MK20

SocketA

AMD Athlon/Duron Processor Based SDR Main Board

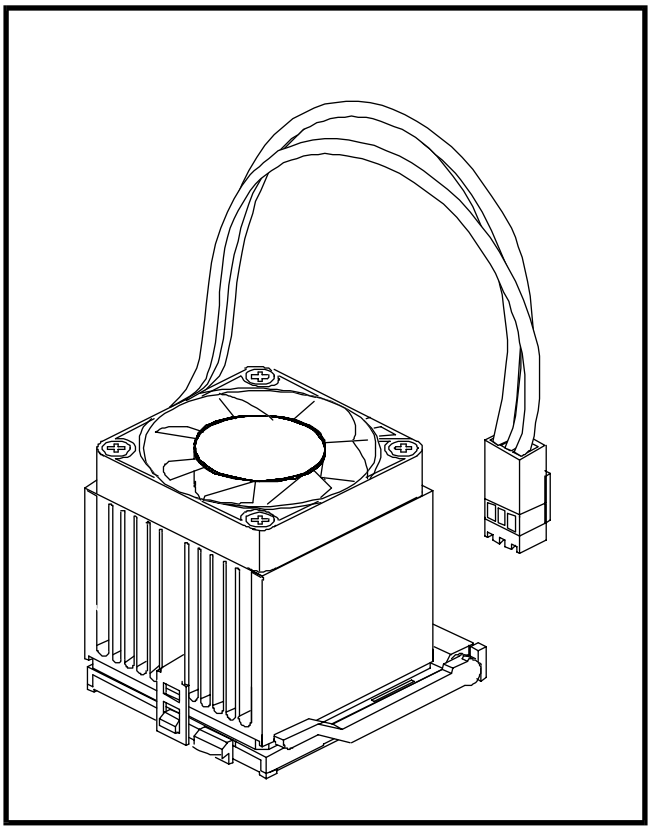
User's Manual

WARNING

Thermal issue is highly essential for processors with a speed of 600MHz and above. Hence, we recommend you to use the CPU fan qualified by AMD or motherboard manufacturer. Meanwhile, please make sure CPU and fan are securely fastened well. Otherwise, improper fan installation not only gets system unstable but also could damage both CPU and motherboard because insufficient thermal dissipation.

If you would like to know more about thermal topic please see **AMD website** for detailed thermal requirement through the address:

http://www.amd.com/products/athlon/thermals
http://www.amd.com/products/duron/thermals



Shuttle® Spacewalker™ MK20

SocketA
AMD Athlon/Duron Processor
based SDR Mainboard
Manual Version 1.0

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1 INTRODUCTION

1.1 To Different Users

First-Time DIY System Builder

Welcome to the DIY world! Building your own computer system is not as difficult as you may think. To make your first computer DIY experience successful, right from the start, we have designed the **Chapter 3 Hardware Installation** section in a step-by-step fashion for all the first-time DIY system builders. Prior to installation, we also suggest you to read the whole manual carefully to gain a complete understanding of your new Shuttle MK20 mainboard.

Experienced DIY User

Congratulate on your purchase of the Shuttle MK20 mainboard. You will find that installing your new Shuttle MK20 mainboard is just easy. Bundled with an array of onboard functions, the highly-integrated MK20 mainboard provides you with a total solution to build the most stable and reliable system. Refer to sections **3.2 Jumper Settings** and **Chapter 4 Software Utility** to find out how to get the best out of your new mainboard. **Chapter 5 BIOS Setup** also contains the relevant information on how to tune up your system to achieve higher performance.

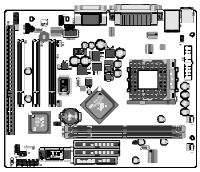
System Integrator

You have wisely chosen Shuttle MK20 to construct your system. Shuttle MK20 incorporates all the state-of-the-art technology of the KLE133 chipset from VIA. It integrates the most advanced functions you can find to date in a compact Micro ATX board.

1.2 Item Checklist

Check all items with you MK20 mainboard to make sure nothing is missing. The complete package should include:

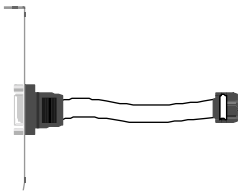
- One piece of Shuttle MK20 Mainboard



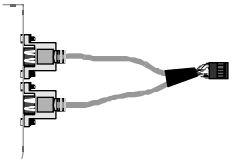
- One piece of ATA**100/66/33** Ribbon Cable

- One piece of Floppy Ribbon Cable

- One piece of 9-pin Ribbon Cable



- One piece of twin ports USB Cable **(optional)**



- MK20 User's Manual

- One piece of Bundled CD-ROM with containing:
  - MK20 user's manual on PDF format
  - VIA 4-IN-1 driver
  - VIA AGP driver
  - VIA Audio driver
  - VIA Hardware Monitor driver
  - LAN driver
  - Award Flashing Utility

2 FEATURES

MK20 mainboard is carefully designed for the demanding PC user who wants high performance and maximum intelligent features in a compact package.

2.1 Specifications

✸ CPU Support

Support Socket462 package CPU with 200/266 MHz FSB.
AMD Athlon Processor: 600 ~ 1400+ MHz.
AMD Duron Processor 600 ~ 850+ MHz.

✸ Chipset

Features VIA KLE133, VT8361 N.B. / VT82C686B S.B. Chipset.

✸ AC'97 Link for Audio and Telephony CODEC

AC'97 2.1 compliant.
Spread independent PCI functions for Audio and Modem.

✸ Integrated Graphics Controller

Enhancement 3D graphics visual and texturing features.
Integrated 24-bit 230MHz RAMDAC.
Supports VESA DDC2B.
Up to 1600 x 1200 in 8-bit color at 85 Hz refresh in 2D graphics.

✸ On Board LAN Controller

Support 10Mb/s and 100Mb/s operation.

✸ Versatile Memory Support

Two **168-pin DIMM** slots to support up to 1GB of PC100 or PC133 compliant **SDR** SDRAM module.

✸ PCI and ISA Expansion Slots

Provides three 32-bit PCI slots and one 16-bit ISA slot.

✸ I/O Interface

Provides a variety of I/O interfaces:

- 1 × Floppy interface for 3.5-inch FDD with 720KB, 1.44MB, or 2.88MB format or for 5.25-inch FDD with 360K or 1.2MB format.
- 1 × PS/2 mouse connector.
- 1 × PS/2 Keyboard connector.
- 1 × RJ45 LAN connector.
- 1 × DB15 VGA connector.
- 1 × DB9 Serial connector 16550 UART compatible.
- 1 × Infrared communication port.
  (Serial port COM2 can also be redirected to an external IrDA Adapter for wireless connection.)
- 1 × DB25 Parallel port supporting Standard Parallel Port (SPP), Enhanced Parallel Port (EPP), and Extended Capabilities Port (ECP) data transmission schemes.
- 1 × Line-Out port.
- 1 × Line-In port.
- 1 × Mic-In port.
- 1 × MIDI/GAME port.

✸ 4 USB Supported Onboard

- 2 × USB connectors on back-panel and one sets of dual USB ports headers on mid-board.

✸ PCI Bus Master IDE Controller Onboard

Two UltraDMA **100/66/33** Bus Master Dual-channel IDE ports provide support to a maximum of four IDE devices (one Master and one Slave per channel). The IDE Bus implements the data transfer speed up to **100/66/33** MB/sec and also supports Enhanced PIO Modes.

80-pin Cable Backward Compatible Legacy ATAPI Devices, ATAPI IDE CD-ROM, CD-R, CD-RW, and LS-120 Supports.

✸ ATX Power Supply Connector

ATX power supply unit can be connected to the onboard 20-pin ATX power connector, supporting Suspend and Soft-On/Off by dual-function power button.

✸ Advanced Configuration and Power Interface

Features four power saving modes: Snoop, Suspend to RAM, Suspend to Disk, and Soft-Off. ACPI provides more efficient Energy Savings Features controlled by your operating system that supports OS Direct Power Management (OSPM) functionality.

✸ System BIOS

Provides licensed Award BIOS V6.0 PG on 2Mb Flash EEPROM and supports Green PC, Desktop Management Interface (DMI).

✸ ATX Form Factor

System board conforms to the Micor ATX specification.

Board dimension: 244mm × 200mm.

✸ Advanced Features

- **Dual Function Power Button -** The system can be in one of two states; one is Suspend mode and the other is Soft-Off mode. Pushing the power button for less than 4 seconds places the system into Suspend mode. When the power button is pressed for longer than 4 seconds, the system enters the Soft-Off mode.
- **Modem Ring Power-On** - The system can be powered on automatically by the activation of modem ring.

✸ Intelligent Features

- **Voltage Monitoring -** Monitors various voltages of key elements, such as the CPU, and other critical system voltage levels to ensure stable current passing through mainboard components. System voltages include Vcore on CPU, and +2.5V, +3.3V, +5V, +12V on system etc.
- **Fan Status Monitoring** - To prevent CPU from overheating, the CPU fan is monitored for RPM and failure. (CPU Cooling FAN with RPM sensor is required.)
- **Temperature Monitoring** - This item allows users to make sure whether the CPU or system runs in a suitable temperature.

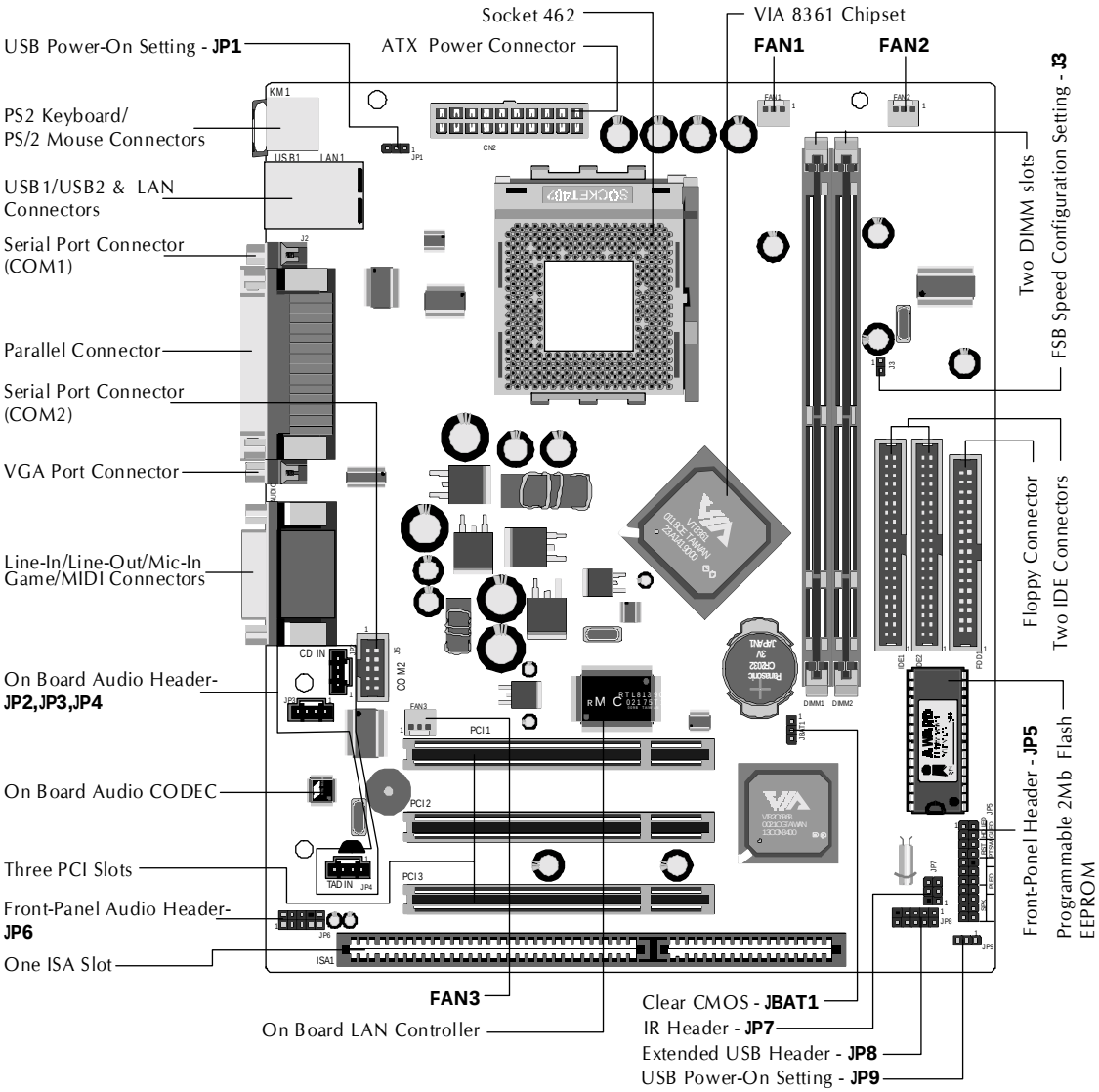
3 HARDWARE INSTALLATION

Before removing or installing any of these devices including CPU, DIMMs, Add-On Cards, Cables, please make sure to unplug the onboard power connector.

This section outlines how to install and configure your MK20 mainboard. Refer to the following mainboard layout to help you identify various jumpers, connectors, slots, and ports. Then follow these steps to guide you through a quick and correct installation of your system.

3.1 Step-by-Step Installation

Accessories Of MK20



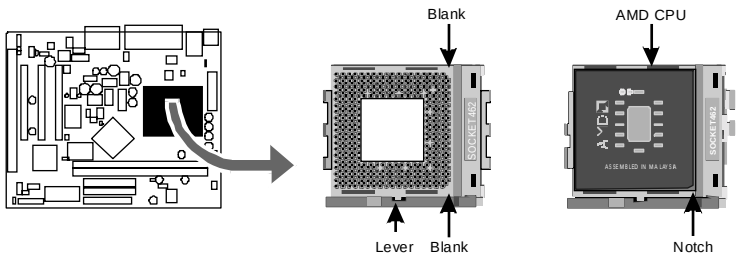
Step 1

Install the CPU:

1. Locate the CPU ZIF (Zero Insertion Force) socket on the upper-right sector of your mainboard (between the back-panel connectors and the DIMM memory slots).

2. Pull the CPU ZIF socket lever slightly sideways away from the socket to unlock the lever, and then bring it to an upwardly vertical position.

3. Place your AMD 462 Athlon/Duron processor in the socket A. Note that the CPU's edges have been purposely designed non-symmetrically to prevent from inserting the processor in the wrong direction. The following diagram demonstrates the correct placement of the CPU in the ZIF socket. You can see that the two blunt-edged corners should face towards the socket-lever.



4. Slightly push the AMD 462 Athlon/Duron processor into the socket without applying excessive force while making sure there is no gap between CPU and socket. Then lower the socket-lever all the way down to its horizontal position and lock it to secure the CPU in place.

5. The AMD 462 Athlon/Duron processor requires a set of heatsink/fan to ensure proper cooling of the processor. If heatsink/fan have not been already mounted on your CPU, you must purchase the heatsink/fan separately and have it installed. Plug the cable throught the heatsink/fan in the CPU fan power connector located nearby. Note that there are several types of CPU fan connectors. Normally, if your mainboard supports the hard ware monitoring function, a 3-pin fan power connector should allow your system to detect the CPU fan's speed . The CPU fan can also run with a 2-pin fan power connector, however, detection of CPU fan's speed is not supported. Another type of CPU fan may feature a large 4-pin fan power connector, which does not support CPU fan's speed detection and must be directly connected to the system's power supply unit. Please refer to the following diagram.

Step 2.

Set Jumpers

This mainboard is jumperless! The default jumper settings have been set for the common usage standard of this mainboard. Therefore, you do not need to reset the jumpers unless you require special adjustments as in any of the following cases:

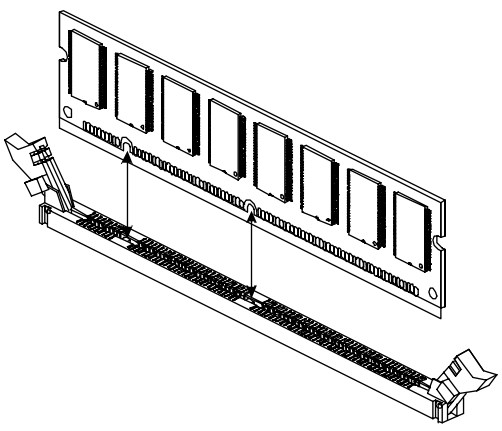
1. CPU FSB Speed
2. Set USB Power-On
3. Clear CMOS

For first-time DIY system builders, we recommend that you do not change the default jumper settings if you are not totally familiar with mainboard configuration procedures. The factory-set default settings are tuned for optimum system performance. For the advanced users who wish to customize their system, section **3.2 Jumper Settings** will provide detailed information on how to configure your mainboard manually.

Step 3.

Install SDR SDRAM System Memory

To install memory, insert SDR SDRAM memory module(s) in DIMM slot(s). Note that SDR SDRAM modules are directional and will not go in the DIMM slots unless properly oriented. After the module is fully inserted into the DIMM slots, lift the clips of both sides of the DIMM slot to lock the module in place.



Step 4

Install Internal Peripherals in System Case

Before you install and connect the mainboard into your system case, we recommend that you first assemble all the internal peripheral devices into the computer housing, including but not limited to the hard disk drive (IDE /HDD), floppy disk drive (FDD), CD-ROM drive, and ATX power supply unit. This will greatly facilitate in making the connections to the mainboard described below.

To install IDE & FDD drives, follow this procedure:

1. Set the required jumpers on board each device according to the instructions provided by the manufacturer. (IDE devices, HDD, and CD-ROM have to set jumpers on Master or Slave mode depending on your willing to install more than one device for each kind.)

2. Connect IDE cable and FDD cable on the back-panel of the internal peripheral devices to the corresponding headers on board. Note that the cable should be oriented with its colored stripe (usually in red or magenta) connected to pin#1 both on the mainboard IDE or FDD connector and on the device as well.

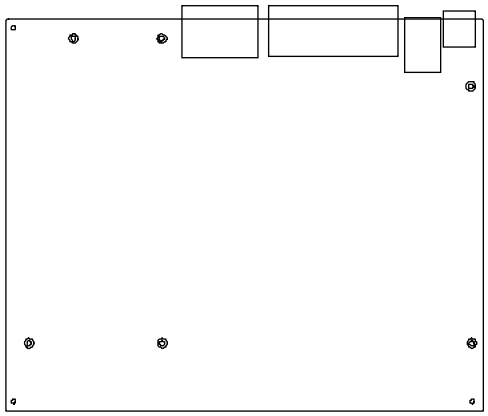
3. Connect an available power cable through your system power supply unit to the back-panel of each peripheral device. Note that the power cable is directional and cannot fit in if not properly positioned.

4. Connect serial port cable to on board COM2 header. And install the other side of CMOS cable to back-panel with a screw.

Step 5

Mount the Mainboard on the Computer Chassis

1. You may find that there are a lot of different mounting hole positions both on your computer chassis and on the mainboard. To choose a correct mounting hole, the key point is to keep the back-panel of the mainboard in a close fit with your system case, as shown below.



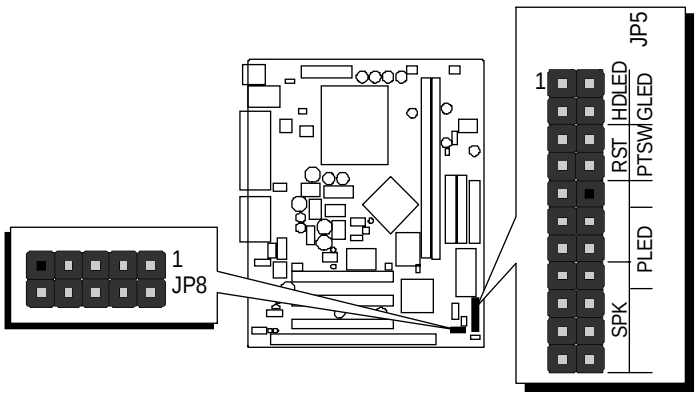
2. After deciding on the proper mounting holes, position the studs between the frame of chassis and the mainboard. The studs are used to fix the mainboard and to keep a certain distance between the system chassis and the mainboard, in order to avoid any electrical short between the board and the metal frame of chassis. (If your computer case is already equipped with mounting studs, you will need to tighten screws to attach the mainboard.)

Note: In most computer housings, you will be able to find 4 or more attachment points to install mounting studs and fix the mainboard. If there aren't enough matching holes, then make sure to install at least 4 mounting studs to ensure proper attachment of the mainboard.

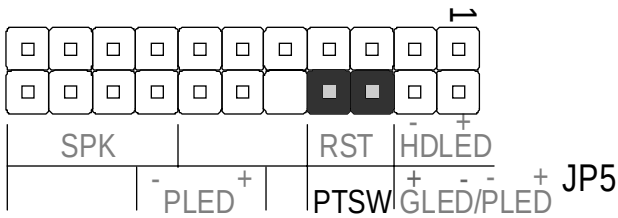
Step 6

Connect Front-Panel Switches/LEDs/Speaker/USB connectors

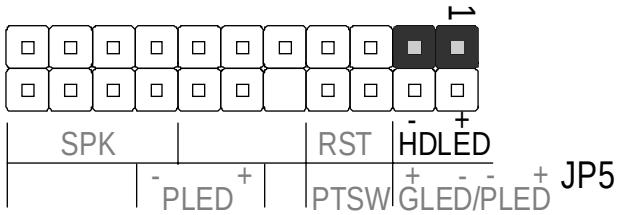
You can find there are several different cables already existing in the system case and originating from the computer's front-panel devices (HDD LED, Green LED, Reset Switch, PC Speaker, or USB devices etc.) These cables serve to connect the front-panel switches, LEDs, and USB connectors to the mainboard's front-panel connectors group (JP5 and JP8), as shown below.



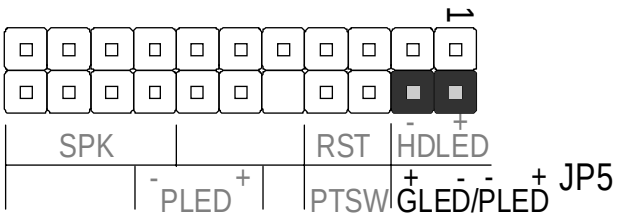
1. ATX Soft Power On/Off (PTSW)



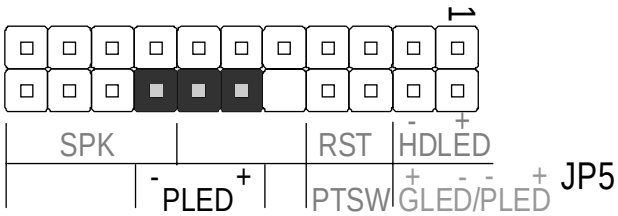
2. HDD_LED (HDLED)



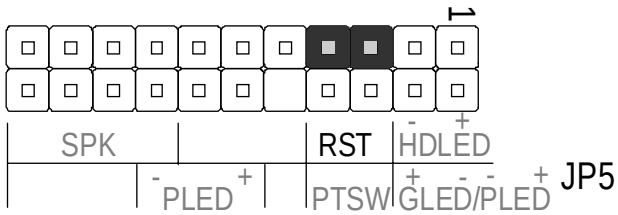
3. Green_LED (GLED)/Power_LED (PLED)



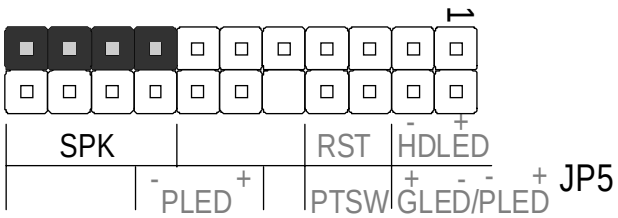
4. Power_LED (PLED)



5. Hardware Reset Switch (RST)

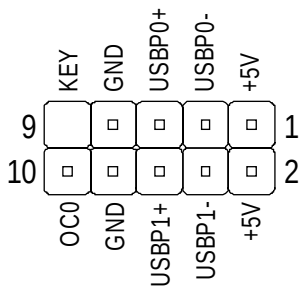


6. PC Speaker (SPK)



7. Extended USB Header

USB port 3

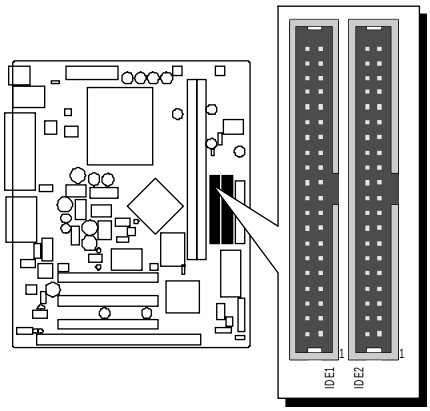


USB port 4

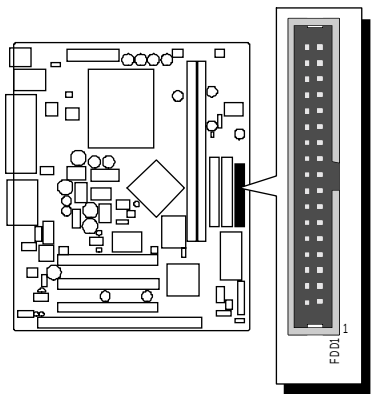
Step 7

Connect IDE & Floppy Disk Drives

1. IDE cable connector



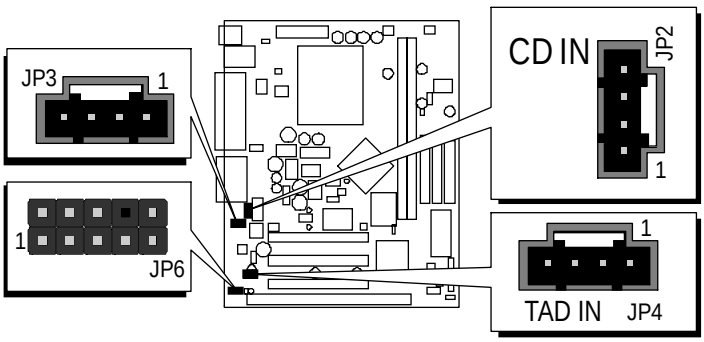
2. FDD cable connector



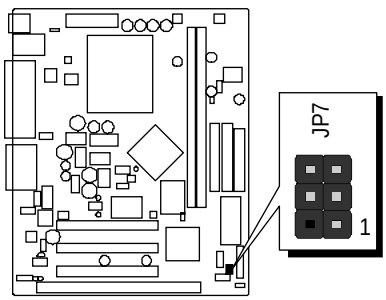
Step 8

Connect Other Internal Peripherals

1. CD_IN, TAD_IN, AUX_IN, and Frint-Panel AUDIO connectors



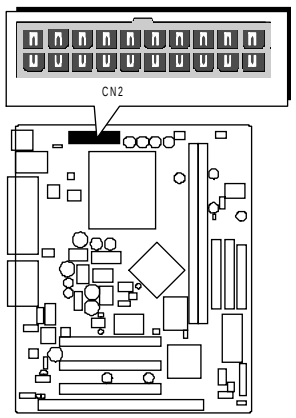
2. IR connector



Step 9

Connect Power Supply

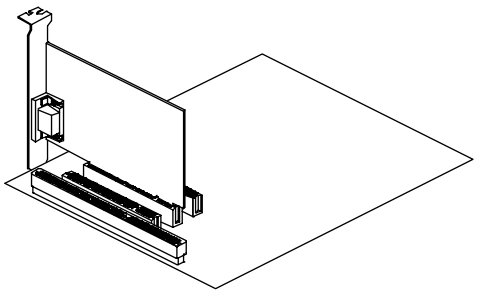
1. System power connector



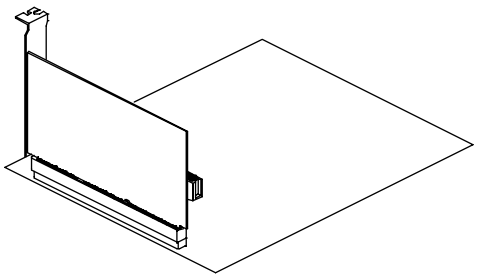
Step 10

Install Add-on Cards in Expansion Slots

1. PCI Card



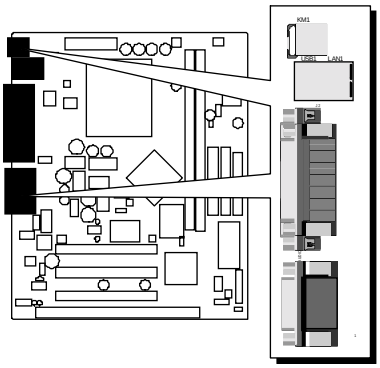
2. ISA Card



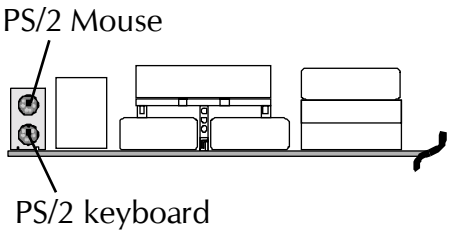
Step 11

Connect External Peripherals to Back-Panel

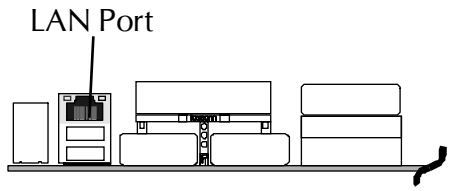
You are now ready to put the computer case back together and get on to the external peripherals connections to your system's back-panel.



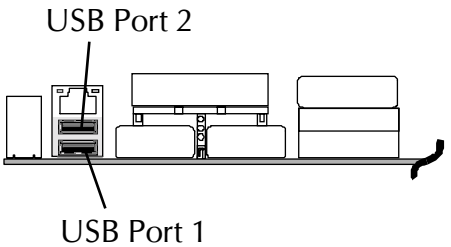
1. PS/2 Mouse and Keyboard



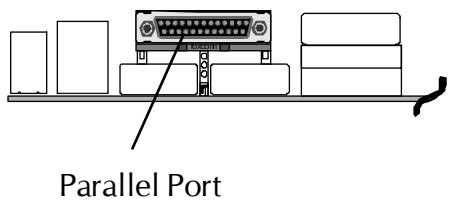
2. LAN Port



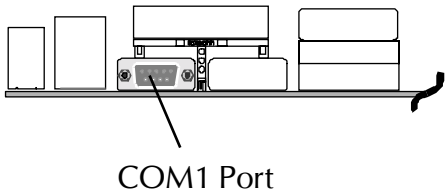
3. USB Ports



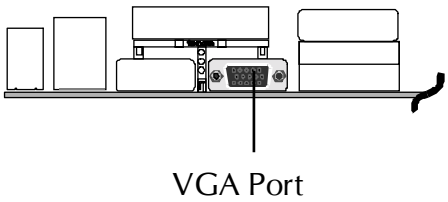
4. Parallel Port



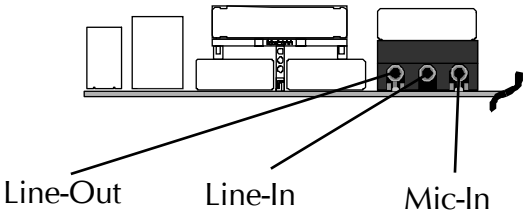
5. COM1 Ports



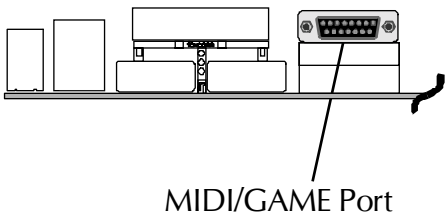
6. VGA Port



7. Audio Line_out / Line_in / Mic_In



8. MIDI/Game Port



Step 12

First Time System Boot Up

To assure the completeness and correctness of your system installation, you may check the above installation steps once again before you boot up your system for the first time.

1. Insert a bootable system floppy disk (DOS 6.2x, Windows 95/98/NT, or others) which contains FDISK and FORMAT utilities into the FDD.

2. Turn on the system power.

3. First, you must use the FDISK utility to create a primary partition of the hard disk. You can also add an extended partition if your primary partition does not use all of the available hard disk space. If you choose to add an extended partition, you will have to create one or more logical partition(s) to occupy all the space available in the extended partition. The FDISK utility will assign a drive letter (i.e., C:, D:, E:,...) to each partition which will be shown in the FDISK program. After FDISK procedure, reboot your system by using the same system floppy disk.

Note: DOS 6.2x and Windows 95A can only support up to 2.1GB of HDD partition. If you use the FDISK utility with one of the operating systems mentioned above, you can only decide your HDD into partitions no larger than 2.1GB each.

4. Now, use the FORMAT utility to format all the partitions you've created. When formatting the primary partition (C:), make sure to use the FORMAT C: /S command.

Note: FORMAT C: /S can transfer all the necessary system files into the primary partition of your hard disk. Then, your HDD will become a bootable drive.

5. Install all the necessary drivers for CD-ROM, Mouse, etc.

6. Setup the complete operating system according to your OS installation guide.

Step 13

Install Driver & Software Components

Please note that all the system utilities and drivers are designed for Win 9x / 2000/ME/NT operating systems only. Make sure your operating system is already installed before running the drivers installation CD-ROM programs.

1. Insert the MK20 bundled CD-ROM into your CD-ROM drive. The auto-run program will display the drivers main installation window on screen.
2. Select the Mainboard related program.
3. Install VIA 4-in-1, AGP, and Audio drivers.
4. Return to the main installation window and select the VIA Hardware Monitor related program.
5. Install Hardware Monitor driver.
6. Exit from the auto-run drivers installation program.
7. Install LAN driver.

❁ The LAN device driver can't be setup automatically, please refer to section **Chapter 4 Software Utility** to manual installation.

3.2 Jumper Settings

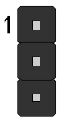
Several hardware settings are made through the use of jumper caps to connect jumper pins to the mainboard. Pin #1 could be located at any corner of each jumper; you just find a location marked with a while right angle, which stands for pin1#. There are several types of pin 1# shown as below:

3-pin and multi-pin (> 3) jumpers show as follows:

Pin #1 to the left:

Pin #1 on the top:

Pin #1 to the right:



Pin #1 on the bottom:

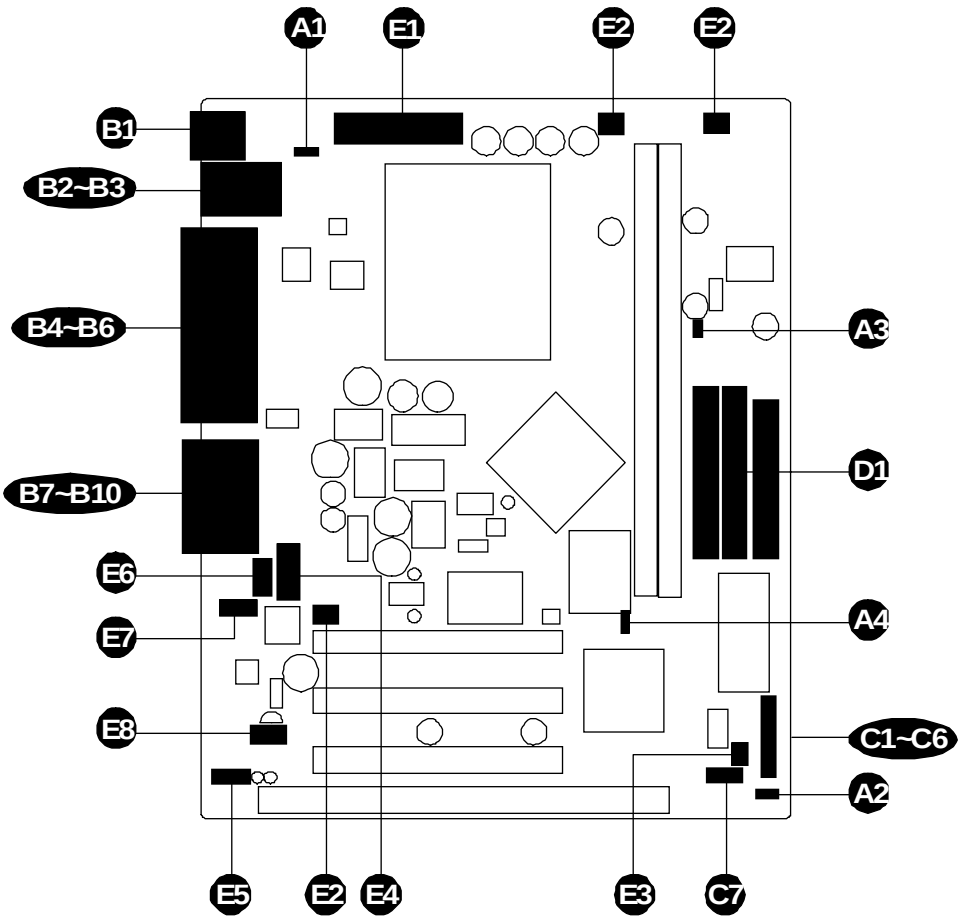
Jumpers with two pins are shown as for Close [On] or for Open [Off]. To Short jumper pins, simply place a plastic jumper cap over the desired pair of pins.

Caution!

1. Do not remove the mainboard from its antistatic protective packaging until you are ready to install it.
2. Carefully hold the mainboard by its edges and avoid touching its components. When putting the mainboard down, place it on the top of its original packaging film and on an even surface, and components side up.
3. Wear an antistatic wrist strap or take other suitable measures to prevent electrostatic discharge (ESD) whenever handling this equipment.

Jumper & Connector Guide

Use the mainboard layout on page 11 to locate CPU socket, memory slots, expansion slots, jumpers and connectors on the mainboard during installation. The following list will help you identify jumpers, slots, and connectors along with their assigned functions:



CPU/Memory/Expansion Slots

Socket 462	: CPU Socket for AMD Athlon and Duron processors.
DIMM1/2	: Two DIMM Slots for 16MB, 32MB, 64MB, 128MB, 256MB, and 512MB of 3.3V SDRAM.
ISA	: One 16-bit ISA Expansion Slot
PCI	: Three 32-bit PCI Expansion Slots

Jumpers

A1	JP1	: USB1/2 Power-On Setting
A2	JP9	: USB3/4 Power-On Setting
A3	J3	: FSB Speed Configuration Setting
A4	JBAT1	: Clear CMOS

Back-Panel Connectors

B1	KB	: PS/2 Keyboard
B1	MS	: PS/2 Mouse
B2	LAN	: RJ45 LAN Port
B3	USB	: 2 × USB (Universal Serial Bus)
B4	COM1	: Serial Port 1 (DB9 male)
B5	VGA	: VGA Port (DB15 female)
B6	PRINTER	: Parallel Port (DB25 female)
B7	LINE-OUT	: Line-Out Port
B8	LINE-IN	: Line-In Port
B9	MIC-IN	: Mic-In Port
B10	GAME/MIDI	: MIDI/Game Port

Front-Panel Connectors (JP5 and JP8)

C1	PTSW	: ATX Power On/Off Momentary Type Switch
C2	HDLED	: IDE Drive Active LED
C3	GLED/PLED	: Green LED (ON when system stays in power saving mode)/ System Power LED
C4	PLED	: System Power LED
C5	RST	: Hardware Reset Switch
C6	SPK	: Housing Internal Speaker
C7	JP8	: Extended USB Header (USB Port 3/4)

Internal Peripherals Connectors

D1	FDD	: Floppy Disk Drive Interface
D1	IDE1	: IDE Primary Interface (Dual-channel)
D1	IDE2	: IDE Secondary Interface (Dual-channel)

Other Connectors:

E1	CN2	: ATX Power (20-pin header)
E2	FAN1	: CPU Fan Power
E2	FAN2	: Chassis Fan Power
E2	FAN3	: Chassis Fan Power
E3	JP7	: IR Connector
E4	J5	: COM2 Connector
E5	JP6	: Front-Panel Microphone and Line-Out Connector
E6	JP2	: CD-in Connector
E7	JP3	: AUX-in Connector
E8	JP4	: TAD-in Connector

☞ *Jumpers*

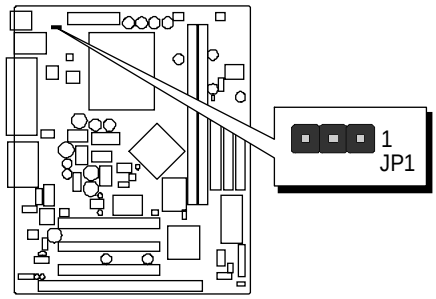
Ⓐ1 USB1/2 Power-On Setting (JP1)

MK20 provides one jumper to set USB devices which connect to back-panel to power-on system from Soft off stage.

Place jumper cap on JP1 pin 1-2 for enabling USB device (USB port 1 and USB port 2) power-on function on back-panel.

Disabled (Default)
(USB power-on function)

Enabled
(USB power-on function)



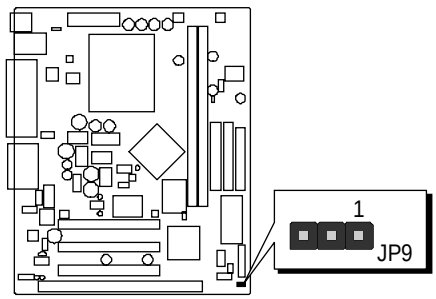
Ⓐ2 USB3/4 Power-On Setting (JP9)

MK20 provides one jumper to set USB devices which connect to front-panel to power-on system from Soft off stage.

Place jumper cap on JP9 for enabling or disabling USB device (USB port 3 and USB port 4) power-on function.

Disabled (Default)
(USB power-on function)

Enabled
(USB power-on function)

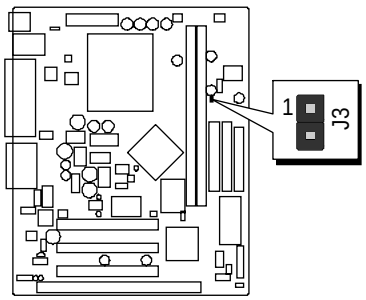


A3 FSB Speed Configuration Setting (J3)

MK20 provides jumper J3 to set front side bus at 100MHz and 133MHz. Insert mini-jumper caps on J3 to set FSB to 100MHz. Remove mini-jumper caps from J3 to set FSB to 133MHz.

Set FSB hardware jumper to 100MHz. (Default)

Set FSB hardware jumper to 133MHz.

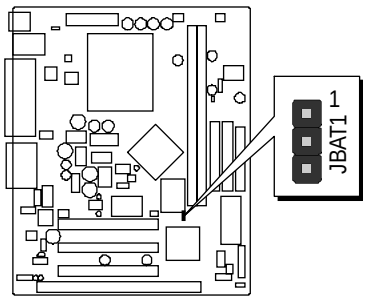


A4 Clear CMOS (JBAT1)

JBAT1 is used to clear CMOS data. Clearing CMOS will result in the permanent erasing of previous system configuration settings and the restoration of original (factory-default) system settings.

Pin 1-2 (Default)

Pin 2-3 (Clear CMOS)

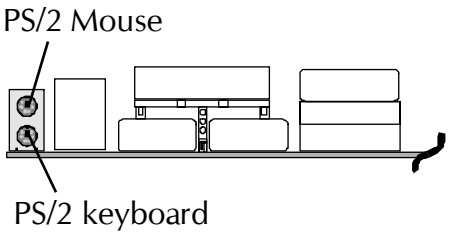


Step 1. Turn off the system power (PC-> Off).
Step 2. Remove ATX Power cable from ATX Power connector.
Step 3. Remove jumper cap from JBAT1 pins 1-2.
Step 4. Place the jumper cap on JBAT1 pin 2-3 for a few seconds.
Step 5. Return the jumper cap to pin 1-2.
Step 6. Plug ATX Power cable into ATX Power connector.
Step 7. Turn on the system power (PC-> On).

☞ *Back-Panel Connectors*

B1 PS/2 Keyboard & PS/2 Mouse Connectors

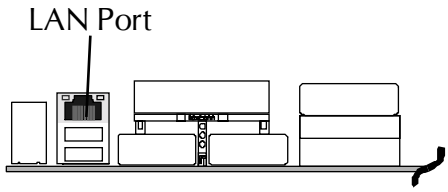
Two 6-pin female PS/2 keyboard & Mouse connectors are located at the rear panel of mainboard. Depending on the computer housing you use (desktop or tower), the PS/2 Mouse connector is situated at the top of the PS/2 Keyboard connector when the mainboard is laid into a desktop, as opposed to a tower where the PS/2 Mouse connector is located at the right of the PS/2 Keyboard. Plug the PS/2 keyboard and mouse jacks into their corresponding connectors.



B2 LAN Port Connectors

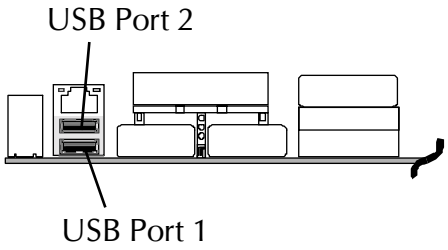
This mainboard can accommodate one device on LAN.

Attach a 10/100 bseeT cable to the RJ45 at the back-panel of your computer.



B3 USB Port Connectors

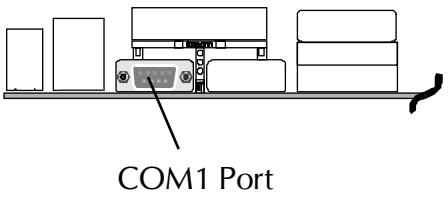
This mainboard offers 2 USB ports on back-panel. Plug each USB device jack into an available USB Port 1/2 connector.



B4 COM1 Connectors

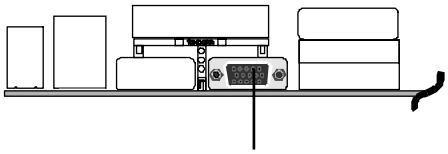
This mainboard can accommodate one serial device on COM1.

Attach a serial device cable to the DB9 serial port COM1 at the back-panel of your computer.



B5 VGA Connector

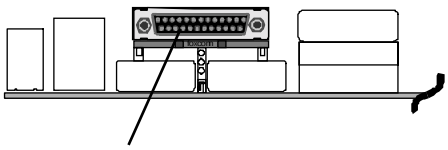
One 15-pin VGA connector is located at the rear panel of the mainboard.



VGA Port

B6 Parallel Port Connector

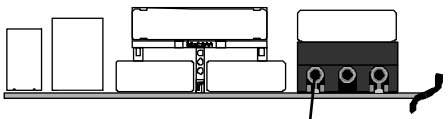
One DB25 female parallel connector is located at the rear panel of the mainboard. Plug the connection cable from your parallel device (printer, scanner, etc.) into this connector.



Parallel Port

B7 Line-Out

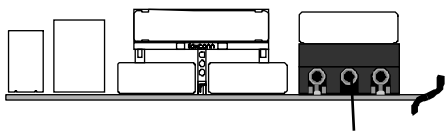
Line-Out is a stereo output port through which the combined signal of all internal and external audio sources on the board is output. It can be connected to 1/8-inch TRS stereo headphones or to amplified speakers.



Line-Out

B8 Line-In

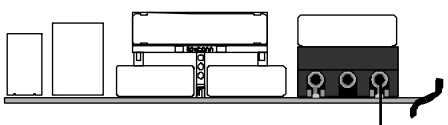
Line-In is a stereo line-level input port that accepts a 1/8-inch TRS stereo plug. It can be used as a source for digital sound recording, a source to be mixed with the output, or both.



Line-In

B9 Mic-In

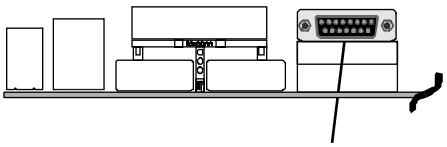
MIC-IN is a 1/8-inch jack that provides a mono input. It can use a dynamic mono or stereo microphone with a resistance of not more than 600 Ohms.



Mic-In

B10 MIDI/GAME Port

The MIDI/GAME port is a 15-pin female connector. This port can be connected to any IBM PC compatible game with a 15-pin D-sub connector.



MIDI/GAME Port

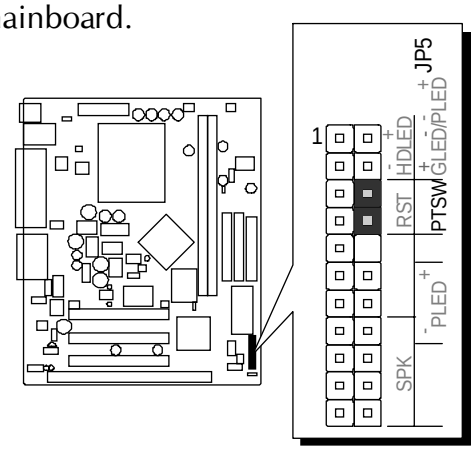
MIDI Instrument Connection

You will need a MIDI adapter to connect a MIDI compatible instrument to the sound card. The MIDI adapter can in turn be connected to the Joystick/MIDE port. You will also need the MIDI sequencing software to run MIDI instruments with your computer.

☞ *Front-Panel Connectors*

C1 ATX Power On/Off Switch Connector (PTSW)

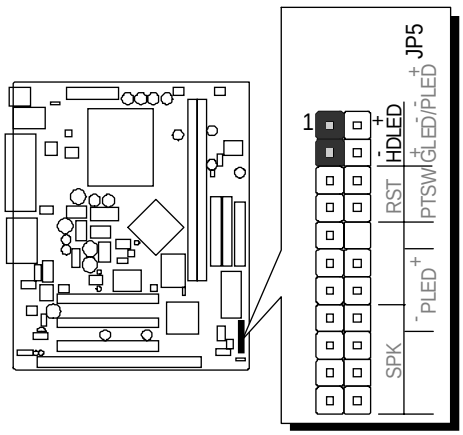
The Power On/Off Switch is a momentary- type switch used for turning on or off the system's ATX power supply. Attach the connector cable from the Power Switch to the 2-pin PTSW header on the mainboard.



Note : Please note the Speaker and all the LED connectors are directional. If your chassis's LED does not light up during running, please simply change to the opposite direction.

C2 HDD LED Connector (HDLED)

Attach the connector cable from the IDE device LED to the 2-pin HDLED header. The HDD LED lights up whenever an IDE device is active.



C3 Green LED / Power LED Connector (GLED/PLED)

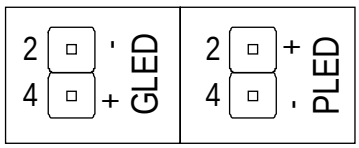
This header is dual color LED function.

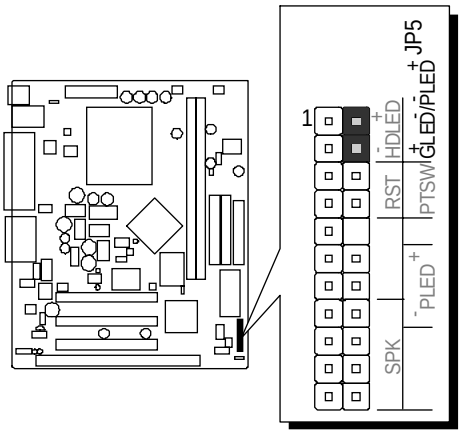
Dual color LED function is defined by either Power LED or Green LED, the header can be in these states.

The Green LED indicates that the system is currently in one of the power saving mode (Doze/Standby/Suspend). When the system resumes to normal operation mode, the Green LED will go off, power LED on.

This Power LED will go off during power saving mode.

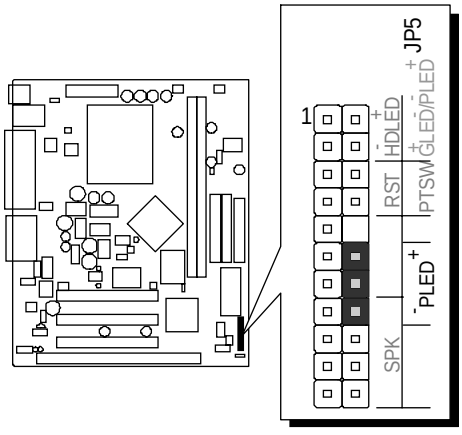
Attach a 2-pin Green LED/Power LED cable to GLED/PLED header.





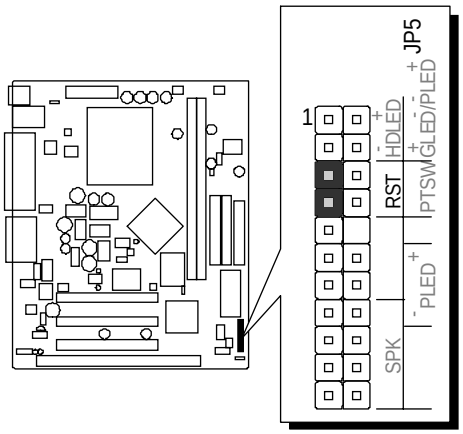
C4 Power LED Connector (PLED)

Attach the 3-pin Power-LED connector cable from the housing front-panel to the PLED header on the mainboard. The power LED stays light while the system is on.



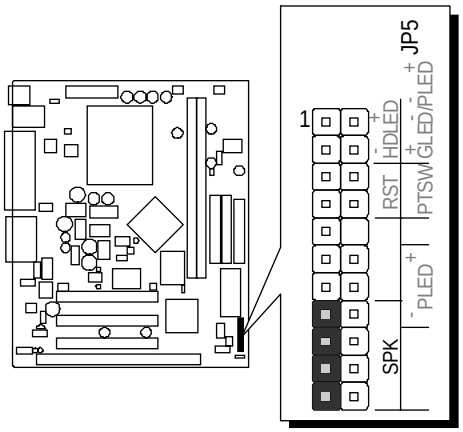
C5 Hardware Reset Connector (RST)

Attach the 2-pin hardware reset switch cable to the RST header. Pressing the reset switch causes the system to restart.



C6 Speaker Connector (SPK)

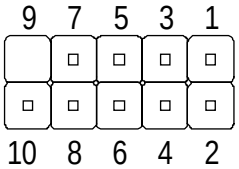
Attach the PC speaker cable from the case to the 4-pin speaker connector (SPK).



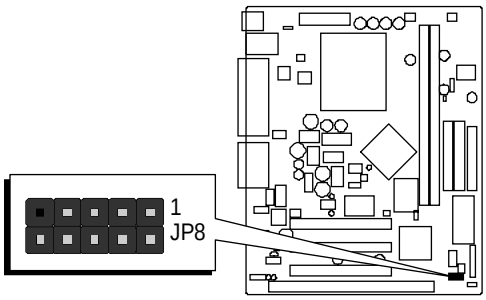
C7 Extended USB Header (JP8)

The headers are used to connect the cable attached to USB connectors which are mounted on front-panel or back-panel. But the USB cable is optional at the time of purchase.

USB port 3



USB port 4



Pins Assignment:

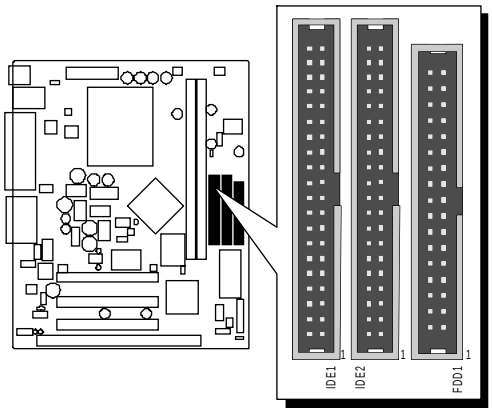
1 = + 5V
3 = USBP0-
5 = USBP0 +
7 = GROUND
9 = KEY

2 = + 5V
4 = USBP1-
6 = USBP1 +
8 = GROUND
10 = OC0

☞ *Internal Peripherals Connectors*

D1 Enhanced IDE Ports and Floppy Connector

The MK20 mainboard features two 40-pin dual-channel IDE device connectors (IDE1/IDE2) providing support to up to four IDE devices, such as CD-ROM and Hard Disk Drives (H.D.D.). This mainboard also includes one 34-pin floppy disk controller (FDD1) to accommodate the Floppy Disk Drive (F.D.D.). Moreover, this mainboard comes with one 80pin ATA100/66/33 ribbon cable to connect to IDE H.D.D. and one 34-pin ribbon cable for F.D.D. connection.

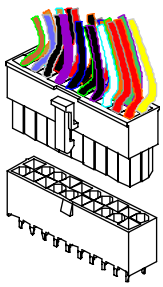


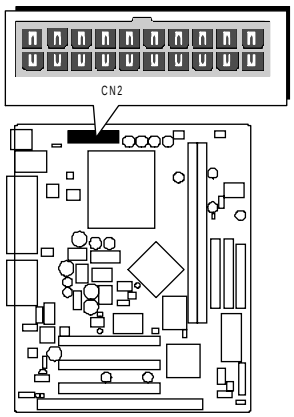
Important: Ribbon cables are directional, therefore, make sure to always connect with the red cable stripe on the same side as pin #1 of the IDE1/IDE2 or FDD1 connector on the mainboard.

☞ *Other Connectors*

E1 ATX Power Supply Connector (CN2)

Locate the 20-pin male header ATX power connector (CN2) on your mainboard. Plug the power cable from the ATX power supply unit directly into (CN2) ATX power supply connector.





Note 1: The ATX power connector is directional and will not go in unless the guides match perfectly making sure that pin#1 is properly positioned.

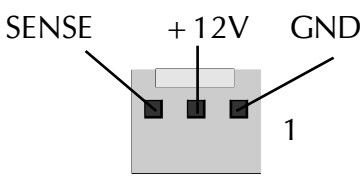
Note 2: Make sure the latch of the ATX power connector clicks into place to ensure a solid attachment.

Note 3: Your ATX power supply must be supplied to ACPI +5V standby power and at least 720mA compatible.

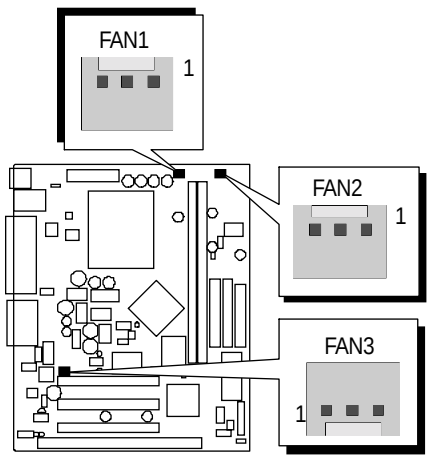
Note 4: Make sure your power supply have enough power for higher speed processor installed.

E2 Cooling Fan Connectors for CPU (FAN1) and Chassis (FAN2/3) Fan

The mainboard provides three onboard 12V cooling fan power connectors to support CPU (FAN1) and Chassis (FAN2/3) cooling fans.



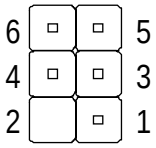
FAN1, FAN2 with rotate sense.
FAN3 without rotate sense.

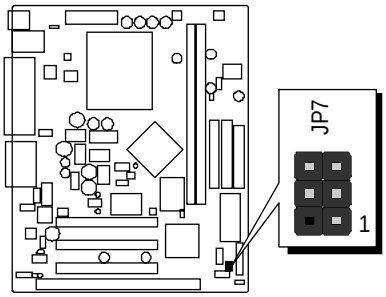


Note: Both cable wiring and type of plug may vary depending on the fan maker. Keep in mind that the red wire should always be connected to the +12V header, and the black wire, to the ground (GND) header.

E3 IR Connector (JP7)

If you have an Infrared device, this mainboard can implement IR transfer function. To enable the IR transfer function, follow these steps:





Pins Assignment:

1 = NC	2 = KEY	3 = + 5V
4 = GND	5 = IRTX	6 = IRRX

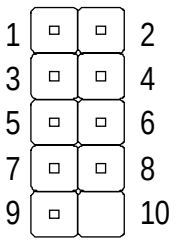
Note: Before connect your IR device, please be sure each IR on board pin allocation is matched with the pin of the IR device. Otherwise, incorrect IR connection may damage your IR device.

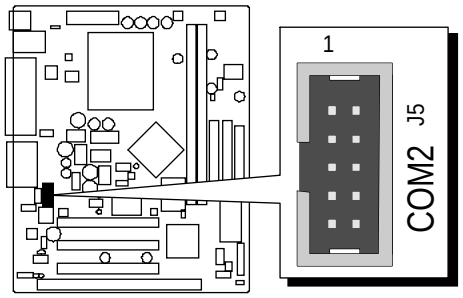
Step 1. Attach the 6-pin infrared device cable to JP7 connector. (Refer to the above diagram for IR pin assignment.)

Step 2. This mainboard only support normal transfer mode.

E4 COM2 Connector (J5)

This mainboard comes with one 10-pin ribbon cable for COM2.



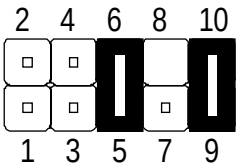


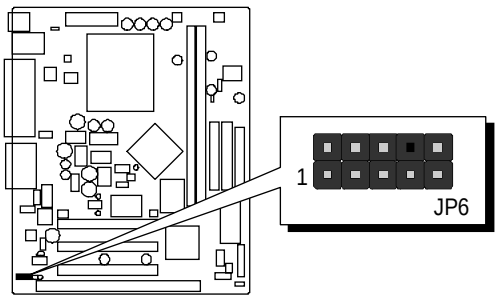
Pins Assignment:

1 = DCD2	2 = RX2
3 = TX2	4 = DTR2
5 = GND	6 = DSR2
7 = RTS2	8 = CTS2
9 = RI2	10 = KEY

E5 Front-Panel Microphone and Line_out Header (JP6)

This header allows users to install auxiliary front-oriented microphone and line-out ports for easier access. Either the Mic and Line_out connector on back-panel or JP6 header are available at the same time. If you would like to use this JP6 header on front-panel, please remove all jumpers from JP6 and install your special Extra Mic / Line_out cable instead.





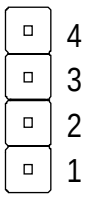
Pins Assignment:

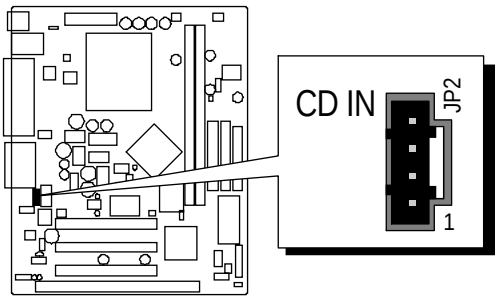
1 = AUD_MIC	2 = AUD_GND
3 = AUD_MIC_BIOS	4 = AUD_VCC
5 = AUD_FRONT_R	6 = AUD_RET_R
7 = HP_ON	8 = KEY
9 = AUD_FRONT_L	10 = AUD_RET_L

E6 Audio Connector CD _In (JP2) (Black)

Port JP2 is used to attach an audio connector cable from the CD-ROM drive.

Pins Assignment:
1 = CD_L
2 = CD_GND
3 = CD_GND
4 = CD_R

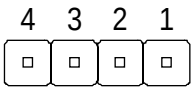


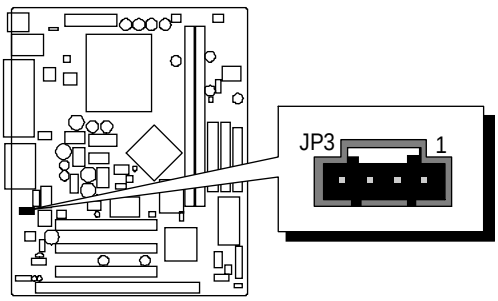


E7 Audio Connector AUX _In (JP3) (White)

Port JP3 can be used to connect a stereo audio input from CD-ROM, TV-tuner, or MPEG card.

Pins Assignment:
1 = AUX_L
2 = AGND
3 = AGND
4 = AUX_R

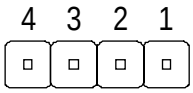


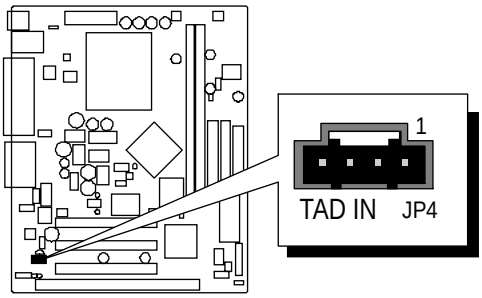


E8 Audio Connector TAD _In (JP4) (Green)

Port JP4 can be used to connect a modem audio line to MK20 mainboard. Typically, you would use this connector when running the voice mail software on your system for audio input and output.

Pins Assignment:
1 = PHONE_IN
2 = AGND
3 = AGND
4 = MONO_OUT





3.3 System Memory Configuration

The MK20 mainboard has two 168-pin DIMM slots that allow you to install from 16MB up to 1GB of system memory.

Each 168-pin DIMM (Dual In-line Memory Module) Slot can accommodate 16MB, 32MB, 64MB, 128MB, 256MB, and 512MB of PC100/PC133 compliant 3.3V single or double side 64-bit wide data path SDRAM modules.

Install Memory:

Install memory in any or all of the slots. The combination shown as follows.

DIMM Slot	Memory Modules	Module Quantity
DIMM 1	16MB, 32MB, 64MB, 128MB, 256MB, and 512MB 168-pin 3.3V SDR SDRAM DIMM	x 1
DIMM 2	16MB, 32MB, 64MB, 128MB, 256MB, and 512MB 168-pin 3.3V SDR SDRAM DIMM	x 1

Note: You do not need to set any jumper to configure memory since the BIOS utility can detect the system memory automatically. You can check the total system memory value in the BIOS Standard CMOS Setup menu.

Upgrade Memory:

You can easily upgrade the system memory by inserting additional SDRAM modules in available DIMM slots. The total system memory is calculated by simply adding up the memory in all DIMM slots. After upgrade, the new system memory value will automatically be computed and displayed in the field " Standard CMOS Setup" of BIOS setup program.

4 SOFTWARE UTILITY

4.1 Mainboard CD Overview

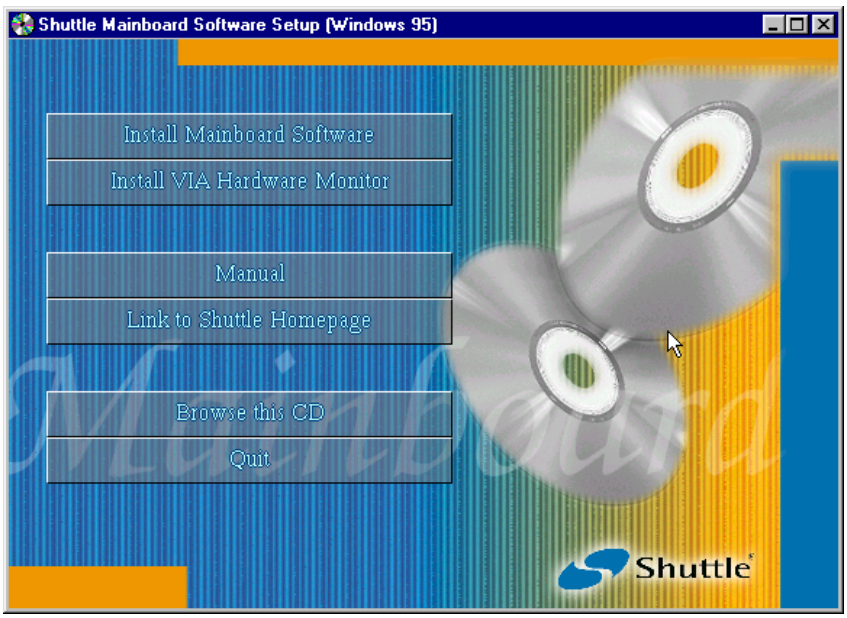
Note: The CD contents attached in the MK20 mainboard are subject to change without notice.

To start your mainboard CD disc, just insert it into your CD-ROM drive, and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click or run D:\Autorun.exe (assuming that your CD-ROM drive is drive D:)

Navigation Bar Description:

- **Install Mainboard Software** - Installing 4 in 1, AGP, ,Audio drivers, and LAN driver installation Guide.
- **Install VIA Hardware Monitor** - Installing VIA hardware monitor.
- **Manual** - MK20 series mainboard user's manual in PDF format.
- **Link to Shuttle Homepage** - Link to shuttle website homepage.
- **Browse this CD** - Allows you to see the contents of this CD.
- **Quit** - Close this CD.

❁ LAN Device Driver must be installed manually.



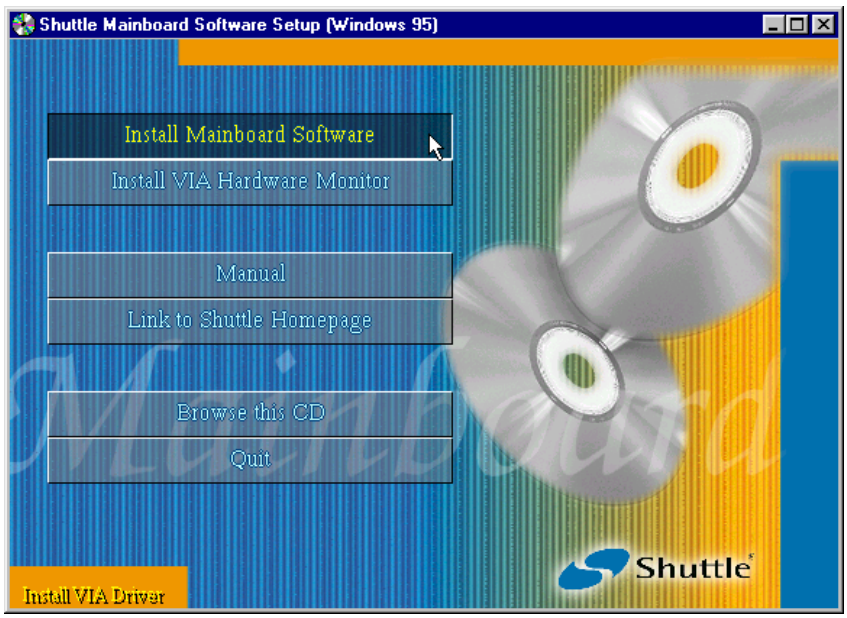
4.2 Install Mainboard Software

Insert the attached CD into your CD-ROM drive and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click on Autorun icon in **My Computer** to bring up **Shuttle Mainboard Software Setup** screen.

Select using your pointing device (e.g. mouse) on the "**Install Mainboard Software**" bar to enter the sub-menu.

The **Mainboard Software** include:

- ☞ [4.2.A] Install VIA Driver
- ☞ [4.2.B] Install AGP Device Software
- ☞ [4.2.C] Install Audio Device Software
- ☞ [4.2.D] LAN Driver Installation Guide



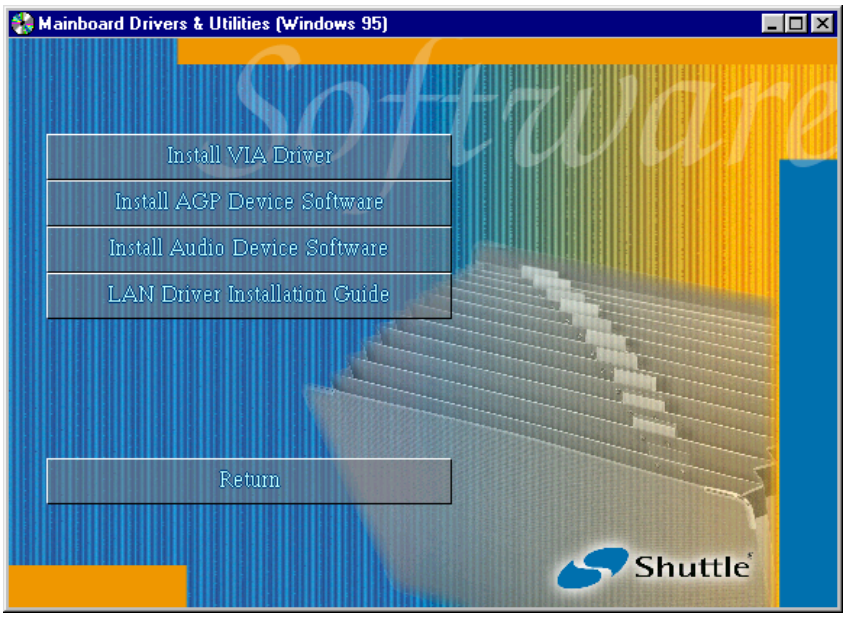
Install VIA 4 in 1, AGP, and Audio Device Driver

[4.2.A] Select using your pointing device (e.g. mouse) on the "**Install VIA Driver**" bar to install VIA 4 in 1 driver.

[4.2.B] Click on the "**Install AGP Device Software**" bar to install AGP device driver.

[4.2.C] Click on the **"Install Audio Device Software"** bar to install Audio driver.

[4.2.D] Click on the **"LAN Driver Installation Guide"** bar to run readme file, please follow below instructions to complete the installation.

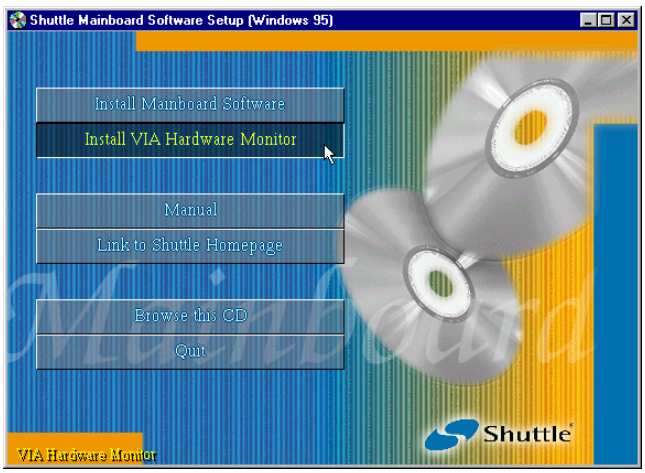


Once you made your selection, a Setup window run the installation automatically.

When the copying files is done, make sure you **reboot** the system to take the installation effect.

4.3 Install VIA Hardware Monitor

Insert the attached CD into your CD-ROM drive, and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click on Autorun icon in **My Computer** to bring up **Shuttle Mainboard Software Setup** screen. Select the item using your pointing device (e.g. mouse) on the "**Install VIA Hardware Monitor**" bar to install hardware monitor driver.



Once you make your selection, a Setup window will automatically run the installation.

When the files are done copying, make sure you **reboot** the system to insure that the files are installed correctly.

4.4 Install LAN Software

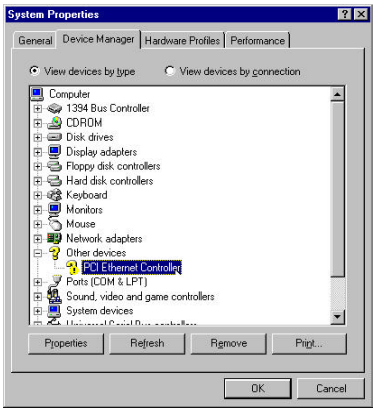
Install WIN98 LAN driver

The LAN Device Driver can't install automatically, you need double click on **My Computer -> Control Pnael -> System** icon to bring up **System Properties** screen.

Select tab **"Device Manager"**.

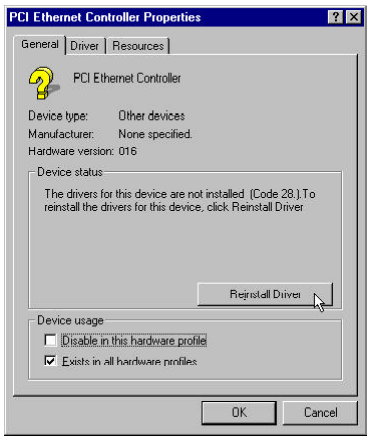
You will find a yellow "?" mark at **PCI Ethernet Controller**, that means the driver is not recognize.

Double click on the **Ethernet Controller.**



Then **PCI Ethernet Controller Properties** windows will appear on your screen.

Click on the **"Reinstall Driver"** bar to install driver.

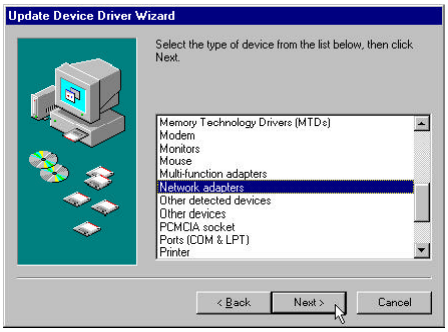


The **Updade Device Driver Wizard** windows will appear on your screen.

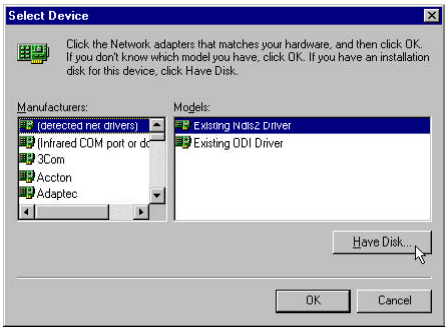
Click on **"Next"** bar to continue.

Please choose **"Display a list of the drivers in a specific location, so you can select the driver you want"** to the manual install driver, and click on **"Next"** bar to continue.

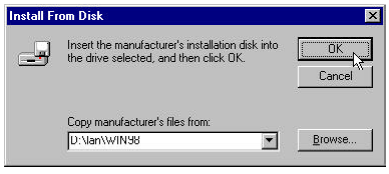
Select **"Network adapters"** bar for LAN device and click on **"Next"** bar to continue.



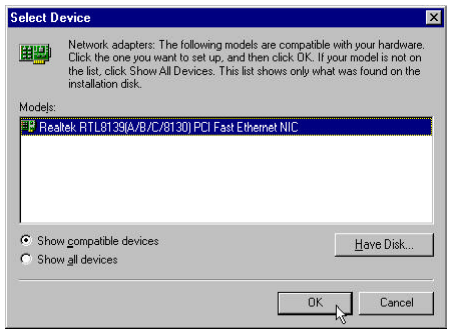
Insert the support CD by the mainboard manufacturer and choose "**Have Disk**" bar to continue next step.



Indicate the driver's location as **"D:\lan\WIN98\NETRTS5.INF"** (In this location CD disk drive is supposed to be **"D"** letter.)

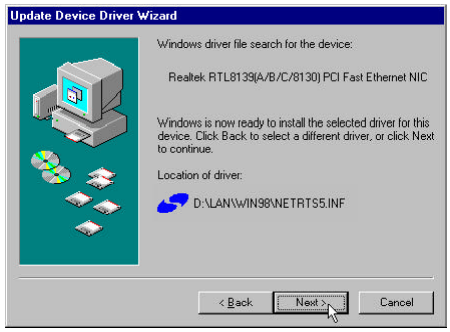


Select **"Realtek RTL8139 [A/B/C/8130] PCI Fast Ethernet NIC"** to install, and then click on **"OK"**.

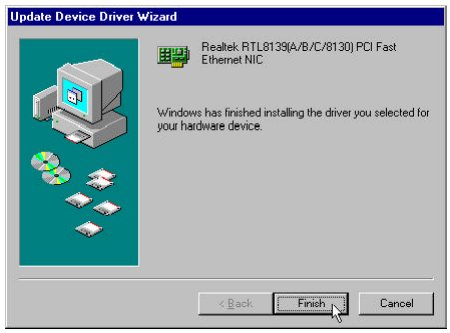


Make sure **"Realtek RTL8139 [A/B/C/8130] PCI Fast Ethernet NIC"** driver, and click on **"Next"**.

Then the system will do the setup procddure automatically.

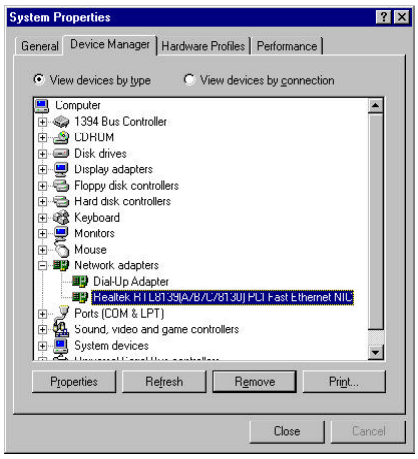


Completing the upgrade device driver, and click on **"Finish"** to restart the system to take all the changes effect.



After restart, you may check Network adapters under the location mentioned at right figure.

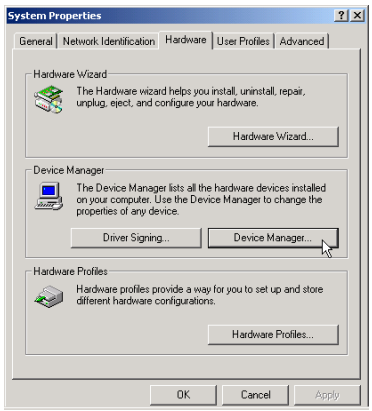
The Network adapters shows correctly.



Install WIN2000 LAN driver

The LAN Device Driver can't install automatically, you need double click on **My Computer** -> **Control Pnael** -> **System** icon to bring up **System Properties** screen.

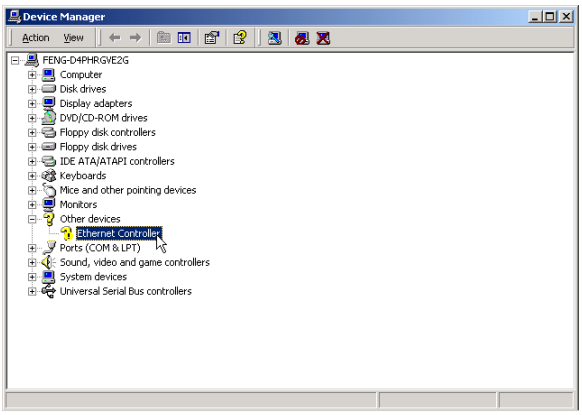
Select tab **"Hardware"** and then **"Device Manager"** bar.



The **Device Manager** windows will appear on your screen.

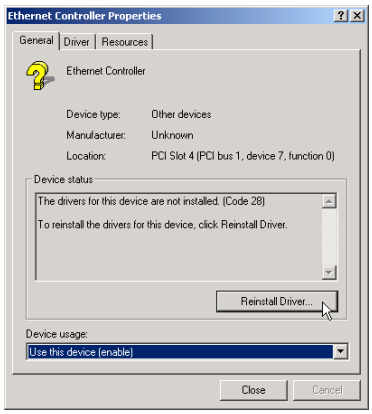
You will find a yellow "?" mark on **Ethernet Controller**, that means the driver is not recognized.

Double click on the **Ethernet Controller.**



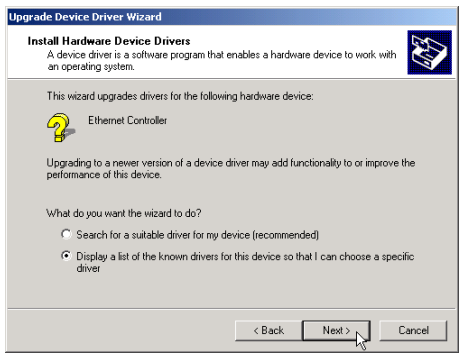
Then **Ethernet Controller Properties** windows will appear on your screen.

Click on the **"Reinstall Driver"** bar to install driver.

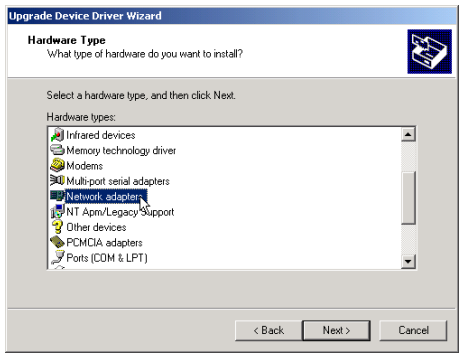


The **Upgrade Device Driver Wizard** windows will appear on your screen. Click on **"Next"** bar to continue.

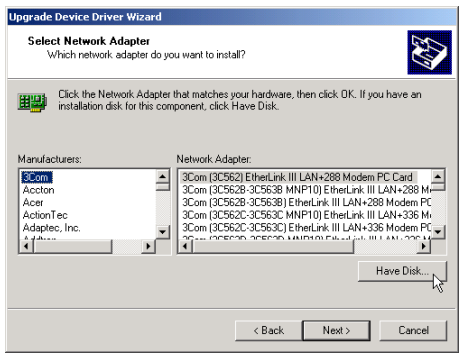
Please choose **"Display a list of the known drivers for this device so that I can choose a specific driver"** to the manual install driver, and click on **"Next"** bar to continue.



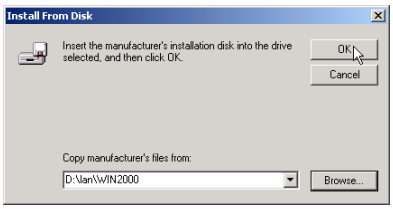
Select **"Network adapter"** bar for LAN device and click on **"Next"** bar to continue.



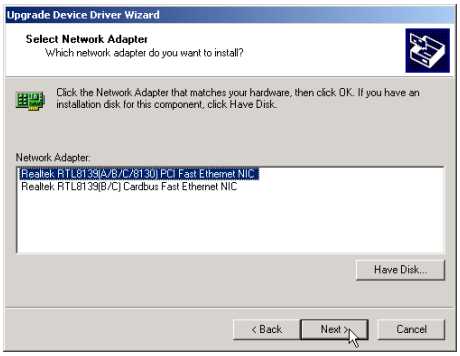
Insert the support CD by the mainboard manufacturer and choose "**Have Disk**" bar to continue next step.



Indicate the driver's location as **"D:\lan\WIN2000\NETRTS5.INF"** (In this location CD disk drive is supposed to be **"D"** letter.)

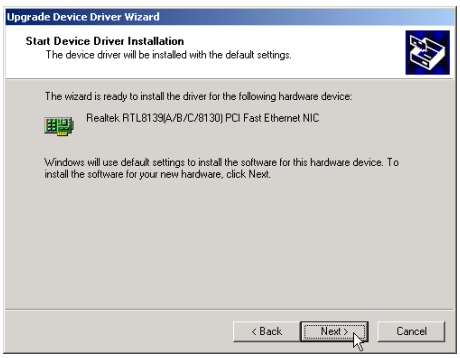


Select **"Realtek RTL8139 [A/B/C/8130] PCI Fast Ethernet NIC"** to install, and then click on **"Next"**.

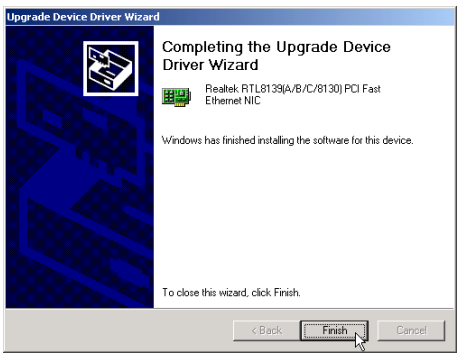


Make sure **"Realtek RTL8139 [A/B/C/8130] PCI Fast Ethernet NIC"** driver, and click on **"Next"**.

Then the system will do the setup procddure automatically.

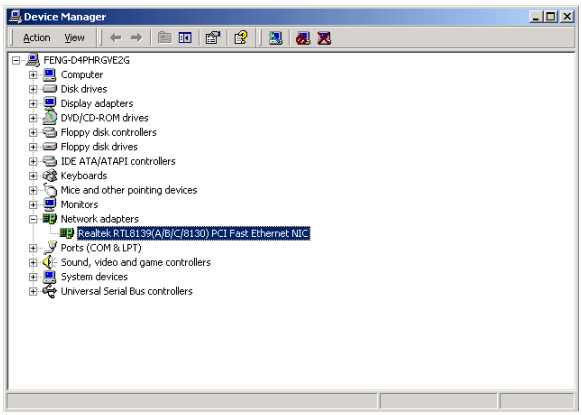


Completing the upgrade device driver, and click on **"Finish"** to restart the system to take all the changes effect.



After restart, you may check Network adapters under the location mentioned at right figure.

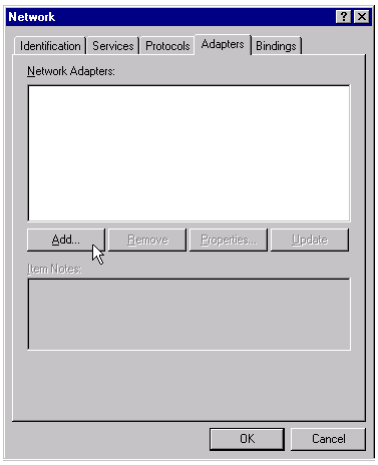
The Network adapters shows correctly.



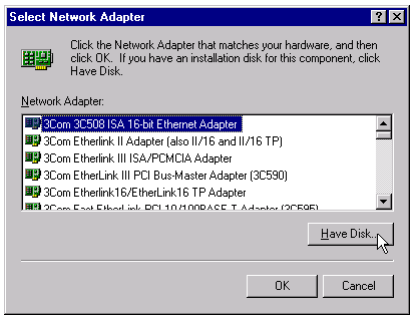
Install WINNT LAN driver

The LAN Device Driver can't install automatically, you need double click on **My Computer** -> **Control Pnael** -> **Network** icon to bring up **Network** screen.

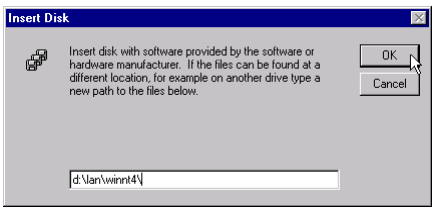
Select tab "**Adapters"** and **"Add"** bar to install driver.



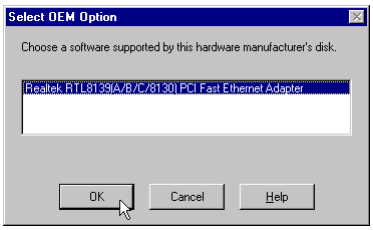
Insert the support CD by the mainboard manufacturer and choose "**Have Disk"** bar to continue next step.



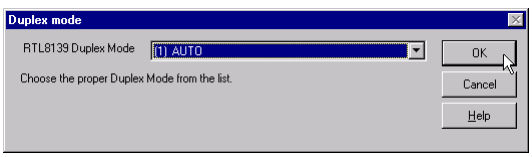
Key in the driver's location as **"D:\lan\WINNT4\"** (In this location CD disk drive is supposed to be **"D"** letter.) and click on **"OK"**.



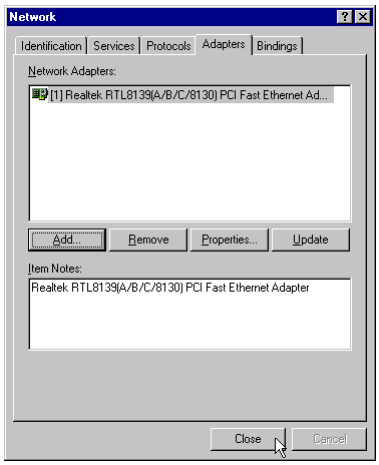
Select **"Realtek RTL8139 [A/B/C/8130] PCI Fast Ethernet Adapter"** to install then click on **"OK"**.



Chocse the proper Duplex Mode, and click on **"OK"**.

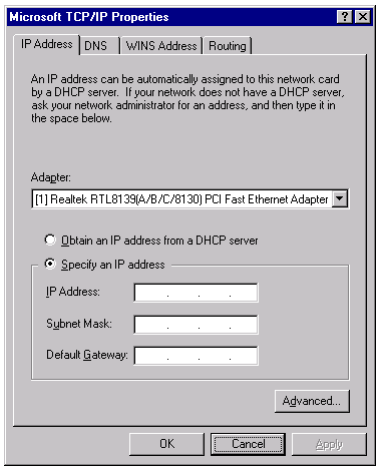


Make sure **"Realtek RTL8139 [A/B/C/8130] PCI Fast Ethernet Adapter"** driver, and click on **"Close"**.

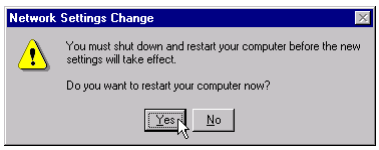


Setting yourself network.

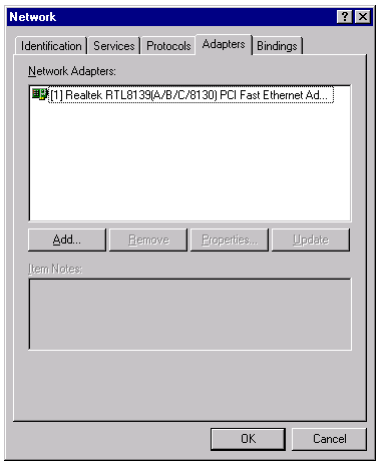
Then the system will do the setup procddure automatically.



Completing the upgrade device driver, and click on **"Yes"** to restart the system to take all the changes effect.



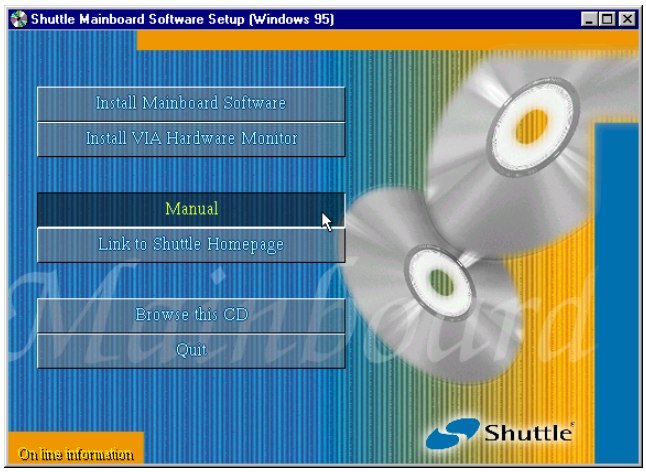
After restart, you may check Network adapters under the location mentioned at right figure. The Network adapters shows correctly.



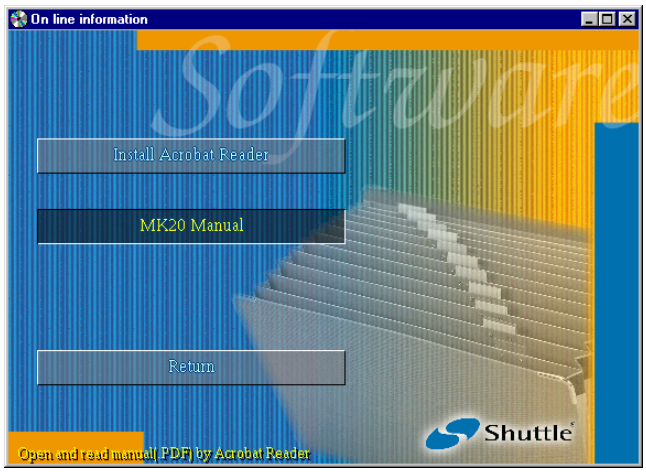
4.5 View the User's Manual

Insert the attached CD into your CD-ROM drive, and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click on Autorun icon in **My Computer** to bring up **Shuttle Mainboard Software Setup** screen.

Select the item using your pointing device (e.g. mouse) on the "**Manual**" bar.



Then **Online Information** windows will appear on the screen. Click on the "**Install Acrobe Reader**" bar if you need to install acrobe reader.



Then click on "**MK20 Manual**" bar to view MK20 user's manual.

5 BIOS SETUP

MK20 BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in battery-backed RAM so that it retains the Setup information even if the system power is turned off.

The system BIOS is managing and executing a variety of hardware related functions in the system, including:

System date and time

Hardware execution sequence

Power management functions

Allocation of system resources

5.1 Enter the BIOS

To enter the BIOS (Basic Input / Output System) utility, follow these steps:

Step 1. Power on the computer, and the system will perform its POST (Power-On Self Test) routine checks.

Step 2. Press <Del> key immediately, or at the following message:
"Press DEL to enter SETUP"
,or simultaneously press <Ctrl>, <Alt>, <Esc> keys

Note 1. If you miss trains of words mentioned in step2 (the message disappears before you can respond) and you still wish to enter BIOS Setup, restart the system and try again by turning the computer OFF and ON again or by pressing the <RESET> switch located at the computer's front-panel. You may also reboot by simultaneously pressing the <Ctrl>, <Alt>, <Del> keys.

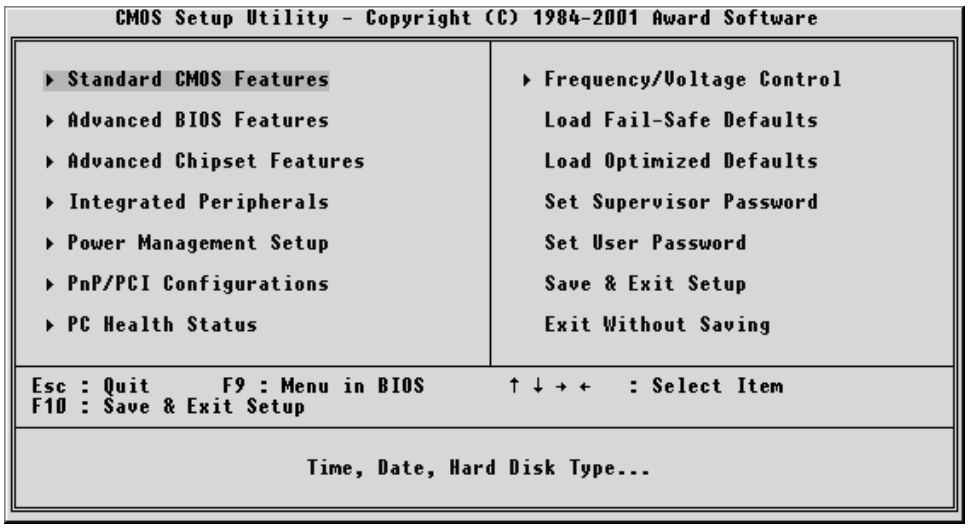
Note 2. If you do not press the keys in time and system does not boot, the screen will prompt an error message, and you will be given the following options:

"Press F1 to Continue, DEL to Enter Setup"

Step 3. As you enter the BIOS program, the CMOS Setup Utility will prompt you the Main Menu, as shown in the next section.

5.2 The Main Menu

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



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

Setup Items

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

Standard CMOS Features

Use this menu for basic system configuration.

Advanced BIOS Features

Use this menu to set the Advanced Features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

PnP / PCI Configurations

This entry appears if your system supports PnP / PCI.

PC Health Status

This entry shows the current system temperature, Voltage, and FAN speed.

Frequency/Voltage Control

Use this menu to specify your settings for frequency/voltage control.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance of your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory-set for optimal performance system operation. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet users' needs.

Supervisor / User Password

Use this menu to change, set, or disable supervisor/user password. It allows you to limit access to the system and Setup, or only to Setup.

Save & Exit Setup

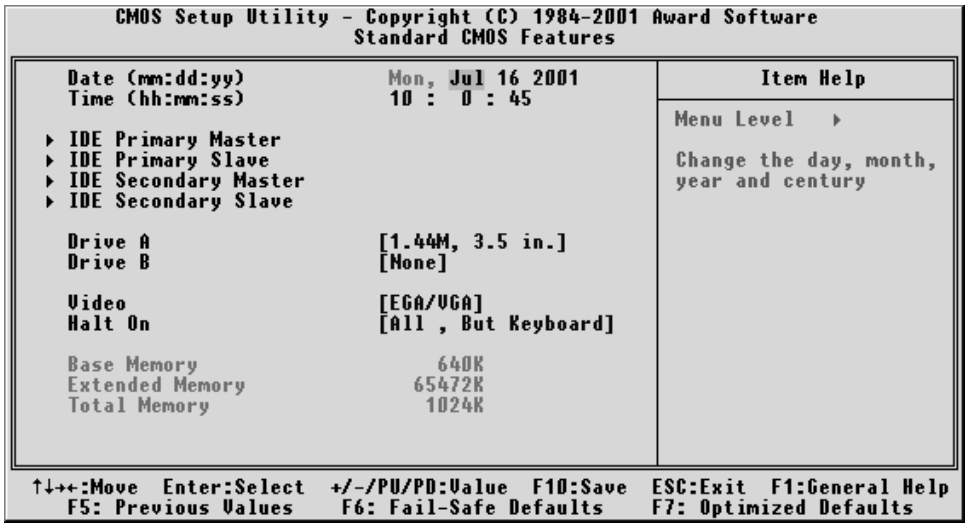
Save CMOS value changes in CMOS and exit from setup.

Exit Without Saving

Abandon all CMOS value changes and exit from setup.

☞ *Standard CMOS Features*

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.



Date

<Month> <DD> <YYYY>

Set the system date. Note that the 'Day' automatically changes when you set the date.

Time

<HH : MM : SS>

The time is converted based on the 24-hour military-time clock. For example, 5 p.m. is 17:00:00.

IDE Primary Master

Options are in its sub-menu.

Press <Enter> to enter the sub-menu of detailed options.

IDE Primary Slave

Options are in its sub-menu.

Press <Enter> to enter the sub-menu of detailed options.

IDE Secondary Master

Options are in its sub-menu.

Press <Enter> to enter the sub-menu of detailed options.

IDE Secondary Slave

Options are in its sub menu.

Press <Enter> to enter the sub-menu of detailed options.

Drive A/Drive B

Select the type of floppy disk drive installed in your system.

- The choice: None, 360K, 5.25 in, 1.2M, 5.25 in, 720K, 3.5 in, 1.44M, 3.5 in, or 2.88M, 3.5 in

Video

This item defines the video mode of the system. This mainboard has a built-in VGA graphics system; you must leave this item at the default value.

- The choice: EGA/VGA, CGA 40, CGA 80, or MONO

Halt On

Select the situation in which you want the BIOS to stop the POST process and notify you.

- The choice: All Errors, No Errors, All, But Keyboard, All, But Diskette, or All, But Disk/Key

Base Memory

Displays the amount of conventional memory detected during boot up.

- The choice: N/A

Extended Memory

Displays the amount of extended memory detected during boot up.

- The choice: N/A

Total Memory

Displays the total memory available in the system.

- The choice: N/A

****

IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub-menu to configure each hard disk drive.

IDE HDD Auto-Detection

Press <Enter> to auto-detect HDD on this channel. If detection is successful, it fills the remaining fields on this menu.

- Press Enter

IDE Primary Master

Selecting 'manual' lets you set the remaining fields on this screen and select the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc., Note: PRECOMP=65535 means NONE !

- The choice: None, Auto, or Manual.

Access Mode

Choose the access mode for this hard disk.

- The choice: Normal, LBA, Large, or Auto.

Capacity

Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.

- Auto-Display your disk drive size.

The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'

Cylinder

Set the number of cylinders for this hard disk.

- Min = 0, Max = 65535

Head

Set the number of read/write heads.

- Min = 0, Max = 255

Precomp

Warning: Setting a value of 65535 means no hard disk.

- Min = 0, Max = 65535

Landing zone

Set the Landing zone size.

- Min = 0, Max = 65535

Sector

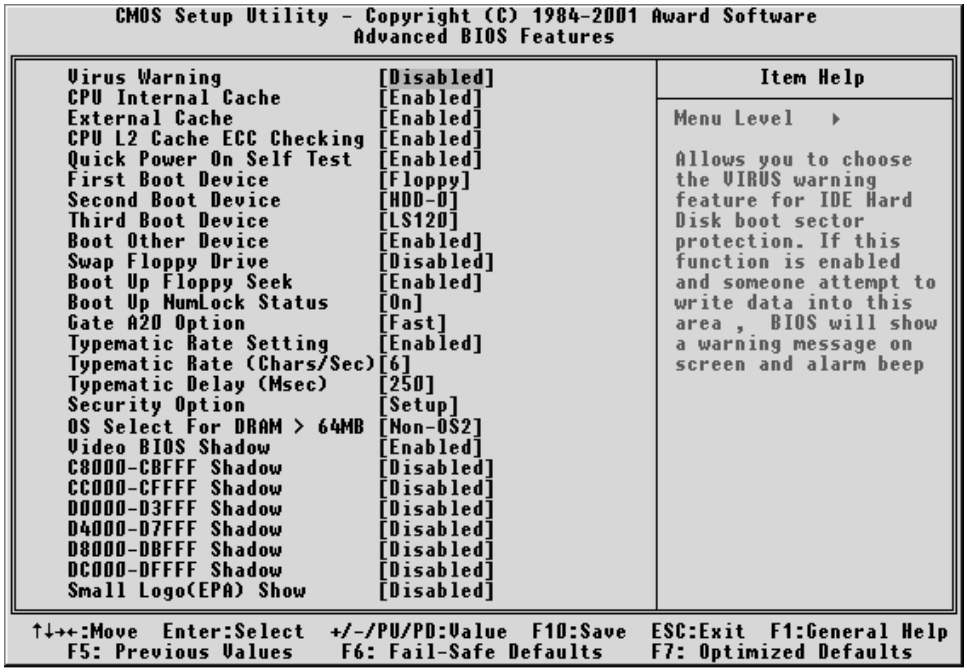
Number of sector per track.

- Min = 0, Max = 255

****

☞ *Advanced BIOS Features*

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing, and security.



Virus Warning

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enables and someone attempts to write data into this area, BIOS will show a warning message on screen, and an alarm beep.

Enabled Activates automatically when the system boots up, causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.

Disabled No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

➢ The choice: Enabled or Disabled.

CPU Internal Cache

All processors that can be installed in this mainboard use internal level 1 (L1) cache memory to improve performance. Leave this item at the default value for better performance.

➢ The choice: Enabled or Disabled.

External Cache

Most processors that can be installed in this system use external level 2 (L2) cache memory to improve performance. Leave this item at the default value for better performance.

- The choice: Enabled or Disabled.

CPU L2 Cache ECC Checking

This item enables or disables ECC (Error Correction Code) error checking on the CPU cache memory. We recommend that you leave this item at the default value.

- The choice: Enabled or Disabled.

Quick Power On Self Test

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

- The choice: Enabled, or Disabled.

First/Second/Third Boot Device

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

- The Choice: Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, ZIP100, LAN, or Disabled.

Boot Other Device

Select Your Boot Device Priority.

- The choice: Enabled or Disabled.

Swap Floppy Drive

If the system has two floppy drives, you can swap the logical drive name assignment.

- The choice: Enabled or Disabled.

Boot Up Floppy Seek

Seeks disk drives during boot-up. Disabling speed boots up.

- The choice: Enabled or Disabled.

Boot Up NumLock Status

This item defines if the keyboard Num Lock key is active when your system is started.

- The choice: Off or On.

Gate A20 Option

This entry allows you to select how the gate A20 is handled. The gate A20 is a device used for above 1MByte of address memory. Initially, the gate A20 was handled via a pin on the keyboard. Today, while a keyboard still provides this support, it is more common and much faster in setting to Fast for the system chipset to provide support for gate A20.

- The choice: Normal, or Fast.

Typematic Rate Setting

Keystrokes repeat at a rate determined by the keyboard controller. When this controller enabled, the typematic rate and typematic delay can be selected.

- The choice: Enabled or Disabled.

Typematic Rate (Chars/Sec)

This item sets how many times the keystroke will be repented in a second when you hold the key down.

- The choice: 6, 8, 10, 12, 15, 20, 24, or 30.

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.

- The choice: 250, 500, 750, or 1000.

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System The system will not boot and access to Setup will be denied if the correct password is not entered promptly.

Setup The system will boot, but access to Setup will be denied if the correct password is not entered promptly.

- The choice: System or Setup.

Note: To disabled security, select PASSWORD SETTING at Main Menu, and then you will be asked to enter password. Do not type anything and just press <Enter>; it will disable security. Once the security is disabled, the system will boot, and you can enter Setup freely.

OS Select For DRAM > 64MB

Selects the operating system that is running with greater than 64MB of RAM in the system.

- The choice: Non-OS2 or OS2.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM. However, it is optional depending on chipset design. Video Shadow will increase the video speed.

- The choice: Enabled or Disabled.

XX000-XXFFF Shadow

These categories determine whether option ROMs will be Chipset Feature Setup Auto Configuration copied to RAM. An example of such option ROM would be support of on-board SCSI.

- The choice: Enabled or Disabled.

Small Logo (EPA) Show

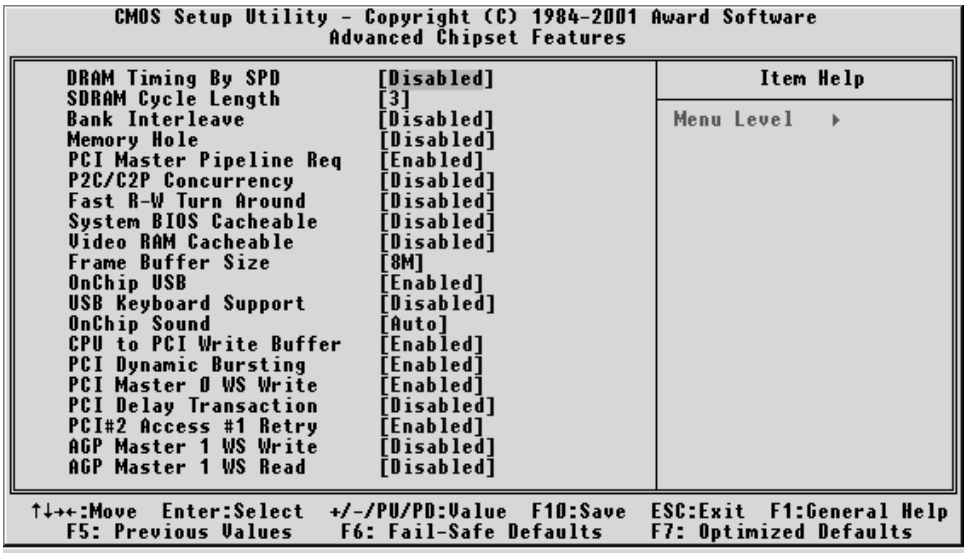
This item allows you to enable/disable the EPA Logo.

- The choice: Enabled or Disabled.

☞ *Advanced Chipset Features*

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It states that these items should never need to be altered.

The default settings have been chosen because they provide the best operating conditions for your system. If you discovered that data was being lost while using your system, you might consider making any changes.



DRAM Timing By SPD

This item allows you to select the value in this field, depending on whether the board using which kind of SDR DRAM.

- The Choice: Enabled or Disabled.

SDRAM Cycle Length

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

- The Choice: 3, or 2.

Bank Interleave

The interleave number of internal banks, can be set to 2 way, 4 way interleave or disabled. For VCM and 16Mb type dram chips, the bank interleave is fixed at 2 way interleave.

When the dram timing is selected by SPD, it will be set by the value on SPD of the RAM module(DDR or SDR).

- The Choice: Disabled, 2 Bank, or 4 Bank.

Memory Hole

In order to improve performance, some space in memory can be reserved for ISA cards.

- The Choice: Disabled or 15M-16M.

PCI Master Pipeline Req

Enable this item to enhance PCI bus for better performance.

- The choice: Enabled, Disabled.

P2C/C2P Concurrency

This item allows you to enable/disable the PCI to CPU and CPU to PCI concurrently.

- The Choice: Enabled or Disabled.

Fast R-W Turn Around

This item controls the DRAM Timing. It allows you to enable/disable the fast read/write turn-around.

- The Choice: Enabled or Disabled.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program is written to this memory area, a system error may result.

- The choice: Enabled or Disabled.

Video RAM Cacheable

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

- The Choice: Enabled or Disabled.

Frame Buffer Size

This item allows you to control the VGA frame buffer size.

- The choice: 2M, 4M, or 8M.

On Chip USB

This should be enabled if your system has a USB installed on the system board and you want to use it. Even when on chip USB so equipped, if you add a higher performance controller, you will need to disable this feature.

- The Choice: Enabled or Disabled.

USB Keyboard Support

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard running under DOS or NT

- The Choice: Enabled or Disabled.

On Chip Sound

This item allows you to control the onboard AC 97 audio.

- The Choice: Auto or Disabled.

CPU to PCI Write Buffer

When this field is Enabled, the writing from CPU to PCI bus is buffered, to compensate for the speed differences between the CPU and the PCI bus. When Disabled, the writing is are not buffered and the CPU must wait until the write is complete before starting another write cycle.

- The Choice: Enabled or Disabled.

PCI Dynamic Bursting

This item allows you to enable/disable the PCI dynamic bursting function.

- The Choice: Enabled or Disabled.

PCI Master 0 WS Write

When this item enabled, writing to the PCI bus is executed with zero wait state.

- The Choice: Enabled or Disabled.

PCI Delay Transaction

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

- The Choice: Enabled or Disabled.

PCI #2 Access #1 Retry

When this item disabled, PCI#2 will not be disconnected until access finishes (default); On the contrary, PCI#2 will be disconnected if max etries are attempted without success.

- The Choice: Enabled or Disabled.

AGP Master 1 WS Write

When this item enabled, writing to the AGP(Accelerated Graphics Port) is executed with one wait state.

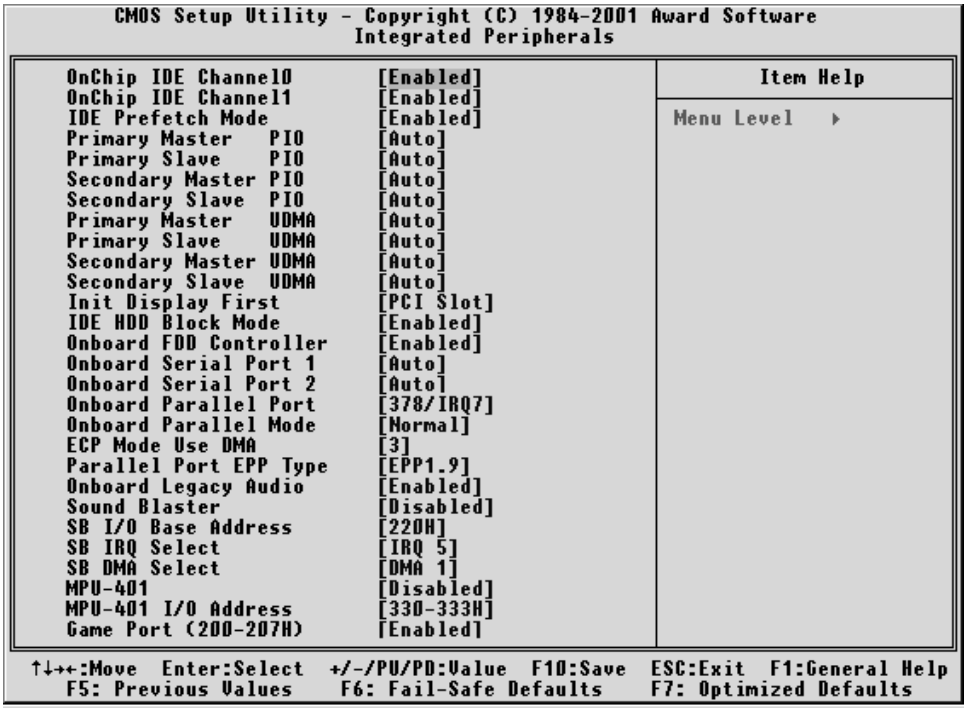
- The Choice: Enabled or Disabled.

AGP Master 1 WS Read

When this item enabled, reading from the AGP (Accelerated Graphics Port) is executed with one wait state.

- The Choice: Enabled or Disabled.

☞ *Integrated Peripherals*



OnChip IDE Channel0

The chipset contains a PCI IDE interface with support to two IDE channels. Select Enabled to activate the primary IDE interface; select Disabled to deactivate this interface

- The choice: Enabled or Disabled.

OnChip IDE Channel1

The chipset contains a PCI IDE interface with support to two IDE channels. Select Enabled to activate the secondary IDE interface; select Disabled to deactivate this interface

- The choice: Enabled or Disabled.

IDE Prefetch Mode

The onboard IDE drive interfaces support IDE prefetching for faster drive access. If you install a primary and/or secondary add-on IDE interface, set this field to Disabled if the interface does not support prefetching.

- The choice: Enabled or Disabled.

Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

- The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, or Mode 4.

Primary/Secondary Master/Slave UDMA

Ultra DMA/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If both of your hard drive and your system software support Ultra DMA/100, select Auto to enable BIOS support.

- The choice: Auto or Disabled.

Init Display First

This item allows you to decide to activate PCI Slot or on-chip VGA first.

- The choice: PCI Slot or On board.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support.

- The choice: Enabled or Disabled

Onboard FDD Controller

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you want to use it. If you install add-on FDC or the system has no floppy drive, select Disabled in this field.

- The choice: Enabled or Disabled.

Onboard Serial Port1/Port2

Select an address and corresponding interrupt for the first and second serial ports.

- The choice: 3E8/IRQ4, 2E8/IRQ3, 3F8/IRQ4, 2F8/IRQ3,Auto, or Disabled.

Onboard Parallel Port

This item allows you to determine onboard parallel port controller I/O address setting.

- The choice:: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, or Disabled.

Onboard Parallel Mode

Select an operating mode for the onboard parallel (printer) port. Select Normal or Compatible unless you are certain your hardware and software both support one of the other available modes.

- The choice: Normal, EPP, ECP, or ECP/EPP.

ECP Mode Use DMA

Select a DMA channel for the parallel port for use during ECP mode.

- The choice: 1 or 3.

Parallel Port EPP Type

Select a DMA channel for the parallel port for use during ECP mode.

- The choice: EPP1.7 or EPP1.9.

Onboard Legacy Audio

This field controls the onboard legacy audio.

- The choice: Enabled or Disabled.

Sound Blaster

This item enables/disables the onboard Sound Blaster.

- The choice: Enabled or Disabled.

SB I/O Base Address

This item selects the Sound Blaster I/O Base Address.

- The choice: 220H, 240H, 260H, or 280H.

SB IRQ Select

This item selects the Sound Blaster IRQ.

- The choice: IRQ5, IRQ7, IRQ 9, or IRQ10.

SB DMA Select

This item selects the Sound Blaster DMA.

- The choice: DMA0, DMA1, DMA2, or DMA3.

MPU-401

This item enables/disables on-board MPU-401.

- The choice: Enabled or Disabled.

MPU-401 I/O Address

This item selects MPU-401 I/O Address.

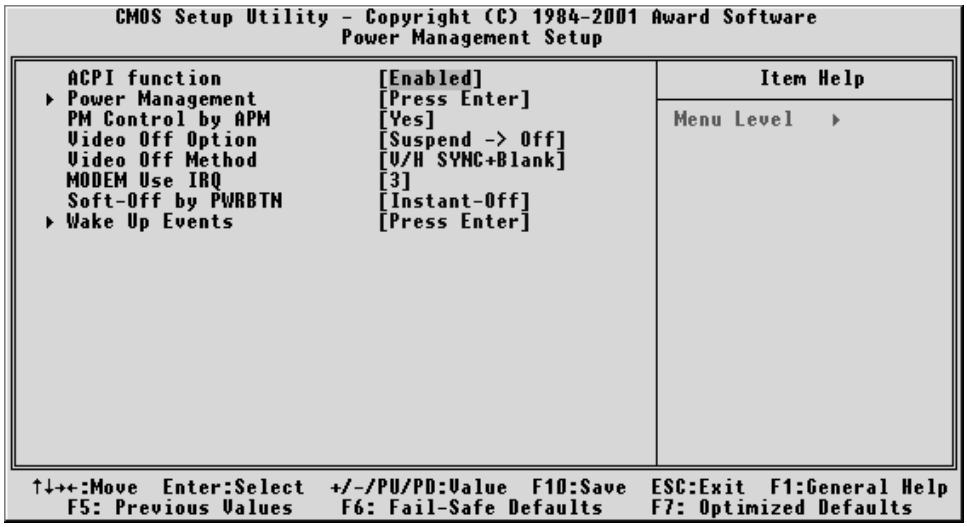
- The choice: 300-303H, 310-313H, 320-323H, or 330-333H.

Game Port (200-207H)

This item enables/disables Game Port.

- The choice: Enabled or Disabled.

☞ *Power Management Setup*



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

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI)

➢ The choice: Enabled or Disabled.

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down
2. Doze Mode
3. Suspend Mode

Min Saving Minimum power management.
HDD Power Down = Allows you to set each mode individually.
Doze Mode = 1 hr. and Suspend Mode = 1 hr.

Max Saving Maximum power management.
HDD Power Down = Allows you to set each mode individually.
Doze Mode = 1 min. and Suspend Mode = 1 min.

User Define Allows you to set each mode individually.
HDD Power Down = Disabled or 1min. ~ 15min.
Doze Mode = Disabled or 1 min ~ 1 hr.
Suspend Mode = Disabled or 1 min ~ 1 hr.

- The choice: User Define, Min Saving, or Max Saving.

HDD Power Down

When this item enabled and after the set up time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

- The choice: Disabled or 1 Min ~ 15 Min.

Doze Mode

When enabled and after the set time of system inactivity, the CPU clock will run at slower sped while all other devices still operate at full speed.

- The choice: Disabled, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, or 1 Hour.

Suspend Mode

When this item enabled and after the set up time of system inactivity, all devices except the CPU will be shut off.

- The choice: Disabled, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, or 1 Hour.

PM Control by APM

When this item enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting Yes gives better power saving.

If the Max. Power Saving is not enabled, this will be preset to No.

- The choice: Yes or No.

Video Off Option

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On Monitor will remain on during power saving mode.

Suspend -- > Off Monitor is blanked when the system enters the Suspend mode.

All Modes -- > Off Monitor is blanked when the system enters any power saving mode.

- The choice: Always On, Suspend -> off, or All Modes -> off.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC + Blank This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

Blank Screen This option only writes blanks to the video buffer.

DPMS Support Initial display power management signaling.

- The choice: V/H SYNC + Blank, Blank Screen, or DPMS Support.

MODEM Use IRQ

This determines the IRQ which the MODEM can use.

- The choice: 3, 4, 5, 7, 9, 10, 11, or N/A.

Soft-Off by PWRBTN

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung.".

- The choice: Instant-Off or Delay 4 Sec.

Wake Up Events

Options are in its sub-menu.

Press <Enter> to enter the sub-menu of detailed options.

Power-On by USB

This item enables/disables the power on function by USB.

- The choice: Disabled or Enabled.

VGA

When this item enabled, you can set VGA to awaken the system.

- The choice: OFF or ON

LPT & COM

When LPT & COM stays On, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

- The choice: NONE, LPT, COM, or LPT/COM

HDD & FDD

When HDD & FDD stays On, any activity from one of the listed system peripheral devices wakes up the system.

- The choice: OFF or ON

PCI Master

When PCI Master stays On, any activity from one of the listed system peripheral devices wakes up the system.

- The choice: OFF, or ON

Power-On by PCI Card

This item enables/disables the power on function of PCI Card.

- The choice: Disabled or Enabled.

Power-On by Modem Ring

This item determine the system will resume by activating of modem ring.

- The choice: Disabled or Enabled.

RTC Alarm Resume

When this item enabled, your can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.

- The choice: Disabled or Enabled.

Data (of Month)

This item selects the alarm date.

- Key in a DEC number:Min = 0, Max = 31.

Resume Time (hh:mm:ss)

This item selects the alarm Time.

[hh]

- Key in a DEC number:Min = 0, Max = 23.

[mm/ss]

- Key in a DEC number:Min = 0, Max = 59.

Primary INTR

Press Enter to on/off the wake up ability of a specified IRQ.

- The choice: OFF, or ON.

IRQs Activity Monitoring

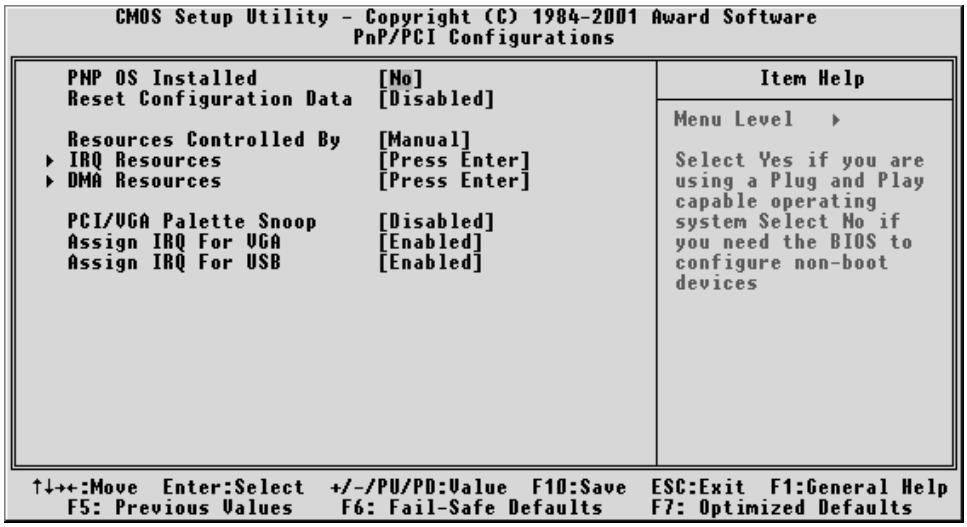
In the following is a list of IRQ's, Interrupt ReQuests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

When On mode exist, activity will neither prevent the system from going into a power management mode nor awaken it.

IRQ3 (COM 2)
IRQ4 (COM 1)
IRQ5 (LPT 2)
IRQ6 (Floppy Disk)
IRQ7 (LPT 1)
IRQ8 (RTC Alarm)
IRQ9 (IRQ2 Redir)
IRQ10 (Reserved)
IRQ11 (Reserved)
IRQ12 (PS / 2 Mouse)
IRQ13 (Coprocessor)
IRQ14 (Hard Disk)
IRQ15 (Reserved)

- The choice: Disabled or Enabled.

☛ *PnP/PCI Configurations*



This section describes the configuration of PCI bus system. PCI or Personal Computer Interconnection is a system which allows I/O devices to operate at the speed CPU itself keeps when CPU communicating with its own special components.
This section covers some very technical items, and it is strongly recommended that only experienced users should make any changes to the default settings.

PNP OS Installed

This item allows you to determine PnP OS is installed or not.

- The choice: Yes or No.

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit from Setup if you have installed a new device or software and the system reconfiguration has caused such a serious conflict that the operating system can not boot.

- The choice: Enabled or Disabled .

Resource controlled By

The Award Plug-and-Play BIOS has the capacity to automatically configure all of the boot and Plug-and-Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug-and-Play operating system such as Windows 95.

If you set this field to "manual" , choose specific resources by going into each of the sub-menu that follows this field (a sub-menu is proceeded by a ">").

- The choice: Auto(ESCD) or Manual.

IRQ/DMA Resources

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

IRQ 3/4/5/7/9/10/11/12/14/15 assigned

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

- The choice: Legacy ISA or PCI/ISA PnP.

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

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1). PCI/ISA PnP Devices compliant with the Plug-and-Play standard, whether designed for PCI or ISA bus architecture.

- The choice: Legacy ISA or PCI/ISA PnP.

PCI/VGA Palette Snoop

It determines whether the MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. If you have MPEG ISA/VESA VGA Cards and PCI/VGA Card worked, Enable this field. Otherwise, please Disable it.

- The choice: Enabled or Disabled.

Assign IRQ For VGA

This item allows the user to set VGA IRQ Routing table Enabled or Disabled.

- The choice: Enabled or Disabled.

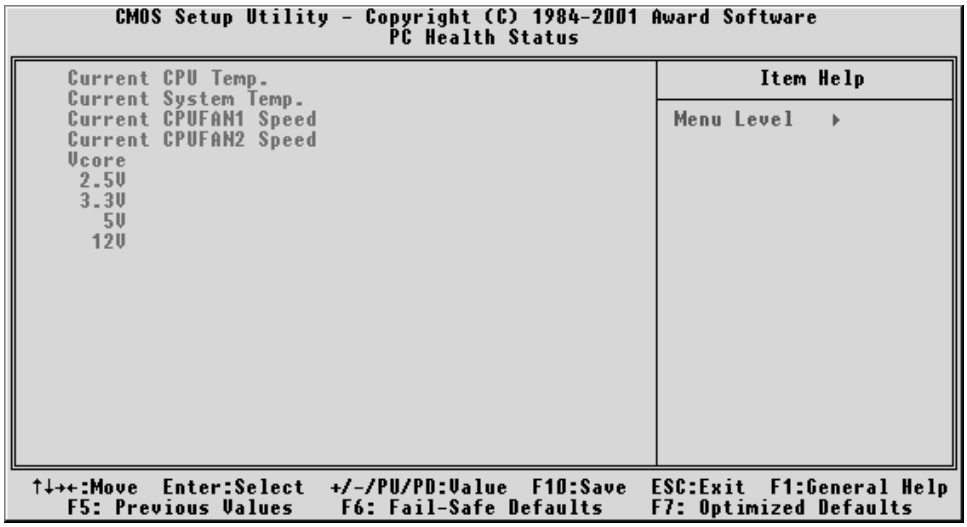
Assign IRQ For USB

This item allows the user the option to assign an IRQ to on-board USB controller.

Since the on-board controller is always enabled, if no IRQ is assigned to it, there will be a question mark report on the sytem device under Windows95/98.

- The choice: Enabled or Disabled.

☞ *PC Health Status*



Current CPU Temp

Since the mainboard supports CPU temperature monitoring and overheat alert. This item indicates the current Processor temperature.

Current System Temp

Since the mainboard supports System temperature monitoring and overheat alert. This item indicates the current main board temperature.

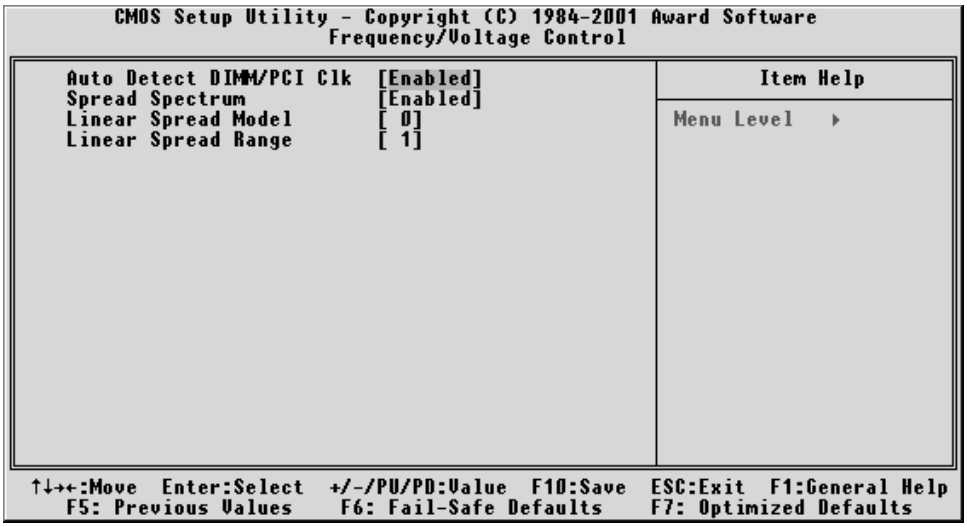
Current CPUFAN1/2 Speed

The mainboard can detect two fans rotation speed for CPU cooler and system.

Vcore, 2.5V, 3.3V, 5V, 12V

The mainboard supports CPU and mainboard voltages monitoring. The onboard hardware monitor is able to detect the CPU voltage (Vcore) and the voltage output from power supply.

☞ *Frequency/Voltage Control*



Auto Detect DIMM/PCI Clk

This item allows you to enable/disable auto detection DIMM/PCI Clock.

- The choice: Enabled or Disabled.

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulation.

- The choice: Enabled or Disabled.

Linear Spread Model

This item allows you to enable Spread Spectrum for reducing EMI.

The item is between 0 and 7 means the different models for spreading the clock sprectrum

- Key in a DEC number:Min = 0, Max = 7.

Linear Spread Range

This item allows you to enable Spread Spectrum for reducing EMI.

The item is between 0 and 10 means the range of each model.

- Key in a DEC number:Min = 0, Max = 10.

☞ Load Fail-Safe Defaults

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

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

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

☞ Load Optimized Defaults

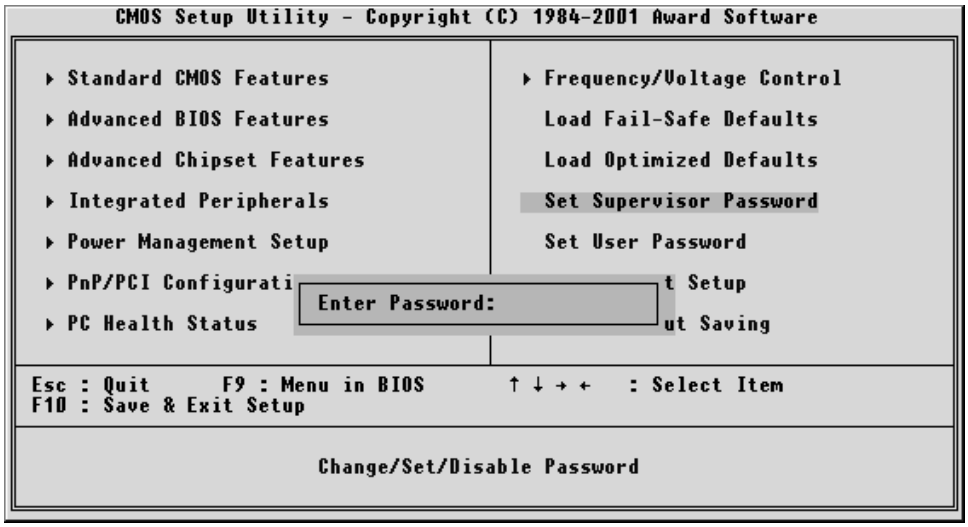
When you press <Enter> on this item, you will get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory-set for optimal performance system operation.

☞ Supervisor/User Password Setting

You can set either supervisor or user password, or both of them. The differences between them are:



Supervisor Password and User Password

The options on the Password screen menu make it possible to restrict access to the Setup program by enabling you to set passwords for two different access modes: Supervisor mode and User mode.

In general, Supervisor mode has full access to the Setup options, whereas User mode has restricted access to the options. By setting separate Supervisor and User password, a system supervisor can limit who can change critical Setup values.

Enter Password

Type the password up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

Password Disable

If you select System at Security Option of BIOS Features Setup Menu, you will be prompted in entering the password whenever the system is rebooted or you try to enter Setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

Warning : Retain a record of your password in a safe place. If you forget the password, the only way to access the system is to clear CMOS, please refer to "Clear CMOS" on page 29.

☞ **Save & Exit Setup**

Pressing <Enter> on this item asks for confirmation:

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

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

☞ **Exit Without Saving**

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

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