Introduction 1

The MS-6378 Micro-ATX mainboard is a high-performance computer mainboard based on VIA Apollo KLE133 chipset and designed for the AMD® Athlon™ or Duron™ processor for inexpensive business/personal desktop markets.

The Apollo KLE133 chipset consists of the VT8361 North Bridge controller and the VT82C686A/686B South Bridge controller. The VT8361 integrates rich AGP4X graphics capabilities for 2D/3D software and internet multimedia applications. It supports CPU running at a 100/133MHz FSB frequency; and provides bandwidth and performance for internet and 3D graphics needs by supporting advanced memory technologies PC133 SDRAM and VC133 RAM (Virtual Channel RAM) up to 1.0GB.

The VIA® VT82C686A/686B Super I/O PCI integrated Peripheral Controller (PSIPC) includes PCI-to-ISA bridge controller, 10/100 BaseT Ethernet controller, AC'97 audio and MC'97 modem (for CNR slot). In addition, it supports dual bus-master IDE with Ultra DMA 33/66 (686B also supports Ultra DMA100), four USB ports, system hardware monitoring and enhanced power management capabilities.

The KLE133 chipset allows the MS-6378 mainboard to meet specific needs of internet multimedia and 3D graphics applications.

This chapter includes the following topics:

Mainboard Specification

CPU

- Support Socket 462 for AMD® Athlon™ /Duron™ processor
- Support CPU frequencies at 600/650/700/750/800/850/900/950MHz, 1GHz and up to 1.1GHz

Chipset

- VIA® VT8361 chipset (552 BGA)
  - FSB @200/266MHz
  - Integrated Trident Blade 2D/3D video accelerator
  - PCI advanced high performance memory controller
  - Support PC100/133 SDRAM, VCM & ESDRAM technology
- VIA® VT686A/686B chipset (352 BGA)
  - Enhanced Power Management Features
  - Integrated Super I/O (FDC, LPT, COM 1/2 and IR)
  - Dual bus Master IDE Ultra DMA 33/66
    (686B supports up to Ultra DMA 100)
  - Integrated Hardware Soundblaster
  - Direct Sound AC97 Audio
  - ACPI

Clock Generator

- Support 100/133MHz clocks

Main Memory

- Support four memory banks using 168-pin unbuffered DIMM
- Support a maximum memory size of 1GB (256 MB DRAM technology)
- Support 3.3V SDRAM DIMM

Slots

- One CNR (Communication Network Riser) slot
- Three 32-bit Master PCI Bus slots
- Support 3.3V/5V PCI bus Interface
- One ISA slot (optional)

On-Board IDE

- An IDE controller on the VIA® VT82C686A/686B chipset provides IDE

HDD/CD-ROM with PIO, Bus Master and Ultra DMA 33/66 operation modes (686B can support up to Ultra DMA 100)

- Can connect up to four IDE devices

Audio

- Audio controller integrated in 686A/686B chipset
- Software audio codec ALC100P
  - Onboard Front Audio Pin Header

Network (Optional)

- Realtek 8100

On-Board Peripherals

- On-Board Peripherals include:
  - 1 floppy port supports 2 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
  - 1 serial port (COM1)
  - 1 parallel port supporting SPP/EPP/ECP mode
  - 4 USB ports (2 rear connectors and 1 USB front pin header- 2 ports)
  - 1 IrDA connector for SIR/CIR/FIR/ASKIR/HPSIR
  - 1 VGA port
  - 1 Audio/Game port

BIOS

- The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
- The mainboard provides a Desktop Management Interface (DMI) function which records your mainboard specifications.

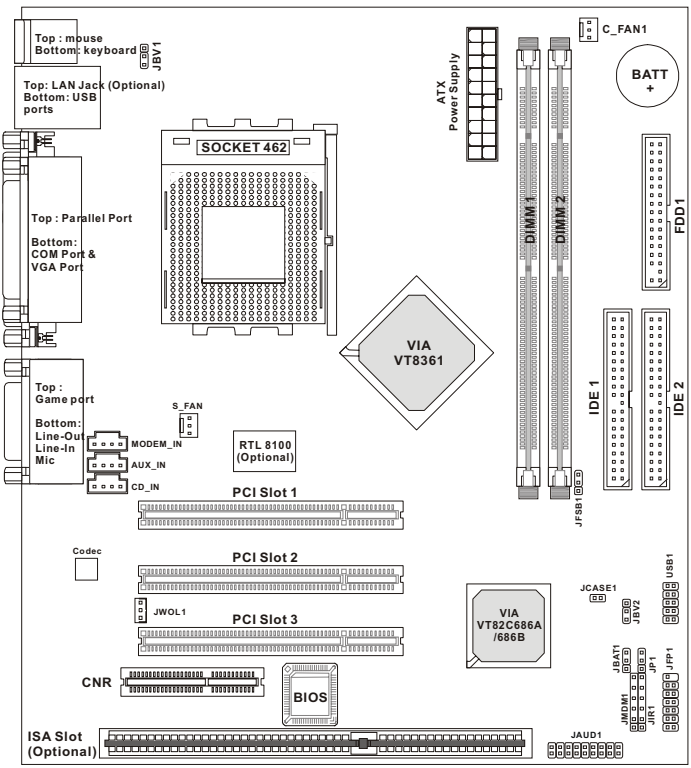
Dimension

- Micro-ATX Form Factor: 24.3cm (L) x 21.5cm (W)

Mounting

- 6 mounting holes

Mainboard Layout



MS-6378 Micro-ATX VA Mainboard

Quick Components Guide

Component	Function	Reference
DIMM 1~2	Installing memory modules	See p. 2-5~2-6
Socket 462	Installing CPU	See p. 2-2~2-3
C_FAN1	Connecting to CPUFAN	See p. 2-19
S_FAN	Connecting to SYSFAN	See p. 2-19
ATX Power Supply	Installing power supply	See p. 2-7
IDE1& IDE2	Connecting to IDE hard disk drive	See p.2-15
FDD1	Connecting to floppy disk drive	See p.2-14
USB1	Connecting to USB interfaces	See p. 2-14
PCI Slot 1~3	Installing expansion cards	See p. 2-27
CNR Slot	Installing expansion cards	See p. 2-27
JFP1	Connecting to the case	See p. 2-16
JMDM1	Connecting to a modem card	See p. 2-18
JWOL1	Connecting to an LAN card	See p. 2-18
JIR1	Connecting to IrDA infrared module	See p. 2-21
JAUD1	Connecting to Audio connectors	See p. 2-23
JBAT1	Clearing CMOS data	See p. 2-24
JBV1 & JBV2	Setting keyboard wake-up function	See p. 2-26
JP1	Enable onboard audio codec	See p. 2-25
JCASE1	Connecting to the chassis intrusion switch	See p. 2-22

Key Features

- Microsoft® PC99 compliant
- T.O.P Tech™ - Thermal Overheat Protection Technology
- PC Alert™ III system hardware monitor
- CPU: Socket 462 for AMD® Athlon™/Duron™ Processor
- Micro-ATX Form Factor
- Clock: 100/133MHz
- Audio integrated in chipset
- Memory: 2 SDRAM DIMMs
- LAN Wake up Function
- Modem (External/Internal) Ring Wake up Function
- I/O: 1 serial port, 1 parallel port, 4 USB ports, 1 floppy port, 1 IrDA connector, 1 Audio/Game port, 1 VGA port
- Slot: 1 CNR slot, 3 PCI slots, 1 ISA slot (optional)

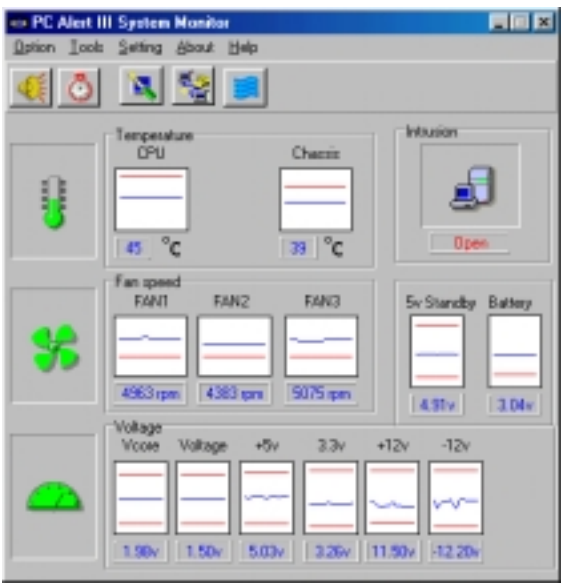
MSI Special Features

PC Alert™ III

The PC Alert™ III is a utility you can find in the CD-ROM. The utility is just like your PC doctor that can detect the following PC hardware status during real time operation:

* monitor CPU & system temperature
* monitor fan speed
* monitor system voltage
* monitor chassis intrusion

If one of the items above is abnormal, the program main screen will be immediately shown on the screen, with the abnormal item highlighted in red. This will continue to be shown until user disables the warning.



Note: *Items shown on PC Alert III vary depending on your system's status.*

Features:

- Network Management
  - Monitoring & remote control
- Basic System Utilities
  - Scandisk & Defragment to maintain your HDD
- 3D Graphics Design
  - Enables a more friendly user interface
- Sofware Utilities
  - SoftCooler Optimized Cooling

2 Hardware Setup

This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install them in the wrong orientation, the components will not work properly.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

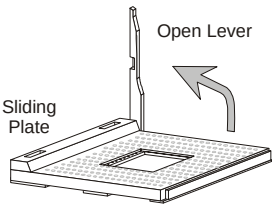
This chapter contains the following topics:

Central Processing Unit: CPU

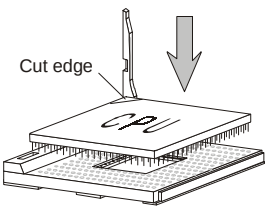
The mainboard supports AMD® Athlon™ and Duron™ processor. The mainboard uses a CPU socket called Socket A for easy CPU installation. Make sure the CPU has a Heat Sink and a cooling fan attached on top to prevent overheating. If you do not find the Heat Sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

CPU Installation Procedures

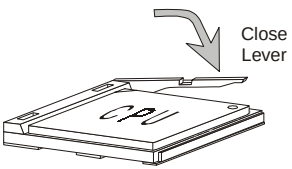
1. Pull the lever sideways away from the socket. Then, raise the lever up to a 90-degree angle.



2. Look for the cut edge. The cut edge should point towards the lever pivot. The CPU will only fit in the correct orientation.



3. Hold the CPU down firmly, and then close the lever to complete the installation.



Thermal Issue for CPU

As processor technology pushes to faster speeds and higher performance, thermal management becomes increasingly crucial when building computer systems. Maintaining the proper thermal environment is key to reliable operation. As such, the processor must be maintained in the specified thermal requirements. AMD recommends the use of high performance thermal interface material.

AMD Athlon™/Duron™ processor with a speed of **600MHz and above** requires LARGER heatsink and fan. You also need to add thermal grease between the CPU and heatsink to improve heat dissipation. Then, make sure that the CPU and heatsink are securely fastened and in good contact with each other. These are needed to prevent damaging the processor and ensuring reliable operation.

You can check AMD's web site for more information on proper cooling: *http://www.amd.com/products/cpg/athlon/pdf/cooling_guide.pdf*

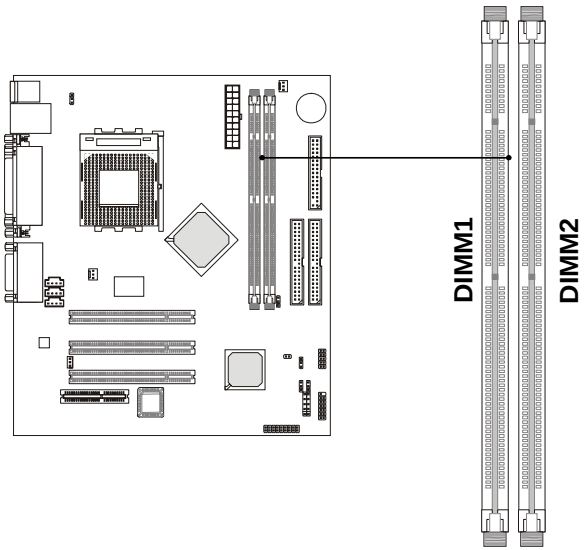
CPU Core Speed Derivation Procedure

The mainboard can automatically set the CPU Host Bus Frequency Clock.

If	CPU Clock	=	100MHz
	Core/Bus ratio	=	7
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	100MHz x 7
		=	700MHz

Memory Installation

The mainboard provides 2 slots for 168-pin, 3.3V SDR DIMM with 4 memory banks. To operate properly, at least one DIMM module must be installed.

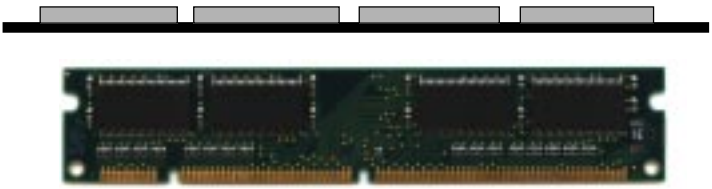


The SDRAM Addressing & Size

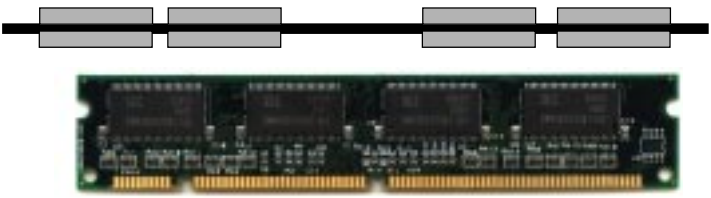
DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
16M	1Mx16	ASYM	11	8	8MBx4	16MBx8
	2Mx8	ASYM	11	9	16MBx8	32MBx16
	4Mx4	ASYM	11	10	32MB	64MB
64M	2Mx32	ASYM	11	9	32MBx2	64MBx4
	2Mx32	ASYM	12	8	16MBx2	32MBx4
	4Mx16	ASYM	11	10	32MB	64MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB
64M	2Mx32	ASYM	12	8	16MB	32MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB

Module Installation Procedures

You can install single sided or double sided 168-pin DIMMs into DIMM slots according to your needs.



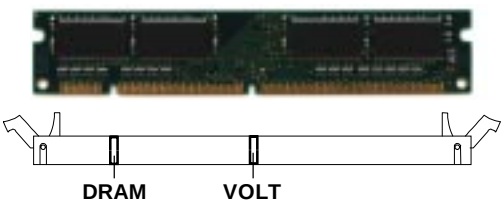
Single Sided DIMM



Double Sided DIMM

1. The DIMM slot has 2 Notch Keys “VOLT and DRAM”, so the DIMM memory module can only fit in one direction.

2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in.



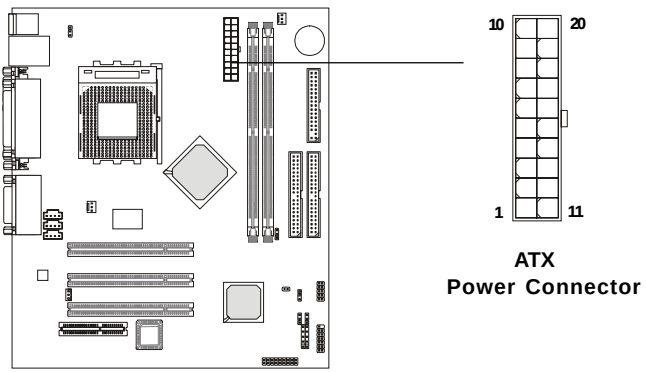
3. The plastic clips at sides of the DIMM slot will automatically close.

Power Supply

The mainboard supports ATX power supply for the power system. Before connecting to the power supply, always make sure that all components are installed properly and no damage will be caused.

ATX 20-Pin Power Supply

This connector allows you to connect to an ATX power supply. To connect to the ATX power supply, make sure the power supply connector is installed in the right orientation and the pins are aligned. Then push down the power supply connector firmly into the power connector on the mainboard.

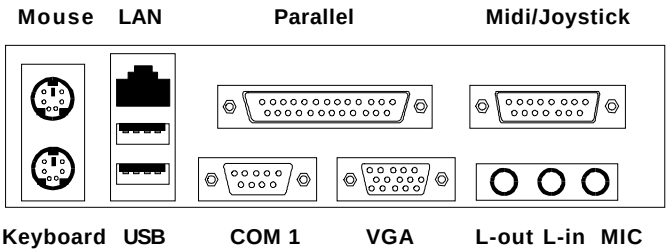


ATX
Power Connector

PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

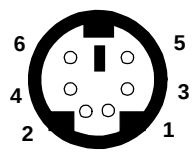
Back Panel

The Back Panel provides the following connectors:



Mouse Connector

The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector.



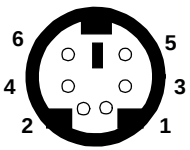
PS/2 Mouse (6-pin Female)

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	Mouse DATA	Mouse DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Mouse Clock	Mouse clock
6	NC	No connection

Keyboard Connector

The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a PS/2® keyboard. You can plug a PS/2® keyboard directly into this connector.



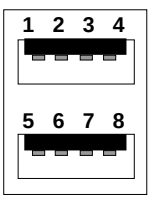
PS/2 Keyboard (6-pin Female)

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	Keyboard DATA	Keyboard DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Keyboard Clock	Keyboard clock
6	NC	No connection

USB Connectors

The mainboard provides a UHCI (Universal Host Controller Interface) Universal Serial Bus root for attaching USB devices such as keyboard, mouse or other USB-compatible devices. You can plug the USB device directly into the connector.



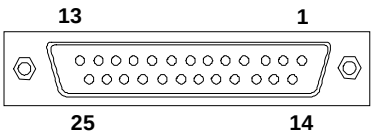
USB Ports

USB Port Description

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V
6	+Data 1	Positive Data Channel 1
7	-Data 1	Negative Data Channel 1
8	GND	Ground

Parallel Port Connector

The mainboard provides a 25-pin female centronic connector for LPT. A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.

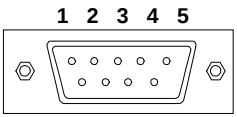


Pin Definition

PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	Paper End
13	SELECT	Select
14	AUTO FEED#	Automatic Feed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground1

Serial Port Connector: COM 1

The mainboard has one 9-pin male DIN connector for serial port COM 1. You can attach a serial mouse or other serial devices.



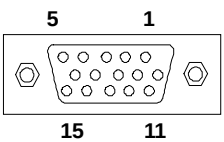
9-Pin Male DIN Connectors

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready)
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

VGA DB 15 Pin Connector

The mainboard provides one DB 15-pin female connector to connect a VGA monitor.



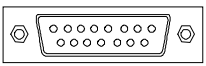
DB 15-Pin Female Connector

Pin Definition

Analog Video Display Connector (DB-15S)	
PIN	**SIGNAL DESCRIPTION**
1	Red
2	Green
3	Blue
4	Not used
5	Ground
6	Ground
7	Ground
8	Ground
9	Not used
10	Ground
11	Not used
12	SDA
13	Horizontal Sync
14	Vertical Sync
15	SCL

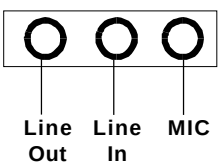
Joystick/Midi Connectors

You can connect a joystick or game pad to this connector.



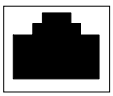
Audio Port Connectors

Line Out is to connect speakers or headphones. ***Line In*** is a connector for external CD player, Tape player or other audio devices. ***Mic*** is used to connect to a microphone.



LAN Jack (RJ-45)

The mainboard provides one standard RJ-45 jack for connection to Local Area Network (LAN). You can connect a network cable to the LAN jack.



LAN RJ-45 Jack

Pin Definition

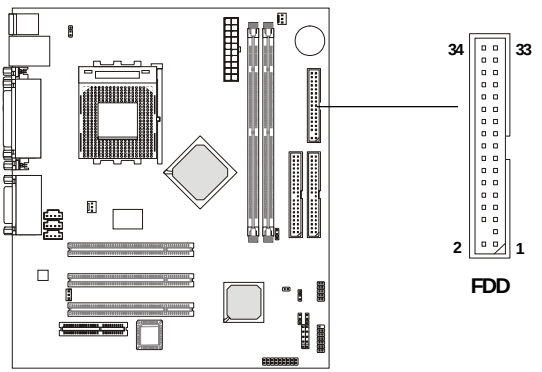
PIN	SIGNAL	DESCRIPTION
1	RDN	Receive Differential Pair
2	RDP	Receive Differential Pair
3	GND	Ground
4	GND	Ground
5	GND	Ground
6	GND	Ground
7	TDN	Transmit Differential Pair
8	TDP	Transmit Differential Pair

Connectors

The mainboard provides connectors to connect to FDD, IDE HDD, IDE RAID HDD, case, modem, LAN, USB Ports, IR module and CPU/Power Supply/System FAN.

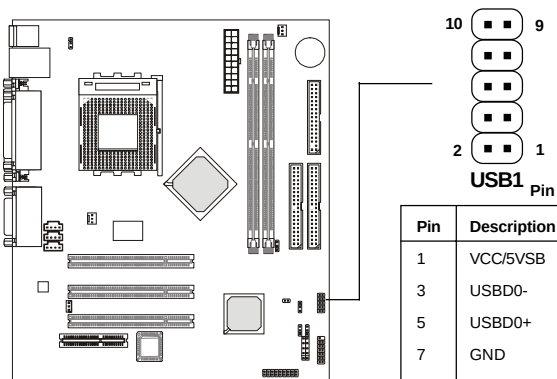
Floppy Disk Drive Connector: FDD1

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



USB Front Panel Connector: USB1

The mainboard provides one Front USB (Universal Serial Bus) pin header that allows you to connect two optional USB ports for Front Panel.



Pin Definition

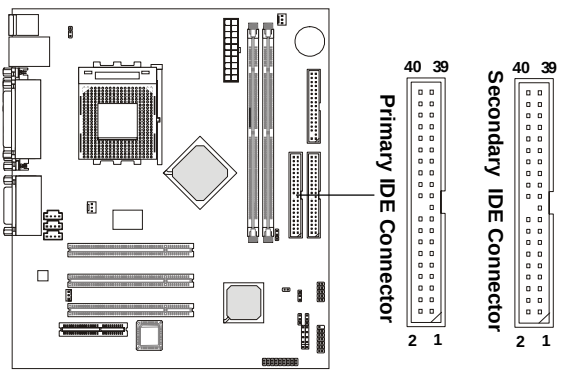
Pin	Description	Pin	Description
1	VCC/5VSB	2	GND
3	USBD0-	4	GND
5	USBD0+	6	USBD1+
7	GND	8	USBD1-
9	GND	10	VCC/5VSB

Hard Disk Connectors: IDE1 & IDE2

The mainboard uses an IDE controller on the VIA® VT82C686A/686B chipset that provides PIO mode 0-4, Bus Master, and Ultra DMA 33/66 modes. It has two HDD connectors IDE1 (Primary) and IDE2 (Secondary). You can connect up to four hard disk drives, CD-ROM or 120MB Floppy to IDE1 and IDE2.

IDE1 (Primary IDE Connector)
- The first hard disk drive should always be connected to IDE1. You can connect a Master and a Slave drive to IDE1.

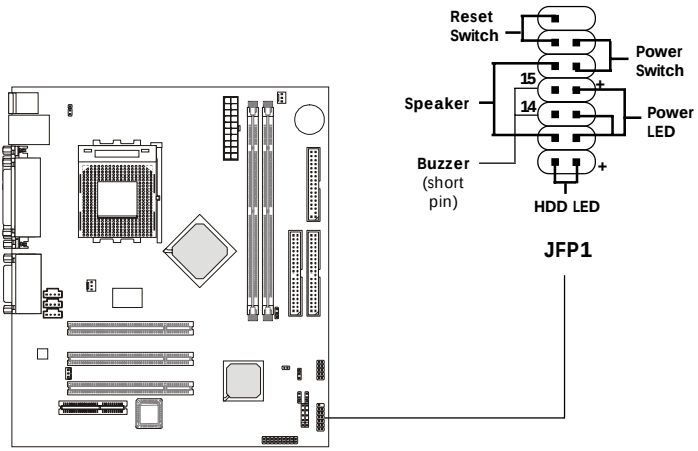
IDE2 (Secondary IDE Connector)
- You can connect a Master and a Slave drive to IDE2.



TIP:
If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

Case Connector: JFP1

The case connector block JFP1 allows you to connect to the Power Switch, Reset Switch, Speaker, Power LED, and HDD LED on the case.



Power Switch

Connect to a 2-pin push button switch. Pressing this button can turn the system power on or off.

Reset Switch

Reset switch is used to reboot the system rather than turning the power ON/ OFF. Avoid rebooting while the HDD LED is lit. You can connect the Reset switch from the system case to this pin.

Power LED

The Power LED is lit while the system power is on. You can connect the Power LED from the system case to this pin. When the system enters the suspend mode, the Power LED will blink.

Speaker

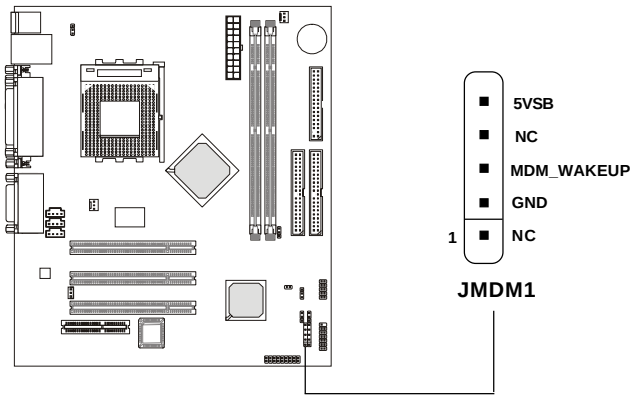
Speaker from the system case is connected to this pin.
If on-board Buzzer is available, then:
Short pin 14-15: On-board Buzzer Enabled.
Open pin 14-15: On-board Buzzer Disabled.

HDD LED

HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD led is lit. You can connect the HDD LED from the system case to this pin.

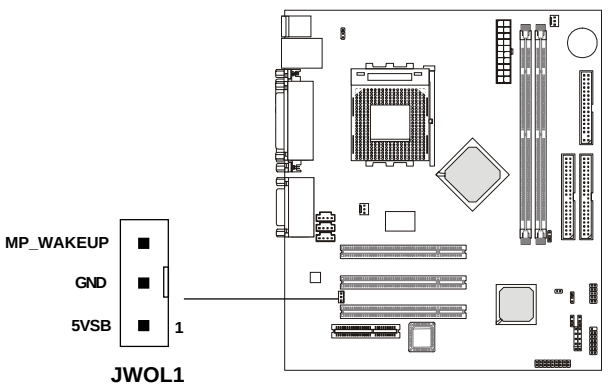
Wake On Ring Connector: JMDM1

This connector allows you to connect to a modem card with Wake On Ring function. The connector will power up the system when a signal is received through the modem card.



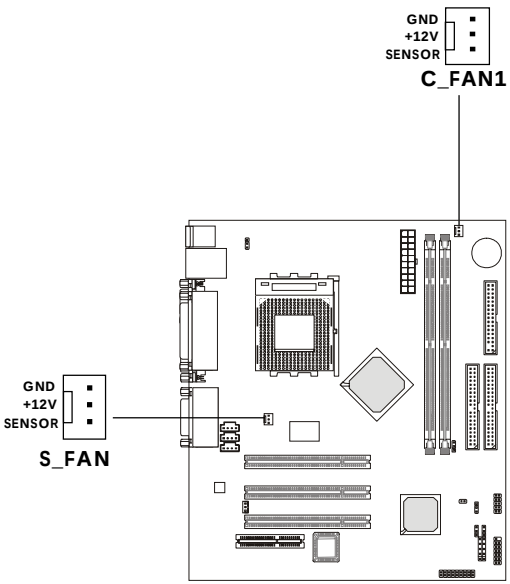
Wake On LAN Connector: JWOL1

This connector allows you to connect to a LAN card with Wake On LAN function. You can wake up the computer via remote control through a local area network.



Fan Power Connectors: C_FAN1/S_FAN

The C_FAN1 (processor fan) and S_FAN (system fan) support system cooling fan with +12V. It supports three-pin head connector. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.

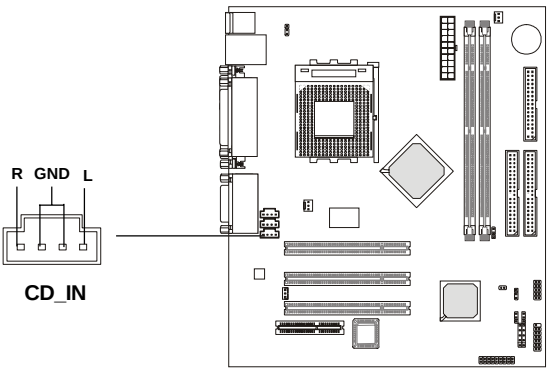


Note:

1. Always consult the vendor for proper CPU cooling fan.
2. CPU Fan supports the fan control. You can install the PC Alert utility that will automatically control the CPU Fan speed according to the actual CPU temperature.

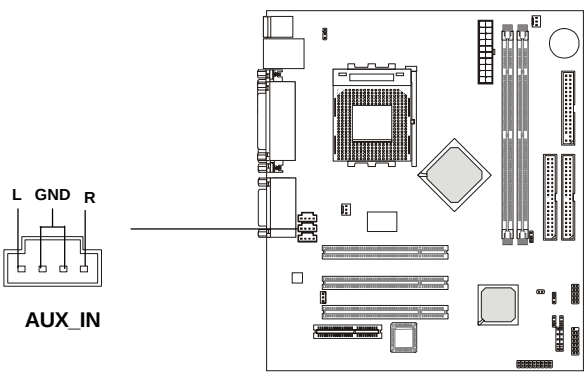
CD-In Connector: CD_IN

The connector is for CD-ROM audio connector.



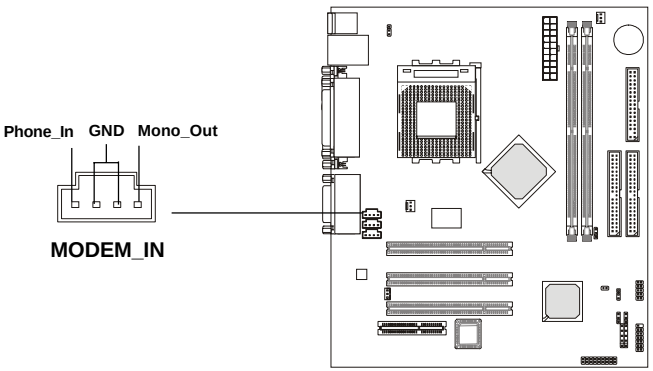
Aux Line-In Connector: AUX_IN

The connector is for DVD add-on card with Line-in connector.



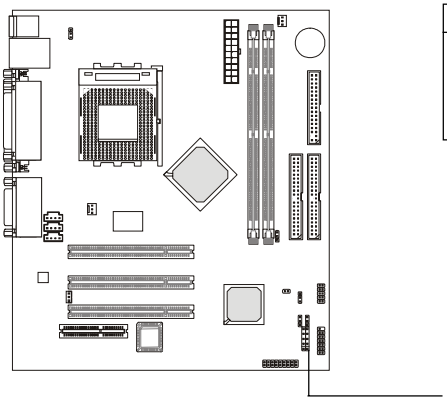
Modem-In Connector: MODEM_IN

The connector is for modem with internal audio connector.



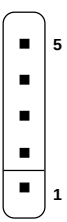
IrDA Infrared Module Connector: JIR1

This connector allows you to connect to an IrDA Infrared module. You must configure the setting through the BIOS setup to use the IR function.



Pin Definition

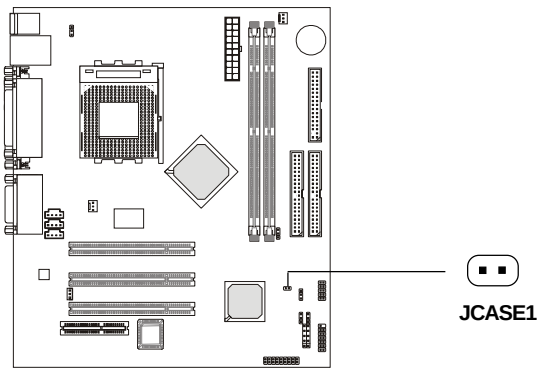
PIN	SIGNAL
1	VCC
2	NC
3	IRRX
4	GND
5	IRTX



JIR1

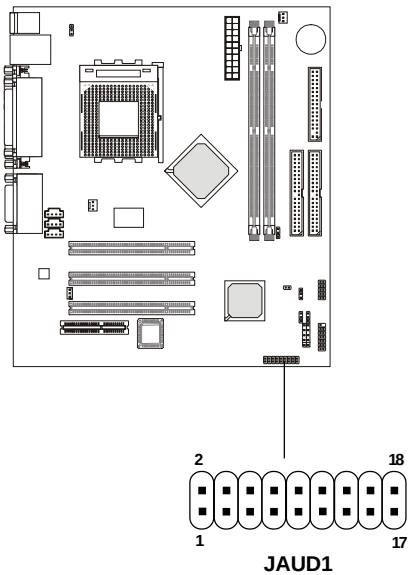
Chassis Intrusion Switch Connector: JCASE1

This connector is connected to a 2-pin chassis switch. If the chassis is opened, the switch will be short. The system will record this status and show a warning on the screen. To clear the warning, you must enter the BIOS utility to clear the record.



Front Panel Audio Connector: JAUD1

You can connect an optional audio connector to the Front Panel Audio Header.



JAUD1

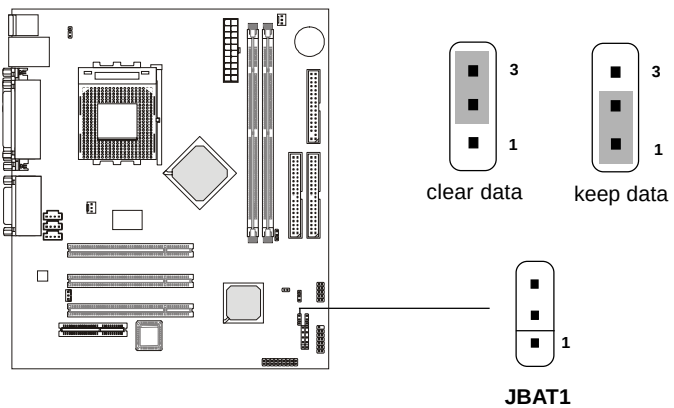
PIN	Description	PIN	Description
1	Active Line Out (R)	2	Active Line Out (L)
3	GND (ALO)	4	GND (ALO)
5	GND (+12)	6	GND (+12)
7	+12V (1A)	8	NC
9	MIC	10	GND (MIC)
11	Front Line Out (R)	12	Line Next (R)
13	Front Line Out (L)	14	Line Next (L)
15	GND (FLO)	16	NC
17	Line In (R)	18	Line In (L)

Jumpers

The motherboard provides the following jumpers for you to set the computer's function. This section describes how to change your motherboard's function through the use of jumpers.

Clear CMOS Jumper: JBAT1

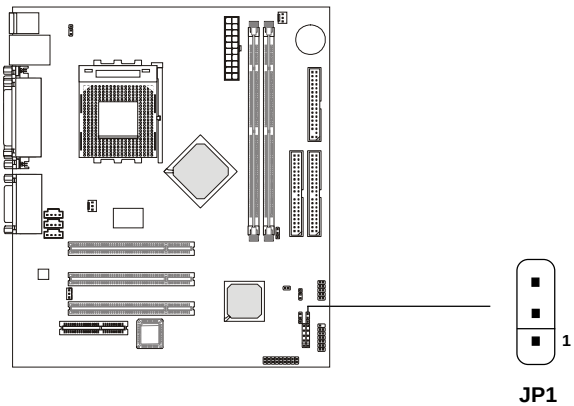
There is a CMOS RAM on board that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. The battery has long life time for at least 5 years. If you want to clear the system configuration stored in the CMOS RAM, use the JBAT1 (Clear CMOS Jumper) to clear data. Follow the instructions below to clear the data:



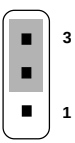
WARNING! *You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.*

Onboard Audio Codec Jumper: JP1

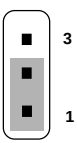
The jumper is used to enable or disable the onboard software audio codec. When enabling the onboard audio codec, the system will use the onboard codec as the PRIMARY audio adapter and the installed CNR card as the SECONDARY one. But some types of CNR cards cannot be set to the secondary one, then the onboard audio codec must be disabled to resolve the system conflict.



JP1



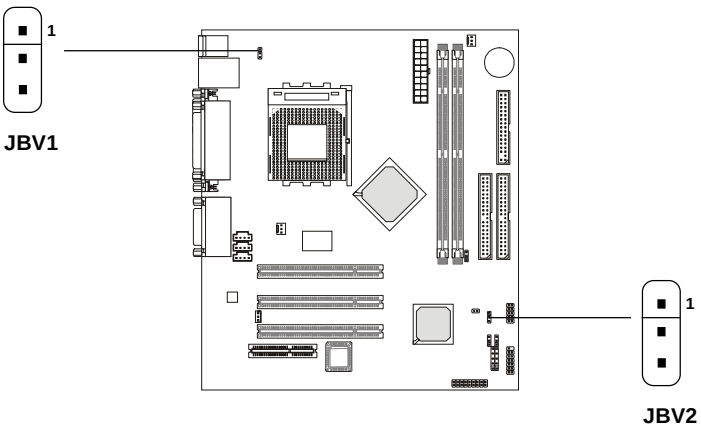
Disable onboard audio codec

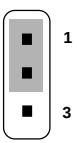


Enable onboard audio codec

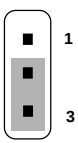
USB Keyboard Wake-up Jumpers: JBV1 & JBV2

The JBV1/JBV2 jumpers are used to set USB keyboard wake-up function. (Please note JBV1 is for USB rear ports and JBV2 is for USB front pin header: USB1) To use the function, you should also go to BIOS to enable the USB keyboard wake-up (power on) function.





5V Standby
Enable Keyboard Power On Function

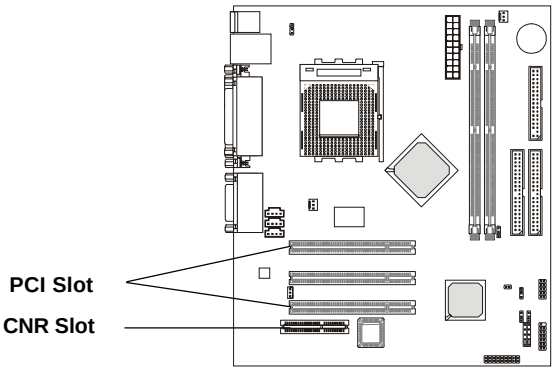


VCC 5V
Disable Keyboard Power On Function

Note: *To be able to use this function, you need a power supply that provides enough power for this feature. (Power supply with 750mA 5V Stand-by)*

Slots

The motherboard provides three 32-bit Master PCI Bus Slots and one CNR slot.



PCI Slots

Three PCI slots allow you to install expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

CNR (Communication Network Riser) Slot

The CNR specification is an open industry-standard specification that defines a hardware scalable Original Equipment Manufacturer (OEM) mainboard riser board and interface, which supports both audio and modem.

PCI Interrupt Request Routing

The IRQ, abbreviation of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The “PCI/USB/AC97/RTL8100” IRQ pins are typically connected to the PCI bus INTA#-INTD# pins as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT A#	INT B#	INT C#	INT D#
PCI Slot 2	INT B#	INT C#	INT D#	INT A#
PCI Slot 3	INT C#	INT D#	INT A#	INT B#
USB-1	INT D#	INT A#	INT B#	INT C#
USB-2	INT D#	INT A#	INT B#	INT C#
AC97	INT C#	INT D#	INT A#	INT B#
RTL8100	INT D#			

PCI Slot 3 & AC97 shared.
USB & RTL8100 shared.

PCI Slot 1~3: Bus Master

AWARD® BIOS Setup 3

The mainboard uses AWARD® BIOS ROM that provides a Setup utility for users to modify the basic system configuration. The information is stored in a battery-backed CMOS RAM so it retains the Setup information when the power is turned off.

This chapter provides you with the overview of the BIOS Setup program. It contains the following topics:

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> key to enter Setup.

```
Hit DEL if you want to run SETUP
```

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F6>	Load the default CMOS value from Fail-Safe default table, only for Option Page Setup Menu
<F7>	Load Optimized defaults
<F10>	Save all the CMOS changes and exit

Getting Help

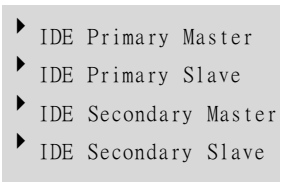
After entering the Setup utility, the first screen you see is the Main Menu.

Main Menu

The main menu displays the setup categories the BIOS supplies. You can use the arrow keys (↑↓) to select the item. The on-line description for the selected setup category is displayed on the bottom of the screen.

Sub-Menu

If you find a right pointer symbol appears to the left of certain fields (as shown in the right view), that means a sub-menu containing additional options for the field can be launched from this field. To enter the sub-menu, highlight the field and press <Enter>. Then you can use control keys to move between and change the settings of the sub-menu. To return to the main menu, press <Esc>.

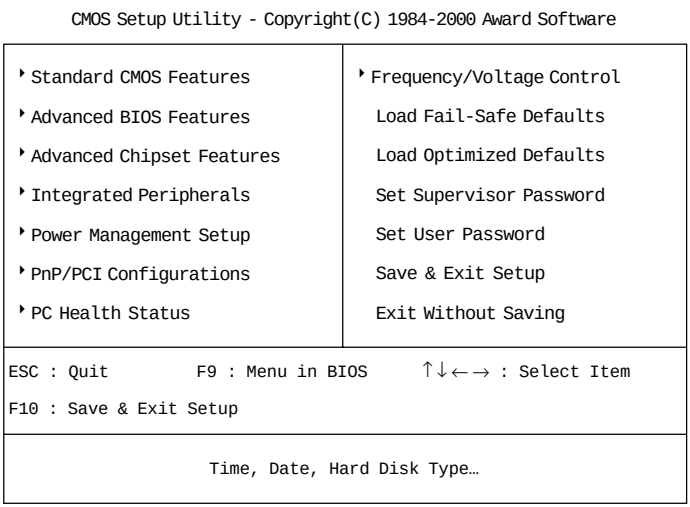


General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

The Main Menu

Once you enter AWARD® BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu displays eleven configurable functions and two exit choices. Use arrow keys to move among the items and press <Enter> to enter the sub-menu.



Standard CMOS Features
Use this menu for basic system configurations, such as time, date etc.

Advanced BIOS Features
Use this menu to setup the items of Award® special enhanced features.

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 displays the current status of your PC.

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 PC.

Load Optimized Defaults
Use this menu to load the default factory settings for BIOS for optimal system performance.

Supervisor Password
Use this menu to set Supervisor Password.

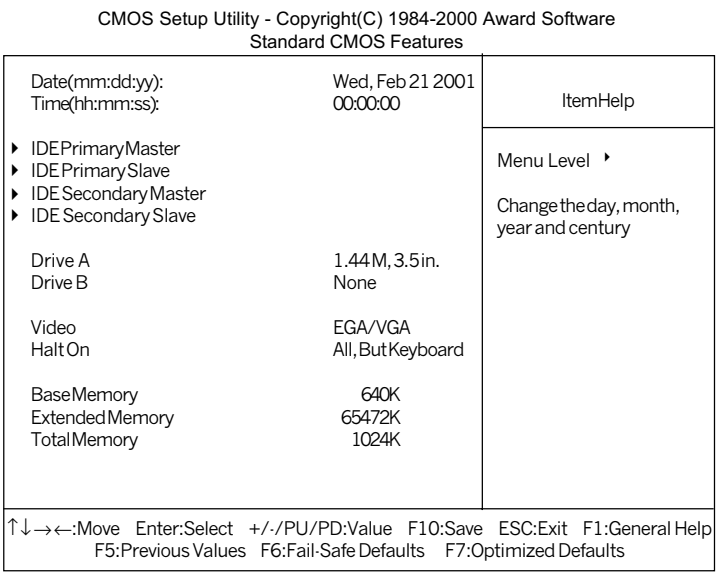
User Password
Use this menu to set User Password.

Save & Exit Setup
Save changes to CMOS and exit setup.

Exit Without Saving
Abandon all changes and exit setup.

Standard CMOS Features

The items inside Standard CMOS Features menu are divided into 13 categories. Each category includes none, one or more setup items. Use the arrow keys to highlight the item you want to modify and use the <PgUp> or <PgDn> keys to switch to the value you prefer.



Date

This allows you to set the system to the date that you want (usually the current date). The format is <day><month> <date> <year>.

day	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month	The month from Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric function keys.
year	The year depends on the year of the BIOS.

Time

This allows you to set the system time that you want (usually the current time). The time format is <hour> <minute> <second>.

IDE Primary Master/Primary Slave/Secondary Master/Secondary Slave
Press PgUp/<+> or PgDn/<-> to select the hard disk drive type. The specification of hard disk drive will show up on the right hand according to your selection.

IDE Primary Master

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Primary Master	Auto	
Access Mode	Auto	Menu Level ▸▸
Capacity	15021MB	To auto-detect the HDD's size, head...on this channel
Cylinder	291024	
Head	16	
Precomp	0	
Landing Zone	29103	
Sector	63	

Access Mode	The settings are Auto, CHS, LBA and Large.
Capacity	The formatted size of the storage device.
Cylinder	Number of cylinders.
Head	Number of heads.
Precomp	Write precompensation.
Landing Zone	Cylinder location of the landing zone.
Sector	Number of sectors.

Drive A/B
This item allows you to set the type of floppy drives installed. Available options are *None*, *360K, 5.25 in.*, *1.2M, 5.25 in.*, *720K*, 3.5 in., *1.44M, 3.5 in.*, *2.88M, 3.5 in.*. The default value for Floppy Drive A is *1.44M, 3.5 in*, and for Floppy Drive B is *None*.

Video
The item sets the type of video adapter used for the primary monitor of the system . Available options are *EGA/VGA* , *CGA 40*, *CGA 80* and *Mono*.

Default value is *EGA/VGA*.

Halt On
The item determines whether the system will stop if an error is detected at boot. Available options are:

All Errors	The system stops when any error is detected.
No Errors	The system doesn't stop for any detected error.
All, But Keyboard	The system doesn't stop for a keyboard error.
All, But Diskette	The system doesn't stop for a disk error.
All, But Disk/Key	The system doesn't stop for either a disk or a keyboard error.

Advanced BIOS Features

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Advanced BIOS Features

Anti-Virus Protection	Disabled	Item Help
CPU Internal Cache	Enabled	
External Cache	Enabled	Menu Level ▸
CPU L2 Cache ECC Checking	Enabled	
Quick Power On Self Test	Disabled	Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.
First Boot Device	Floppy	
Second Boot Device	HDD-0	
Third Boot Device	LS120	
Boot Other Device	Enabled	
Swap Floppy Drive	Disabled	
Boot Up NumLock Status	On	
Gate A20 Option	Normal	
Typematic Rate Setting	Disabled	
x Typematic Rate (Chars/Sec)	6	
x Typematic Delay (Msec)	250	
Security Option	Setup	
OS Select for DRAM > 64MB	Non-OS2	
Video BIOS Shadow	Enabled	
C8000-CBFFF Shadow	Disabled	
CC000-CFFFF Shadow	Disabled	
D0000-D3FFF Shadow	Disabled	
D4000-D7FFF Shadow	Disabled	
D8000-DBFFF Shadow	Disabled	
DC000-DFFFF Shadow	Disabled	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Anti-Virus Protection
The item is to set the Virus Warning feature for IDE Hard Disk boot sector protection. If the function is enabled and any attempt to write data into this area is made, BIOS will display a warning message on screen and beep. Settings are *Disabled* and *Enabled*. Default value is *Disabled*.

CPU Internal Cache
The item allows you to turn on or off CPU's internal (L1) cache. Settings are *Enabled* (default) and *Disabled*.

External Cache
This allows you to turn on or off L2 (Level 2) cache memory for CPU. Settings are *Enabled* (default) and *Disabled*.

CPU L2 Cache ECC Checking
This allows you to enable or disable the ECC (Error-Correcting Code) feature for error detection and correction when data passes through L2 cache memory. Settings are *Enabled* and *Disabled*. Default value is *Enabled*.

Quick Power On Self Test
Setting the item to *Enabled* allows the system to shorten boot time since it will skip some check items. Settings are *Enabled* and *Disabled*. Default value is *Disabled*.

First/Second/Third Boot Device
The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system. The settings are:

HDD-0	The system will boot from the first HDD.
HDD-1	The system will boot from the second HDD.
HDD-2	The system will boot from the third HDD.
HDD-3	The system will boot from the fourth HDD.
Floppy	The system will boot from floppy drive.
ZIP100	The system will boot from ATAPI ZIP drive.
LS-120	The system will boot from LS-120 drive.
SCSI	The system will boot from the SCSI.
LAN	The system will boot from the Network drive.
CD-ROM	The system will boot from the CD-ROM.
Disabled	Disable this sequence.

Boot Other Device
Setting the option to *Enabled* allows the system to try to boot from other device if the system fails to boot from the 1st/2nd/3rd boot device.

Swap Floppy Drive
Setting to *Enabled* will swap floppy drives A: and B:. Default is *Disabled*.

Boot Up Floppy Seek
Setting to *Enabled* will make BIOS seek floppy drive A: before booting the system. Setting options are *Disabled* and *Enabled*. Default is *Enabled*.

Boot Up NumLock Status
This item is to set the Num Lock status when the system is powered on. Setting to *On* will turn on the Num Lock key when the system is powered on. Setting to *Off* will allow end users to use the arrow keys on the numeric keypad. Settings are *On* and *Off*. Default is *On*.

Gate A20 Option
This item is to set the Gate A20 status. A20 refers to the first 64KB of extended memory. When the default value *Fast* is selected, the Gate A20 is controlled by Port92 or chipset specific method resulting in faster system performance. When *Normal* is selected, A20 is controlled by a keyboard controller or chipset hardware.

Typematic Rate Setting
This item is used to enable or disable the typematic rate setting including Typematic Rate & Typematic Delay.

Typematic Rate (Chars/Sec)
After Typematic Rate Setting is enabled, this item allows you to set the rate (characters/second) at which the keys are accelerated. Setting options are *6*, *8*, *10*, *12*, *15*, *20*, *24* and *30*.

Typematic Delay (Msec)
This item allows you to select the delay between when the key was first pressed and when the acceleration begins. Setting options are *250*, *500*, *750* and *1000*.

Security Option
This specifies the type of BIOS password protection that is implemented. Setting options are described below:

Option	Description
Setup (default)	The password prompt appears only when end users try to run Setup.
System	A password prompt appears every time when the computer is powered on or when end users try to run Setup.

OS Select for DRAM > 64MB
This allows you to run the OS/2® operating system with DRAM larger than 64MB. When you choose the default value *Non-OS2*, you cannot run the OS/2® operating system with DRAM larger than 64MB. But it is possible if you choose *OS2*. Default value is *Non-OS2*.

Video BIOS Shadow
This items sets if the Video BIOS will be copied to RAM and increase video speed accordingly. Settings are *Enabled* (default) and *Disabled*.

C8000-CBFFF/CC000-CFFFF/D0000-D3FFF/D4000-D7FFF/D8000-DBFFF/DC000-DFFFF Shadow
These items specify whether the contents of the adapter ROM named in the items will be copied into RAM to improve the performance of ROM firmware for adapters. You need to know the address of each adapter ROM occupies to shadow (copy) it into the correct area of RAM. Settings are *Enabled* and *Disabled* (default).

Advanced Chipset Features

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Advanced Chipset Features

DRAM Timing by SPD	Yes	Item Help
x SDRAM Cycle Length	Auto	
x DRAM Clock	Auto	Menu Level ▸
Memory Hole	Disabled	
P2C/C2P Concurrency	Enabled	
Fast R-W Turn Around	Enabled	
System BIOS Cacheable	Disabled	
Video RAM Cacheable	Disabled	
Frame Buffer Size	8M	
AGP Aperture Size	64M	
On-Chip USB	Enabled	
USB Keyboard Support	Disabled	
On-Chip Sound	Auto	
On-Chip Modem	Auto	
CPU to PCI Write Buffer	Enabled	
PCI Dynamic Bursting	Enabled	
PCI Master 0 WS Write	Enabled	
PCI Delay Transaction	Enabled	
PCI#2 Access #1 Retry	Enabled	
AGP Master 1 WS Write	Disabled	
AGP Master 1 WS Read	Disabled	
Memory Parity/ECC Check	Disabled	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Note: *Change these settings only if you are familiar with the chipset.*

DRAM Timing by SPD
Selects whether DRAM timing is configured by reading the contents of the SPD (Serial Presence Detect) device on the DRAM module. Setting to *Enabled* makes both DRAM Cycle Length and DRAM Clock automatically determined by BIOS according to the configurations on the SPD.

SDRAM Cycle Length
The option controls the CAS latency, which determines the timing delay before SDRAM starts a read command after receiving it. Settings are *Auto*, *2* and *3* (clock cycles). *2* increases system performance while *3* provides more stable system performance. *Auto* allows BIOS to determine the best CAS latency length.

DRAM Clock
The chipset supports synchronous and asynchronous mode between host clock and DRAM clock frequency. Settings are *Auto*, *100* and *133* (MHz). *Auto* allows BIOS to determine the best DRAM clock frequency.

Memory Hole
In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16MB. When this area is reserved, it cannot be cached. The settings are *Enabled* and *Disabled* (default).

P2C/C2P Concurrency
This field enables or disables the PCI to CPU and CPU to PCI concurrency feature, which allows synchronous data transmission from PCI to CPU and vice versa. Selecting the default *Enabled* will increase system performance.

Fast R-W Turn Around
This is used to control the fast read/write turn around feature for DRAM timing. Settings are *Enabled* and *Disabled* (default). *Enabled* improves system performance while *Disabled* provides stability.

System BIOS Cacheable
System BIOS ROM at F000h-F0000h is always copied to RAM for faster execution. Selecting *Enabled* allows the contents of F0000h RAM memory segment to be written to and read from cache memory, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The settings are *Enabled* and *Disabled* (default).

Video RAM Cacheable
The field allows the caching of video memory, resulting in increased system performance. Settings are *Enabled* and *Disabled* (default).

Frame Buffer Size
Frame Buffer is the video memory that stores data for video display (frame). This field is used to determine the memory size for Frame Buffer. Larger frame buffer size increases video performance. Settings are *2M*, *4M* and *8M*

(default).

AGP Aperture Size
Selects the size of the Accelerated Graphics Port (AGP) aperture. Aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. Options are *4M*, *8M*, *16M*, *32M*, *64M* and *128M*.

OnChip USB
This is used to enable or disable the USB ports. Settings are *Enabled* and *Disabled*. The default is *Enabled*.

USB Keyboard Support
Set to *Enabled* if your system installs and uses an USB keyboard. Default is *Disabled*.

OnChip Sound
Auto allows the mainboard to detect whether an audio device is used. If the device is detected, the onboard audio controller will be enabled; if not, the controller is disabled. Disable the controller if you want to use other controller cards to connect an audio device. Settings are *Auto* (default) and *Disabled*.

OnChip Modem
Auto allows the mainboard to detect whether a modem is used. If a modem is detected, the onboard modem controller will be enabled; if not, the controller is disabled. Disable the controller if you want to use other controller cards to connect modems. Settings are *Auto* (default) and *Disabled*.

CPU to PCI Write Buffer
When *Enabled*, CPU can write up to four words of data into the PCI write buffer before the CPU must wait for PCI bus cycles to finish. When *Disabled*, the CPU must wait after each write cycle until the PCI bus signals that it is ready to receive more data.

PCI Dynamic Bursting
When *Enabled*, every write transaction goes to the write buffer. Then burstable transactions burst on the PCI bus and nonburstable transactions do not.

PCI Master 0 WS Write
When *Enabled*, writes to the PCI bus are executed with zero wait state. Default is *Enabled*.

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. Default is *Enabled*.

PCI #2 Access #1 Retry
When *Disabled*, PCI#2 will not be disconnected until access finishes (default). When *Enabled*, PCI#2 will be disconnected if max retries are attempted without success. Default is *Enabled*.

AGP Master 1 WS Write
When *Enabled*, writes to the AGP bus are executed with one wait state inserted. Default is *Disabled*.

AGP Master 1 WS Read
When *Enabled*, one wait state is inserted in the AGP read cycle. Default is *Disabled*.

Memory Parity/ECC Check
User can set the field to *Enabled* for memory checking if the type of DRAM installed in your system is Parity or ECC (Error-Correcting Code) DRAM. Default is *Disabled*.

AGP Master 1 WS Write
When *Enabled*, writes to the AGP bus are executed with one wait state inserted. Default is *Disabled*.

Integrated Peripherals

CMOS Setup Utility - Copyright(C) 1984-2000 Award Software
Integrated Peripherals

	OnChip IDE Channel0		Enabled	ItemHelp
	OnChip IDE Channel1		Enabled	
	IDE Prefetch Mode		Enabled	
	Primary Master	PIO	Auto	Menu Level ▸
	Primary Slave	PIO	Auto	
	Secondary Master	PIO	Auto	
	Secondary Slave	PIO	Auto	
	Primary Master	UDMA	Auto	
	Primary Slave	UDMA	Auto	
	Secondary Master	UDMA	Auto	
	Secondary Slave	UDMA	Auto	
	Init Display First		PCI Slot	
	onboard Lan Device		Enabled	
	IDE HDD Block Mode		Enabled	
	Onboard FDD Controller		Enabled	
	Onboard Serial Port 1		Auto	
	UART 2 Mode		Standard	
x	IR Function Duplex		Half	
x	TX, RX inverting enable		No, Yes	
	Onboard Parallel Port		378/IRQ7	
	Onboard Parallel Mode		Normal	
x	ECP Mode Use DMA		3	
x	Parallel Port EPP Type		EPP1.9	
	Onboard Legacy Audio		Enabled	
	SoundBlaster		Disabled	
	SBI/O Base Address		220H	
	SB IRQ Select		IRQ 5	
	SB DMA Select		DMA 1	
	MPU-401		Disabled	
	MPU-401 I/O Address		330-333H	
	Game Port(200-207H)		Enabled	

↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

OnChip IDE Channel0/1

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Choose the default value *Enabled* to activate each channel separately.

IDE Prefetch Mode

The onboard IDE drive interfaces supports prefetching, for faster drive accesses. Set to *Disabled* if your primary and/or secondary add-in IDE

interface does not support prefetching.

Primary/Secondary Master/Slave PIO
The four fields allow you to set a PIO (Programmed Input/Output) mode for each of the four IDE devices that the onboard IDE interface supports. Modes 0~4 provide increased performance. In Auto mode, BIOS automatically determines the best mode for each IDE device.

Primary/Secondary Master/Slave UDMA
Ultra DMA implementation is possible only if your IDE device supports it and your operating environment contains a DMA driver. If both your hard drive and software support Ultra DMA, select *Auto* (default) to enable BIOS support.

Init Display First
This item specifies which VGA card is your primary graphics adapter. Available options are *PCI Slot* and *AGP*. Default value is *PCI Slot*.

onboard Lan Device (Optional)
The field is available only when LAN is integrated on the board. This is used to enable or disable the onboard LAN controller. Settings are *Enabled* (default) and *Disabled*.

IDE HDD Block Mode
This allows your hard disk controller to use the fast block mode to transfer data to and from the hard disk drive. Block mode is also called block transfer, multiple commands or multiple sector read/write. *Enabled* enables IDE controller to use block mode; *Disabled* allows the controller to use standard mode. Default is *Enabled*.

Onboard FDD Controller
This is to enable or disable the onboard Floppy controller. Set to *Enabled* if you have a floppy disk drive installed on the mainboard and want to use it.

Onboard Serial Port 1
These items specify the base I/O port address and IRQ for the onboard Serial Port 1 (COM 1). Selecting to *Auto* allows BIOS to automatically

determine the correct base I/O port address. Available options are *Auto, 3F8/IRQ4*, *2F8/IRQ3*, *3E8/IRQ4*, *2E8/IRQ3* and *Disabled*. Default is *Auto*. If you have ISA add-on card, the suggested configuration is as the following:

If the ISA add-on card has				**Onboard Serial port to be set at**			
COM1 (I/O:3F8H)	COM2 (I/O:3F8H)	COM3 (I/O:3E8H)	COM4 (I/O:2E8H)	PORT1	IRQ ASSIGNED	PORT2	IRQ ASSIGNED
✓	✓	✓	✓	DISABLED	X	DISABLED	X
✓	✓	X	X	COM3	4	COM4	3
X	X	✓	✓	COM1	4	COM2	3
✓	X	X	✓	COM2	3	COM3	4
X	✓	✓	X	COM1	4	COM4	3
✓	✓	✓	X	COM4	3	DISABLED	X
✓	✓	X	✓	COM3	4	DISABLED	X
✓	X	✓	✓	COM2	3	DISABLED	X
X	✓	✓	✓	COM1	4	DISABLED	X
X	X	X	X	COM1	4	COM2	3
✓	X	X	X	COM2	3	COM3	4
X	✓	X	X	COM1	4	COM3	4
X	X	✓	X	COM1	4	COM2	3
X	X	X	✓	COM1	4	COM2	3

UART 2 Mode

The item allows you to specify the operation mode for serial port. Settings are:

Standard	RS-232C Serial Port
HPSIR	IrDA-compliant Serial Infrared Port
ASKIR	Amplitude Shift Keyed Infrared Port

IR Function Duplex

This field specifies a duplex value for the IR device. Full-Duplex mode permits simultaneous two-direction transmission. Half-Duplex mode permits transmission in one direction only at a time. Settings are *Half* and *Full*. The default is *Half* .

TX, RX inverting enable
This item allows you to enable the TX, RX inverting which depends on different H/W requirement. This field is not recommended to change its default setting for avoiding any error in your system. Settings are "*No, Yes*" (default), "*Yes, No*", "*Yes, Yes*" and "*No, No*."

Onboard Parallel Port
This specifies the base I/O port address and IRQ of the onboard Parallel Port. Settings are *378/IRQ7*, *278/IRQ5*, *3BC/IRQ7* and *Disabled*. Default is *378/IRQ7*. If you have an ISA add-on card, the suggested configuration is as below:

If the ISA add-on card has			Onboard parallel port to be set as	
LPT1 I/O:378H	LPT2 I/O:278H	LPT3 I/O:3BCH	PORT ASSIGNED	IRQ ASSIGNED
✓	✓	✓	Disabled	X
✓	✓	X	LPT3	5
✓	X	✓	LPT2	5
X	✓	✓	LPT1	7
✓	X	X	LPT2	5
X	✓	X	LPT1	7
X	X	✓	LPT1	7
X	X	X	LPT1	7

***Note**: If the onboard parallel port interrupt and ISA add-on card interrupt are in conflict, the parallel port will not work properly. Please disable one of the devices.*

Onboard Parallel Mode
This item selects the operating mode for the parallel port: *Normal*, *EPP*, *ECP* or *ECP+EPP*. Default is *Normal*.

ECP Mode Use DMA
This item specifies an DMA channel 1 or 3 for the Parallel Port when it is set to *ECP* or *ECP+EPP*mode.

Parallel Port EPP Type
The item selects the EPP version used by the parallel port if the port is set to *EPP* or *ECP+EPP* mode. Settings are *EPP1.7* and *EPP1.9*.

Onboard Legacy Audio
The item enables or disables the onboard audio features of the mainbaord and the following audio options in the BIOS.

Sound Blaster
The item turns on/off the Sound Blaster feature of the board. If you want to play the Sound Blaster compatible games, you need to set the field to *Enabled*.

SB I/O Base Address
This item specifies the I/O Base Address for the Sound Blaster. Settings are 220H, 240H, 260H and 280H.

SB IRQ Select
This item specifies the IRQ for the Sound Blaster. Settings are IRQ 5, IRQ 7, IRQ 9 and IRQ 10.

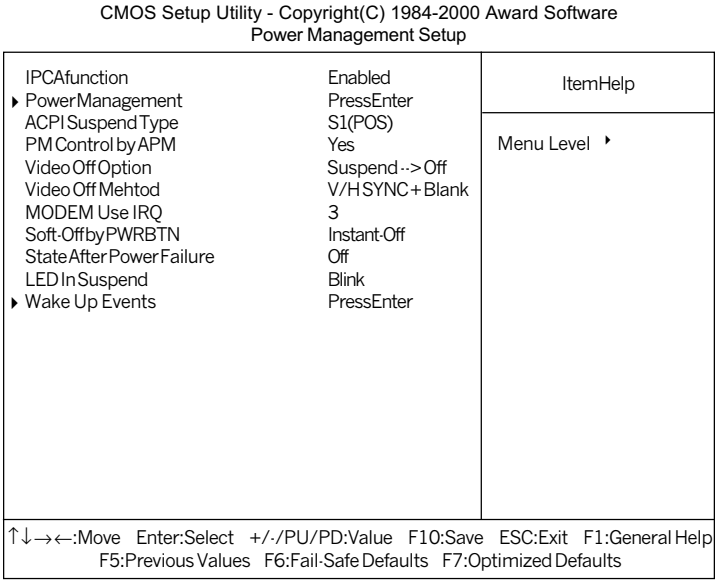
SB DMA Select
This item specifies the DMA channel for the Sound Blaster. Settings are DMA 1, DMA 2, DMA 3 and DMA 0.

MPU-401
The field enables or disables the MPU-401 interface (the Yamaha Sound Blaster mode).

MPU-401 I/O Address
This item selects the base I/O port address for the MPU-401 interface. Settings are *330-333H*, *300-303* and *310-313*.

Game Port (200-207H)
The item enables or disables the Joystick/Game port.

Power Management Setup



IPCA Function

This item is to activate the ACPI (Advanced Configuration and Power Management Interface) Function. If your operating system is ACPI-aware, such as Windows 98SE/2000/ME, select *Enabled*. Settings are *Enabled* and *Disabled*. Default is *Enabled*.

Power Management

Press <Enter> to enter the sub-menu for power management options.

Power Management

Power Management	User Define	Item Help
HDD Power Down	Disable	
Doze Mode	Disable	Menu Level ▸▸
Suspend Mode	Disable	

Power Management
This item is used to select the degree (or type) or power saving and is related to these modes: Doze Mode, Suspend Mode and HDD Power Down. There are three options for power management:

Min Saving	Minimum Power Management. Doze Mode = 1 hour, Suspend Mode = 1 hour, and HDD Power Down = Disable.
Max Saving	Maximum Power Management. Doze Mode = 10 sec, Suspend Mode = 10 sec, and HDD Power Down = Disable.
User Define	Allows end users to configure each mode separately. Each of the ranges are from *1 min.* to *1 hour* except for HDD Power Down which ranges from *1 min.* to *15 min*.

Default value is *User Define*.

HDD Power Down
If HDD activity is not detected for the length of time specified in this field, the hard disk drive will be powered down while all other devices remain active. Settings are *Disable* and *1* through *15* Min.

Doze Mode
If system activity is not detected for the length of time specified in this field, the CPU clock will run at slower speed while other devices still run at full

speed. Settings are *Disable*, *1 Min*, *2 Min*, *4 Min*, *6 Min*, *8 Min*, *10 Min*, *20 Min*, *30 Min*, *40 Min* and *1 Hour*.

Suspend Mode
If system activity is not detected for the length of time specified in this field, all devices except CPU will be shut off. Settings are *Disable*, *1 Min*, *2 Min*, *4 Min*, *6 Min*, *8 Min*, *10 Min*, *20 Min*, *30 Min*, *40 Min* and *1 Hour*.

ACPI Suspend Type
This item specifies the power saving modes for ACPI function. Options are:

S1 (POS)	The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.
S3 (STR)	The S3 sleep mode is a lower power state where the information of system cofiguration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when an "wake up" event occurs.

Default value is *S1 (POS)*.

PM Control by APM
Setting to *Yes* will activate an Advanced Power Management (APM) device to enhance Max Saving mode and stop CPU internal clock. Settings are *Yes* and *No*. Default is *Yes*.

Video Off Option
The settings are Always On, Suspend and All Modes. This option is for choosing the setting in which the monitor will turn off.

Always On	Always turn on.
Suspend --> Off	During Suspend mode, the monitor will be turned off.
All Modes --> Off	The monitor is turned off during Doze, Standby

or Suspend mode.

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.

MODEM Use IRQ
Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system. Settings are *3*, *4*, *5*, *7*, *9*, *10*, *11* and *NA*.

Soft-Off by PWRBTN
This feature allows users to configure the power button as a normal power-on/-off button or a soft-off button. Settings are:

Instant-Off	The power button functions as a normal power-on/-off button.
Delay 4 Sec.	Pressing the power button for more than 4 seconds will place the system in a very low-power-usage state (Soft-Off state), with only enough circuitry receiving power to detect power button activity or Wake Up On LAN/Ring activity.

Default is *Instant-Off*.

State After Power Failure
This item specifies whether your system will reboot after a power failure or interrupts occurs. Available settings are:

Off	Leaves the computer in the power off state.
On	Reboots the computer.
Auto	BIOS automatically determines the best mode.

LED In Suspend
This item sets how the system uses Power LED on the case to indicate the suspend state. Settings are:

Blink	The Power LED blinks to indicate the suspend state.
Single	The Power LED remains the same color.
Dual	The Power LED changes its color to indicate the suspend state.

Wake Up Events
Press <Enter> to enter the sub-menu and the following screen appears:

Wake Up Events

VGA	OFF	ItemHelp
LPT & COM I/O Access	LPT/COM	
HDD & FDD I/O Access	ON	
PCI Master	OFF	Menu Level ▸▸
PowerOn by PCI Card	Disabled	
Wake Up On LAN/Ring	Disabled	
RTC Alarm Resume	Disabled	
x Date(of Month)	0	
x Resume Time(hh:mm:ss)	0 0 0	
IRQ Wake Up Event	ON	
▸ IRQs Activity Monitoring	Press Enter	

VGA, LPT & COM I/O Access, HDD & FDD I/O Access, PCI Master, PowerOn by PCI Card, Wake Up On LAN/Ring, IRQ Wake Up Event
These items specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

***Note**: To use the function of Wake Up On LAN/Ring, you need to install a LAN card/modem supporting power on function.*

RTC Alarm Resume
This is to enable or disable the feature of booting up the system on a scheduled time/date. Settings are *Enabled* and *Disabled* (default)

Date (of Month)
Specifies the date for **RTC Alarm Resume**. Settings are *0~31.*

Resume Time (hh:mm:ss)
Specifies the time for **RTC Alarm Resume**. Format is <hour><minute> <second>.

IRQs Activity Monitoring
Press <Enter> to enter the sub-menu and the following screen appears:

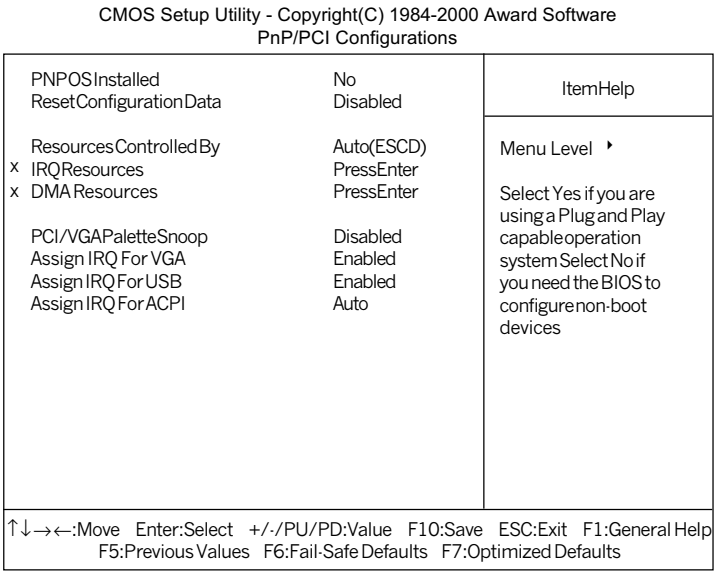
IRQ Activity Monitoring

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

IRQ3~IRQ15
Enables or disables the monitoring of the specified IRQ line. If set to *Enabled*, the activity of the specified IRQ line will prevent the system from entering power saving modes or awaken it from power saving modes.

***Note**: IRQ (Interrupt Request) lines are system resources allocated to I/O devices. When an I/O device needs to gain attention of the operating system, it signals this by causing an IRQ to occur. After receiving the signal, when the operating system is ready, the system will interrupt itself and perform the service required by the I/O device.*

PnP/PCI Configurations



PNP OS Installed
When set to *YES*, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows® 95 or 98. When set to *NO*, BIOS will initialize all the PnP cards. So, select *Yes* if the operating system is Plug & Play aware.

Reset Configuration Data
The ESCD (Extended System Configuration Data) is a method that the BIOS uses to store resource information for both PNP and non PNP devices in a bit string format. When *Enabled*, the system will rebuild ESCD and you will see the message "ESCD Update Successfully" on boot up.

Resources Controlled By
If select *Auto(ESCD)*, BIOS will automatically configure all the boot and PnP (Plug & Play) compatible devices and assigns system resources like IRQ to these devices. However, this feature means absolutely nothing unless you

are using a Plug and Play operating system such as Windows®95/98. If you want to configure by yourself, select *Manaul*. Default is *Auto(ESCD)*.

IRQ/DMA Resources
The items are adjustable only when **Resources Controlled By** is set to *Manual*. Press <Enter> and you will enter the sub-menu of the items. **IRQ Resources** & **DMA Resources** list IRQ 3/4/5/7/9/10/11/12/14/15 and DMA 0/1/3/5/6/7 for users to set each IRQ/DMA a type depending on the type of device using the IRQ/DMA. Settings are:

PCI/ISA PnP	For Plug & Play compatible devices designed for PCI or ISA bus architecture.
Legacy ISA	For devices compliant with the PC AT bus specification, requiring a specific interrupt.

PCI/VGA Palette Snoop
When set to *Enabled*, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example, if there are two VGA devices in the computer (one PCI and one ISA) and the:

VGA Palette Snoop Bit Setting	Action
Disabled	Data read or written by the CPU is only directed to the PCI VGA device's palette registers.
Enabled	Data read or written by the CPU is directed to both the PCI VGA device's palette registers and the ISA VGA device's palette registers, permitting the palette registers of both VGA devices to be identical.

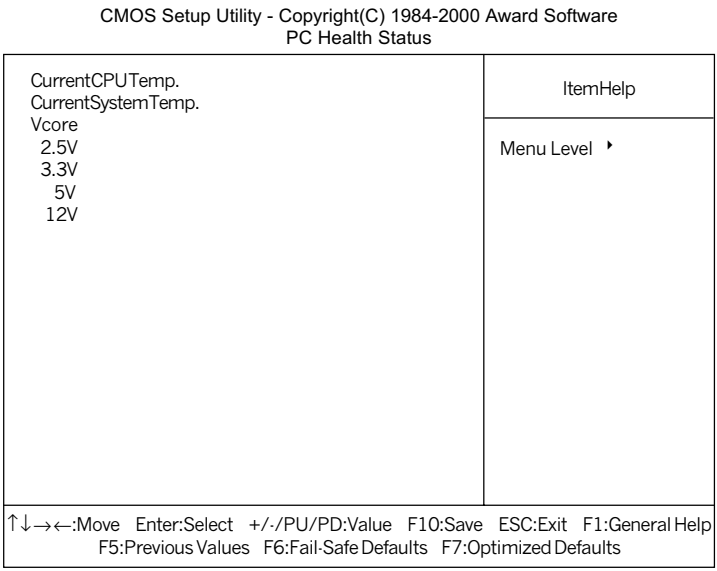
The setting must be set to *Enabled* if any ISA adapter card installed in the system requires VGA palette snooping. The Setup and BIOS default values are *Disabled*.

Assign IRQ For VGA/USB
Set to *Enabled* allows BIOS to assign an IRQ to VGA card/USB device. Choose *Disabled* if you want to release the IRQ. Default is *Enabled*.

Assign IRQ For ACPI
The field is to assign an IRQ for ACPI. Settings are *Auto* (default), *IRQ 9*, *IRQ 10* and *IRQ 11*.

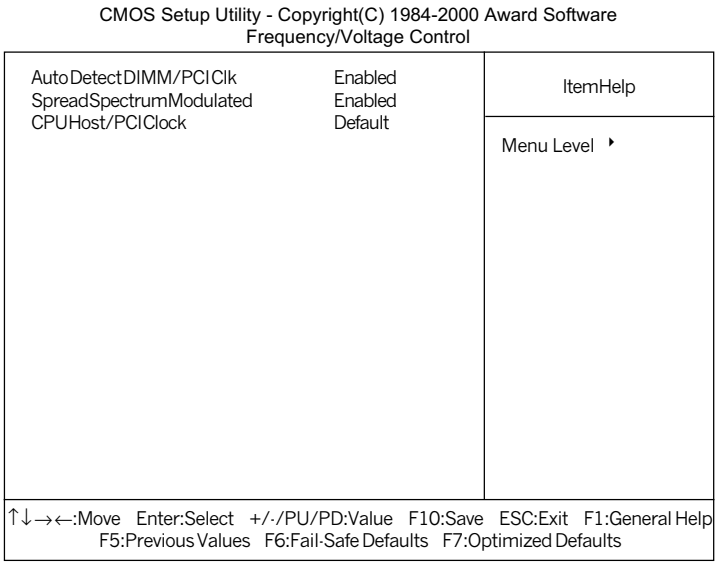
PC Health Status

This section is to monitor the current hardware status including CPU temperature, CPU Fan speed, Vcore etc. This is available only if there is hardware monitoring onboard.



Current CPU Temp., Current System Temp., Vcore, 2.5/3.3/5/12V
These items display the current status of all of the monitored hardware devices/components such as CPU voltages and temperatures.

Frequency/Voltage Control



Auto Detect DIMM/PCI Clk
Use this item to enable or disable the feature of auto detecting the clock frequency of the installed DRAM DIMMs and PCI cards. Settings are *Enabled* (default) and *Disabled*.

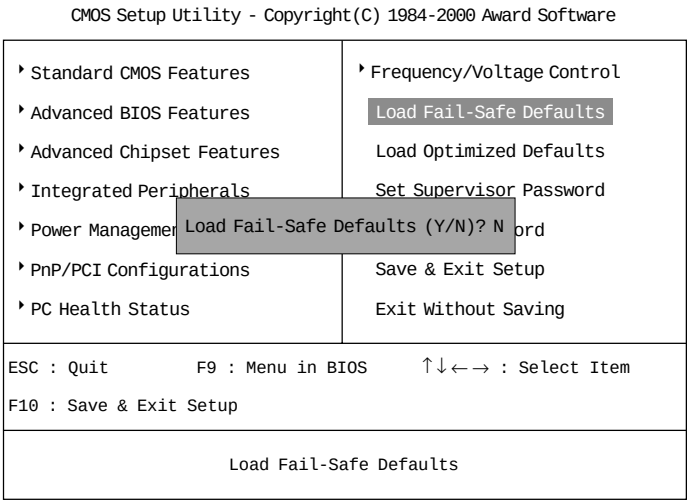
Spread Spectrum Modulated
This item is used to enable or disable the clock generator's Spread Spectrum feature. When overclocking the processor, always set it to *Disabled*. Settings are *Disabled* and *Enabled* (default).

CPU Host/PCI Clock
This item specifies the clock frequency of CPU host bus (FSB) and PCI bus and provides a method for end users to overclock the processor accordingly. If the item shows *Default*, the clock frequency will use the default value for both the CPU host bus and PCI bus.

Load Fail-Safe/Optimized Defaults

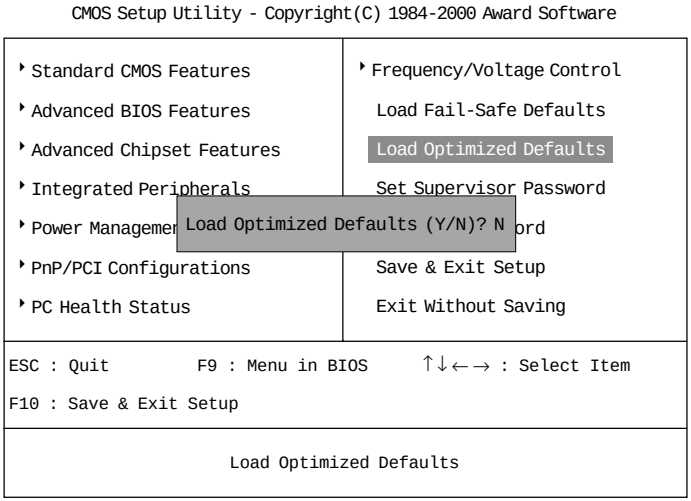
The two options on the main menu allow users to restore all of the BIOS settings to the default Fail-Safe or Optimized values. The Optimized Defaults are the default values set by the mainboard manufacturer specifically for the optimal performance of the mainboard. The Fail-Safe Defaults are the default values set by the BIOS vendor for the stable system performance.

When you select Load Fail-Safe Defaults, a message as below appears:



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

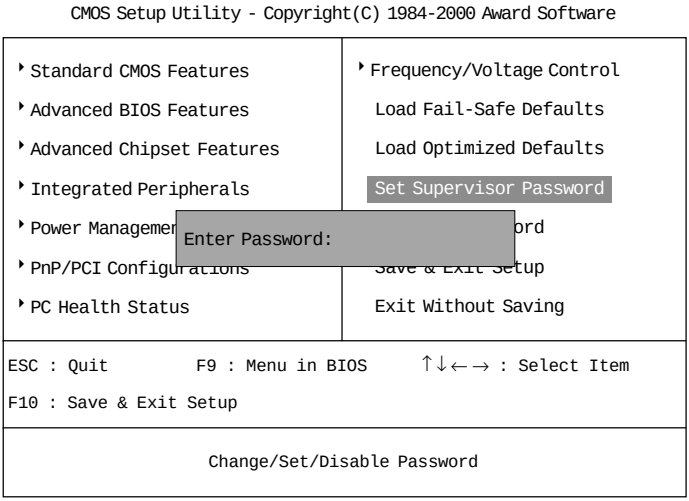
When you select Load Optimized Defaults, a message as below appears:



Pressing *Y* loads the default factory settings for optimal system performance.

Set Supervisor/User Password

When you select this function, a message as below will appear on the screen:



Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously set password from CMOS memory. You will be prompted to confirm the password. Re-type the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

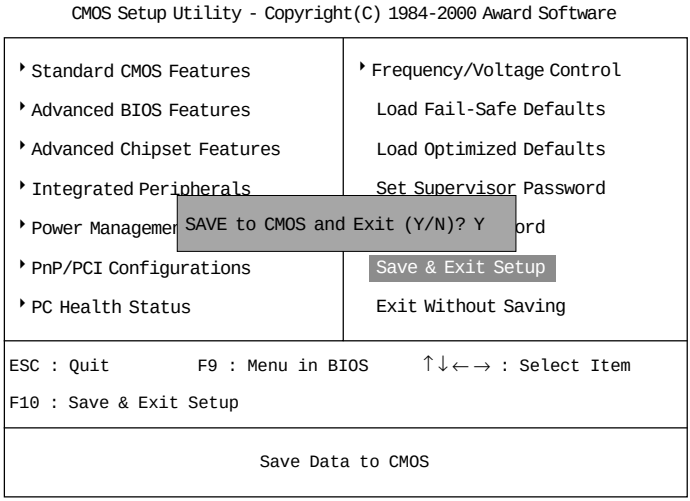
Additionally, when a password is enabled, you can also have BIOS to request a password each time the system is booted. This would prevent unauthorized

use of your computer. The setting to determine when the password prompt is required is the Security Option of the Advanced BIOS Features menu. If the Security Option is set to *System*, the password is required both at boot and at entry to Setup. If set to *Setup*, password prompt only occurs when trying to enter Setup.

About Supervisor Password & User Password:	
Supervisor password :	*Can enter and change the settings of the setup menus.*
User password:	*Can only enter but do not have the right to change the settings of the setup menus*

Save & Exit Setup

When you want to quit the Setup menu, you can select this option to save the changes and quit. A message as below will appear on the screen:

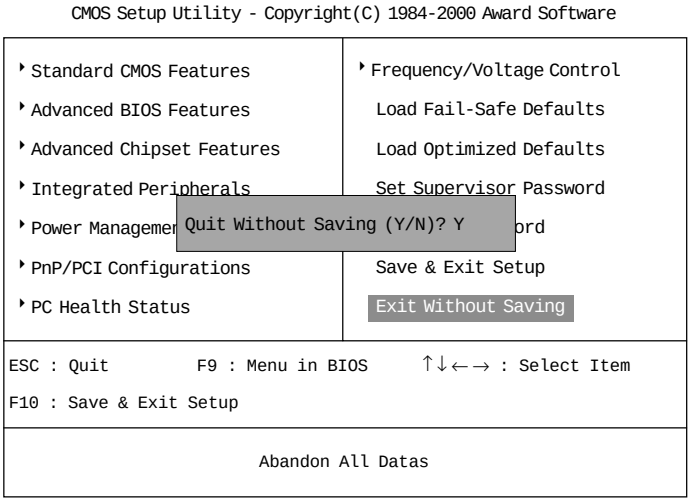


Typing *Y* will allow you to quit the Setup Utility and save the user setup changes to RTC CMOS.

Typing *N* will return to the Setup Utility.

Exit Without Saving

When you want to quit the Setup menu, you can select this option to abandon the changes. A message as below will appear on the screen:



Typing *Y* will allow you to quit the Setup Utility without saving any changes to RTC CMOS.

Typing *N* will return to the Setup Utility.

4 Drivers

The chapter describes the features and basic system requirements for the VIA® chipset and Realtek® 8100 LAN controller, and how to install the drivers into your system.

This chapter contains the following topics:

System Requirements

This section describes the basic system requirements for the VIA® and LAN drivers installation and usage.

CPU
AMD® Athlon™/Duron™ processor or higher

Chipset
VIA® VT8361 & VT686A/686B chipset

Monitor
VGA Support, minimum 640x480 resolution

Operating system
DOS 5.0 or higher, Windows® 95/98, Windows® NT3.51/4.0, OS/2®, Windows® 2000 or Windows® ME

CD-ROM
2X speed or above

VIA® Chipset

The MS-6378 is paired with the VIA® Apollo KLE133 chipset. Highly advanced, the chipset combines an integrated 2D/3D engine with DVD hardware acceleration, AC-97 audio support for SoundBlaster Pro and FM synthesis legacy audio.

Features

- AC'97 audio support for SoundBlaster Pro
- FM synthesis legacy audio
- 2D/3D Graphics Accelerator
- Support AGP 2X/4X Bus

VIA Chipset Driver Installation

Insert the provided CD disk into the CD-ROM drive. The CD will auto-run and display "**VIA Chipset Drivers**," "VIA KLE133 VGA Driver," "VIA AC97 PCI Sound Drivers" and "Realtek Network Drivers" on the screen. Click on the appropriate button for installation.

Installation for Windows® 98SE

1. Insert the CD disk into the CD-ROM drive
2. The CD will auto-run and the setup screen will appear.
3. Click on the "VIA Chipset Drivers" and the screen will show "VIA Service Pack 4.XX."
4. Click "Next" and the screen will show four drivers "VIA Atapi Vendor Support Driver," "AGP VxD Driver," "VIA Chipset Function's Registry" and "IRQ Routing Miniport Driver". Select all four drivers and click on "Next".
5. The setup program will request you to choose "Install VIA Atapi Vendor Support Driver". Please select "Install" and click "Next" to continue.
6. Click to enable DMA Mode, Please select "Install" and click "Next" to continue.
7. The setup program will request you to choose "Install VIA AGP VxD in turbo mode", "Install VIA AGP VxD in normal mode" or "Uninstall VIA AGP VxD". Please select "Install VIA AGP VxD in turbo mode"

and click on "Next".

8. The setup program will let you choose between "Install VIA Chipset Functions Registry" or "Uninstall VIA Chipset Functions Registry". Please select "Install VIA Chipset Functions Registry" and then click "Next".
9. The setup program will let you choose between "Install VIA IRQ Routing Miniport Driver" or "Uninstall VIA IRQ Routing Miniport Driver". Please select "Install VIA IRQ Routing Miniport Driver"
10. The setup program will request you to choose whether to restart the computer or not. Please select "Yes, I want to restart my computer now" and click Finish. The computer will restart and finish the VIA Chipset Drivers installation.

Installation for Windows® 2000/ME

1. Insert the CD disk into the CD-ROM drive
2. The CD will auto-run and the setup screen will appear.
3. Click on the "VIA Chipset Drivers" and the screen will show "VIA Service Pack 4.XX."
4. Click "Next" and the screen will show VIA Service Pack (VIA 4 in 1) Readme.TXT.
5. Click "Yes" and the screen will show two drives "AGP VxD Driver" and "VIA INF Driver 1.0x." Select all and click "Next" to proceed to next step.
6. The setup program will request you to choose "Install AGP 4X/133 Driver". Select "Install" and then click on "Next".
7. The setup program will request you to choose whether to restart the computer or not. Please select "Yes, I want to restart my computer now" and click Finish. The computer will restart and finish the VIA Chipset Drivers installation.

Installation for Windows® NT4.0

Note: *Install Windows® NT 4.0 Service Pack 3 or above before installing the VIA drivers in Windows® NT.*

1. Insert the CD disk into the CD-ROM drive
2. The CD will auto-run and the setup screen will appear.
3. Click on the "VIA Chipset Drivers" and the screen will show "VIA Service Pack 4.XX."

4. Click "Next" to proceed and the screen will show "Install", "Uninstall" or "Enable/Disable Ultra DMA for IDE Driver". Select "Install" and then click on "Next".
5. Please click on "Yes, I want to restart my computer" to complete setup.

VIA KLE133 VGA Driver Installation

Insert the provided CD disk into the CD-ROM drive. The CD will auto-run and display "VIA Chipset Drivers," "**VIA KLE133 VGA Driver**," "VIA AC97 PCI Sound Drivers" and "Realtek Network Drivers" on the screen. Click on the appropriate button for installation.

Note: *Always install the VIA Chipset drivers before VIA KLE133 VGA driver.*

Installation for Windows® 98SE/2000/ME/NT4.0

1. Insert the CD disk into the CD-ROM drive
2. The CD will auto-run and the setup screen will appear.
3. Click on the "VIA KLE133 VGA Driver" and the screen will show an installation menu.
4. Click on "Display Drivers."
5. Click on "OK" and the VGA drivers will be copied into the HDD.
6. A message appears prompting you to restart the Windows® system. Select "Yes" to restart the system.
7. After restart, Windows will show a new display setting.

Note: *For Windows NT4.0, you must install Windows® NT 4.0 Service Pack 3 or above before installing the VIA drivers.*

VIA AC97 PCI Sound Driver Installation

Insert the provided CD disk into the CD-ROM drive. The CD will auto-run and display "VIA Chipset Drivers," "VIA KLE133 VGA Driver," "**VIA AC97 PCI Sound Drivers**" and "Realtek Network Drivers" on the screen. Click on the appropriate button for installation.

Note: *Always install the VIA Chipset drivers before VIA AC97 PCI Sound*

driver.

Installation for Windows® 98SE

1. Insert the CD disk into the CD-ROM drive
2. The CD will auto-run and the setup screen will appear.
3. Click on the "VIA AC97 PCI Sound Drivers" and the screen will show "VIA AC97 PCI Sound Drivers."
4. Click "Next" to proceed and the screen will show "Install", or "Uninstall". Select "Install" and then click on "Next".
5. Click "Finish" to complete the AC97 Audio Driver Installation.

Installation for Windows® 2000/ME

1. Insert the CD disk into the CD-ROM drive
2. The CD will auto-run and the setup screen will appear.
3. Click on the "VIA AC97 PCI Sound Drivers" and the screen will show "VIA AC97 PCI Sound Drivers."
4. Click "Next" to proceed and the screen will show "Install", or "Uninstall". Select "Install" and then click on "Next".
5. A window "Digital Signature Not Found" will appear and will request "Do you want to continue the installation of the VIA AC'97 Audio Controller (WDM) Driver?" Please click "Yes" to proceed.
6. Click "Finish" to complete setup.

Installation for Windows® NT4.0

1. Insert the CD disk into the CD-ROM drive
2. The CD will auto-run and the setup screen will appear.
3. Click on the "VIA AC97 PCI Sound Drivers" and the screen will show "VIA AC97 PCI Sound Drivers."
4. Click "Next" to proceed and the screen will show "Install", or "Uninstall". Select "Install" and then click on "Next".
5. The setup program will show the following on the screen:

> Please choose "Add" from the next window and add the following device:
> VIA AC97 PCI Audio Device
> VIA MIDI External Port

Then click "OK".

6. Follow the steps shown in **Step 5** to finish the VIA AC97 PCI Audio Drivers Installation.
7. A window will appear asking "Do you want to install the joystick driver for the Microsoft Sidewinder 3D Pro Joystick?" Please click "No" to continue.
8. Please click "Finish" to complete setup.

Note: *In Windows 2000/ME, you may see the* ***One Touch Setup*** *button appear on the setup screen. Choosing the button will help you to install more than one driver into the system without going through the installation process step by step and save a lot of time accordingly. After clicking on* ***One Touch Setup****, a window will show up listing what drivers will be installed. Install other drivers not included by One Touch Setup manually if any.*

Realtek® 8100 Fast Ethernet Controller

When your mainboard comes with the Realtek® 8100 LAN controller, you must install the Realtek® LAN driver to support the LAN function. The Realtek® 8100 is a sophisticated 32-bit PCI component, with enhanced scatter-gather bus mastering capabilities. Its true 32-bit architecture enables it to perform high speed data transfers on the PCI bus using four DMA channels.

Features

- IEEE 802.3/802.3u 10BASE-T and 100BASE-TX compatible
- Glueless 32-bit PCI bus master interface
- Backward software compatible to the 82557
- Internal transmit and receive FIFOs (3 kbytes each)
- Back-to-back transmit at 100 Mbps within minimum IFS
- EEPROM support for configuration and customized feature selection
- Advanced configuration and Power Interface Specification, Revision 1.0, and PCI Power Management Specification, Revision 1.0 compliant
- Remote Wake Up (Magic Packet*) support in APM and ACPI modes
- ACPI "interesting" packet wake support in D0 to D3 low power states
- IEEE 802.3u Auto-Negotiation support for 10BASE-T and 100BASE-TX
- Full or half duplex capable at 10 or 100 Mbps
- IEEE 802.3x flow control support

Driver Installation

Installation for Windows® 98

In some operating systems like Windows® 98, the provided CD will auto-run when you insert the CD disk into the CD-ROM drive. To install the LAN driver, just click on the "**Realtek Network Drivers**" button on the screen.

Installation for Other O/S

To find out the installation procedures for other operating systems such as Windows® 2000 & Linux, insert the provided CD disk into the CD-ROM drive. Run or type the path to:

CD-ROM drive*:\Network\Realtek\8139\Help8139.exe*

Then press spacebar to continue and installation of the LAN driver for different operating systems is listed on the screen. Select the operating system you need by using arrow keys and follow the installation procedures provided.