User's Manual

EPIA-MS

P/N: 99-51-012844-10
Version 1.0
April 21, 2004

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FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his personal expense.

Notice 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord in such a way that people cannot step on it. Do not place anything over the power cord.
8. Always unplug the power cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening. Liquid can cause damage or electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - The power cord or plug is damaged
    - Liquid has penetrated into the equipment
    - The equipment has been exposed to moisture
    - The equipment has not work well or you cannot get it work according to User's Manual.
    - The equipment has dropped and damaged
    - If the equipment has obvious sign of breakage
12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60 C (140F), IT MAY DAMAGE THE EQUIPMENT.

CAUTION: Explosion or serious damage may occur if the battery is incorrectly replaced. Replace only with the same or equivalent battery type recommended by the manufacturer.

BOX CONTENTS

- ☒ One VIA Mini-ITX mainboard
- ☒ One user's manual
- ☒ One ATA-66/100/133 IDE ribbon cable
- ☒ One driver and utilities CD

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CHAPTER 1

Specifications

The ultra-compact and highly integrated VIA EPIA-MS Mini-ITX mainboard is the smallest Mini-ITX form-factor available today, developed by VIA Technologies, Inc. as part of the company's open industry-wide total connectivity initiative. The mainboard enables the creation of an exciting new generation of small, ergonomic, innovative and affordable embedded systems. Through a high level of integration, the Mini-ITX occupy 66% of the size of FlexATX mainboard form factor. The mainboard comes with an embedded VIA Processor, boasting of ultra-low power consumption and cool, quite operation.

MAINBOARD SPECIFICATIONS

CPU

- VIA C3 / Eden EBGA Processor

Chipset

- VIA CLE266 North Bridge
- VIA VT8237 South Bridge

Graphics

- Integrated UniChrome™ AGP

Audio

- VIA VT1616 6-channel AC'97 codec

Memory

- 1 x DDR 266 SODIMM socket (up to 1 GB)

Expansion Slot

- 1 x PCI slot

IDE

- 2 x UltraDMA 133/100/66 connectors

Compact Flash

- VIA VT6207 USB2.0 CF controller

LAN

- VIA VT6103 10/100 Base-T Ethernet PHY

TV-Out

- VIA VT1622A TV Encoder
- Focus FS453 TV-Out Encoder (optional)

Back Panel I/O Ports

- 1 x RJ-45 LAN port
- 1 x VGA port
- 1 x CF Slot

Onboard I/O Connectors

- 3 x USB connectors for 6 additional USB 2.0 ports
- 1 x Front Panel connector
- 1 x CD audio-in connector
- 1 x SMBus connector
- 1 x VIP Port connector
- 1 x FIR connector
- 1 x CIR connector (CIR or KB/MS)
- 1 x Wake On LAN connector
- 2 x Fan connectors (CPU Fan and System Fan)
- 1 x LVDS / TTL / DVI Panel and VIP1 connector (optional)
- 2 x Serial Port connectors for COM1 and COM2
- 1 x PS/2 connectors (Mouse and Keyboard)
- 1 x SPDIF connector
- 1 x TV Connector for S-Video / Composite / SCART / Component (YPbPr)
- 1 x Front Panel Audio Pin Header
- 1 x Audio Pin Header (Smart 5.1 Support)

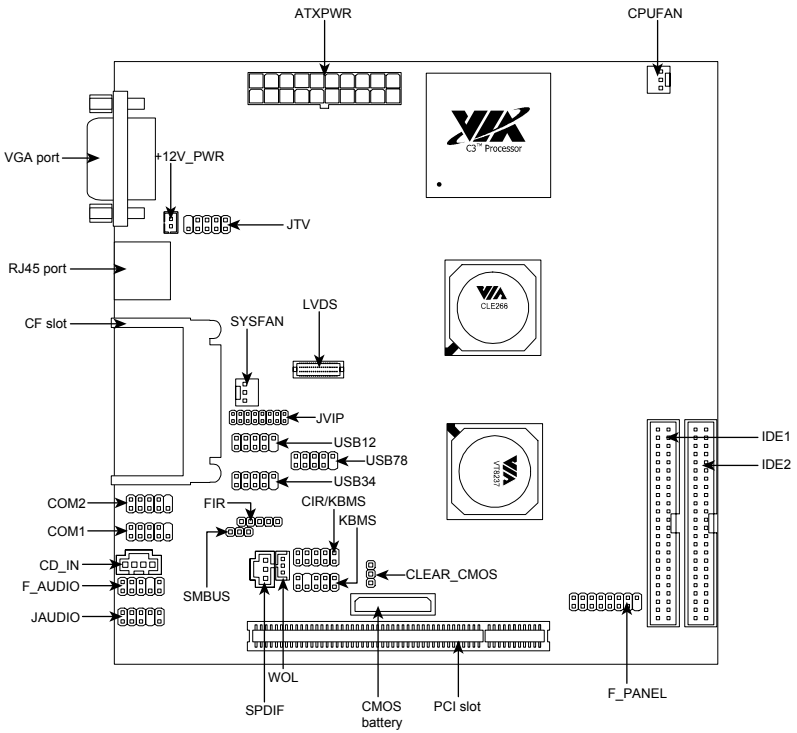
BIOS

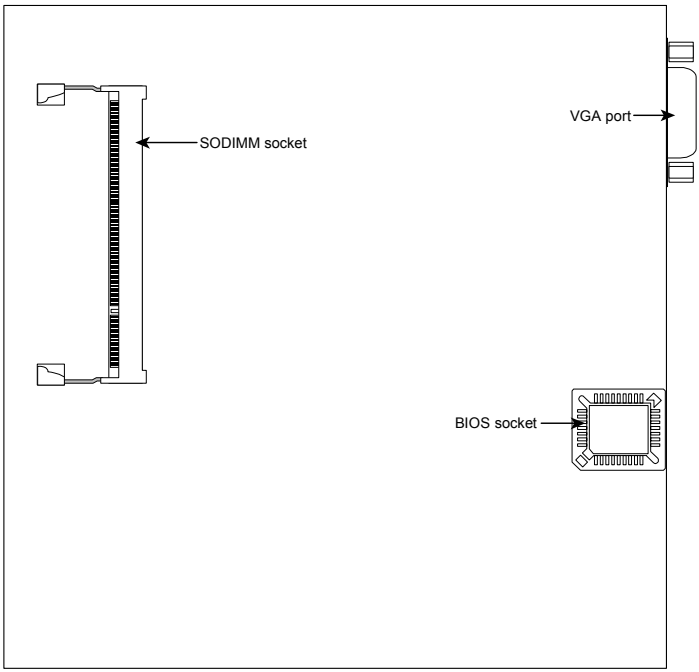
- Award BIOS with 2/4Mbit flash memory
- ACPI2.0, SMBIOS2.1 and DMI2.2

Form Factor

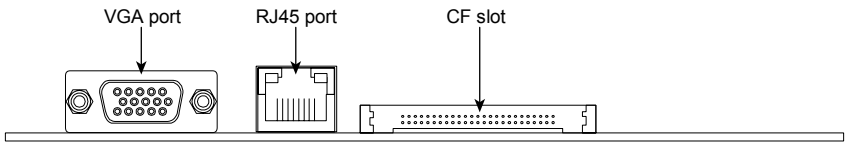
- Mini-ITX (6 layers)
- 17 cm X 17 cm

MAINBOARD LAYOUT (TOP AND BOTTOM)




SODIMM socket
VGA port
BIOS socket

BACK PANEL LAYOUT



BACK PANEL PORTS

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Jumper	Description	Page
CLEAR_CMOS	Reset CMOS settings	34

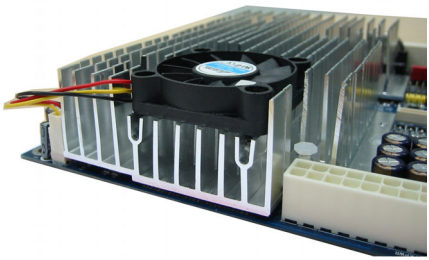
CHAPTER 2

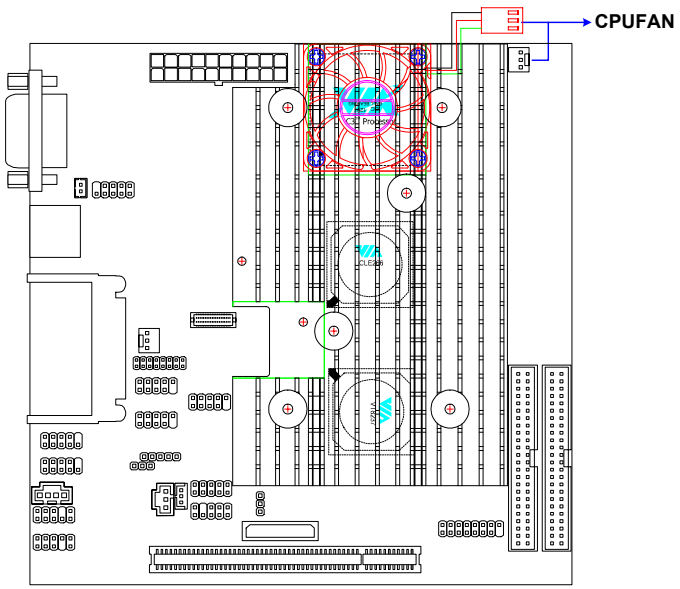
Installation

This chapter provides you with information about hardware installation procedures. It is recommended to use a grounded wrist strap before handling computer components. Electrostatic discharge (ESD) can damage some components.

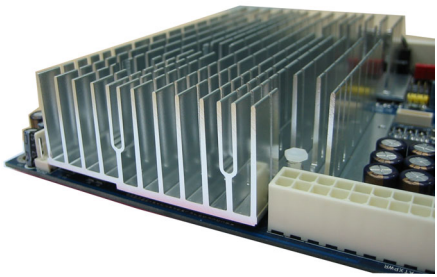
CPU

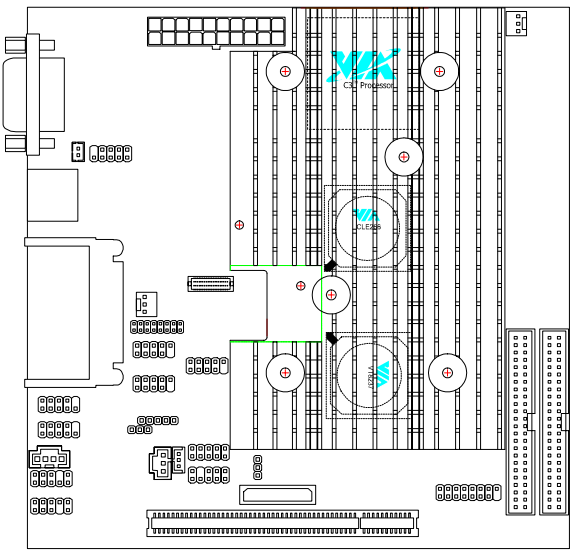
The VIA EPIA-MS Mini-ITX mainboard includes an embedded VIA C3 or Eden Processor. The VIA C3 Processor provides ultra-low power consumption and advanced thermal dissipation properties. The VIA C3 Processor requires heatsink and a CPU fan to provide sufficient cooling. Ensure that the CPU fan is correctly installed as shown.





Providing ultra-low power consumption and advanced thermal dissipation properties, the VIA Eden Processor features a fanless design. The VIA Eden Processor requires only a heatsink as shown.

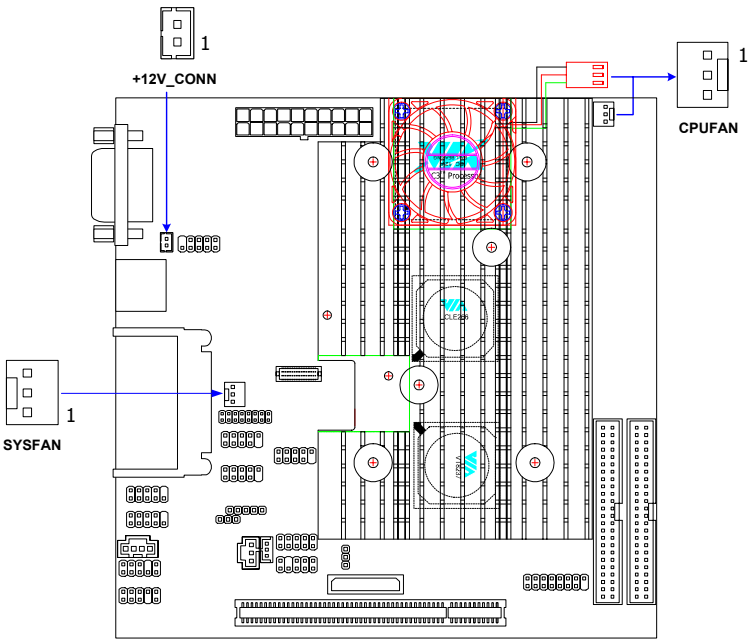




WARNING: This mainboard is not designed to support overclocking. Any attempt to operate beyond product specifications is not recommended. *We do not guarantee the damage or risks caused by inadequate operation or beyond product specifications*.

CPU Fan and System Fan: CPUFAN and SYSFAN

The CPUFAN (CPU fan) and SYSFAN (system fan) run on +12V and maintain system cooling. When connecting the wire to the connectors, always be aware that the red wire is the Positive and should be connected to the +12V. The black wire is Ground and should always be connected to GND. The CPU system and power fan connectors have sensors to support fan monitoring except for +12V_CONN.



+12V Power Connector

This 12V power connector is used to provide additional +12V power to the rest of the system.

+12V Connector

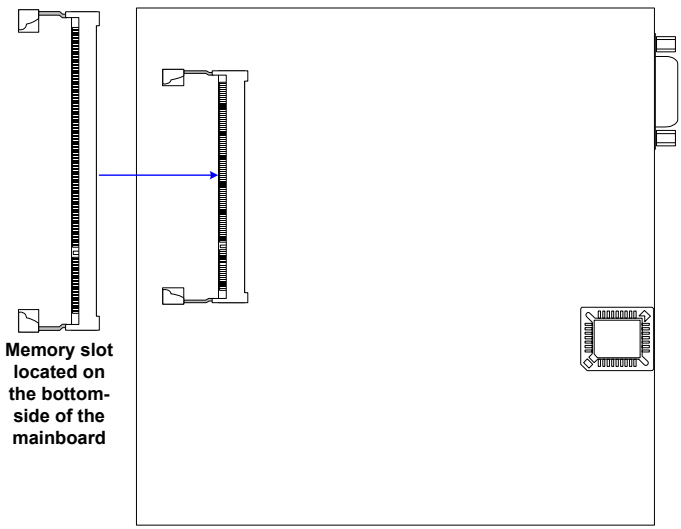
Pin	Signal
1	+12V
2	GND

MEMORY MODULE INSTALLATION

The VIA EPIA-MS Mini-ITX mainboard provides one 200-pin SODIMM slot for DDR266 SDRAM memory modules and supports the memory size up to 1GB.

DDR SDRAM Module Installation Procedures

- Make sure the notch is on the proper side. The module will only fit in the right orientation.
- Insert the memory module into the slot at a 30 degree angle (30 degrees from the board). It should lightly snap into place.
- Push the module up against the board until the golden finger of the memory module is deeply inserted into the socket. The plastic clip at each side of the SODIMM slot will lock the module.



Available DDR SDRAM Configurations

Refer to the table below for available DDR SDRAM configurations on the mainboard.

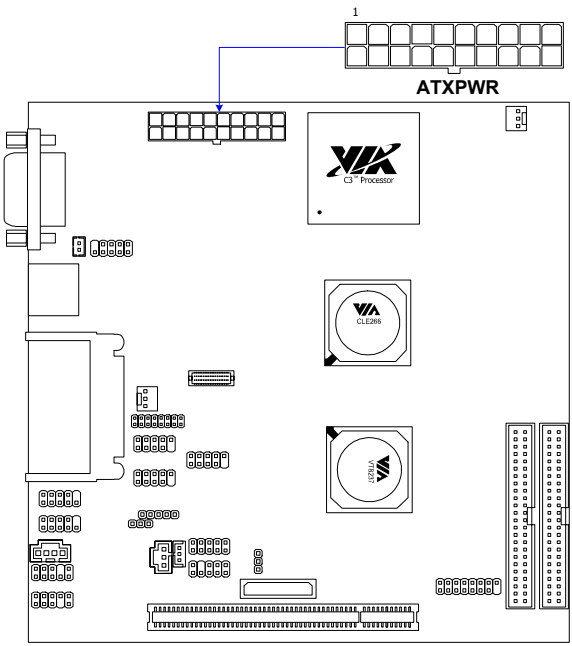
Slot	Module Size	Total
SODIMM	64MB, 128MB, 256MB, 512MB, 1GB	64MB-1GB
Maximum supported system memory		64MB-1GB

CONNECTING THE POWER SUPPLY

The VIA EPIA-MS Mini-ITX mainboard supports a conventional ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed correctly to ensure that no damage will be caused.

ATX 20-Pin Power Connector

To connect the ATX power supply, make sure the power plug is inserted in the proper orientation and the pins are aligned. Then push down the plug firmly into the connector.

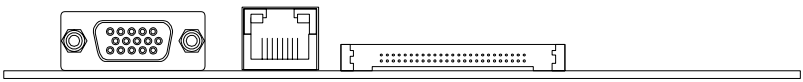


ATX 20 Pin Power Connector

Pin	Signal	Pin	Signal
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	Power Supply On
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	Power Good	18	NC
9	+5V Standby	19	+5V
10	+12V	20	+5V

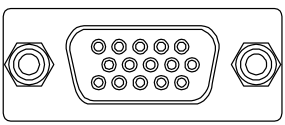
BACK PANEL PORTS

The back panel has the following ports:



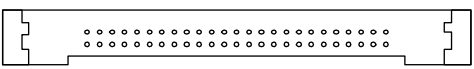
VGA Out

The 15-pin female VGA connector can be used to connect to any analog VGA monitor.



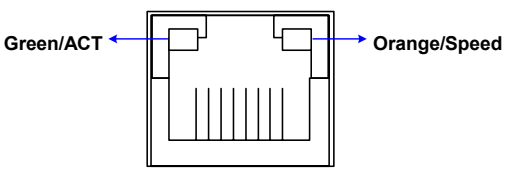
CF: Compact Flash Slot

The mainboard has an on board VIA VT6207 USB2.0 Compact Flash card reader controller. The CF interface supports CF type I, Type II and micro drive. The CF slot can be used for connection between the mainboard and flash memory card.



RJ45 10/100 LAN Connector

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

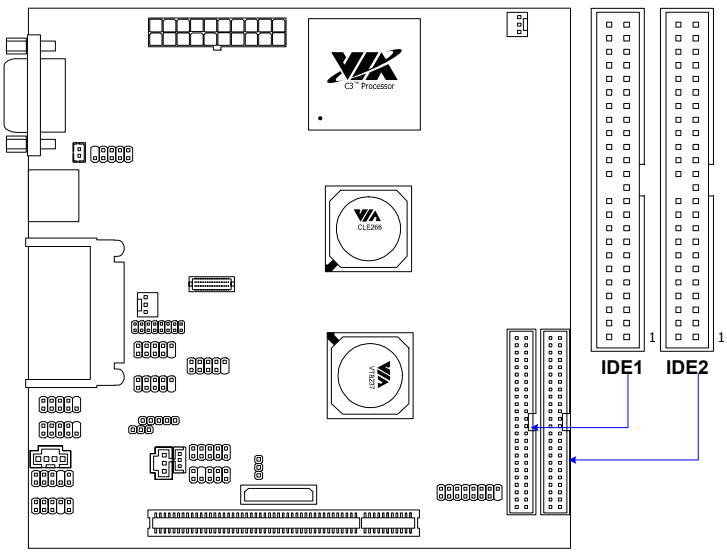


CONNECTORS

Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced IDE and Ultra DMA 66/100/133 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 66/100/133 functions. You can connect up to four hard disk drives, CD-ROM and other devices.

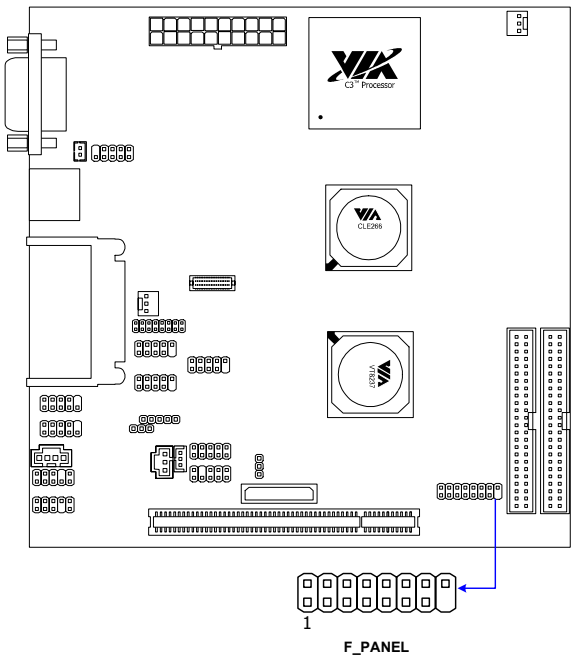
The primary hard drive should always be connected to IDE1 as the master drive. Both IDE drives can connect to a master and a slave drive.



If two drives are connected to a single cable, the jumper on the second drive must be set to slave mode. Refer to the drive documentation supplied by the vendor for the jumper settings.

Case Connectors: F_PANEL

The F_PANEL connector block allows you to connect to the power switch, reset switch, power LED, HDD LED and the case speaker.



Case Connector: F_PANEL

Pin	Signal	Pin	Signal
1	+5VDUAL	2	+5V
3	+5VDUAL	4	HD_LED
5	-PLED	6	PW_BN
7	+5V	8	GND
9	NC	10	RST_SW
11	NC	12	GND
13	SPEAK	14	+5V
15	Key	16	-SLEEP_LED

Power Switch (PW_BN)

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

Reset Switch (RST_SW)

The reset switch is used to reboot the system rather than turning the power ON/OFF. Avoid rebooting the system, if the HDD is still working. Connect the reset switch from the system case to this pin.

Power LED (-PLED)

The LED will lit when the system is on. If the system is in S1 (POS - Power On Suspend) or S3 (STR - Suspend To RAM) state, the LED will blink.

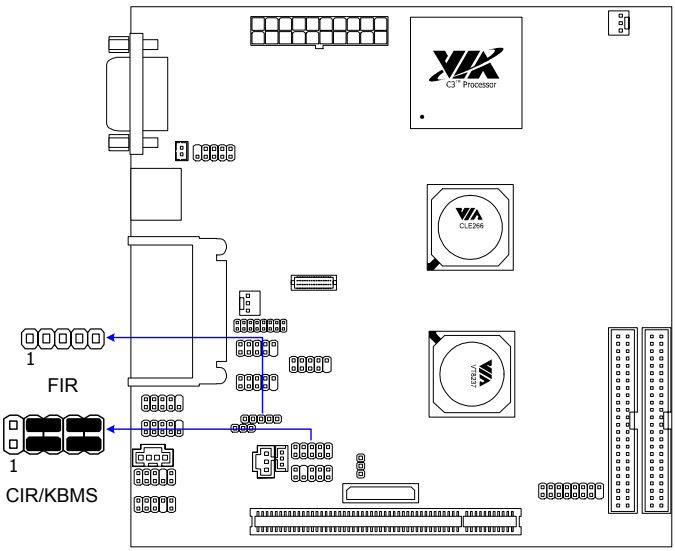
HDD LED (HD_LED)

HDD LED shows the activity of a hard disk drive. Avoid turning the power off when the HDD LED still has a lit. Connect the HDD LED from the system case to this pin.

Fast IrDA Infrared Module Connector: FIR

This connector is used to connect to an IrDA module. The BIOS settings must be configured to activate the IR function.

Pin	Signal	Description
1	+5V	VCC
2	IRRX1	FIR/SIR Data Receive
3	IRRX	SIR Data Receive
4	GND	Ground
5	IRTX	FIR/SIR Data Transmit



Consumer Infrared Module / PS2 Header: CIR / EXT_KBMS

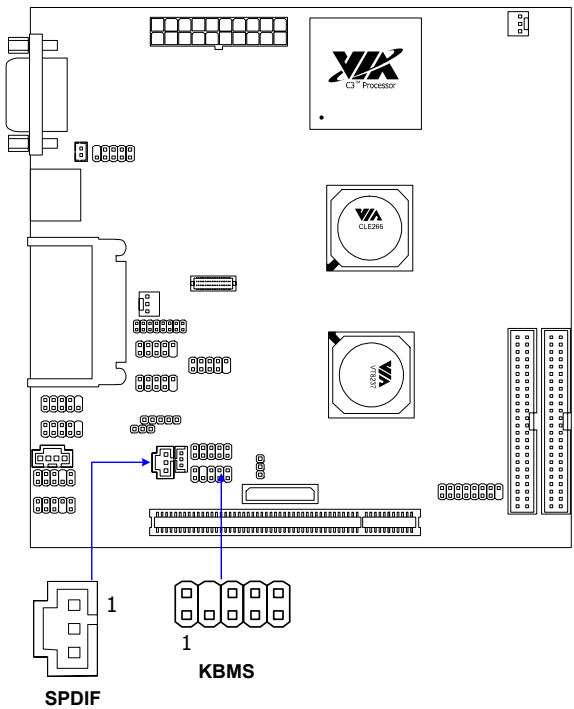
When the header is not in use, short pin 3 & 5, pin 4 & 6, pin 7 & 9, and pin 8 & 10.

Pin	Signal	Pin	Signal
1	+5VDUAL	2	GND
3	KB_CLK	4	KB_DATA
5	EXT_KBCLK	6	EXT_KBDATA
7	MS_CLK	8	MS_DATA
9	EXT_MSCLK	10	EXT_MSDATA

Keyboard and Mouse PS2 Header: KBMS

The mainboard provides a PS2 header to attach a PS2 keyboard and mouse devices.

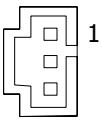
Pin	Signal	Pin	Signal
1	VCCE	2	VCCE
3	NC	4	Key
5	GND	6	GND
7	KB_DT	8	MS_DT
9	KB_CK	10	MS_CK



Digital Audio Connector: SPDIF

This connector is for connecting the Sony Philips Digital Interface (SPDIF) bracket.

The SPDIF output provides digital audio to external speakers or compressed AC3 data to an external Dolby Digital Decoder. The feature is available only with stereo system that has digital output function.

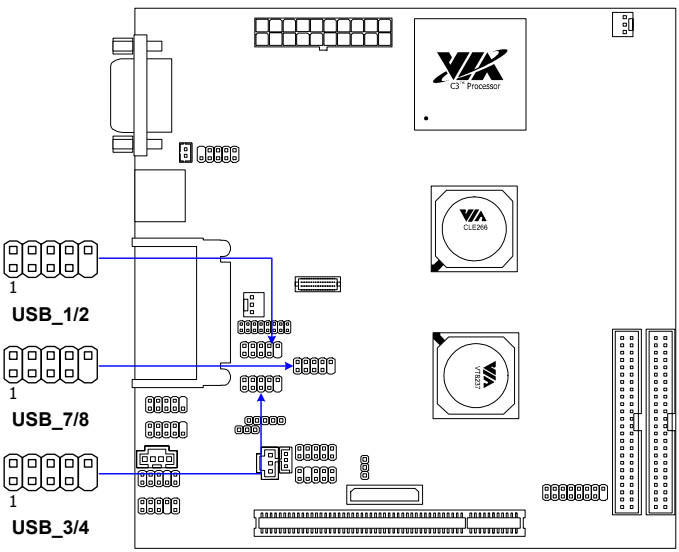


SPDIF

Pin	Signal
1	+5V
2	SPDIF
3	GND

USB pin-connectors: USB 1-2, 3-4, and 7-8

The mainboard provides 3 front USB pin–header connectors, allowing up to 6 additional USB2.0 ports up to maximum throughput of 480 Mbps. Connect each 2-port USB cable into each pin-headers. These ports can be used to connect high-speed USB interface peripherals such as USB HDD, digital cameras, MP3 players, printers, modem and the like.

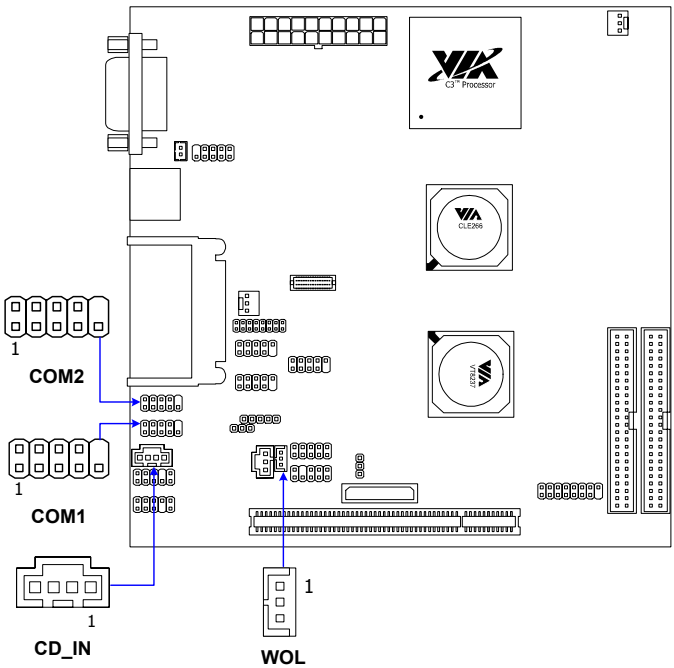


USB connectors: USB 1-2, 3-4, and 7-8

Pin	Signal	Pin	Signal
1	USBVCC	2	USBVCC
3	USBD_T2-	4	USBD_T3-
5	USBD_T2+	6	USBD_T3+
7	GND	8	GND
9	Key	10	GND

Wake-On LAN: WOL

This connector allows you to connect a network card with the Wake-On LAN function. The connector will power up the system when a signal is received through the network card. Please note that the function of ACPI WOL may be disabled when users will unplug the power cord or turn off the power button manually.



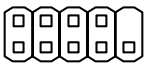
Wake-On LAN connector: WOL

Pin	Signal	Description
1	+5VDUAL	VCC
2	GND	Ground
3	WOL IN	Wake on LAN Input

Serial Ports: COM1 and COM2

Both COM1 and COM2 can be used to attach serial mouse or another serial device.

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
10	Key	No pin

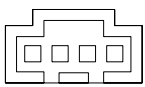


COM1&2

CD Audio Connector: CD_IN

This connector is for the CD-ROM audio connector.

Pin	Signal
1	Left channel
2	GND
3	GND
4	Right channel

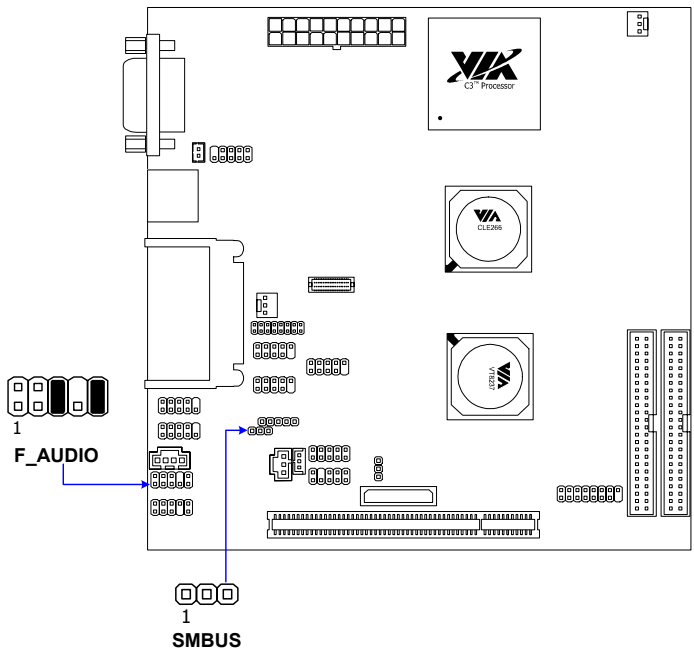


CD_IN

System Management Bus Connector: SM Bus

The System Bus Management Bus (SM Bus) is a two-wire interface which is use to make communication between VIA VT8237 South Bridge and other end device.

Pin	Signal
1	SMBCK
2	SMBDT
3	GND



Front Audio Panel Connector: F_AUDIO

This connector allows you to connect a front audio panel to the mainboard. Only the line-out and microphone functions are available for use on the front panel. To connect the front audio cable, first remove the two plastic jumpers.

Pin	Signal	Description
1	FRNMIC	Front panel microphone input
2	AGND	Ground used by analog audio circuit
3	MIC_BIAS	Microphone power
4	+5V AUDIO	VCC used by analog audio circuit
5	LINE_OUT_R	Right channel audio signal
6	NEXT_R	Right channel audio signal return
7	NC	No connection
8	Key	No pin
9	LINE_OUT_L	Left channel audio signal
10	NEXT_L	Left channel audio signal return

F_AUDIO

Note:
If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumpered in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.

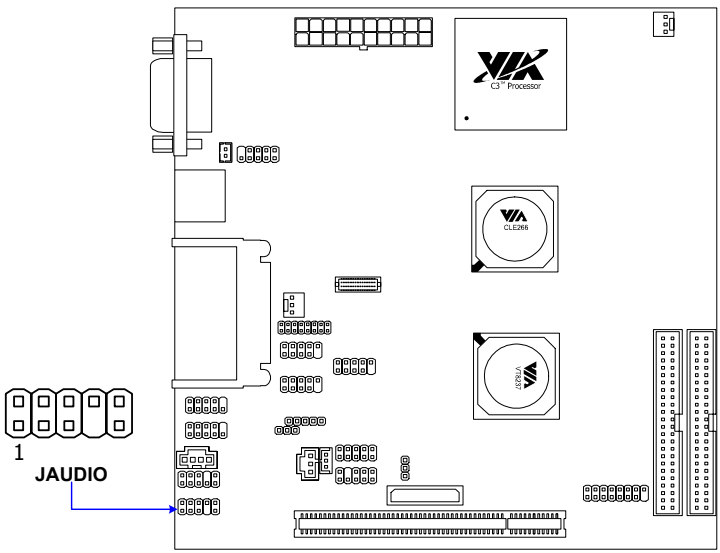
Audio Port Connector: JAUDIO

The **Line-Out** pins is for connecting to external speakers or headphones.

The **Line-In** pins is for connecting to an external audio device such as a CD player, tape player, etc....

The **Mic** pin is for connecting to a microphone.

However, there is an advanced audio application provided by VIA VT1616 audio chip to offer support for **6-channel audio operation** and can turn rear audio connectors from 2-channel to 4-/6-channel audio. For more information on **6-channel audio operation**, *see Appendix A: Smart 5.1.*



Audio Port Connector: JAUDIO

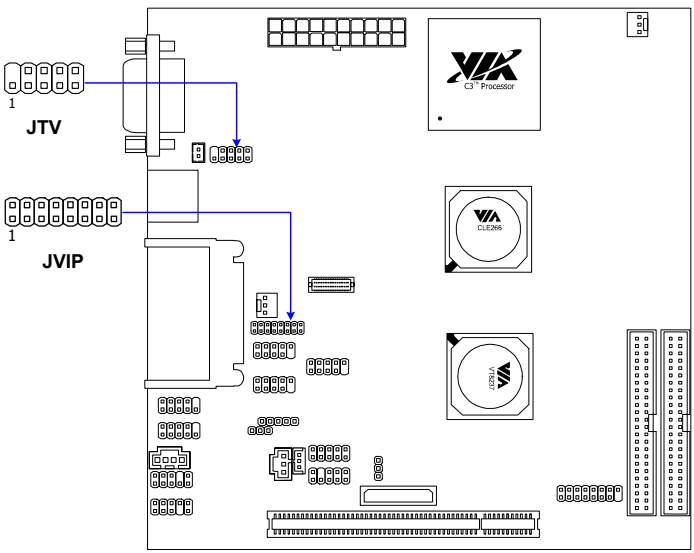
Pin	Signal	Description
1	AGND	Ground used by analog audio circuit
2	MICBIAS	Microphone power
3	LINEIN_R	Line In (right)
4	MICIN	Microphone
5	LINEIN_L	Line In (left)
6	AGND	Ground used by analog audio circuit
7	Key	No pin
8	LINEOUT_R	Line Out (right)
9	LINEOUT_L	Line Out (left)
10	AGND	Ground used by analog audio circuit

TV-Out Pin Connector: JTV

This connector allows you to connect a TV monitor or S-Video device to the mainboard.

Pin	Signal
1	+2.5V
3	B_Pb
5	GND
7	CVBS
9	CSO

Pin	Signal
2	Key
4	Yh_G
6	GND
8	C_R_Pr
10	NC



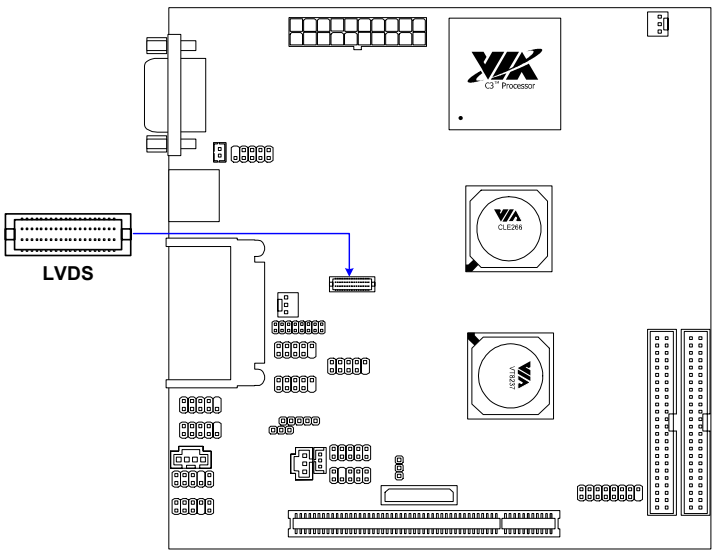
VIP Pin Connector: JVIP

Pin	Signal	Pin	Signal
1	GND	2	CAPD0
3	CAPD7	4	CAPD4
5	CAPD6	6	CAPD5
7	GFPHS	8	CAPD2
9	CAPD1	10	CAPD3
11	GFPVS	12	CAPCLK
13	SPD2	14	KEY
15	SPCLK2	16	GND

JVIP

LVDS Connector

This connector is for devices requiring access to LVDS / TTL / DVI Panel and VIP1. The LVDS connector may not be available on your mainboard. This is an option that is added during the manufacturing process. If you would like a mainboard with the LVDS connector, please contact your vendor or sales contact for more information. *See Appendix B for a list of available add-on modules*.



LVDS Connector

Pin	Signal	Pin	Signal
1	GFPDE	2	GFPD3
3	GFPD0	4	GFPD4
5	GFPD1	6	GFPD5
7	GFPD2	8	GFPCLK
9	GFPHS	10	GFPD6
11	GFPVS	12	GFPD7
13	GFPD11	14	GFPD8
15	GFPD12	16	GFPD9
17	ENPVDD	18	GFPD10
19	ENPVEE	20	GFPD13
21	FPBKLP	22	GFPD14
23	PWRGD_SB	24	GFPD15
25	SPCLK2	26	GFPD16
27	SPD2	28	GFPD17
29	GND	30	GFPD18
31	GND	32	GFPD19
33	+3.3V	34	GFPD20
35	GND	36	GFPD21
37	+5V	38	GFPD22
39	+5V	40	GFPD23

Note:

ENPVDD: Enable Panel VDD power

ENVEE: Enable panel VEE power

GFPD: Graphic Flat Panel Device signals.

JUMPERS

The mainboard provides jumpers for setting some mainboard functions. This section will explain how to change the settings of the mainboard functions using the jumpers.

Clear CMOS: CLEAR_CMOS

The onboard CMOS RAM stores system configuration data and has an onboard battery power supply. To reset the CMOS settings, set the jumper on pins 1 and 2 while the system is off. Return the jumper to pins 2 and 3 afterwards. Setting the jumper while the system is on will damage the mainboard.

CLEAR_CMOS

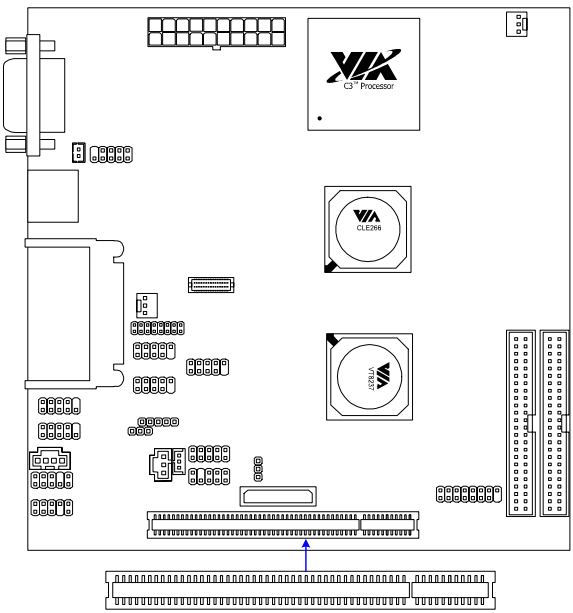
Setting	1	2	3
Clear CMOS setting	ON	ON	OFF
Keep CMOS setting	OFF	ON	ON

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

SLOTS

Peripheral Component Interconnect: PCI

The PCI slot allows you to insert PCI expansion cards. When adding or removing expansion cards, unplug first the power supply. Read the documentation for the expansion card if any changes to the system are necessary.



PCI1

PCI Interrupt Request Routing

The IRQ (interrupt request line) are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI & LAN IRQ pins are typically connected to the PCI bus INT A# ~ INT D# pins as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT B#	INT C#	INT D#	INT A#

CHAPTER 3

BIOS Setup

This chapter gives a detailed explanation of the BIOS setup functions.

ENTERING SETUP

Power on the computer and press <Delete> during the beginning of the boot sequence to enter the BIOS setup menu. If you missed the BIOS setup entry point, you may restart the system and try again.

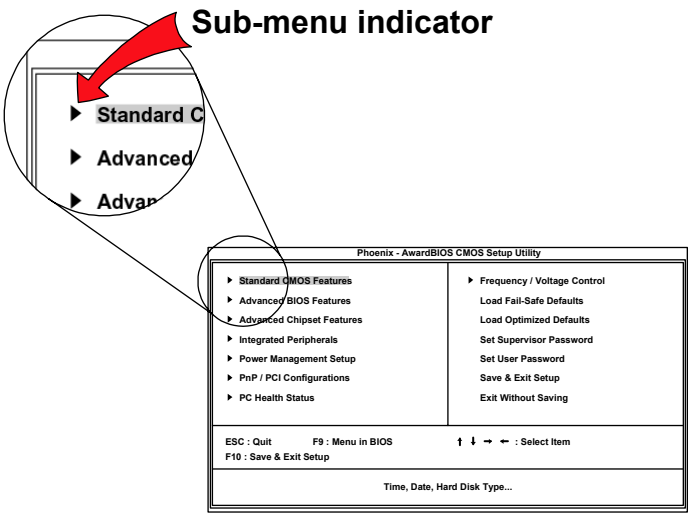
CONTROL KEYS

Keys	Description
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item in the left side
Right Arrow	Move to the item in the right side
Enter	Select the item
Escape	Jumps to the Exit menu or returns to the main menu from a submenu
Page Up / +	Increase the numeric value or make changes
Page Down / -	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
F9	Jumps to the Main Menu
F10	Save all the CMOS changes and exit

NAVIGATING THE BIOS MENUS

The main menu displays all the BIOS setup categories. Use the control keys Up/Down arrow keys to select any item/sub-menu. Description of the selected/highlighted category is displayed at the bottom of the screen.

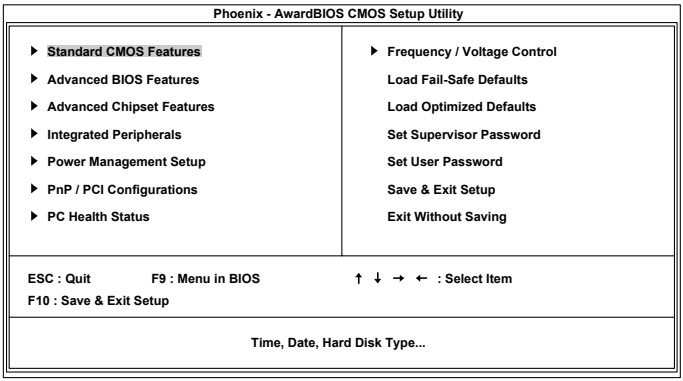
An arrow symbol next to a field indicates that a sub-menu is available (see figure below). Press <Enter> to display the sub-menu. To exit the sub-menu, press <Esc>.



GETTING HELP

The BIOS setup program provides a "General Help" screen. You can display this screen from any menu/sub-menu by pressing <F1>. The help screen displays the keys for using and navigating the BIOS setup. Press <Esc> to exit the help screen.

MAIN MENU



Standard CMOS Features

Use this menu to set basic system configurations.

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

Use this menu to set chipset specific features and optimize system performance.

Integrated Peripherals

Use this menu to set onboard peripherals features.

Power Management Setup

Use this menu to set onboard power management functions.

PnP/PCI Configurations

Use this menu to set the PnP and PCI configurations.

PC Health Status

This menu shows the PC health status.

Frequency/Voltage Control

Use this menu to set the system frequency and voltage control.

Load Fail-Safe Defaults

Use this menu option to load the BIOS default settings for minimal and stable system operations.

Load Optimized Defaults

Use this menu option to load BIOS default settings for optimal and high performance system operations.

Set Supervisor Password

Use this menu option to set the BIOS supervisor password.

Set User Password

Use this menu option to set the BIOS user password.

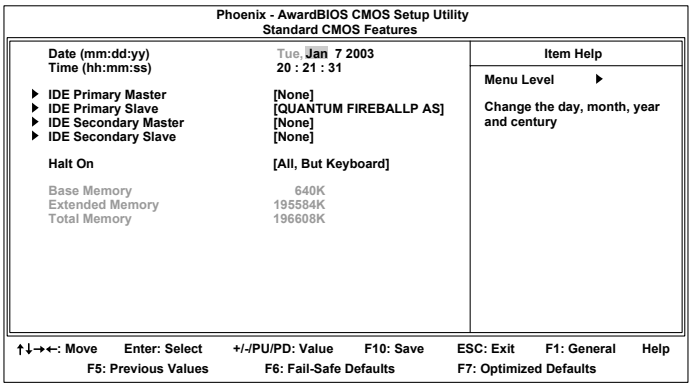
Save & Exit Setup

Save BIOS setting changes and exit setup.

Exit Without Saving

Abandon all BIOS setting changes and exit setup.

STANDARD CMOS FEATURES



Date

The date format is [Day, Month Date Year]

Time

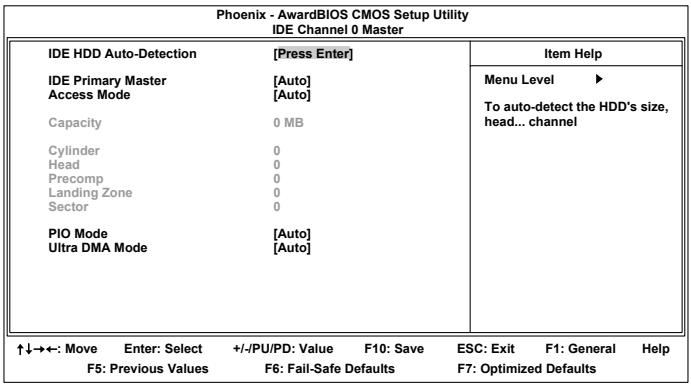
The time format is [Hour : Minute : Second]

Halt On

Sets the system's response to specific boot errors. Below is a table that details the possible settings.

Setting	Description
All Errors	System halts when any error is detected
No Errors	System does not halt for any error
All, But Keyboard	System halts for all non-key errors

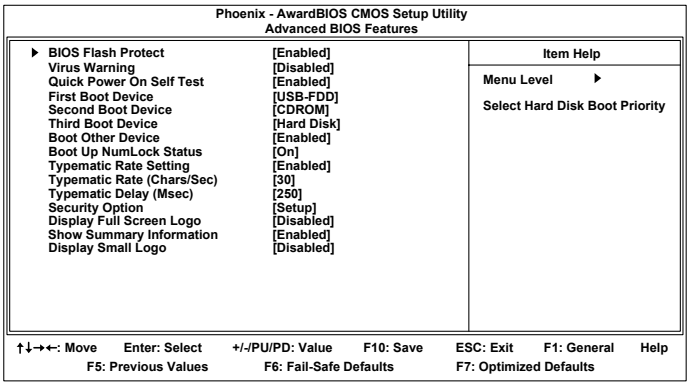
IDE DRIVES



The specifications of your drive must match with the drive table. The hard disk will not work properly if you enter incorrect information in this category. Select "Auto" whenever possible. If you select "Manual", make sure the information is from your hard disk vendor or system manufacturer. Below is a table that details required hard drive information when using the "Manual" mode.

Setting	Description
IDE Channel	The name of this match the name of the menu. Settings: [None, Auto, Manual]
Access Mode	Settings: [CHS, LBA, Large, Auto]
Capacity	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
PIO Mode	Settings: [0, 1, 2, 3, 4]
Ultra DMA Mode	Settings: [Disabled, Auto]

ADVANCED BIOS FEATURES



BIOS Flash Protect

Setting	Description
Enabled	Turns on BIOS flash protection
Disabled	Turns off BIOS flash protection

Virus Warning

Setting	Description
Enabled	Turns on hard disk boot sector virus protection
Disabled	Turns off hard disk boot sector virus protection

Quick Power On Self-Test

Shortens Power On Self-Test (POST) cycle to enable shorter boot up time.

Setting	Description
Enabled	Shorten Power On Self Test (POST) cycle and bootup time
Disabled	Standard Power On Self Test (POST)

First/Second/Third Boot Device

Set the boot device sequence as BIOS attempts to load the disk operating system.

Setting	Description
LS120	Boot from LS-120 drive
Hard Disk	Boot from the HDD
SCSI	Boot from SCSI
CD-ROM	Boot from CD-ROM
ZIP100	Boot from ATAPI ZIP drive
USB-FDD	Boot from USB floppy drive
USB-ZIP	Boot from USB ZIP drive
USB-CDROM	Boot from USB CDROM
LAN	Boot from network drive
Disabled	Disable the boot device sequence

Boot Other Device

Enables the system to boot from alternate devices if the system fails to boot from the "First/Second/Third Boot Device" list.

Setting	Description
Enabled	Enable alternate boot device
Disabled	No alternate boot device allowed

Boot Up NumLock Status

Set the NumLock status when the system is powered on.

Setting	Description
On	Forces keypad to behave as 10-key
Off	Forces keypad to behave as arrow keys

Typematic Rate Setting

Enables "Typematic Rate" and "Typematic Delay" functions.

Settings: [Enabled, Disabled]

Typematic Rate (Chars/Sec)

This item sets the rate (characters/second) at which the system retrieves a signal from a depressed key.

Settings: [6, 8, 10, 12, 15, 20, 24, 30]

Typematic Delay (Msec)

This item sets the delay between when the key was first pressed and when the system begins to repeat the signal from the depressed key.

Settings: [250, 500, 750, 1000]

Security Option

Selects whether the password is required every time the System boots, or only when you enter Setup.

Setting	Description
Setup	Password prompt appears only when end users try to run BIOS Setup
System	Password prompt appears every time when the computer is powered on and when end users try to run BIOS Setup

Display Full Screen Logo

Show full screen logo during BIOS boot up process.

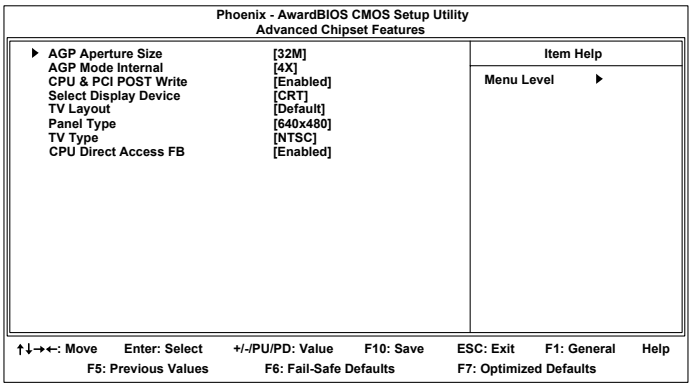
Settings: [Enabled, Disabled]

Display Small Logo

Show small energy star logo during BIOS boot up process.

Settings: [Enabled, Disabled]

ADVANCED CHIPSET FEATURES



WARNING: The Advanced Chipset Features menu is used for optimizing the chipset functions. Do not change these settings unless you are familiar with the chipset.

AGP Aperture Size

This setting controls how much memory space can be allocated to AGP for video purposes. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

Settings: [4MB, 8MB, 16MB, 32MB, 64MB, 128MB, 256MB]

CPU to PCI POST Write

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

Settings: [Enabled, Disabled]

AGP Mode Internal

This mainboard supports the AGP 4x interface. AGP 4x can transfer video data at 1066MB/s and is backward compatible with AGP2x and AGP1x.

Select Display Device

This setting refers to the type of display being used with the system.

Settings: [CRT, TV, CRT + TV, LCD, CRT + LCD]

TV Layout

Settings: [Default, COMP. + S-Video, S-Video + S-Video, COMP. + RGB, COMP. + YCbCr, COMP. + SDTV-RGB, COMP. + SDTV-YPbPr]

Panel Type

This setting refers to the native resolution of the display being used with the system.

TV Type

This setting refers to the native resolution of the display being used with the system.

Settings: [NTSC, PAL]

Settings: [1600x1200, 1400.1050, 1280,1024, 1280x768, 1024x768, 800x600, 640x480]

TV Type

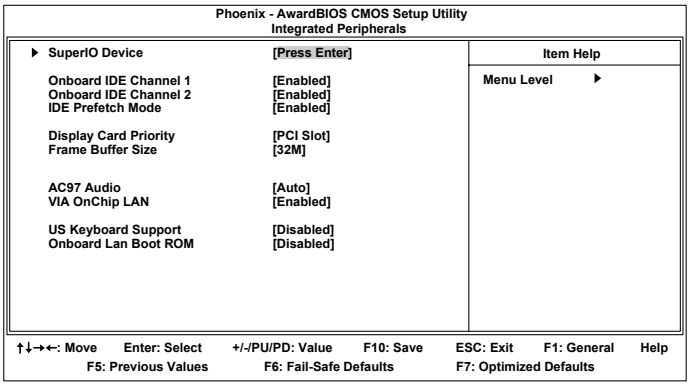
Settings: [Enabled, Disabled]

CPU Direct Access FB

Enable the CPU to directly access the frame buffer.

Settings: [Enabled, Disabled]

INTEGRATED PERIPHERALS



Onboard IDE Channel 1 and 2

The integrated peripheral controller contains an IDE interface with support for two IDE channels.

Setting	Description
Enabled	Activates each channel separately
Disabled	Deactivates IDE channels

IDE Prefetch Mode

This allows the 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.

Setting	Description
Enabled	Block mode
Disabled	Standard mode

Display Card Priority

This setting specifies which VGA card is your primary graphics adapter.

Settings: [PCI Slot and AGP]

Frame Buffer Size

This setting instructs the BIOS to reserved the specified amount of memory for the internal video controller.

Settings: [16M, 32M, 64M]

AC'97 Audio

Auto allows the mainboard to detect whether an audio device is used. If the device is detected, the onboard VIA AC'97 (Audio Codec'97) controller will be enabled; otherwise, it is disabled. Disable the controller if another controller card is being used to connect to an audio device.

Setting	Description
Auto	Enables onboard controller if audio device is detected
Disabled	Turn off onboard controller to allow external controller

VIA OnChip LAN

Settings: [Enabled, Disabled]

USB Keyboard Support

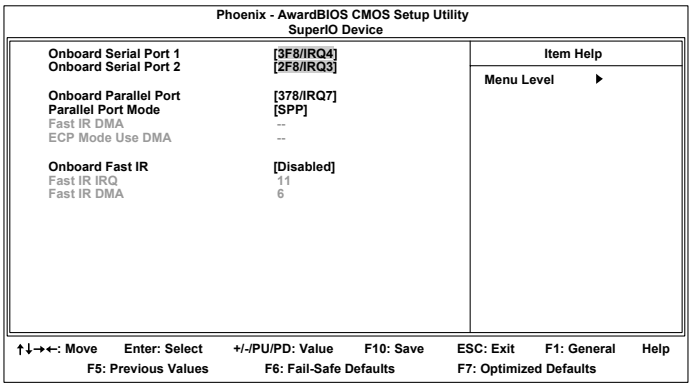
Enable USB Keyboard Support for DOS and Windows.

Settings: [Enabled, Disabled]

Onboard Lan Boot ROM

Settings: [Enabled, Disabled]

SUPER IO DEVICE



Onboard Serial Port 1/2

Sets the base I/O port address and IRQ for the onboard serial ports A and B. Selecting "Auto" allows the BIOS to automatically determine the correct base I/O port address.

Port	Settings					
1	Disabled	3F8 IRQ4	2F8 IRQ3	3E8 IRQ4	2E8 IRQ3	Auto
2	Disabled	3F8 IRQ4	2F8 IRQ3	3E8 IRQ4	2E8 IRQ3	Auto

Onboard Parallel Port

This specifies the I/O port address and IRQ of the onboard parallel port.

Settings: [Disabled, 378/IRQ7, 278/IRQ5, 3BC/IRQ7]

Parallel Port Mode

Set the parallel port mode. To operate the onboard parallel port as Standard Parallel Port, choose *SPP*. To operate the onboard parallel port in the EPP mode, choose *EPP*. By choosing *ECP*, the onboard parallel port will operate in ECP mode. Choosing *ECP + EPP* will allow the onboard parallel port to support both the ECP and EPP modes simultaneously.

Settings: [SPP, EPP, ECP, ECP + EPP]

EPP Mode Select

EPP (Enhanced Parallel Port) comes in two modes: 1.9 and 1.7. EPP 1.9 is the newer version of the protocol and is backwards compatible with most EPP devices. If your EPP device does not work with the EPP 1.9 setting, try changing the setting to EPP 1.7.

Settings: [EPP 1.9, EPP 1.7]

ECP Mode Use DMA

ECP (Extended Capabilities Port) has two DMA channels that it can use. The default channel is 3. However, some expansion cards may use channel 3 as well. To solve this conflict, change the ECP channel to 1. Select a DMA channel for the port.

Settings: [1, 3]

Onboard Fast IR

Enables "Fast IR IRQ" and "Fast IR DMA" functions.

Settings: [Enabled, Disabled]

Fast IR IRQ

Set this field to reserve an IRQ for the Fast IR port.

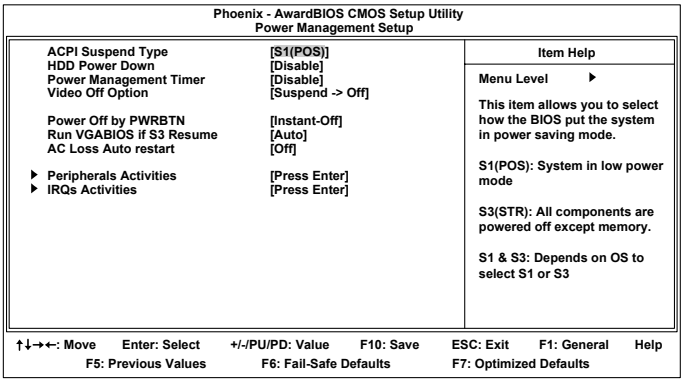
Settings: [3, 4]

Fast IR DMA

Set this field to choose the DMA channel.

Settings: [6, 5]

POWER MANAGEMENT SETUP



ACPI Suspend Type

Setting	Description
S1(POS)	S1/Power On Suspend (POS) is a low power state. In this state, no system context (CPU or chipset) is lost and hardware maintains all system contexts.
S3(STR)	S3/Suspend To RAM (STR) is a power-down state. In this state, power is supplied only to essential components such as main memory and wakeup-capable devices. The system context is saved to main memory, and context is restored from the memory when a "wakeup" event occurs.
S1 & S3	Depends on the OS to select S1 or S3.

HDD Power Down

Sets the length of time for a period of inactivity before powering down the hard disk.

Settings: [Disabled, 1~15(minutes)]

Power Management Timer

Set the idle time before system enters power saving mode. ACPI OS such as Windows XP will override this option.

Settings: [Disabled, 1/2/4/6/8/10/20/30/40(minutes), 1(hour)]

Video Off Option

Select whether or not to turn off the screen when system enters power saving mode, ACPI OS such as Windows XP will override this option.

Setting	Description
Always On	Screen is always on even when system enters power saving mode
Suspend -> Off	Screen is turned off when system enters power saving mode

Power Off by PWRBTN

This field configures the power button on the chassis.

Setting	Description
Delay 4 Sec	System is turned off if power button is pressed for more than four seconds
Instant-Off	Power button functions as a normal power-on/-off button

Run VGABIOS if S3 Resume

Select whether to run VGA BIOS if resuming from S3 state. This is only necessary for older VGA drivers.

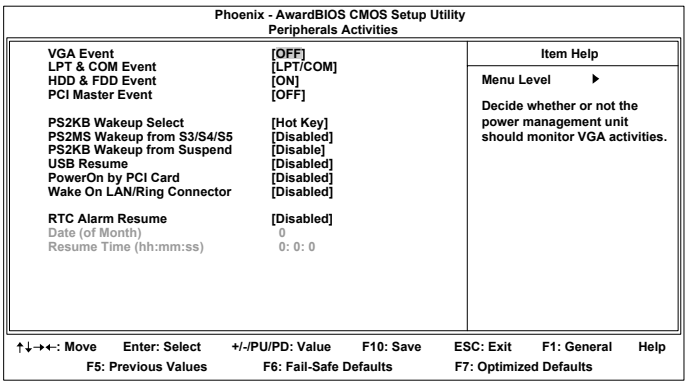
Settings: [Auto, Yes, No]

AC Loss Auto restart

The field defines how the system will respond after an AC power loss during system operation.

Setting	Description
Off	Keeps the system in an off state until the power button is pressed
On	Restarts the system when the power is back
Former-Sts	Restores the system to its previous state

PERIPHERAL ACTIVITIES



VGA Event

Enables the power management unit to monitor VGA activities.

Settings: [Off, On]

LPT & COM Event

Decide whether or not the power management unit should monitor parallel port (LPT) and serial port (COM) activities.

Settings: [None, LPT, COM and LPT/COM]

HDD & FDD Event

Enables the power management unit to monitor hard disk and floppy drives activities.

Settings: [Off, On]

PCI Master Event

Enables the power management unit to monitor PCI master activities.

Settings: [Off, On]

PS2KB Wakeup Select

When selecting "Password", press <Page Up> or <Page Down> to change password. The maximum number of characters is eight. "PS2MS Wakeup from S3/S4/S5" and "PS2KB Wakeup from S3/S4/S5" will be disabled while changing the password.

Settings: [Hot Key, Password]

PS2MS Wakeup from S3/S4/S5

Enables any mouse activity to restore the system from the power saving mode to an active state.

Settings: [Disabled, Enabled]

PS2KB Wakeup from Suspend

Sets a Hot Key to restore the system from the power saving mode to an active state.

Settings: [Disabled, Ctrl+F1, Ctrl+F2, Ctrl+F3, Ctrl+F4, Ctrl+F5, Ctrl+F6, Ctrl+F7, Ctrl+F8, Ctrl+F9, Ctrl+F10, Ctrl+F11, Ctrl+F12, Power, Wake, Any Key]

USB Resume

Enables activity detected from USB devices to restore the system from a suspended state to an active state.

Settings: [Disabled, Enabled]

PowerOn by PCI Card

Enables activity detected from any PCI card to power up the system or resume from a suspended state. Such PCI cards include LAN, onboard USB ports, etc.

Settings: [Disabled, Enabled]

Wake On LAN/Ring Connector

Enables any WOL/Ring-In signals from the modem to restore the system from a suspended state to an active state.

Settings: [Disabled, Enabled]

RTC Alarm Resume

Sets a scheduled time and/or date to automatically power on the system.

Settings: [Disabled, Enabled]

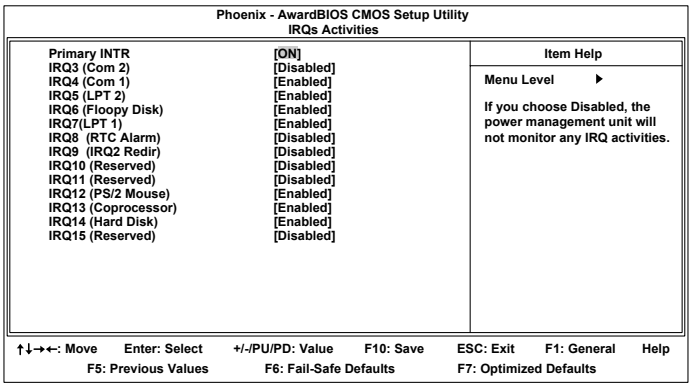
Date (of Month)

The field specifies the date for "RTC Alarm Resume".

Resume Time (hh:mm:ss)

The field specifies the time for "RTC Alarm Resume".

IRQS ACTIVITIES



Primary INTR

Restores the system to an active state if IRQ activity is detected from any of the enabled channels

Settings: [Off, On]

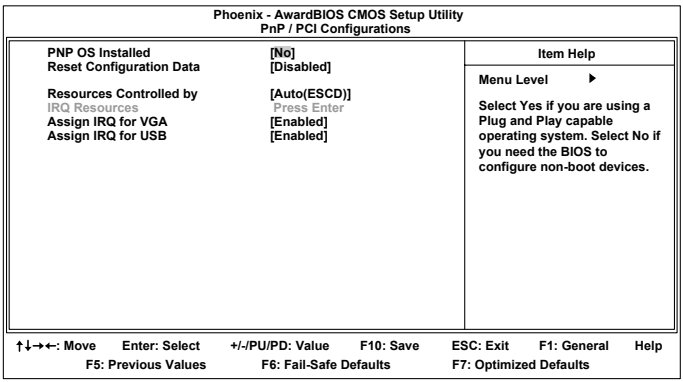
IRQ3~IRQ15

Enables or disables the monitoring of the specified IRQ line. These fields are only available if "Primary INTR" is on.

Settings: [Enabled, Disabled]

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 IO device.

PNP/PCI CONFIGURATIONS



NOTE: This section covers some very technical items and it is strongly recommended to leave the default settings as is unless you are an experienced user.

PNP OS Installed

Setting	Description
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
No	BIOS will initialize all the PnP cards

Reset Configuration Data

This field should usually be left "Disabled".

Setting	Description
Enabled	Resets the ESCD (Extended System Configuration Data) after exiting BIOS Setup if a newly installed PCI card or the system configuration prevents the operating system from loading
Disabled	Default setting

Resource Controlled By

Enables the BIOS to automatically configure all the Plug-and-Play compatible devices.

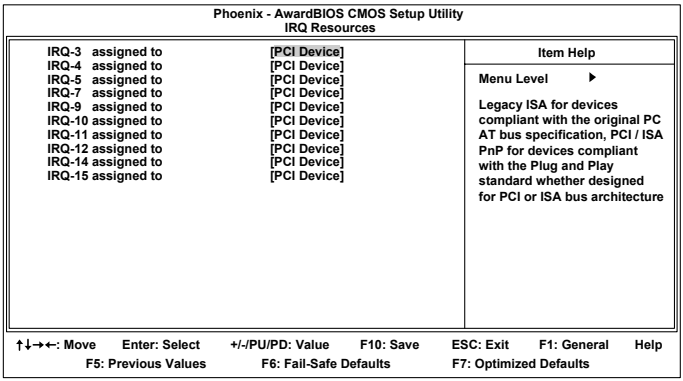
Setting	Description
Auto(ESCD)	BIOS will automatically assign IRQ, DMA and memory base address fields
Manual	Unlocks "IRQ Resources" for manual configuration

Assign IRQ For VGA/USB

Assign IRQ for VGA and USB devices.

Settings: [Disabled, Enabled]

IRQ RESOURCES

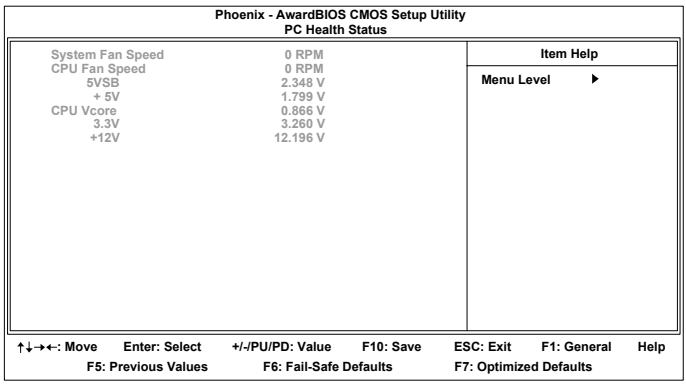


NOTE: The items are adjustable only when "Resources Controlled By" is set to "Manual."

IRQ Resources list IRQ 3/4/5/7/9/10/11/12/14/15 for users to set each IRQ a type depending on the type of device using the IRQ.

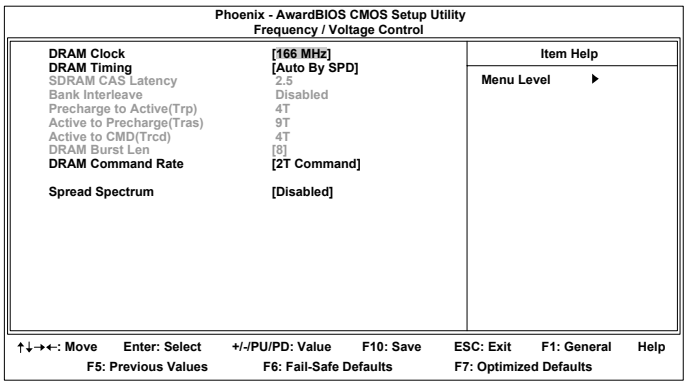
Setting	Description
PCI Device	For Plug-and-Play compatible devices designed for PCI bus architecture
Reserved	The IRQ will be reserved for other requests

PC HEALTH STATUS



The PC Health Status displays the current status of all of the monitored hardware devices/components such as CPU voltages, temperatures and fan speeds.

FREQUENCY / VOLTAGE CONTROL



DRAM Clock

The chipset supports synchronous and asynchronous mode between host clock and DRAM clock frequency.

Settings: [66 MHz, 100 MHz, 133 MHz, 166 MHz, By SPD]

DRAM Timing

The value in this field depends on the memory modules installed in your system. Changing the value from the factory setting is not recommended unless you install new memory that has a different performance rating than the original modules.

Settings: [Manual, By SPD]

SDRAM CAS Latency

This item is for setting the speed it takes for the memory module to complete a command. Generally, a lower setting will improve the performance of your system. However, if your system becomes less stable, you should change it to a higher setting. This field is only available when "DRAM Timing" is set to "Manual".

Settings: [2, 2.5]

Bank Interleave

This item is for setting the interleave mode of the SDRAM interface. Interleaving allows banks of SDRAM to alternate their refresh and access cycles. One bank will undergo its refresh cycle while another is being accessed. This improves performance of the SDRAM by masking the refresh time of each bank. This field is only available when "DRAM Timing" is set to "Manual".

Settings: [Disabled, 2 Bank, 4 Bank]

Precharge to Active (Trp)

This field is for setting the length of time it takes to precharge a row in the memory module before the row becomes active. Longer values are safer but may not offer the best performance. This field is only available when "DRAM Timing" is set to "Manual".

Settings: [2T, 3T]

Active to Precharge (Tras)

This field is for setting the length of time it a row stays active before precharging. Longer values are safer but may not offer the best performance. This field is only available when "DRAM Timing" is set to "Manual".

Settings: [5T, 6T]

Active to CMD (Trcd)

This field is only available when "DRAM Timing" is set to "Manual".

Settings: [2T, 3T]

DRAM Burst Len

This field is for setting the length of time for one burst of data during read/write transaction. Longer setting equals better memory performance.

Settings: [4, 8]

DRAM Command Rate

This field is for setting how fast the memory controller sends out commands. Lower setting equals faster command rate.

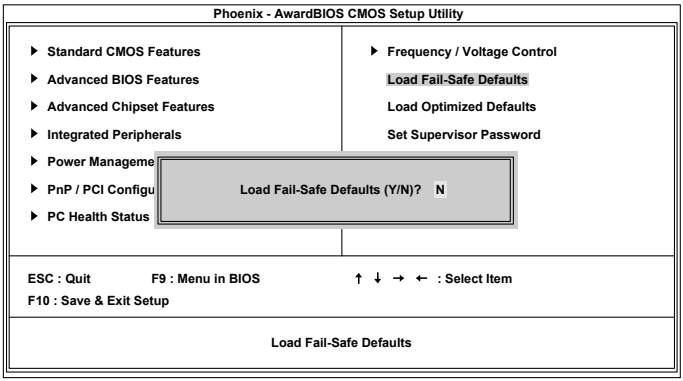
> **NOTE:** Some memory modules may not be able to handle lower settings.

Settings: [2T Command, 1T Command]

Spread Spectrum

When the mainboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The Spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves.

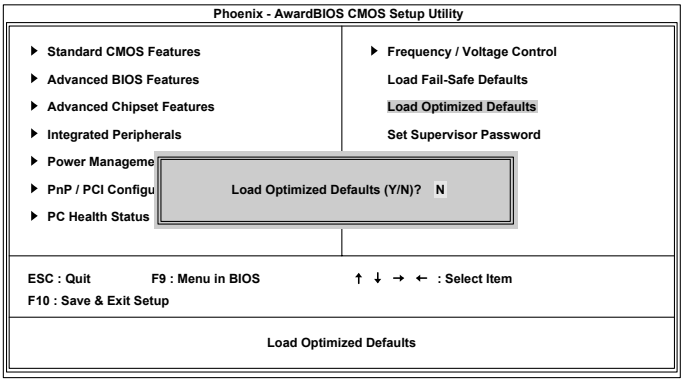
LOAD FAIL-SAFE DEFAULTS



This option is for restoring all the default fail-safe BIOS settings. These values are set by the mainboard manufacturer to provide a stable system with basic performance.

Entering "Y" loads the default fail-safe BIOS values.

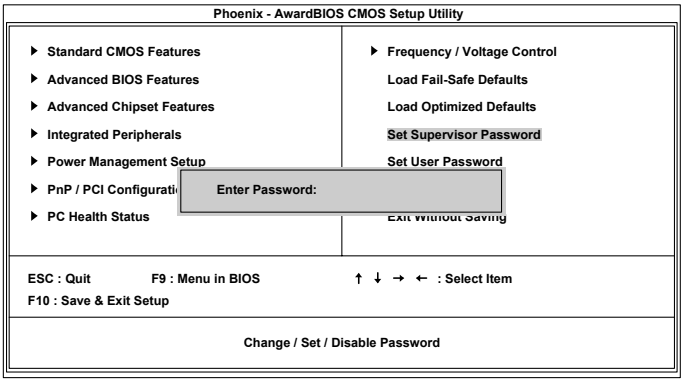
LOAD OPTIMIZED DEFAULTS



This option is for restoring all the default optimized BIOS settings. The default optimized values are set by the mainboard manufacturer to provide a stable system with optimized performance.

Entering "Y" loads the default optimized BIOS values.

SET SUPERVISOR / USER PASSWORD



This option is for setting a password for entering BIOS Setup. When a password has been set, a password prompt will be displayed whenever BIOS Setup is run. This prevents an unauthorized person from changing any part of your system configuration.

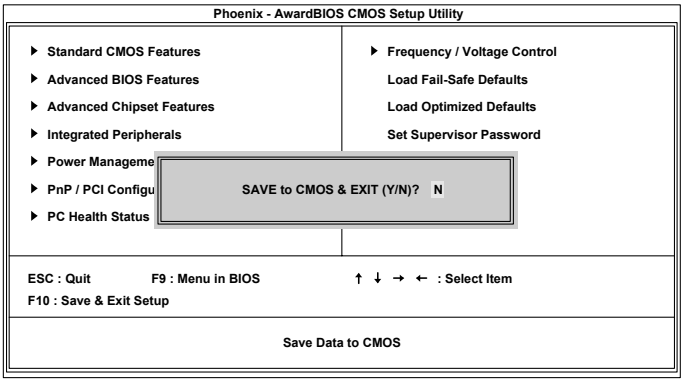
There are two types of passwords you can set. A supervisor password and a user password. When a supervisor password is used, the BIOS Setup program can be accessed and the BIOS settings can be changed. When a user password is used, the BIOS Setup program can be accessed but the BIOS settings cannot be changed.

To set the password, 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. The new password will need to be reentered to be confirmed. To cancel the process press <Esc>.

To disable the password, press <Enter> when prompted to enter a new password. A message will show up to confirm disabling the password. To cancel the process press <Esc>.

Additionally, when a password is enabled, the BIOS can be set to request the password each time the system is booted. This would prevent unauthorized use of the system. See "Security Option" in the "Advanced BIOS Features" section for more details.

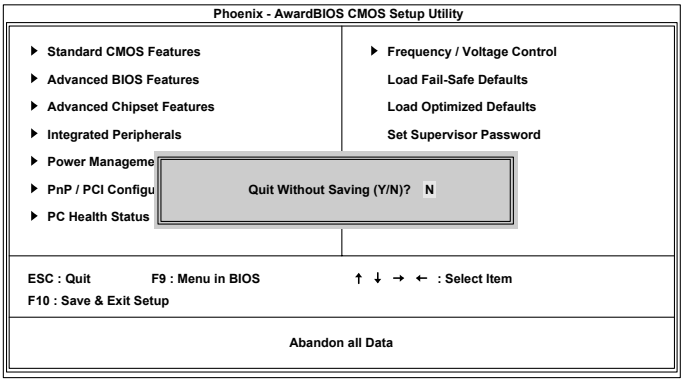
SAVE & EXIT SETUP



Entering "Y" saves any changes made and exits the program.

Entering "N" will cancel the exit request.

EXIT WITHOUT SAVING



Entering "Y" discards any changes made and exits the program.

Entering "N" will cancel the exit request.

CHAPTER 4

Driver Installation

This chapter gives you brief descriptions of each mainboard driver and application. You must install the VIA chipset drivers first before installing other drivers such as audio or VGA drivers. The applications will only function correctly if the necessary drivers are already installed.

DRIVER UTILITIES

Getting Started

The mainboard includes a Driver Utilities CD that contains the driver utilities and software for enhancing the performance of the mainboard. If the CD is missing from the retail box, please contact the local dealer for the CD.

> **Note:** The driver utilities and software are updated from time to time. The latest updated versions are available at http://www.viaembedded.com./

Running the Driver Utilities CD

To start using the CD, insert the CD into the CD-ROM or DVD-ROM drive. The CD should run automatically after closing the CD-ROM or DVD-ROM drive. The driver utilities and software menu screen should then appear on the screen. If the CD does not run automatically, click on the "Start" button and select "Run…" Then type: "D:\Setup.exe".

> **NOTE:** D: might not be the drive letter of the CD-ROM/DVD-ROM in your system.

CD CONTENT

- ☒ **VIA 4in1 Drivers:** Contains VIA ATAPI Vendor Support Driver (enables the performance enhancing bus mastering functions on ATA-capable Hard Disk Drives and ensures IDE device compatibility), AGP VxD Driver (provides service routines to your VGA driver and interface directly to hardware, providing fast graphical access), IRQ Routing Miniport Driver (sets the system's PCI IRQ routing sequence) and VIA INF Driver (enables the VIA Power Management function).
- ☒ **VIA Graphics Driver:** Enhances the onboard VIA graphic chip.
- ☒ **VIA Audio Driver:** Enhances the onboard VIA audio chip.
- ☒ **VIA USB 2.0 Driver:** Enhances VIA USB 2.0 ports.
- ☒ **VIA LAN Driver:** Enhances the onboard VIA LAN chip.
- ☒ **VIA FIR Driver:** Support for FIR.

APPENDIX A

Smart 5.1

This chapter gives you brief description of how Smart 5.1 is enabled if your board is equipped with the VT1616 6-channel AC'97 codec.

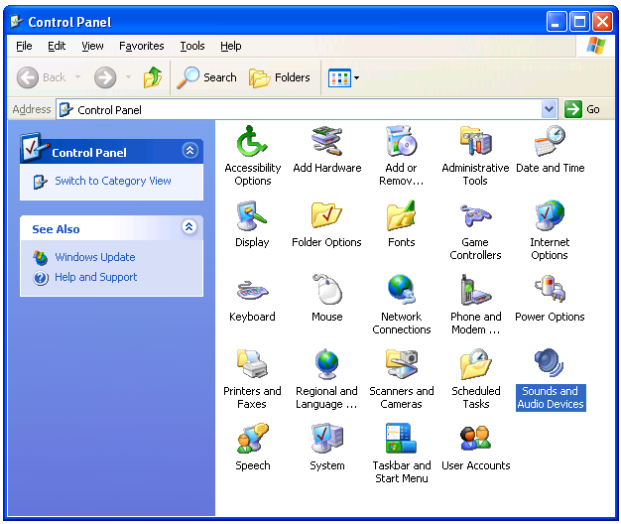
ENABLING SMART 5.1

Smart5.1 allows the system to output 6-channel audio directly from the audio jacks on the mainboard, using the traditional line-in, line-out and microphone jacks as output jacks. Windows® XP/2000 supports 6-channel. Windows® 98 only supports 4-channel. The examples in this section are based on Windows® XP.

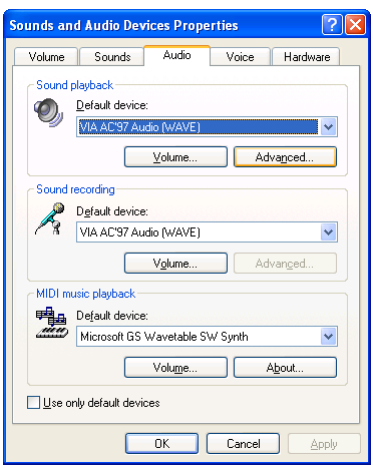
NOTE: Your media entertainment software needs to support 6-channels in order for you to experience Smart5.1. Consult the user manual that came with your software for instructions on enabling 6-channel audio.

Example A

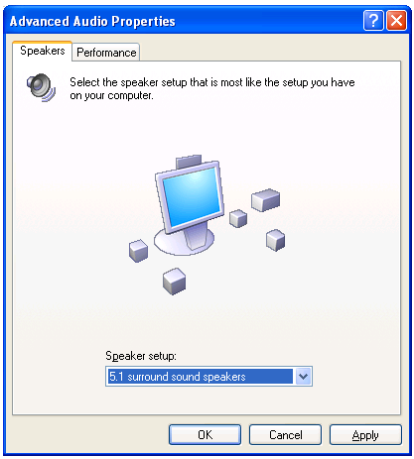
1. Double-click "Sounds and Audio Devices" icon in the control panel.



2. Select the "Audio" tab. Then press "Advanced" as shown in the picture.

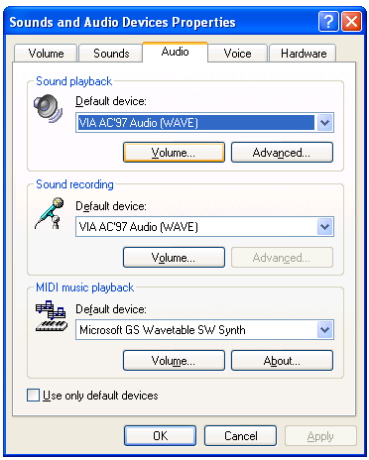


3. Choose "5.1 surround sound speakers" to support the 6-channel function.

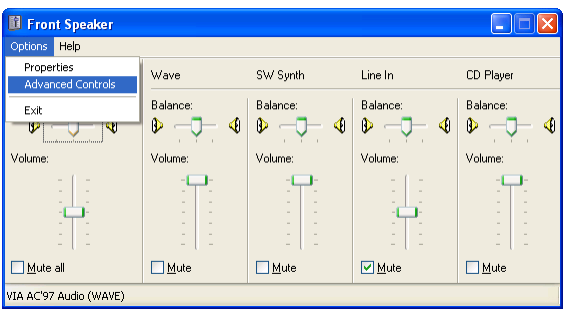


Example B

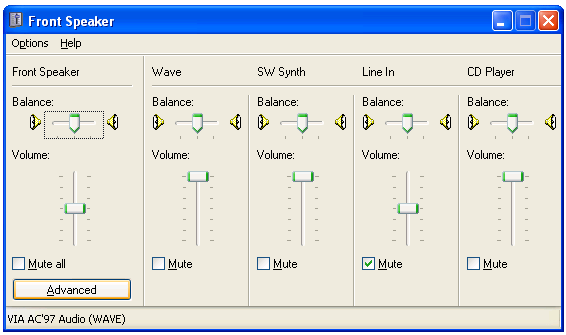
1. Double-click "Sounds and Audio Devices" icon in the control panel and then select the "Audio" tab on the panel as shown below. Press the "Volume" button in the "Sound playback" area



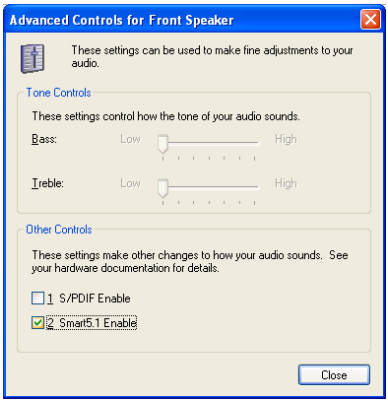
2. Select "Options" from the "Front Speaker" panel and select the item "Advanced Controls".



3. Click on the "Advanced" button.



4. Check the "Smart5.1 Enable" item as shown in the panel below.



After completing the previous settings, connect the speakers to the 3-jack connectors.

Shown below are the corresponding connections to setup the 6-channel system.

Jack	2-channel	6-channel
Line-out	Line-out	Front (Left/Right)
Line-in	Line-in	Rear (Left/Right)
Microphone	Microphone	Center/Sub-woofer

APPENDIX B

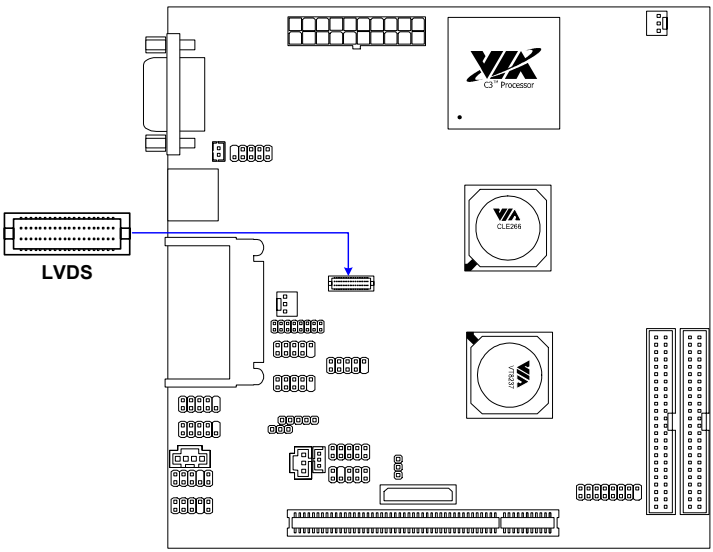
Add-On Module

This chapter gives you brief description of the optional add-on modules that are available for this board.

This chapter includes the following sections:

LVDS-04

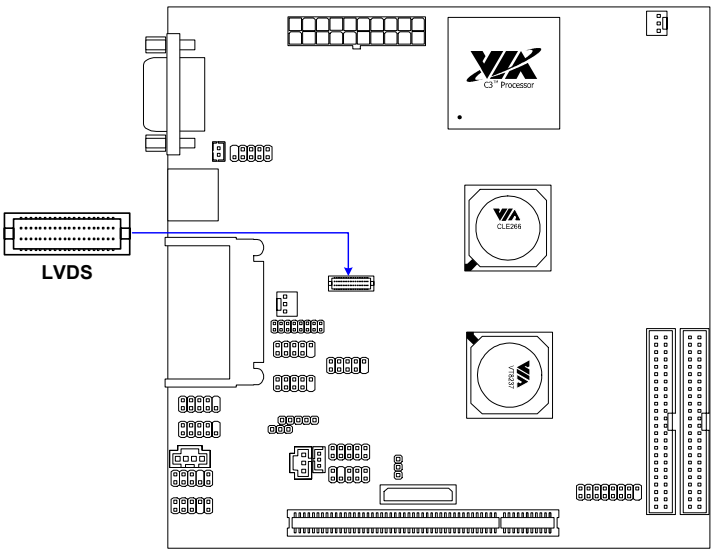
The LVDS-04 module connects to the LVDS connector shown below.



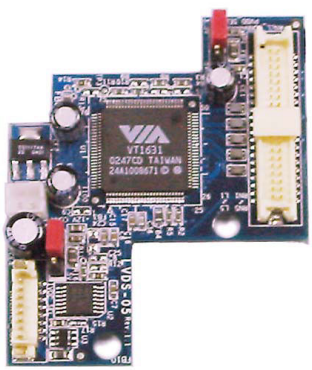
The LVDS-04 module is equipped with the VIA VT1631 transmitter. It provides a way to connect to LCD panel displays. It supports 18-bit LSB LCD panels. The native resolution is 1024 x 768.

LVDS-05

The LVDS-05 module connects to the LVDS connector shown below.

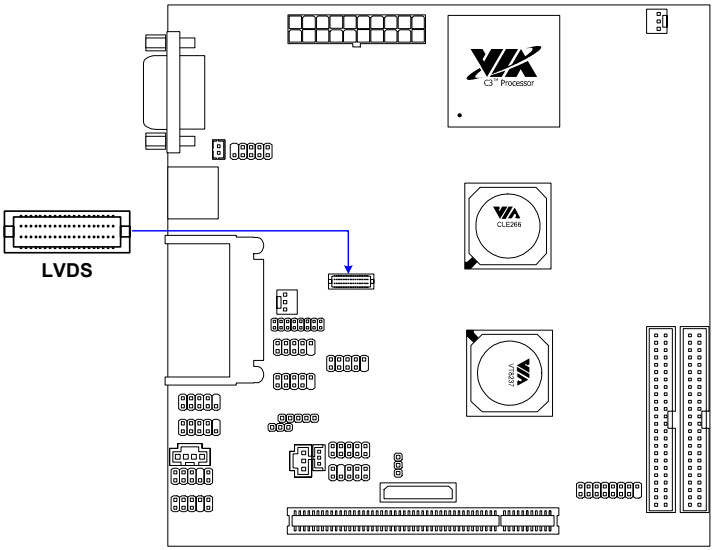


The LVDS-05 module is equipped with the VIA VT1631 transmitter. It provides a way to connect to LCD panel displays. It supports 24-bit MSB LCD panels. The native resolution is 1024 x 768.

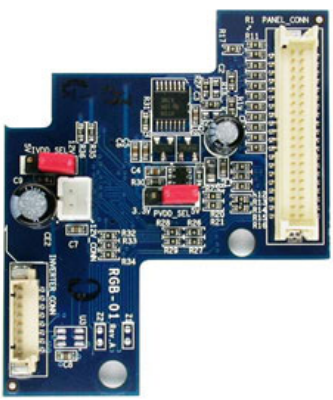


RGB-01

The RGB-01 module connects to the LVDS connector shown below.

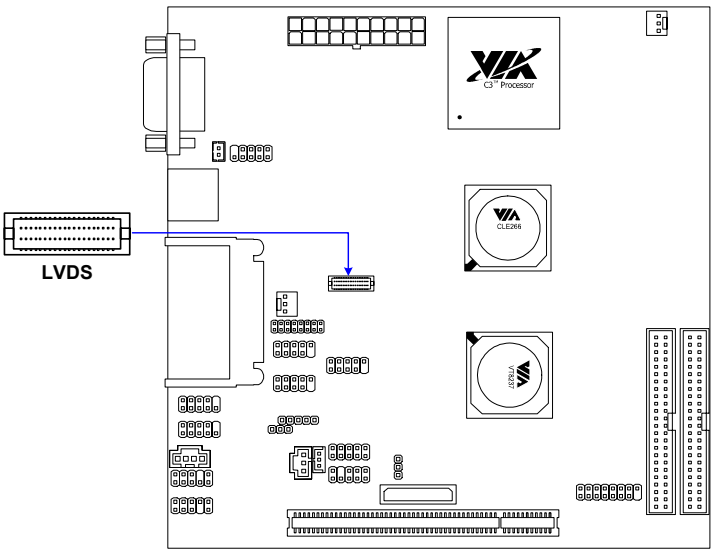


The RGB-01 module provides support for TTL panel displays. It supports up to 18/24-bit panels.



DVI-01

The DVI-01 module connects to the LVDS connector shown below.



The DVI-01 module is equipped with a VIA VT1632 transmitter. It provides support for digital video interfaces.