# ULi M1689
ATX Motherboard

User's Guide

FCC
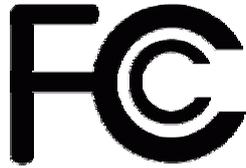
Declaration of Conformity

According to 47 CFR, Parts 2 and 15 of the FCC Rules

The following designated product:

EQUIPMENT: MAINBOARD

is a Class B digital device that complies with 47 CFR Parts 2 and 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that
   may cause undesired operation.

This declaration is given to the manufacturer:

CHAINTECH AMERICA CORP.

4427 Enterprise St. Fremont, CA 94538, U.S.A.

http://www.chaintechusa.com

Chaintech President: Simon Ho

Signature:

Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

* This device may not cause harmful interference.

* This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If this equipment is not installed and used in accordance with the manufacturer's instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

* Reorient or relocate the receiving antenna.

* Increase the separation between the equipment and receiver.

* Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.

* Consult the dealer or an experienced radio/TV technician for help.

The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for audio noise emissions from digital apparatuses set out in the Radio Interference Regulations of the Canadian Department of Communications.

Manufacturer's Disclaimer Statement

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Chapter 1 Introduction

1-1 Specifications

CPU

- Supports AMD Socket-939 Althon 64 / Sempron CPU
- Processor interface via 2000MT/s HyperTransport bus

Chipset

- ULi M1689

Memory

- Four 184- pin DDR DIMMs up to 4GB
- Supports Dual Channel DDR266/333/400 memory

> **Due to CPU specifications limitation, two DDR400 memory modules inserted into DIMM1/3, three DDR400 into DIMM1/2/3, or four DDR400 into DIMM1/2/3/4 is not recommended.**

Expansion Slots

- One AGP slot for 8X/4X AGP
- Five 32-Bit PCI slots (v2.2 compliant)

5.1 Channel Audio

- With external high quality 5.1-channel AC'97 Codec
- Complete software driver supports for Windows OS

SATA

- Supports four native SATA 1.5Gb/s devices
- Hot-swap capability, allowing disks to be changed without powering down the system.
- Supports SATA ATAPI devices

IDE

- Supports 2 UltraDMA-66/100/133 IDE Ports

FDD

- One FDD connector supports up to 2.88 MB

USB 2.0

- Built-in M1689 supports total 8 USB 2.0/1.1 ports
- Supports USB 2.0 High-Speed Device @480 Mb/s Transfer Rates

Fast Ethernet
- Supports 10/100Mb Fast Ethernet with external Realtek PHY

Boot-Block Flash ROM
- Award system BIOS supports PnP, APM, DMI, ACPI, & Multi-device Booting features

Rear Panel I/O ports
- PS/2 Mouse and Keyboard port
- Four USB ports and one RJ45 connector
- Two 9-pin D-Sub male Serial ports
- 25-pin D-Sub female Parallel port
- Audio I/O jacks (Line-in, Line-out and Mic-in)

Internal I/O connectors
- Two 3x1 pin fan connectors
- Two 5x2 pin USB connectors for additional 4 USB ports
- 3x1 pin wake on LAN connector with housing
- Two 4x1 pin CD-in connectors
- 5x2 pin Front Audio connector
- 10x2 pin Front Panel connector
- 8x2 pin Game/Midi Port connector
- 20 pin ATX Power connector
- 4 pin ATX 12V Power connector

Form Factor
- ATX Form Factor 305mm x 200 mm

1-2 Package Contents

This product comes with the following components:

1. 1x Motherboard
2. 1x 40-Pin UDMA-100 IDE Cable
   (**Blue** to motherboard, **Gray** to Master and **Black** to Slave)
3. 1x 34-Pin floppy Disk Drive Cable
4. 1x Serial ATA Cable
5. 1x SATA Power Cable
6. 1x User's Guide
7. 1x Driver CD
8. 1x Value Pack 2005

1-3 Back Panel

S1689
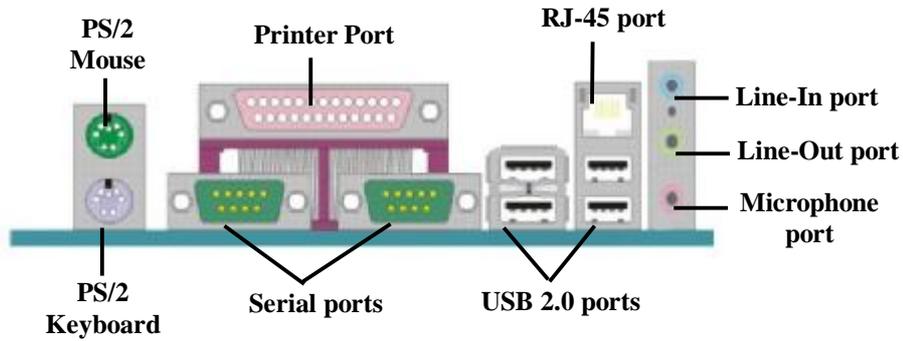
1-4 Motherboard Layout
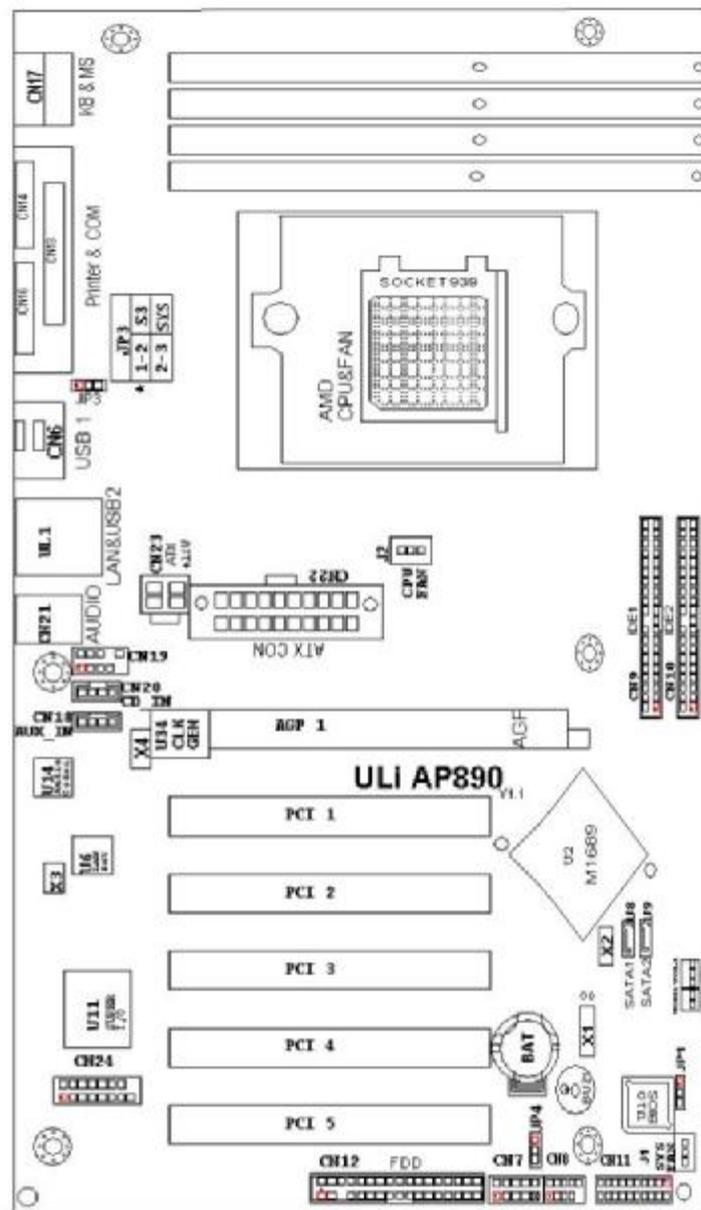
Chapter 2 Hardware Setup

2-1 PC D.I.Y. Assembly Instructions

1. Jumper Setting:
Set the CPU External Clock, Frequency Ratio and the CPU voltage according to the instruction printed on the manual or silkscreen printed on the mainboard.

2. Installing FDD and IDE devices:
Aligned the red colored edge of the cable with the pin 1 of the drive connector on the mainboard and gently attached it. Attach the other end of the cable by aligning the colored edge to the pin 1 of the device connector. Make sure that all drives are securely fastened.

3. Installing a CPU:
Locate a noticeable notch in the CPU's corner. This marking indicate Pin 1 of the CPU. Gently insert the CPU with Pin 1 at the same corner of the socket that contains the end of the lever.

4. Installing System Memory:
Push module downward until side clips are properly secure to the module.
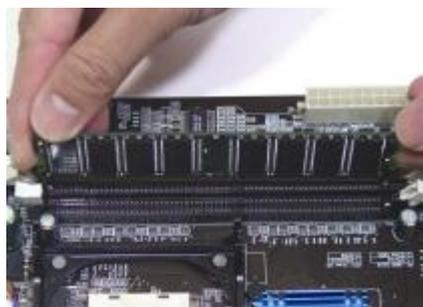
5. Mounting a Mainboard into a Chassis:

Use standoffs and screws to securely mount the mainboard and make sure that all the mounting holes are properly screwed.

6. Adding an expansion card:

Gently fasten the card to the proper slot.
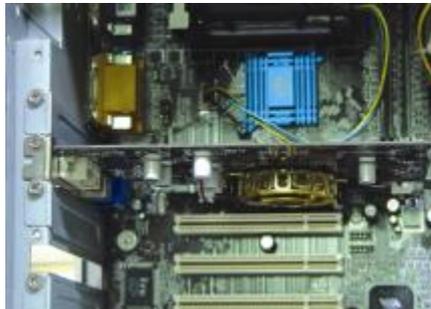
7. Connecting I/O ports and device connectors:

Simply plug the cable into the respective device port or connector as shown in the manual or silkscreen printed on the mainboard.

8. Connecting the Power Supply Cables:

Plug in the ATX power cable to the mainboard's power connector and make sure the cable is connected.

2-2 自行組裝電腦之作業指導重點 (Chinese)

1. 主機板硬體組態設定:

依據使用手冊上面的指令或印刷在主機板上的文字來設定 CPU 外頻,倍頻及電壓或其它設定。

2. 安裝 FDD 和 IDE 裝置:

將排線較長一端的排線插入主機板 IDE 插槽並且紅色線對準插槽的第一針腳 (Pin 1),檢視排線接頭是否完全插入插槽,同時排線較短的一端也依序插入軟碟機,硬碟機等儲存裝置。
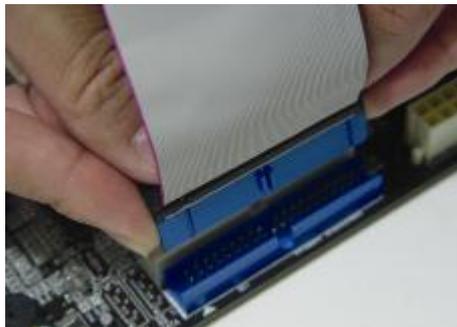
3. 安裝 CPU:

將 CPU 的缺角對準 CPU 腳座的缺角並小心地將 CPU 插在腳座上,按下旁邊的固定桿以固定 CPU。

4. 安裝系統記憶體:

先確定記憶體模組金手指的方向,慢慢插入記憶體插槽並小心地將記憶體模組往下壓,直到插槽的固定卡榫卡住記憶體模組兩端的缺口。

5. 主機板固定:

用銅柱及螺絲將主機板安裝在機殼底座並確定每個孔洞均已被鎖上,尤其注意主機板底下不可有多餘的銅柱以避免造成短路。

6. 增加介面卡:

將介面卡(例 : 網路卡,音效卡等)插在適當的介面卡擴充插槽,並將卡上的鐵片鎖緊在機殼上。
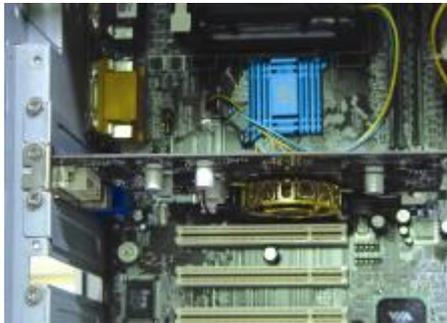
7. 連接 I/O 埠和其他設備的接頭:

適當地將排線插入各設備的插槽,記得必須將排線與插座的第一針腳互相對準,請參照使用者手冊的主機板平面圖。

8. 連接電源供應器:

將電源接頭與主機板上之插座對準插入,並確定卡榫已緊扣。
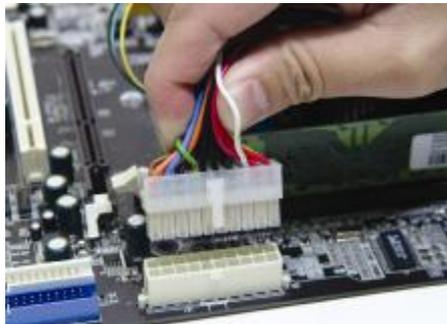
2-3 Français Instructions de montage du PC D.I.Y (French)

1. Positionnement des cavaliers (jumpers)

Positionnez les cavaliers de la fréquence d'horloge externe du microprocesseur, du rapport de fréquence et de la tension d'alimentation du microprocesseur, suivant les instructions qui figurent dans le manuel ou qui sont sérigraphiées sur la carte mère.

2. Installation du disque dur et des périphériques IDE

Alignez le côté coloré en rouge du câble avec la broche n°1 du connecteur de la carte mère, et fixez le câble en douceur. Raccordez l'autre extrémité du câble en alignant le côté coloré en rouge du câble avec la broche n°1 du connecteur du périphérique. Vérifiez que tous les périphériques sont correctement fixés.

3. Installation d'un microprocesseur

Repérez l'encoche qui se trouve dans l'un des coins du microprocesseur. Cette encoche indique la broche n°1 du microprocesseur. Insérez en douceur le microprocesseur dans son support, en plaçant la broche n°1 du côté du support où se trouve l'extrémité du levier de blocage.

4. Installation de la mémoire vive

Poussez la barrette dans son logement jusqu'à ce que les deux clips latéraux soient correctement bloqués par le support module.
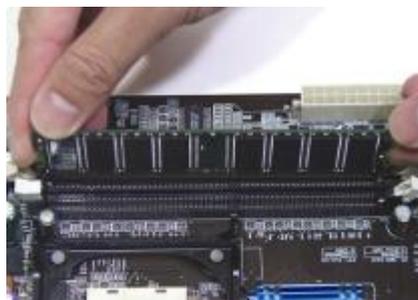
5. Montage d'une carte mère dans son châssis

A l'aide des jauges d'espacement et des vis fournies, fixez fermement la carte mère dans son emplacement, et vérifiez que tous les trous destinés à la fixation sont utilisés et les vis sont correctement serrées.

6. Ajout d'une carte d'extension

Fixez avec précaution la carte dans le logement adapté.
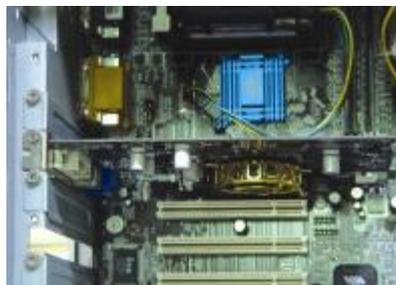
7. Raccordement des ports d'E/S et des connecteurs des périphériques

Branchez simplement le câble dans le port ou le connecteur du périphérique concerné, suivant les instructions qui figurent dans le manuel ou qui sont sérigraphiées sur la carte mère.

8. Raccordement des câbles de l'alimentation électrique

Raccordez le câble d'alimentation ATX au connecteur d'alimentation de la carte mère, et vérifiez qu'ils sont bien verrouillés en place.

2-4 Deutsch PC D.I.Y.-Montageanleitung (German)

1. Steckbrücken Konfigureren

Die Anweisungen zum Einstellen des externen Prozessortakts, der Taktfrequenz und der Prozesorspannung finden Sie im Hand buch oder direct auf dem Motherboard.

2. Disketten- und Festplattenlaufwerke Installieren

Schließen Sie die rot markierte Kabelseite an Stift 1 des Laufweksanschlußes auf dem Motherboard an. Bringen Sie das andere Kabelende am GeräteanSchluß. Richten Sie dabei die rot markierte Kabelseite mit Stift 1 aus.

Überprüfen Sie den stabilen Sitz aller Laufwerke Kabel.

3. Prozessor Installieren

Der Prozessor ist an einer Stelle eingekerbt. Mit diesser Kerbe wird Stift 1 des Prozessors gekennzeichnet. Setzen Sie den Prozessor vorsichtig in den Sockel ein, und richten Sie dabei Stift 1 mit dem Hebelende aus.

4. Arbeitsspeicher einsetzen

Drücken Sie das Modul nach unten, bis die seitlichen Steckplatzhalterungernim Modul eiratsen.
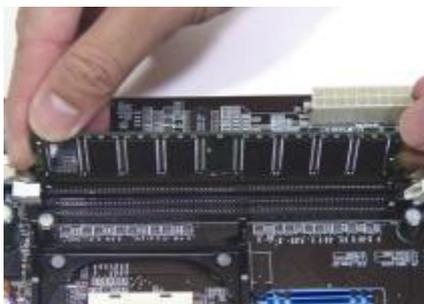
5. Motherboard im Gehäuse montieren

Verwenden Sie das modul nach Schraubenund Abstandhalter, um das Motherboard stabil im Gehäuse zu montieren. Achten Sie darauf, daß sämtliche Montagöffnungen korrekt miet einer Schraube versekhen werden.

6. Steckkarte einbauen

Führen Sie die Karte vorsichtig in einen geeingneten Steckplatz ein.
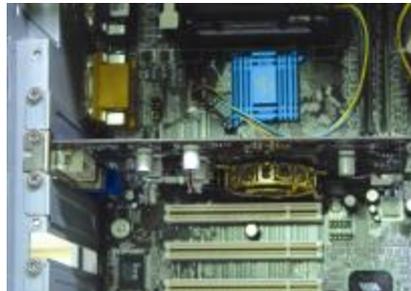
7. Vo- und Geräteanschluße verbinden

Verbinden Sie das Kabel mit dem ensprechenden Geräteanschluß. Folgen Sie dabei den Anweisungen im Handbuch oder direkt auf dem Motherboard.

8. Netzkabel anschließen

Verbinden Sie das ATX-Netzkabel korrekt mit dem Netzanschluß auf dem Motherboard.
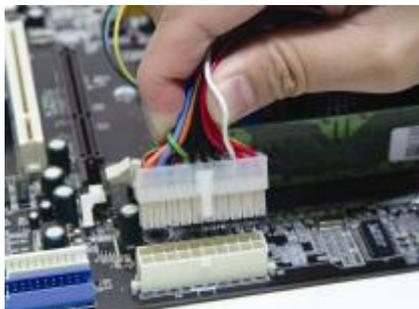
2-5 Самостоятельная сборка ПК (Russian)

1. Установка перемычек

Установите параметры Вашего таймера ЦПУ, значение частоты и напряжение ЦПУ согласно инструкциям, приведенным в руководстве, или надписям на системной плате.

2. Установка Накопителя на гибких дисках и IDE устройств

Совместите кромку красного цвета кабеля и PIN1 разъема накопителя на системной плате, затем аккуратно соедините их. Присоедините другой конец кабеля к разъему накопителя, совместив кромку красного цвета с PIN1 накопителя. Убедитесь, что все накопители правильно подсоединены.

3. Установка ЦПУ

Найдите отметку у одного из углов. Данная маркировка указывает на PIN1 процессора. Аккуратно вставьте ЦПУ, совместив PIN1 процессора с соответствующим углом гнезда, расположенным у окончания рычага.

4. Установка системной памяти

С небольшим нажатием вставьте модули в банки до момента надежного закрепления модулей зажимами.
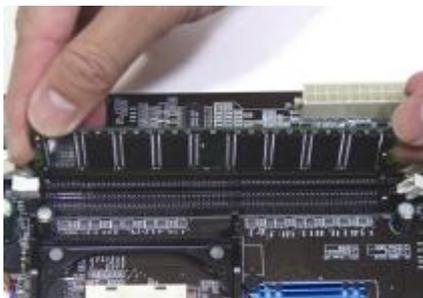
5. Монтаж системной платы на шасси

Для надежного монтажа системной платы используйте крепления и винты.

Убедитесь, что все монтажные отверстия закреплены винтами.

6. Установка карт расширения

Аккуратно установите карту в соответствующий слот
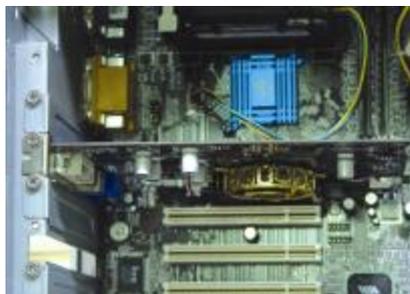
7. Подсоединение портов ввода/вывода и разъемов устройств

Подсоедините кабель к соотве5тствующему порту или разъему согласно инструкциям, приведенным в руководстве или напечатанным на системной плате.

8. Подсоединение кабелей источника питания

Подсоедините кабель питания ATX к разъему питания системной платы и убедитесь в надежности крепления
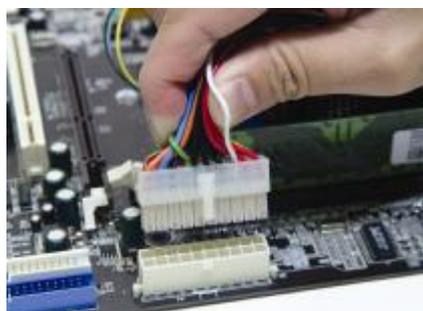
2-6 PC D. I. Y. 조립 설명 (Korean)

1.점퍼설정

매뉴얼이나 메인보드에 나와있는 설정방법을 참고하여 **CPU** 의 외부클럭, 주파수, 전압 등을 설정합니다.

2. 메인보드 장착

드라이버를 이용하여 케이스에 정확하게 메인보드를 장착합니다.

3. CPU 장착

CPU 의 모서리를 보면 표시가 되어있습니다. 이 부분이 **1** 번 핀입니다. 이 부분을 메인보드의 **CPU** 소켓에 맞추어 **CPU** 를 장착합니다.
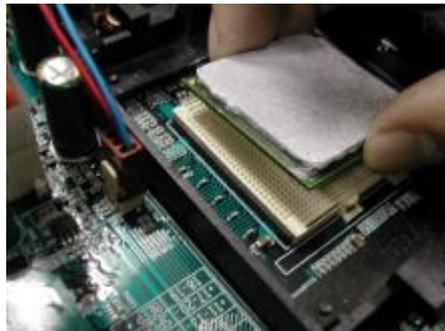
4. 메모리 장착

메모리의 금색부분이 보이지 않을 때까지 메모리 슬롯에 메모리를 꼽습니다. 완벽하게 꽂히면 슬롯 옆에 있는 고정핀이 자동으로 올라옵니다.
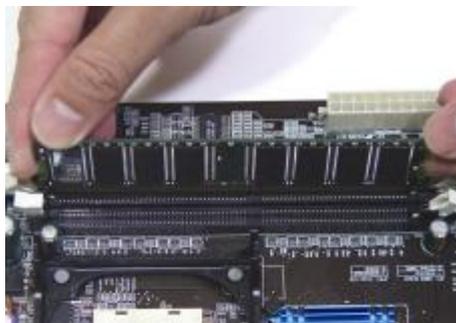
5. 플로피 디스크, 하드디스크 케이블 연결

케이블의 **1** 번선은 빨간색입니다. 이 선을 기준으로 하여 메인보드의 **1** 번핀에 정확하게 장착합니다. 커넥터가 확실하게 연결될 수 있도록 하십시오.

6. 외부 카드의 장착

비디오카드 및 다른 외부 장착용 카드를 장착합니다.
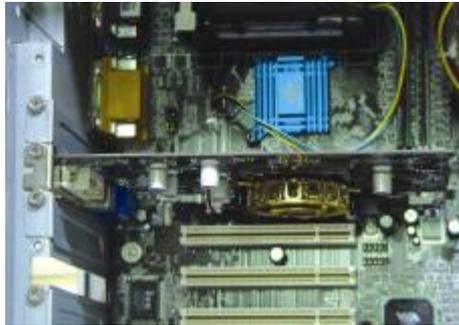
7. I/O 포트, 기타장치 연결

매뉴얼이나 메인보드에 나와있는 설정방법을 참고하여 **I/O** 장치와 기타장치를 연결합니다.

8. 파워 써플라이 케이블 연결

ATX 파워케이블을 메인보드에 연결합니다. 감사합니다.

2-7 Connector and Jumper Settings

Connectors are used to link the system board with other parts of the system, including power supply, keyboard, and the various controllers on the front panel of the system case.

The power supply connector is the last connection to be made while installing a motherboard. Before connecting the power supply, please make sure it is not connected to the power source.

All cables that provided by CHAINTECH come with a security-proof.

CN23 / 22 (ATX Power Supply Connector):
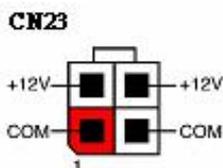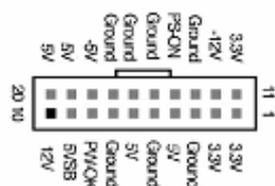
The power cord leading from the system's power supply to the external power source must be the very last part connected when assembling a system. The ATX power supply provides a single 20-pin connector interface, which incorporates standard +/-5V, +/-12V, optional 3.3V and Soft-power signals. The Soft power signal, a 5V trickle supply is continuously supplied when AC power is available. When the system is in Soft-Off mode, this trickle supply maintains the system in its minimum power state.

The ATX 12V power supply has a new +12V (4-pin) and +5V / 3.3V (6-pin) auxiliary power connector to enable the delivery of more +12 VDC and + 5/ 3.3V VDC current to the motherboard.

Power-On By Modem:

While in Soft-Off state, if an external modem ring-up signal is detected, the system will be activated and therefore can be remotely accessed. You may enable this function in BIOS's Power Management Setup menu. (See section **3. 5**)

Blinking LED in Suspend Mode:

While in Suspend mode, the LED light on the front panel of your computer will flash. Suspend mode is entered by pressing the Green Override Power Button on your ATX case, or by enabling the Power Management and Suspend Mode options in BIOS's Power Management menu. (See section **3.5**)

Poly-fuse Over Current Protection:

The poly-fuse protects the system from dangerous voltages that the system might be exposed to via keyboards or USB connectors. In case of such an exposure, the poly-fuse will immediately be disconnected from the circuit just like a normal fuse.

After being disconnected for a certain period of time, the poly-fuse will return to its normal state and the keyboard or USB connector can function properly again. Unlike conventional fuses, the poly-fuse will not need to be replaced, relieving users from such inconveniences.

CN11 (Front Panel Connector):

PWR-SW (**Over-ride Power Button Connector**):

The power button on the ATX chassis can be used as a normal power switch as well as a device to activate the Advanced Power Management Suspend mode. This is a power-saving mode used for saving electricity when the computer is idle for long periods of time. The Soft-OFF by PWR-BTTN function in BIOS's Power Management Setup menu must be set to [**Delay 4 Sec.**] to activate this function.

When the Soft-OFF by PWR-BTTN function is enabled, pressing the power button rapidly will switch the system to Suspend mode. Any occurrence of external activities such as pressing any keys on the keyboard or moving the mouse will bring the system back to Full-On. Pushing the button while in Full-On mode for more than [**4 seconds**] will switch the system completely off. See Over-ride Power Button Operation diagram.
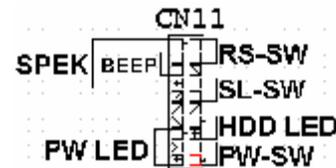
1. **P-LED** (Power LED Connector):
   The power indicator LED shows the system's power status. It is important to pay attention to the correct cable and pin orientation (i.e. Be careful not to reverse the order of these two connectors.)

2. **SL-SW** (Sleep Switch):
   Some ATX cases provide a Sleep switch, which is used to put the system in Suspend mode. While in Suspend mode, the power supply to the system is reduced to a trickle, the CPU clock is stopped, and the CPU core is in its minimum power state. The system is activated whenever the keyboard or mouse is touched. The system will resume in various ways as defined by Power Management Setup screen in BIOS.

3. **RESET** (System Reset Switch Connector):
   This connector should be connected to the reset switch on the front panel of the system case. The reset switch allows you to restart the system without turning the power off.

4. **SPEAKER** (Speaker Connector):
   This 4-pin connector connects to the case-mounted speakers.
   If you want to use the On-board Beep function, as shown in the above figure, please insert the jumper into this port.

5. **HD-LED** (IDE - Activity LED Connector):

The IDE- activity LED lights up whenever the system reads/writes to the IDE devices.

FDD1 (Floppy Connector):
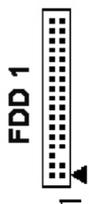
The motherboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. It is connected to a floppy disk drive of 34 pins.

IDE 1/2 (IDE Hard-Disk Connector):

The motherboard has a 32-bit Enhanced PCI IDE and Ultra ATA66/100/133 controller that provides PIO mode 0~4, Bus Master, and Ultra ATA66/100/133 function. This connector is used for connecting 40 pins of ATAPI devices.
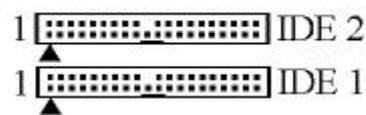
IDE 1 only connects two IDE devices. (**Primary** Master/Slave)

IDE 2 only connects two IDE devices. (**Secondary** Master/Slave)

FAN1/2 (CPU/System Connectors):

The board's hardware management is able to detect the CPU and system fan speed in rpm (revolutions per minute). The wiring and plugging may vary depending on the manufacturer. On standard fans, the red is positive (+12V), the black is ground, and the yellow wire is the rotation signal.
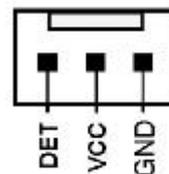
JP1 (CMOS Clear Jumper):

There is a CMOS RAM on board that has a power supply from external battery to keep the data and system configuration. To clear the contents of the CMOS, please follow the steps below.

Pin	Definition
1-2	Normal (default)
2-3	Clear CMOS Data

1. Disconnect the system power supply from the power source.
2. Set the jumper cap at location [2-3] for <5 seconds>, and then set it back to the default position.
3. Connect the system's power and then start the system.
4. Enter BIOS's CMOS Setup Utility and choose Load Optimized Defaults.
5. Type [Y] and then press [Enter] to continue.
6. Set the system configuration in the Standard CMOS Setup menu.

JP3/4 (Power On by USB 0/1/2/3, 4/5/6/7):

JP3 -> USB 0/1/2/3, JP4 -> USB 4/5/6/7

An USB keyboard hot key or an USB mouse-click can activate this board. To use this function, select a hot key of your choice at the USB Resume from S3 option under Wake Up Events in the BIOS's Power On Management screen.

Pin	JP3	JP4
1-2 (default)	Enable	Disable
2-3	Disable	Enable

CN7 / 8 (USB Connector for USB 6/7 and 4/5):

USB Port 4/5 à CN7, USB Port 6/7à CN8

If you want to use a USB Keyboard, you must enable the USB keyboard support function in BIOS's Integrated Peripherals menu (See Section 3.4). This board contains a USB Host controller and a root hub with two connectors is also included for an optional USB Adaptor (USB 6/7 and 4/5).
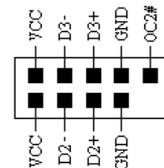
CN19 (Front Audio Connector):

This connector gives you the option of a front-panel audio-jack cable ext. to be plugged into a special custom-designed system case.
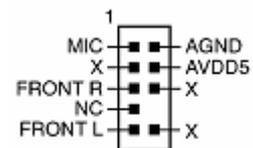
U8 / U9 Serial ATA Connectors (7-pin SATA1/2)

The motherboard provides 2 SATA connectors, which can be used to connect the SATA IDE hard disk drive (HDD) cables for HDD devices. RAID 0 and RAID 1 are supported. For more detailed information, please refer to Appendix.
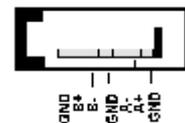
Chapter 3 Phoenix Award BIOS Setup Utility

Phoenix-Award BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. This information is stored in CMOS RAM so that it can retain the setup information even when the power is turned off. Press [**Delete**] when you Power on or Reboot the computer system. The primary screen as shown in Figure 3-1 is a list of the menus and functions available in the setup program. Select the desired item by using arrow keys and press [**Enter**] to make the changes. Operating commands are located at the bottom of this and all other BIOS screens. When a field is highlighted, on-line help information is displayed on the right side of the screen.
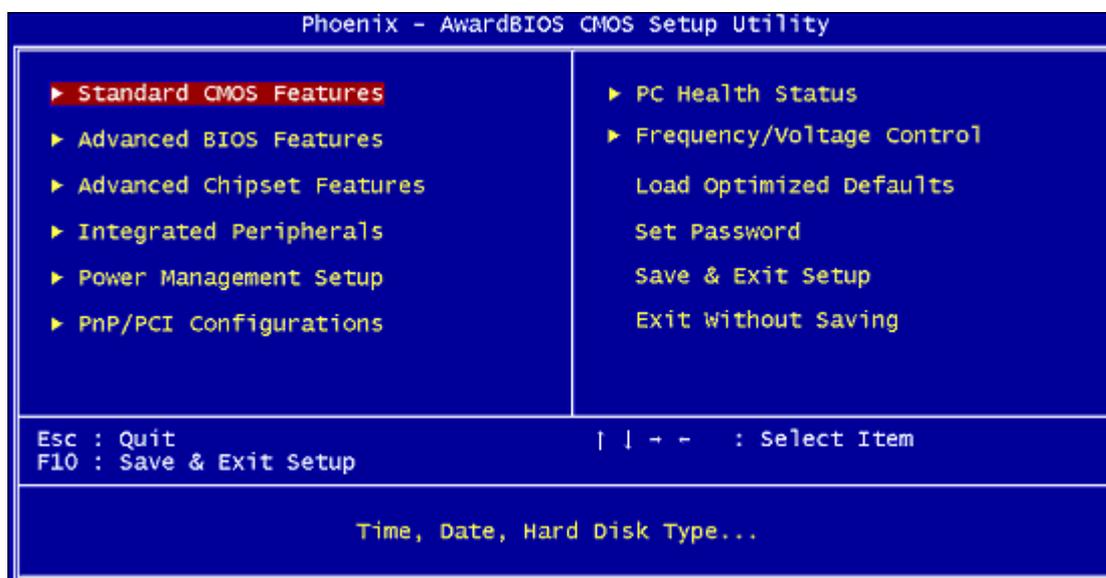
Figure 3-1 Setup Program Initial Screen

3-1 Entering Phoenix-AwardBIOS CMOS Setup Utility

The Phoenix-AwardBIOS CMOS Setup Utility can be entered by pressing {**Delete**} during the boot process; accurately speaking, it is during the POST (Power-On Self Test), one of major tasks performed by the BIOS when the system is turned on to make certain every hardware of the system is present and works properly.

3-2 Standard CMOS Features

Date (mm:dd:yy).
Allows users to set the system date. Once set up, the system date will be based on this.

Time (hh:mm:ss).
Allows users to set the system time. Once set up, the system time will be based on

this.

IDE Primary/Secondary Master/Slave

Each of these items shows the name of the IDE devices currently connected to the motherboard.

Drive A

Allows users to choose the type of the floppy disk drive currently used. Available options: **None**, **360K**, **5.25 in.**, **1.2M**, **5.25in.**, **720K**, **3.5in.**, **1.44M**, **3.5in.**, **2.88M**, **3.5in.**.

Video

Allows users to choose the specification of the monitor currently connected to the motherboard.

Halt On

The item allows users to determine under what condition the system should halt during the boot process.

l   If **All Errors** is selected, the boot process will halt when the system detects any errors on hardware during the POST.

l   If **No Errors** is selected, the boot process will not halt even though the system detects an error on hardware during the POST.

l   If **All, But Keyboard** is selected, the boot process will halt when the system detects any errors on hardware except for the keyboard.

l   If **All, But Diskette** is selected, the boot process will halt when the system detects any errors on hardware except for the hard disk drive.

If **All, But Disk/Key** is selected, the boot process will halt when the system detects any errors on hardware except for the hard disk drive & keyboard.

3-3 Advanced BIOS Features

Hard Disk Boot Priority

One of the major tasks for the BIOS is to help the CPU load the operating system from the hard disk drive into the system memory. This feature allows users to set the sequence by which the BIOS will search for an operating system. Set the hard disk drive that contains the operating system as the first place for the fastest booting process.

CPU Internal/External Cache

This feature controls the functionality of the CPU's internal & external cache. If **enabled**, the CPU's internal & external cache will be allowed to work. The CPU

performance thus will largely increase.

Quick Power On Self Test

This feature allows you to reduce the time it takes to boot up the system. If **enabled**, the BIOS will shorten the booting process by skipping certain some tests and shorten others. It is recommended that you disable this feature when you boot up the system for the first time or whenever you install a new piece of hardware. Doing this will allow the BIOS to execute the complete diagnostic tests to detect the potential problems with the hardware.

First Boot Device

This feature allows users to determine from which device the BIOS will attempt to load the operating system first. If users want to install the operating system such as Windows XP, they will need to set the First Boot Device as the CD-ROM to install the operating system into the Hard Disk Drive (HDD).

Second Boot Device

This feature allows users to determine the Second Boot Device from which the BIOS will attempt to load the operating system.

Third Boot Device

This feature allows users to determine the Third Boot Device from which the BIOS will attempt to load the operating system.

Boot Other Device

This feature allows users to determine whether the BIOS will attempt to load the operating system from the **Second Boot Device** or the **Third Boot Device** if it fails to load it from the **First Boot Device**.

Boot Up Floppy Seek

If **enabled**, the BIOS will attempt to detect and initialize the floppy disk drive (FDD) during the booting process. It will show an error message on the screen when the FDD is not detected. Nevertheless, the users still can continue the booting process. Enabling this feature is actually pointless and takes more time to boot up the system. It is recommended that the users disable it.

Boot Up NumLock Status

There are two input modes for the numeric keypad—numeric & cursor control mode. This feature allows you to select the mode the keypad will adopt. **On** represents the numeric mode and **Off**, cursor control mode.

Gate A20 Option

This BIOS feature is used to determine the method by which Gate A20 is controlled. The **Normal** option forces the chipset to use the slow keyboard controller to do the switching. The **Fast** option, on the other hand, allows the chipset to use its own 0x92 port for faster switching. No candy for guessing which is the recommended setting!

Please note this feature is only important for operating systems that switch a lot between real mode and protected mode. These operating systems include 16-bit operating systems like MS-DOS and 16-bit/32-bit hybrid operating systems like Microsoft Windows 98.

This feature has no effect if the operating system only runs in real mode (*no operating system currently in use does that, as far as I know!*) or if the operating system operates entirely in protected mode (*i.e. Microsoft Windows XP*). This is because if A20 mode switching is not required, then it does not matter at all if the switching was done by the slow keyboard controller or the faster 0x92 port.

With all that said and done, the recommended setting for this BIOS feature is still **Fast**, even with operating systems that don't do much mode switching. Although using the 0x92 port to control Gate A20 has been known to cause spontaneous reboots in certain, very rare instances, there is really no reason why you should keep using the slow keyboard controller to turn A20 or off.

Typematic Rate Setting

The feature allows you to control the keystroke repeat feature.

If **enabled**, you can manually adjust the two following:

l   **Typematic Rate**

l   **Typematic Rate Delay**

If **disabled**, the foregoing features will be disabled and greened out. The keyboard controller will then use the default Typematic Rate & Typematic Rate Delay.

Typematic Rate (Chars/Sec)

You can use this feature only when the **Typematic Rate Setting** is **enabled**. The feature allows users to determine at what rate the keyboard will repeat the keystroke when you press it continuously. The higher the typematic rate is, the faster the keyboard will repeat the keystroke.

Typematic Rate Delay (Msec)

This BIOS setting will only work if the **Typematic Rate Setting** feature has been enabled.

This feature determines how long, in **milliseconds** (*thousandths of a second*), the keyboard controller will wait before it starts repeating the keystroke that you have pressed continuously. The longer the delay, the longer the keyboard controller will

wait before it starts repeating the keystroke.

Generally, using a short delay is useful for people who type quickly and don't like to wait long for a keystroke to be repeated. On the other hand, a long delay is useful for users who tend to press the keys longer while typing. This prevents the keyboard controller from unnecessarily repeating keystrokes with such users.

Security Option

This <u>BIOS</u> feature controls the application of the BIOS' password protection. It will only work once you have created a password through the **Password Setting** option in the main BIOS screen.

Selecting the **System** option will force the BIOS to ask for the password every time the system boots up.

If you choose **Setup**, then the password is only required for <u>access</u> to the BIOS. This option is useful for system administrators or <u>computer</u> resellers who need to keep novice users from messing around with the BIOS.

APIC Mode

By enabling this option, "MPS version control for OS" can be configured.

MPS Version Control For OS

The 1.1 version is the older version that supports 8 more IRQs in the Windows NT environment. Choose the new 1.4 version for Windows 2000 and Windows XP.

OS Select For DRAM>64MB

Select "OS2" only if you are running the OS/2 operating system with greater than 64 MB of RAM.

Video BIOS Shadow

This parameter, when enabled, turns on BIOS ROM shadowing for the block of memory normally used for standard VGA video ROM code, which is C0000 to C7FFF (32K). In short, it speeds up your system by copying the contents of your video BIOS code from the slow ROM in which it resides into faster RAM.

The default for this setting depends on the particular system a great deal.. Enabling it will increase performance. Disable it if it causes system problems, particularly those related to the video subsystem.

Note: On some systems the video BIOS shadow setting is named for the address range the video BIOS occupies, C0000-C7FFFh, instead of being specifically called "Video BIOS Shadow".

Small Logo (EPA) Show

This feature allows the EPA logo to show.

Show POST CODE

Enabling this feature can show POST error code on the screen before proceeding to system's operating system.

3-4 Advanced Chipset Features

DRAM Configuration

Max Memclock (Mhz)

This feature allows you to select the memory clock. When it set to "Auto", the system will automatically detect the memory clock.

1T/2T Memory Timing

Use this feature to select the memory timing that you installed.

CAS# latency (Tcl)

The feature controls the latency between the SDRAM read command and the time the data really becomes available. In other words, the lower the CAS Latency Time is, the faster the memory reads or writes can occur. Note that not every memory module is capable of dealing with the lower CAS Latency Time and may lose date for this. Therefore, you shall increase it as the system becomes unstable.

RAS# to CAS# Delay (Trcd)

This BIOS feature allows you to set the delay between the RAS and CAS signals. The appropriate delay for your memory module is reflected in its rated timings. In JEDEC specifications, it is the second number in the three or four number sequence.

Because this delay occurs whenever the row is refreshed or a new row is activated, reducing the delay improves performance. Therefore, it is recommended that you **reduce** the delay to **3** or **2** for better memory performance.

Please note that if you use a value that is too low for your memory module, this can cause the system to be unstable. If your system becomes unstable after you reduce the RAS-to-CAS delay, you should increase the delay or reset it to the rated delay.

Interestingly, increasing the RAS-to-CAS delay may allow the memory module to run at a higher clock speed. So, if you hit a snag while overclocking your SDRAM modules, you can try **increasing** the RAS-to-CAS delay.

Min RAS# active time (Tras)

Like DRAM **Act to PreChrg CMD**, this BIOS feature controls the memory bank's minimum row active time (**tRAS**). This constitutes the time when a row is activated until the time the same row can be deactivated.

If the tRAS period is too long, it can reduce performance by unnecessarily delaying

the deactivation of active rows. Reducing the tRAS period allows the active row to be deactivated earlier.

However, if the tRAS period is too short, there may not be enough time to complete a burst transfer. This reduces performance and data may be lost or corrupted.

For optimal performance, use the lowest value you can. Usually, this should be **CAS latency + tRCD + 2 clock cycles**. For example, if you set the CAS latency to 2 clock cycles and the tRCD to 3 clock cycles, the optimum tRAS value would be 7 clock cycles.

But if you start getting memory errors or system crashes, increase the tRAS value one clock cycle at a time until your system becomes stable.

Row precharge Time (Trp)

You can set the time to precharge.

M1689 Configuration

M1689 Gated Clock

This feature allows users to enable the dynamic clock-gating feature of various blocks in PCI to PCI bridge.

PCI/14M/USB CLK PowerDown

If this feature is enabled and the system enters S1 state, then the system will power down PCI clock and CLK 14M input PAD.

AGP Configuration

AGP 3.0 Transfer Mode

This feature allows users to select AGP transfer mode depending on users' AGP card.

Fast Write

This BIOS feature controls the AGP bus' Fast Write capability. Fast Write is a feature which accelerates memory write transactions from the chipset to the AGP device.

Fast Write allows the AGP device act like a PCI device. This allows it to bypass the main memory and directly access the data which improves AGP read performance. However AGP write performance is not affected.

It is recommended that you **enable** AGP Fast Write for better AGP read performance but **disable** it if any of your PCI cards start acting funny.

AGP Aperture Size (MB)

This feature enables users to control the AGP aperture size and the GART (Graphics Address Relocation Table) size. It is recommended that the AGP aperture size is kept about 64MB or 128MB even if your graphics card has a lot of onboard memory on it.

AGP Secondary Lat Timer

This <u>BIOS</u> feature controls how long the AGP bus can hold the <u>PCI</u> bus (*via the PCI-to-PCI bridge*) before another PCI device takes over. The longer the latency, the longer the AGP bus can retain control of the <u>PCI bus</u> before handing it over to another PCI device.

Normally, the AGP Secondary Latency Timer is set to **20h** (**32 clock cycles**). This means the AGP bus' PCI-to-PCI bridge has to complete its transactions within 32 clock cycles or hand it over to the next PCI device.

For better AGP performance, a longer latency should be used. Try increasing it to **40h** (**64 cycles**) or even **80h** (**128 cycles**). The optimal value for every system is different. You should benchmark your AGP card's performance after each change to determine the optimal latency for your system.

If you set the AGP Secondary Latency Timer to a very large value like **80h** (**128 cycles**) or **C0h** (**192 cycles**), it is recommended that you set the **PCI Latency Time** to **32 cycles**. This provides better <u>access</u> for your <u>PCI devices</u> that might be unnecessarily stalled if both the AGP and PCI buses have very long latencies.

In addition, some time-critical PCI devices may not agree with a long AGP latency. Such devices require priority access to the PCI bus which may not be possible if the PCI bus is held up by the AGP bus for a long period. In such cases, it is recommended that you keep to the default latency of **20h** (**32 clock cycles**).

HyperTransport Config

Hammer to M1689 Freq.

This feature allows you to select the M1689 Hyper transport frequency.

Hammer to M1689 Width

This feature allows users to select the M1689 Hyper transport width.

M1689 HTT TriState

If enabled, the HTT transmitter tristates the link during the disconnected state.

Memory Hole At 15M-16M

This feature enables users to determine whether the 15th~16th (1MB) block of memory will be reserved for the ISA cards or not. If **enabled**, 1MB of memory will be reserved exclusively for the ISA cards. Thus the total amount of memory the operating system uses will decrease. If **disabled**, the 15th MB of RAM will not be reserved for the ISA cards and there will be a full range of memory available to the operating system. Since the ISA cards are a thing of the past, it is highly recommended that you **disable** this feature.

3-5 Integrated Peripherals

On-Chip Primary IDE

Master PIO

This feature allows users to set the PIO (Programmable Input/Output) mode for the IDE Primary Master drive attached to the IDE1 connector. **Auto** is recommended.

Slave PIO

This feature allows users to set the PIO (Programmable Input/Output) mode for the IDE Primary Slave drive attached to the IDE1 connector. **Auto** is recommended.

Master Ultra DMA

This feature allows users to set the Ultra Direct Memory Access (UDMA) mode for the IDE Primary Master drive attached to the IDE1 connector. **Auto** is recommended.

Slave Ultra DMA

This feature allows users to set the Ultra Direct Memory Access (UDMA) mode for the IDE Primary Slave drive attached to the IDE1 connector. **Auto** is recommended.

On-Chip Secondary IDE

Master PIO

This feature allows users to set the PIO (Programmable Input/Output) mode for the IDE Secondary Master drive attached to the IDE2 connector. **Auto** is recommended.

Slave PIO

This feature allows users to set the PIO (Programmable Input/Output) mode for the IDE Secondary slave drive attached to the IDE2 connector. **Auto** is recommended.

Master Ultra DMA

This feature allows users to set the Ultra Direct Memory Access (UDMA) mode for the IDE Secondary Master drive attached to the IDE2 connector. **Auto** is recommended.

Slave Ultra DMA

This feature allows users to set the Ultra Direct Memory Access (UDMA) mode for the IDE Secondary Slave drive attached to the IDE2 connector. **Auto** is recommended.

IDE DMA transfer access

This feature allows users to set IDE transfer mode to Direct Memory Access (DMA) mode.

On-Chip USB1.1 Controller

This feature allows users to enable/disable the USB1.1 controller.

USB Keyboard Support

This feature allows users to determine whether the USB keyboard is supported by the BIOS or the operating system. If users' operating system supports the USB keyboard, such as Windows XP, they shall **disable** this feature. If not, this feature shall be **enabled**. But this only provides the basic functions for the USB keyboard.

USB Mouse Support

This feature allows users to determine whether the USB mouse is supported by the BIOS or the operating system. If users' operating system supports the USB mouse, such as Windows XP, they shall **disable** this feature. If not, this feature shall be **enabled**. But this only provides the basic functions for the USB mouse.

On-Chip USB2.0 Controller

This feature allows users to enable or disable the motherboard's onboard USB 2.0 controller. If **enabled**, users are allowed to communicate with the USB 2.0 devices via the USB 2.0 controller. **Enabled** is recommended unless you decide not to use any of the USB 2.0 devices.

Init Display First

This BIOS feature allows users to select whether to boot the system using the AGP graphics card or the PCI graphics card. This is particularly important if you have AGP and PCI graphics cards but only one monitor.

If you are only using a single graphics card, then the BIOS will detect it as such and boot it up, irrespective of what you set the feature to. However, there may be a slight reduction in the time taken to detect and initialize the card if you select the proper setting for this BIOS feature. For example, if you only use an AGP graphics card, then setting Init Display First to **AGP** may speed up your system's booting-up process.

Therefore, if you are only using a single graphics card, it is recommended that you set the Init Display First feature to the proper setting for your system (*AGP for a single AGP card* and **PCI** *for a single PCI card*).

But if you are using multiple graphics cards, it is up to you which card you want to use as your primary display card. It is recommended that you select the fastest graphics card as the primary display card.

IDE HDD Block Mode

This feature enables users to speed up the hard disk access by transferring the data in the block mode. **Enabled** is recommended.

Onboard FDC Controller

This feature allows users to enable or disable the floppy disk controller.

Onboard Serial Port 1

This feature allows users to select the I/O address and IRQ for the first serial port. **Auto** is recommended. Nevertheless, you can manually choose another I/O port or IRQ if a certain I/O port or IRQ is needed. **Disabling** this feature can free up the I/O port and IRQ resources for other devices.

Onboard Serial Port 2

This feature allows users to select the I/O address and IRQ for the second serial port. **Auto** is recommended. Nevertheless, you can manually choose another I/O port or IRQ if a certain I/O port or IRQ is needed. **Disabling** this feature can free up the I/O port and IRQ resources for other devices.

UART Mode Select

This feature allows you to select the Infra Red (IR) standard to be used.

RxD, TxD Active

This BIOS feature allows you to set the infra-red reception (**RxD**) and transmission (**TxD**) polarity.

It is usually found under the **Onboard Serial Port 2** BIOS feature and is linked to the second serial port. So, if you disable that port, this feature will disappear from the screen or appear grayed out.

There are four options available, based on combinations of Hi and Lo. You'll need to consult your IR peripheral's documentation to determine the correct polarity. Choosing the wrong polarity will prevent a proper IR connection from being established with the IR peripheral.

IR Transmission Delay

This item allows you to enable/ disable IR transmission delay. This field only configurable if "UART Mode" is set to "ASKIR" or "IrDA".

UR2 Duplex Mode

This BIOS feature allows you to determine the transmission mode of the IR (Infra-Red) communications port.

Selecting **Full-Duplex** permits simultaneous two-way transmission, like a conversation over the phone.

Selecting **Half-Duplex**, on the other hand, only permits transmission in one direction at any one time, which is more like a conversation over the walkie-talkie.

Naturally, the **Full-Duplex** mode is the faster and more desirable choice. You should

use **Full-Duplex** if possible.

Consult your IR peripheral's manual to determine if it supports **Full-Duplex** transmission. The IR peripheral <u>must</u> support **Full-Duplex** for this option to work.

Use IR Pins

Consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals. This field is only configurable if "UART Mode Select" is set to "ASKIR" or "IrDA".

Onboard Parallel Port

This feature allows users to select the I/O address and IRQ for the onboard parallel port. **Auto** is recommended. Nevertheless, you can manually choose another I/O port or IRQ if a certain I/O port or IRQ is needed. **Disabling** this feature can free up the I/O port and IRQ resources for other devices.

Parallel Port Mode

This feature allows users to select the transfer protocol for the parallel port.

l **Normal** (**SPP**) stands for the Standard Parallel Port, which is the original transfer protocol for the parallel port. Therefore, it works fine with all the parallel port devices.

l **ECP** (**Extended Capabilities Port**) is a transfer mode that uses the DMA protocol to reach data transfer rate of up to 2MB/s and provides symmetric bidirectional communication.

l **EPP (Enhanced Parallel Port)** is also referred to as IEEE 1284. It uses the existing parallel port signal to reach data transfer rate of up to 2MB/s and provides asymmetric communication bidirectional communication.

Some parallel port devices designate certain transfer protocol. Please refer to the documentation that comes with them. If users are not sure what transfer protocol shall be selected, they can use **ECP+EPP** so that the BIOS will automatically determine the transfer mode suitable for the device.

EPP Mode Select

Select EPP port type 1.7 or 1.9.

ECP Mode Use DMA

If the ECP or ECP+EPP mode in the above feature is selected, this feature will become selectable to enable users to choose the DMA channel 1 or 3.

Game Port Address

Game Port I/O address.

3-6 Power Management Setup

ACPI Suspend Type

This feature allows users to select the ACPI suspend type. You can select **S1**(**POS**) for Power On Suspend under ACPI mode, or **S3** (**STR**) for Suspending To RAM.

ACPI C2 Function

This feature allows users to enable/disable ACPI C2 function. The C2 state puts the processor into a low-power state optimized around multiprocessor and bus master systems. OSPM will cause an idle processor complex to enter a C2 state if there are bus masters or Multiple processor activity. The processor complex is able to snoop bus master or multiprocessor CPU accesses to memory while in the C2 state.

ACPI C3 Function

This feature allows users to enable/disable ACPI C3 function. While in the C3 state, the processor's caches maintain state but the processor is not required to snoop bus master or multiprocessor CPU accesses to memory.

PWRON After PWR-Loss

This feature determines whether you want to restart the system after a power failure. Select "On", to boot the system whether or not the system was on before power failure. Choose Former-Sts, to restore the system to the status before the power failure.

Power Management

To select the type (or degree) of power saving for Doze, Standby, and Suspend modes.

PM Control by APM

This feature allows you to enable or disabled Advanced Power Management for Power Management of the system.

MODEM Use IRQ

This feature allows users to set the IRQ (Interrupt Request) for the modem. Set NA if no modem exists.

Video Off In Suspend

This field determines when to activate the video off feature for monitor power management.

Video Off Method

This feature allows users to determine in what mode the monitor is blanked.

l   Blank Screen: Blank signal to the Video Buffer

l   V/H sync+blank: Blank signal to Video Buffer, with Vertical and Horizontal

prots off

l DPMS support: To select video power management values with Display Power Management Signaling support

HDD Power Down

Allows automatic power down of IDE drives after a specified period of inactivity, but 15 minutes is a suggested minimum, to avoid undue wear and tear on the drive.

Suspend Mode

This feature allows you to select the period of inactivity before the system is suspended or put into suspend mode.

Soft-Off by PWR-BTTN

This feature allows users to determine whether the system is shut down immediately or after 4 seconds when users press the power button.

SLEEP BUTTON

If enabled, the system can enter suspend by "SLEEP BUTTON".

AMD K8 Cool'n' Quiet control

When set to "Auto", the system will auto control the CPU voltage and frequency depends the loading of system.

Hammer Fid control StartUp

This field allows you to set the CPU Ratio. If your CPU is locked, you will not be able to adjust this field. The default depends on your CPU.

Hammer Vid control StartUp

This field allows you to adjust the CPU core voltage.

Wake up events

The items contained in this feature allow users to choose which device can wake up the system when power is shut down.

3-7 PNP/PCI Configurations

Reset Configuration Data

The BIOS will automatically detect the changes in hardware and reconfigure the **ESCD** (**Extended System Configuration Data**). However, the BIOS sometimes cannot detect these changes. Thus a serious resource conflict may occur, which may cause the system to fail to load the operating system. This is where this feature comes in. Enabling this feature allows the BIOS to clear the saved ESCD data and reconfigure the settings. The BIOS will automatically reset this feature to the default

setting of **Disabled** after configuring the new ESCD. Therefore, the users need not to disable this feature after rebooting.

Resources Controlled By

This feature determines whether the BIOS will automatically configure IRQ and DMA resources or not. **Auto** is recommended.

PCI/VGA Palette Snoop

The VGA "palette" is the set of colors that are in use by the video card when it is in 256-color mode. Since there are thousands of colors and only 256 can be used in that mode, a <u>palette containing the current colors is used</u>. Some special VGA cards, high-end hardware MPEG decoders etc. need to be able to look at the video card's VGA palette to determine what colors are currently in use. Enabling this feature turns on this palette "snoop".

This option is only *very* rarely needed. It should be left at "Disabled" unless a video device specifically requires the setting enabled upon installation.

Assign IRQ For VGA

This feature allows users to assign IRQ for VGA.

PCI IRQ Activated By

Report No FDD For Win 95

Select "Yes" only if you are running Windows 95 operating system without the floppy disk drive.

3-8 PC Health Status

3-9 Frequency/Voltage Control

Auto Detect PCI Clk

This feature allows users to determine whether the BIOS will automatically reduce the EMI (Electromagnetic Interface) and the power consumption by shutting down the unoccupied or inactive expansion slots. If **enabled**, the BIOS will monitor the PCI slots and will turn off the clock signal to all the unoccupied or inactive PCI slots. If **disabled**, the BIOS will not do the thing mentioned above. It is recommended that users enable this feature to save power and reduce EMI.

Spread Spectrum

This BIOS feature allows you to reduce the EMI of your motherboard by modulating the signals it generates so that the spikes are reduced to flatter curves. It achieves this by varying the frequency *slightly* so that the signal does not use any particular

frequency for more than a moment.

The BIOS usually offers two levels of modulation - **0.25%** or **0.5%**. The greater the modulation, the greater the reduction of EMI is. Therefore, if you need to significantly reduce your motherboard's EMI, a modulation of **0.5%** is recommended.

In most conditions, frequency modulation via this feature should not cause any problems. However, system stability may be slightly compromised in certain situations. For example, this BIOS feature may cause improper functioning of timing-critical devices like clock-sensitive SCSI devices.

Spread Spectrum can also cause problems with overclocked systems, especially those that have been taken to extremes. Even a slight modulation of frequency may cause the processor or any other overclocked components of the system to fail, leading to very predictable consequences.

Therefore, it is recommended that you **disable** this feature if you are overclocking your system. The risk of crashing your system is not worth the reduction in EMI. Of course, if EMI reduction is important to you, **enable** this feature by all means. But you should reduce the clock speed a little to provide a margin of safety.

Some BIOSes also offer a **Smart Clock** option. Instead of modulating the frequency of signals over time, Smart Clock turns off the AGP, PCI and SDRAM clock signals that are not in use. Therefore, EMI can be reduced <u>without</u> compromising system stability. As a bonus, using Smart Clock also helps reduce power consumption. The degree of EMI and power reduction will depend on the number of empty AGP, PCI and SDRAM slots. But generally, Smart Clock won't be able to reduce EMI as effectively as simple frequency modulation.

With that said, it is recommended that you enable **Smart Clock**, instead of the 0.25% or 5% option, if the option is available to you. It allows you to reduce some EMI without any risk of compromising your computer's stability.

CPU Clock

This feature allows users to modulate the CPU clock.

3-10 Load Optimized Defaults

Like the Fail-Safe mode above, this option loads the BIOS default settings, but runs the system at optimal performance. From the dialog box Choose "Y" followed by enter to load Optimized Defaults.

3-11 Set Password

When the Security Option function is set to Setup, a password is required to enter BIOS and change BIOS settings. When the Security Option function is set to System,

a password is required to enter both BIOS and the computer's operating system (for example Windows XP) found on the boot drive.

3-12 Save and Exit Setup

Save all configuration changes to CMOS (memory) and exit setup. A confirmation message will be displayed before proceeding.

3-13 Exit Without Saving

If you don't want to save changes made to the BIOS, choose "N" from the dialog box.

Chapter 4 Software

Insert the support CD that comes with your motherboard into your CD-ROM driver or double-click the CD drive icon in [**My computer**] to enter the setup screen.

4-1 Driver Setup

We begin with the installation of drivers. To do so, simply follow the instructions below.

Step-by-step guide

1. Make certain that your computer and display are powered on.
2. Insert the support CD into the CD-ROM and the autorun screen will automatically pop up, as shown in the following image. If the autorun screen does not show up, please jump to the Step 3.
3. Double-click My Computer, find out the CD-ROM you are using, double-click it, then the autorun screen shall appear.

Integrated Driver

Five drivers are integrated into the item. They are ULi PCI 10-100 Fast Ethernet Controller Driver, ULi USB 2.0 Controller Driver, ULi PCI to AGP Controller Driver, ULi M5289 SATA Controller Driver, ULi M5289 SATA Raid Function. To install them, simply follow the instructions below

Step-by-step guide

1. Click Integrated Driver, then the Welcome screen will show up.
2. After reading the contents, click Next> to proceed with the Setup program.

3. The drivers that have been checked are defaults, simply click Next> to proceed.
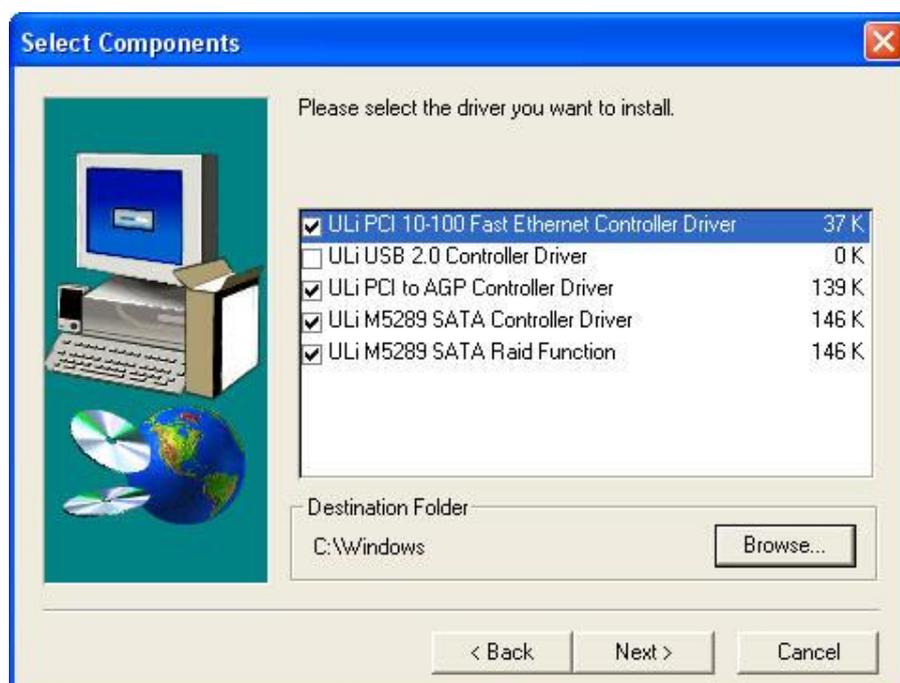
4. Ignore the message below and click Continue Anyway.

5. The following message simply tells you that it is better to install the driver prior to the potential installation of the graphics driver.

6. Choose Yes, I want to restart my computer now and click OK to restart the computer.

DirectX 9.0c

Allows you to install the latest DirectX 9.0c Driver. To do so, please follow the instructions below.

Step-by-step guide

1. Click DirectX 9.0c to enter the Installing Microsoft DirectX. After reading the license agreement, choose I accept the agreement then click Next>.

2. Click Next> to proceed with the installation.
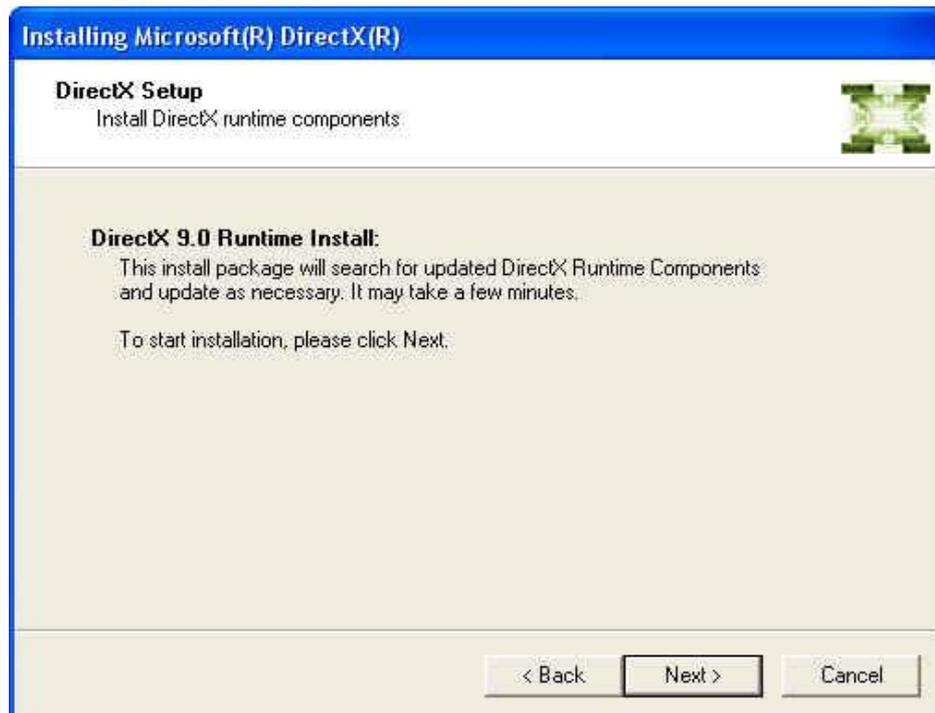
3. Click Finish to complete the installation.
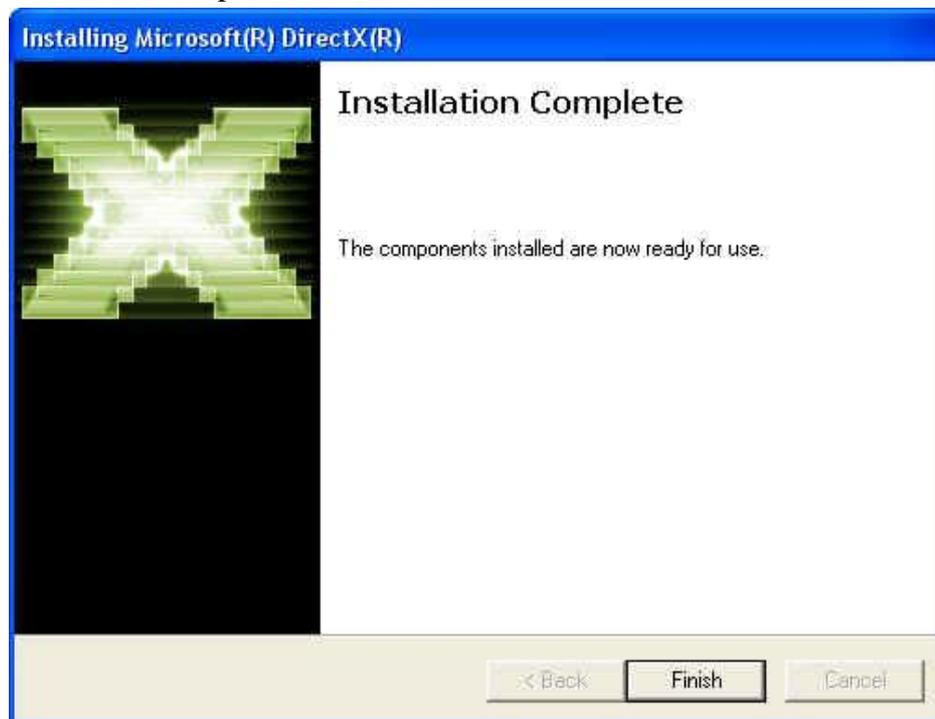
Realtek Codec Audio Driver

To install this, simply follow the instructions below.

Step-by-step guide

1. Click **Realtek Codec Audio Driver** and wait until the figure below pops up.
2. Select **Yes, I want to restart my computer now** then click **Finish** to complete the process.
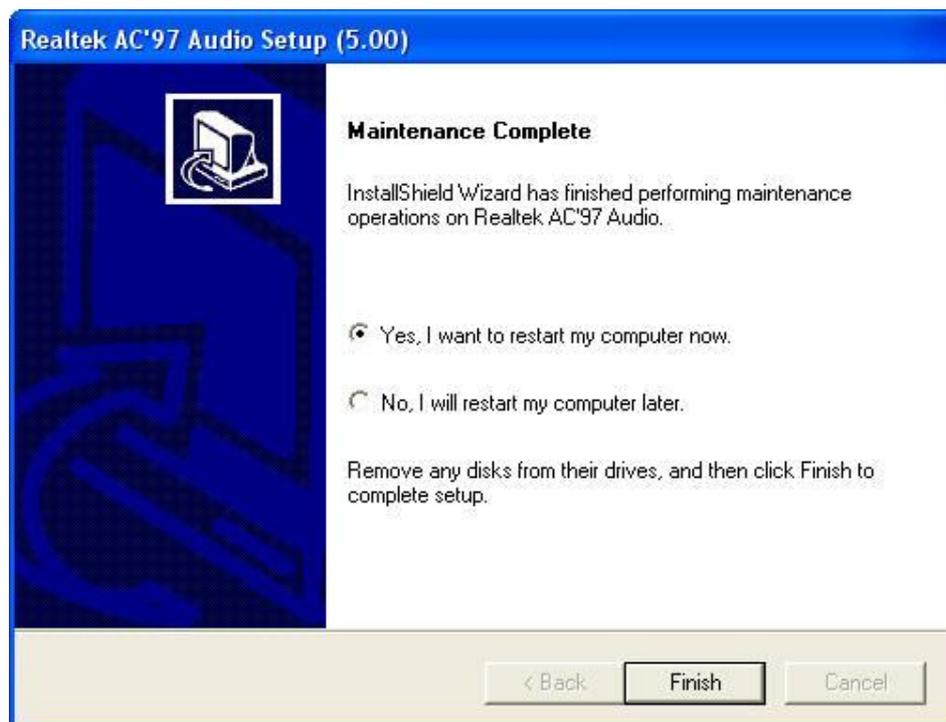
Appendix

How to Install Windows 2000/XP On a SATA Drive

After you unpack driver, please copy files under subdirectory SATA50XX to the root directory of floppy diskette (called driver diskette).

Therefore, in root directory of floppy diskette you will see:

(1) Files "disk1" and "txtsetup.oem",

(2) Directory "win98_me", "win_nt", "win_2000", "win_xp" and related driver files in each directory.

(please refer to "Driver File List" as below)

1. Booting from CD-ROM, when the Windows XP Setup blue screen appear and prompt user to Press F6 if you need to install third party SCSI or RAID driver, please press F6 key.

2. The setup program will continue, later when the setup program prompts user to specify additional adapters, please press S Key.

3. Then the setup program will prompt user to insert the driver diskette. Please insert the driver diskette, then press ENTER to continue.

4. The follow-up window will list out the installation choices, please **SCROLL down** the list to select ALi SATA/RAID Controller (M5289 Windows 2000/XP) for Windows 2000/XP and press ENTER to continue.

5. If users want to install other devices, please operate at this time.
   If all devices have been successfully installed, please go to next step.

6. Press ENTER to continue Windows 2000/XP setup.

NOTE

How To Contact CHAINTECH

Please do not hesitate to contact us if you have any problem about our products. Any opinion will be appreciated.

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