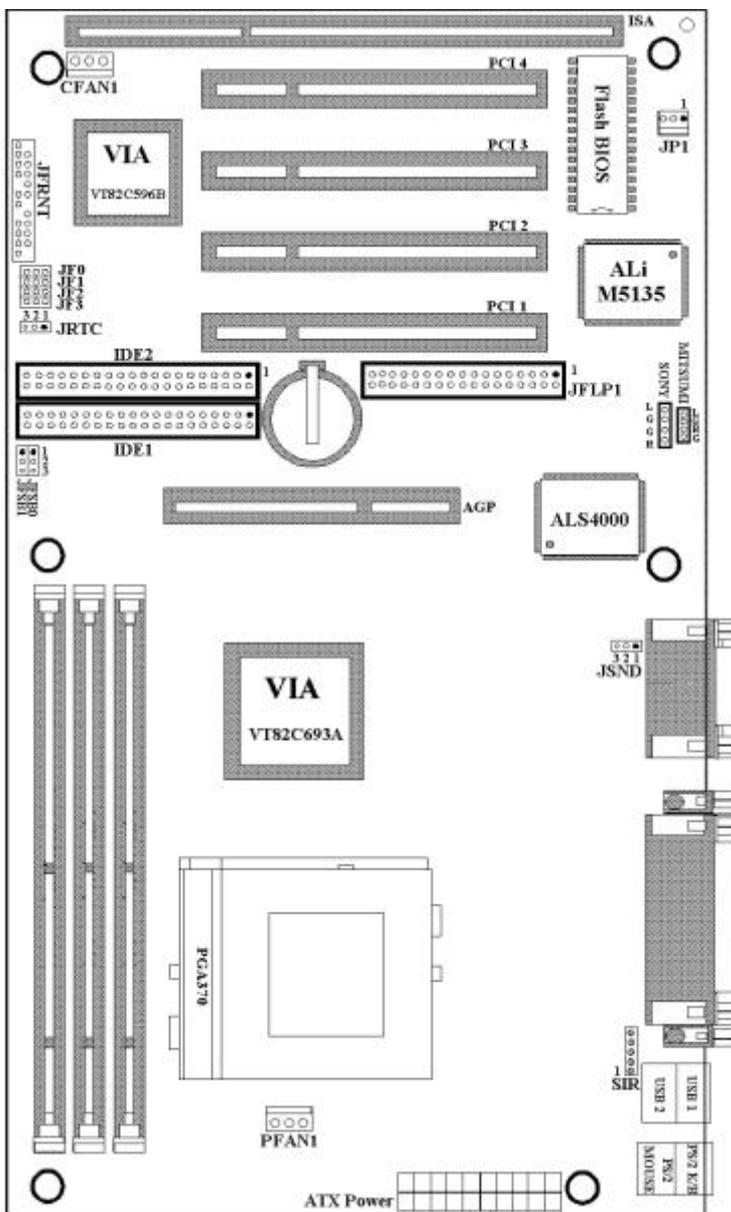
Chapter 2. Hardware Setup

2.1 Installation Procedure

1. **Jumper settings （BIOS and CPU）**

2. **Installation of CPU**
3. **Installation of Memory**
4. **I/O Connections & Panel Connections**

2.1.1 Jumper Settings

In this manual , （1-2） represents the first and second pins of the jumper. （2-3） **represents the second and third pins of the jumper**. On the motherboard, you will see two sets of jumpers with different color jumper caps:
Yellow Jumper Caps：(JRTC)Sets the Function of Flash CMOS
Red Jumper Caps ：(JFSB0, JFSB1)Sets the FSB frequency of CPU
　　　(JSND) Enable/Disable Sound function(optional)
WARNING : Electronic parts are Static sensitive. To prevent damage to the computer and its parts please take the following measures.
Work on a surface such as concrete, linoleum or hard wood floor.
Ground your self with either a properly installed grounding strap or by touching a major electrical appliance long enough to discharge the static.

2.1.2 Enable/Disable Sound (JSND : Red Jumper Cap) (The Sound function and jumper are optional)

This jumper lets you to enable or disable the sound function.
1-2 : Enable Sound function (Default Setting)
2-3 : Disable Sound function
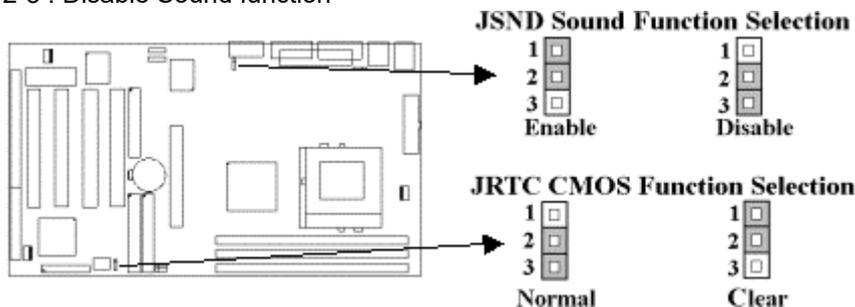
2.1.3 Clearing the CMOS （Yellow Jumper Caps）

JRTC: CMOS Function Selection
1-2：Clear data
2-3：Normal Operation（Default Setting）
How to Clear the CMOS Setting

1. Turn off the power.
2. Remove ATX power cable from connector J1.
3. Remove Yellow Jumper Cap from JRTC（2-3）and put on JRTC（1-2）to remove the CMOS setting.
4. Remove Yellow Jumper Cap from JRTC（1-2）and put on JRTC（2-3）.
5. Connect ATX power cable back to connector J1.
6. Turn on the power.
7. While the system reboots, press <DEL> key to set the BIOS setup.

2.1.4 CPU Voltage Setting

The motherboard supports CPU VID function. It can automatically detect CPU VID signal and generates proper CPU core voltage.

2.1.5 CPU FSB Frequency Setting

The JFSB jumper provides some FSB frequency settings for the CPU. Auto Detect , 66MHz, 100MHz or 133MHz FSB frequency can be selected with this jumper. The over specification operation is not recommended.

JFSB CPU FSB Frequency Setting

JFSB0 / JFSB1	Auto Detect
JFSB0 / JFSB1	66 MHz FSB Frequency
JFSB0 / JFSB1	100 MHz FSB Frequency
JFSB0 / JFSB1	133 MHz FSB Frequency
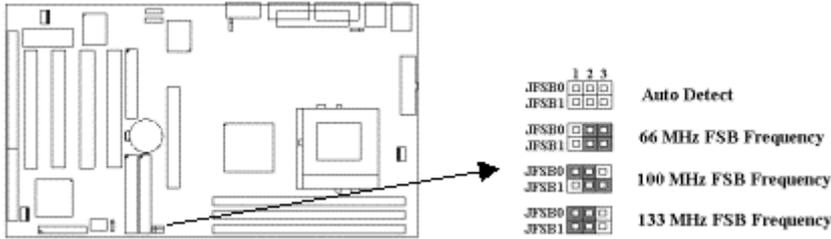
2.2 Installation of CPU

Before installing CPU, make sure the power is off. Locate the level bar on the PGA370 ZIF socket. Push level bar away from the socket and pull upward 90 degrees. Insert the CPU into the socket. Be careful of CPU orientation. Make sure the notch of the CPU corresponds with the white dot on the ZIF socket (the corner without pin socket). Do not push in the CPU. Make sure all pins are aligned with the CPU socket. ON the level bar.

2.3 Installation of Memory

The motherboard has 3x168-pin 64-bit Dual Inline Memory Module（DIMM）sockets divided into 3 banks. You can install 3.3V Extended Data Output（EDO）or Unbuffered Synchronous DRAM（SDRAM）memory. This will increase the system reliability. **You must set DRAM Clock as 66MHz from BIOS Setup if EDO RAM was installed on board.**

2.3.1 Installation of 168-pin DIMM （Dual Inline Memory Module）

1. Before inserting the DIMM, make sure the pin1 of the DIMM matches with the pin1 on the DIMM socket.
2. Insert DIMM into the DIMM sockets at a 90-degree angle and press down.

2.3.2 Removal of 168-pin DIMM

1. Press the holding clips on both sides of the socket outward to release the DIMM.
2. Gently pull the DIMM out of the socket.

Install DIMM   Remove DIMM
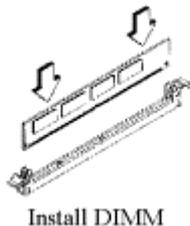
2.3.3 Memory Configuration

There is no jumper setting required for the memory size or type. It is automatically detected by the system BIOS, and the total memory size is to add them together.

DIMM Socket	DIMM Modules
DIMM1	EDO/SDRAM 8, 16, 32, 64, 128, 256, 512MB
DIMM2	EDO/SDRAM 8, 16, 32, 64, 128, 256, 512MB
DIMM3	EDO/SDRAM 8, 16, 32, 64, 128, 256, 512MB

2.4 I/O Connections/Panel Connections

I/O Connections

J1	ATX Power Connector
PFAN1	Chassis fan connector
CFAN1	CPU fan connector
SIR	Infrared Connector (Cable optional)
JP1	Wake up on LAN connector

JFLP1	Floppy Disk Drive Connector
IDE1, 2	Primary/ Secondary IDE Connectors
MS	PS/2 Mouse Port
KB	PS/2 Keyboard Connector
JCOM1, 2	Serial Ports 1 & 2
JPRT	Printer Port
USB1, 2	USB Connector
P1	Game/MIDI Connectors (optional)
LOUT	Line out Connector (optional)
LIN	Line in Connector (optional)
MIC	Microphone in Connector (optional)
MITSUMI	The Connector for Mitsumi CD-ROM audio cable (optional)
SONY	The Connector for IDE/Sony CD-ROM audio cable (optional)

2.4.1 ATX Power Connector (20-pin J1)

Make sure that the power supply is off before connecting or disconnecting the power cable.
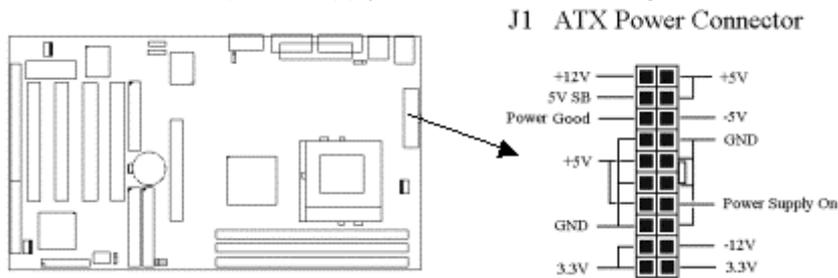
2.4.2 Chassis & CPU Fan Connectors (3-pin FAN)

Connect the fan's plug to the board taking into consideration the polarity of the connector.
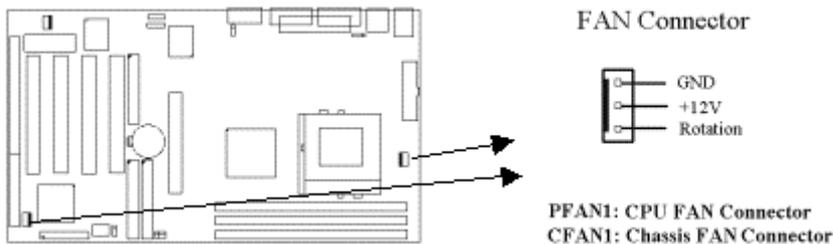
2.4.3 Infrared Connector (5-pin SIR)

This connector supports the optional wireless transmitting and receiving infrared module, with this module and application software such as Laplink or Win95 Direct Cable Connection, user can transfer files to or from their laptops, notebooks, PDA, PCs and printers. The connector supports IrDA (115.2Kbps, 2 meters) and ASK-IR (56Kbps). Install infrared module onto Infrared connector and configure the setting through 'UR2 Mode' in **Integrated Peripherals** to select whether UART is directed for use with COM2 or Infrared.
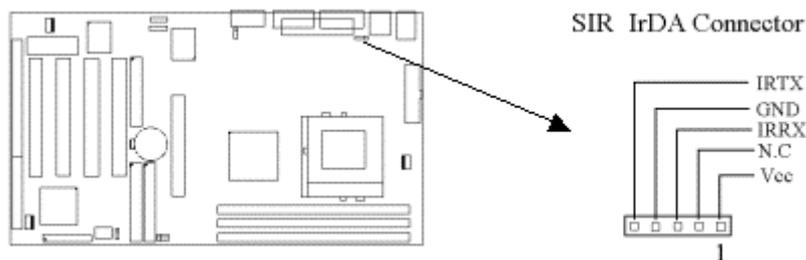
2.4.4 Wake-up on LAN Connector (3-pin JP1)

The JP1 connector powers up the system when a wakeup packet or signal is received from the network . This feature requires the **Wake up on LAN** function in BIOS is set to Enabled and that your system has an ATX power supply with at least 720mA +5V standby power.

JP1 Wake up on LAN Connector

1 — Wake up signal
2 — Ground
3 — +5V Standby
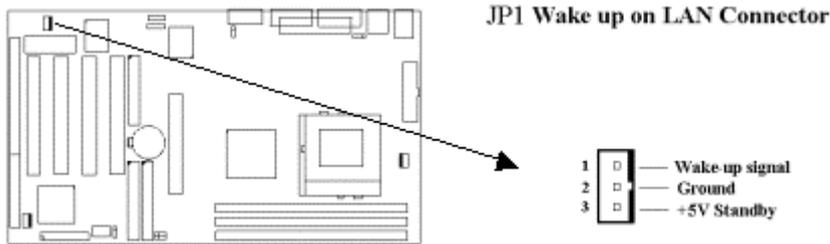
2.4.5 Floppy Disk Drive Connector (34-pin JFLP1)

This connector supports the provided floppy disk drive ribbon cable. Orient the red stripe to pin 1

JFLP1 Floppy Drive Connector
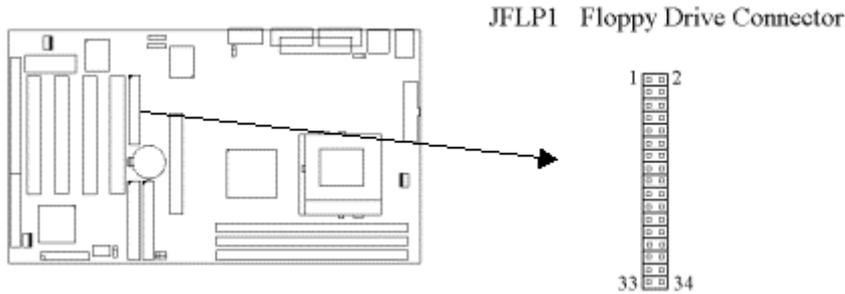
2.4.6 Primary/Secondary IDE Connector (Two 40-pin IDE)

These connectors support the provided IDE hard disk ribbon cable. Connect your first IDE hard disk to master mode of the primary channel. If you have second IDE device to install in your system, connect it as slave mode on the same channel, and the third and fourth device can be connected on secondary channel as master and slave mode respectively.
There are three connectors on the 80-pin IDE ribbon cable. The blue connector must connect with motherboard's IDE connector and the other connectors must connect with HDD. In order to get the better performance the Ultra DMA 66 HDD must connect with 80-pin IDE ribbon cable.

IDE Connectors

Secondary IDE Connector   Primary IDE Connector

Back I/O panel
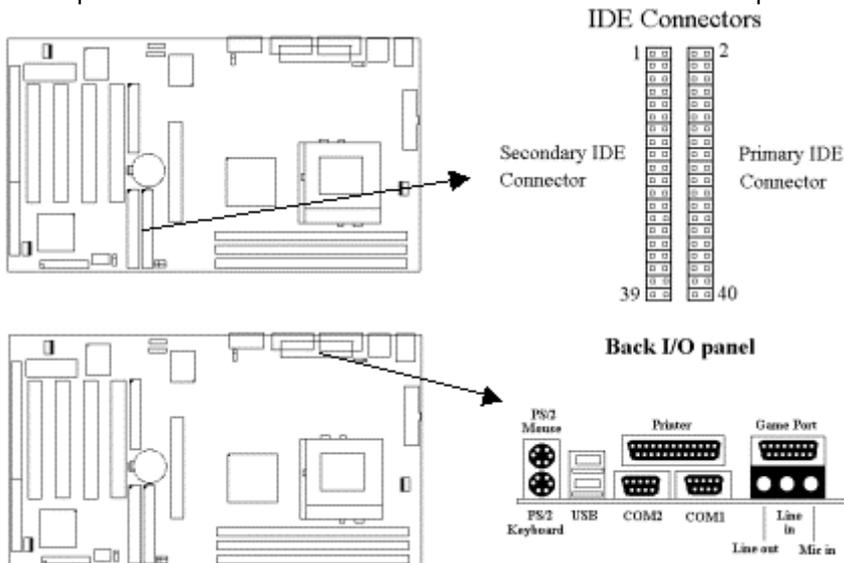
2.4.7 PS/2 Mouse Port (6-pin Mini-Din MS)

The system will direct IRQ12 to the PS/2 mouse.

2.4.8 PS/2 Keyboard Connector (6-pin Mini-Din KB)

This connection is for a standard keyboard using a PS/2 plug. You may use a Din to Mini-Din adapter on standard AT keyboards.

2.4.9 Serial Port (Two 9-pin D-type JCOM)

2.4.10 Printer Port (25-pin D-type JPRT)

You can enable the parallel port and choose the IRQ through the "Onboard Parallel Port" setting in Integrated Peripherals of the COMS SETUP UTILITY.

2.4.11 USB Connectors (Two 4-pin USB)

You can attach USB devices to the USB connector.

2.4.12 Line Out Connector (optional)

The Line Out phonejack provides the audio outputs for the left and right stereo channels.

2.4.13 Line In Connector (optional)

The Line In phonejack is used to attach monaural or stereo devices such as a cassette, Digital Audio Tape, or Minidisc players for playback, mixing, or recording.

2.4.14 Microphone In Connector (optional)

The Microphone In phonejack is used to attach a monaural microphone for live audio input for playback, mixing, or recording.

2.4.15 Game/MIDI Port (optional)

The Game/MIDI Port connector is used to attach a joystick for game interaction or to attach an external MIDI device for playback, mixing, or recording.

2.4.16 ATAPI IDE/Sony CD-ROM Audio (4-pin SONY) (optional)

The ATAPI IDE/Sony CD-ROM Audio connector is used to connect the audio cable from either an ATAPI IDE or Sony CD-ROM drive for playback, mixing, and recording.

Mitsumi CD-ROM Audio Connector

Left Right GND

SONY/IDE CD-ROM Audio Connector

Right GND Left
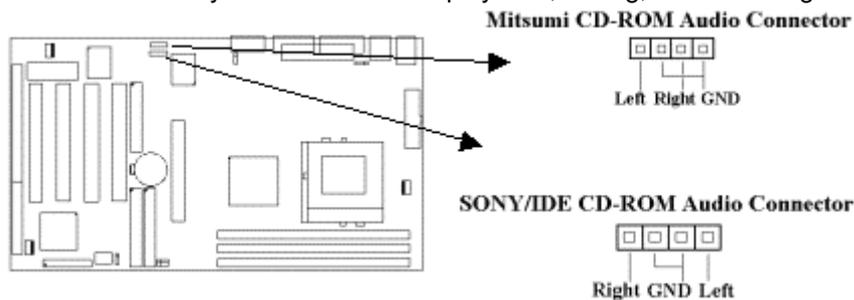
2.4.17 Mitsumi CD-ROM Audio (4-pin MITSUMI) (optional)

The Mitsumi CD-ROM Audio connector is used to connect the audio cable from a Mitsumi CD-ROM drive for playback, mixing, or recording. Only one of the two CD-ROM audio connectors may be used at a time.

2.4.18 Panel Connection (24-pin JFRNT)

JFRNT Connector	Function
GREENLED	Suspend Mode LED
PWRLED	Power LED
KEYLK	Keylock Switch
SPKR	Speaker
RESET	Reset Switch
IDELED	HDD LED
PWRBNT	ATX Power Button Connector
SMISW	Sleep Switch

! WARNING: To avoid the system from failing, turn off the power before connecting any devices to the system.

Chapter 3. BIOS Setup

3.1 CMOS Setup Utility

To activate CMOS Setup, press ＜DEL＞ key immediately after you turn on the system. The following message "Press DEL to enter SETUP" should appear in the lower left hand corner of your screen. When you enter the CMOS Setup Utility, the Main Menu will be displayed（**Figure 3-1**）. You can use arrow keys to select your function, press ＜Enter＞ key to accept the selection and enter the sub-menu.

Figure 3-1. CMOS Setup Utility Main Screen

```
ROM PCI/ISA BIOS (XXXXXXXX)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.
```

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

```
Esc : Quit                          ↓ → ← : Select Item
F10 : Save & Exit Setup             (Shift) F2 : Change Color
                Time, Date,    Hard Disk Type...
```

3.2 Standard CMOS Setup

With the sub-menu（**Figure 3-2**）, you can setup the; system date, system time, hard and floppy drive type, and display adapter type. Please refer to your equipment specification when changing the setup. Use arrow keys to highlight items, and use ＜PageUp＞, ＜PageDown＞, ＜+＞, or ＜-＞ keys to scroll through the available options.

Figure 3-2. Standard CMOS Setup Screen

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

Date (mm:dd:yy) : Mon, Apr. 13 1998

Time(hh:mm:ss) : 17 : 52 : 00

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	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 , 3.5in.

Drive B   : None

Floppy 3 Mode Support : Disabled   Base Memory :   640K

                                                 Extended Memory : 31744K

3.2.1 Date

To assign the system date, the format is "mm.dd.yy". The input range for the Month is 1-12. Range for Date is 1-31. Range for Year is 1994-2079. System BIOS will calculate the day of the week automatically.

3.2.2 Time

To assign the system time, the format is "hh:mm:ss". The setting is in military time. When entering 2:34pm enter "14:34:00".

3.2.3 Hard Disks Setting

The BIOS supports Dual-Channel PIO and PCI Bus Master IDE ports. Each port supports one master and one slave hard drive. You can use ＜PageUp＞ or ＜PageDown＞ key to change hard drive type. Incorrect setting may result in boot up error or system hang.
If your hard disk drive is not listed, you can select Type "USER" to define your own drive manually. We recommend that you select Type "AUTO" for all drives. The BIOS will auto-detect the hard disk drive and CD-ROM drive at the POST stage.
If your hard disk drive is a SCSI device, please select "None" for your hard drive setting.

3.2.4 Floppy Drives A&B Setting

Select your floppy disk drive type. Options are 360KB（5.25"）, 720KB（3.5"）, 1.2MB（5.25"）, 1.44MB（3.5"）, 2.88MB（3.5"）.

3.2.5 Floppy 3 Mode Support

This is required to support older Japanese floppy drives. Floppy 3 Mode support will allow reading and writing of 1.2MB (as opposed to 1.44MB) on a 3.5-inch diskette.

3.2.6 Video Display Adapter Setting

Select the display adapter type for your system. Options are EGA/VGA, MONO, CGA40 and CGA80.

3.2.7 Halt On

This function allows the system to halt when an error is detected during Power-On Self-Test.

3.3 BIOS Features Setup

The sub-menu （**Figure 3-3**） includes all AWARD enhanced functions. The correct setting can enhance boot up efficiency. You can assign system speed, setup sequence, typematic and system password setting. You can enter ＜F1＞ key for help on highlighted topics. If you want to restore values before the changes you just made, press ＜F5＞ key. If you want to restore default value, press ＜F6＞ or ＜F7＞ key.

Figure 3-3. BIOS FEATURES SETUP SCREEN

ROM PCI / ISA BIOS (XXXXXXXX)
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	: Enabled	D0000-D3FFF Shadow	: Disabled
Processor Number Feature	: Disabled	D4000-D7FFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D8000-DBFFF Shadow	: Disabled
Boot Sequence	: C ,A, SCSI	DC000-DFFFF Shadow	: Disabled

Swap Floppy Drive	: Disabled		
Boot Up Floppy Seek	: Disabled		
Boot Up Numlock Status	:On		
Gate A20 Option	: Fast		
Memory Parity/ECC Check	: Disabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250	ESC : Quit	↓ → ←: Select Item
Security Option	: Setup	F1 : Help	PU/PD/+/- : Modify
PCI/VGA Palette Snoop	: Disabled	F5 : Old Values	(Shift) F2 : Color
OS Select For DRAM>64MB	: Non-OS2	F6 : Load BIOS Defaults	
Report No FDD For WIN 95	: Yes	F7 : Load Setup Defaults	

3.3.1 Virus Warning

When enabled, the BIOS will monitor the boot sector and the partition table on the hard drive for any attempt to modify. If an attempt is detected, the BIOS will halt the system and prompt the warning message. Select "Disabled" if you are installing a new operating system.

3.3.2 CPU Internal/External Cache

These options are to enable or disable CPU Internal （L1） Cache, or External （L2） Cache.

3.3.3 CPU L2 Cache ECC Checking

Select "Enabled" to enable CPU L2 Cache ECC Checking.
Select "Disabled" to disable CPU L2 Cache ECC Checking.

3.3.4 Quick Power On Self Test

Select "Enabled" to speed up time required to complete Power-On Self-Test.

3.3.5 Boot Sequence

This option allows user to assign boot sequence of the system. Available options are A, C, D, E, F, CD-ROM, SCSI and LS120/ZIP.

3.3.6 Swap Floppy Drive

When enabled, physical drive A will be assigned to logical drive B, and physical drive B will be assigned to logical drive A.

3.3.7 Boot Up Floppy Seek

The system will detect and verify operation of the floppy drive type .

3.3.8 Boot Up Numlock Status

The option allows the ＜NumLock＞ key to be activated after system boot up.

3.3.9 Gate A20 Option

This entry allows you to select how the gate A20 is handled. The gate A20 is a device used to address memory above 1 Mbytes. Initially, the gate A20 was handled via a pin on the keyboard (Normal). Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset (Fast; default) to provide support for gate A20.

3.3.10 Memory Parity / ECC Check

When Disabled, there will be no memory errors shown on the monitor for Memory parity SERR# (NMI). When parity DRAM modules are used, select Parity or ECC (Error Checking and Correcting) to correct 1 bit memory errors in the memory.

3.3.11 Typematic Rate Setting

Select "Enabled" to configure "Typematic Rate" and "Typematic Delay" functions.

3.3.12 Typematic Rate

Use this option to set the rate at which a character keeps repeating while you hold down a key.

3.3.13 Typematic Delay

Select "Enabled" to set the length of delay before key strokes to repeat. Available options are "250", "500", "750", and "1000".

3.3.14 Security Option

You can select whether the password is required every time the system boots or only when you enter the Setup. You can assign "Supervisor Password" and "User Password" in the main CMOS Setup Utility Screen.

3.3.15 PCI/VGA Palette Snoop

Enable this option to correct screen color shifts, when there is a combination of VGA cards, accelerator cards, or MPEG cards present.

3.3.16 OS Select for DRAM > 64MB

If you are using OS/2 operating system and installed memory is larger than 64MB. You need to have the setting in the enable mode.

3.3.17 Report No FDD For WIN 95

While the FDD in " STANDARD CMOS SETUP " is set to NONE, set this option to No to release IRQ6 for passing Win95 logo. This option is irrelevant under normal operation .

3.3.18 Video BIOS Shadow

Video shadow copies BIOS code from slower ROM to faster RAM. BIOS can then execute from RAM.

3.3.19 C8000-CBFFF /DC000-DFFFF Shadow

Optional firmware will be copied from ROM to RAM. When this option is enabled.

3.4 Chipset Features Setup

These settings are intended for the Chipset function on the motherboard. Fine tuning these options, enhances the performance of the system.

Figure 3.4 CHIPSET FEATURES SETUP SCREEN

```
                    ROM PCI / ISA BIOS (XXXXXXXX)
                       CHIPSET FEATURES SETUP
                        AWARD SOFTWARE, INC.
```

Bank 0/1 DRAM Timing	: SDRAM 10ns	CPU Host/PCI Clock	: Default
Bank 2/3 DRAM Timing	: SDRAM 10ns		
Bank 4/5 DRAM Timing	: SDRAM 10ns		
SDRAM Cycle Length	: 3		
DRAM Clock	: HCLK-33M		
Memory Hole	: Disabled		
Read Around write	: Disabled		
Concurrent PCI/Host	: Disabled		
System BIOS Cacheable	: Enabled	ESC : Quit ↓ → ←: Select Item	
Video BIOS Cacheable	: Enabled	F1 : Help PU/PD/+/- : Modify	
Video RAM Cacheable	: Enabled	F5 : Old Values (Shift) F2 : Color	
AGP Aperture Size	: 64M	F6 : Load BIOS Defaults	
AGP-2X Mode	: Enabled	F7 : Load Setup Defaults	

3.4.1 Bank 0/1, 2/3, 4/5 DRAM Timing

DRAM timing is controlled by the DRAM timing registers. The timings programmed into this register are dependent on the system design. The slower timing may be required in certain system designs to support loose layouts or slower memory. Options are SDRAM 10ns, SDRAM 8ns, Normal, Medium, Fast, Turbo.

3.4.2 SDRAM Cycle Length

This item allows you to set the SDRAM Latency Timer. Options are 2, 3.

3.4.3 DRAM Clock

This item allows you to set the DRAM Clock. You must set DRAM Clock as 66MHz if EDO RAM was installed on board. Please set the item according to the Host (CPU) Clock and DRAM Clock.

3.4.4 Memory Hole

Enabling this feature reserves 15MB to 16MB memory address space to ISA expansion cards that specifically require this setting. This makes the memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB.

3.4.5 Read Around write

DRAM optimization feature: If a memory read is addressed to a location whose latest write is being held in a buffer before being written to memory, the read is satisfied through the buffer contents, and the read is not sent to the DRAM.

3.4.6 Concurrent PCI/Host

When Disabled, CPU bus will be occupied during the entire PCI operation period.

3.4.7 System BIOS Cacheable

Allows the system BIOS to be cached for faster system performance.

3.4.8 Video BIOS Cacheable

Allows the video BIOS to be cached for faster video performance.

3.4.9 Video RAM Cacheable

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

3.4.10 AGP Aperture Size

Choose 4, 8, 16, 32, 64, 128MB. Memory-mapped, graphics data structures can reside in the Graphics Aperture.

3.4.11 AGP-2X Mode

Set to Enabled if your AGP card supports the 2X mode, which uses a double-clocked data technique to transfer twice the data per each AGP clock.

3.4.12 CPU Host/PCI Clock

Select Default, 66, 75 or 83MHz if your CPU is 66MHz FSB and select Default, 100, 103, 112 or 124, if the CPU is 100MHz FSB. When CPU is 133MHz FSB, you can select the 124, 133, 140 or 150MHz.
The 75, 83, 103, 112, 124, 140 and 150MHz frequency are over specification.
Notice:
You must install 8ns or faster DIMM on board if you set 103, 112 or 124MHz as external frequency and must install 7ns or faster DIMM on board if you set 133 or 140MHz as external frequency. If the external frequency is 150MHz, 6ns or faster DIMM must be installed on board.

Warning: Over specification operations are not recommended.

3.5 Power Management Setup

Power management decreases power usage under the pre-defined standby time range.

Figure 3-5. POWER MANAGEMENT SETUP SCREEN

```
                    ROM PCI / ISA BIOS (XXXXXXXX)
                      POWER MANAGEMENT SETUP
                       AWARD SOFTWARE, INC.
┌─────────────────────────────────────────┬──────────────────────────────────────┐
│ ACPI function          :Disabled         │ Primary INTR          : ON           │
│ Power Management       : Disabled        │ IRQ3   (COM2)           : Primary    │
│ PM Control by APM      : Yes             │ IRQ4   (COM1)           : Primary    │
│ Video Off After        : Suspend         │ IRQ5   (LPT2)           : Primary    │
│ Video Off Method       : V/H SYNC+Blank  │ IRQ6   (Floppy Disk)    : Primary    │
│ MODEM Use IRQ          : 3               │ IRQ7   (LPT1)           : Primary    │
│ Soft-off by PWRBTTN    : Instant-off     │ IRQ8   (RTC Alarm)      : Disabled   │
│        ** PM Timers **                   │ IRQ9   (IRQ2 Redir)     : Secondary  │
│ HDD Power Down         : Disabled        │ IRQ10  (Reserved)       : Secondary  │
│ Doze Mode              : Disabled        │ IRQ11  (Reserved)       : Secondary  │
│ Suspend Mode           : Disabled        │ IRQ12  (PS/2 Mouse)     : Primary    │
│        ** PM Events **                   │ IRQ13  (Coprocessor)    : Primary    │
│ VGA                    : OFF             │ IRQ14  (Hard Disk)      : Primary    │
│ LPT & COM              : LPT / COM       │ IRQ15  (Reserved)       : Disabled   │
│ HDD & FDD              : ON              ├──────────────────────────────────────┤
│ DMA/master             : OFF             │ ESC : Quit      ↓ → ←: Select Item   │
│ Modem Ring Resume      : Disabled        │ F1  : Help      PU/PD/+/- : Modify   │
│ RTC Alarm Resume       : Disabled        │ F5  : Old Values  (Shift) F2 : Color │
│ Wake Up On LAN         : Disabled        │ F6  : Load BIOS Defaults             │
│                                          │ F7  : Load Setup Defaults            │
└─────────────────────────────────────────┴──────────────────────────────────────┘
```

3.5.1 ACPI Function

This item allows you to enable or disable the function of Advanced Configuration and Power Interface which offers improved power management.

3.5.2 Power Management

Min Saving	System starts power saving function when the inactivity period exceeds 1 hour.
Max Saving	System starts power saving function when the inactivity period exceeds 1 min.
User Define	Allows user to define the inactivity period before power saving function activates,

3.5.3 PM Control by APM

Select "Yes" if your system has Advanced Power Management （APM）.

3.5.4 Video Off After

This option allows your monitor to blank after your system went into Doze or Suspend mode. You can elect to not blank screen by select " NA". Default value is " Suspend ".

3.5.5 Video Off Method

This field defines the video off features. The following options are available: DPMS Support, Blank Screen, V/H SYNC + Blank . The DPMS (Display Power Management System) features allow the BIOS to control the video display card if it supports the DPMS feature.

3.5.6 MODEM Use IRQ

This item tells the Power Management BIOS which IRQ is assigned to the installed MODEM. Option are NA, 3, 4, 5, 7, 9, 10 and 11.

3.5.7 Soft-Off by PWRBTN

When set to "Delay 4 Sec.", the power button has a dual function where pressing less than 4 seconds will place the system in sleep mode and shut down the system when the button is held more than 4 seconds. "Instant-Off", the system will be shut down right away when the power button is pressed.

3.5.8 HDD Power Down

This instructs hard drives to shut off while in the Power Management modes.

3.5.9 Doze Mode

When system is inactive after the predefined time limit, system performance will drop down. This is the first level of Power Management.

3.5.10 Suspend Mode

System further shuts down all devices except for CPU itself. This is the third level of Power Management.

3.5.11 VGA

When set to On, any event occurring at a VGA port will awaken a system which has been powered down.

3.5.12 LPT & COM

When set to On, any event occurring at a LPT (printer) / COM (serial) port will awaken a system which has been powered down.

3.5.13 HDD & FDD

When set to On, any event occurring at a Hard Disk or floppy drive port will awaken a system which has been powered down.

3.5.14 DMA / master

When set to On, any event occurring to the DMA controller will awaken a system which has been powered down.

3.5.15 Modem Ring Resume

An incoming call on the external Modem power on the system. The function of power on through modem when system is off. When set to "Enabled" : To let the system to enter the environment of DOS or Windows 95/98 OS before system is power off. As long as there are any message through the Modem to enter the System during system is power off. The system will enable power on function.

3.5.16 RTC Alarm Resume

Set this option to enable or disable the RTC Alarm to Wake Up the system which is set at soft Off.

3.5.17 Date (of Month) Alarm, Timer (hh:mm:ss) Alarm

Set these options to specify the RTC Alarm time on Date / Hour / Minute / Second.

3.5.18 Wake Up On LAN

With a LAN card installed, the Wake-up on LAN function allows you to remotely power up your system through your network by sending a wake-up frame or signal. With this feature, you can remotely upload / download data to/from systems during off-peak hours. Please refer to session 2.4.4 for more information.

3.5.19 Primary INTR

When set to On (default), any primary interrupt request (see below) will awaken the system which has been powered down.
Following this option is a list of IRQs (**I**nterrupt **ReQ**uests). You can set each IRQ to be Primary, Secondary or Disabled. When set to Secondary, the interrupt request will neither prevent the system from going into a power management mode nor awaken it.

3.6 PNP/PCI Configuration Setup

Figure 3.6 PNP/PCI CONFIGURATION SETUP

ROM PCI / ISA BIOS (XXXXXXXX)
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
IRQ-3 assigned to	: PCI/ISA PnP	PCI Delay Transaction	: Enabled
IRQ-4 assigned to	: PCI/ISA PnP	PCI#2 Access #1 Retry	: Disabled
IRQ-5 assigned to	: PCI/ISA PnP	AGP Master 1 WS Write	: Enabled
IRQ-7 assigned to	: PCI/ISA PnP	AGP Master 1 WS Read	: Disabled
IRQ-9 assigned to	: PCI/ISA PnP		
IRQ-10 assigned to	: PCI/ISA PnP	Assign IRQ For USB	: Enabled
IRQ-11 assigned to	: PCI/ISA PnP	Assign IRQ For VGA	: Enabled
IRQ-12 assigned to	: PCI/ISA PnP		
IRQ-14 assigned to	: PCI/ISA PnP		
IRQ-15 assigned to	: PCI/ISA PnP		
DMA-0 assigned to	: PCI/ISA PnP		
DMA-1 assigned to	: PCI/ISA PnP	ESC : Quit ↓ → ←: Select Item	
DMA-3 assigned to	: PCI/ISA PnP	F1 : Help PU/PD/+/- : Modify	
DMA-5 assigned to	: PCI/ISA PnP	F5 : Old Values (Shift) F2 : Color	
DMA-6 assigned to	: PCI/ISA PnP	F6 : Load BIOS Defaults	
DMA-7 assigned to	: PCI/ISA PnP	F7 : Load Setup Defaults	

3.6.1 PNP OS Installed

This field allows you to use a Plug-and-Play (PnP) operating system.
Please set it as " No " if the operating system has no PnP function or to avoid reassigning the IRQs by the operating system.

3.6.2 Resources Controlled By

Default setting is "Auto". This setting allows the BIOS to self detect setting and Plug-and-Play devices during start up. The user can select and configure IRQs under "Manual" mode.

3.6.3 Reset Configuration Data

In case a conflict occurs after you assign the IRQs or after you configure your system, you can enable this function to allow your system to automatically reset your configuration and reassign the IRQs, DMAs, and I/O address.

3.6.4 IRQ-xx assigned to

If your ISA card is not PnP compatible and requires a special IRQ to support its function, set the selected IRQ-x assigned to :"Legacy ISA". This setting informs the PnP BIOS to reserve the selected IRQ for the installed legacy ISA card.

3.6.5 DMA-x assigned to

If your ISA card is not PnP compatible and requires a special DMA channel to support its function, set the selected DMA channel to "Legacy ISA". This setting informs the PnP BIOS to reserve the selected DMA channel for the installed legacy ISA card.

3.6.6 CPU to PCI Write Buffer

When enabled, up to four D words of data can be written to the PCI bus without interrupting the CPU. When disabled, a write buffer is not used and the CPU read cycle will not be completed until the PCI

bus signals that it is ready to receive the data.

3.6.7 PCI Dynamic Bursting

When enabled, data transfer on the PCI bus, where possible, make use of the high-performance PCI bust protocol, in which greater amounts of data are transferred at a single command.

3.6.8 PCI Master 0 WS Write

When enabled, writes to the PCI bus are command with zero wait states.

3.6.9 PCI Delay Transaction

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

3.6.10 PCI # 2 Access # 1 Retry

This item allows you enabled/disabled the PCI # 2 Access # 1 Retry.

3.6.11 AGP Master 1 WS Write

This implements a single delay when writing to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.

3.6.12 AGP Master 1 WS Read

This implements a single delay when reading to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.

3.6.13 Assign IRQ For USB

This item can be found when "OnChip USB" is enabled from Integrated Peripherals menu. When this item is Enabled, the system automatically assigns an IRQ for the USB device connected to your system. However, if you are not using USB devices and an ISA slot required an IRQ address, set this function to Disabled. The IRQ address previously occupied by the USB device will be available for the ISA slot.

3.6.14 Assign IRQ For VGA

The Enabled option allows the BIOS to auto-route an IRQ for use by a VGA card. While most of the VGA cards do not need the IRQ assignment, certain VGA cards may need it.

3.7 Integrated Peripherals

You can control Input and Output functions from this screen.

Figure 3-7 Integrated Peripherals

ROM PCI / ISA BIOS (XXXXXXXX)
INTEGRATED PERIPHERAL
AWARD SOFTWARE, INC.

OnChip IDE Channel 0	: Enabled	UR2 Mode	: Normal
OnChip IDE Channel 1	: Enabled		
IDE Prefetch Mode	: Auto		
IDE HDD Block Mode	: Enabled	Onboard Parallel Port	: 378/IRQ7
Primary Master PIO	: Auto	Parallel Port Mode	: ECP
Primary Slave PIO	: Auto	ECP Mode Use DMA	: 3
Secondary Master PIO	: Auto	OnChip USB	: Enabled
Secondary Slave PIO	: Auto	USB Keyboard Support	: Disabled
Primary Master UDMA	: Auto		
Primary Slave UDMA	: Auto		
Secondary Master UDMA	: Auto		
Secondary Slave UDMA	: Auto		
Init Display First	: AGP	ESC : Quit	↓ → ←: Select Item

		F1 : Help	PU/PD/+/- : Modify
Onboard FDC Controller	: Enabled	F5 : Old Values	(Shift) F2 : Color
Onboard Serial Port 1	: 3F8/IRQ4	F6 : Load BIOS Defaults	
UR1 Mode	: Normal	F7 : Load Setup Defaults	
Onboard Serial Port 2	: 2F8/IRQ3		

3.7.1 OnChip IDE Channel 0/1

Select "Enabled" to activate each on-board IDE channel separately, Select "Disabled", if you install an add-on IDE Control card

3.7.2 IDE Prefetch Mode

Enable prefetching for IDE drive interfaces that support its faster drive accesses. If you are getting disk drive errors, change the setting to omit the drive interface where the errors occur. Depending on the configuration of your IDE subsystem, this field may not appear, and it does appear when the Internal PCI/IDE filed, above, is Disabled.

3.7.3 IDE HDD Block Mode

This feature enhances disk performance by allowing multi-sector data transfers and eliminates the interrupt handling time for each sector.

3.7.4 Primary & Secondary Master/Slave PIO

These four PIO fields let you set a PIO mode（0-4）for each of four IDE devices. When under "Auto" mode, the system automatically set the best mode for each device

3.7.5 Primary & Secondary Master/Slave UDMA

When set to "Auto" mode, the system will detect if the hard drive supports Ultra DMA mode.

3.7.6 Init Display First

Select "AGP" or "PCI Slot" for system to detect first when boot-up.

3.7.7 Onboard FDC Controller

Select "Enabled" to activate the on-board FDC
Select "Disabled" to activate an add-on FDC

3.7.8 Onboard Serial Port 1 & 2

Select an address and corresponding interrupt for the first/second serial port. The default value for the first serial port is "3F8/IRQ4" and the second serial port is "2F8/IRQ3".

3.7.9 UR1 & 2 Mode Select

Select to activate the Infrared transfer function.

3.7.10 Onboard Parallel Port

Select address and interrupt for the Parallel port.

3.7.11 Parallel Port Mode

Select an operating mode for the parallel port. Mode options are SPP, EPP1.7, EPP1.9, ECP, ECPEPP1.7 and ECPEPP1.9.

3.7.12 ECP Mode Use DMA

Select a DMA channel if parallel port is set as ECP, ECPEPP1.7 or ECPEPP1.9.

3.7.13 OnChip USB

If your system contains a Universal Serial Bus controller and you have a USB peripheral, select Enabled. The next option will become available.

3.7.14 USB Keyboard Support

This item lets you enable or disable the USB keyboard driver within the onboard BIOS.

3.8 Load BIOS Defaults

This loads the standard BIOS default values. To select, highlight it and press the < Enter > key. Then press the < Y > and < Enter > keys to confirm. Otherwise, press the < N > key to cancel.

3.9 Load Setup Defaults

This feature loads the setup default values from BIOS default table. To select, highlight it and press the < Enter > key. Then press the < Y > and < Enter > keys to confirm. Otherwise, press the < N > key to cancel.

3.10 Supervisor/User Password

You can assign, modify, or cancel password settings. To modify, highlight "Supervisor Password" or "User Password" and press the < Enter > key. The screen will prompt you（"Enter Password："）. Enter your password. The maximum size of the password is 8 characters. System will prompt you to reenter the password to verify. Remember the passwords are case sensitive.
If you want to remove the passwords, either delete passwords or press < Enter > when prompting for new password.
If you want it to require password upon initial system startup and upon entering the CMOS Setup Utility, you will need to change the selection of the（Security Option）under（BIOS FEATURES SETUP）to "System".
If the setting is "Setup", the system will only require the password you activate CMOS Setup Utility.

3.11 IDE HDD Auto Detection

If your system has an IDE hard drive, you can use this function to detect its parameters and enter them into the "Standard CMOS Setup" automatically.
This routine only detects one set of parameters. If your hard disk is formatted using different parameters than those detected, you have to enter the parameters manually. If the parameters listed do not match the ones used to format the disk, the information on that disk will not be accessible. If the auto-detected parameters displayed do not match those that are used for your drive, ignore them. Type N to reject the values and enter the correct ones manually from the Standard CMOS Setup screen.

3.12 Exit CMOS Setup Utility

Press the < F10 > key to save the setup and exit. Press < ESC > key to exit without saving. Either saving or not saving modifications, screen will prompt user to confirm, and system will reboot on exit.

Chapter 4. Driver Installation

4.1 AGP & IDE Driver Installation

Please refer to the readme.txt file that in **\VIA\4IN1DRV** directory in the CD Driver Disk first then follow the instruction to setup AGP & IDE driver.

4.2 Sound Driver Installation

(The Sound function is optional. If you have sound on board, you can follow the below steps to load sound driver)

4.2.1 Windows 95 Installation

1. Start up Windows 95 OSR2.1 or later version [If your Windows 95 is older version, please install the USB supplement service pack (usbsupp.exe) file first. You can get this file from Microsoft Inc. (http://www.microsoft.com)]
2. Remove the " **?PCI Multimedia Audio Devices** " item from Start \Settings \ Control Panel \System \Device Manager \?Other devices.

3. Double click " **Add New Hardware** " icon then click " **Next** " button.
4. Check the box on the " **No** " item when " Do you want Windows to search for your new hardware ? " message is shown on screen then click the " **Next** " button.
5. Select " **Sound, video and game Controllers** " then click " **Next** " button.
6. Click the " **Have Disk …**" button and type in " **D:\ALS\ALS4000\9531DOS\WIN95** " in Install From Disk dialog box. Note: D: is the Drive where CD Driver has been inserted.
7. Click " **OK** " button.
8. The " **ALS4000 PCI Audio Device** " will be detected. Click " **OK** " button.
9. Click " **Next** " button, Windows will automatically copy the needed files.
10. Click " **Finish** " button and restart your system.

4.2.2 Windows 98 Installation

1. Start up Windows 98. Open " **My Computer** ", and select " **Control Panel** " icon.
2. Select " **System** " icon, and then select " **Device Manager** " page.
3. Please remove " **?PCI Multimedia Audio Device** " from " **?Other devices** " under device list with the " **Remove** " button.
4. Please double click on the Add New Hardware icon then click " **Next** " button, click " **Next** " one more times.
5. This Wizard searches for new drivers for " **PCI Multimedia Audio Device** ", you have to attempt to locate a driver provided by the manufacturer.
6. Please insert the CD Driver into the CD drive, then click " **Next** " button.
7. " What do you want Windows to do? ", Please click " **search for the best driver for your device [Recommended]** ", then click " **Next** " button.
8. Please click " **Specify a location** ", then type in " **D:\ALS\ALS4000\WIN98** ", then click " **Next** " button, click " **Next** " button one more times. Assume the D is CD drive.
9. Click the " **Finish** " button.
10. If Insert Disk dialog is displayed, please insert the " Windows 98 CD- ROM " into the CD drive, then click " **OK** " button.
11. Windows found and installed Sound devices. Click " **Next** " button then click " **Finish** " button.

4.2.3 Windows ME Installation

1. Start up Windows ME.
2. Open " **My Computer** ", and select " **Control Panel** " icon.
3. Select " **System** " icon, and then select " **Device Manager** " page.
4. Please remove " **?PCI Mulitmedia Audio Device** " from " **?Other devices** " under device list with the "**Remove** " button.
5. Please click on the Add New Hardware icon then click " **Next** " button, click " **Next** " button one more times.
6. This Wizard searches for new drivers for " **PCI Multimedia Audio Device** "
7. Please insert the CD Driver into the CD drive.
8. " What would you like to do? ", Please click " **Automatic search for a better driver [Recommended]** " then click " **Next** " button.
9. System will auto detect ALS4000 PCI Multimedia Device. Click " **Finish** " button.
10. If system wants to load " **ALS4000.SYS** " file, please type in the path " **D:\ALS\ALS4000\WINME** " then click " **OK** " button. (Assume that the D is CD ROM drive)
11. Windows found and installed ALS4000 Audio Devices. Click " **Next** " button.
12. Windows has finished installing the software necessary to support your new hardware. Click " **Finish** " button.

4.2.4 Windows 2000 Installation

1. Start up Windows 2000.
2. Open " **My Computer** ", and select " **Control Panel** " icon.
3. Select " **System** " icon, and then select " **Hardware** " page.
4. Click the " **Device Manager...** " button.
5. Please remove " **?Multimedia Audio Controller** " from " **?Other devices** ". Click the " **?Multimedia Audio Controller** " then press the right button of the Mouse. Select " **Uninstall...** " item then select " **OK** " button to remove the device.

6.	Please double click on the " **Add/Remove Hardware** " icon from Control Panel group. Then click " **Next** " button, select the " **Add/Troubleshoot a device** " item then click " **Next** " button.
7.	This Wizard will help you install a device driver for a hardware device. Click the " **Next** " button.
8.	Select " **Search for a suitable driver for my device [recommended]** " then click the " **Next** " button.
9.	Please click " **Specify a location** ", then click " **Next** " button. Type in " **D:\ALS\ALS4000\WIN2000** ", then click " **OK** " button. Note: D: is the drive where CD Driver has been inserted.
10.	This Wizard found Multimedia Audio Controller, please click " **Next** " button.
11.	Windows has finished installing the software for this device. Click " **Finish** " button.
12.	ALS4000 Game Port is displayed. Do you want to continue the installation? Click " **Yes** " button.
13.	When Insert Disk dialog is displayed, please insert the CD Driver Disk into the CD drive, then click " **OK** " button.
14.	Type in " **D:\ALS\ALS4000\WIN2000** ", then click " **OK** " button.
15.	ALS4000 Audio Device [WDM] is displayed. Do you want to continue the installation? Click " **Yes** " button.
16.	When Insert Disk dialog is displayed, please insert the CD Driver Disk into the CD drive, then click " **OK** " button.
17.	Type in " **D:\ALS\ALS4000\WIN2000** ", then click " **OK** " button.
18.	Windows has finished searching for plug and play hardware. Click " **Next** " button then click " **Finish** " button.

4.2.5 Windows NT 4.0 Installation

Login Windows NT 4.0
Insert the CD Driver into the CD drive first. Choose " **OK** " from CONTROL PANEL \MULTIMEDIA \DEVICES \ADD \UNLISTED OR UPDATED DRIVER. Type in " **D:\ALS\ALS4000\WINNT** " then click " **OK** ". (Assume the D is CD drive)
The " **Avance Logic, Inc. ALS4000** " will be appeared. Click " **OK** " button. While installing, " **Driver Exists** " warning message will appear and will ask to keep the old " **midimap.cfg** " or re-install a new driver. Please choose " **New** " to install a new driver, or else it will not function properly.

4.2.6 For Windows NT 3.51, Windows 3.11 & DOS

Please refer to the **readme.txt** file that in each directory to load the sound driver.