eBOX639-840 & eBOX-639-840-FL Series
Embedded System
User's Manual

Disclaimers

This manual has been carefully checked and believed to contain accurate information. AXIOMTEK Co., Ltd. assumes no responsibility for any infringements of patents or any third party's rights, and any liability arising from such use.

AXIOMTEK does not warrant or assume any legal liability or responsibility for the accuracy, completeness or usefulness of any information in this document. AXIOMTEK does not make any commitment to update the information in this manual.

AXIOMTEK reserves the right to change or revise this document and/or product at any time without notice.

February 2009, Version A1
Printed in Taiwan

Safety Precautions

Before getting started, please read the following important safety precautions.

1. The **eBOX639-840 & eBOX-639-840-FL Series** does not come equipped with an operating system. An operating system must be loaded first before installing any software into the computer.
2. Be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.
3. Disconnect the power cord from the **eBOX639-840 & eBOX-639-840-FL Series** before making any installation. Be sure both the system and the external devices are turned OFF. Sudden surge of power could ruin sensitive components. Make sure the **eBOX639-840 & eBOX-639-840-FL Series** is properly grounded.
4. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
5. Turn OFF the system power before cleaning. Clean the system using a cloth only. Do not spray any liquid cleaner directly onto the screen.
6. Do not leave this equipment in an uncontrolled environment where the storage temperature is below -20℃ or above 60℃. It may damage the equipment.
7. Do not open the system's back cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:
   - Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on your body.
   - When handling boards and components, wear a wrist-grounding strap, available from most electronic component stores.

Classification

1. Degree of production against electric shock: not classified
2. Degree of protection against the ingress of water: IPX0
3. Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.
4. Mode of operation: Continuous
5. Type of protection against electric shock: Class I equipment

General Cleaning Tips

You may need the following precautions before you begin to clean the computer. When you clean any single part or component for the computer, please read and understand the details below fully.

When you need to clean the device, please rub it with a piece of dry cloth.

1. Be cautious of the tiny removable components when you use a vacuum cleaner to absorb the dirt on the floor.
2. Turn the system off before you start to clean up the component or computer.
3. Never drop the components inside the computer or get circuit board damp or wet.
4. Be cautious of all kinds of cleaning solvents or chemicals when you use it for the sake of cleaning. Some individuals may be allergic to the ingredients.
5. Try not to put any food, drink or cigarette around the computer.

Cleaning Tools:

Although many companies have created products to help improve the process of cleaning your computer and peripherals users can also use household items to clean their computers and peripherals. Below is a listing of items you may need or want to use while cleaning your computer or computer peripherals.

Keep in mind that some components in your computer may only be able to be cleaned using a product designed for cleaning that component, if this is the case it will be mentioned in the cleaning.

- Cloth: A piece of cloth is the best tool to use when rubbing up

a component. Although paper towels or tissues can be used on most hardware as well, we still recommend you to rub it with a piece of cloth.

- Water or rubbing alcohol: You may moisten a piece of cloth a bit with some water or rubbing alcohol and rub it on the computer. Unknown solvents may be harmful to the plastics parts.
- Vacuum cleaner: Absorb the dust, dirt, hair, cigarette particles, and other particles out of a computer can be one of the best methods of cleaning a computer. Over time these items can restrict the airflow in a computer and cause circuitry to corrode.
- Cotton swabs: Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas in your keyboard, mouse, and other locations.
- Foam swabs: Whenever possible it is better to use lint free swabs such as foam swabs.

Note *We strongly recommended that you should shut down the system before you start to clean any single components.*

Please follow the steps below:

1. Close all application programs
2. Close operating software
3. Turn off power switch
4. Remove all device
5. Pull out power cable

Scrap Computer Recycling

If the computer equipments need the maintenance or are beyond repair, we strongly recommended that you should inform your AXIOMTEK distributor as soon as possible for the suitable solution. For the computers that are no longer useful or no longer working well, please contact your AXIOMTEK distributor for recycling and we will make the proper arrangement.

Trademarks Acknowledgments

AXIOMTEK is a trademark of AXIOMTEK Co., Ltd.
IBM, PC/AT, PS/2, VGA are trademarks of International Business Machines Corporation.
Intel® and Pentium® are registered trademarks of Intel Corporation.
MS-DOS, Microsoft C and QuickBASIC are trademarks of Microsoft Corporation.
VIA is a trademark of VIA Technologies, Inc.
SST is a trademark of Silicon Storage Technology, Inc.
UMC is a trademark of United Microelectronics Corporation.
Other brand names and trademarks are the properties and registered brands of their respective owners.

Table of Contents

MEMO

CHAPTER 1
INTRODUCTION

This chapter contains general information and detailed specifications of the **eBOX639-840 & eBOX-639-840-FL Series**. Chapter 1 includes the following sections:

- **General Description**
- **System Specification**
- **Dimensions**
- **I/O Outlets**
- **Package List**

1.1 General Description

The **eBOX639-840 & eBOX-639-840-FL Series** is an embedded system that supports socket type Intel® Core™ 2 Duo and Celeron® M processors to provide Windows® XP, Windows® CE embedded and Linux, suitable for the most endurable operation. It features fanless design with full feature I/O, one 32bit/33MHz PCI slot, one PCI Express X16 slot for graphics for expansion purpose, high performance DDR2 DIMM max. up to 4GB, and enhanced system dependability by built-in Watchdog Timer.

➢ **Reliable and Stable Design**

The **eBOX639-840 & eBOX-639-840-FL Series** adopts the advanced cooling system and the anti-vibration hard-drive bay, which makes it especially suitable for vibration environments, best for industrial automation, digital signage and gaming application.

➢ **Embedded O.S. Supported**

The **eBOX639-840 & eBOX-639-840-FL Series** not only supports Windows® XP, but also supports embedded OS, such as Windows®

XP embedded, WinCE and Linux. For storage device, the **eBOX639-840 & eBOX-639-840-FL Series** supports one 2.5" SATA/IDE HDD drive bay.

1.2 System Specifications

1.2.1 CPU

- **CPU**
- Socket P (478-pin) for Intel® Core™ 2 Duo and Celeron® M processors
- **BIOS**
  - Phoenix-Award BIOS, 16Mbit with RPL/PXE LAN Boot ROM, SmartView and Customer CMOS Backup
- **System Memory**
  - Two 240-pin DDR2 DIMMs max. up to 4GB

1.2.2 I/O System

- **System I/O Outlet**
  - Three 9-pin D-Sub male RS-232 connector for COM2~4
  - One 9-pin D-Sub male RS-232/422/485 connector for COM1
  - One 15-pin D-Sub female connector for VGA
  - One PS/2 connector for Keyboard
  - One PS/2 connector for Mouse
  - One AC'97 Audio for Line-in/Line-out
  - Two RJ-45 connectors for 10/100/1000Base-T Ethernet
  - Six USB ports 2.0 connectors
  - One V_{DC} Power Input connector
  - Two IEEE 1394a connectors

1.2.3 System Specification

- **Watchdog Timer**
  - 255 levels as SMI and Reset from 0 ~ 255 seconds
- **Power Supply**
  - Input rating-- Vdc 10~30V (-10 ~ 70 degreeC)

    (Input source should be more than 20A when it is operated within 10V~15V, and more than12A when it is operated within 15V~30V.)
  - Output rating-- 150W
  - Output voltage-- +5Vdc@11A, +12Vdc@9A, +3.3Vdc@5A, +5Vsb@2A, -12V@0.15A

NOTE *The maximum loading of 3.3V +5Vsb +5V is 80W.*

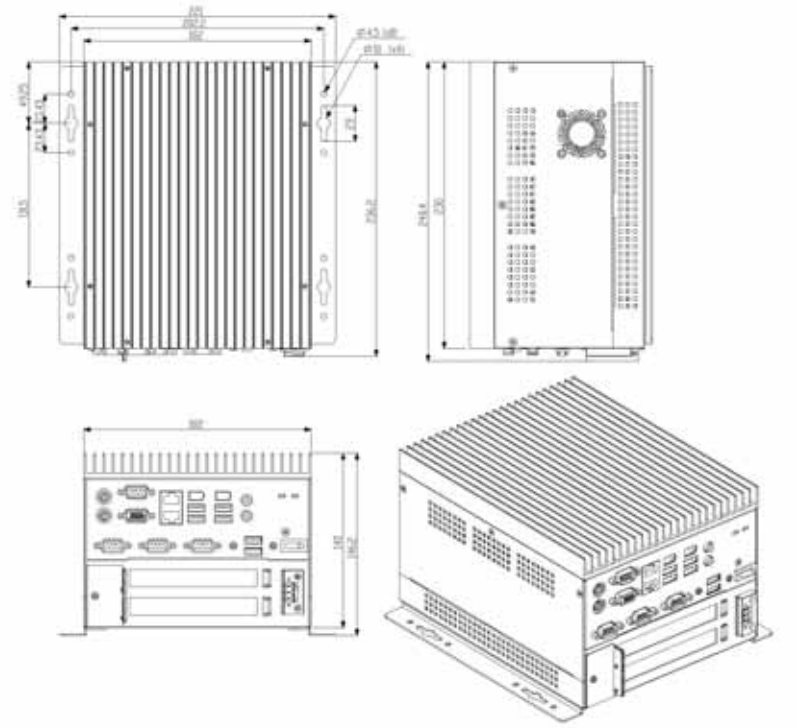
The maximum loading of 3.3V +5V +12V is 150W.

- **Operation Temperature**
  - -10℃ ~ 40℃ (eBOX639-840-FL)
  - -10℃ ~ 45℃ (eBOX639-840)
- **Storage Temperature**
  - -20℃ ~ 80℃
- **Humidity**
  - 10% ~ 90% RH (non-condensation)
- **Vibration Endurance**
  - 1Grms (5 ~ 500Hz, X, Y, Z directions) operation w/HDD
- **Dimensions**
  - 182mm (W) x 230mm(D) x 140mm (H)
- **EOS Support**
  - XPE, WinCE, Linux

NOTE *All specifications and images are subject to change without notice.*

1.3 Dimensions

The following diagrams show you dimensions and outlines of the **eBOX639-840 & eBOX-639-840-FL Series**.



1.4 I/O Outlets

The following figures show you I/O outlets on front view of the **eBOX639-840 & eBOX-639-840-FL Series**.

- **Front View**

NO	CONNECTOR	NO	CONNECTOR
1	Audio Connectors	7	VGA Connector
2	IEEE 1394a Connectors	8	COM3~4 Connectors
3	RJ45 Connector for Ethernet	9	USB 2.0 Connectors x 4
4	COM1Connector	10	USB 2.0 Connectors x 2
5	PS/2 Connector for KB/MS	11	V_{DC} Power Input Connector
6	COM2Connector		

1.5 Packing List

The package bundled with your **eBOX639-840 & eBOX-639-840-FL Series** should contain the following items:

- eBOX639-840 System Unit x 1 or eBOX-639-840-FL System Unit x 1
- eBOX639-840 & eBOX-639-840-FL Series Quick Installation Guide x 1
- AC/DC Power Cord x 1 (option)
- AC/DC Power Adapter x 1 (option)
- CD x 1 (For Driver and User's Manual)
- M3-12.5 Screws x 4
- M3-6 Screws x 4
- Wallmount Beacket (option)

If you can not find this package or any items are missing, please contact AXIOMTEK distributors immediately.

CHAPTER 2
HARDWARE INSTALLATION

The **eBOX639-840 & eBOX-639-840-FL Series** is convenient for your various hardware configurations, such as CPU (Central Processing Unit), Memory Module, and HDD (Hard Disk Drive). The chapter 2 will show you how to install the hardware. It includes:

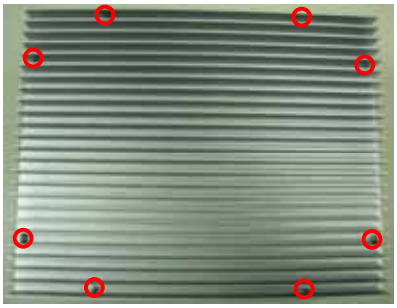
2.1 Installing the Processor

The **eBOX639-840 & eBOX-639-840-FL Series** supports Socket P (478-pin) for Intel® Core™ 2 Duo and Celeron® M processors. Please carefully follow up these steps below to install the CPU:

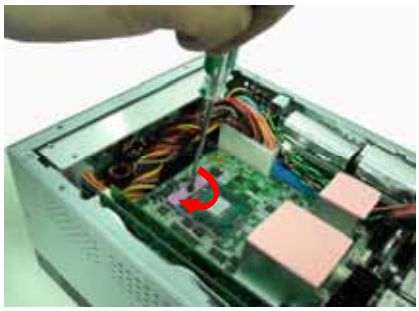
Step 1 Turn off the system.

Step 2 Unplug the power-cord.

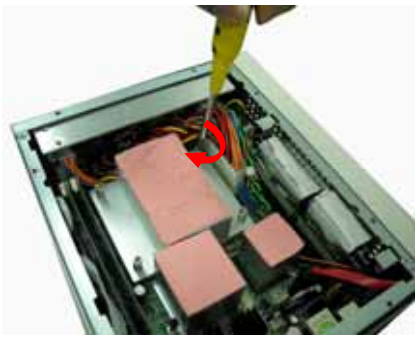
Step 3 Locate and loosen screws on the top of the system, and remove the top cover from the chassis.

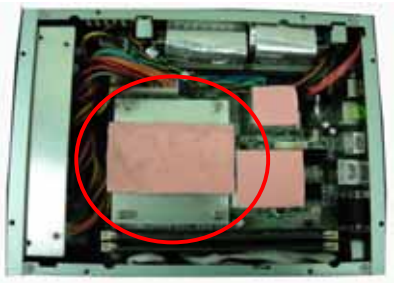


Step 4 Before installing your CPU, please check and confirm all jumpers are correctly set. Align pins of the CPU with pin holes of the socket. Be careful of the CPU's orientation that you need to align the arrow mark on the CPU with the arrow key on the socket. Place the CPU into the socket, and use a screwdriver to lock it onto the socket.



Step 5 Place the heat sink on the CPU, and lock it down.





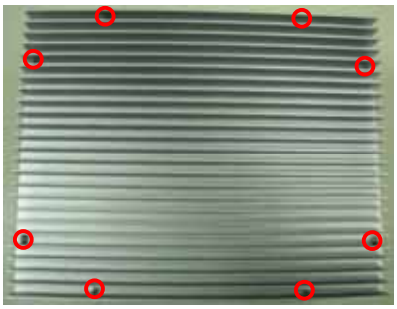
Step 6 Close the cover to the chassis, and fasten all screws.

2.2 Installing the Memory Module

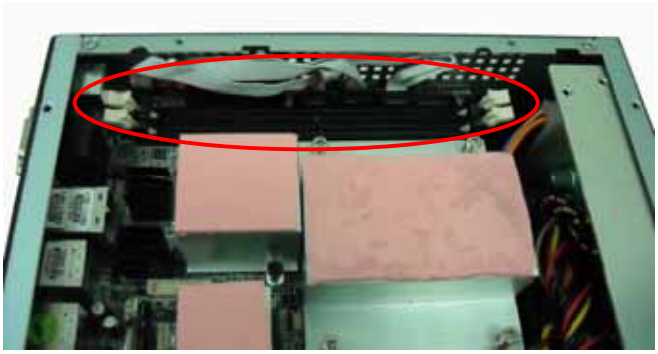
Step 1 Turn off the system.

Step 2 Unplug the power-cord.

Step 3 Locate and loosen screws on the top of the system, and remove the top cover from the chassis.

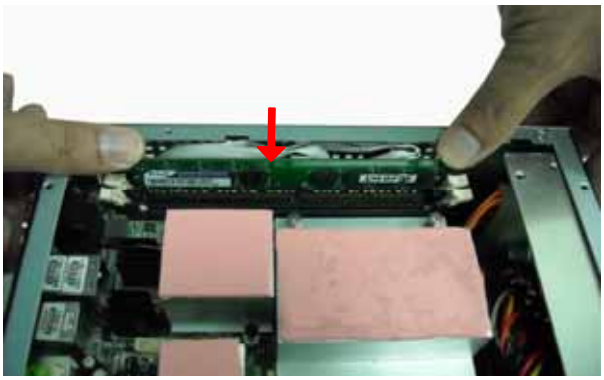


Step 4 Open the top cover from the chassis, and here is the top view of the inside. Locate the memory socket.

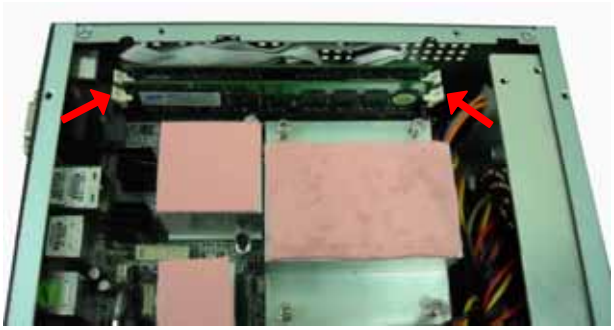


Step 5 Please follow steps below to install the memory module:

(1) Align the memory module with the socket that notches of memory module must match the socket keys for a correct installation.



(2) Install the memory module into the socket and push it firmly down until it is fully seated. The socket latches are levered upwards and clipped on to the edges of the SO-DIMM.



Step 6 Put back the top cover to the chassis and fasten all screws.

2.3 Installing the Hard Disk Drive

The **eBOX639-840 & eBOX-639-840-FL Series** offers a convenient drive bay module for users to install HDD. The system offers users one 2.5" Hard Disk Drive for installation. Please follow the steps:

Step 1 Turn off the system.

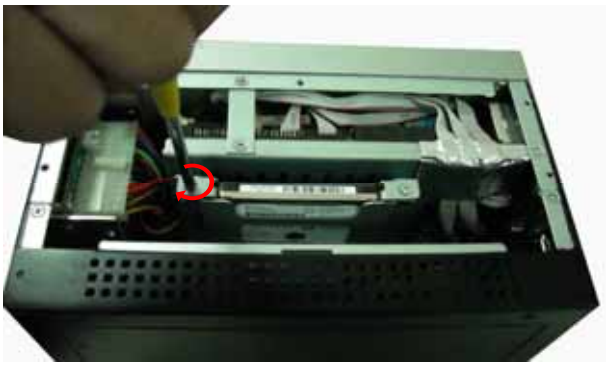
Step 2 Unplug the power-cord.

Step 3 Locate and loosen screws on the side of the system, and remove the side cover from the chassis.

Step 4 Open the side cover and locate the Hard Disk Drive.

Step 5 Use assembly parts to fix HDD with the bracket, and install the HDD.

Step 5 Fix the HDD bracket firmly into the HDD drive.



Step 7 Put back the side cover to the chassis and fasten all screws.

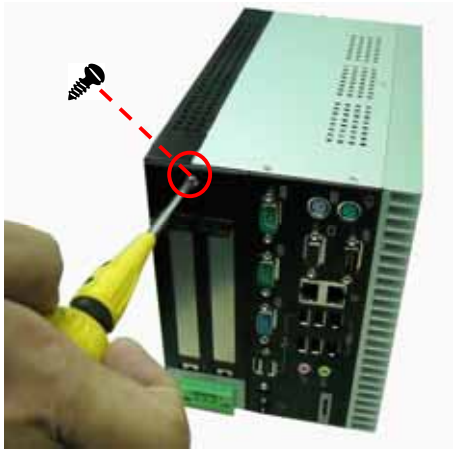
2.4 Installing the PCI Card

Step 1 Turn off the system.

Step 2 Unplug the power-cord.

Step 3 Locate and loosen screws on the bottom of the system, and remove the bottom cover from the chassis. You can locate the PCI slot in the bottom.

Step 4 Next, locate the PCI bracket on the front of the system. Loosen the screw of the PCI bracket, and remove the slot plate out.



Step 5 Align the PCI card with the slot, and latch the PCI bracket with the slot on the front panel.Press the card into the slot until it is firmly seated, and screw the PCI bracket onto the front panel.

Step 6 Put back the bottom cover to the chassis and fasten all screws.

MEMO

CHAPTER 3
PHOENIX-AWARD BIOS UTILITY

The Phoenix-Award BIOS provides users with a built-in Setup program to modify basic system configuration. All configured parameters are stored in a battery-backed-up RAM (CMOS RAM) to save the Setup information whenever the power is turned off.

3.1 Entering Setup

There are two ways to enter the Setup program. You may either turn ON the computer and press <Del> immediately, or press the <Del> and/or <Ctrl>, <Alt>, and <Esc> keys simultaneously when the following message appears at the bottom of the screen during POST (Power on Self Test).

TO ENTER SETUP PRESS DEL KEY

If the message disappears before you respond and you still want to enter Setup, please restart the system to try it again. Turning the system power OFF and ON, pressing the "RESET" button on the system case or simultaneously pressing <Ctrl>, <Alt>, and <Del> keys can restart the system. If you do not press keys at the right time and the system doesn't boot, an error message will pop out to prompt you the following information:

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC> OR <DEL> TO ENTER SETUP

3.2 Control Keys

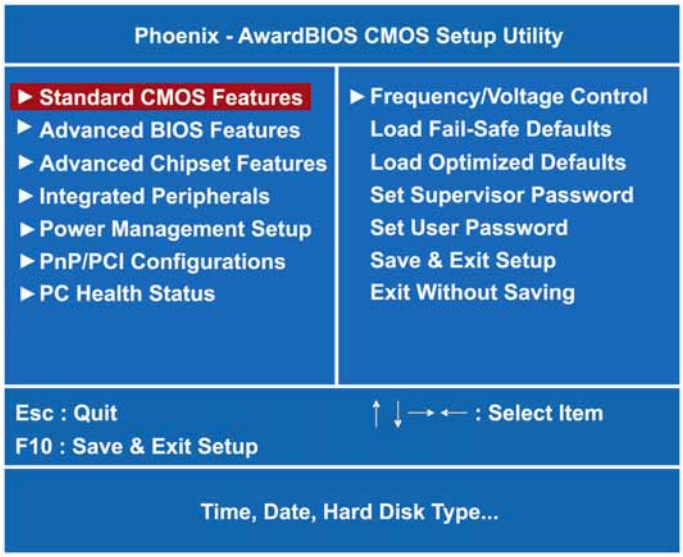
Up arrow	Move cursor to the previous item
Down arrow	Move cursor to the next item
Left arrow	Move cursor to the item on the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu -- Quit and delete changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp/"+" key	Increase the numeric value or make changes
PgDn/"–" key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift) F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Reserved
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the Setup default, only for Option Page Setup Menu
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

3.3 Getting Help

- **Main Menu**
  The online description of the highlighted setup function is displayed at the bottom of the screen.
- **Status Page Setup Menu/Option Page Setup Menu**
  Press <F1> to pop out a small Help window that provides the description of using appropriate keys and possible selections for highlighted items. Press <F1> or <Esc> to exit the Help Window.

3.4 The Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use the arrow keys to select the setup function you intend to configure then press <Enter> to accept or enter its sub-menu.

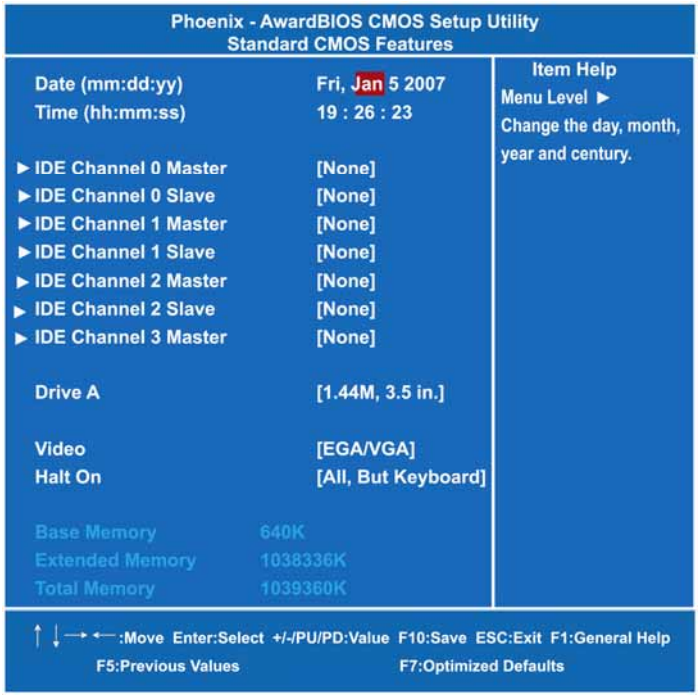


NOTE *If you find that your computer cannot boot after making and saving system changes with Setup, the Award BIOS, via its built-in override feature, resets your system to the CMOS default settings.*

We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability.

3.5 Standard CMOS Setup Menu

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



- **Date**
  The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	The day of week, from Sun to Sat, determined by the BIOS, is read only
date	The date, from 1 to 31 (or the maximum allowed in the month), can key in the numerical / function key
month	The month, Jan through Dec.
year	The year, depends on the year of BIOS

- **Time**
  The time format is <hour> <minute> <second> accepting either functions key or numerical key. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

- **IDE Channel 0~3 Master/IDE Channel 0~2 Slave**
  These items identify the types of each IDE channel installed in the computer. There are 45 predefined types (Type 1 to Type 45) and 2 user's definable types (Type User) for Enhanced IDE BIOS. Press <PgUp>/<+> or <PgDn>/<–> to select a numbered hard disk type, or directly type the number and press <Enter>. Please be noted your drive's specifications must match the drive table. The hard disk will not work properly if you enter improper information. If your hard disk drive type does not match or is not listed, you can use Type User to manually define your own drive type.
  If selecting Type User, you will be asked to enter related information in the following items. Directly key in the information and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.
  If the HDD interface controller supports ESDI, select "Type 1".
  If the HDD interface controller supports SCSI, select "None".
  If the HDD interface controller supports CD-ROM, select "None".

CYLS.	number of cylinders	**LANDZONE**	landing zone
HEADS	number of heads	**SECTORS**	number of sectors
PRECOMP	write precom	**MODE**	HDD access mode

  If there is no hard disk drive installed, select NONE and press <Enter>.

- **Drive A**
  Select the type of floppy drive installed in your system, and the default setting is *"None"*.

- **Video**
  Select the display adapter type for your system.

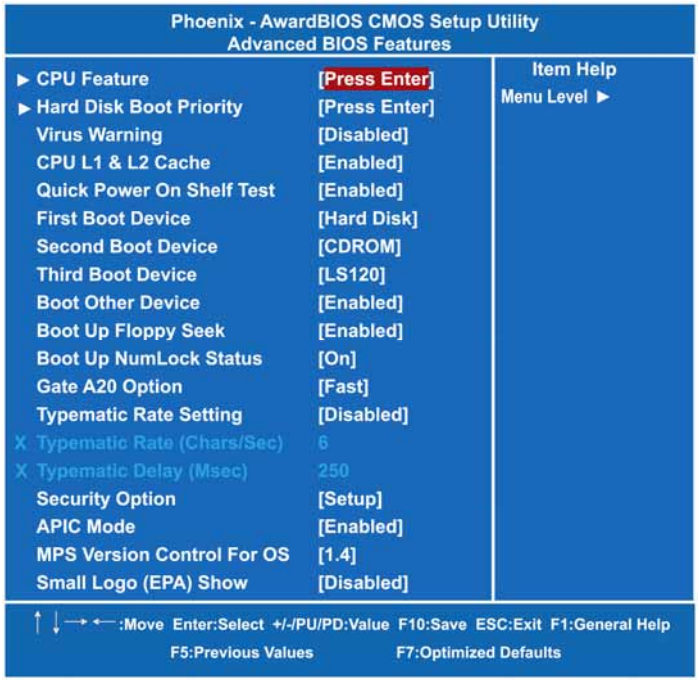
- **Halt On**
  This field determines whether the system will halt if an error is detected during power up.

No errors	The system booting will halt on any errors detected. (default)
All errors	Whenever BIOS detects a non-fatal error, the system will stop and you will be prompted.
All, But Keyboard	The system booting will not stop for a keyboard error; it will stop for other errors.
All, But Diskette	The system booting will not stop for a disk error; it will stop for other errors.
All, But Disk/Key	The system booting will not stop for a keyboard or disk error; it will stop for other errors.

Press <Esc> to return to the Main Menu page.

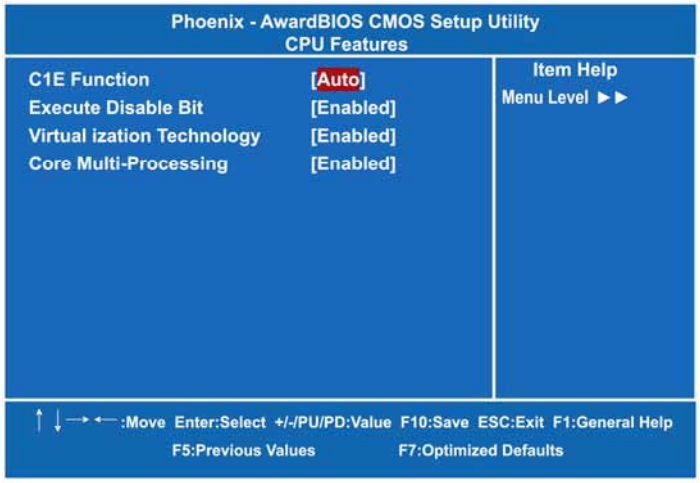
3.6 Advanced BIOS Features

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.



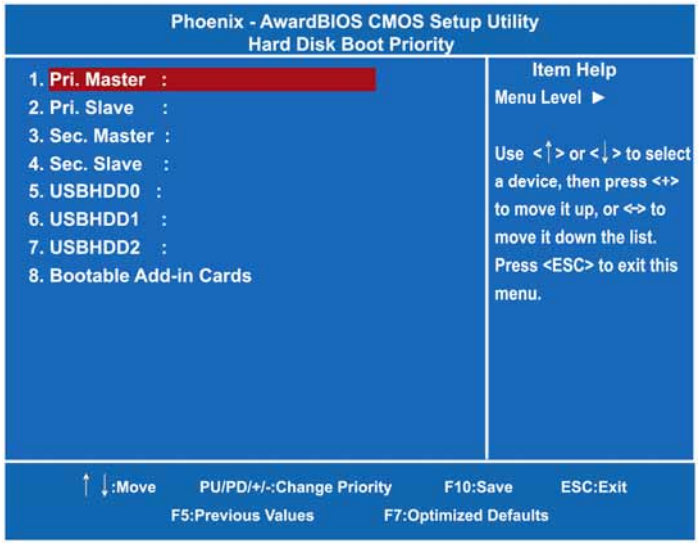
- **CPU Feature**

  Scroll to this item and press <Enter> to view the CPU Feature sub menu.



- **Hard Disk Boot Priority**

  Scroll to this item and press <Enter> to view the sub menu to decide the disk boot priority.



Press <Esc> to return to the Advanced BIOS Features page.

- **Virus Warning**
  This function allows you to choose the VIRUS Warning feature for IDF Hard Disk boot sector protection. If this function is enabled and attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.
- **CPU L1 & L2 Cache**
  These two options speed up memory access. However, it depends on the CPU/chipset design. The default setting is *"Enabled"*. CPUs without built-in internal cache will not provide the "CPU Internal Cache" item on the menu.

Enabled	Enable cache
Disabled	Disable cache

- **Quick Power On Self Test**
  This option speeds up Power on Self Test (POST) after you turn on the system power. If set as Enabled, BIOS will shorten or skip some check items during POST. The default setting is "Enabled".

Enabled	Enable Quick POST
Disabled	Normal POST

- **First/Second/Third Boot Device**
  These items let you select the 1st, 2nd, and 3rd devices that the system will search for during its boot-up sequence. The wide range of selection includes Floppy, LS120, ZIP100, HDD0~3, SCSI, and CDROM.
- **Boot Other Device**
  This item allows users to enable or disable the boot device not listed in the First/Second/Third boot devices option above. The default setting is "*Enabled"*.
- **Boot Up Floppy Seek**
  During POST, BIOS will determine the floppy disk drive type, 40 or 80 tracks. The 360Kb type is 40 tracks while 720Kb, 1.2MB and 1.44MB are all 80 tracks. The default value is *"Enabled"*.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Please be noted BIOS can not differentiate 720K, 1.2M or 1.44M drive type as they all are 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. There will be no warning message displayed if the installed drive is 360K.

- **Boot Up NumLock Status**
  Set the the Num Lock status when the system is powered on. The default value is *"On"*.
- **Gate A20 Option**
  The default value is *"Fast"*.

Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
Fast	Default: Fast. The A20 signal is controlled by Port 92 or chipset specific method.

- **Typematic Rate Setting**
  This item determines the typematic rate of the keyboard. The default value is *"Disabled"*.

Enabled	Enable typematic rate and typematic delay programming.
Disabled	Disable typematic rate and typematic delay programming. The system BIOS will use default value of these 2 items, controlled by keyboard.

- **Typematic Rate (Chars/Sec)**
  This option refers to character numbers typed per second by the keyboard. The default value is *"6"*.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

- **Typematic Delay (Msec)**
  This option defines how many milliseconds must elapse before a

held-down key begins generating repeat characters. The default value is *"250"*.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

- **Security Option**
  This item allows you to limit access to the system and Setup, or just to Setup. The default value is *"Setup"*.

System	If a wrong password is entered at the prompt, the system will not boot, the access to Setup will be denied, either.
Setup	If a wrong password is entered at the prompt, the system will boot, but the access to Setup will be denied.

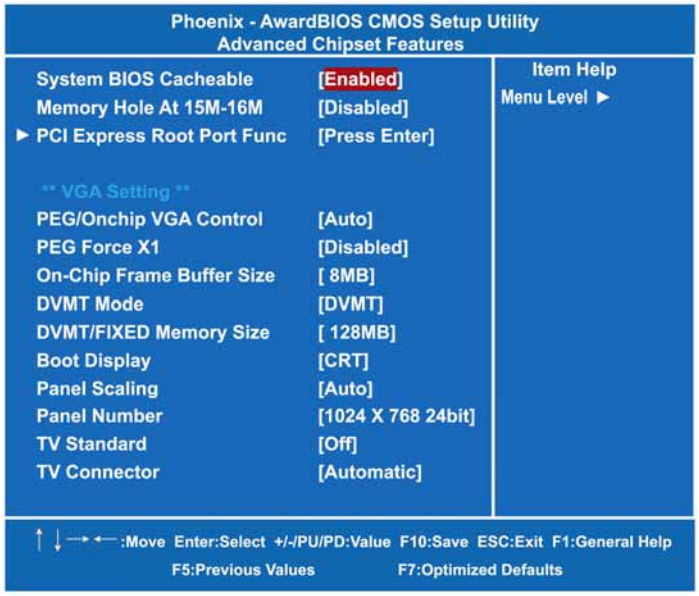
NOTE *To disable the security, select PASSWORD SETTING at Main Menu and then you will be asked to enter a password. Do not type anything, just press <Enter> and it will disable the security. Once the security is disabled, the system will boot and you can enter Setup freely.*

- **APIC Mode**
  Use this item to enable or disable APIC (Advanced Programmable Interrupt Controller) mode that provides symmetric multi-processing (SMP) for systems.
- **MPS Version Control For OS**
  This item specifies the version of the Multiprocessor Specification (MPS). Version 1.4 has extended configuration tables to improve support for multiple PCI bus configurations and provide future expandability.
- **Small Logo <EPA> Show**
  If enabled, the EPA logo will appear during system booting up; if disabled, the EPA logo will not appear.

Press <Esc> to return to the Main Menu page.

3.7 Advanced Chipset Features

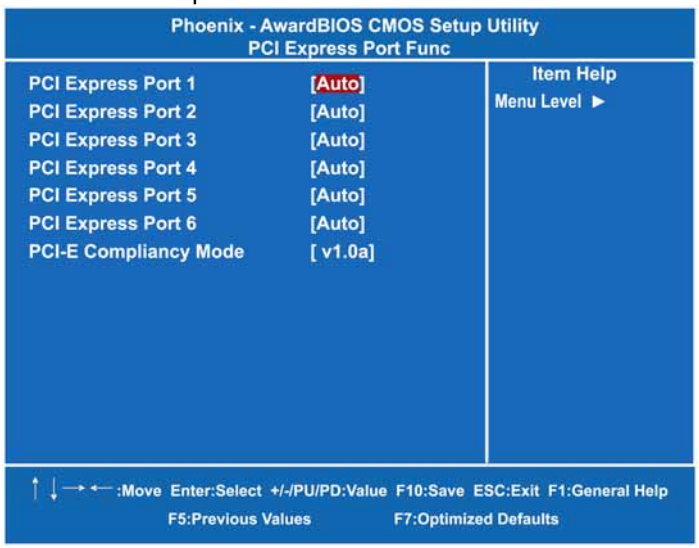
Since the features in this section are related to the chipset on the CPU board and are completely optimized, you are not recommended to change the default settings in this setup table unless you are well oriented with the chipset features.



- **System BIOS Cacheable**
  Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The default value is *"Disabled"*.

- **Memory Hole At 15M-16M**
  Enabling this feature reserves 15MB to 16MB memory address space to ISA expansion cards that specifically require this setting. This makes the memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB.

- **PCI Express Root Port Func**
  Scroll to this item and press <Enter> to view the sub menu to decide the PCI Express Port.



Press <Esc> to return to the Advanced Chipset Featurs page, and press it again, return to the Main Menu page.

***** VGA Setting *****

- **PEG/Onchip VGA Control**
  This setting allows you to select whether to use the onchip graphics processor or the PCI Express card. When set to [Auto], the BIOS will check if a PCI Express graphics card is installed or not. If a PCI Express graphics card is detected, the board will boot up using that card. Otherwise, it is defaulted to the onchip graphics processor.
- **PEG Force X1**
  This BIOS feature allows you to convert a PCI Express X16 slot into a PCI Express X1 slot. When this item is enabled, the PCI Express X16 slot will be forced to run in the PCI Express X1 mode. When this item is disabled, the PCI Express X16 slot will be

allowed to run its normal PCI Express X16 mode.

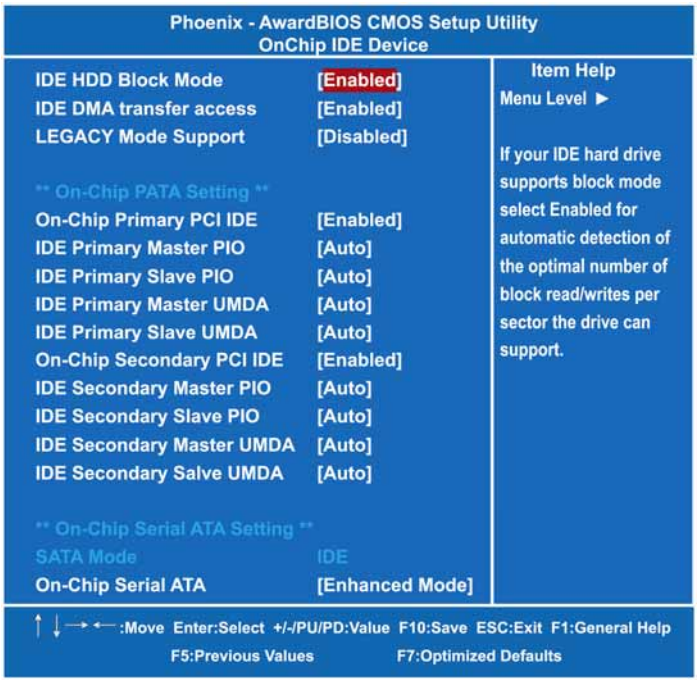
- **On-Chip Frame Buffer Size**
  Use this item to set the VGA frame buffer size.
- **DVMT Mode**
  DVMT (Dynamic Video Memory Technology) helps you select the video mode.
- **DVMT/Fixed Memory Size**
  DVMT (Dynamic Video Memory Technology) allows you to select a maximum size of dynamic amount usage of the video memory. The system would configure the video memory dependent on your application.
- **Boot Display**
  This item is to select Display Device that the screen will be shown.
- **Panel Scaling**
  This item shows the setting of panel scaling and operates the scaling function that the panel output can fit the screen resolution connected to the output port.
- **Panel Number**
  This item is to select panel resolution that you want.
- **TV Standard**
  This item is to select the output mode of TV Standard.
- **TV Connector**
  This item is to select the type of TV display connector.

Press <Esc> to return to the Main Menu page.

3.8 Integrated Peripherals

This section allows you to configure your SuperIO Device, IDE Function and Onboard Device.

- **OnChip IDE Device**
  Scroll to this item and press <Enter> to view the sub menu OnChip IDE Device.



  - **IDE HDD Block Mode**
    Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.
  - **IDE DMA transfer access**
    Automatic data transfer between system memory and IDE device with minimum CPU intervention. This improves data throughput and frees CPU to perform other tasks.
  - **LEGACY Mode Support**
    Legacy mode support allows devices to function in an operating environment that is not USB-aware.

***** On-Chip PATA Setting *****

- **On-Chip Primary/Secondary PCI IDE**
  The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately. The default value is *"Enabled"*.

  
  ***NOTE**: Choosing Disabled for these options will automatically remove the IDE Primary Master/ Slave PIO and/or IDE Secondary Master/Slave PIO items on the menu.*

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

- **IDE Primary/Secondary Master/Slave UDMA**
  Select the mode of operation for the IDE drive. Ultra DMA-33/66/100/133 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and system software both support Ultra DMA-33/66/100/133, select Auto to enable UDMA mode by BIOS.

***** On-Chip Serial ATA Setting *****

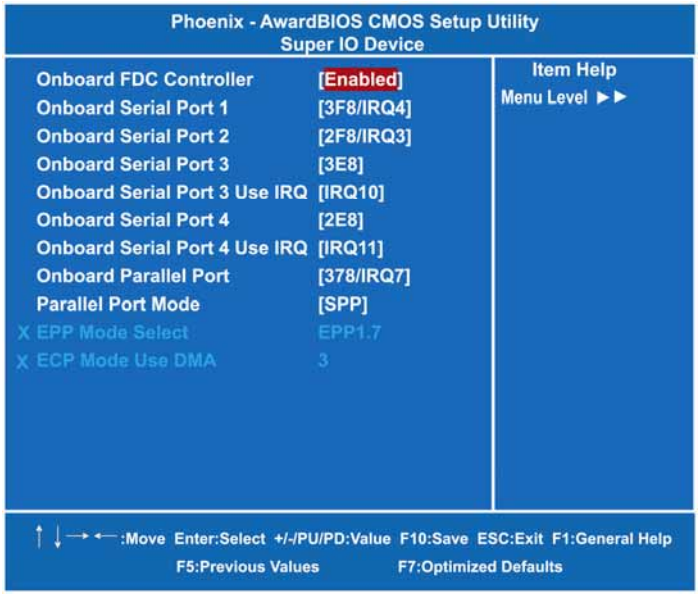
- **SATA Mode**
  There are these options for you to set up SATA mode: IDE, RAID or AHCI.

- **On-Chip Serial ATA**
  Use this item to enable or disable the built-in on-chip serial ATA.

Press <Esc> to return to the Integrated Peripherals page.

- **Super IO Device**

  Scroll to this item and press <Enter> to view the sub menu Super IO Device.



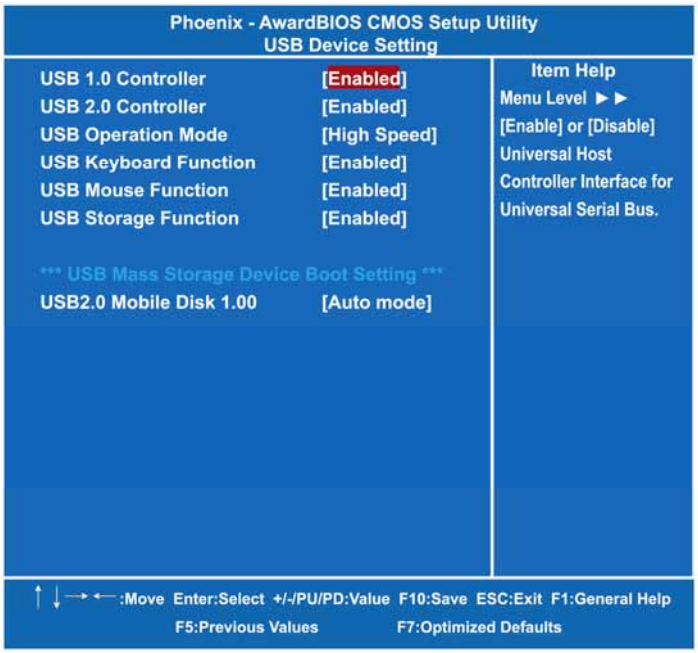
  - **Onboard FDC Controller**
    Select Enabled, if your system has a floppy disk controller (FDC) installed on the system board and you want to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field. Options: Enabled and Disabled.
  - **Onboard Serial Port 1/2**
    Select an address and corresponding interrupt for the serial port.
  - **Onboard Serial Port 3**
    This item assigns which I/O address to access onboard serial port 3.
  - **Serial Port 3 Use IRQ**
    This item selects a corresponding interrupt for the third serial port.

- **Onboard Serial Port 4**
  This item assigns which I/O address to access onboard serial port 4.
- **Serial Port 4 Use IRQ**
  This item selects a corresponding interrupt for the fourth serial port.
- **Onboard Paralellel Port**
  This item allows you to determine the I/O address for onboard parallel port. Options are: *"378H/IRQ7", "278H/IRQ5", "3BC/IRQ7"* and *"Disabled"*.
- **Parallel Port Mode**
  Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require another mode in this field. Options are: *"EPP1.9", "ECP", "SPP", "ECPEPP1.7"* and *"EPP1.7"*.
- **EPP Mode Select**
  Select EPP port type 1.7 or 1.9.
- **ECP Mode Use DMA**
  Select a DMA channel for the parallel port while using the ECP mode.

Press <Esc> to return to the Integrated Peripherals page.

- **USB Device Setting**

  Scroll to this item and press <Enter> to view the sub menu USB Device Setting.



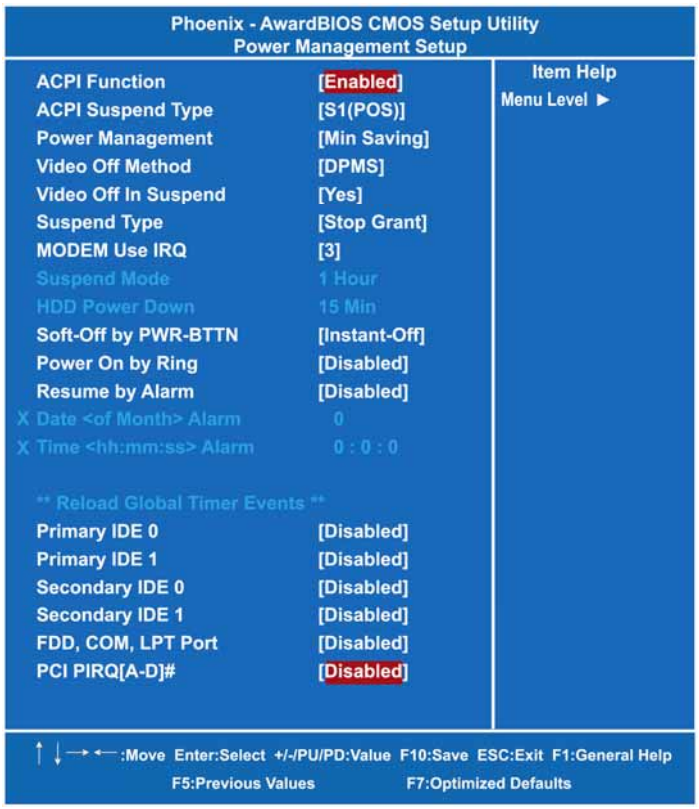
  - **USB 1.0 Controller**
    Enable this item if you are using the USB 1.0 in the system. You should disable this item if a higher-level controller is added.
  - **USB 2.0 Controller**
    Enable this item if you are using the EHCI (USB2.0) controller in the system.
  - **USB Keyboard Function**
    Enable this item if the system has a Universal Serial Bus (USB) controller, and you have a USB keyboard.
  - **USB Mouse Function**
    Enable this item to boot the hard drive by a USB mouse.

- **USB Storage Function**
  Use this item to enable or disable Legacy suppor of USB Mass Storage.

Press <Esc> twice to return to the Main Menu page.

3.9 Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn OFF video display after a period of inactivity.



- **ACPI Function**
  This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI). The function is always defaulted in the "*Enabled*" mode.

- **ACPI Suspend Type**
  This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

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

- **Power Management**
  This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. The table below describes each power management mode:

Max Saving	It is maximum power savings, only available for SL CPUs. The inactivity period is 1 minute in each mode.
User Define	It sets each mode. Select time-out periods in the PM Timers section.
Min Saving	It is minimum power savings. The inactivity period is 1 hour in each mode (except the hard drive).
Disabled	Default value

- **Video Off Method**
  This setting determines the manner in which the monitor is blanked.

V/H SYNC+Blank	It turns OFF vertical and horizontal synchronization ports and writes blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the supplied software for your video subsystem to select video power management values.
Blank Screen	The System only writes blanks to the video buffer.

- **Video Off In Suspend**
  This item defines if the video is powered down when the system is put into suspend mode.
- **Suspend Type**
  If this item is set to the default Stop Grant, the CPU will go into Idle Mode during power saving mode.
- **Moden Use IRQ**
  If you want an incoming call on a modem to automatically resume the system from a powersaving mode, use this item to specify the interrupt request line (IRQ) used by the modem. You might have to connect the fax/modem to the board Wake On Modem connector for working this feature.
- **Suspend Mode**
  After the selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is *"Disabled"*.

Disabled	System will never enter SUSPEND mode
1/2/4/6/8/10/20/30/40 Min/1 Hr	Defines the continuous idle time before the system entering SUSPEND mode. If any item defined in (J) is enabled & active, SUSPEND timer will be reloaded

- **HDD Power Down**
  If HDD activity is not detected for the length of time specified in this field, the hard disk drive will be powered down while all other devices remain active.
- **Suspend Mode**
  After a selected period of system inactivity (1 minute to 1 hour), all devices except the CPU shut off. The default value is *"Disabled"*.

Disabled	The System will never enter the SUSPEND mode.
1/2/4/6/8/10/20/30/40 Min/1 Hr	It defines continuous idle time before the system entering the SUSPEND mode. If any item defined in (J) is enabled and active, the SUSPEND timer will be reloaded.

- **HDD Power Down**
  If HDD activity is not detected for a specified length of time in this field, the hard disk drive will be powered down while other devices remain active.

- **Soft-Off by PWR-BTTN**
  This option only works with systems using an ATX power supply. It also allows users to define which type of soft power OFF sequence the system will follow. The default value is *"Instant-Off"*.

Instant-Off	This option follows the conventional manner of system performance when turning the power to OFF. Instant-Off is a software power OFF sequence requiring the power supply button is switched to OFF.
Delay 4 Sec.	Upon the system's turning OFF through the power switch, this option will delay the complete system power OFF sequence approximately 4 seconds. Within this delay period, the system will temporarily enter into the Suspend Mode enabling you to restart the system at once.

- **Power On by Ring**
  This option allows the system to resume or wake up upon detecting any ring signals coming from an installed modem. The default value is "Enabled".

- **Resume by Alarm**
  If enable this item, the system can automatically resume after a fixed time in accordance with the system's RTC (realtime clock).

**** Reload Global Timer Events ****

Global Timer (power management) events can prevent the system from entering a power saving mode or can awaken the system from such a mode.

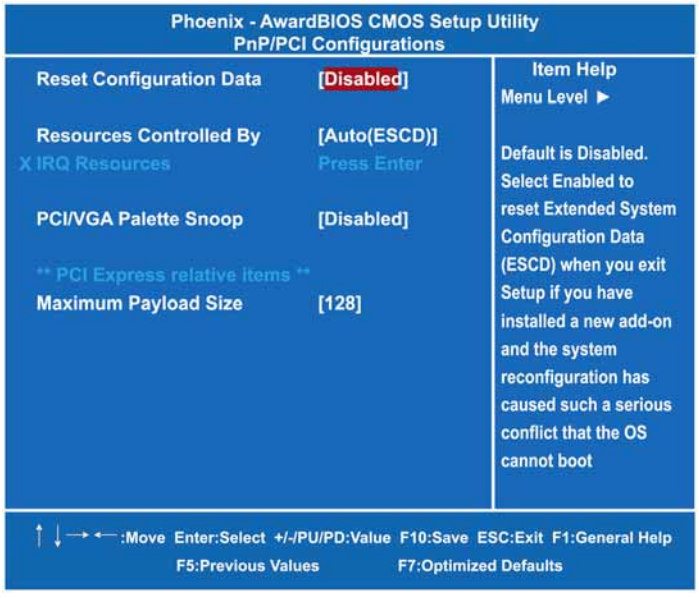
- **Primary/Secondary IDE 0/1**
  Use this item to configure the IDE devices monitored by the system.

- **COM Port**
  Use this item to configure the COM ports monitored by the system.
- **FDD, COM, LPT Port**
  Use this item to configure the FDD, COM and LPT ports monitored by the system.
- **PCI PIRQ[A-D]#**
  This item can be used to detect PCI device activities; if no activity, the system will enter the sleep mode.

Press <Esc> to return to the Main Menu page.

3.10 PnP/PCI Configuration Setup

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



- **Reset Configuration Data**
  Normally, you leave this item Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup or if installing a new add-on cause the system reconfiguration a serious conflict that the operating system can not boot. Options: *Enabled, Disabled*.

- **Resources Controlled By**
  The Award Plug and Play BIOS can automatically configure all boot and Plug and Play-compatible devices. If you select Auto, all interrupt request (IRQ), DMA assignment, and Used DMA fields disappear, as the BIOS automatically assigns them. The default value is *"Manual"*.

- **IRQ Resources**
  When resources are controlled manually, assign each system interrupt to one of the following types in accordance with the type of devices using the interrupt:
  1. Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).
  2. PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

  The default value is "*PCI/ISA PnP*".

- **PCI/VGA Palette Snoop**
  Some non-standard VGA display cards may not show colors properly. This item allows you to set whether MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. When enabled, a PCI/VGA can work with a MPEG ISA/VESA VGA card; when disabled, a PCI/VGA cannot work with a MPEG ISA/VESA Card.

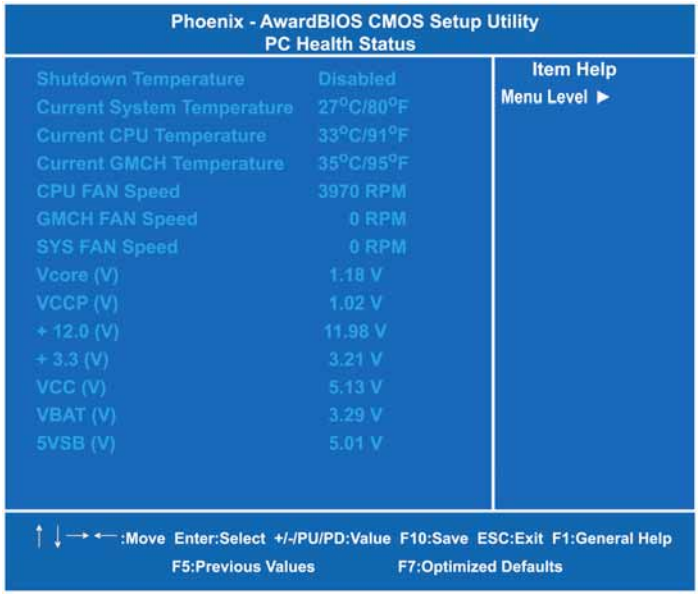
**** PCI Express relative items ****

- **Maximum Payload Size**
  When using DDR SDRAM and Buffer size selection, another consideration in designing a payload memory is the size of the buffer for data storage. Maximum Payload Size defines the maximum TLP (Transaction Layer Packet) data payload size for the device.

Press <Esc> to return to the Main Menu page.

3.11 PC Health Status

This section supports hardware monitering that lets you monitor those parameters for critical voltages, temperatures and fan speed of the board.



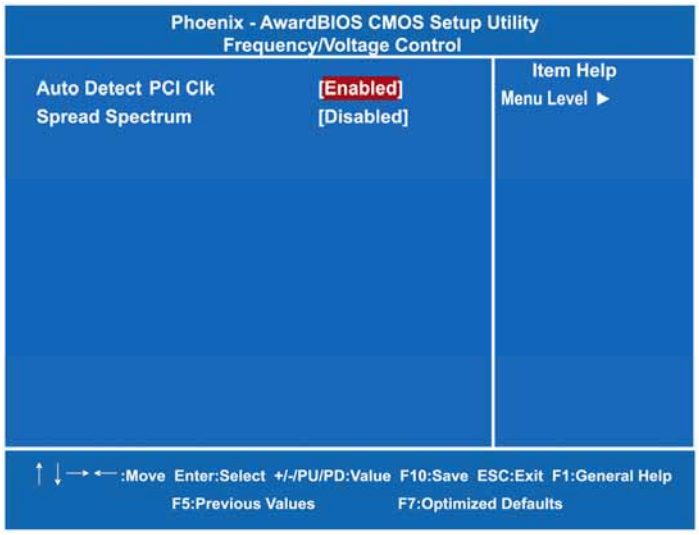
- **Shutdown Temperature**
  It helps you set the maximum temperature they system can reach before powering down.
- **Current SYSTEM Temperature**
  Show you the current system1 temperature.
- **Current CPU Temperature**
  The current system CPU temperature will be automatically detected by the system.
- **Current GMCH Temperature**
  The current GMCH temperature will be automatically detected by the system.

- **Current CPU FAN Speed**
  These optional and read-only items show current speeds in RPM (Revolution Per Minute) for the CPU fan and chassis fan as monitored by the hardware monitoring IC.
- **Current SYS FAN Speed**
  Show you the current system fan1 temperature.
- **Vcore +3.3V/+5V/+12V/VBAT(V)/5VSB**
  Show you the voltage of +3.3V/+5V/+12V.

Press <Esc> to return to the Main Menu page.

3.12 Frequency/Voltage Control

This section is to control the CPU frequency and Supply Voltage, DIMM OverVoltage and AGP voltage.

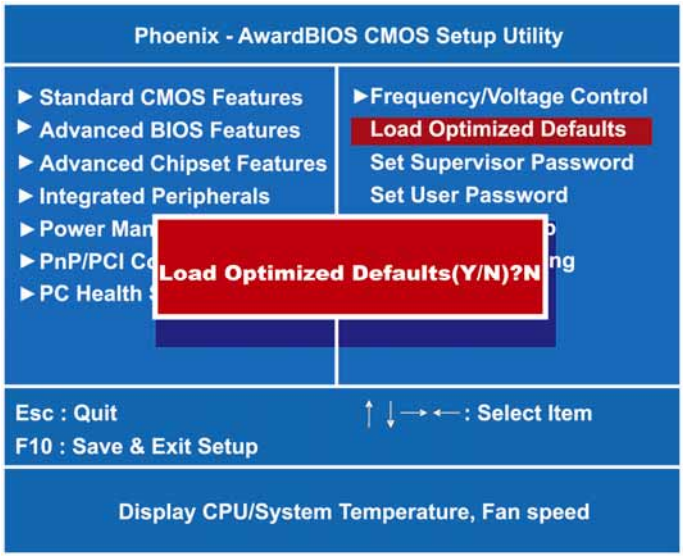


- **Auto Detect PCI Clk**
  The item enables or disables the auto detection of the PCI clock.
- **Spread Spectrum**
  This item is to adjust extreme values of the pulse for EMI test.

Press <Esc> to return to the Main Menu page.

3.13 Load Optimized Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.



To load SETUP defaults value to CMOS SRAM, enter "Y". If not, enter "N".

3.14 Set Supervisor/User Password

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

1. **Supervisor password:** You can enter and change the options on the setup menu.
2. **User password:** You can just enter, but have no right to change the options on the setup menu.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type a maximum eight-character password, and press <Enter>. This typed password will clear previously entered password from the CMOS memory. You will be asked to confirm this password. Type this password again and press <Enter>. You may also press <Esc> to abort this selection and not enter a password.

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

PASSWORD DISABLED

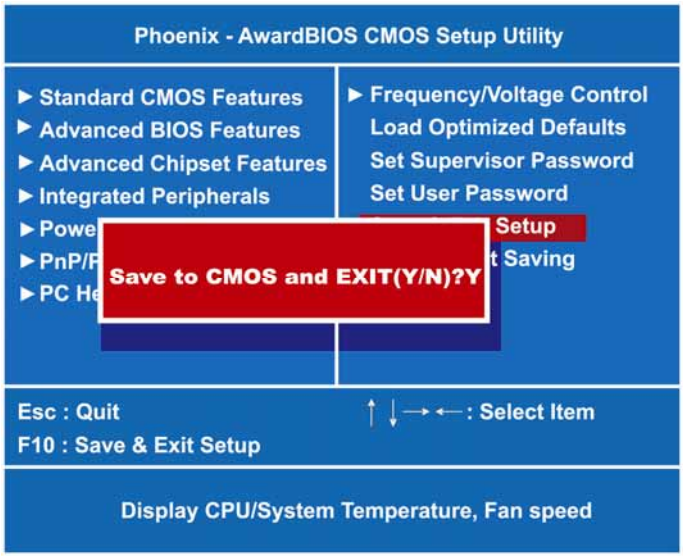
When a password is enabled, you have to type it every time you enter the Setup. It prevents any unauthorized persons from changing your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time the system reboots. This would prevent unauthorized use of your computer.

You decide when the password is required for the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password is required during booting up and entry into the Setup; if it is set as "Setup", a prompt will only appear before entering the Setup.

3.15 Save & Exit Setup

This allows you to determine whether or not to accept the modifications. Typing "Y" quits the setup utility and saves all changes into the CMOS memory. Typing "N" brigs you back to Setup utility.



3.16 Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing "Y" will quit the Setup utility without saving the modifications. Typing "N" will return you to Setup utility.