VB8002

Mini-ITX Mainboard Manual

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Regulatory Compliance

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

Battery Recycling and Disposal

Only use the appropriate battery specified for this product.
Do not re-use, recharge, or reheat an old battery.
Do not attempt to force open the battery.
Do not discard used batteries with regular trash.
Discard used batteries according to local regulations.

Safety Precautions

- ☐ Always read the safety instructions carefully.
- ☐ Keep this User's Manual for future reference.
- ☐ Keep this equipment away from humidity.
- ☐ Lay this equipment on a reliable flat surface before setting it up.
- ☐ The openings on the enclosure are for air convection hence protects the equipment from overheating. Do not cover the openings.
- ☐ Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
- ☐ Place the power cord in such a way that people cannot step on it. Do not place anything over the power cord.
- ☐ Always unplug the power cord before inserting any add-on card or module.
- ☐ All cautions and warnings on the equipment should be noted.
- ☐ Never pour any liquid into the opening. Liquid can cause damage or electrical shock.
- ☐ If any of the following situations arises, get the equipment checked by authorized service personnel:
    - o The power cord or plug is damaged.
    - o Liquid has penetrated into the equipment.
    - o The equipment has been exposed to moisture.
    - o The equipment has not worked well or you cannot get it work according to User's Manual.
    - o The equipment has dropped and damaged.
    - o The equipment has obvious sign of breakage.
- ☐ Do not leave this equipment in an environment unconditioned or in a storage temperature above 60°C (140°F). The equipment may be damaged.

Box Contents

- ☐ VIA VB8002 Mini-ITX mainboard
- ☐ SATA cable
- ☐ IO bracket
- ☐ Driver utility CD
- ☐ Screw accessories
- ☐ Box content card

TABLE OF CONTENTS

1: Specifications

The ultra-compact and highly integrated VIA VB8002 uses the Mini-ITX mainboard form-factor 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.

Mainboard Specifications

CPU

- VIA Nano 1.6 GHz Processor

Chipset

- VIA CX700M Advanced All-in-one system processor

Graphics

- Integrated Unichrome Pro II 3D/2D AGP with MPEG-2 and WMV9 Video Decoding Acceleration

Memory

- One DDR2 533 DIMM slot (up to 1 GB)

Storage

- One UltraDMA 133/100/66/33 connector
- Two SATA 3 Gb/s connector

Expansion Slot

- One PCI slot

LAN

- One VIA VT6122 Gigabit LAN controller

Audio Codec

- VIA VT1708A High Definition Audio Codec

Back Panel I/O Ports

- One DVI-I connector
- One RJ-45 LAN port
- Two USB2.0 connector
- One MiniDIN for S-Video output
- One Triple RCA jack for composite video and stereo audio outputs
- One Triple RCA jack for component video output
- 1 x S/PDIF coaxial connector
- 1 x S/PDIF optical connector

Onboard I/O Connectors

- Two USB pin header connector for 4 additional USB2.0 ports
- One USB pin connector for 4 additional USB 2.0 ports
- One Front panel audio pin header for HP-out and MIC-in
- One Audio Line-in header
- One LPC header
- One LVDS connector to support 1-CH LVDS panel
- One LVDS Inverter connector
- One Video pin connector for CCIR656/601 video input
- One SMBus connector
- One PS2 Keyboard/Mouse connector
- One System fan connector
- One CPU fan connector
- One +12V power connector
- One ATX power connector
- One TV out header for SCART and D-terminal (Optional)

Supported OS

- Windows 2000
- Windows XP
- Windows CE
- Windows XPe
- Linux

System Monitoring and Management

- System power management
- AC power failure recovery
- Wake-on LAN, Keyboard-Power-on, Timer-Power-on

BIOS

- Award BIOS with LPC 4/8 Mbit flash memory capacity

Operating Environment

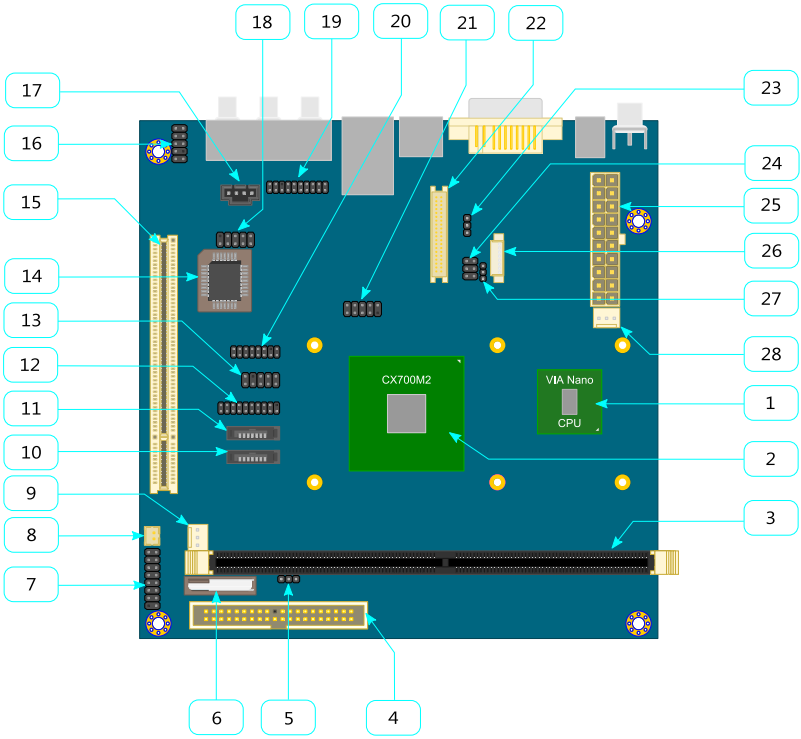
- Temperature range: 0°C - 50°C
- Relative and non-condensing: 0% - 95%

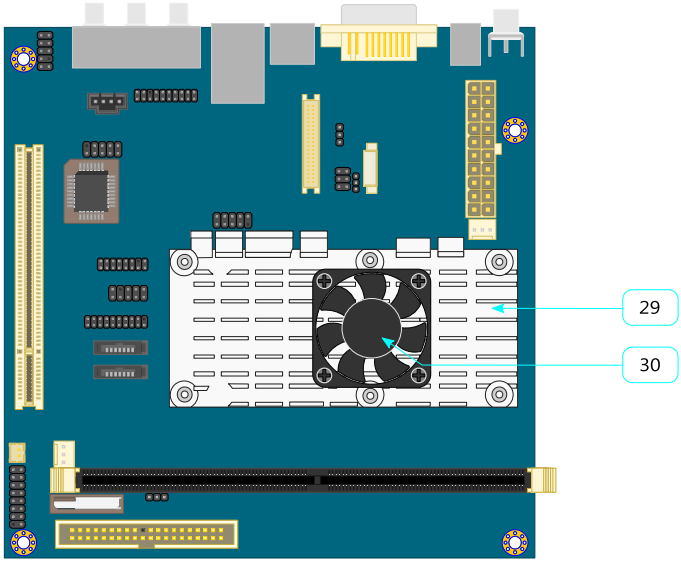
Form Factor

- Mini-ITX
- 17cm x 17 cm

Note:
Due to hardware limitation, DDR2 SDRAM chips organized as 128Mb x 8 bank cannot be supported by EPIA products with CN700 and CX700M chipsets.

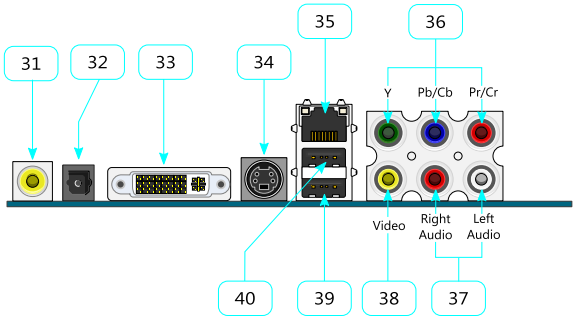
VB8002 Layout





Symbol	Description	Symbol	Description
1	VIA Nano CPU	16	Front audio pin header
2	CX700M chipset	17	Line-In(CD Audio) connector
3	DDR2 533 DIMM slot	18	USB1-2 pin header
4	IDE connector	19	TV-Out pin header(Optional)
5	Clear CMOS jumper	20	VIP pin header
6	Battery	21	USB3-4 pin header
7	Front panel pin header	22	LVDS panel connector
8	+12V power connector	23	SMBus pin header
9	System fan connector	24	PVDD_SEL jumper
10	SATA port 1	25	ATX power connector
11	SATA port 2	26	Inverter connector
12	LPC pin header	27	IVDD_SEL jumper
13	KBMS pin header	28	CPU fan connector
14	BIOS	29	CPU heatsink
15	PCI slot	30	CPU fan

VB8002 Back Panel Layout



Symbol	Description	Symbol	Description
31	SPDIF Coaxial port	36	RCA jack component
32	SPDIF Optical port	37	RCA audio jack
33	DVI-I port	38	Composite TV-out jack
34	S-Video port	39	USB port 2
35	RJ-45 LAN port	40	USB port 1

S/PDIF ports

This mainboard enables digital audio output through either the Coaxial or Optical SPDIF port.

DVI-I port

The DVI-I connector allows you to connect to DVI display.

S-Video port

The black port allows you to connect TV monitor or S-Video device to the mainboard.

RJ45 LAN and USB ports

The mainboard provides a standard RJ-45 and two USB 2.0 ports. These ports allow connection to a Local Area Network (LAN) through a network hub and USB 2.0 devices.

RCA jack

The top three RCA jacks enable you to connect to displays using component video signals. The bottom three jacks enable you to connect to displays using the yellow composite TV-out jack. The red and white RCA jacks are for audio output.

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.

Onboard Connectors & Slots

CPU fan and System fan Connector

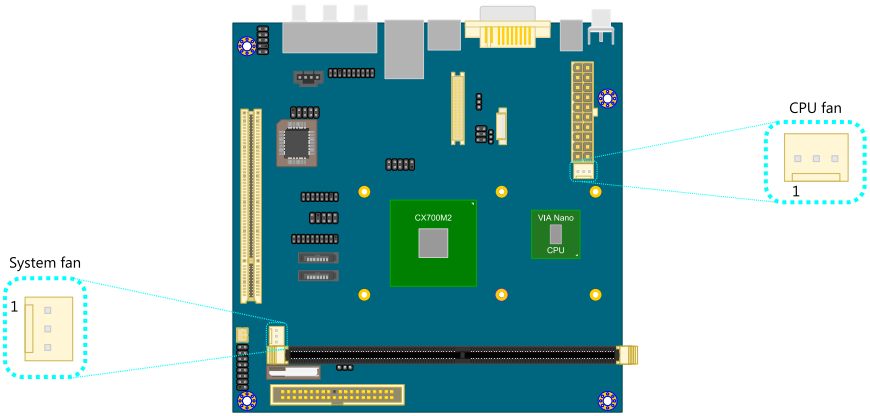
The CPU fan and System fan runs on +12V and maintain system cooling. When connecting the wire to the connectors, always be aware that the red wire (positive wire) should be connected to the +12V. The black wire is Ground and should always be connected to GND.

CPU fan

Pin	Signal
1	NC
2	+12V
3	GND

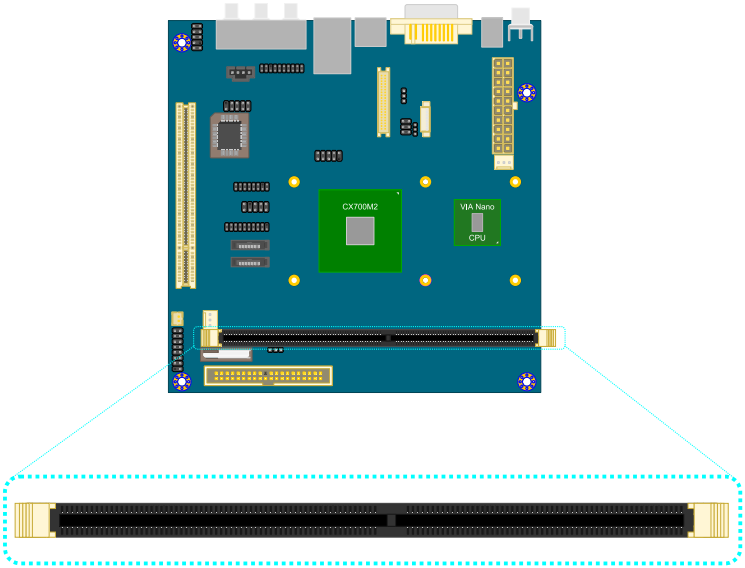
System fan

Pin	Signal
1	NC
2	+12V
3	GND



Memory slot: DDR2 DIMM

The VIA VB8002 mainboard provides one 240-DIMM slot for DDR2 533 SDRAM memory modules and supports memory size up to 1GB.



Available DDR2 SDRAM Configurations

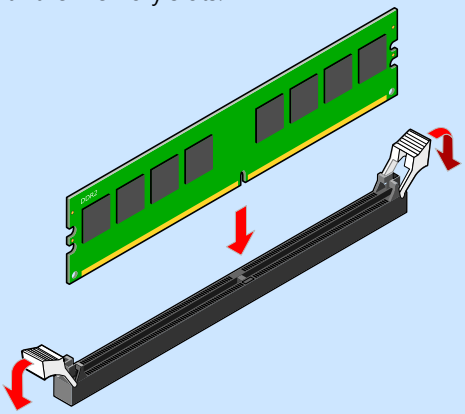
Refer to the table below for available DDR2 SDRAM configurations on the mainboard.

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

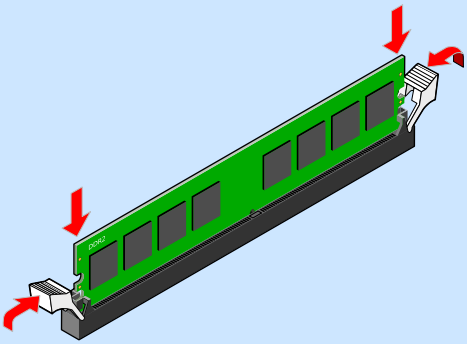
DDR2 SDRAM Module Installation Procedures

Step 1
Locate the memory DIMM slot.

Step 2
Push the locking mechanism on the memory slot outward. Then align the memory module with the memory slots.



Step 3
Insert the memory module into the slot and push down until it snaps into the locking mechanism.

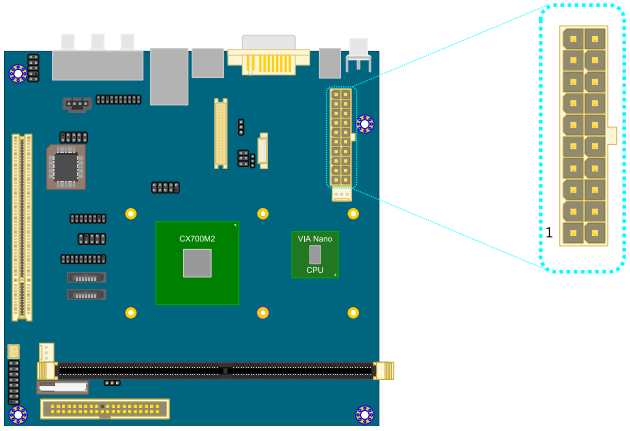


ATX 20-Pin Power connector

The VIA VB8002 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.

To connect the 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.

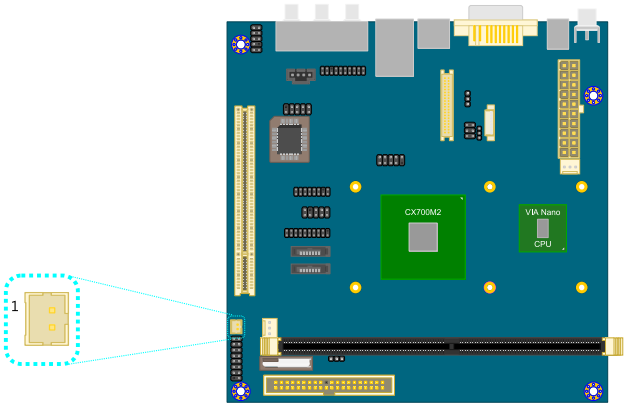
Pin	Signal	Pin	Signal
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	Power Supply On
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	Power Good	18	-5V
9	+5V Standby	19	+5V
10	+12V	20	+5V



+12V Power connector

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

Pin	Signal
1	+12V
2	GND

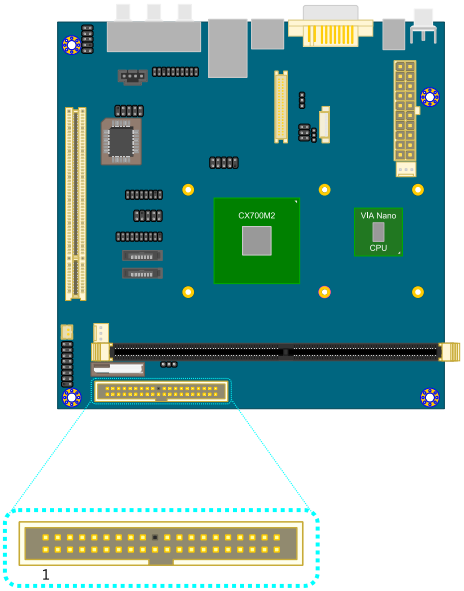


IDE connector

The mainboard has an Ultra DMA 133/100/66/33 controller. You can connect up to two hard disks drive, CD-ROM and other devices.

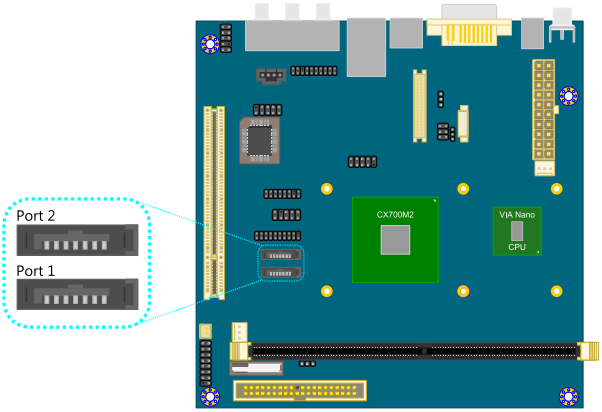
If two drives are connected to a single cable, the jumper on the second drive must be set to slave mode. Refer to the drive documentation supplied by the vendor for the jumper settings.

Pin	Signal	Pin	Signal
1	#IDE_RST	2	GND
3	PD_7	4	PD_8
5	PD_6	6	PD_9
7	PD_5	8	PD_10
9	PD_4	10	PD_11
11	PD_3	12	PD_12
13	PD_2	14	PD_13
15	PD_1	16	PD_14
17	PD_0	18	PD_15
19	GND	20	NC
21	#PD_REQ	22	GND
23	#PD_IOW	24	GND
25	#PD_IOR	26	GND
27	#PD_RDY	28	Primary
29	#PD_ACK	30	GND
31	PD_IRQ15	32	NC
33	PD_A1	34	IDE_DMADET
35	PD_A0	36	PD_A2
37	#PD_CS1	38	#PD_CS3
39	#HD_LED1	40	GND



SATA port 1 and SATA port 2

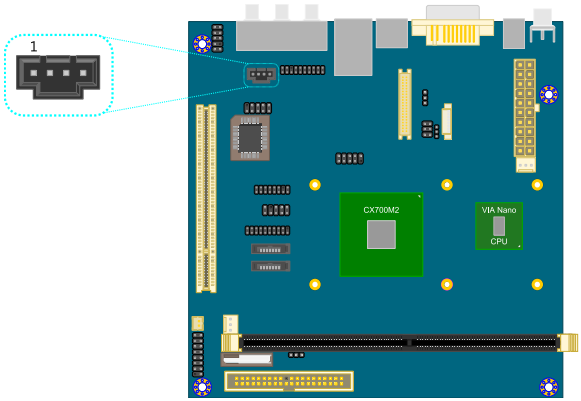
These next generation connectors support the thin SATA cables for primary internal storage devices. The current SATA interface allows up to 300MB/s data transfer rate, faster than the standard parallel ATA with 133 MB/s (Ultra DMA).



Line-In (CD Audio) connector

This connector allows you to receive stereo audio from sound source such as CD-ROM.

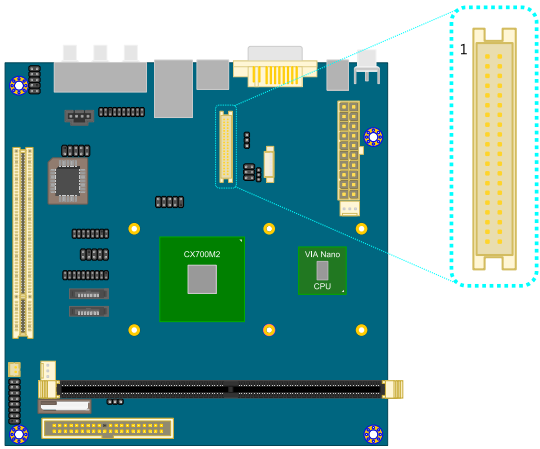
Pin	Signal
1	LINEIN_L
2	GND
3	GND
4	LINEIN_R



LVDS connector

The LVDS connector allows you to connect the panel's LVDS cable directly to support LVDS panel without any need of a daughter card.

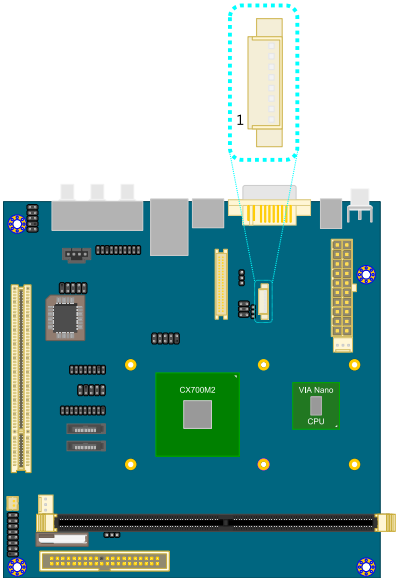
Pin	Signal	Pin	Signal
1	-LD2C4	2	PVDD
3	+LD2C4	4	PVDD
5	GND	6	GND
7	-LD2C5	8	GND
9	+LD2C5	10	-LD1C0
11	GND	12	+LD1C0
13	-LD2C6	14	GND
15	+LD2C6	16	-LD1C1
17	GND	18	+LD1C1
19	-LCLK2	20	GND
21	+LCLK2	22	-LD1C2
23	GND	24	+LD1C2
25	-LD2C7	26	GND
27	+LD2C7	28	-LCLK1
29	Key	30	+LCLK1
31	Key	32	GND
33	Key	34	-LD1C3
35	Key	36	+LD1C3
37	Key	38	GPIOA_CLK
39	Key	40	GPIOB_DATA



INVERTER connector

The mainboard provides an inverter for supplying power to the backlight of the LCD panel.

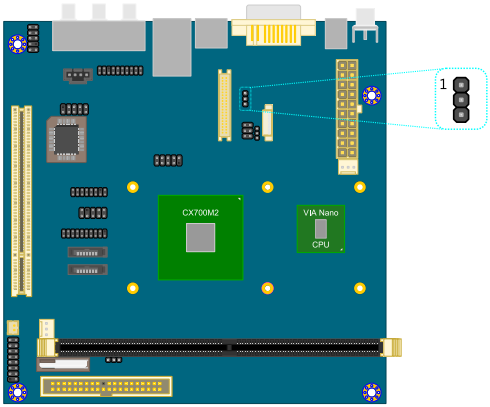
Pin	Signal
1	IVDD
2	IVDD
3	BLON
4	NC
5	BLON
6	BR_CNTR
7	GND
8	GND



System Management Bus: SMBus

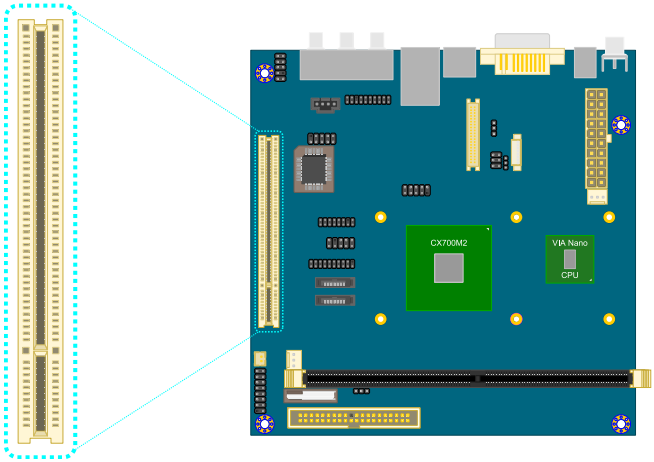
This pin header connector allows you to connect SMBus (System Management Bus) devices. Devices communicate with a SMBus host and/or other SMBus devices using the SMBus interface.

Pin	Signal
1	SMBCK
2	SMBDT
3	GND



PCI slot : Peripheral Component Interconnect

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



PCI Interrupt Request Routing

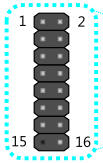
The IRQ (interrupt request line) are hardware lines over which devices can send interrupt signals to the microprocessor. The "PCI & LAN" IRQ pins are typically connected to the PCI bus INT A# ~ INT D# pins as follows:

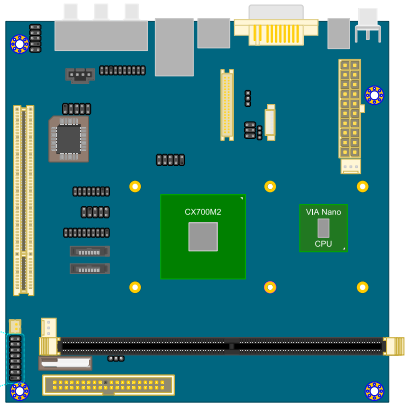
	Order 1	Order 2	Order 3	Order 4
PCI slot	INT B#	INT C#	INT D#	INT A#

Front Panel: F_Panel case connector

The Front Panel (F_Panel) pin header connector allows you to connect the power switch, reset switch, power LED, sleep LED, HDD LED and the case speaker.

Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	+5V	4	HD_LED
5	-PLED_2	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_2)

The LED will light 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.

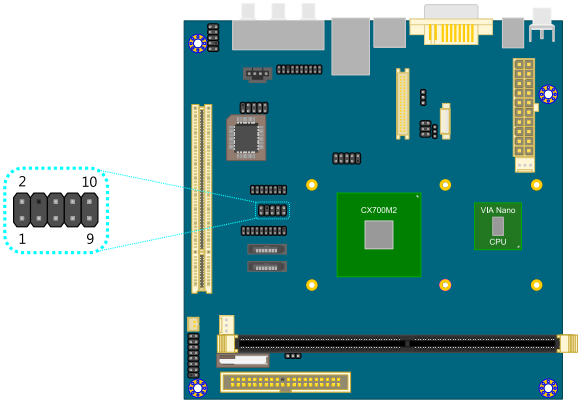
Speaker (SPEAK)

The speaker from the system case is connected to this pin.

KBMS: Keyboard and Mouse

The KBMS pin header connector allows you to attach a PS2 keyboard and mouse.

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

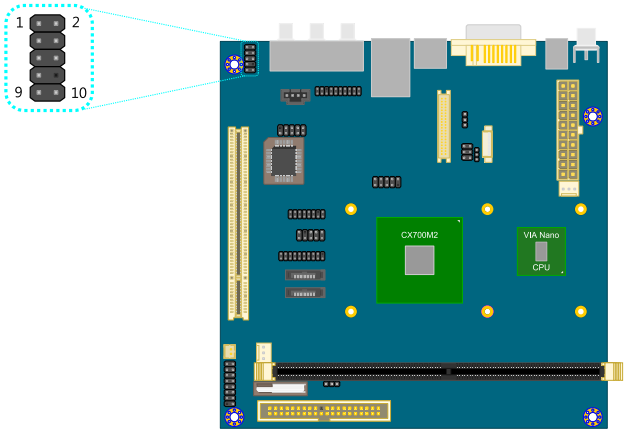


Note:
When the pin header is not in use, please short pin3 & 5, pin 4 & 6, pin 7 & 9 and pin8 & 10.

Front panel audio: F_Audio

This is an interface for the front panel audio cable that allows convenient connection and control of audio devices.

Pin	Signal	Pin	Signal
1	AUD_MIC	2	AUD_GND
3	AUD_MIC_BIAS	4	AUD_FNT_DET
5	AUD_FPOUT_R	6	AUD_RET_R
7	HP_ON	8	Key
9	AUD_FPOUT_L	10	AUD_RET_L



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.

USB1-2 and USB3-4: Universal Serial Bus

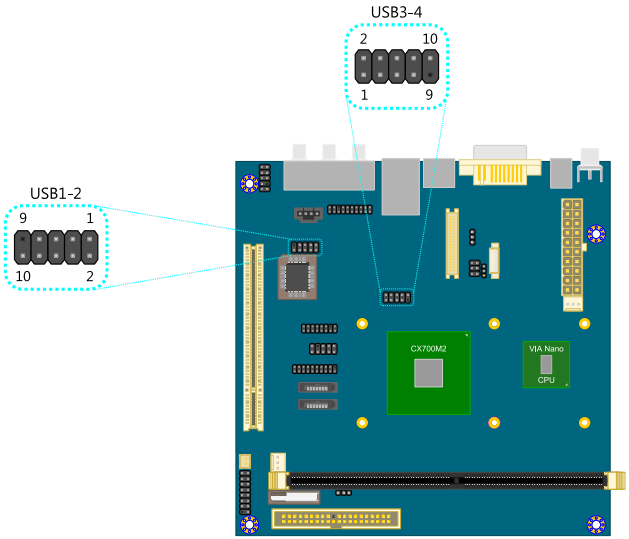
The mainboard provides two 10-pin USB pin header connector, allowing up to 4 additional USB2.0 ports. Therefore the mainboard can support up to six USB 2.0 ports. These ports can be used to connect high-speed USB interface peripherals such as USB HDD, digital cameras, MP3 players, printers, modem and the like.

USB1-2

Pin	Signal	Pin	Signal
1	5VDUAL	2	5VDUAL
3	USBD_T1-	4	USBD_T2-
5	USBD_T1+	6	USBD_T2+
7	GND	8	GND
9	Key	10	GND

USB3-4

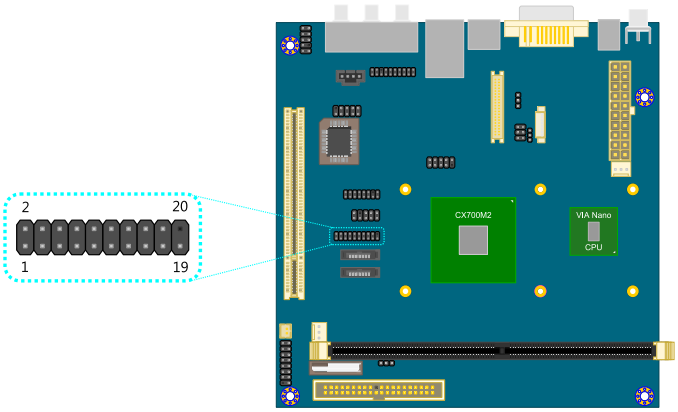
Pin	Signal	Pin	Signal
1	5VDUAL	2	5VDUAL
3	USBD_T3-	4	USBD_T4-
5	USBD_T3+	6	USBD_T4+
7	GND	8	GND
9	Key	10	GND



LPC: Low Pin Count

This pin header connector is for LPC devices.

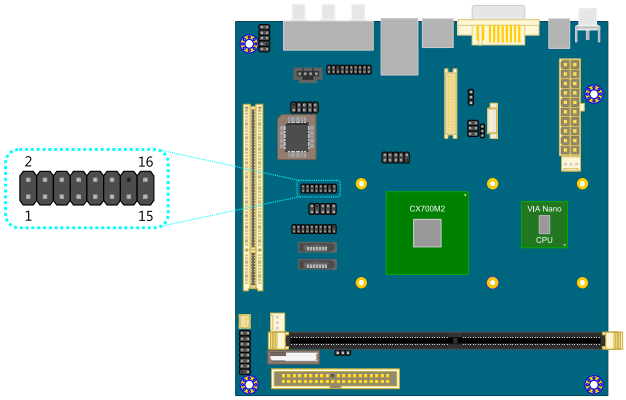
Pin	Signal	Pin	Signal
1	LAD1	2	LPCCLK1
3	-PCIRSTX	4	GND
5	LAD0	6	SIO_OSC
7	LAD2	8	-LFRAME
9	SERIRQ	10	LAD3
11	-LDRQ1	12	-EXTSMI
13	+5V	14	+3.3V
15	+5V	16	+3.3V
17	GND	18	GND
19	GND	20	Key



VIP: Video-In Port connector

Video In Port (VIP) connector is used to support the CCIR656/601 video-in/ capture function.

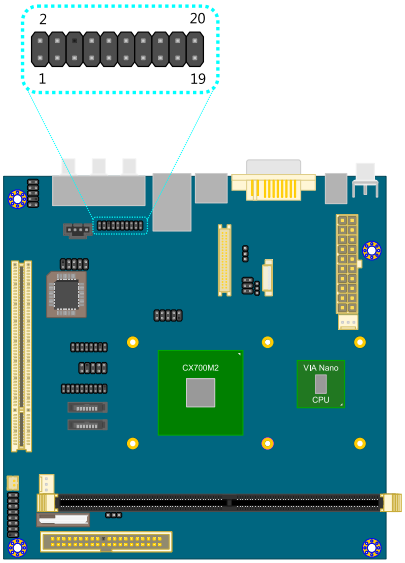
Pin	Signal	Pin	Signal
1	GND	2	CAP0D0
3	CAP0D7	4	CAP0D4
5	CAP0D6	6	CAP0D5
7	CAP0HS	8	CAP0D2
9	CAP0D1	10	CAP0D3
11	CAP0VS	12	CAPCLK
13	SMBDT	14	Key
15	SMBCK	16	GND



TV Out: SCART and D-Terminal (Optional)

Mainboards fitted with the optional SCART / D-Terminal connector enables users to connect a SCART / D-Terminal port for connecting to audio/visual equipment.

Pin	Signal	Pin	Signal
1	AUDIO_R	2	AUD_GND
3	AUDIO_L	4	AUD_GND
5	+2.5V	6	Key
7	PB_B	8	Y_G
9	GND	10	GND
11	PR_R	12	CHROMA
13	CVBS	14	LUMA
15	LINE1	16	GND
17	LINE2	18	LINE3
19	GND	20	GND

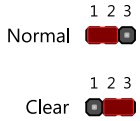


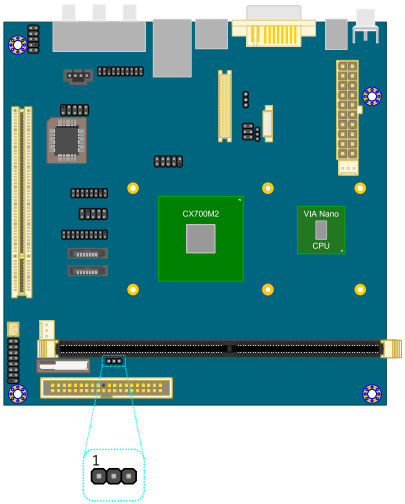
Onboard Jumpers

Clear CMOS jumper: 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 2 and 3 while the system is off. Return the jumper to pins 1 and 2 afterwards. Setting the jumper while the system is on will damage the mainboard. The default setting is on pins 1 and 2.

Setting	1	2	3
Normal Operation	ON	ON	OFF
Clear CMOS setting	OFF	ON	ON



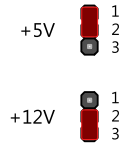


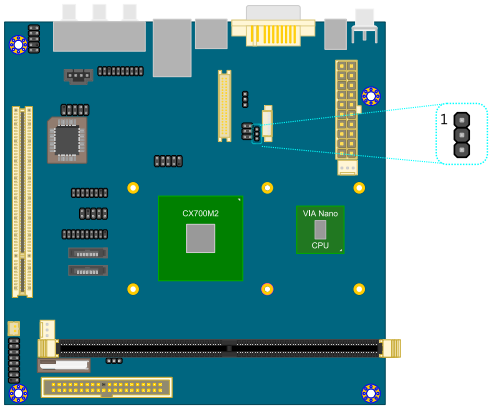
Caution:
Except when clearing the RTC RAM, never remove the cap on CLEAR_CMOS jumper default position. Removing the cap will cause system boot failure. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

IVDD_SEL: Inverter Selector jumper

IVDD_SEL is the VCC selector jumper to determine the input voltage of the panel inverter for panel's back-light.

Setting	1	2	3
+5V	ON	ON	OFF
+12V	OFF	ON	ON

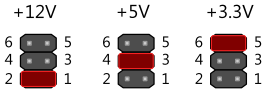


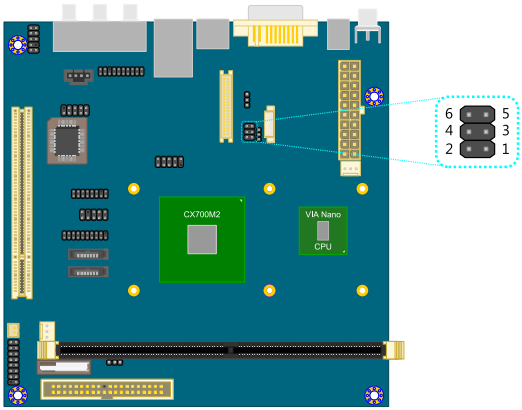


PVDD_SEL: Panel Power Selector

PVDD_SEL is the VCC selector jumper to determine the panel's signal voltage.

Setting	1	2	3	4	5	6
+12V	ON	ON	OFF	OFF	OFF	OFF
+5V	OFF	OFF	ON	ON	OFF	OFF
+3.3V	OFF	OFF	OFF	ON	ON	ON





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3: BIOS Setup

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

Entering the BIOS Setup Menu

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, restart the system and try again.

Control Keys

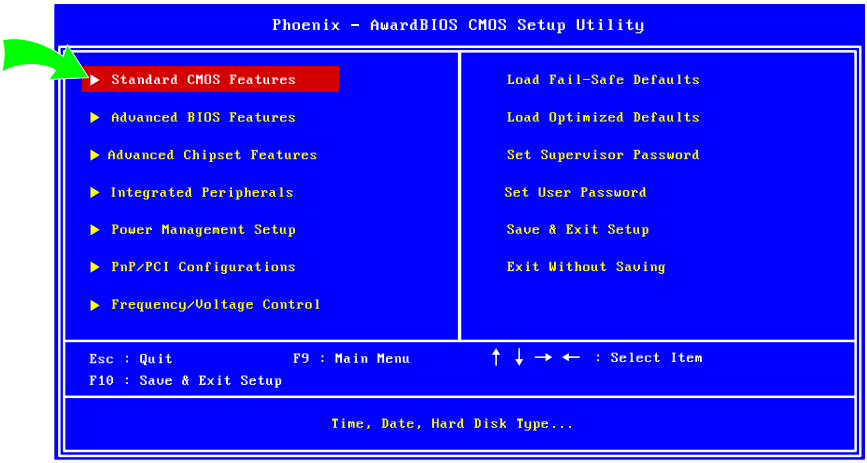
Keys	Description
	Move to the previous item
	Move to the next item
	Move to the item in the left side
	Move to the item in the right side
	Select the item
	Jumps to the Exit menu or returns to the main menu from a submenu
	Increase the numeric value or make changes
	Decrease the numeric value or make changes
	Increase the numeric value or make changes
	Decrease the numeric value or make changes
	General help, only for Status Page Setup Menu and Option Page Setup Menu

	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
	Load the default CMOS value from Fail-Safe default table, only for Option Page Setup Menu
	Load Optimized defaults
	Jumps to the Main Menu
	Save all the CMOS changes and exit

Navigating the BIOS Menus

The main menu displays all the BIOS setup categories. Use the <**Left**>/<**Right**> and <**Up**>/<**Down**> arrow keys to select any item or sub-menu. Descriptions of the selected/highlighted category are displayed at the bottom of the screen.

The small triangular arrowhead 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**>.

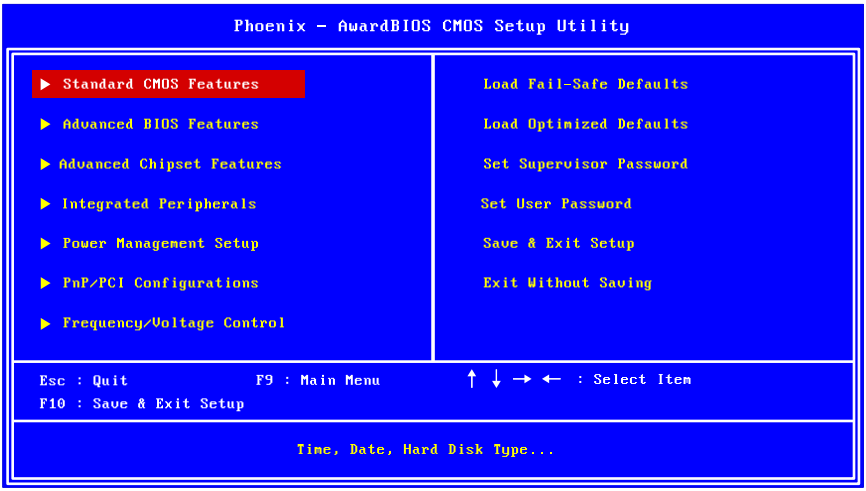


Getting Help

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

The Main Menu contains thirteen setup functions and two exit choices. Use arrow keys to select the items and press <**Enter**> to accept or enter Sub-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.

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.

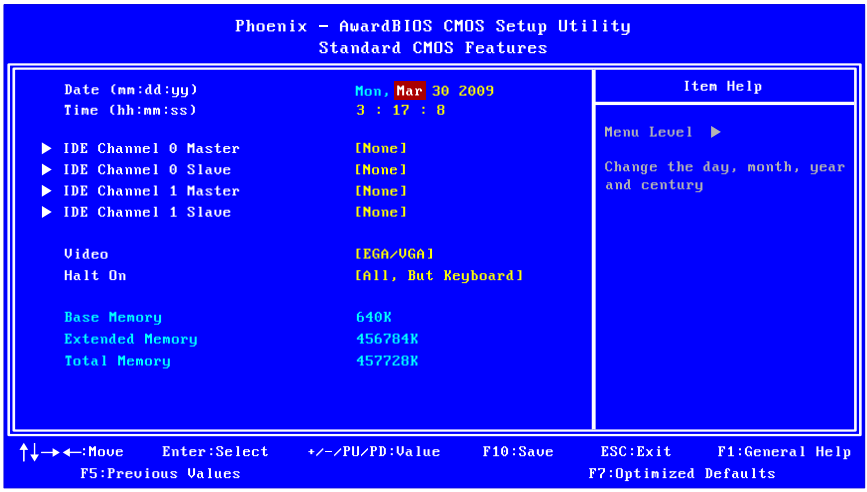
Set Supervisor Password
Use this menu option to set the BIOS supervisor password.

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
Discard 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]

Video

Settings: [EGA/VGA, CGA 40, CGA 80, MONO]

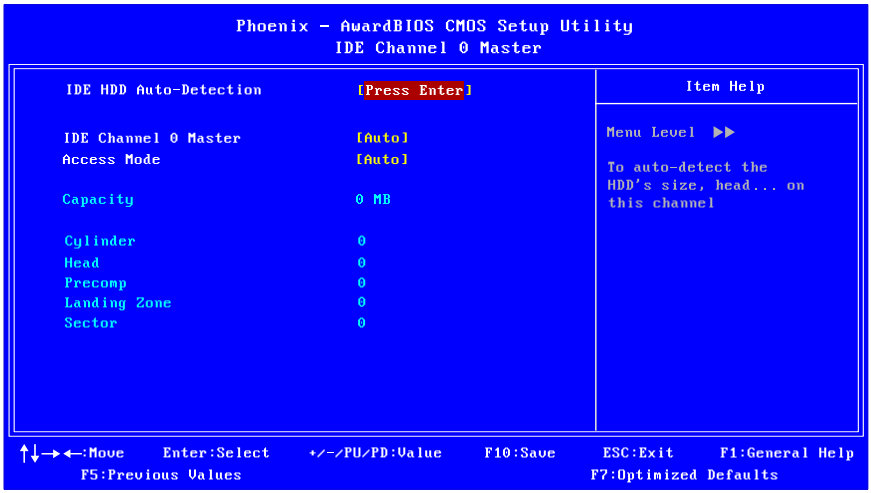
Halt On

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

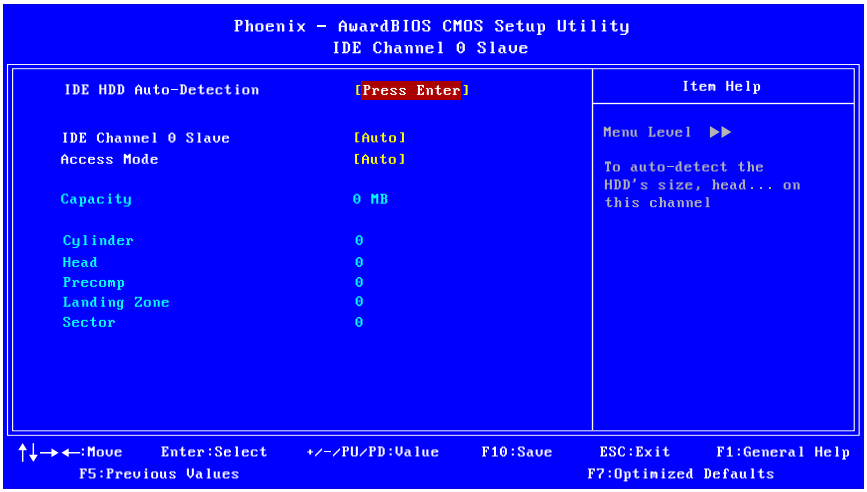
Settings	Description
All Errors	System halts when any error is detected
No Errors	System does not halt for any error
All, But Keyboard	System halts for all non-key errors

IDE Channels

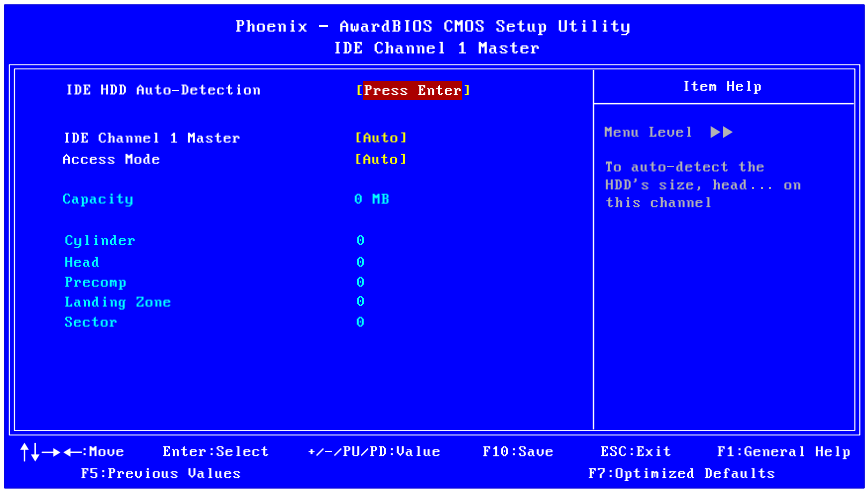
IDE Channel 0 Master



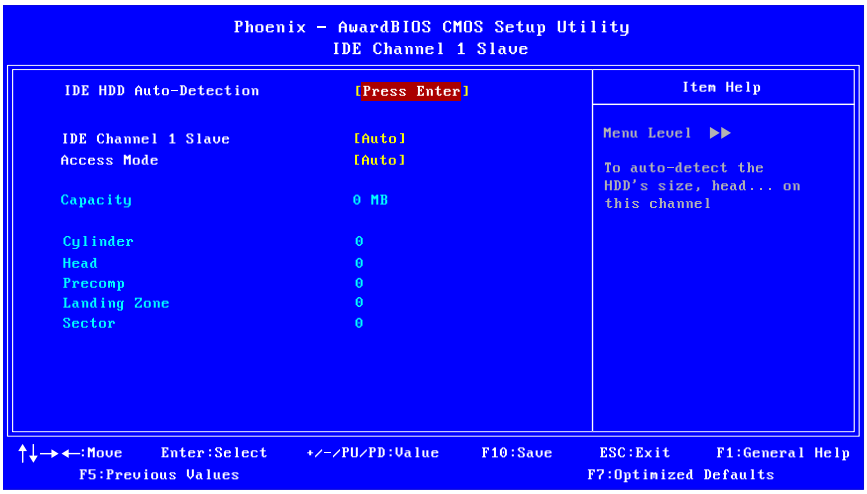
IDE Channel 0 Slave



IDE Channel 1 Master



IDE Channel 1 Slave

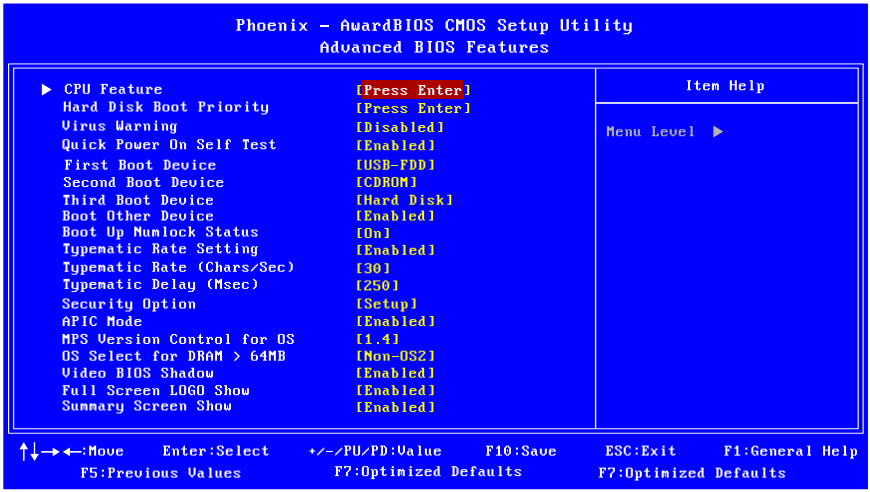


The specifications of your drive must match with the drive table. The hard disk will not work properly if you enter incorrect information in this category. Select "**Auto**" whenever possible. If you select "**Manual**", make sure the information is from your hard disk vendor or system manufacturer.

Below is a table that details required hard drive information when using the "**Manual**" mode.

Settings	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

Advanced BIOS Features



Virus Warning

Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection.

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

Note:
If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on the screen and alarm beep.

Quick Power On Self-Test

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

Settings	Description
Enabled	Shorten Power On Self Test (POST) cycle and boot up 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.

Settings	Description
LS120	Boot from LS120
Hard Disk	Boot from the HDD
CDROM	Boot from CDROM
ZIP100	Boot from ATAPI ZIP drive
USB-FDD	Boot from USB Floppy
USB-CDROM	Boot from USB CDROM
Legacy 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" lists.

Settings	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.

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

Typematic Rate Setting

Enable "Typematic Rate" function.
Settings: [Disabled, Enabled]

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.

Settings	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

APIC Mode

Enables APIC (Advanced Programmable Interrupt Controller) functionality.
Settings: [Enabled, Disabled]

MPS Version Control for OS

Settings: [1.1, 1.4]

OS Select for DRAM > 64 MB

Select OS2 only if you are running OS/2 operating system with greater than 64MB of RAM on the screen.
Settings: [Non-OS2, OS2]

Video BIOS Shadow

Settings: [Disabled, Enabled]

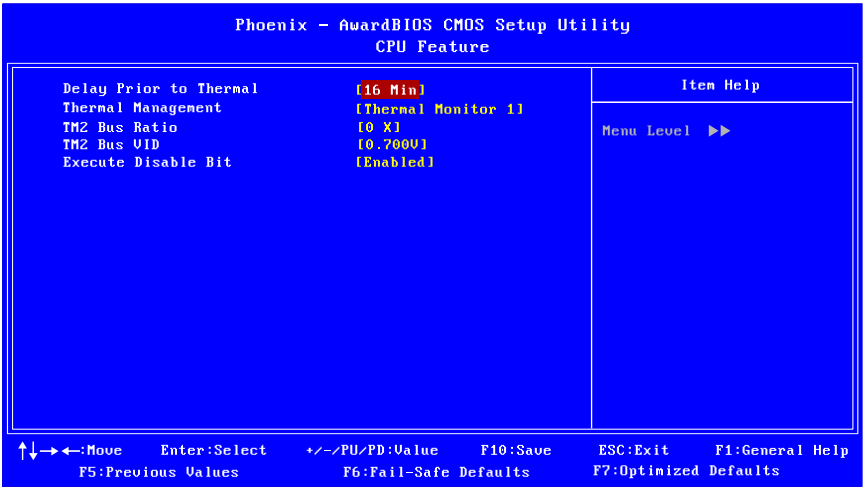
Full Screen Logo Show

Show full screen logo during BIOS boot up process.
Settings: [Disabled, Enabled]

Summary Screen Show

Show summary screen.
Settings: [Disabled, Enabled]

CPU Feature



Delay Prior to Thermal

Settings: [4 Min, 8 Min, 16 Min, 32 Min]

Thermal Management

This item sets CPU's thermal control rule to protect CPU from overheat.

Setting	Description
Thermal Monitor 1	On-die throtting
Thermal Monitor 2	Ratio & VID transition

TM2 Bus Ratio

This item sets the frequency (bus ratio) of the throttled performance that will be initiated when the on die sensor goes from not hot to hot.

Key in a DEC number.
Settings: [Min = 0, Max = 255]

TM2 Bus VID

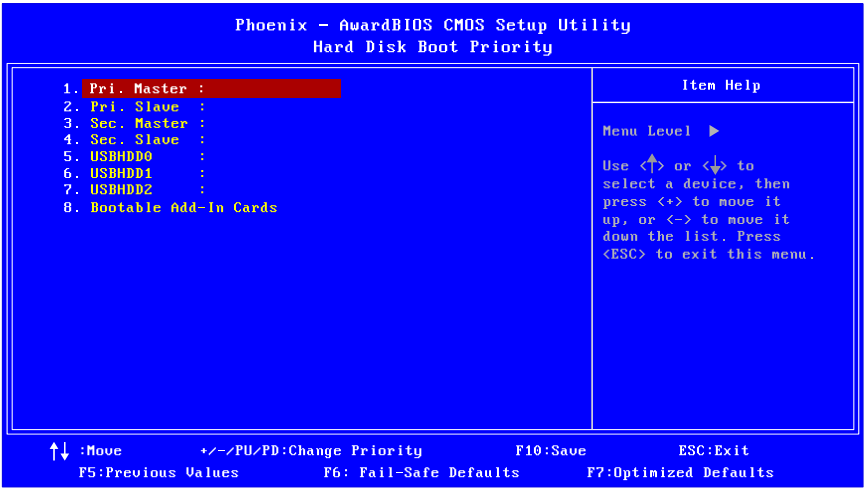
This item sets the voltage of the throttled performance that will be initiated when the on die sensor goes from not hot to hot.

Settings: [0.700V, 0.716V, 0.732V, 0.748V, 0.764V, 0.780V, 0.796V, 0.812V, 0.828V, 0.844V, 0.860V, 0.876V, 0.892V, 0.908V, 0.924V, 0.940V, 0.956V, 0.972V, 0.988V, 1.004V, 1.020V, 1.036V, 1.052V, 1.068V, 1.084V, 1.100V, 1.116V, 1.132V, 1.148V, 1.164V, 1.180V, 1.196V, 1.212V, 1.228V, 1.244V, 1.260V, 1.276V, 1.292V, 1.308V, 1.324V, 1.340V, 1.356V, 1.372V, 1.388V, 1.404V, 1.420V, 1.436V, 1.452V, 1.468V, 1.484V, 1.500V, 1.516V, 1.532V, 1.548V, 1.564V, 1.580V, 1.596V, 1.612V, 1.628V, 1.644V, 1.660V, 1.676V, 1.692V, 1.708]

Execute Disable Bit

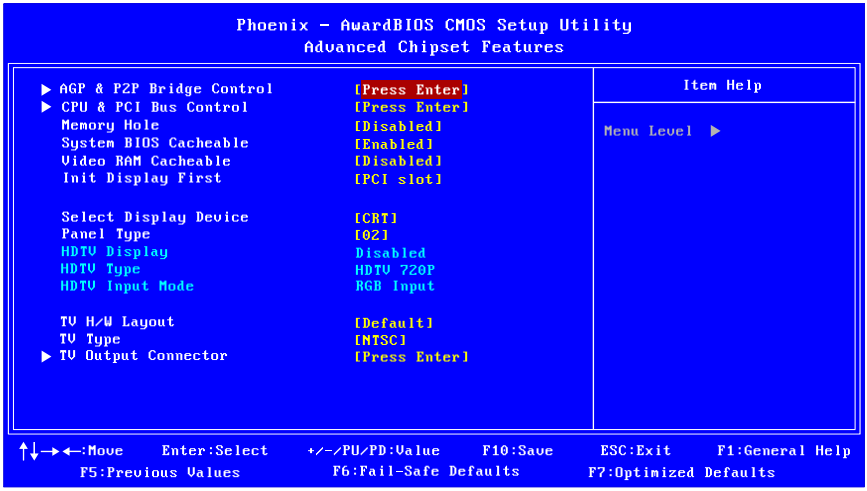
Settings: [Enabled, Disabled]

Hard Disk Boot Priority



This is for setting the priority of the hard disk boot order when the “Hard Disk” option is selected in the “[First/Second/Third] Boot Device” menu item.

Advanced Chipset Features



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

Memory Hole

Settings: [Disabled, 15M – 16M]

System BIOS Cacheable

Settings: [Disabled, Enabled]

Video RAM Cacheable

Settings: [Disabled, Enabled]

Init Display First

Settings: [PCI slot, AGP]

Select Display Device

This setting refers to the type of display being used with the system.
Settings: [CRT, LCD, CRT+LCD, TV, CRT+TV, LCD+TV, DVI, CRT+DVI, TV+DVI]

Panel Type

This setting refers to the native resolution of the display being used with the system.
Key in a HEX number.
Settings: [Min = 0000, Max = 000F]

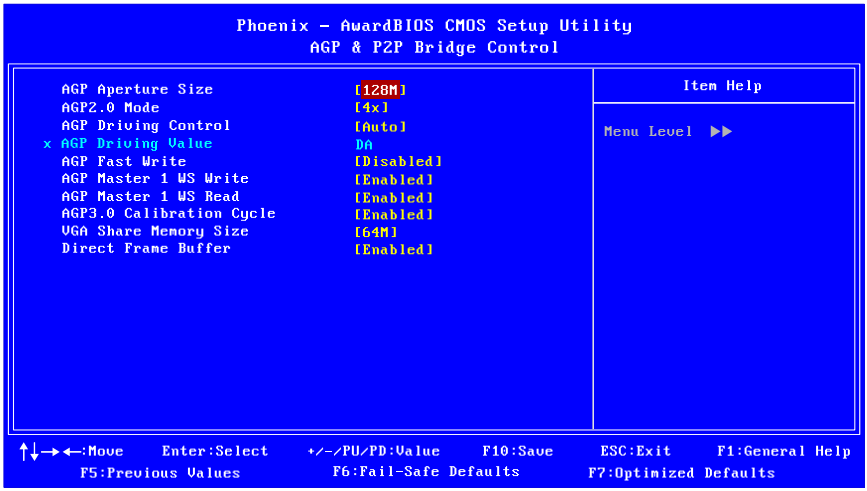
TV H/W Layout

Settings: [Default, COMPOSITE+S-Video, COMP.+R/G/B, COMP.+Y/Cb/Cr, COMP.+SDTV-R,G,B, COMP.+SDTV-Y,Cb,Cr, COMPOSITE, S-Video, R/G/B, Y/Cb/Cr, SDTV - R,G,B, SDTV - Y,Cb,Cr, S-Video+R,G,B, S-Video+Y,Cb,Cr]

TV Type

This setting refers to the native resolution of the display being used with the system.
Settings: [NTSC, PAL]

AGP & P2P Bridge Control



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: [32MB, 64MB, 128MB, 256MB, 512MB, 1GB]

AGP2.0 Mode

This mainboard supports the AGP 4x interface. When the AGP 4x video card is used, it can transfer video data at 1066MB/s. AGP 4x is backward compatible, leave the default 4x mode on. AGP 4x mode can be detected automatically once you plug in the AGP 4x card.
Settings: [4x, 2x, 1x]

AGP Driving Control

This item is used to signal driving current on AGP cards to auto or manual.
Settings: [Auto, Manual]

AGP Fast Write

This item is used to enable or disable the caching of display data for the video memory of the processor.

Settings: [Enabled, Disabled]

AGP Master 1 WS Write

Settings: [Enabled, Disabled]

AGP Master 1 WS Read

Settings: [Enabled, Disabled]

AGP 3.0 Calibration Cycle

Settings: [Enabled, Disabled]

VGA Share Memory Size

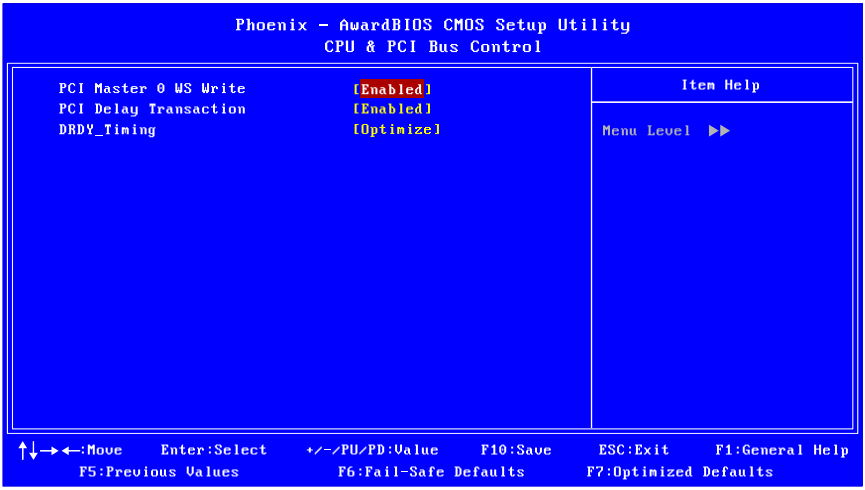
This setting allows you to select the amount of system memory that is allocated to the integrated graphics processor.

Settings: [Disabled, 32M, 64M, 128M]

Direct Frame Buffer

Settings: [Enabled, Disabled]

CPU & PCI Bus Control



PCI Master 0 WS Write

Settings: [Enabled, Disabled]

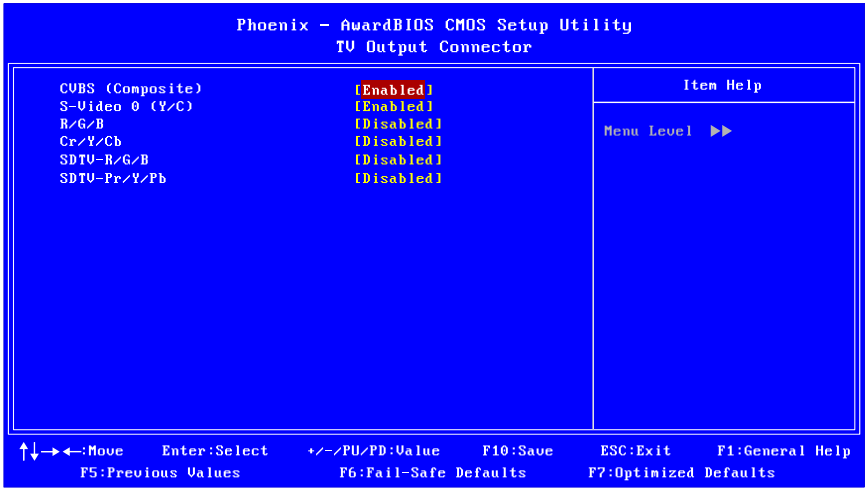
PCI Delay Transaction

Settings: [Enabled, Disabled]

DRDY_Timing

Settings: [Slowest, Default, Optimize]

TV Output Connector



CVBS (Composite)

Settings: [Enabled, Disabled]

S-Video 0 (Y/C)

Settings: [Enabled, Disabled]

R/G/B

Settings: [Enabled, Disabled]

Cr/Y/Cb

Settings: [Enabled, Disabled]

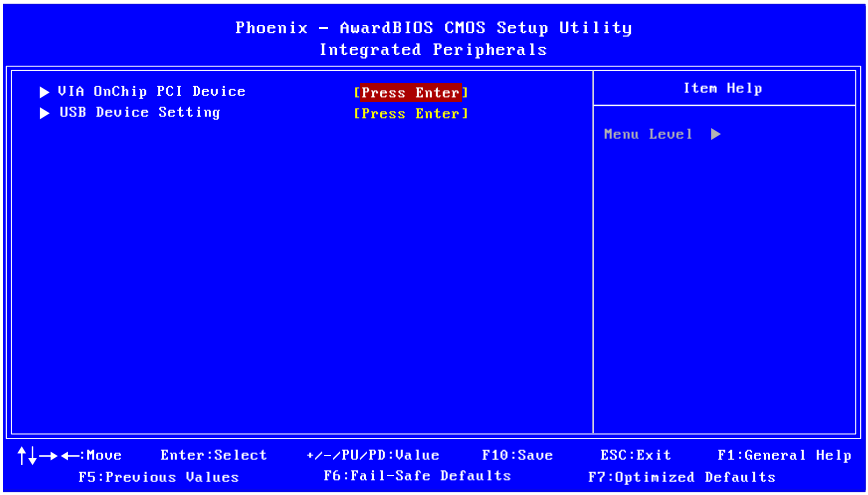
SDTV-R/G/B

Settings: [Enabled, Disabled]

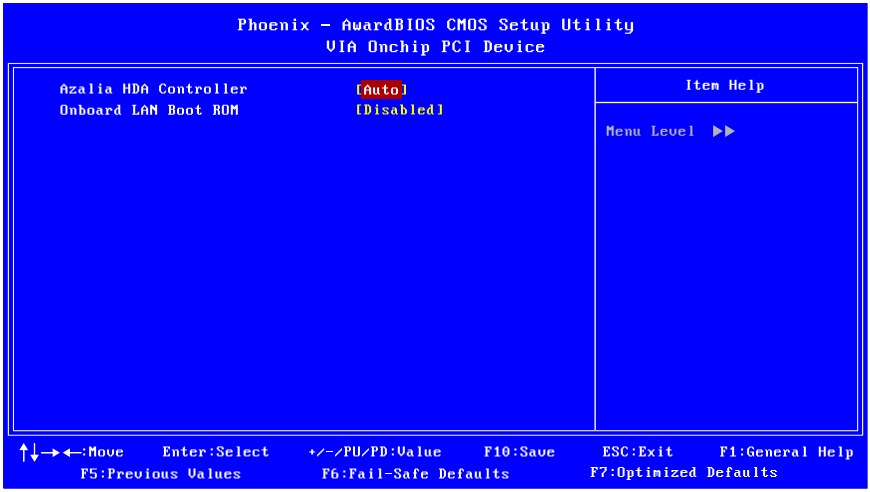
SDTV-Pr/Y/Pb

Settings: [Enabled, Disabled]

Integrated Peripherals



VIA OnChip PCI Device



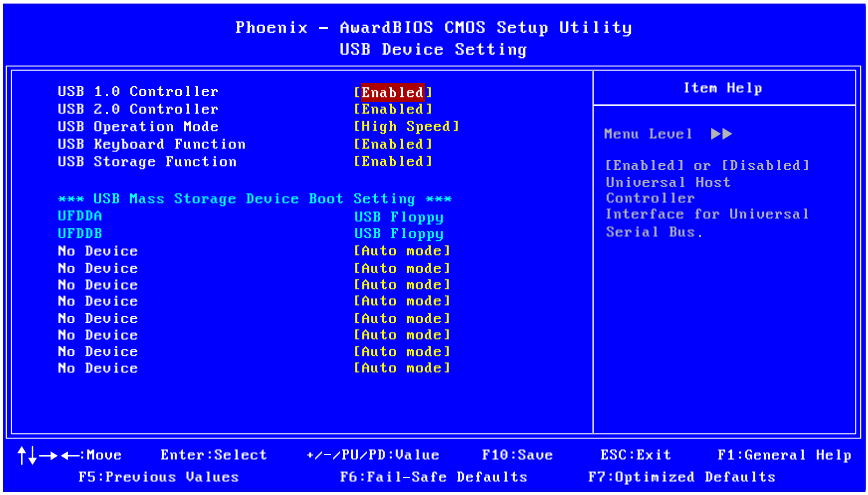
Azalia HDA Controller

Settings: [Auto, Disabled]

Onboard LAN Boot ROM

Settings: [Enabled, Disabled]

USB Device Setting



USB 1.0 Controller

Enable or disable Universal Host Controller Interface for Universal Serial Bus.
Settings: [Enabled, Disabled]

USB 2.0 Controller

Enable or disable Enhanced Host Controller Interface for Universal Serial Bus.
Settings: [Enabled, Disabled]

USB Operation Mode

Auto decide USB device operation mode.

Settings	Description
High Speed	If USB device was high speed device, then it operated on high speed mode
Full/Low Speed	All of USB Device operated on full/low speed mode

USB Keyboard Function

Enable or disable Legacy support of USB Keyboard.
Settings: [Enabled, Disabled]

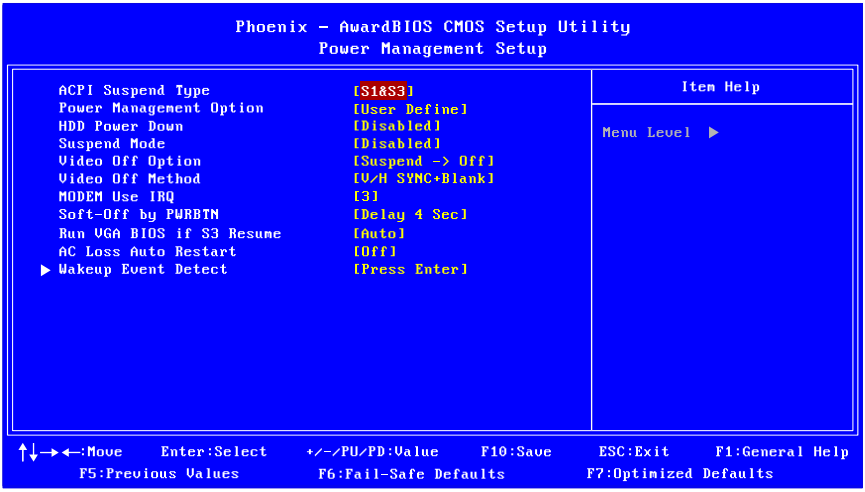
USB Storage Function

Enable or disable Legacy support of USB Mass Storage.
Settings: [Enabled, Disabled]

No Device

Settings	Description
Auto mode	According to contents of USB MSD decide boot up type.
FDD mode	The USB MSD always boot up as floppy disk.
HDD mode	The USB MSD always boot up as hard disk.

Power Management Setup



ACPI Suspend Type

Settings	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.

Power Management Option

Settings: [User Define, Min Saving, Max Saving]

HDD Power Down

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

Settings: [Disable, 1 Min, 2 Min, 3 Min, 4 Min, 5 Min, 6 Min, 7 Min, 8 Min, 9 Min, 10 Min, 11 Min, 12 Min, 13 Min, 14 Min, 15 Min]

Suspend Mode

Settings: [Disabled, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, 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.

Settings	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

Video Off Method

Settings: [Blank Screen, V/H SYNC + Blank, DPMS Support]

MODEM Use IRQ

Settings: [NA, 3, 4, 5, 7, 9, 10, 11]

Soft-Off by PWRBTN

Settings	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

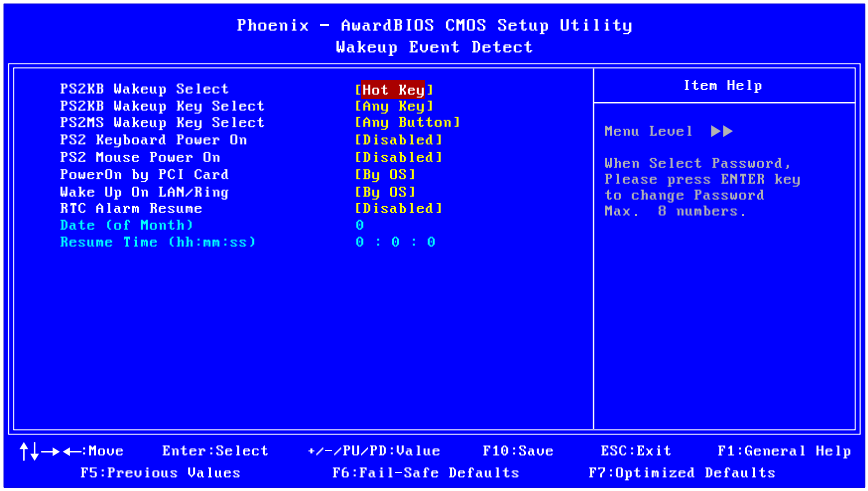
Select whether to run VGA BIOS if resuming from S3 state. This is only necessary for older VGA drivers.
Settings: [Auto, Yes, No]

AC Loss Auto Restart

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

Settings	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	Former-Sts

Wakeup Event Detect



PS2KB Wakeup Select

When selecting Password, press Enter to change password. The maximum number of characters is eight.

Settings: [Hot Key, Password]

PS2KB Wakeup Key Select

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

Settings: [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]

PS2MS Wakeup Key Select

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

Settings: [Any Button, Left Button, Right Button]

PS2 Keyboard Power On
Settings: [Disabled, Enabled]

PS2 Mouse Power On
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: [By OS, Enabled]

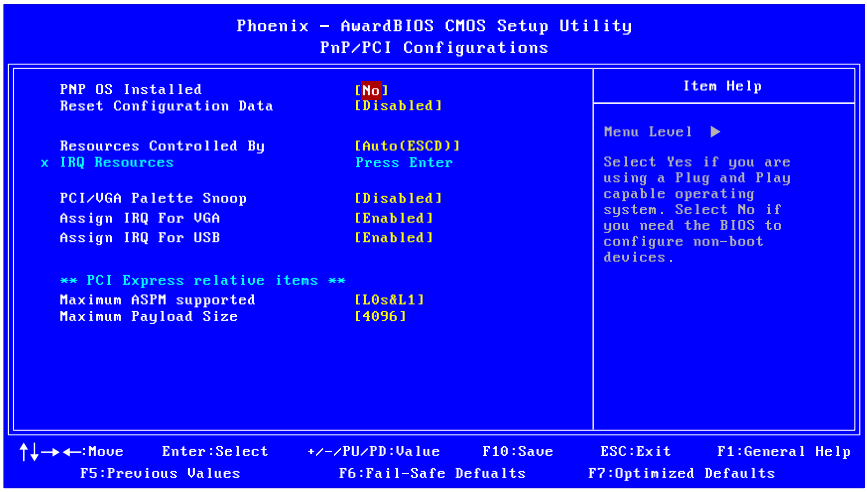
Wake Up On LAN/Ring
Settings: [By OS, Enabled]

RTC Alarm Resume
Set a scheduled time and/or date to automatically power on the system.
Settings: [Disabled, Enabled]

Date (of Month)
This field can only be set if “RTC Alarm Resume” is enabled. The field specifies the date for “RTC Alarm Resume”.

Resume Time (hh:mm:ss)
This field can only be set if “RTC Alarm Resume” is enabled. The field specifies the time for “RTC Alarm Resume”.

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

Settings	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

Settings	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

Resources Controlled By

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

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

PCI/VGA Palette Snoop

Settings: [Disabled, Enabled]

Assign IRQ for VGA

Assign IRQ for VGA devices.

Settings: [Disabled, Enabled]

Assign IRQ for USB

Assign IRQ for USB devices.

Settings: [Disabled, Enabled]

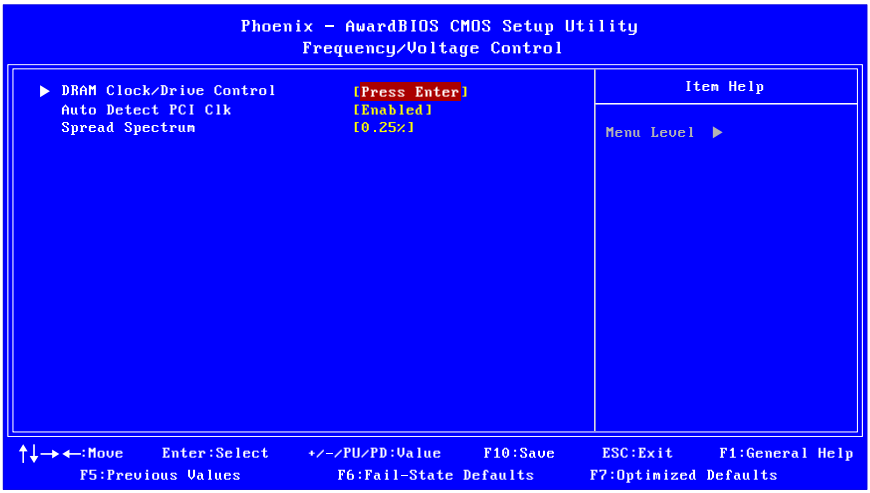
Maximum ASPM supported

Settings: [L0, L0s, L1, L0s&L1]

Maximum Payload Size

This options sets the maximum TLP payload size in bytes for PCI Express devices.
Settings: [128, 256, 512, 1024, 2048, 4096]

Frequency/Voltage Control



Auto Detect PCI Clock

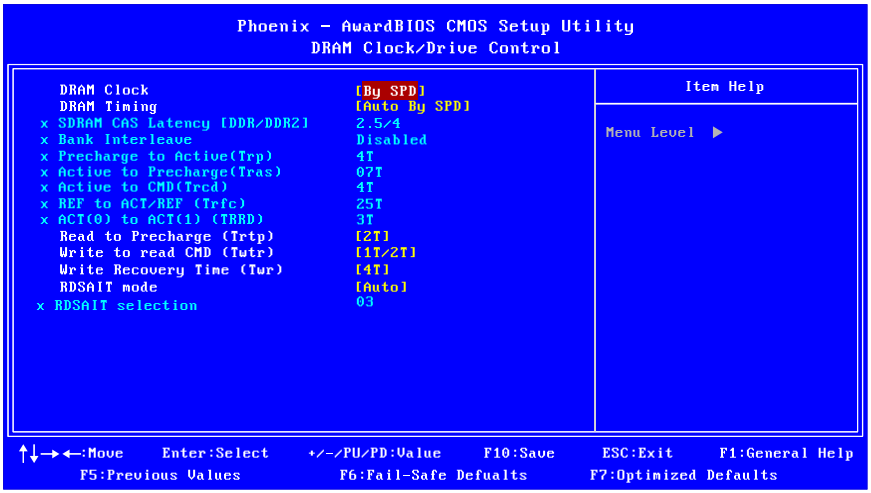
Settings: [Disabled, Enabled]

Spread Spectrum

When the mainboard's clock generator pulses, the extreme values (spikes) of the pulses create 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.

Settings: [Disabled, 0.20%, 0.25%, 0.35%]

DRAM Clock/Drive Control



DRAM Clock

This control enables the user to choose either automatic or one of memory clock frequencies.
Settings: [By SPD, 100 MHz, 133 MHz, 166 MHz, 200 MHz, 266 MHz, 333 MHz]

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, Auto By SPD]

SDRAM CAS Latency Control

This item adjusts 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: [1.5/2, 2/3, 2.5/4, 3/5]

Bank Interleave

Set 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, 8 Bank]

Precharge to Active (Trp)

This field controls 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 - 5T]

Active to Precharge (Tras)

This field controls 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 – 20T]

Active to CMD (Trcd)

This field is only available when "DRAM Timing" is set to "Manual".
Settings: [2T - 5T]

REF to ACT/REF (Trfc)

This field is only available when "DRAM Timing" is set to "Manual".
Settings: [08T - 71T]

ACT(0) to ACT(1) (TRRD)

This field is only available when "DRAM Timing" is set to "Manual".
Settings: [2T - 5T]

Read to Precharge (Trtp)
Settings: [2T, 3T]

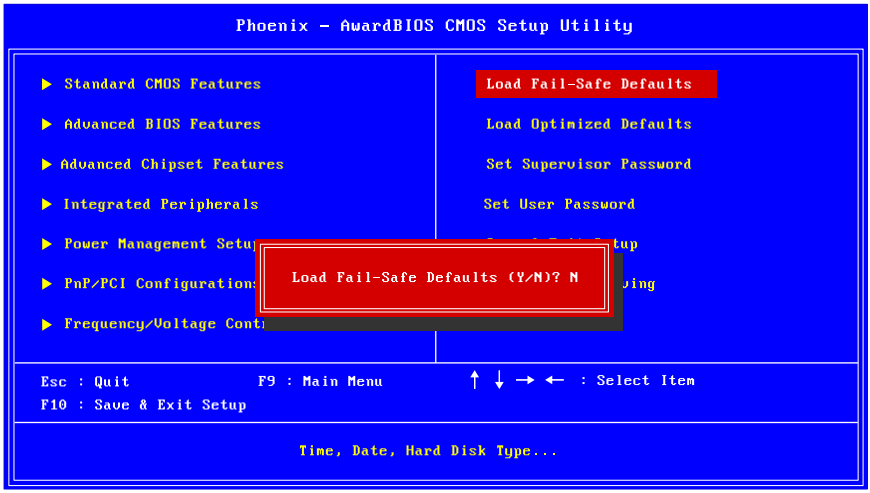
Write to Read CMD (Twtr)
Settings: [1T/2T, 2T/3T]

Write Recovery Time (Twr)
Settings: [2T - 5T]

RSAIT Mode
Settings: [Auto, Manual]

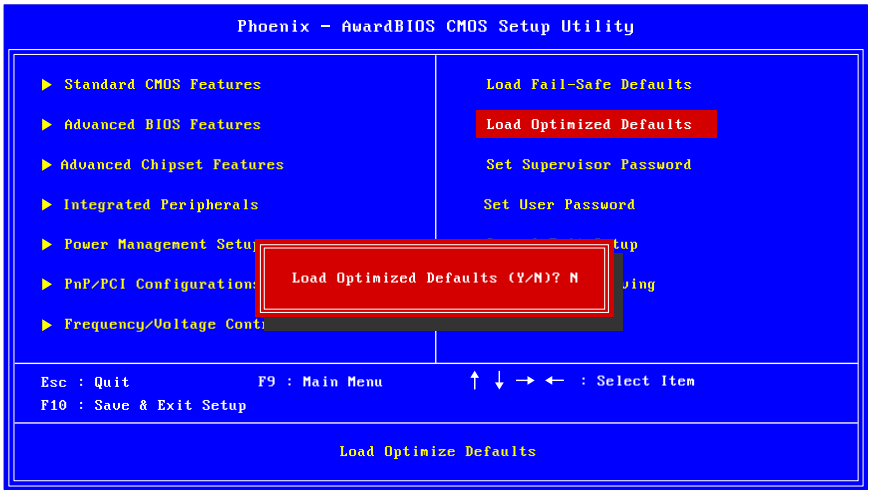
RSAIT Selection
This field is only available when “RSAIT Mode” is set to “Manual”. Input should be a hexadecimal number between 0000 and 003F.

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

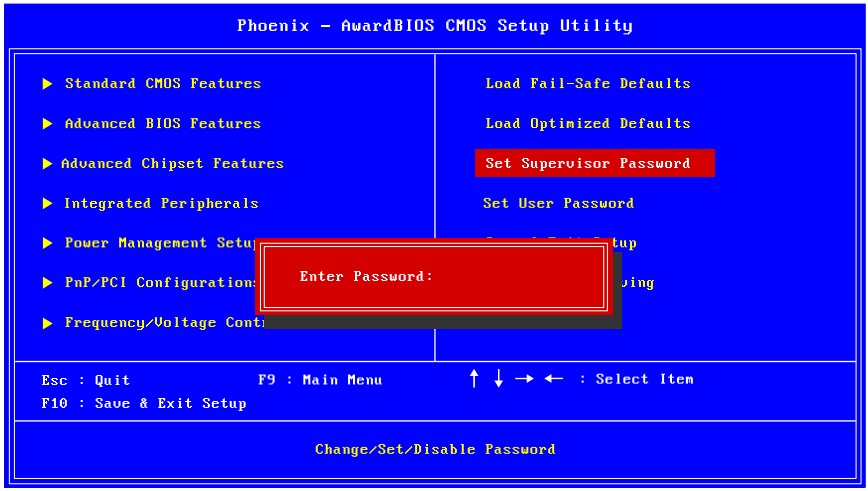


This option is for restoring all the default optimized BIOS settings. The default optimized values are set by the mainboard manufacturer to provide a stable system with optimized performance.

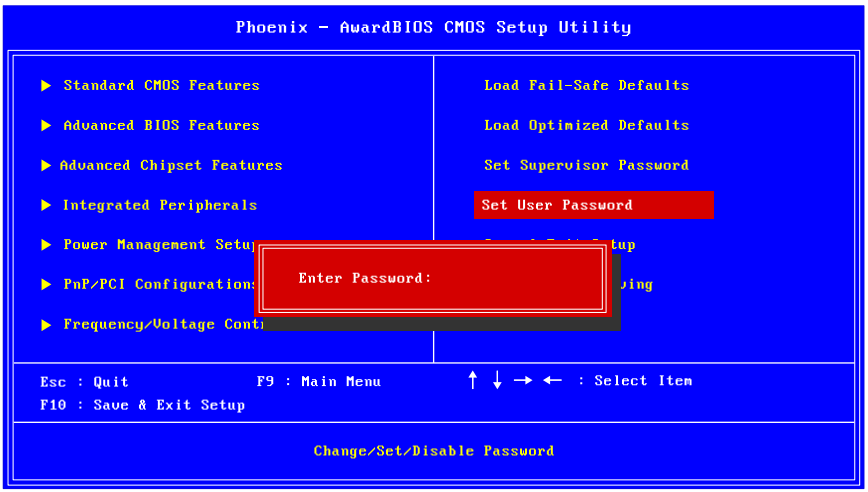
Entering "**Y**" and press <**Enter**> to load the default optimized BIOS values. Entering "**N**" will cancel the load optimized defaults request.

Set Supervisor/User Password

Set Supervisor



Set 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.

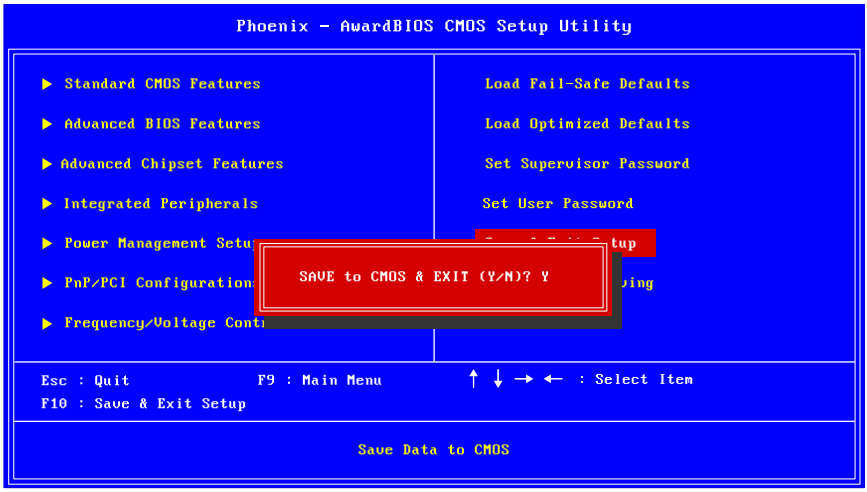
There are two types of passwords you can set. A supervisor password and a user password. When a supervisor password is used, the BIOS Setup program can be accessed and the BIOS settings can be changed. When a user password is used, the BIOS Setup program can be accessed but the BIOS settings cannot be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

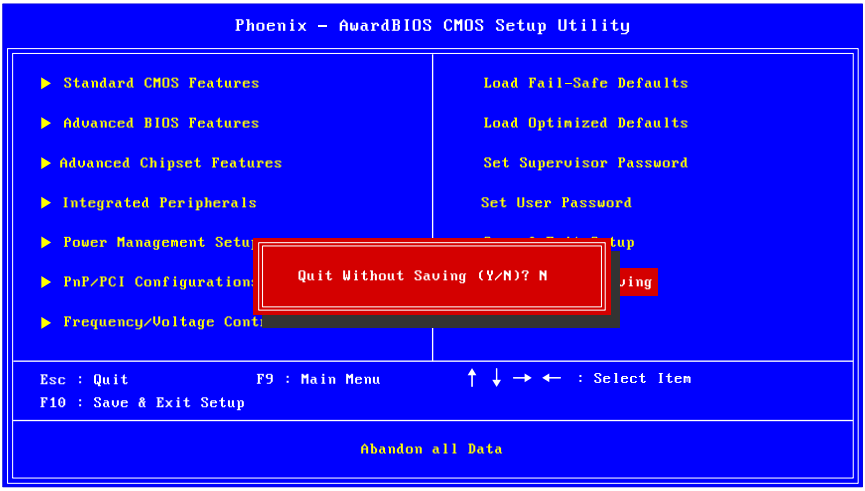
Save & Exit Setup



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.

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 VGA drivers. The applications will only function correctly if the necessary drivers are already installed.

Driver Utilities

Getting Started

VIA VB8002 developer kits include a driver CD that contains the drivers and software for enhancing the performance of the mainboard. The drivers can also be downloaded from http://www.viaembedded.com

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".

For Linux drivers, click the right button on mouse and click open. Linux drivers are located in the "Driver" folder.

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**

- Enables access to the onboard VIA audio codec.

☐ **VIA USB 2.0 Driver**

- Enhances VIA USB 2.0 ports.

☐ **VIA GigaLAN Driver**

- Enhances the onboard VIA VT6122 Gigabit Ethernet LAN chip.

☐ **VIA RAID Driver**

- Supports for SATA RAID devices

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