User's Manual

NAB-7400

Version 1.11
April 2, 2007

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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.

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CHAPTER 1

Specifications

The ultra-compact and highly integrated VIA NAB-7400 uses the 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 systems. Through a high level of integration, it occupies 66% of the size of FlexATX mainboard form factor.

MAINBOARD SPECIFICATIONS

CPU

- Support VIA C7 1.0GHz NanoBGA2 Processor

Chipset

- VIA CN700 North Bridge
- VIA VT8237R-Series South Bridge

Graphics

- Integrated UniChrome™ Pro 3D/2D AGP with MPEG-2 Video Decoding Acceleration

Memory

- 1 x DDR2 533/400 DIMM slot (up to 1 GB)

Expansion Interface

- 2 x Mini PCI Interface
- 1 x 32-bit PCI Golden Finger

IDE

- 2 x UltraDMA 133/100/66 connectors (1 x 40 pins and 1 x 44 pins)

LAN

- 4 x Intel 82551ER Fast Ethernet PCI Controller or 4 x Intel 82541GI of Gigabit Ethernet Controllers

Back Panel I/O Ports

- 1 x COM port
- 2 x USB 2.0 ports
- 4 x RJ-45 LAN ports

Onboard I/O Connectors

- 1 x VGA pin connector
- 1 x Digital I/O pin connector
- 1 x PS/2 pin connector for keyboard and mouse
- 1 x PCI pin header for storage module board
- 1 x PCI extension pin connector (for BXB board)
- 1 x Front panel pin connector
- 1 x Front panel LED pin connector for the LAN activity indicators of Ethernet and wireless
- 2 x Fan pin connectors (CPU Fan and System Fan)
- 2 x SATA connectors
- 3 x USB pin connectors for 6 additional USB 2.0 ports (1 port for VNT wireless board)
- 3 x Serial port pin connectors for COM2/3/4
- 1 x ATX Power connector
- 1 x Buzzer

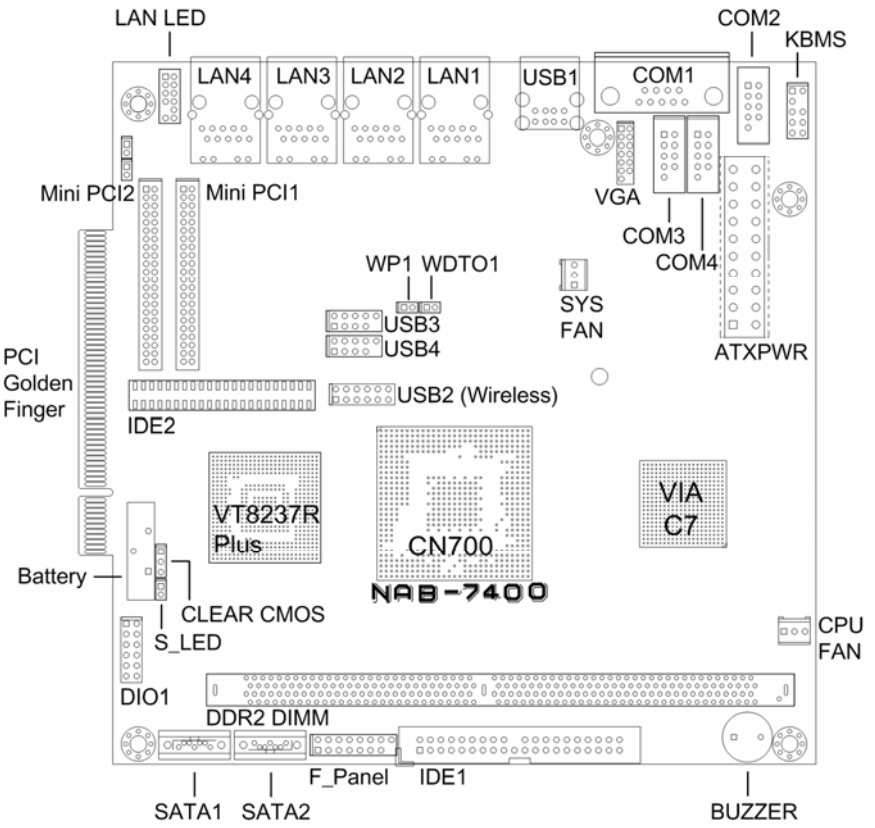
BIOS

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

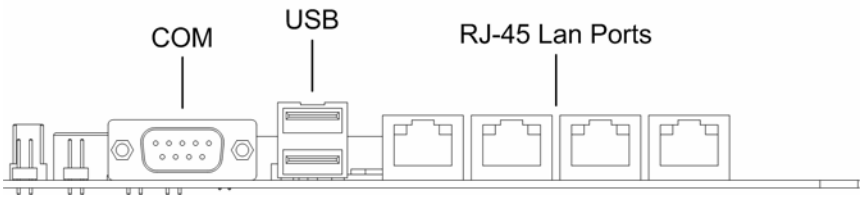
Form Factor

- 6-layer PCB
- 17cm X 17.8cm

MAINBOARD LAYOUT



BACK PANEL LAYOUT



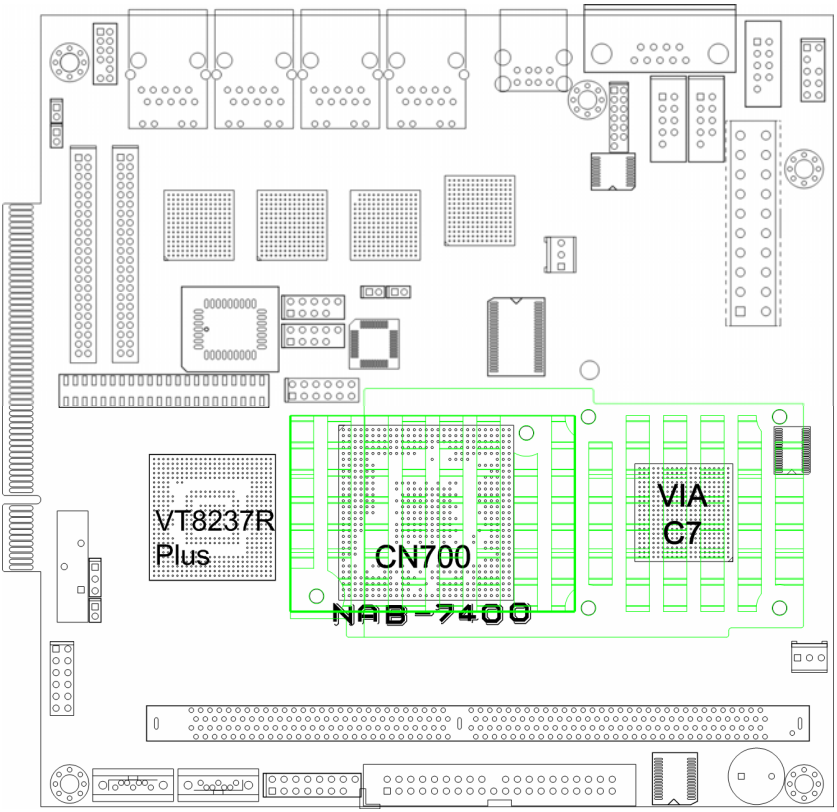
CHAPTER 2

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 NAB-7400 mainboard can support VIA C7 NanoBGA2 Processor.



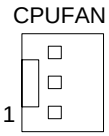
CPU Fan and System Fan: CPUFAN and SYSFAN

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.

FAN_MCM is a switch that is used by high-quality fans to monitor the system temperature and will automatically adjust according to the environment.

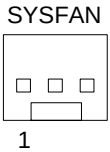
CPUFAN

Pin	Signal
1	FAN_MCM
2	+12V
3	GND



SYSFAN

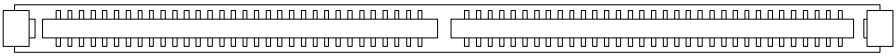
Pin	Signal
1	FAN Speed detect
2	FAN_Control
3	GND



MEMORY MODULE INSTALLATION

The VIA NAB-7400 mainboard provides one 240-pin DIMM slot for DDR2 400/533 SDRAM memory modules and supports the memory size up to 1GB.

DIMM



DDR2 SDRAM Module Installation Procedures

- Locate the DIMM slot in the motherboard.
- Unlock a DIMM slot by pressing the retaining clips outward.
- Align a DIMM on the socket such that the notch on the DIMM matches the break on the slot.
- Firmly insert the DIMM into the slot until the retaining clips snap back in place and the DIMM is properly seated.

Available DDR2 SDRAM Configurations

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

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

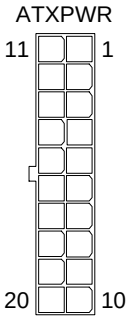
CONNECTING THE POWER SUPPLY

The VIA NAB-7400 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

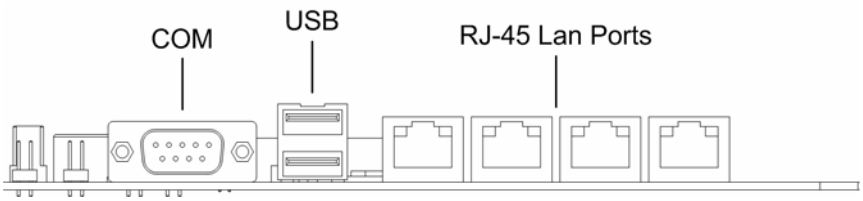
To connect the ATX power supply, make sure the power plug is inserted in the proper orientation and the pins are aligned. Then push down the plug firmly into the connector.

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



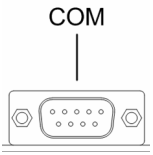
BACK PANEL PORTS

The back panel has the following ports:



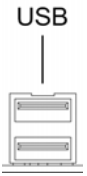
Serial port: COM 1

The 9-pin COM 1 port is for pointing devices or other serial devices.



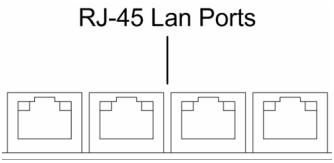
USB 2.0 ports

The USB ports is for connecting to external peripheral devices.



RJ-45 10/100 LAN ports

The mainboard provides four standard RJ-45 ports which allow connection to a Local Area Network (LAN).



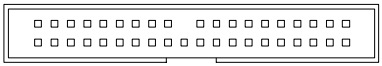
CONNECTORS

Hard Disk Connectors: IDE1 & IDE2

The mainboard has an Ultra DMA 133/100/66 controller. 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.

IDE1 (40 pins)



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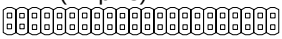
IDE2 (44 pins)



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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.

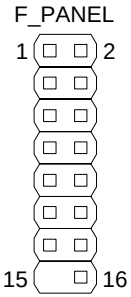
IDE2 Pinout:

Pin	Signal	Pin	Signal
1	-IDERST2	2	GND
3	SDD7	4	SDD8
5	SDD6	6	SDD9
7	SDD5	8	SDD10
9	SDD4	10	SDD11
11	SDD3	12	SDD12
13	SDD2	14	SDD13
15	SDD1	16	SDD14
17	SDD0	18	SDD15
19	GND	20	NC
21	SDDREQ	22	GND
23	-SDIOW	24	GND
25	-SDIOR	26	GND
27	SHDRDY	28	NC
29	-SDDACK	30	GND
31	IRQ15	32	NC
33	SDA1	34	S_ATA66
35	SDA0	36	SDA2
37	-SCS1	38	-SCS3
39	-HD_led2	40	GND
41	+5V	42	+5V
43	GND	44	NC

Case Connector: F_PANEL

The F_PANEL pin header 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



HDD LED (HD_LED): pin 2 & pin 4

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.

Power Switch (PW_BN): pin 6 & pin 8

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

Reset Switch (RST_SW): pin 10 & pin 12

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.

Sleep LED (-SLEEP_LED): pin 14 and pin 16

Power LED (-PLED_2): pin 1 & pin 5, or pin 3 & pin 5

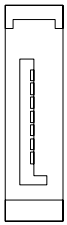
The LED will light when the system is on. If the system is in S1 (POS - Power On Suspend) or S3 (STR - Suspend To RAM) state, the LED will blink.

Speaker (SPEAK): pin 7 & pin 13

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

Serial ATA Connectors: SATA1 and SATA2

SATA1-2

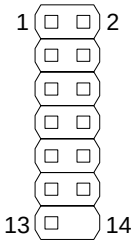


These next generation connectors support the thin Serial ATA cables for primary internal storage devices. The current Serial ATA interface allows up to 150 MB/s data transfer rate, faster than the standard parallel ATA with 133 MB/s (Ultra DMA).

VGA Connectors

The internal pin header is to support VGA output.

VGA1

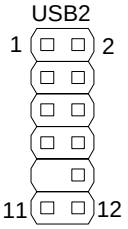


Pin	Signal	Pin	Signal
1	GND	2	VCC
3	R	4	SPD2
5	G	6	SPCLK2
7	B	8	HSYNC
9	GND	10	VSYNC
11	GND	12	GND
13	GND	14	Key

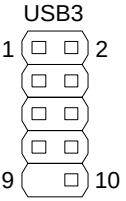
USB Pin Connector: USB 2-4

The mainboard provides 3 front USB pin headers, allowing up to 6 additional USB 2.0 ports up to maximum throughput of 480 Mbps. Connect each 2-port USB cable into the pin header. This port can be used to connect high-speed USB interface peripherals such as USB HDD, digital cameras, MP3 players, printers, modem and the like.

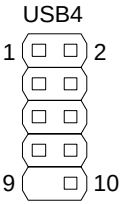
Pin	Signal	Pin	Signal
1	VCC	2	VCC
3	USBD_T2-	4	USBD_T3-
5	USBD_T2+	6	USBD_T3+
7	GND	8	GND
9	Key	10	Wireless LAN LED
11	NC	12	NC



Pin	Signal	Pin	Signal
1	VCC	2	VCC
3	USBD_T4-	4	USBD_T5-
5	USBD_T4+	6	USBD_T5+
7	GND	8	GND
9	Key	10	GND



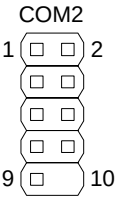
Pin	Signal	Pin	Signal
1	5VDUAL	2	5VDUAL
3	USBD_T6-	4	USBD_T7-
5	USBD_T6+	6	USBD_T7+
7	GND	8	GND
9	Key	10	GND



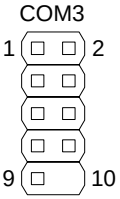
Serial Port Connector: COM 2/3/4

COM2/3/4 pin headers can be used to attach additional ports for serial mouse or other serial devices.

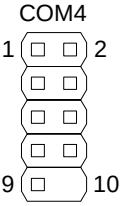
Pin	Signal	Pin	Signal
1	RIN12	2	RIN32
3	DOUT22	4	DOUT32
5	GND	6	RIN22
7	DOUT12	8	RIN42
9	XRI2#	10	Key



Pin	Signal	Pin	Signal
1	RIN13	2	RIN33
3	DOUT23	4	DOUT33
5	GND	6	RIN23
7	DOUT13	8	RIN43
9	XRI3#	10	Key



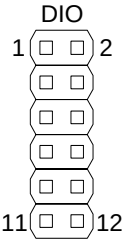
Pin	Signal	Pin	Signal
1	RIN14	2	RIN34
3	DOUT24	4	DOUT34
5	GND	6	RIN24
7	DOUT14	8	RIN44
9	XRI4#	10	Key



Digital I/O Connector: DIO

General purpose input and output.

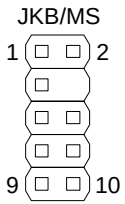
Pin	Signal	Pin	Signal
1	+5V	2	+12V
3	GPO14	4	GPI20
5	GPO13	6	GPI21
7	GPO4	8	GPI22
9	GPO29	10	GPI9
11	GND	12	GND



KBMS Connector: JKB/MS

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

Pin	Signal	Pin	Signal
1	VCCE	2	VCCE
3	KB_CLK	4	Key
5	EKBCLK	6	EKBDATA
7	KB_DT	8	MS_DT
9	KB_CK	10	MS_CK

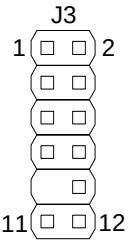


Note: When the pin header is not in use, please short pin 3&5, pin 4&6, pin 7&9 and pin 8&10.

LAN LED Connector: J3

This pin header allows you to connect to a LAN LED which shows the state of network connecion.

Pin	Signal	Pin	Signal
1	LAN1_ACT	2	LINK_UP1
3	LAN2_ACT	4	LINK_UP2
5	LAN3_ACT	6	LINK_UP3
7	LAN4_ACT	8	LINK_UP4
9	Key	10	NC
11	+3.3V	12	WireLess LED



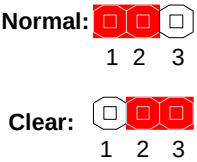
JUMPERS

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 Connector: 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.

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



WARNING: 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.

LAN3-LAN4 Bypass Enable: J2

Open 1-2, bypass function is enabled for LAN3 and LAN4; short 1-2, then bypass function is disabled.

BIOS Write Protection: WP1

This jumper allows you to protect from flashing the BIOS. BIOS Write Protection setting: pin1 = /WP & /TBL, pin2 = GND, short 1-2.

Watchdog Timer: WDTO1

Watchdog Timer setting: pin1 = -WDTO, pin2 = VCOREGD, short 1-2.

S_LED1

Pin header for LED indicator of SATA HD, short 1-2.

SLOTS

Peripheral Component Interconnect: Mini PCI

The Mini PCI interface is designed for the BXB Expansion module for supporting additional functions as 1 Mini-PCI slot, 1 CF card reader interface, and 2 x 44 pin IDE connectors. Among those 2 IDE connectors, one of them has the DOM support.

Mini PCI 1-2

1

PCI Interrupt Request Routing

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

	INTA#	INTB#
Slot 1	INT C#	INT D#

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.

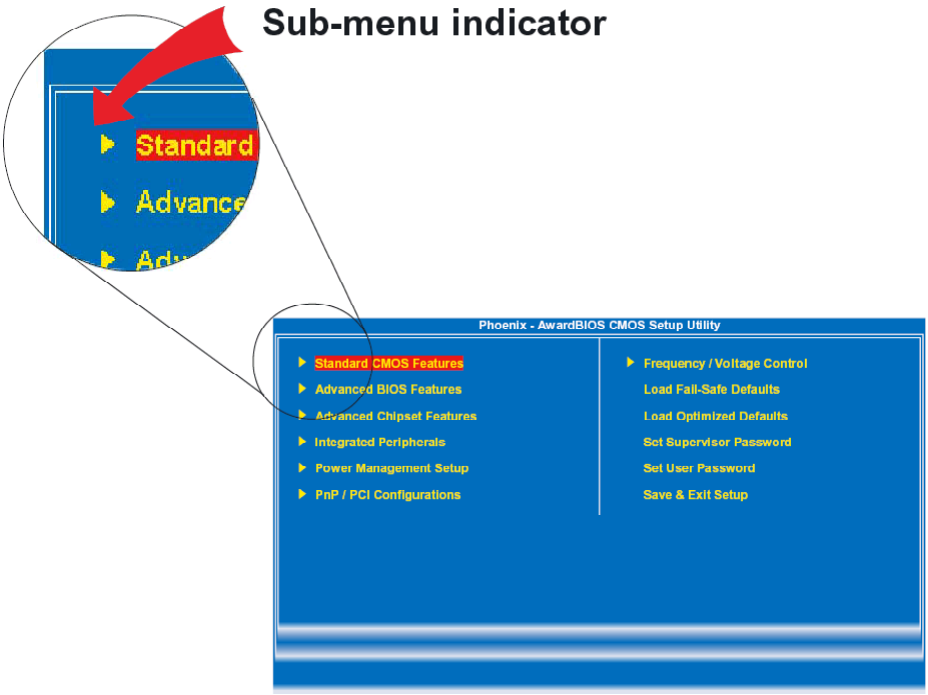
CONTROL KEYS

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.

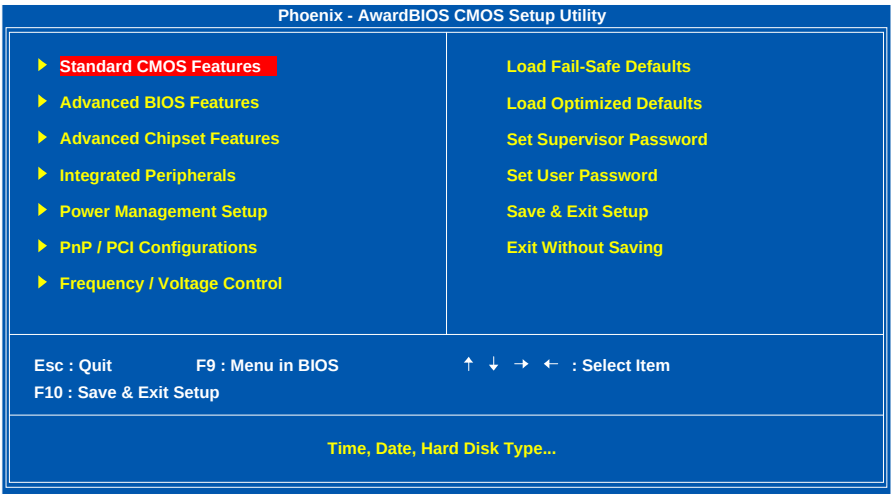
An arrow symbol next to a field indicates that a sub-menu is available (see figure below). Press <Enter> to display the sub-menu. To exit the sub-menu, press <Esc>.



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.

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.

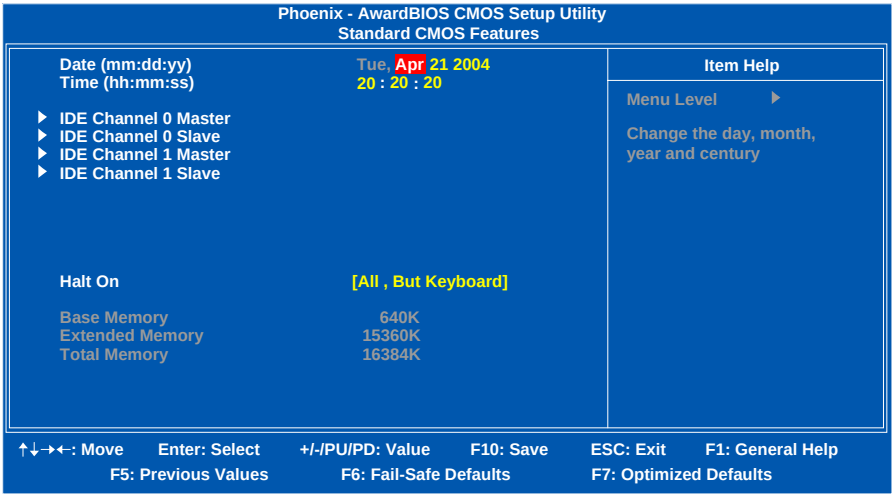
Save & Exit Setup

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

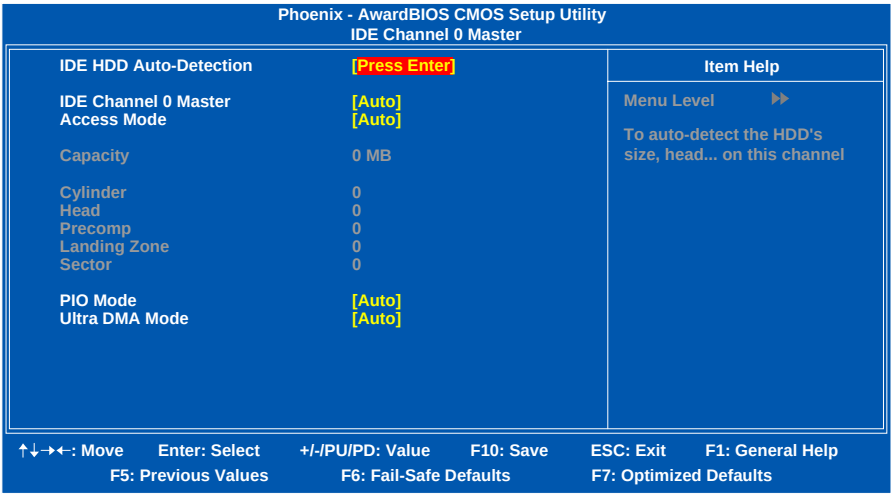
The time format is [Hour : Minute : Second]

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

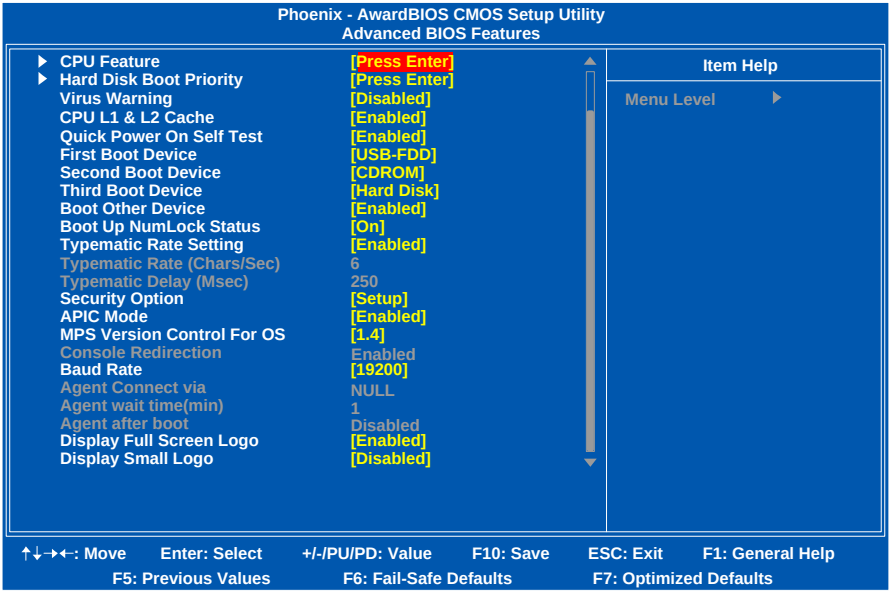
IDE DRIVES



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: [Auto, 0, 1, 2, 3, 4]
Ultra DMA Mode	Settings: [Disabled, Auto]

ADVANCED BIOS FEATURES



Virus Warning

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

CPU L1 & L2 Cache

Setting	Description
Enabled	Turns on CPU L1 & L2 cache
Disabled	Turns off CPU L1 & L2 cache

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
CDROM	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
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” 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]

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

APIC Mode

Enables APIC (Advanced Programmable Interrupt Controller) functionality.

Settings: [Enabled, Disabled]

MPS Variation Control For OS

Settings: [1.1, 1.4]

Baud Rate

Settings: [9600, 19200, 38400, 57600, 115200]

Display Full Screen Logo

Show full screen logo during BIOS boot up process.

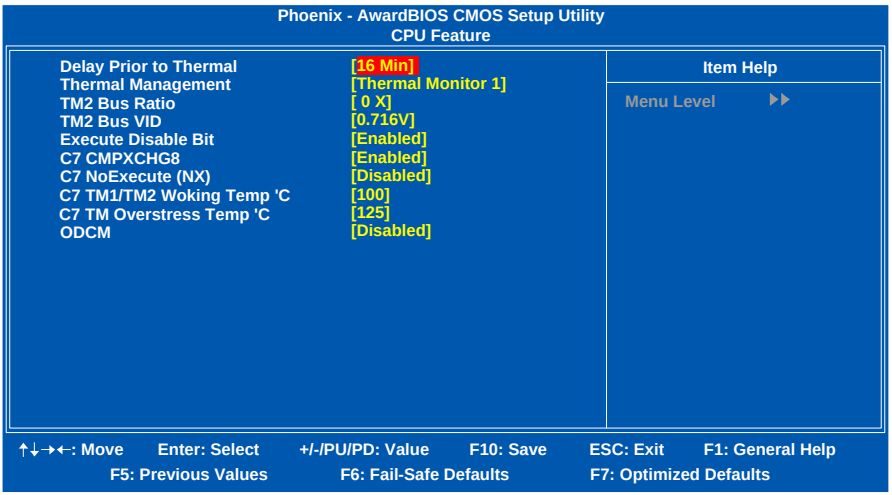
Settings: [Enabled, Disabled]

Display Small Logo

Show small energy star logo during BIOS boot up process.

Settings: [Enabled, Disabled]

CPU FEATURE



Delay Prior to Thermal

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

Thermal Management

Thermal Monitor 1 (On die throtting) ; Thermal Monitor 2 (Ratio & VID transition).

Settings: [Thermal Monitor 1, Thermal Monitor 2]

TM2 Bus Ratio

Represent the frequency (bus ratio) of the throttled performance state that will be initiated when the on-die sensor goes from not hot to hot.

Settings: [Key in a DEC number ranged between 0~255]

TM2 Bus VID

Represent the voltage of the throttled performance state that will be initiated when the on-die sensor goes from not hot to hot.

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

Execute Disable Bit

When disabled, forces the XD feature flag to always return to 0.

Settings: [Enabled, Disabled]

C7 CMPXCHG8

Disable to install Windows NT 4.0.

Settings: [Enabled, Disabled]

C7 NoExecute (NX)

NoExecute is supported in WinXP SP2 and provides some protection from virii.

Settings: [Enabled, Disabled]

C7 TM1/TM2 Working Temp ℃

Show small energy star logo during BIOS boot up process.

Settings: [Enabled, Disabled]

C7 TM Overstress Temp ℃

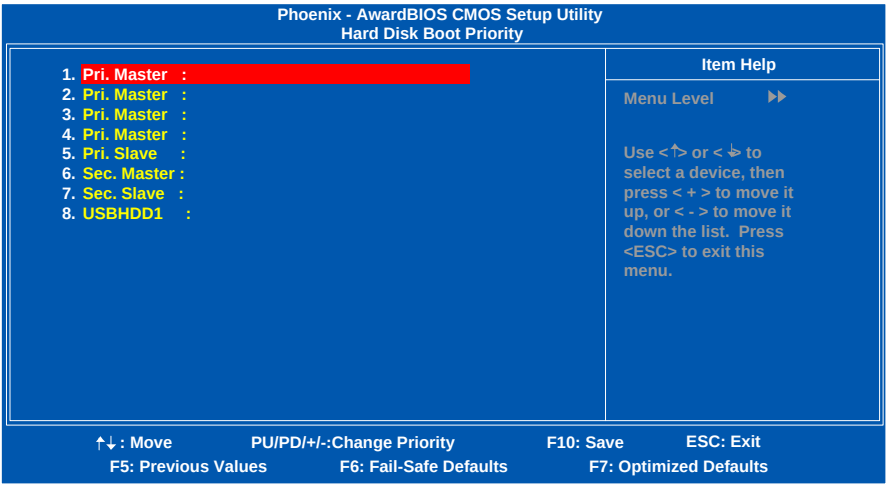
Settings: [Key in a DEC number ranged between 0~255]

ODCM

On Demand Clock Modulation forces an internal stop grant duty cycle.

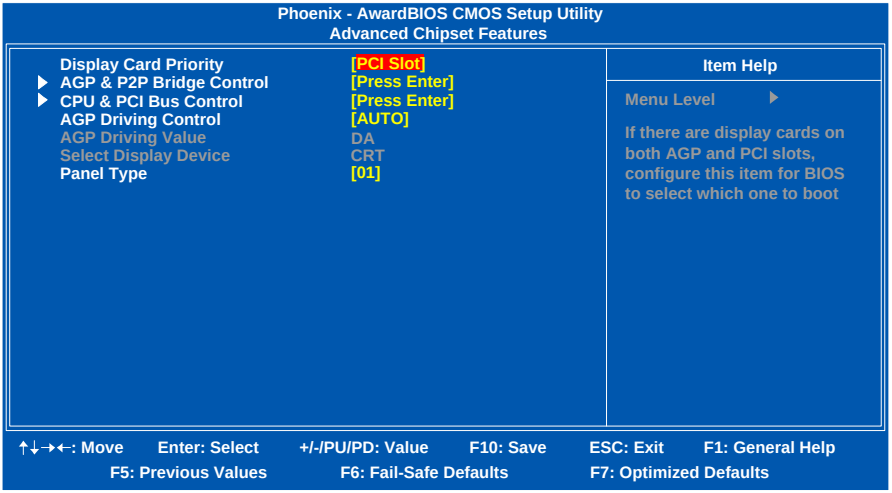
Settings: [Disabled, 12.5%, 25.0%, 37.5%, 50.0%, 62.5%, 75.0%, 87.5%]

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



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.

Display Card Priority

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

Settings: [PCI Slot, AGP]

AGP Driving Control

Always fix this setting to optimized default value unless you face problems with special video cards.

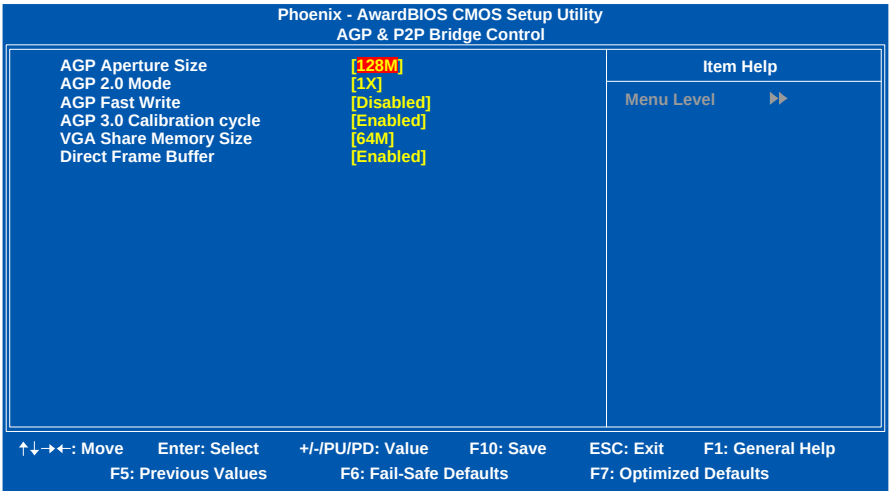
Settings: [Auto, Manual]

Panel Type

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

Settings: [Key in a HEX number ranged between 0000~000F]

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, 1G]

AGP 2.0 Mode

To configure the maximum capable performance of the AGP bus. The actual performance depends on the display card.

Settings: [4X, 2X, 1X]

AGP Fast Write

Enable this feature can improve system performance. Enable ONLY when your AGP Card supports Fast Write.

Settings: [Enabled, Disabled]

AGP 3.0 Calibration cycle

Settings: [Enabled, Disabled]

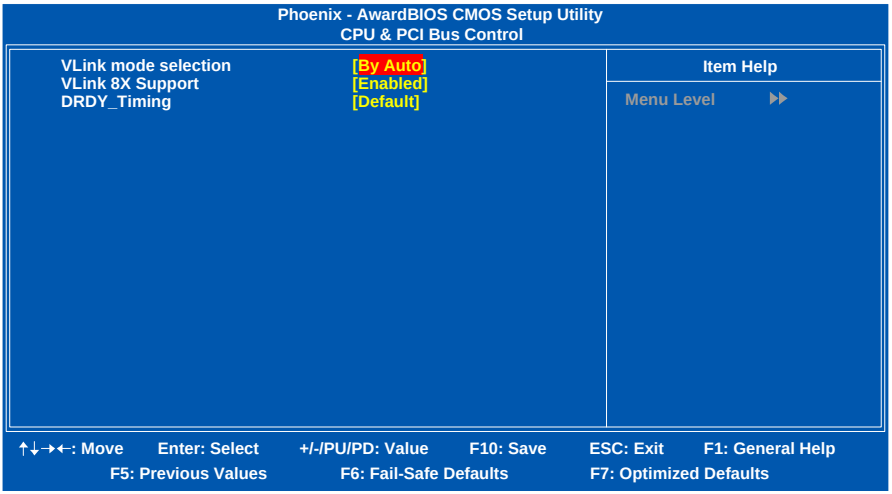
VGA Share Memory Size

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

Direct Frame Buffer

Settings: [Enabled, Disabled]

CPU & PCI BUS CONTROL



V-Link mode selection

This menu item controls the data transfer speed between the north and south bridge.

Settings: [By Auto, Mode 0~4]

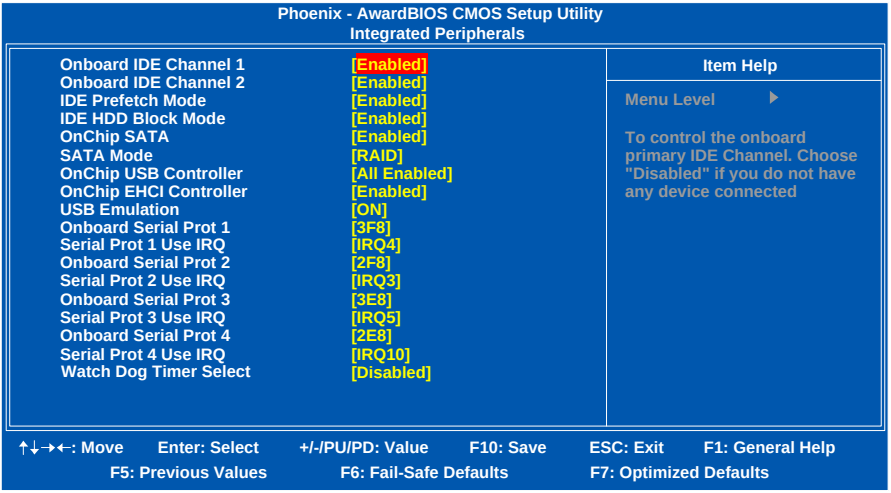
V-Link 8X Support

Settings: [Enabled, Disabled]

DRDY_Timing

Settings: [Slowest, Default, Optimize]

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

Fixed to default “Enabled” to let the IDE controller work more efficiently.

Settings: [Enabled, Disabled]

IDE HDD Block Mode

If your IDE hard drive supports block mode, select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support.

Settings: [Enabled, Disabled]

OnChip SATA

Settings: [Enabled, Disabled]

SATA Mode

Serial ATA is the latest generation of the ATA interface. Serial ATA hard drives deliver transfer speeds of up to 150MB/sec.

Setting	Description
IDE	Supports two SATA plus two PATA hard disk drives
RAID	Only SATA supports RAID

OnChip USB Controller

Settings: [All Disabled, All Enabled, 1&2 USB Port, 2&3 USB Port, 1&3 USB Port, 1 USB Port, 2 USB Port, 3 USB Port]

OnChip EHCI Controller

Settings: [Enabled, Disabled]

USB Emulation

Set this field to choose the USB emulation. When set to “OFF “, do not support any USB device on DOS. When set to “KB/MS”, support USB legacy keyboard and mouse, no support USB storage. And set to ”ON”, support USB legacy keyboard, mouse and storage.

Settings: [OFF, KB/MS, ON]

Onboard Serial Port 1

Settings: [Disabled, 3F8, 2F8, 3E8, 2E8]

Serial Prot 1 USB IRQ

Settings: [IRQ3, IRQ 4, IRQ 5, IRQ 10, IRQ 11]

Onboard Serial Port 2

Settings: [Disabled, 3F8, 2F8, 3E8, 2E8]

Serial Prot 2 USB IRQ

Settings: [IRQ3, IRQ 4, IRQ 5, IRQ 10, IRQ 11]

Onboard Serial Port 3

Settings: [Disabled, 3F8, 2F8, 3E8, 2E8]

Serial Prot 3 USB IRQ

Settings: [IRQ3, IRQ 4, IRQ 5, IRQ 10, IRQ 11]

Onboard Serial Port 4

Settings: [Disabled, 3F8, 2F8, 3E8, 2E8]

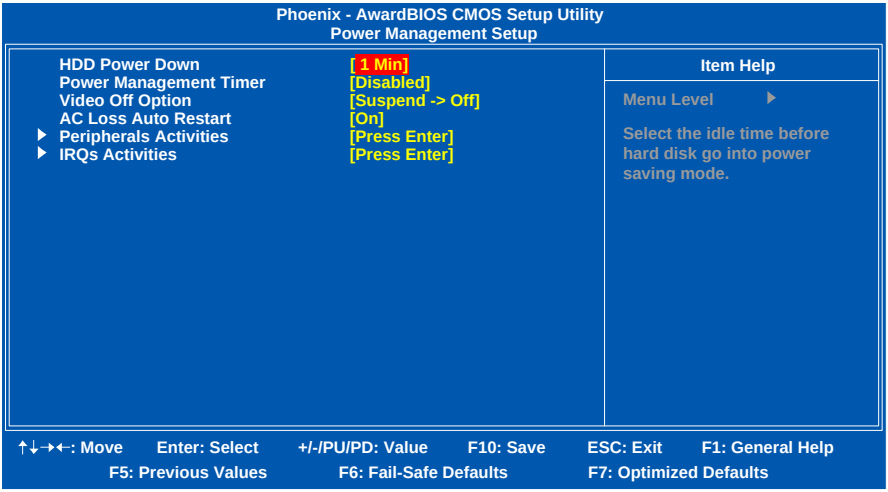
Serial Prot 4 USB IRQ

Settings: [IRQ3, IRQ 4, IRQ 5, IRQ 10, IRQ 11]

Watchdog Timer Select

Settings: [Disabled, 20 Sec, 30 Sec, 40 Sec, 1 Min, 2 Min, 4 Min]

POWER MANAGEMENT SETUP



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.

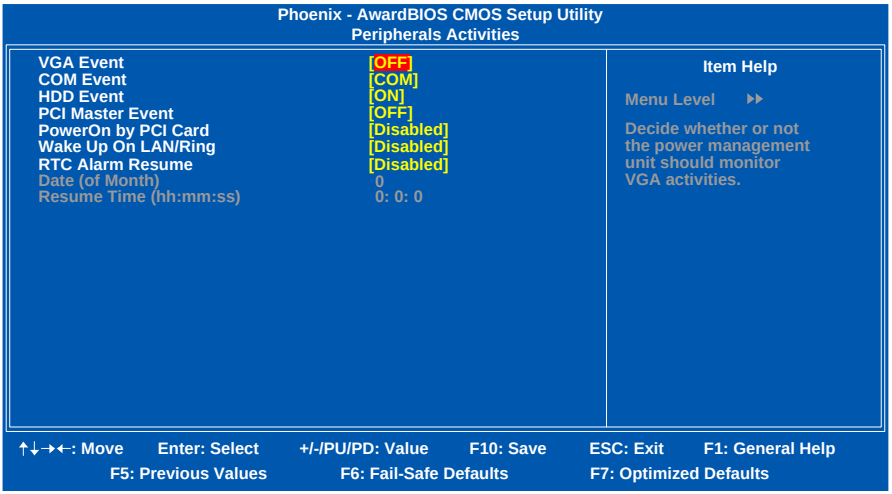
Setting	Description
Always On	Screen is always on even when system enters power saving mode
Suspend -> Off	Screen is turned off when system enters power saving mode

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	Former-Sts

PERIPHERAL ACTIVITIES



VGA Event

Enables the power management unit to monitor VGA activities.

Settings: [Off, On]

COM Event

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

Settings: [None, COM]

HDD Event

Enables the power management unit to monitor hard disk activities.

Settings: [Off, On]

PCI Master Event

Enables the power management unit to monitor PCI master activities.

Settings: [Off, On]

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 card, onboard LAN controller, onboard USB ports, etc.

Settings: [Disabled, Enabled]

Wake Up On LAN/Ring

Decide whether or not any Ring-In signals from Modem can wake up the system from a suspended state.

Settings: [Disabled, Enabled]

RTC Alarm Resume

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

Settings: [Disabled, Enabled]

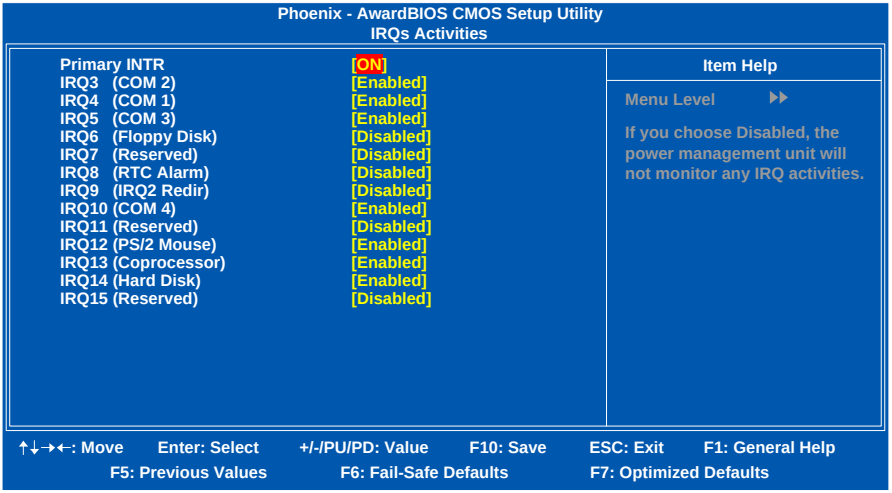
Date (of Month)

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]

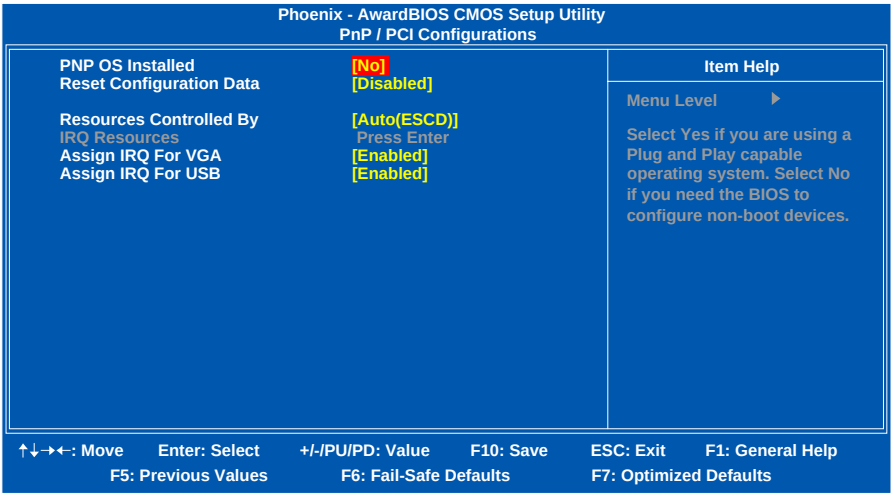
IRQ3~IRQ15

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.

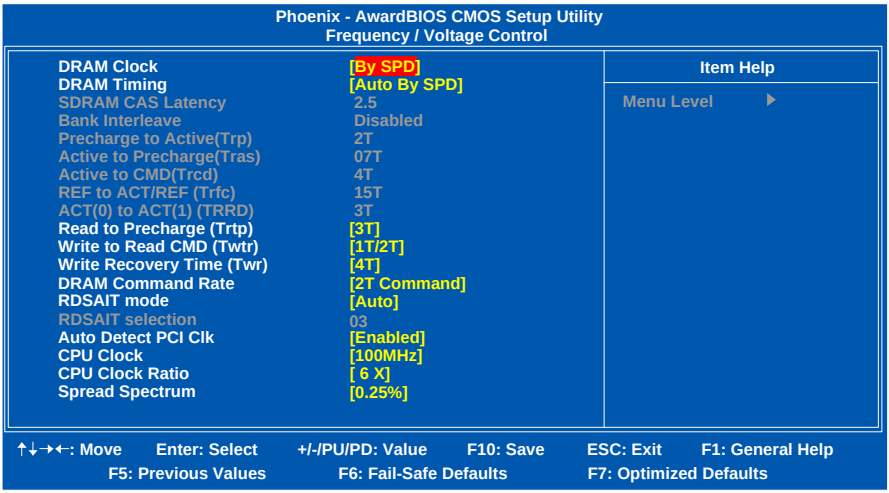
Setting	Description
Auto(ESCD)	BIOS will automatically assign IRQ, DMA and memory base address fields
Manual	Unlocks “IRQ Resources” for manual configuration

Assign IRQ For VGA/USB

Assign IRQ for VGA and USB devices.

Settings: [Disabled, Enabled]

FREQUENCY / VOLTAGE CONTROL



DRAM Clock

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

Settings: [By SPD, 100 MHz, 133 MHz, 166 MHz, 200MHz, 266MHz]

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, Turbo, Ultra]

Read to Precharge (Trtp)

Settings: [2T, 3T]

Write to Read CMD (Twtr)

Settings: [1T/2T, 2T/3T]

Write Recovery Time (Twr)

Settings: [2T, 3T, 4T, 5T]

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]

RDSAIT mode

Settings: [Manual, Auto]

Auto Detect PCI Clk

Settings: [Enabled, Disabled]

CPU Clock

Settings: [Key in a DEC number ranged between 100~333]

CPU Clock Ratio

To configure the CPU internal clock multiplier. This option does NOT apply to CPU(s) which have this clock multiplier locked.

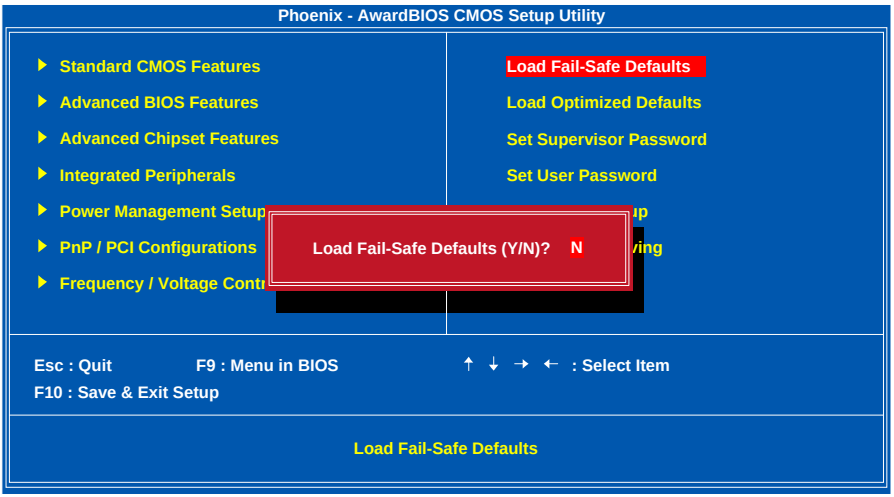
Settings: [Key in a DEC number ranged between 8~50]

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.

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

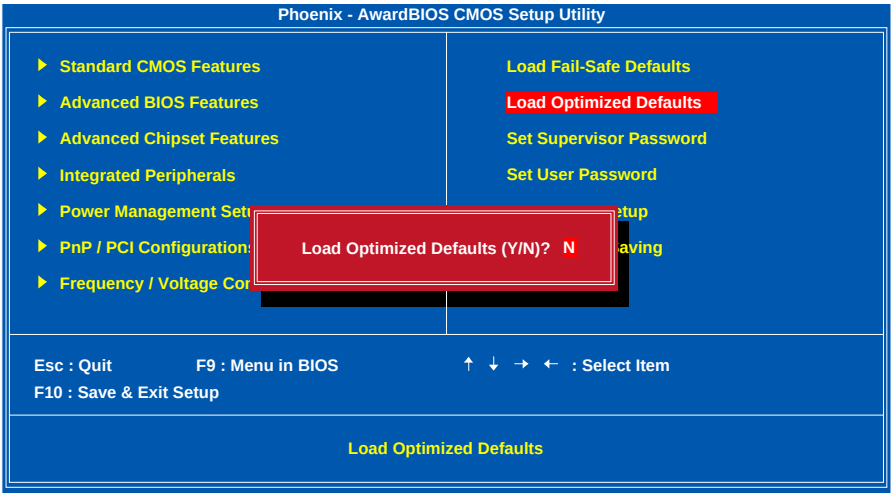
LOAD FAIL-SAFE DEFAULTS



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.

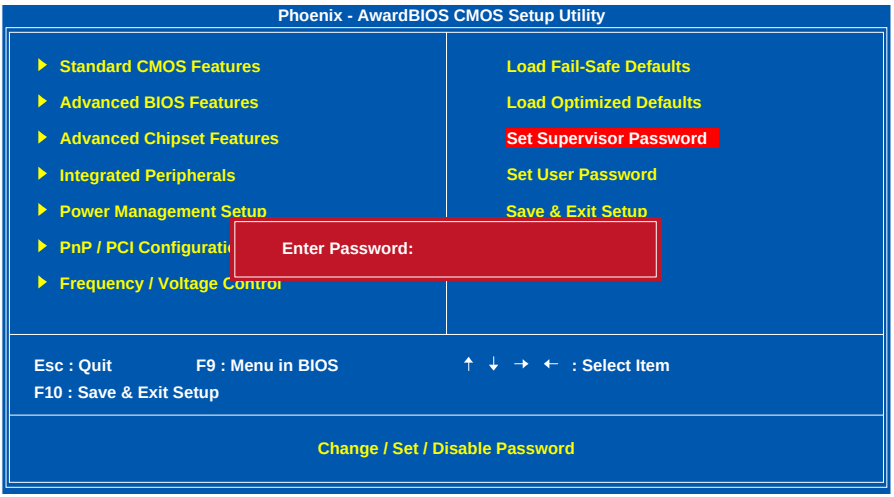
LOAD OPTIMIZED DEFAULTS



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.

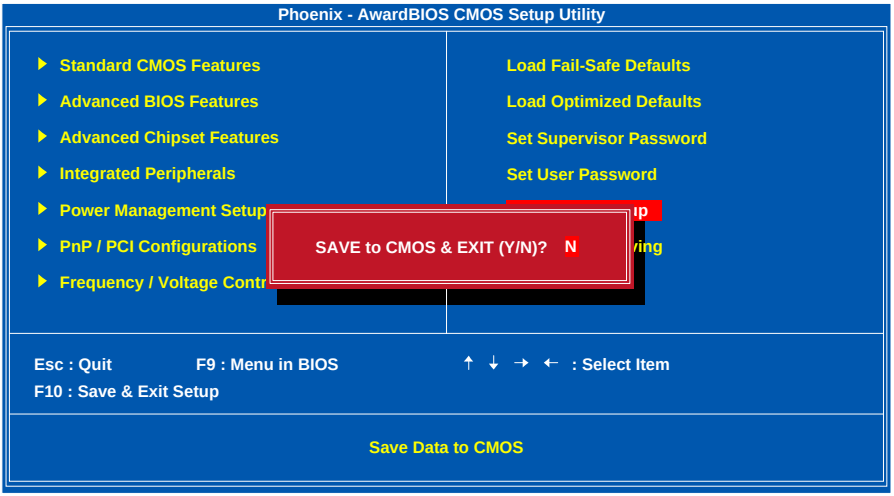
There are two types of passwords you can set. A supervisor password and a user password. When a supervisor password is used, the BIOS Setup program can be accessed and the BIOS settings can be changed. When a user password is used, the BIOS Setup program can be accessed but the BIOS settings cannot be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

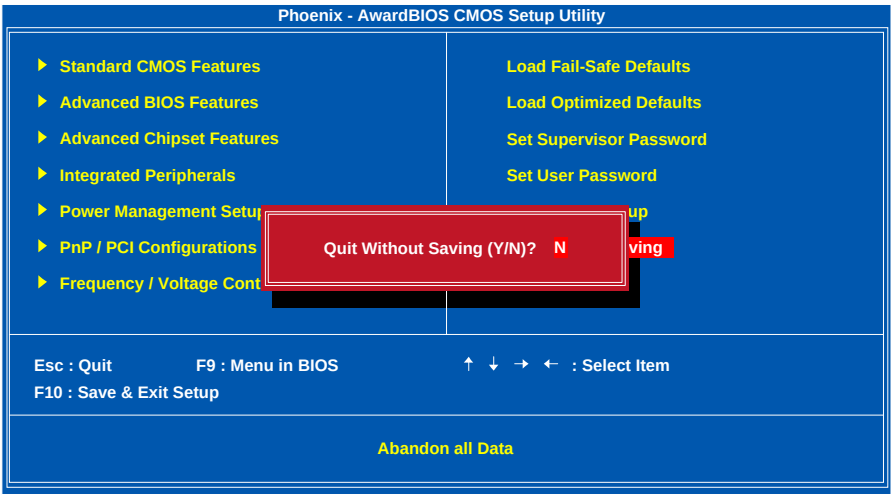
SAVE & EXIT SETUP



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 Driver Utilities CD contains the driver utilities and software for enhancing the performance of the mainboard.

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.
- ☒ **Intel LAN Driver:** Enhances the onboard Intel 10/100M LAN chip.
- ☒ **Intel GigaLAN Driver:** Enhances the onboard optional Intel 10/100/1000M LAN chip.
- ☒ **VIA RAID Driver:** Support for RAID devices.

APPENDIX

Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sort of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

SAMPLE CODE

This code and information is provided “as is” without warranty of any kind, either expressed or implied, including but not limited to the implied warranties of merchantability and/or fitness for a particular purpose.

```
#include <stdio.h>
#include <dos.h>
#include <inlines/pc.h>

//Sio area
#define SUPERIO_INDEX 0x4e
#define SUPERIO_DATA  0x4f
#define BANK_REG      0x07
#define CR20_REG      0x20    //This register indicate the device's ID
#define Fintek_ID     0x08 //Fintek Device ID CR21-20 = 0208h

//Digital Input=GP10~13 ==> mapping to IN0~IN3
//Digital Output=GP14~17 ==> mapping to OUT0~OUT3



main(int argc, char *argv[])
{
        int     i;
        int     io_mode;                //0: read 1:write
        char    *ptr;
        unsigned char tmp, tmp1;
```

```
        int     value;




printf("============================================
============================\n");
    printf("  Fintek Watchdog testing program  Ver:00   2007-2-5\n");

printf("============================================
============================\n");


        if (detect_sio()) print_err_help(argv);


        if ((argc<2)||(argc>3))
        {
                print_help(argv);
        }
//      printf("the parameter=%s\n", argv[1]);
        sscanf(argv[1], "%d", &value);
//      printf("you input=%d\n", value);
        if(value >255) print_help(argv);


        write_sio_reg(0x08, 0x60, 0x03);  //Set Watch Dog timer base
address High byte = 03h
        write_sio_reg(0x08, 0x61, 0x00);  //Set Watch Dog timer base
address Low byte = 00h
        write_sio_reg(0x08, 0x30, 0x01);  //enable watchdog function
```

```
        outportb(0x0300, 0x03);  //Select unit to one second and clear time
out status
        outportb(0x0301, value);
        outportb(0x0301, value);  //Set timer to value second and enable
timer
        printf("Program %d seconds success\n", value);
        return;
}

void print_help(char *argv[])
{
        printf("!!! Wrong argument !!!\n");
        printf("using: %s nnn\n", argv[0]);
        printf("      nnn=1~255 seconds\n");
        printf("      nnn=0 to disbale watchdog \n");
        printf("Program terminated !!!\n");
        exit(1);
}

void print_err_help(char *argv[])
{
        printf("!!! Wrong platform !!!\n");
        printf("!!! This is not Fintek \n");
        printf("!!! Program terminated !!!\n");
        exit(1);
}
```

```
//input: none
//output: 1 = not correct SuperIO
//          0 = correct SuperIO
int detect_sio(void)
{
        //check the SuperIO version
        if(read_sio_reg(0,CR20_REG)==Fintek_ID)
                return 0;
        else
                return 1;
}



unsigned char read_sio_reg(int bank_no, int reg_no)
{
        unsigned char reg_data;
        enter_sio_config();
        outportb(SUPERIO_INDEX, BANK_REG);
        delay(1);
        outportb(SUPERIO_DATA, bank_no);
        delay(1);
        outportb(SUPERIO_INDEX, reg_no);
        delay(1);
        reg_data=inportb(SUPERIO_DATA);
        exit_sio_config();
        return reg_data;
```

```
}


void write_sio_reg(int bank_no, int reg_no, unsigned short write_data)
{
        enter_sio_config();
        outportb(SUPERIO_INDEX, BANK_REG);
        delay(1);
        outportb(SUPERIO_DATA, bank_no);
        delay(1);
        outportb(SUPERIO_INDEX, reg_no);
        delay(1);
        outportb(SUPERIO_DATA, write_data);
        exit_sio_config();
}

void enter_sio_config()
{
        outportb(SUPERIO_INDEX, 0x77);
        delay(1);                       //delay some time
        outportb(SUPERIO_INDEX, 0x77);
}
void exit_sio_config()
{
        outportb(SUPERIO_INDEX, 0xaa);
}
```