CONTENTS

I.   INTRODUCTION

■ How this manual is organized

This manual is divided into the following sections:

I   Introduction   : Manual information and checklist
II.   Features   : Information and specifications concerning this product
III. Installation   : Instructions on setting up the motherboard
IV. BIOS Setup   : Instructions on setting up special feature in the BIOS

■ Item Checklist

Please check that your package is complete. If you discover damaged or missing items, please contact your retailer.

- ☑ Motherboard x 1
- ☑ 40-pin IDE Connector Flat Cable x 1
- ☑ 34-pin Floppy Disk Drive Flat Cable x 1
- ☑ User's Manual x 1
- ☑ CD x 1

- ☑ RS232 9 Pins & 25 Pins connector & PRT 25 Pins connector

- ☑ Retention Holder for Pentium II CPU

- ☐ LDCM Diskette x 1 (Option)
- ☐ USB Connector Cable with bracket x 1 (Option)
- ☐ IrDA Module x 1   (Option)

Option : Components will be include upon customer ordering instructions
            per Proforma Invoice & additional external procurement cost will
            be included.

II FEATURES

The motherboard is designed with the Intel 82443BX PCI chipset which is developed by Intel Corporation to fully support the Pentium II Processor PCI/ISA system. And implement the CPU speed Jumper-less function.

The Intel 82443BX PCI chipset provides increased integration and improved performance designs. The chipset provides an integrated IDE controller with two high performance IDE interfaces for up to four IDE devices (hard devices, CD-ROM device, etc). The Super I/O controller provides the standard PC I/O function: floppy interface, two 16Byte FIFO serial ports and EPP/ECP capable parallel port. Care must be taken when inserting memory modules, inserting CPU or even plugging PCI card into associated slots to avoid damaging any circuits or sockets on board. A cooling fan is strongly recommended. The motherboard supports minimum of 8MB of system memory and a maximum of 384MB SDRAM. The motherboard provides 3 168-pin DIMM. The socket supports 1Mx32 (32MB) single-sided or double-sided memory modules. The board also supports two onboard PCI IDE connectors, and detects the IDE hard disk type by the BIOS utility which is automatic. The system also supports Award Plug & Play BIOS for the ISA and PCI cards.

Intel Chipset:
Features Intel's 440BX AGPset with I/O subsystems.

Multi-Speed:
Supports an Intel Pentium II processor from 233MHz-450MHz. With CPU Jumperless function support. User can change the CPU speed in the BIOS setting.

Multi-Cache:
Supports a Pentium II processor with either 512KB, 256KB, or 0KB Pipelined Burst Level 2 cache in the Single Edge Contact (SEC) cartridge.

Versatile Memory:
Is equipped with three DIMM sockets to support 8MB-128MB 168-pin 3.3Volt SDRAM/EDO memory modules up to 384MB.

AGP:
Supports an Accelerated Graphics Port card for high performance, component level interconnect targeted at 3D graphical display applications.

Dual Power Supply:
Has both AT and ATX power connectors onboard to support an AT or ATX power supply with soft-on/off features.

ISA & PCI Expansion:
Provides three 16-bit ISA expansion slots and four 32-bit PCI expansion slots.

Super Multi-I/O:
Provides two high-speed UART compatible serial ports and one parallel port with EPP and ECP capabilities. UART2 can also be directed from COM2 to the Infrared Module for wireless connections.

PCI Bus Master IDE:
Comes with an onboard PCI Bus Master IDE controller with two connectors that supports four IDE devices in two channels, supports PIO Modes 3 and 4 and Bus Master IDE DMA Mode 2, and supports Enhanced IDE devices such as Tape Backup and CD-ROM drives. Supports two drives of either 5.25-inch (360KB or 1.2MB) or 3.5-inch (720KB, 1.44MB, or 2.88MB) disk drives and supports LS-120 floppy disk drives (3.5-inch disk drive: 120 MB, 1.44MB, 720K). BIOS supports IDE, CD-ROM or SCSI device boot-up.

Easy Installation:
Is equipped with BIOS that supports auto detection of hard drives, PS/2 mouse, and Plug and Play devices to make setup of hard drives, expansion cards, and other devices virtually automatic.

Optional USB, IrDA:
Supports USB or IrDA optional cable and bracket set to mount the connectors to an unused expansion slot on the system chassis.

ACPI Ready :
ACPI (Advanced Configuration and Power Interface) is also implemented on this motherboards. ACPI provide more Energy Saving Features for the future operating systems (OS) supporting OS Direct Power Management (DPM) functionality. With these features implemented in the OS, PCs can be ready around the clock everyday, yet satisfy all the energy saving standards. To fully utilize the benefits of ACPI, an ACPI-supported OS such as in the next release of Windows 95/98 must be used.

PC '97 Compliant –

Both the BIOS and hardware levels of smart series of motherboards meet PC '97 compliance. The PC 97 requirements for systems and components are based on the following high-level goals: Support for Plug and Play compatibility and power management for configuring and managing all system components, and 32-bit device drivers and installation procedures for both Windows 95/98 and Windows NT.

Modem Ring On –

This allows a computer to be turned on remotely through an external modem. With this benefit on-hand, any user can access vital information from their computer from anywhere in the world.

Wake ON LAN –

This main board implements a LAN-Wake UP connector, to use LAN Wake-up function, user need a network card that supports this feature. In addition, user also needs to install network management software, such as LDCM. The connector will receive a wakeup packet or signal from LAN Card to power up the system.

Temperature Monitoring and Alert – (Option)

To prevent system overheat and system damage, there are heat sensors to monitor the CPU and system temperatures to warn of damaging temperatures.

Voltage Monitoring and Alert – (Option)

System voltage levels are monitored to ensure stable current to critical motherboard components. Voltage specifications are more critical for future processors, so monitoring is necessary to ensure proper system configuration and management.

Sometimes, the external MODEM just power ON/OFF, the pulse will be taken as the Ring in signal, which will make the machine power up. User needs to pay more attention about this symptom.

III. INSTALLATION

Hardware Monitor (Option)

COM 1   USB

PS/2 Mouse
Connector

BIOS   I/O Chip   COM 2   Keyboard

AT SPS

IR 1   ATX
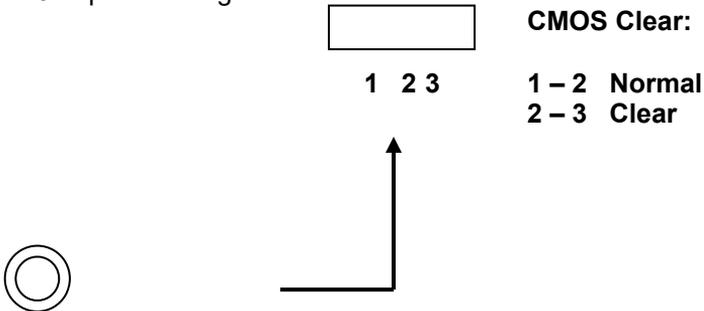   SPS

FAN 2   Printer
PCI   Port
Slots

                                                    AGP
                                                    Slot

ISA
Slots   Slot1
                                                    CPU

Battery
                                                    Thermal
                                                    Sensor
IR 2   (Option)
WOL
FAN 1

                                                    DIMM
                                                    Socket

Front Panel   FDD   Intel 440BX AGP Set
Connector   IDE 2
               IDE 1
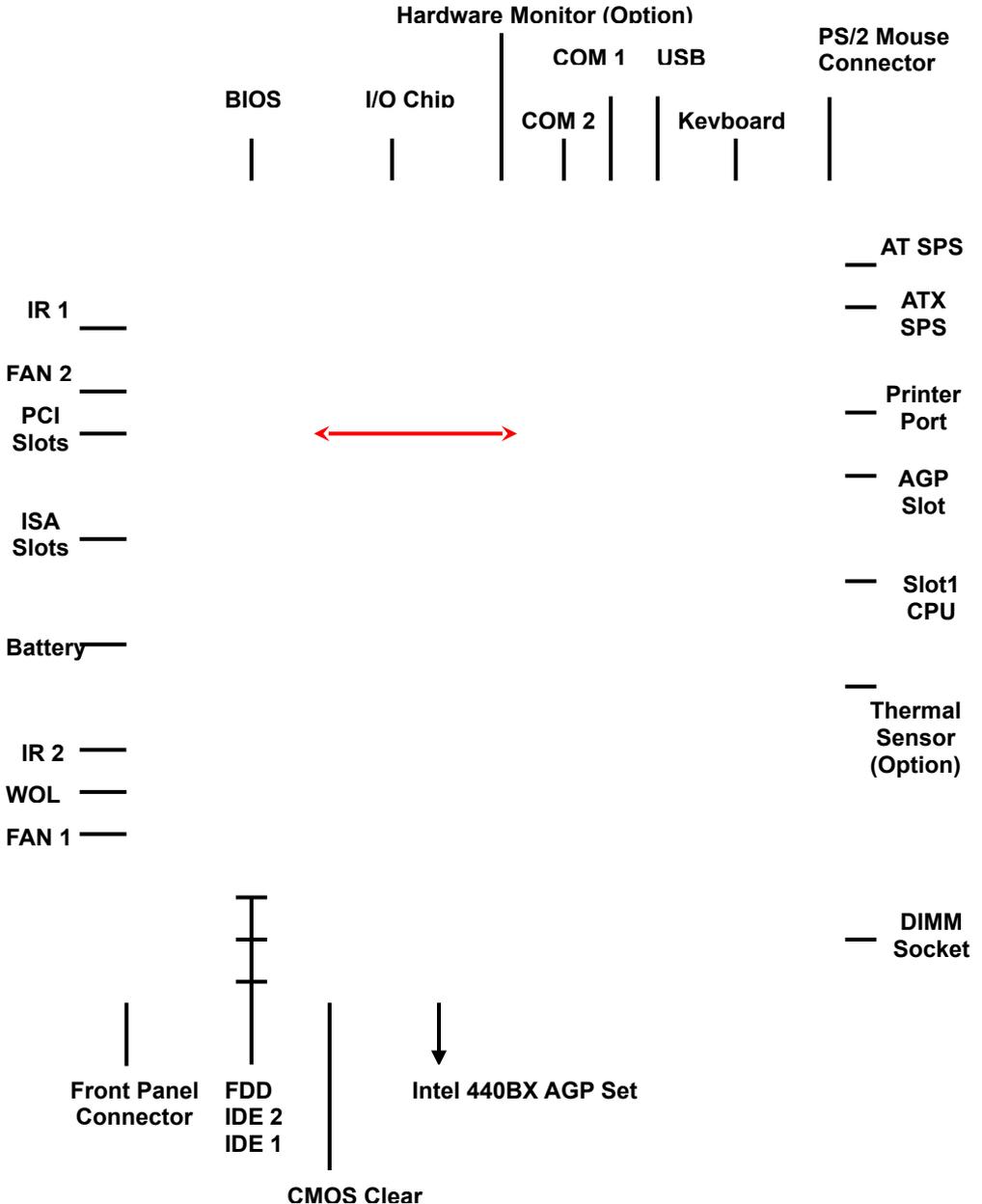
CMOS Clear

III. INSTALLATION

III-1   Jumpers Setting

CMOS Clear:

1   2 3

1 – 2   Normal
2 – 3   Clear

CMOS Clearing

CMOS Clear, which is a safety hook if you forget the password. Follow the steps:
After you have turned off your computer, clear the CMOS memory by momentarily shorting pins 2-3, for a few seconds. Then restore it to the initial 1-2 jumper setting in order to recover and retain the default settings. Reset your computer now.

Front Panel
Connector

III-2   Install System Memory Modules

This motherboard support 3 slots for 168-pin 3.3V Non-buffered DIMM modules, providing support for up to 1GB of main memory using DIMM modules from 8MB to 128MB. For 66MHz host bus CPUs, please use 12ns or faster DIMM modules. For 100MHz host bus CPUs, please use **8ns** or faster DIMM modules that support the PC-100 specification. The following is the example to install the system SDRAM memory module combination: if you have two DIMM Modules, you has better install them into DIMM Slot 1 & Slot 2 with the Max possible memory size up to 256MB (128 + 128) if the 128MB DIMM module is available.

Number Of Memory Module	DIMM1	DIMM2	DIMM3	Memory Module	Max. Size
1	1 st			8~128MB	128 MB
2	1 st	2 nd		8~128 MB	256 MB
3	1 st	2 nd	3 rd	8~128 MB	384 MB

The DIMM types supported SDRAM (Synchronous DRAM). The following is the summary:
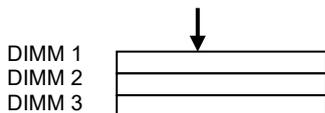
Single side:
1Mx64 (8MB), 2Mx64 (16MB), 4Mx64 (32MB), 8Mx64 (64MB), 16Mx64 (128MB)

Double side:
1Mx64x2 (16MB), 2Mx64x2 (32MB), 4Mx64x2 (64MB), 8Mx64x2 (128MB).

Total Memory Size:
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 1
DIMM 2
DIMM 3

III-3   Install the Central Processing Unit (CPU)

➢   **Selecting the CPU Frequency**
CPU voltage auto-detection and allow user to set CPU frequency through CMOS setup, no jumper or switch is needed. The correct CPU information is saved into EEPROM, with these technologies, the disadvantages of Pentium base jumper-less design are eliminated. There will be no worry of wrong CPU voltage detection and no need to re-open the housing if CMOS battery loss. The CPU frequency selection is set with the followings by the BIOS Setup Utility.

BOIS Setup ➔ CPU Speed Setting
(The possible setting is 66, 75, 83 , 100, 103, 112, 133 MHZ)
The BIOS will auto detect the CPU type, if the CPU type is 66MHZ front side bus, the setting only could be 66, 75, 83 MHZ. If the CPU type is 100MHZ FSB, the setting only could be 100, 103,112, 133 MHZ

BOIS Setup ➔ CPU Speed Setting
(The possible setting is 3x, 3.5x, 4x, 4.5x, 5x, 5.5x, 6x)

➢   **The following table is the recommendation for the CPU setting with the Frequency and the Ratio.**

| CPU Host Cock (MHz)	X	Multiplier	=	CPU Frequency (MHz)
66	X	3.5	=	233
66	X	4.0	=	266
66	X	4.5	=	300
66	X	5	=	333
100	X	3	=	300
100	X	3.5	=	350
100	X	4	=	400
100	X	4.5	=	450

Notes:
1. If you want to Over-Clock the CPU, please make sure the other peripherals can work fine with one another. That mean you need to well test the whole system with your own configuration, otherwise, please set the default and safe setting with 66MHZ or 100MHZ front side bus.
2. Once the machine can't power up, sometimes, that is because the CPU auto-detect function cannot well detect your CPU due to the change of the CPU type. Please do the following method to correct it. **[Clear the CMOS data]** or **[press Insert key then power on the machine]** or **[Power on the machine with 3 ~4 times].**
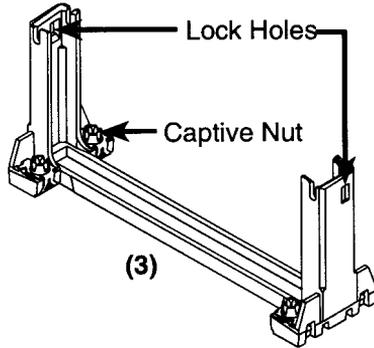
➢ **Install the CPU on the Motherboard**

1. Insert the attach mount bridges (For the remaining instructions) into the bottom of the mainboard with the curved edges facing outwards, toward the edge of the mainboard.
2. Use a screw driver to lightly tighten the attach mount bridges and the Pentium II Retention Mechanism
3. Insert the Pentium II processor into the Pentium II retention Mechanism with the processor Heatsink. Press evenly and gently until the snaps on the upper side of the processor have been inserted into the holes at the top of the retention base. Note that when removing the processor, these snaps can be clicked into a completely vertical position, leaving your hands free to stabilize the board and pull the processor evenly and gently out of the board. Also note that like PCI and ISA slots, Slot 1 has a divider that prevents backwards insertion.
4. Attach the Thermal Sensor (optional): If you purchased the specially designed thermal sensor, you can contact the thermal sensor to the CPU Heatsink as nearest as possible.
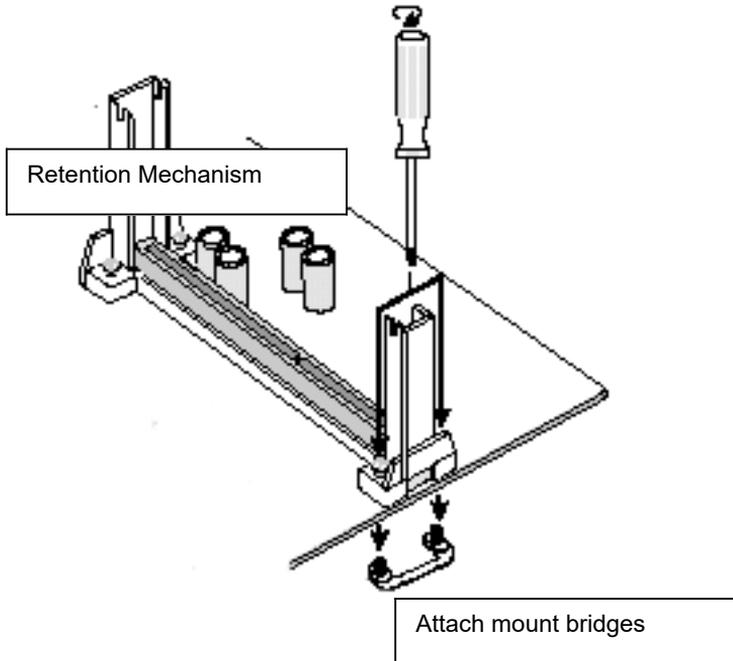
➢ Install the CPU on the Motherboard

NOTE: The pictures in the following pages will have the same item numbers next to them for your reference. The design and color of your items may be slightly different.

(1)

(2)
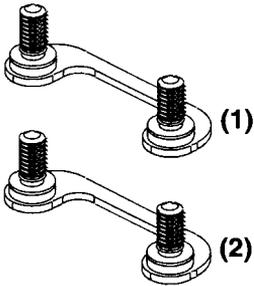
Attach Mount Bridges
(Items 1,2)

Lock Holes

Captive Nut

(3)

Pentium II Retention Mechanism
(Item 3)

Retention Mechanism

Attach mount bridges

III-4   Install Expansion Cards

WARNING!
Unplug your power supply when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards.

Expansion Card Installation Procedure
- Read the documentation for your expansion card and make any necessary hardware or software settings for your expansion card, such as jumpers.
- Remove your computer system's cover and the bracket plate on the slot you intend to use. Keep the bracket for possible future use.
- Carefully align the card's connectors and press firmly.
- Secure the card on the slot with the screw you removed above.
- Replace the computer system's cover.
- Set up the BIOS if necessary (such as IRQ xx Used By ISA: Yes in PNP AND PCI SETUP)
- Install the necessary software drivers for your expansion card.
- This motherboard also provides an AGP (Accelerated Graphics Port) slot to support a new generation of graphics cards with ultra-high memory bandwidth.

AGP Slot

4 PCI Slots

3 ISA Slots

➢ Install Expansion Cards Tips:

Assigning IRQs for Expansion Cards:
Some expansion cards need to use an IRQ to operate. Generally an IRQ must be exclusively assigned to one use. In a standard design there are 16 IRQs available but most of them are already in use, leaving 6 IRQs free for expansion cards.
Both ISA and PCI expansion cards may require to use IRQs. System IRQs are available to cards installed in the ISA expansion bus first, then any remaining IRQs are available to PCI cards. Currently, there are two types of ISA cards. The original ISA expansion card design, now referred to as legacy ISA cards, requires that you configure the card's jumpers manually and then install it in any available slot on the ISA bus. You may use Microsoft Diagnostics (MSD.EXE) utility located in the Windows directory to see a map of your used and free IRQs. If you use Windows 95/98, the Resources tab under Device Manager displays the resource settings being used by a particular device (to gain access, double-click the System icon under the Control Panel program). Ensure that no two devices share the ame IRQs or your computer will experience problems when those two devices are in use at the same time. The original ISA expansion card design, now referred to as "Legacy" ISA cards, requires that you configure the card's jumpers manually and then install it in any available slot on the ISA bus. You may use Microsoft's Diagnostic (MSD.EXE) utility included in the Windows directory to see a map of your used and free IRQs. For Windows 95/98 users, the "Control Panel" icon in "My Computer," contains a "System" icon which gives you a "Device Manager" tab. Double clicking on a specific device give you "Resources" tab which shows the Interrupt number and address. Make sure that no two devices use the same IRQs or your computer will experience problems when those two devices are in use at the same time. To simplify this process this motherboard has complied with the Plug and Play (PnP) specification which was developed to allow automatic system configuration whenever a PnP-compliant card is added to the system. For PnP cards, IRQs are assigned automatically from those available. If the system has both Legacy and PnP ISA cards installed, IRQs are assigned to PnP cards from those not used by Legacy cards. The PCI and PnP configuration of the BIOS setup utility can be used to indicate which IRQs are being used by Legacy cards. For older Legacy cards that do not work with the BIOS, you can contact your vendor for an ISA Configuration Utility. An IRQ number is automatically assigned to PCI expansion cards after those used by Legacy and PnP ISA cards. In the PCI bus design, the BIOS automatically assigns an IRQ to a PCI slot that has a card in it that requires an IRQ. To install a PCI card, you need to set something called the INT (interrupt) assignment. Since all the PCI slots on

this motherboard use an INTA #, be sure that the jumpers on your PCI cards are set to INT A.

Assigning DMA Channels for ISA Cards
Some ISA cards, both legacy and PnP, may also need to use a DMA (Direct Memory Access) channel. DMA assignments for this motherboard are handled the same way as the IRQ assignment process described earlier. You can select a DMA channel in the PCI and PnP configuration section of the BIOS Setup utility.

IMPORTANT:
To avoid conflicts, reserve the necessary IRQs and DMAs for legacy ISA cards (under PnP AND PCI SETUP of the BIOS SOFTWARE, choose *Yes* in *IRQ xx Used By ISA* and *DMA x Used By ISA* for those IRQs and DMAs you want to reserve).

Notes:

● **If you have the problem to install the Windows 95 /98, maybe system hung up or something wrong, the installation can't complete. Please try the following step:**

   1.   Remove all the Add-ons, only remain the Display Card.
   2.   Set the BIOS default value.
   3.   Re- Install the OS (Windows 95 or Windows 98.)
   4.   After completely install the OS, add the other expansion cards one by one.

● **If your system can't power on or no display, you may do the following step to verify the problem:**

   1.   Check the jumper on the Mother Board.
   2.   Set the BIOS to default value.
   3.   Remove all the add-ons only remain the VGA Card.
   4.   Change the VGA Card with different Slot.
   5.   Change the DIMM module.
   6.   Remove all the HDD, FDD Cable.

III-5　External Connection

III-5-1　Power Supply Connector

➢ **ATX Power Supply Connector (ATXPWR, 20-pins)**
Plug the connector from the power directly into the 20-pin male ATX PW connector on the motherboard as shown in the following figure. The plug from the power supply will only insert in one orientation because of the different hole sizes. Find the proper orientation and push down firmly making sure that the pins are aligned and the power supply is off before connecting or disconnecting the power cable.

ATX Power

12V	5V
5VSB	5V
PW-OK	-5V
GND	GND
5V	GND
GND	GND
5V	PS-ON
GND	GND
3.3V	-12V
3.3V	3.3V
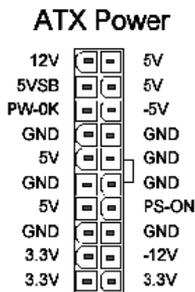
IMPORTANT:
Make sure that your ATX power supply can supply at least 10 mAmp on the 5-volt standby lead (5VSTB). You may experience difficulty in powering on your system if your power supply cannot support the load. For Wake on LAN support, your ATX power supply must supply at least 720mAmp.

➢ AT Power Supply Connector (ATPOWER, 12-pins)

This connector connects to a standard AT power supply. To connect the leads from the power supply, ensure first that the power supply is not plugged. Most power supplies provide two plugs (P8 and P9), each containing six wires, two of which are black. Orient the connectors so that the black wires are together. Please refer to the following:

ORG YLW   BLK   WHT RED
  RED BLU

P8   P9

PG +12V   GND   -5V +5V

+5V -12V
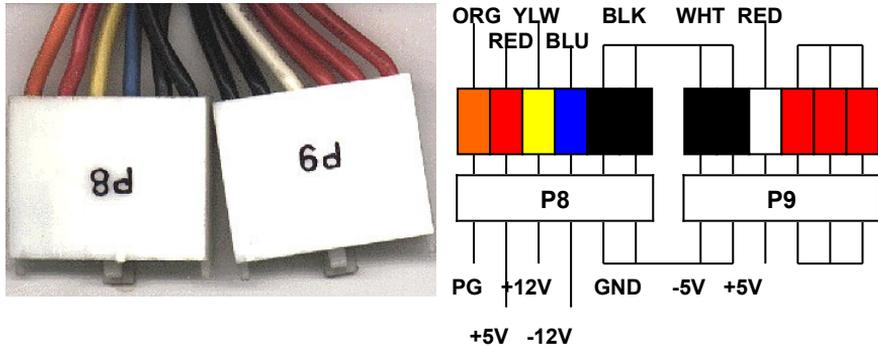
III-5-2 Keyboard, Mouse, USB, COM Port and Printer port

USB → PS/2 Mouse connector

Kevboard Connector

COM 1
COM 2

Printer Port
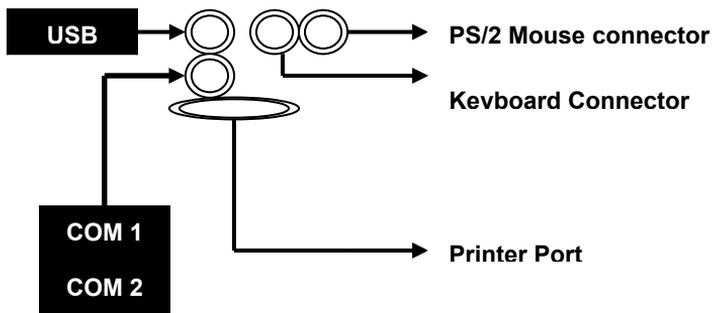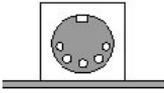
➢ Keyboard:

The onboard keyboard connector is a five-pin AT-compatible connector. The view angle of drawing shown here is from back panel of the housing. If you want to use the PS/2 Keyboard, you need to add one adapter that converts the signal from AT to PS/2 specification.

➢ PS/2 Mouse Connector

7 5 3 1

8   2

The onboard PS/2 mouse connector is a 6-pin Mini-Din connector marked PS2.

1	2	3	5	7	8
+5V	NC	NC	MS Data	GND	MS CLK

➢ USB (Universal Serial Bus Connector)

4 3 2 1

8 7 6 5

Pin	Description	Pin	Description
1	+5 VDC	5	+5VDC
2	D0 -	6	D1-
3	D0+	7	D1+
4	GND	8	GND

You can attach USB devices to the USB connector. The Mother board contains two USB connectors. USB is a new serial bus design that is capable of cascading low-/medium-speed peripherals (less than 12Mbps) such as keyboard, mouse, joystick, scanner, printer and modem/ISDN.

➢ Serial Devices (COM1/COM2)
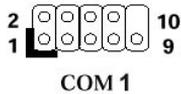
COM 1
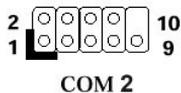
COM 2

The serial port 1 connector is marked as COM1 and the serial port 2 connector is marked as COM2. These are standard Serial Port Pin assignment. To support serial devices, insert the serial device connector into the serial port on the bracket. Plug in the 10-pin flat cable to the appropriate onboard connectors.

➢ Printer Port (LPT)
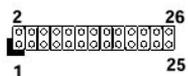
Plug in the 26-pin printer flat cable to the onboard parallel connector

III-5-3 Front Panel Connector
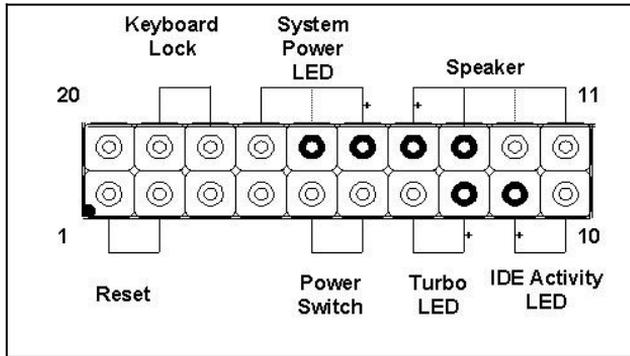
1). IDE Activity LED (Pin 9,10)
This connector connects to the IDE (hard disk) activity indicator light on the system abinet.

2). System Power LED (Pin 15,16,17)
This 3-pin connector lights the system power LED when the motherboard has power.

3). Turbo LED (Pin 7,8)
If the cabinet provide the turbo LED cable, connect the cable to this two pin connector to turn on the LED on the front panel.

4). ATX Power Switch (Pin 5,6)
The system power is controlled by a push-switch, connected to this lead. Pushing the button once will turn on the power and pushing again will turn off the power. The system power LED shows that status of the system's power. If the power to the ATX power supply is interrupted while the motherboard is on, standby power will remember that the motherboard should be on and boot the computer when power is reapplied to the ATX power supply.

5). Reset Switch (Pin 1,2)
This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply.

6). Keyboard Lock Switch Lead (Pin 18,19)
This 3-pin connector connects to the case-mounted keyboard lock switch for locking the keyboard.

7). Speaker Connector (Pin 11,12,13,14)
This 4-pin connector connects to the case-mounted speaker.

III-5-4 FAN Connector

Sensor

Vcc

GND

GND   **Sensor**

Vcc
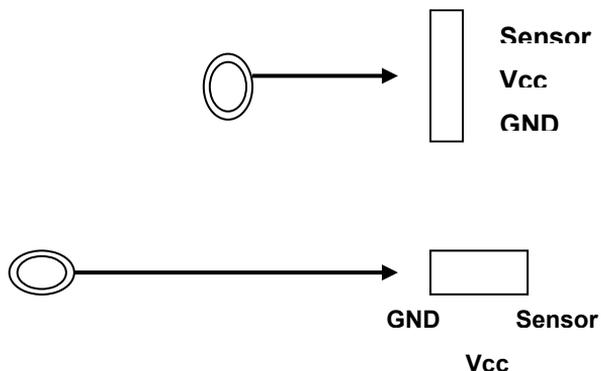
1).This connectors support a CPU cooling fan of 500 mA (6WATT, +12V) or less. Orient the fan so that the heat sink fins allow airflow to go across the onboard heat sink(s). Depending on the fan manufacturer, the wiring and plug may be different. The red wire should be positive (+12V), while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of the connector.

WARNING!

The CPU and/or motherboard will overheat if there is no airflow across the CPU and onboard Heatsink. Damage may occur to the motherboard and/or the CPU fan if these pins are incorrectly used. These are not jumpers, do not place jumper caps over these pins.

III-5-5 IrDA Compliant Infrared Module Connector

These connectors support the optional wireless transmitting and receiving infrared module. This module mounts to a small opening on system cases that support this feature. You must also configure UART 2. Use Infrared in Chipset Features Setup to select whether UART 2 is directed for use with COM2 or IrDA. When IrDA is selected in BIOS, COM2 will be disabled. Use the five pins or six pins as shown and connect a ribbon cable from the module to the motherboard to the pin definitions. There are two connectors are available for the IrDA, one is near to Front Panel the other is rear, user can use one of them to connect to IrDA module depending on the location you want.

Pin 1: Vcc   Pin 6~10: NC
Pin 2: NC
Pin 3: IR_RX
Pin 4: GND
Pin 5: IR_TX

5VSB
GND
SENSOR

IR1

WOL

WOL

IR 2
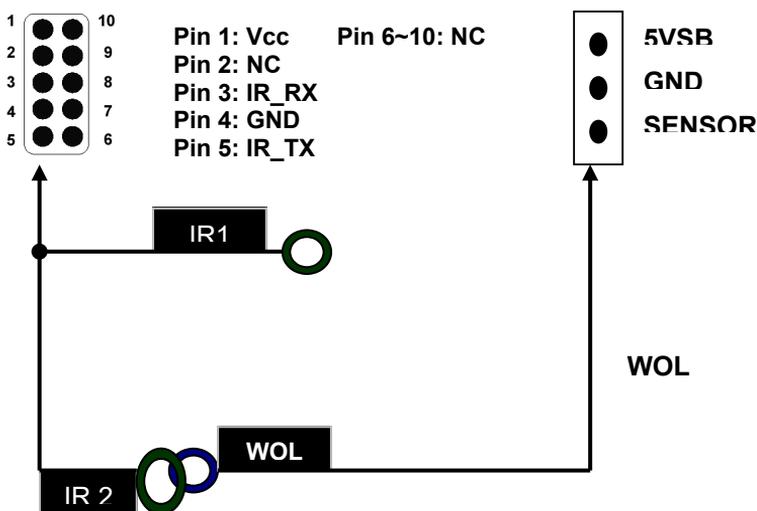
III-5-6 Wake-On-LAN (WOL)

Attach the 3-pin connector from the LAN card which supports the Wake-On-LAN (WOL) function to the WOL connector on the motherboard. This WOL function lets users wake up the connected computer through the LAN card. Please install according to the above pin assignment:

III-5-7   FDD & HDD Connector

```
 2                                34
┌─────────────────────────────────┐
│□│ □□□□□□□□□□□□□□□□│
└─────────────────────────────────┘
 1                                33
```

FDC   FDD

```
 2                                40
┌─────────────────────────────────┐
│□│ □□□□□□□□□  □□□□□□□□□│
└─────────────────────────────────┘
 1                                39
```

IDE1

```
 2                                40
┌─────────────────────────────────┐
│□│ □□□□□□□□□  □□□□□□□□□│
└─────────────────────────────────┘
 1                                39
```
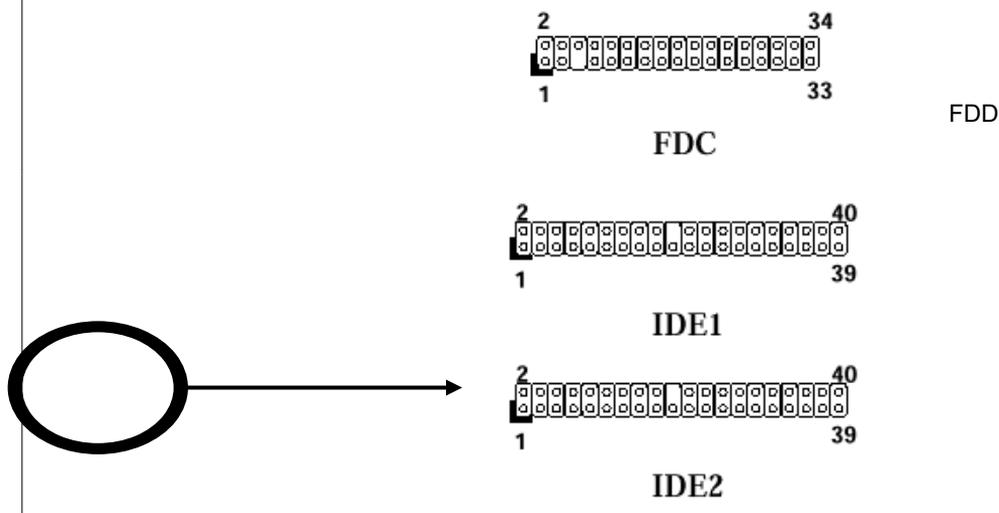
IDE2

➢   Connect the 34-pin floppy drive cable to the floppy drive connector

➢   This mainboard supports two 40 pin IDE connectors marked as IDE1
     and IDE2. IDE1 is also known as primary channel and IDE2 as
     secondary channel, each channel supports two IDE devices that
     makes total of four devices. In order to work together, the two devices
     on each channel must be set differently to master and slave mode,
     either one can be hard disk or CDROM. The setting as master or slave
     mode depends on the jumper on your IDE device, please refer to your
     hard disk and CDROM manual accordingly. 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. If you have
     one HDD and one CD-ROM, it is highly recommended to connect the
     CD-ROM in the IDE2.

III-6 Power On Procedure:

1. After all connections are made, close the system case cover.

2. Be sure that all switches are off (in some systems, marked with ○).

3. Make sure your power supply voltage is correctly set to 110V or 230V.

4. Connect the power supply cord into the power supply located on the back of your system case according to your system user's manual.

5. Connect the power cord into a power outlet that is equipped with a surge protector.

6. You may then turn on your devices in the following order:
   - ✓ Your monitor
   - ✓ External SCSI devices (starting with the last device on the chain)
   - ✓ Your system power. For ATX power supplies, you need to switch on the power supply as well as press the ATX power switch on the front of the case.

7. The power LED on the front panel of the system case will light. For ATX power supplies, the system LED will light when the ATX power switch is pressed. The monitor LED may light up after the system power up. if it complies with "green" standards or if it has a power standby feature. The system will then run power-on tests. While the tests are running, additional messages will appear on the screen. If you do not see anything within 30 seconds from the time you turn on the power, the system may have failed a power-on test. Recheck your jumper settings and connections or call your retailer for assistance.

8. During power-on, hold down <Delete> to enter BIOS setup menu if you want to run the BIOS Setup Utility.

Note:

◼ Powering Off your computer: You must first exit or shut down your operating system before switching off the power switch. For ATX power supplies, you can press the ATX power switch after exiting or shutting down your operating system. If you use Windows 95/98, click the Start button, click Shut Down, and then click Shut down the computer. The system will give three quick beeps after about 30 seconds and then power off after Windows shuts down.

III.   BIOS SETUP TIPS

This charter only describes the major items that could be setup by End User point of view. If you are technical people or familiar with the BIOS setting or you have the interesting about the details of the BIOS setup, please refer to the documents from Award by download following files.
http://www.enpc.com.tw/ftp/ts/setup451.zip
http://www.enpc.com.tw/ftp/ts/i440bx.zip

Entering the Award BIOS Setup Menu
The BIOS setup utility is a segment of codes/routines residing in the BIOS Flash ROM. This routine allows you to configure the system parameters and save the configuration into the 128 byte CMOS area, (normally in the RTC chip or directly in the main chipset). To Enter the BIOS Setup, press DEL during POST (Power-On Self Test).

```
                    ROM PCI/ISA BIOS (2A69KECA)
                        CMOS SETUP UTILITY
                       AWARD SOFTWARE, INC.

    STANDARD CMOS SETUP          CPU SPEED SETTING

    BIOS FEATURES SETUP          INTEGRATED PERIPHERALS

    CHIPSET FEATURES SETUP       SUPERVISOR PASSWORD

    POWER MANAGEMENT SETUP       USER PASSWORD

    PNP/PCI CONFIGURATION        IDE HDD AUTO DETECTION

    LOAD BIOS DEFAULTS           SAVE & EXIT SETUP

    LOAD SETUP DEFAULTS          EXIT WITHOUT SAVING

    Esc : Quit                   ↑ ↓ → ←   : Select Item
    F10 : Save & Exit Setup      (Shift)F2 : Change Color


```

■ Standard CMOS Setup

The "Standard CMOS Setup" sets the basic system parameters such as the date, time, and the hard disk type. Use the arrow keys to highlight an item and Page Up or Page Down to select the value for each item.

Tips:
The enhanced IDE feature allows the system to use a hard disk with a capacity of more than 528MB. This is made possible through the Logical Block Address (LBA) mode translation. The LBA is now to be considered as a standard feature of current IDE hard disk on the market which capability is larger than 528MB. Note that if HDD is formatted with LBA On, it will not be able to boot with LBA Off.

◼ BIOS Features Setup

```
                    ROM PCI/ISA BIOS (2A69KECA)
                        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
Quick Power On Self Test  : Disabled   D4000-D7FFF Shadow  : Disabled
Boot Sequence             : A,C,SCSI   D8000-DBFFF Shadow  : Disabled
Swap Floppy Drive         : Disabled   DC000-DFFFF Shadow  : Disabled
Boot Up Floppy Seek       : Enabled
Boot Up NumLock Status    : On
Gate A20 Option           : Normal
Typematic Rate Setting    : Disabled
Typematic Rate (Chars/Sec): 6
Typematic Delay (Msec)    : 250
Security Option           : Setup
PCI/VGA Palette Snoop     : Disabled
Assign IRQ For VGA        : Disabled   ESC : Quit         ↑↓→← : Select Item
OS Select For DRAM > 64MB : Non-OS2    F1  : Help         PU/PD/+/- : Modify
Report No FDD For WIN 95  : No         F5  : Old Values  (Shift)F2 : Color
                                       F6  : Load BIOS  Defaults
                                       F7  : Load Setup Defaults
```

This screen appears when you select the option "BIOS Features Setup" from the main menu. There are many items for the user to setup regarding to the BIOS feature. Most of them are standard setting, basically, it is recommended to set to default, the following item is the description for the special function and setup tips:

Virus Warning
This feature protects the boot sector and partition table of your hard disk from virus intrusion.
Quick Power On Self Test
Speeds up POST by skipping some items that are normally checked.
Boot Sequence
Allows you to specify the system boot up search sequence. For example, if you want to boot up the system from CD-ROM, you can set the sequence here.
Boot Up NumLock Status
Setting this parameter to On enables the numeric function of the numeric keypad.
Gate A20 Option
Fast that mean GateA20 signal supported by core logic. Normal mean GateA20 signal supported by keyboard controller
Assign IRQ For VGA
This option allows BIOS to assign IRQ for VGA device
OS Select for DRAM > 64MB
Set to OS/2 if your system is utilizing an OS/2 operating system and has a memory size of more than 64 MB.

■ Chipset Features Setup

```
                    ROM PCI/ISA BIOS (2A69KECA)
                        CHIPSET FEATURES SETUP
                        AWARD SOFTWARE, INC.
┌─────────────────────────────────────┬─────────────────────────────────────┐
│ Auto Configuration      : Enabled   │ Auto Detect DIMM/PCI Clk : Enabled  │
│ EDO DRAM Speed Selection : 60ns     │ Spread Spectrum          : Disabled │
│ EDO CASx# MA Wait State  : 2        │                                     │
│ EDO RASx# Wait State     : 1        │                                     │
│ SDRAM RAS-to-CAS Delay   : 3        │                                     │
│ SDRAM RAS Precharge Time : 3        │                                     │
│ SDRAM CAS latency Time   : 3        │                                     │
│ SDRAM Precharge Control  : Disabled │                                     │
│ DRAM Data Integrity Mode : Non-ECC  │                                     │
│ System BIOS Cacheable    : Disabled │                                     │
│ Video  BIOS Cacheable    : Disabled │                                     │
│ Video RAM Cacheable      : Disabled │                                     │
│ 8 Bit I/O Recovery Time  : 3        │                                     │
│ 16 Bit I/O Recovery Time : 2        ├─────────────────────────────────────┤
│ Memory Hole At 15M-16M   : Disabled │                                     │
│ Passive Release          : Enabled  │ ESC : Quit        ↑↓→← : Select Item│
│ Delayed Transaction      : Disabled │ F1  : Help        PU/PD/+/- : Modify│
│ AGP Aperture Size (MB)   : 64       │ F5  : Old Values  (Shift)F2 : Color │
│                                     │ F6  : Load BIOS  Defaults           │
│                                     │ F7  : Load Setup Defaults           │
└─────────────────────────────────────┴─────────────────────────────────────┘
```

The "Chipset Features Setup" includes settings for the chipset dependent features. These features are related to system performance. It is highly recommended that the items are optimal setting for this Main-Board. You should not change them unless you are familiar with the chipset. Make sure you fully understand the items contained in this menu before you try to change anything. You may change the parameter settings to improve system's performance. However, it may cause system unstable if the settings are not correct for your system configuration. Once you change the setting and not sure which one will be better parameter, please load the BIOS default by press "F6" or load the SETUP default by press "F7".

SDRAM RAS-to-CAS delay
They are important parameters that affect the SDRAM performance. If your SDRAM has unstable problem, change 2/2 to 3/3.

SDRAM CAS Latency Time
This setting defines the CAS timing parameter of the SDRAM in terms of clocks. Sometime, the BIOS will recommend you to set the correct value depending on the DIMM Module you use.

■ Power Management Setup

```
                    ROM PCI/ISA BIOS (2A69KECA)
                      POWER MANAGEMENT SETUP
                       AWARD SOFTWARE, INC.

 Power Management      : Min Saving      ** Reload Global Timer Events **
 PM Control by APM     : Yes             IRQ[3-7,9-15],NMI  : Disabled
 Video Off Method      : V/H SYNC+Blank  Primary IDE 0      : Disabled
 Video Off After       : Standby         Primary IDE 1      : Disabled
 MODEM Use IRQ         : 3               Secondary IDE 0    : Disabled
 Doze Mode             : Disable         Secondary IDE 1    : Disabled
 Standby Mode          : Disable         Floppy Disk        : Disabled
 Suspend Mode          : Disable         Serial Port        : Enabled
 HDD Power Down        : Disable         Parallel Port      : Disabled
 Throttle Duty Cycle   : 62.5%
 VGA Active Monitor    : Disabled
 Soft-Off by PWR-BTTN  : Delay 4 Sec.
 CPUFAN Off In Suspend : Enabled
 Resume by Ring        : Disabled
 Resume by Alarm       : Disabled

                                        ESC : Quit         ↑↓→← : Select Item
 IRQ 8 Break Suspend   : Disabled       F1  : Help         PU/PD/+/- : Modify
                                        F5  : Old Values  (Shift)F2 : Color
                                        F6  : Load BIOS  Defaults
                                        F7  : Load Setup Defaults
```

The Power Management Setup screen enables you to control the Main
Board green features.

Power Management
This function allows you to set the default parameters of power-saving modes.

PM Control by APM
If "Max Saving" is selected, you can turn on this item, transfer power
management control to APM

Video Off Method
The option "V/H SYNC+Blank" allows the BIOS to blank off screen display by
turning off the V-Sync signals sent from add-on VGA card. "DPMS Supported"
allows the BIOS to blank off screen display by your add-on VGA card which
supports DPMS; "Blank Screen" allows the BIOS to blank screen display by
turning off the red-green-blue signals.

Video Off After
What time frame that the video will be disabled under current power
management settings.

MODEM use IRQ
When the system is in green function, modem will wakes up the system through
IRQ you assigned here.

Doze Mode
When disabled, the system will not enter Doze mode. The specified time option
defines the idle time the system takes before it enters Doze mode.

Standby Mode
When the standby mode timer times-out, it will enter the standby mode and retain CPU at a slow working speed. The screen will be blanked out.

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

HDD Power Down
This option lets you specify the IDE HDD idle time before the device enters the power down state.

Throttle duty Cycle
Choose the duty cycle time : 12.5%, 25%, 37.5%, 50%, 62.5%(default), 75%, or 87.5%. The bigger of the percentage, the more saving power it gets.

PCI/VGA   Active   Monitor

Enabled : the system can not enter the power saving mode when monitor is on.
Disabled : the system can enter the power saving mode when monitor is on.

Soft-Off by PWRBTN
When enabled, turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity.

Resume   by   Ring

Enabled : Wake up the system from ring signal.
Disabled : (default) Ring signal can not wake up the system.

Resume by Alarm:
his option allows you to have the system turn on at a preset time each day or on a certain day.

IRQ8 Break Suspend
Choose Enabled or Disabled (default). Alarm function will be activated when this function is enabled.

If the [Resume by Ring] set to Enable, that means the machine will wake up after a external Modem Ring in through the COM Port. That is the special function for the Modem Ring on. But if the machine is in the off mode and you just power ON/OFF the external Modem, sometimes, it will cause the machine power on, because the Modem Power On/OFF pulse will be taken as the Modem Ring in signal and then power up the machine.

■ PNP/PCI Configuration

```
                    ROM PCI/ISA BIOS (2A69KECA)
                        PNP/PCI CONFIGURATION
                          AWARD SOFTWARE, INC.

  PNP OS Installed       : No
  Resources Controlled By : Auto        Assign IRQ For USB  : Enabled
  Reset Configuration Data : Disabled




                                         ESC : Quit       ↑↓→← : Select Item
                                         F1  : Help       PU/PD/+/- : Modify
                                         F5  : Old Values  (Shift)F2 : Color
                                         F6  : Load BIOS  Defaults
                                         F7  : Load Setup Defaults
```

The PNP/PCI Configuration Setup allows you to configure the ISA and PCI devices installed in your system.

PnP OS Installed
Normally, the PnP resources are allocated by BIOS during POST (Power-On Self Test). If you are using a PnP operating system (such as Windows 95,98), set this item to Yes to inform BIOS to configure only the resources needed for booting (VGA/IDE or SCSI). The rest of system resources will be allocated by PnP operating system.

Resources Controlled By
Setting this option to Manual allows you to individually assign the IRQs and DMAs to the ISA and PCI devices. Set this to Auto to enable the auto-configuration function.
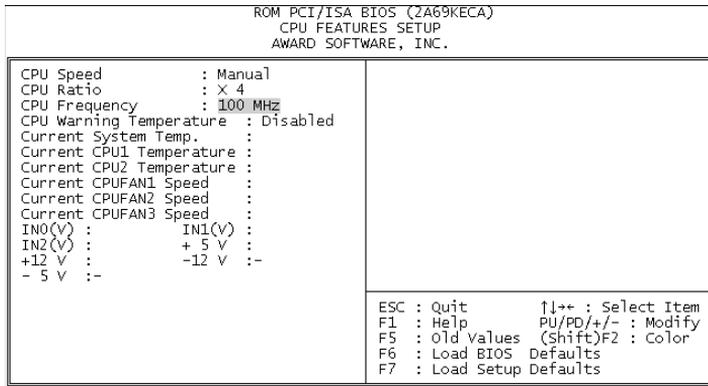
Reset Configuration Data
If you had plugged some Legacy cards in the system and there were records into ESCD (Extended System Configuration Data). You can set this field to Enabled to clear ESCD one time, while the Legacy cards were removed.

Assign IRQ For USB
Assign IRQ For USB device

■ CPU FEATURE SETUP:

```
                    ROM PCI/ISA BIOS (2A69KECA)
                         CPU FEATURES SETUP
                        AWARD SOFTWARE, INC.

 CPU Speed          : Manual
 CPU Ratio          : X 4
 CPU Frequency      : 100 MHz
 CPU Warning Temperature  : Disabled
 Current System Temp.     :
 Current CPU1 Temperature :
 Current CPU2 Temperature :
 Current CPUFAN1 Speed    :
 Current CPUFAN2 Speed    :
 Current CPUFAN3 Speed    :
 IN0(V) :          IN1(V) :
 IN2(V) :          + 5 V  :
 +12 V  :          -12 V  :-
 - 5 V  :-
                                ESC : Quit        ↑↓→← : Select Item
                                F1  : Help        PU/PD/+/- : Modify
                                F5  : Old Values  (Shift)F2 : Color
                                F6  : Load BIOS  Defaults
                                F7  : Load Setup Defaults
```

CPU Speed
Set to Manual user can use the next two items to decide the CPU speed.
CPU Ratio
This item lets you select the ratio of Core/Bus frequency. Have the following selections: 3x, 3.5x, 4x , 4.5x, 5x, 5.5x, 6x
CPU Frequency
This item lets you set external clock (bus clock). The possible settings are 66, 75, 83, 100, 103, 112, 133 MHZ.
CPU Warning Temperature (Option)
This is the temperature setting that the computer will respond to an overheating CPU and provide the alarm.

The BIOS also support the Current System/CPU Temperature & CPU FAN speed monitor, user can trace this environment in this page. Meanwhile the BIOS also monitor the Main Board important voltage such as the CPU Voltage, +/- 5V, +/- 12V, 5V Standby, Battery voltage, user can double check the current M/B voltage with this page.

■ LOAD BIOS / SETUP DEFAULTS

This Main Menu item loads the default system values. These settings are recommended for optimum performance. If the CMOS is corrupted when enter BIOS setup utility you must load setup default again. Choose this item and the following message appears:

Load SETUP Defaults (Y/N)? Y

To use the Setup defaults, change the prompt to and press <Y> and press <Enter>.

■ INTEGRATED PERIPHERALS SETUP

```
              ROM PCI/ISA BIOS (2A69KECA)
                  PNP/PCI CONFIGURATION
                  AWARD SOFTWARE, INC.
┌────────────────────────────────────────────────────────────────────┐
│ PNP OS Installed       : No                                          │
│ Resources Controlled By : Auto     Assign IRQ For USB  : Enabled     │
│ Reset Configuration Data : Disabled                                  │
│                                                                      │
│                                                                      │
│                                                                      │
│                                                                      │
│                                    ESC : Quit       ↑↓→← : Select Item│
│                                    F1  : Help       PU/PD/+/- : Modify│
│                                    F5  : Old Values  (Shift)F2 : Color│
│                                    F6  : Load BIOS  Defaults          │
│                                    F7  : Load Setup Defaults          │
└────────────────────────────────────────────────────────────────────┘
```

The INTEGRATED PERIPHERIALS is used to control the values of the I/O chipset registers. These registers control the mode of HDD type and I/O address port.

Note:
If you don't use the Onboard IDE connector, than use On-card (PCI or ISA card) IDE connector, you will set Onboard Primary PCI IDE : Disabled and Onboard Secondary PCI IDE : Disabled from CHIPSET FEATURES SETUP UTILITY. The Onboard PCI IDE cable should be equal to or less than 18 inches (45cm).

IDE Secondary Master UDMA / IDE Secondary Slave UDMA
Allows you to select the second PCI IDE channel of the secondary master hard disk mode or to detect it by the BIOS if the hard disk supports UDMA (Ultra DMA, faster than DMA).

USB Keyboard Support
Choose Disabled (default) or Enabled. You need to use the regular keyboard to get in the BIOS Setup to enable this function before using the USB keyboard.

Init Display First
Set the Display Card priority for the PCI slot or AGP Slot

KB Power on Password
Set the keyboard power on password, if you enable this function, you can use the keyboard to power on the machine with the password you defined, but at the same time, the machine can't be power on with the normal power button on the front panel.

Hot key power on
Set the power on hot key, the function almost the same with the keyboard power on function.

UART Mode Select
Choose Normal (default), IrDA 1.0, or ASKIR to meet the specification of your Infra Red device.

RxD, TxD Active
Choose Hi/Hi; Hi/Lo (default); Lo/Hi; or Lo/Lo. Ask your IR provider when you use this function.

IR Transmission Delay
Choose Enabled or Disabled. Ask your IR provider when you use this function.

■ USER Password

This Main Menu item lets you configure the system so that a password is required every time the system boots or an attempt is made to enter the Setup program. The password cannot be longer than 8 characters.

■ IDE HDD Auto Detection

If your system has an IDE hard drive, you can use this utility to detect its parameters and automatically enter them into the Standard CMOS Setup.

Normal mode
For drivers small than 528MB
Large Mode
For drives larger than 528MB that do not use LBA. There can only be used with MS-Dos operating system.
LBA mode
For drivers larger than 528MB and up to 8.4GB that use logic block addressing mode. Normally we recommend to select LBA Mode if our HDD drivers large than 528MB

■ SAVE & EXIT SETUP

V. Year 2000 (Y2K) Compliant

Dear Sirs,

The following is the Year 2000 (Y2K) Compliant Test Report for the Model KB21:

Uses the test program released by NSTL to ensure the product are Year 2000 compliant both in hardware and BIOS. The testing procedure is as below:

Run the program Y2000.EXE released by NSTL for the compliance test:

1. Verify MC146818 RTC compatibility. This test ensures that the date and time indices are compatible to the MC146818 and the data is in packed BCD format. Some non-DOS based operating systems, like Unix, do not use the BIOS but use drivers to access the clock directly. This test ensures that the clock is a Motorola MC146818 compatible chip. If the chip is not compatible, then these "other" operating systems or programs that read the clock directly may fail.

2. Verify real-time progression from December 31st, 1999 to January 1st, 2000. If real-time support fails, then the ability to set the date manually is checked.

3. Verify recognition and support of leap years from 2000 through 2009.

Detail BIOS Version : KB11 ROM BIOS Ver. 1.0

Test Result: : PASS