PROCELERANT®

CE915GMA COM EXPRESS MODULE

BIOS SETUP UTILITY SPECIFICATION

Full BIOS for CR200-Series Carrier Boards

002-08781-0001 ▪ August 2009

Revision History

Revision	Date	Description
-0000	December, 2007	First release.
-0001	August, 2009	Added the CR202-PCIE16 carrier board.

Table of Contents

1. BIOS Setup Utility Overview

This specification describes the user interface design of the CE915GMA Full BIOS for use with Procelerant® CR200-series (CR200-PCIE16 and CR202-PCIE16) carrier boards. Two versions of the BIOS are available to support the following LPC Super I/O chips:

- **W83627EHG** version. The CR200-series ATX carrier boards contain an onboard Winbond® W83627EHG LPC Super I/O chip. The CE915GMA Full BIOS for CR200-Series Carrier Boards with the W83627EHG chip supports all legacy-free features available on the CE915GMA COM Express™ module, as well as legacy devices controlled by the onboard Winbond W83627ENG chip.
- **WPC8374L** version. The CR200-series ATX carrier boards are capable of extending support for an off-board Winbond WPC8374L LPC Super I/O chip if a compatible expansion card is installed in the LPC slot. The CE915GMA Full BIOS for CR200-Series Carrier Boards with the WPC8374L chip supports all legacy-free features available on a CE915GMA COM Express module, as well as legacy devices controlled by the Winbond WPC8374L chip.

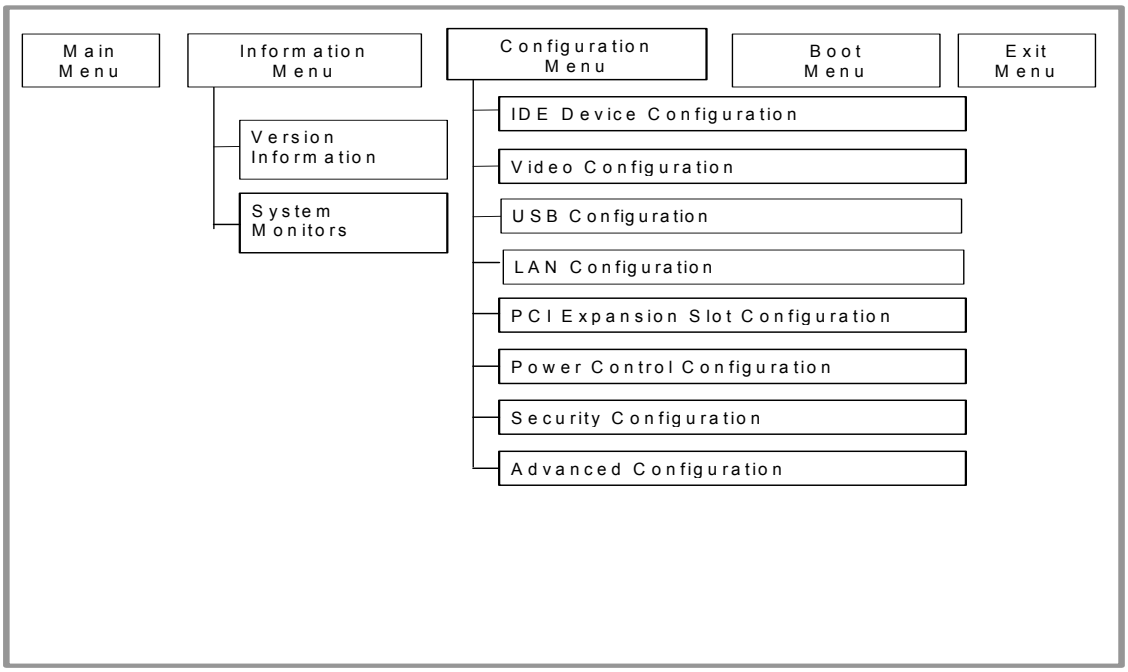
The two BIOS release options are based on the standard Phoenix® TrustedCore™ BIOS. A BIOS setup utility is available to display and modify the BIOS configuration settings, which are stored in nonvolatile CMOS RAM.

Normally, a Power On Self Test (POST) is performed autonomously as a pre-boot sequence, but you can press <F2> during POST to access the BIOS setup utility.

1.1 Menu map

Figure 1 shows the menu map of the BIOS setup utility. Each menu is equivalent to a functional group and contains all related BIOS settings.

Figure 1. Menu map



1.2 Keyboard commands

In the BIOS setup utility, a legend at the bottom of each screen provides instructions for navigating to and selecting setup options, as shown in Table 1. When you have finished changing your settings, navigate to the Exit menu, and select Save and Exit. The settings will be stored in nonvolatile memory and the system will reboot with the new settings.

Table 1. Keyboard commands

Keyboard commands	Usage
F1 Help	Press F1 to view help information.
← → Select Menu	Press ← and → keys to navigate to a specific menu.
↑↓ Select Item	Press ↑ and ↓ keys to navigate to a specific field within a menu.
–/+ Change Values	Press – and + keys to step through available options.
Enter Select Entry	Press Enter to display a submenu or select an option.
Esc Exit	Press Esc to exit the BIOS setup utility.
F9 Setup Defaults	Press F9 to revert all BIOS fields to setup defaults.
F10 Save and Exit	Press F10 to save your changes and exit the BIOS setup utility.

1.2.1 General Help

When pressing F1 or Alt + H in the BIOS setup utility, the General Help should display the following text:

```
Different BIOS configurations can change the system behavior. If incorrect
values cause the system boot failure, load the defaults to recover.


<Up/Down> arrows select fields in the current menu.

<PgUp/PgDn> moves to previous/next page on a scrollable menu.

<Home/End>moves to top/bottom item in the current menu.


Within an item, <F5> or <-> selects the preceding option and <F6>, <+>, or
<Space> selects the next option.

<Left/Right> arrows select menus on the menu bar.

<Enter> displays sub-items for the item marked with ►.


<F9> loads setup defaults.

<F10> saves current settings and exits.


<Esc> or <Alt-X> exits a submenu and returns to the parent menu.


<F1> or <Alt-H> displays General Help (this screen).
```

1.3 User interface elements

1.3.1 BIOS item types

Each item in the System Setup Utility menus can be classified as one of the following:

- Configurable: default options are highlighted in bold in this document.
- Read-only
- Operational

Note: If an item becomes inapplicable to a menu, it will not be displayed.

1.3.2 Sorting orders of BIOS items and available options

The order of BIOS items in each menu is described in the sections that follow. The order may be logical or alphabetical depending on the circumstances.

1.3.3 Configurable items

A configurable BIOS item allows you to select one of multiple options.

- The currently-selected option in a configurable item will be highlighted.
- When a setup menu is displayed, the cursor is initially placed in the first configurable item.
- When returning to a previously-visited menu by pressing the Up, Down, Left, and Right arrow keys, the cursor will be placed at the first configurable item.

1.3.4 Read-only items

A read-only item can be one of the following:

- System output
- System input that is limited to a single option

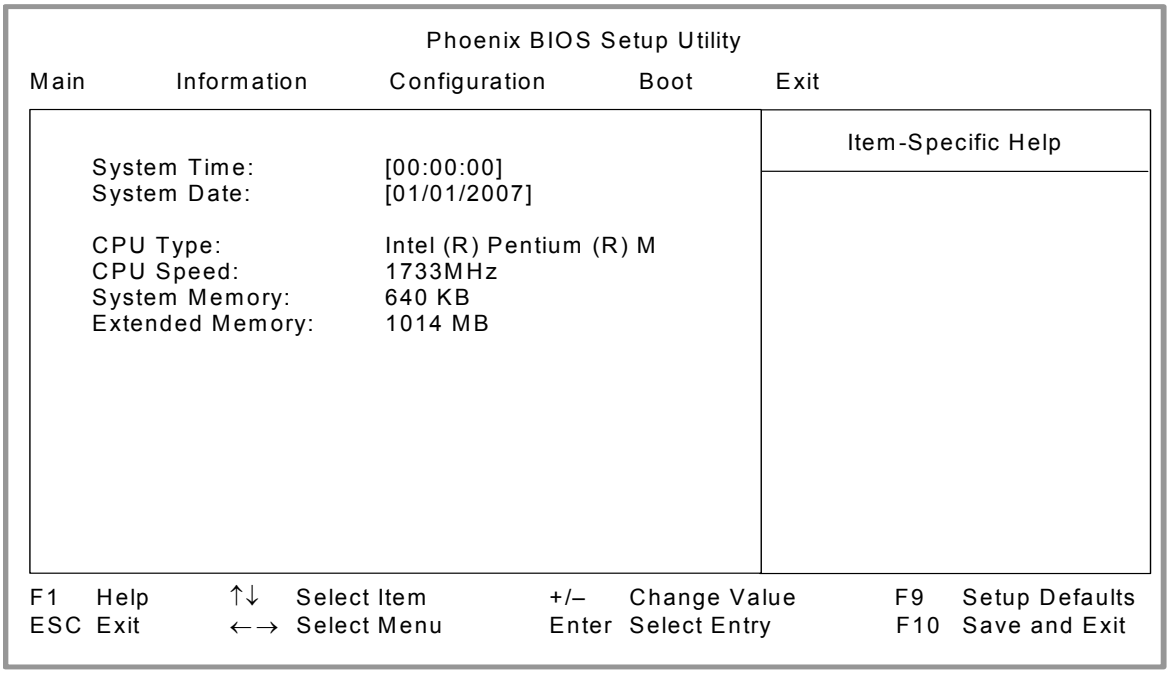
Read-only items cannot be selected in the system setup utility. When navigating through BIOS items with the arrow keys, read-only items will be skipped.

1.3.5 Operational items

An operational item requests the system BIOS to perform a specific operation. The system BIOS displays a message window asking whether to continue performing the operation or to return to the menu.

2. Main Menu

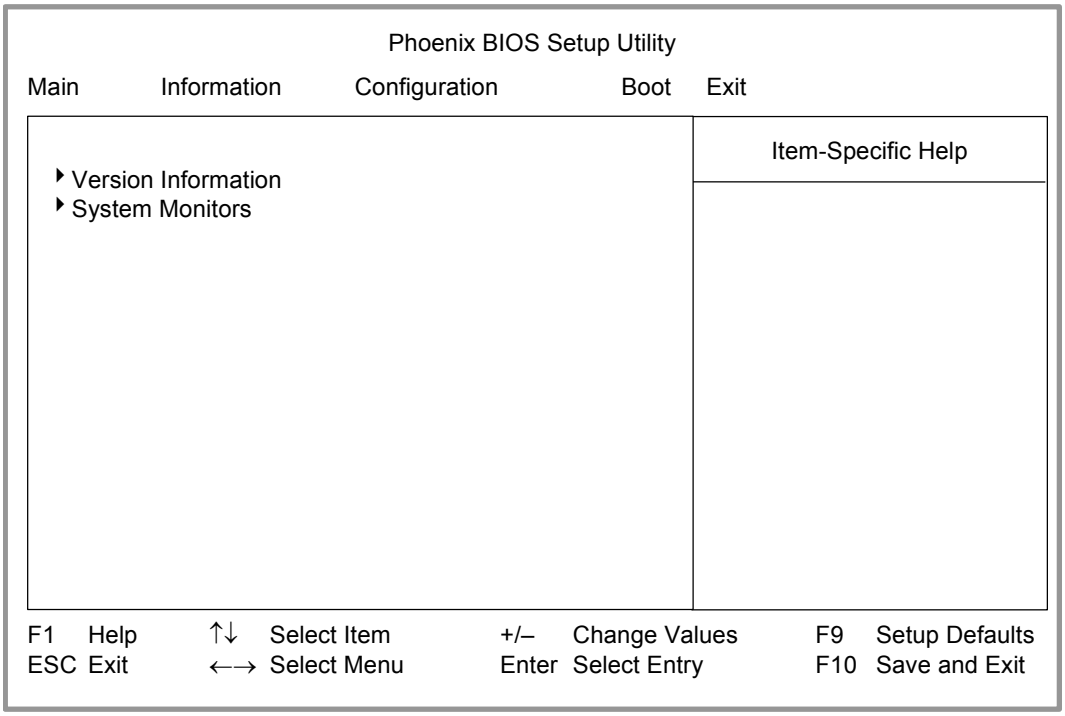
Figure 2. Main menu



BIOS Item	Usage	Item-Specific Help
System Time	User entry. The default is 00:00:00.	Specify the current time (HH: MM: SS, 24-hour clock notation). Press Tab, Shift+Tab, or Enter to select fields.
System Date	User entry. The default is 01-01-2007.	Specify the current date (mm/dd/yyyy). Press Tab, Shift+Tab, or Enter to select fields.
CPU Type	Read-only. Displays the CPU vendor and type.	N/A
CPU Speed	Read-only. Displays the CPU speed in MHz.	N/A
System Memory	Read-only. Displays the amount of conventional memory (below 1MB).	N/A
Extended Memory	Read-only. Displays the amount of extended memory (above 1MB).	N/A

3. Information Menu

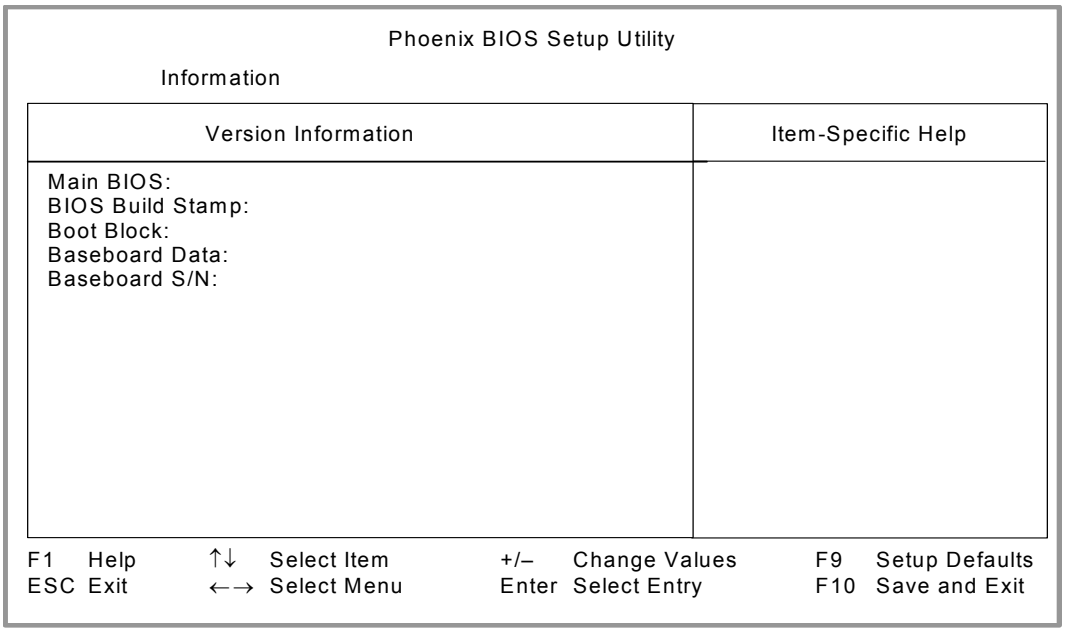
Figure 3. Information menu



BIOS Item	Usage	Item-Specific Help
Version Information	A submenu that includes a varied list of basic BIOS information. The basic BIOS information shown is read-only and depends on the version of BIOS releases. See 3.1.	The BIOS version information is displayed.
System Monitors	A submenu that includes a list of system temperatures and fan speeds. The information shown is read-only.	System temperature readings and fan speeds are displayed.

3.1 Version Information

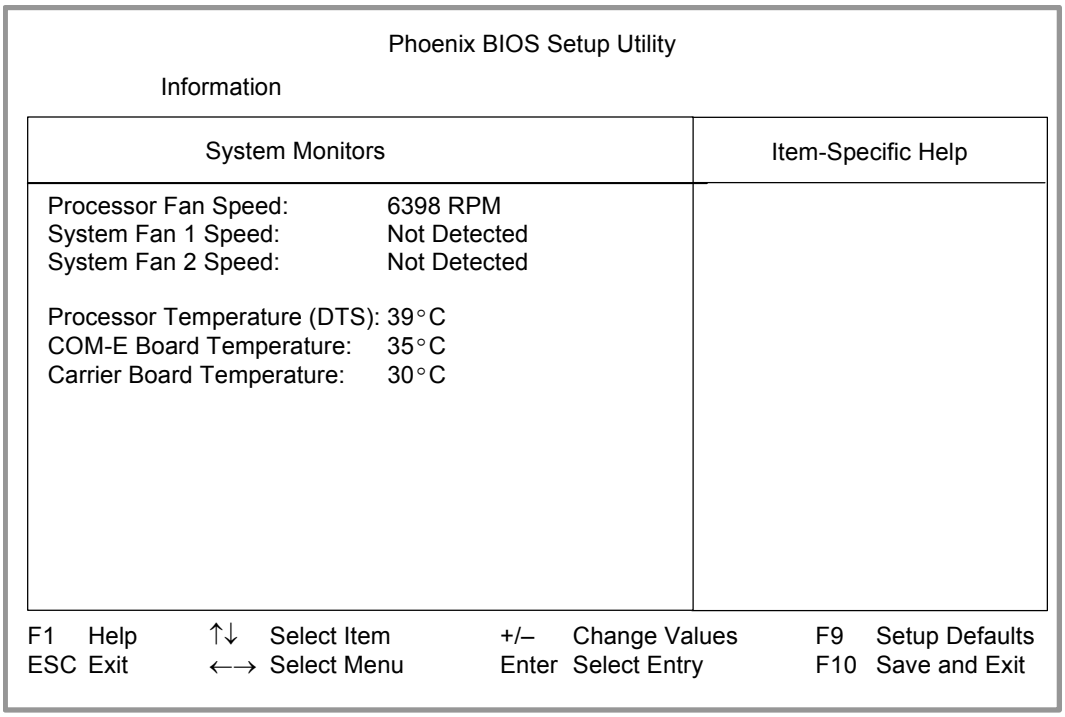
Figure 4. Version Information



BIOS Item	Usage	Item-Specific Help
Main BIOS BIOS Build Stamp Boot Block Baseboard Data Baseboard S/N	Read-only. These version numbers specify the build of the BIOS. The versions do not reflect any customized features: - The Main BIOS field shows the principle revision of the main BIOS. - The BIOS Build Stamp field shows the date and time when the BIOS image was built. - The Boot Block field shows the version of the BIOS boot block. It is updated less frequently than the main BIOS. - The Baseboard Data field shows the platform configuration. Each product type may use an identical main BIOS and boot block, but the baseboard data is unique to each product type. The - Baseboard S/N field shows the unique serial number for the baseboard data.	Consult your system supervisor if changes are required.

3.2 System Monitors

Figure 5. System Monitors

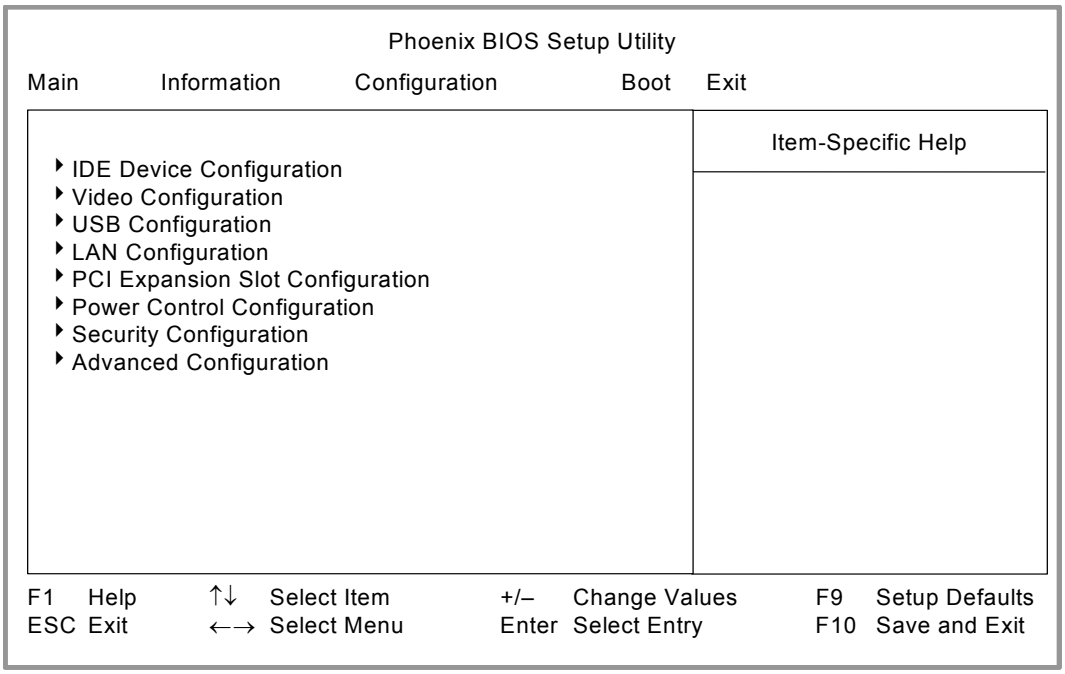


BIOS Item	Usage	Item-Specific Help
Processor Fan Speed	Read-only. This item is visible only in the Full BIOS. This number identifies the speed of the processor fan in revolutions per minute. When no processor fan is detected, “Not Detected” is displayed.	Consult your system supervisor if changes are required.
System Fan 1 Speed	Read-only. This item is visible only in the Full BIOS. This number identifies the speed of the system fan 1 in revolutions per minute. When no processor fan is detected, “Not Detected” is displayed.	
System Fan 2 Speed	Read-only. This item is visible only in the Full BIOS. This number identifies the speed of the system fan 2 in revolutions per minute. When no processor fan is detected, “Not Detected” is displayed.	

BIOS Item	Usage	Item-Specific Help
Processor Temperature	Read-only. The temperature of the processor is detected by the CPU digital thermal sensor (DTS).	
COM-E Board Temperature	Read-only. The temperature of the COM Express module is detected by the onboard thermal sensor.	
Carrier Board Temperature	Read-only. This item is visible only in the Full BIOS. The temperature of the COM Express carrier board is detected by the onboard thermal sensor.	

4. Configuration Menu

Figure 6. Configuration menu

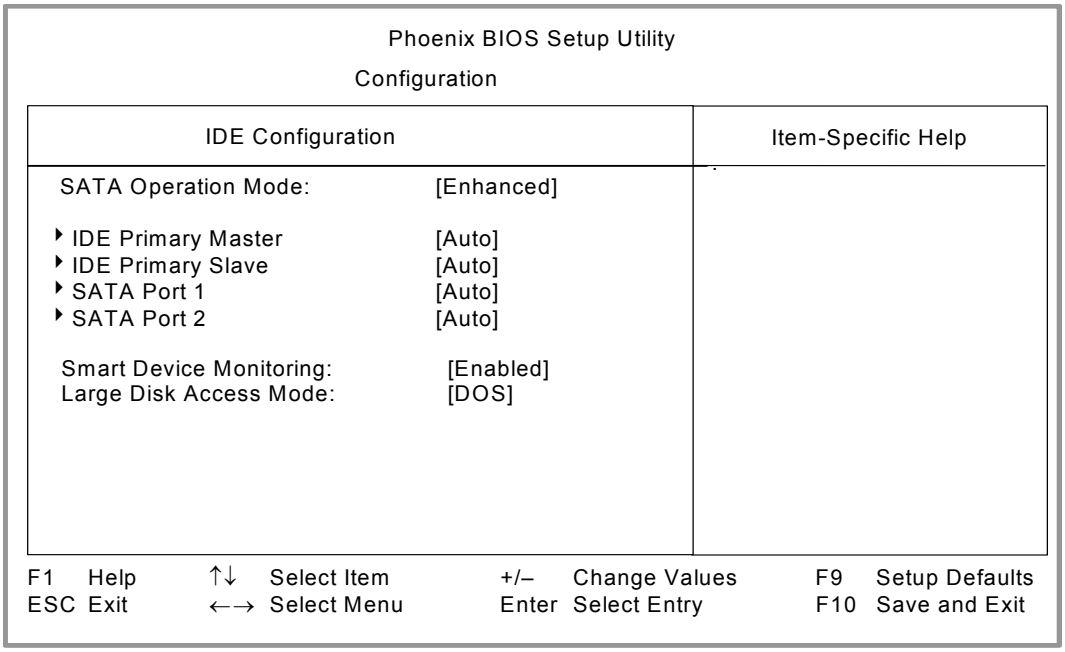


BIOS Item	Usage	Item-Specific Help
IDE Device Configuration	A submenu that includes a list of items to configure ATA devices.	Configure ATA drive interfaces and view information about the connected drives.
Video Configuration	A submenu that includes a list of items to configure video devices.	Configure video devices and specify the primary video display.
USB Configuration	A submenu that includes a list of items to configure USB controllers, UHCI and EHCI.	Configure USB controllers, UHCI, EHCI and HDD boot translation.

BIOS Item	Usage	Item-Specific Help
LAN Configuration	A submenu that includes a list of items to configure an onboard dual-port LAN device. The LAN signals come from one x4 PCI Express bridge.	Configure onboard LAN devices.
PCI Expansion Slot Configuration	A submenu that includes a list of items to configure the IICH's PCI expansion slot.	Configure PCI expansion slots.
Power Control Configuration	A submenu that includes a list of items to configure system power options.	Configure system wake-up and power failure options.
Security Configuration	A submenu that includes a list of items to configure system security options.	Configure passwords and boot-sector write protection.
Advanced Configuration	A submenu that includes a list of items to configure advanced system options.	Configure CPU, keyboard, legacy device, and other advanced options.

4.1 IDE Device Configuration

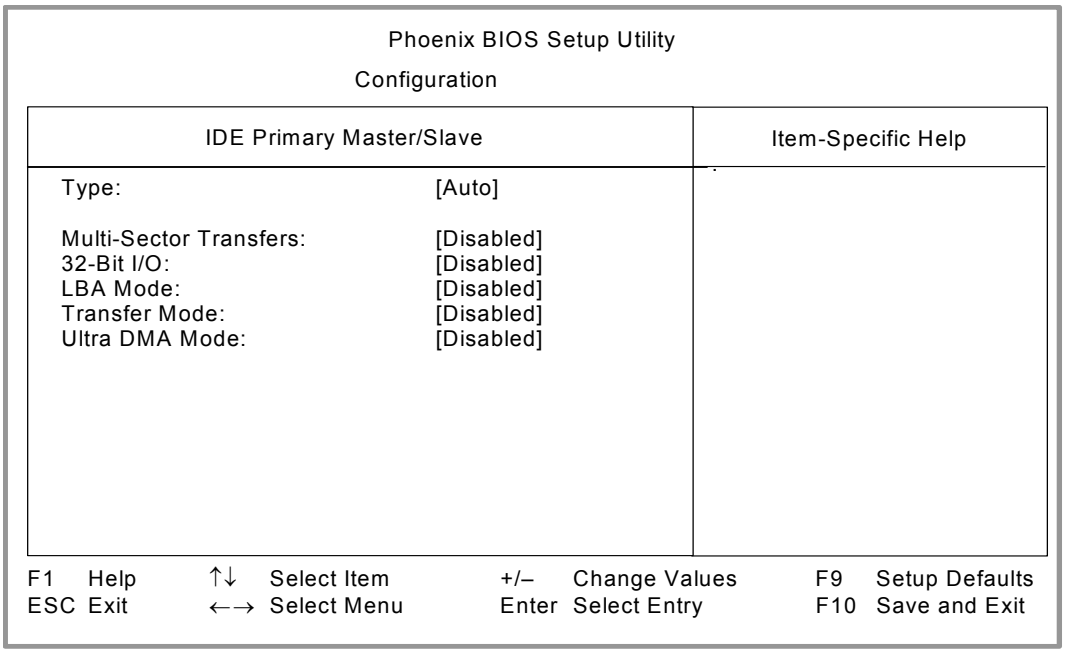
Figure 7. IDE Device Configuration



BIOS Item	Usage	Item-Specific Help
SATA Operation Mode	Available options are: - Compatible: SATA and PATA drives are automatically detected and placed in legacy mode. - Enhanced (non-AHCI): SATA and PATA drives are automatically detected and placed in native IDE mode.	Current disk drives typically operate better in Enhanced mode. Select Compatible if using a legacy disk drive.
IDE Primary Master	A submenu that includes a list of options to configure the IDE primary device connected to the master channel.	Configure the primary IDE drive in master operation mode.
IDE Primary Slave	A submenu that includes a list of options to configure the IDE primary device connected to the slave channel.	Configure the primary IDE drive in slave operation mode.
SATA Port 1	A submenu that includes a list of options to configure the SATA port 1.	Configure SATA port 1.
SATA Port 2	A submenu that includes a list of options to configure the SATA port 1.	Configure SATA port 2.
Smart Device Monitoring	Available options are: - Disabled - Enabled (default)	Select [Enabled] to display warnings of potential IDE drive problems in the IDE Channel Master/Slave fields.
Large Disk Access Mode	Available options are: - DOS (default) - Other	Different operating systems require different representations of drive geometries. [DOS] is appropriate for most recent disk drives and Windows. Select [Other] if using UNIX or Novell Netware operating systems.

4.1.1 IDE Primary Master/Slave and SATA Port X

Figure 8. IDE Device Configuration



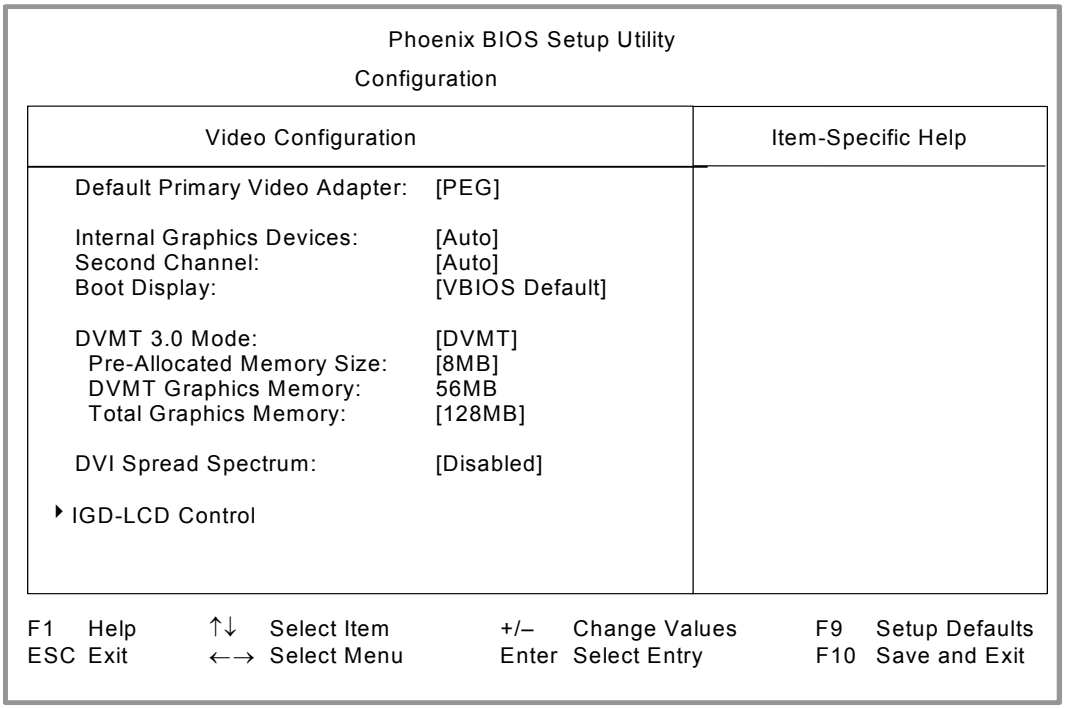
BIOS Item	Usage	Item-Specific Help
Type	Available options are: - ATAPI Removable: The disk drive is a removable drive, such as an LS120 drive. - Auto (default): The hard disk's parameters will be queried automatically during POST. - CD-ROM: The drive is a CD-ROM or DVD drive. - IDE Removable: The drive is a removable IDE disk drive. - None: No drive is present. - Other ATAPI: The drive is an ATAPI drive type not in this list. - User: The drive is an IDE disk that cannot be recognized by [Auto]. Use of this option requires in-depth knowledge of the IDE device's features and technology.	Press the spacebar to specify the type of hard disk used. In most cases, Auto will be the most appropriate setting.

BIOS Item	Usage	Item-Specific Help
Multi-Sector Transfers	Available options are: - Disabled (default) - 2 Sectors - 4 Sectors - 8 Sectors - 16 Sectors	Select the number of sectors transferred per block. System performance may be improved by increasing this amount.
32-Bit I/O	Available options are: - Disabled (default) - Enabled	Select [Enabled] to improve performance using 32-bit I/O to access the hard disk controller. The hard disk must support 32-bit I/O operation. Disable this item if an ISA bus IDE controller is used for this drive.
LBA Mode	Available options are: - Disabled - Enabled The default mode is determined automatically according to the disk drive's capabilities.	Select [Enabled] to use the Logical Block Addressing (LBA) method to reference data on the hard disk. When disabled, the cylinders/heads/sectors (CHS) method is used.
Transfer Mode	Available options are: - Fast PIO 1: 10 MBps maximum data rate - Fast PIO 2: 16 MBps maximum data rate - Fast PIO 3: 22 MBps maximum data rate - Fast PIO 4: 33 MBps maximum data rate - Fast PIO 3/DMA1: 22 MBps maximum data rate - Fast PIO 4/DMA2: 33 MBps maximum data rate - Standard: 6 MBps maximum data rate The default mode is automatically determined by the BIOS based on the drive capabilities and the cable used.	Choose the fastest mode supported by the drive for best performance. Older hard disks only support Standard mode. Newer hard disks adhering to "Fast ATA" or "Enhanced IDE" specifications may support FPIO or DMA modes.

BIOS Item	Usage	Item-Specific Help
Ultra DMA Mode	Available options are: - Disabled: The Ultra DMA data transfer mode will not be used. - Mode 0:16 MBps maximum data rate - Mode 1:25 MBps maximum data rate - Mode 2:33 MBps maximum data rate - Mode 3:44 MBps maximum data rate - Mode 4:66 MBps maximum data rate - Mode 5:100 MBps maximum data rate The default mode is automatically determined by the BIOS based on the drive capabilities and the cable used.	Choose the fastest mode supported by the drive for best performance. Note: Most CompactFlash devices do not support Ultra DMA mode.

4.2 Video Configuration

Figure 9. Video Configuration

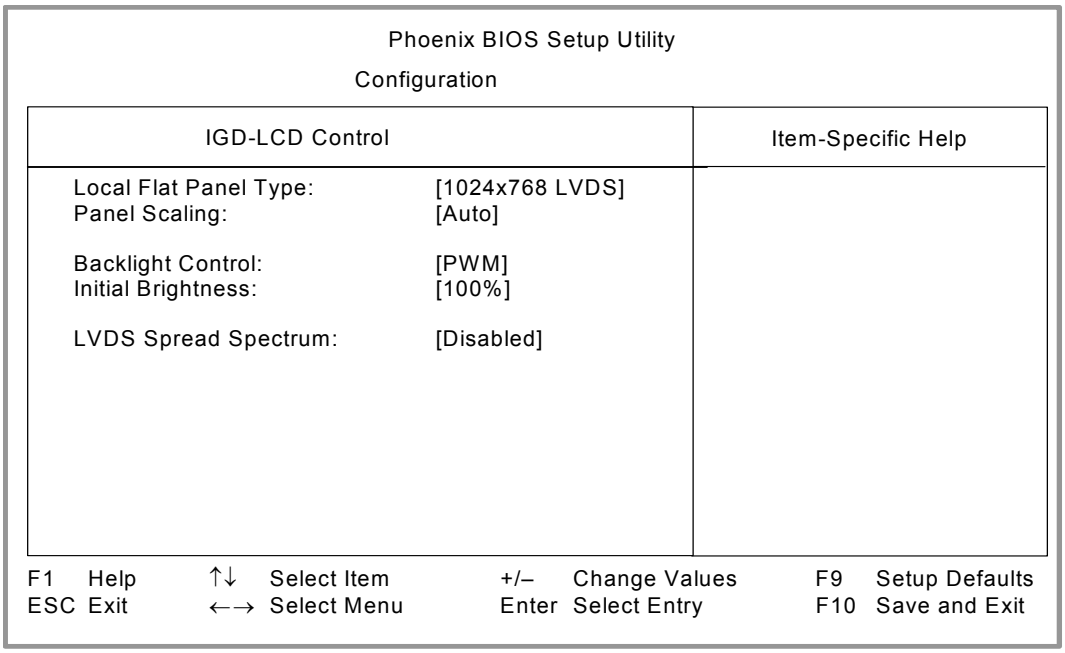


BIOS Item	Usage	Item-Specific Help
Default Primary Video Adapter	Available options are: - IGD - PEG (default)	Specify which graphics device will be the used as the primary video adapter. Select [PEG] for a PCI Express graphics card or [IGD] for the motherboard's integrated graphics device.
Internal Graphics Device	Available options are: - Auto (default) - Disabled	[Auto] reserves system resources for the integrated graphics device. When using a video adapter, select [Disabled] to free up system resources.
Second Channel	Available options are: - Auto (default) - Disabled	When two monitors are used, [Auto] extends the "desktop" independently across the second monitor. [Disabled] shows identical content on both monitors.
Boot Display	Available options are: - VBIOS (default) - CRT - LVDS - CRT+LVDS - TV - SDVO - VGA+SDVO	Select the graphics device that will be used during boot up. [VBIOS] detects the device automatically.
DVMT 3.0 Mode	Available options are: - Combo - DVMT (default) - Fixed	[Combo]: DVMT + Fixed [DVMT]: The graphics driver allocates memory as needed for running graphics applications and other system components. Use DVMT for the best overall system performance. [Fixed]: A static amount of 64MB memory will be allocated for driver initialization, but will not be available to the OS. However, the OS will include this allocated memory as part of the total reported system memory.
Pre-Allocated Memory Size	Available options are: - 1M - 8M (default)	Select the amount of pre-allocated graphics memory for legacy VGA and SVGA devices. The memory allocated by this selection will be unavailable for use by the operating system.

BIOS Item	Usage	Item-Specific Help
Fixed Graphics Memory	This item is visible only when DVMT 3.0 Mode is set to Combo or DVMT. It displays how much of the fixed memory is used by the internal graphics device.	N/A
DVMT Graphics Memory	This item is visible only when DVMT 3.0 Mode is set to Combo or DVMT. It displays how much video memory is dynamically allocated.	N/A
Total Graphics Memory	Available options are: - 64M - 128M (default) - MaxDVMT	Select the amount of total graphics memory (Pre-Allocated + Fixed + DVMT) available to devices driven by the integrated graphics controller. Select [MaxDVMT] if graphics-intensive applications will be used.
DVI Spread Spectrum	Available options are: - Disabled (default) - 1 - 2 - 3 - 4 - 5 - 6 - 7	Configure the spread spectrum for digital display devices to reduce electromagnetic interference (EMI).
IGD-LCD Control	A submenu that includes a list of items to configure the onboard LVDS flat panel.	Configure the onboard LVDS flat panel.

4.2.1 IGD-LCD Control

Figure 10. IGD-LCD Control

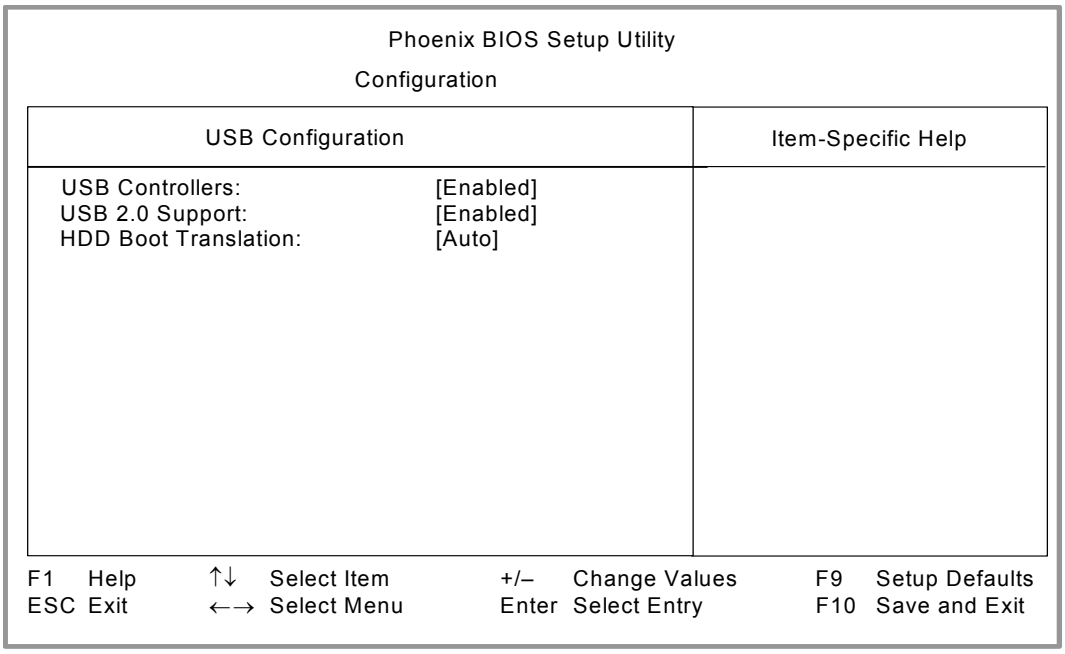


BIOS Item	Usage	Item-Specific Help
Local Flat Panel Type	Available options are: - 640x480 LVDS - 800x600 LVDS - 1024x768 LVDS (default) - 1280x1024 LVDS - 1400x1050 LVDS - 1600x1200 LVDS	Select the resolution of the onboard LVDS flat panel.
Panel Scaling	Available options are: - Auto (default) - Force Scaling - Off	Select the scaling method for the local LVDS flat panel. [Force Scaling] always scales graphics to fit the local flat panel resolution. For example, when the Local Flat Panel Type is set to 1024x768 LVDS, a 640x480 image will be stretched to fit the 1024x768 display.
Backlight Control	Read-only. [PWM] is the only option the system writes for backlight control.	The system controls the flat panel's backlight brightness via PWM output from the chipset.

BIOS Item	Usage	Item-Specific Help
Initial Brightness	Available options are: - 100% (default) - 80% - 60% - 40% - 20% - 10%	Define the initial brightness of the backlight set by the BIOS. Further control of the backlight brightness requires a driver or application software.
LVDS Spread Spectrum	Available options are: - Disabled (default) - Enabled	Enable the spread spectrum for onboard LVDS flat panel to reduce electromagnetic interference (EMI).
Spread Percentage	This item is visible only when LVDS Spread Spectrum is set to Enabled. Available options are: - Down 0.8% - Down 1.00% (default) - Down 1.25% - Down 1.50% - Down 1.75% - Down 2.00% - Down 2.50% - Down 3.00% - Center 0.3% - Center 0.4% - Center 0.5% - Center 0.6% - Center 0.8% - Center 1.0% - Center 1.25% - Center 1.50%	For EMI testing, select the modulation width of the spread on the target frequency.

4.3 USB Configuration

Figure 11. USB Configuration



BIOS Item	Usage	Item-Specific Help
USB Controllers	Available options are: - None - One Controller: Enable UHCI controller 0, ports 0 through 1 - Two Controllers: Enable UHCI controllers 0 and 1, ports 0 through 3 - Three Controllers: Enable UHCI controllers 0 and 2, ports 0 through 5 - Four Controllers (default): Enable UHCI controllers 0 and 3, ports 0 through 7	For the location of each USB port, refer to the Product Manual.
USB 2.0 Support	This item is visible only when USB Functions is not set to Disabled. Available options are: - Disabled - Enabled (default)	Select Enabled to support USB 2.0 functionality on all USB ports.

BIOS Item	Usage	Item-Specific Help
HDD Boot Translation	Available options are: - Auto (default): Use the values provided by the boot sector of the device, as determined when it was formatted. - Force32: Force the BIOS to use a sector per track value of 32. This is used by the majority of USB mass storage devices. - Force63: Force the BIOS to use a sector per track value of 63. This provides compatibility for devices that have been formatted with older BIOS versions or other system boards.	Specify how the translation of a USB mass storage device should be handled if “mode sense page 5” fails or is disabled.

4.4 LAN Configuration

Figure 12. LAN Configuration

Phoenix BIOS Setup Utility

Configuration

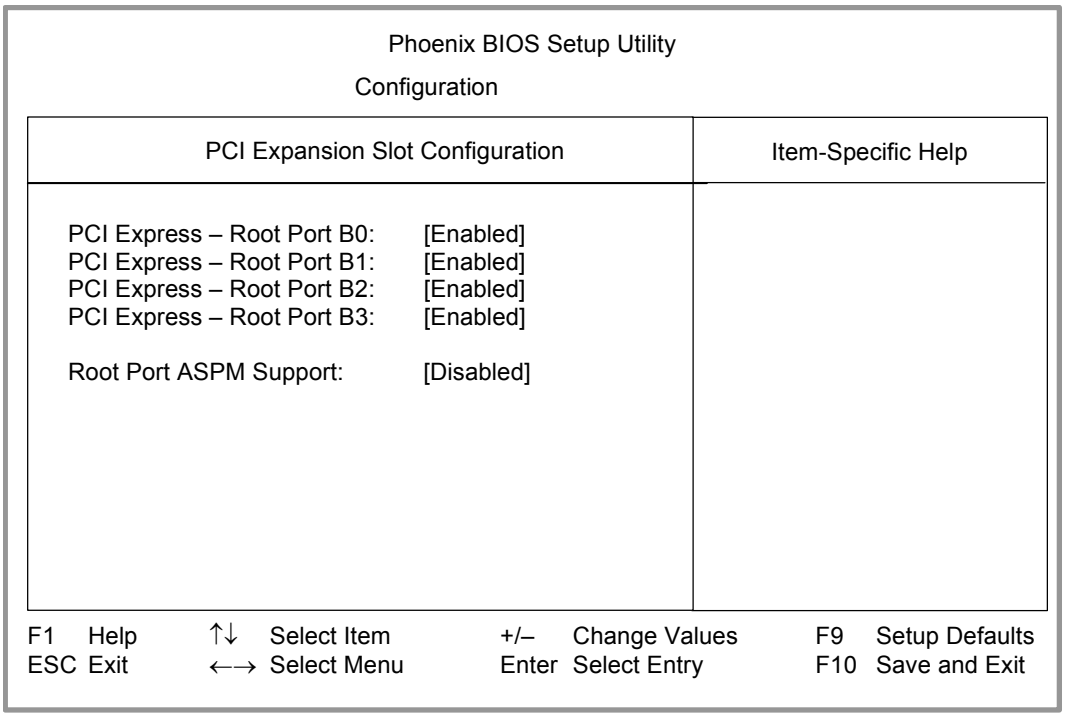
LAN Configuration		Item-Specific Help
Onboard LAN:	[Enabled]	
MAC Address:		
Bus Mastering:	[Disabled]	
Latency Timer:	[Default]	
PXE Option ROM:	[Enabled]	
Power Saving When S5:	[Disabled]	

F1	Help	↑↓	Select Item	+/–	Change Values	F9	Setup Defaults
ESC	Exit	←→	Select Menu	Enter	Select Entry	F10	Save and Exit

BIOS Item	Usage	Item-Specific Help
Onboard LAN	Available options are: - Disabled - Enabled (default)	Enable or disable the LAN port.
MAC Address	Read-only. This item is visible only when Onboard LAN is set to Enabled. It displays the Ethernet node address assigned to the LAN port.	N/A
Bus Mastering	Typically only the CPU can be the bus master that drives the address bus, bus control signals and all communications between input and output (I/O) devices. This setting allows the onboard Ethernet controller to take turns at, for example, accessing a disk controller directly while the CPU performs other tasks that do not require the bus, such as fetching code from its cache. Available options are: - Disabled (default) - Enabled	Specify whether the onboard Ethernet controller will operate as a bus master.
Latency Timer	Available options are: - 1 µs - 2 µs - 3 µs - 4 µs - 5 µs - 6 µs - 7 µs Default (default): The BIOS determines the correct setting.	Select the minimum guaranteed time slice in microseconds allotted for Ethernet bus mastering. [Default] allows the system BIOS to determine the time slice automatically.
PXE Option ROM	Available options are: - Disabled - Enabled (default)	Select [Enabled] to load the onboard LAN Option ROM during system boot for PXE support.
Power Saving When S5	Available options are: - Disabled (default) - Enabled	Select [Enabled] to power off the LAN in the S5 (Soft Off) state. This will make Wake On LAN unavailable.

4.5 PCI Expansion Slot Configuration

Figure 13. PCI Expansion Slot Configuration

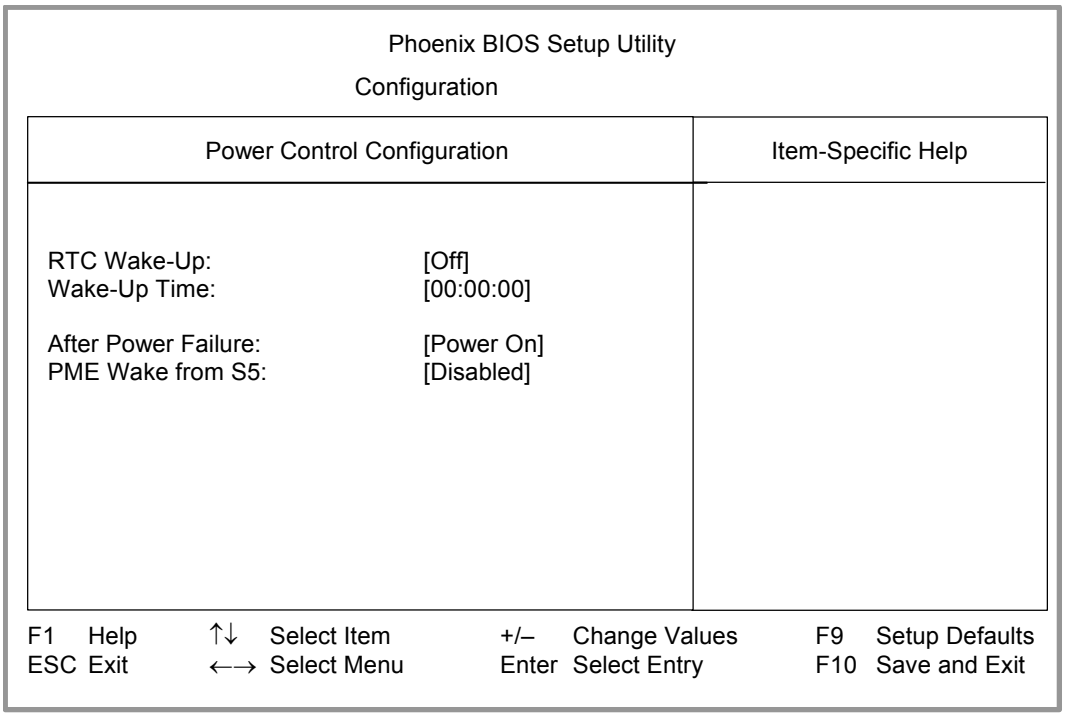


BIOS Item	Usage	Item-Specific Help
PCI Express –Root Port B	This item is visible only when the x4 PCI Express slot is configured as one x4 PCI Express interface, instead of the four x1 PCI Express interfaces. In this case, all BIOS items beneath this item are invisible. The Intel ICH chipset supports one x4 PCI Express interface (PEB). Available options are: - Disabled - Enabled (default)	Select [Disabled] if PCI Express x4 (PEB) interface functionality is not required.

BIOS Item	Usage	Item-Specific Help
PCI Express - Root Port B0 PCI Express - Root Port B1 PCI Express - Root Port B2 PCI Express - Root Port B3	This item is visible only when the x4 PCI Express slot is configured as four x1 PCI Express interfaces. The Procelerant COM Express module provides a switch to specify usage of the slot as one x4 PCI Express interface or four x1 PCI Express interfaces. When the PEB functions as a single x4 PCI Express interface, all of the root ports must be enabled or the interface will not work. Available options are: - Disabled - Enabled (default)	When the x4 PCI Express slot (PEB) is configured as four x1 PCI Express interfaces, you can enable or disable each root port. When Root Port 0 is disabled, all other ports will also be disabled.
Root Port ASPM Support	Available options are: - Auto (default) - Disabled	Control Active State Power Management (ASPM) support for all the enabled root ports.

4.6 Power Control Configuration

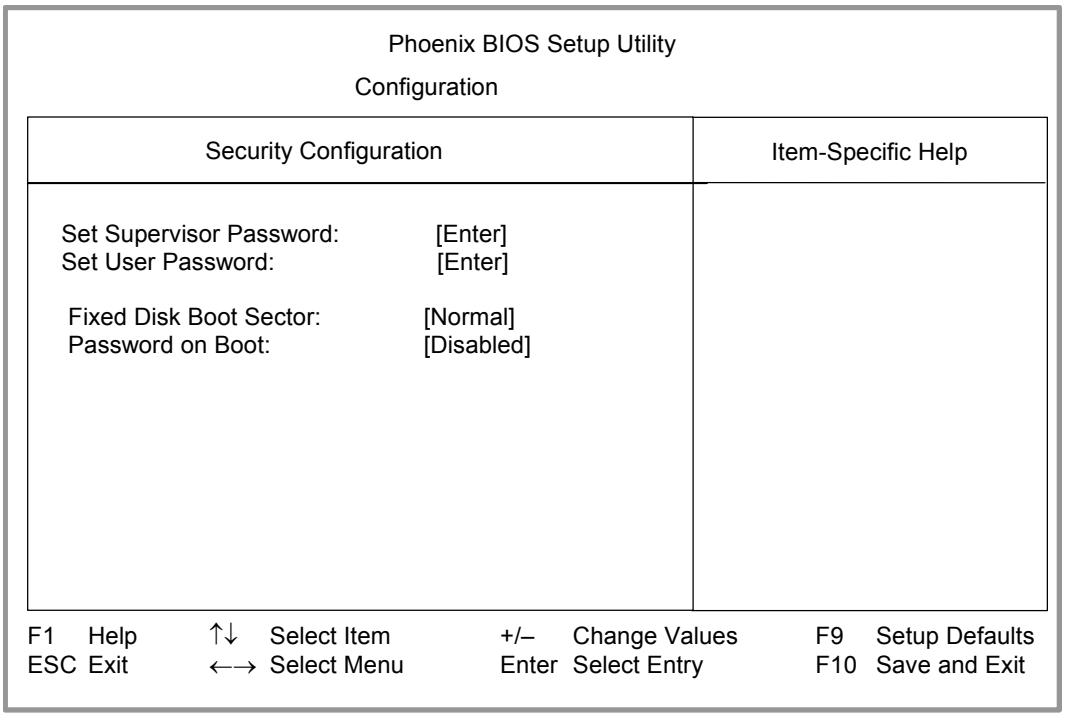
Figure 14. Power Control Configuration



BIOS Item	Usage	Item-Specific Help
RTC Wake-Up	Available options are: - Off (default) - On	Select [On] to wake up the system at the time specified in the Wake-Up Time setting.
Wake-Up Time	User entry. The default is 00:00:00. Note: This setting will function only when RTC Wake-Up is set to On.	Specify the time (HH:MM:SS, 24-hour clock notation) when the system is to wake up. Press Tab, Shift + Tab, or Enter to select fields.
After Power Failure	In the Standard BIOS and Full BIOS, this item is visible with these available options: - Last State: The system reverts to the previous power state before AC power is lost. - Power On: The system powers up immediately after AC power is restored. - Stay Off: The system remains powered-off until the power switch is pressed.	Specify the action when power is restored after AC power loss.
PME Wake from S5	Available options are: - Disabled (default): The system cannot be woken using the PME signal. - Enabled: The system may be woken from S5 state (Soft Off) using the PME signal.	Select [Enabled] to allow the PCI power management event signal to wake up the system from the S5 (Soft Off) state.

4.7 Security Configuration

Figure 15. Security Configuration

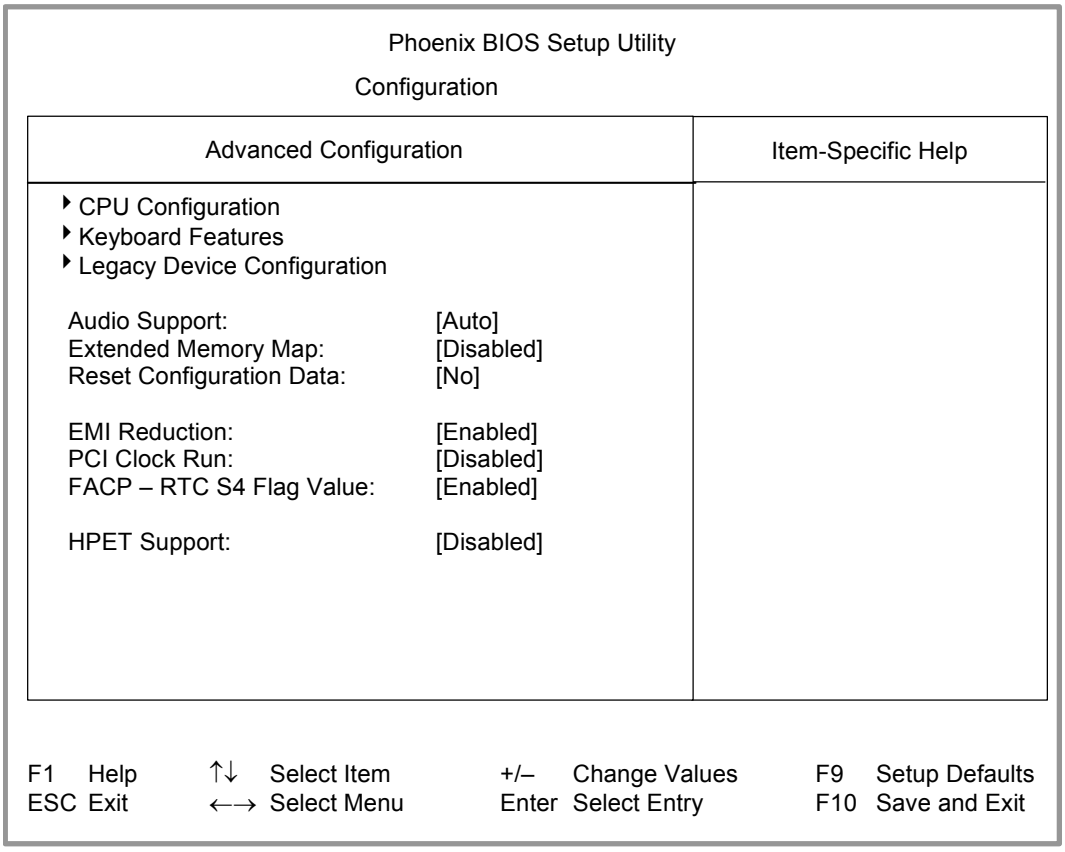


BIOS Item	Usage	Item-Specific Help
Set Supervisor Password	User entry. The supervisor password controls full access to both fundamental and advanced configuration items.	Press Enter to specify a supervisor password with full control. The password is not case-sensitive and permits a maximum of 8 numbers, letters, special characters (including \ [ ] ; ‘ , . /), and spaces.
Set User Password	User entry. This item will be available to enter a normal user password only when the supervisor password is not blank, otherwise, it will be grayed out. A normal user password allows users to log in the BIOS setup utility and configure fundamental configurations. Without in-depth knowledge of the system, changes to advanced configuration items may cause serious hardware problems and fatal system errors. This password will restrict access to advanced configuration items.	Press Enter to specify a password for normal users to change basic settings. The password is not case-sensitive and permits a maximum of 8 numbers, letters, special characters (including \ [ ] ; ‘ , . /), and spaces.

BIOS Item	Usage	Item-Specific Help
Fixed Disk Boot Sector	Available options are: - Normal (default) - Write Protect	Select [Write Protect] to prevent virus attacks on the boot sector of the hard disk.
Password on Boot	Available options are: - Disabled (default): A password is not required to complete the boot. - Enabled: Ether the supervisor or the user password, where configured, is required to complete the boot process.	Specify whether a password is required to complete the boot process. When enabled, either the supervisor or user password can be used.

4.8 Advanced Configuration

Figure 16. Advanced Configuration

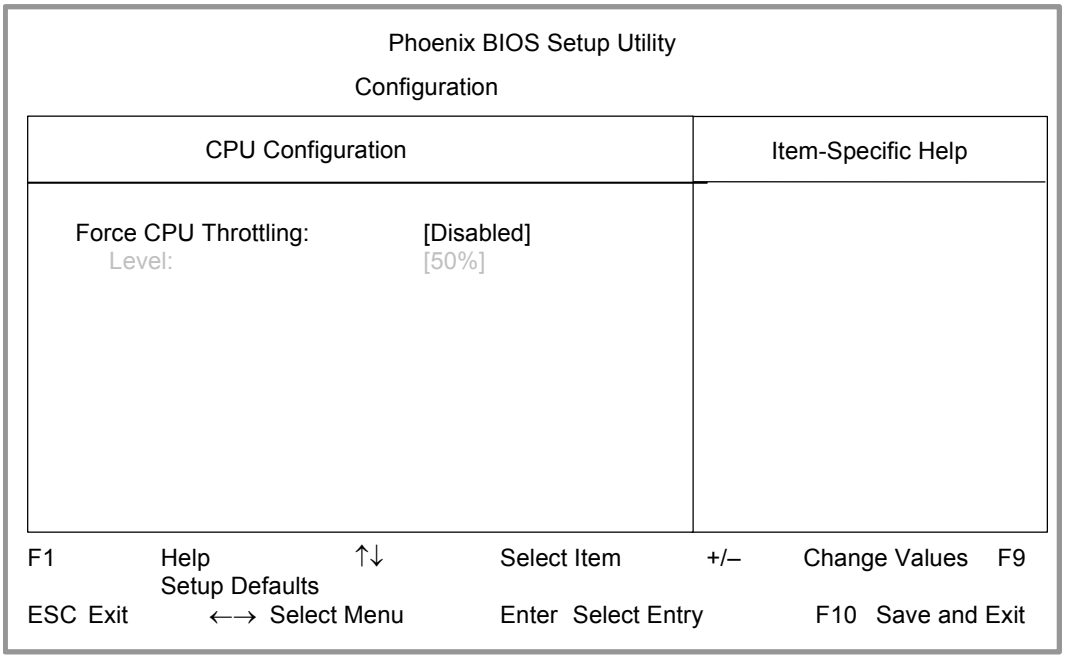


BIOS Item	Usage	Item-Specific Help
CPU Configuration	A submenu that includes a list of items used to configure the CPU. See 4.8.1.	Configure the CPU options.
Keyboard Features	A submenu that includes a list of items used to configure the keyboard features. See 4.8.2.	Configure the keyboard features.
Legacy Device Configuration	A submenu that includes a list of items used to configure legacy Super I/O devices. See 4.8.3.	Configure the Super I/O-based legacy devices.
Reset Configuration Data	Available options are: - Yes: Reset the configuration data. The operating system should load normally after system reboot. The selection reverts to [No] in the next boot cycle. - No (default): Do not reset the configuration data.	Select [Yes] to clear the Extended System Configuration Data (ESCD) held in the flash ROM and to reconfigure the settings. If the BIOS cannot detect hardware changes, this option may resolve resource conflicts. This setting always reverts to [No] after system reboot.
Audio Support	Available options are: - AC'97 - Disabled - HDA (default)	Intel High Definition Audio is supported by default for high quality, multi-channel audio support. Select [AC'97] if your audio hardware is not compatible with HDA, or [Disabled] for no audio support.
EMI Reduction	Available options are: - Disabled - Enabled (default)	Select [Enabled] to turn off unused clocks in order to reduce RF emissions. [Disabled] leaves all clocks on to support a non-compliant PCI card that does not require configuration space but needs a PCI clock, such as a PCI-based POST card.
Extended Memory Gap	Available options are: - Disabled (default) - Enabled	Select [Enabled] to turn off system RAM to free address space for use with an option card. A 1MB extended memory gap starting at 15MB will be created in system RAM.
PCI Clock Run	Available options are: - Disabled (default) - Enabled	Select [Enabled] to allow the CLKRUN# logic to stop the PCI clock when it stops the CPU clock.

BIOS Item	Usage	Item-Specific Help
RTC Wake-Up from S4	The RTC must be able to wake the system from an S1, S2, or S3 sleep state. The RTC alarm can optionally support waking the system from the S4 state, as indicated by the RTC_S4 value in the FACP Table. Available options are: - Enabled (default) - Disabled	Select [Enabled] to allow the RTC alarm to wake the system from S4 state with software control under Windows or by default with the RTC Wake-Up Time configured in the BIOS setup utility.
HPET Support	Available options are: - Disabled - Enabled (default): The RSDT (Root System Description Table) will point to the HPET (High Precision Event Timer), and the appropriate enable bits will be set.	Enable or disable the support for the High Precision Event Timer.

4.8.1 CPU Configuration

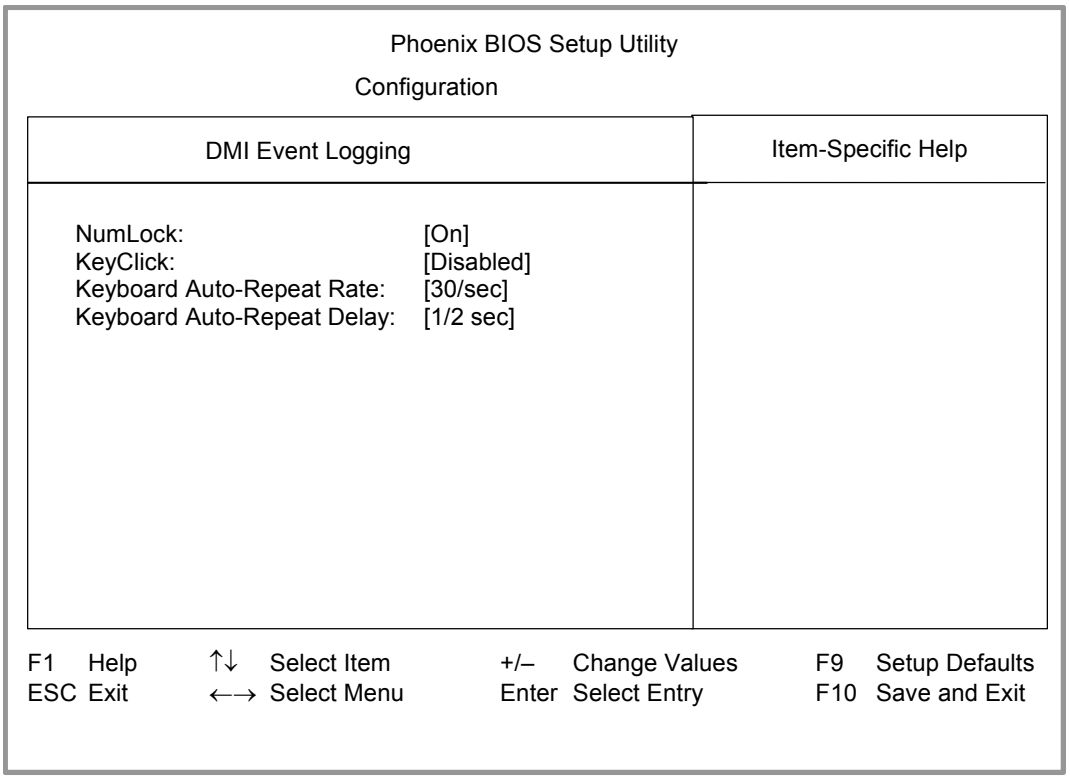
Figure 17. CPU Configuration



BIOS Item	Usage	Item-Specific Help
Force CPU Throttling	Available options are: - Disabled (default) - Enabled	Specify whether to force the CPU to run at a slower rate in order to save power or make the CPU run cooler.
Level	This item is visible only when Force CPU Throttling is set to Enabled. Available options are: - [12.5%] - [25%] - [37.5%] - [50%] (default) - [62.5%] - [75%] - [87.5%]	The options specify how much the CPU speed will be reduced. For example, [12.5%] would reduce the CPU speed by only 12.5%.

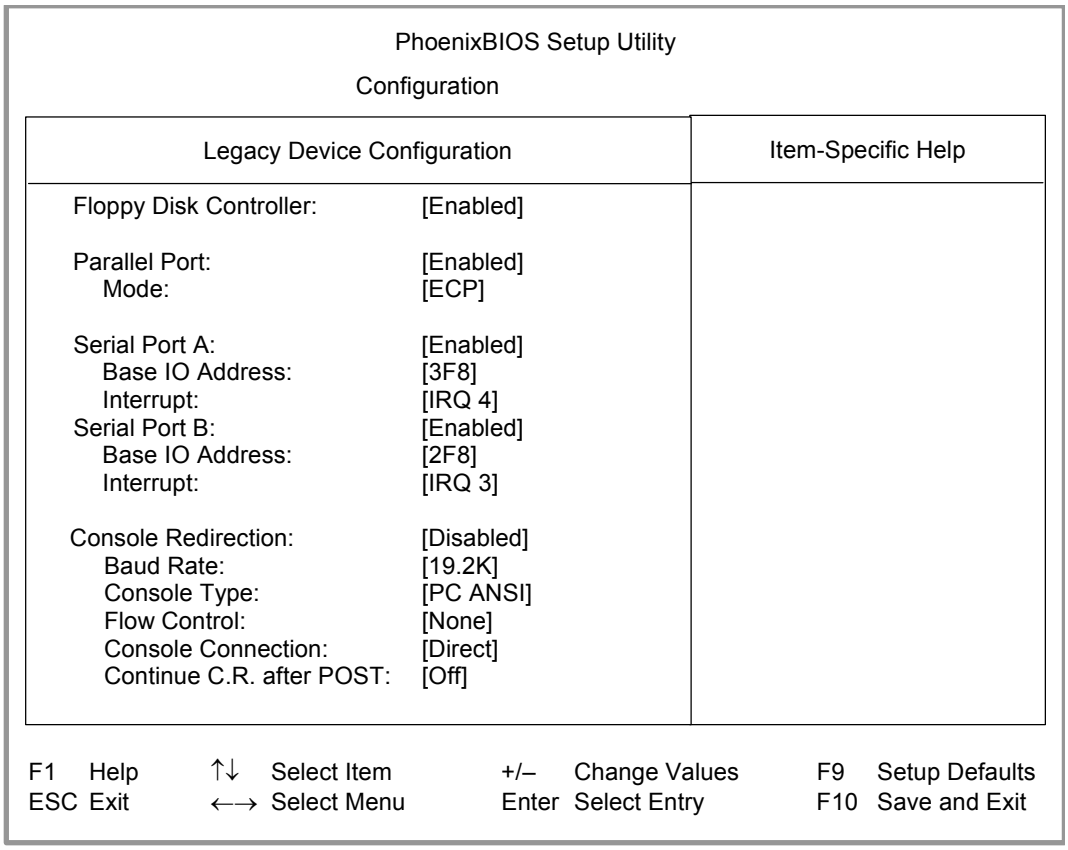
4.8.2 Keyboard Features

Figure 18. Keyboard Features



BIOS Item	Usage	Item-Specific Help
NumLock	Available options are: - Off - On (default)	Select the default power-on state of the NumLock function.
Key Click	Available options are: - Disabled (default) - Enabled	[Enabled] allows you to use the PC speaker to generate an audible click for the keyboard.
Keyboard Auto-Repeat Rate	Available options are: - 30/sec (default) - 26.7/sec - 21.8/sec - 18.5/sec - 13.3/sec - 10/sec - 6/sec - 2/sec	Specify the number of times a character will be repeated per second when its key is held down.
Keyboard Auto-repeat Delay	Available options are: - ¼ sec - ½ sec (default) - ¾ sec - 1 sec	Select the delay before the auto-repeat function starts when holding down a key.

4.8.3 Legacy Device Configuration



Item	Description	Item-Specific Help
Floppy Disk Controller	This item is visible in the Full BIOS. Available options are: - Disabled - Enabled (default)	Enable or disable the legacy floppy disk controller on the carrier board.
Parallel Port	This item is visible only in the Full BIOS. Available options are: - Disabled - Enabled (default)	Enable or disable the legacy parallel port on the carrier board.

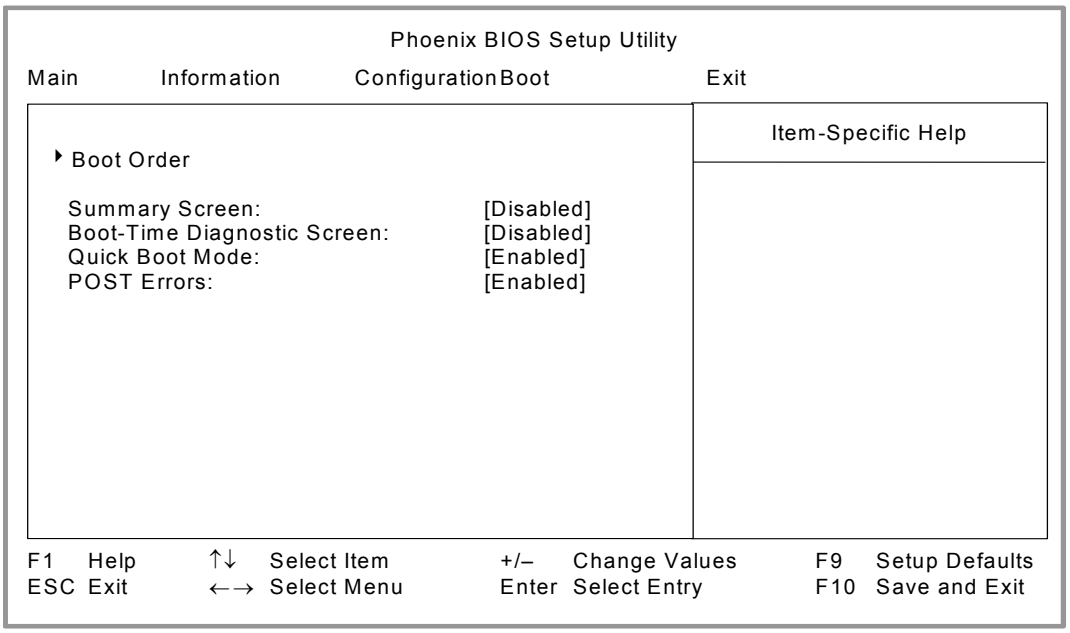
Item	Description	Item-Specific Help
Mode	This item is visible only when Parallel Port set to Enabled. Available options are: - Output Only - Bi-directional - EPP: The Enhanced Parallel Port mode is compatible with IEEE 1284 specification. An EPP is a half-duplex, bi-directional interface designed to allow devices like printers, scanners, or storage devices to transmit large amounts of data. - ECP (default): The Extended Capabilities Port mode is compatible with IEEE1284. An ECP is a half-duplex, bi-directional interface similar to EPP, except that the system uses DMA to provide even faster data transfer than EPP.	Select the operating mode of the legacy parallel port.
Serial Port A	Available options are: - Disabled - Enabled (default)	Enable or disable legacy serial port A.
Base I/O Address	Read-only. This item is visible only when the Serial Port A is enabled. The fixed value of this base I/O address is 3F8.	N/A
Interrupt	Read-only. This item is visible only when the Serial Port A is enabled. The fixed value of this base I/O address is IRQ 4.	N/A
Serial Port B	Available options are: - Disabled - Enabled (default)	Enable or disable legacy serial port B.
Base I/O Address	Read-only. This item is visible only when the Serial Port A is enabled. The fixed value of this base I/O address is 2F8.	N/A

Item	Description	Item-Specific Help
Interrupt	Read-only. This item is visible only when the Serial Port A is enabled. The fixed value of this base I/O address is IRQ 3.	N/A
Console Redirection	This item is used to configure the console redirection with the available Super I/O-based serial ports. When this item is disabled, all settings beneath this item become invisible. Available options are: - Disabled - Serial Port A (default) - Serial Port B	Select one legacy serial port for console redirection.
Baud Rate	Available options are: - 300 - 1200 - 2400 - 9600 - 19.2K - 38.4K - 57.6K - 115.2K (default)	Select a baud rate supported by your device.
Console Type	Available options are: - VT100 - VT100 8Bit - PC ANSI 7Bit - PC ANSI - VT100+ (default) - VT-UTF8 - ASCII	Select a console protocol supported by your device.

Item	Description	Item-Specific Help
Flow Control	Available options are: - None (default) - CTS/RTS: This option is a standard method of hardware flow control between DTEs. CTS (Clear To Send) and RTS (Request To Send) are common RS-232 serial port control lines. - XON/XOFF: This option is a standard method of software flow control between modem and DTEs.	Select the data transmission flow control between the network and data terminal equipment (DTE).
Console Connection	Available options are: - Direct (default) - Via Modem	Specify whether the console is connected to the system directly or via a modem.
Continue C.R. after POST	Available options are: - Off - On (default)	Select [On] to enable console redirection after entering the operating system.

5. Boot Menu

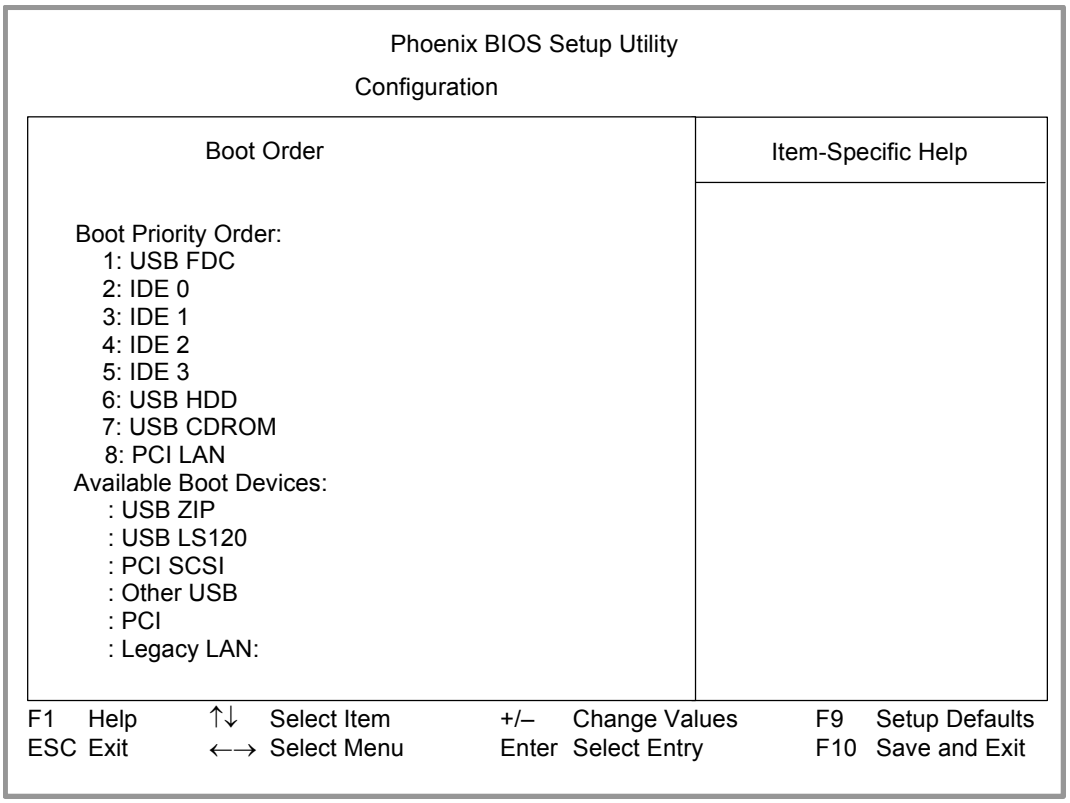
Figure 19. Boot menu



BIOS Item	Usage	Item-Specific Help
Boot Order	A submenu that includes the settings for boot priority orders and available boot order options.	Select the order of devices to boot from.
Summary Screen	Available options are: - Disabled - Enabled (default)	Select [Enabled] to display the system configuration prior to loading the OS. Disabling this setting speeds up the boot process.
Boot-Time Diagnostic Screen	Available options are: - Disabled (default) - Enabled	Select [Enabled] to display the diagnostic screen and customized boot logo during POST. When disabled, pressing ESC during POST displays the diagnostic screen.
Quick Boot Mode	Available options are: - Disabled - Enabled (default)	Select [Enabled] to skip in-depth tests during system boot.
POST Errors	Available options are: - Disabled (default) - Enabled	Select [Enabled] to pause the boot process and display the BIOS setup utility if system boot errors occur. When disabled, the system continues attempting to boot.

5.1 Boot Order

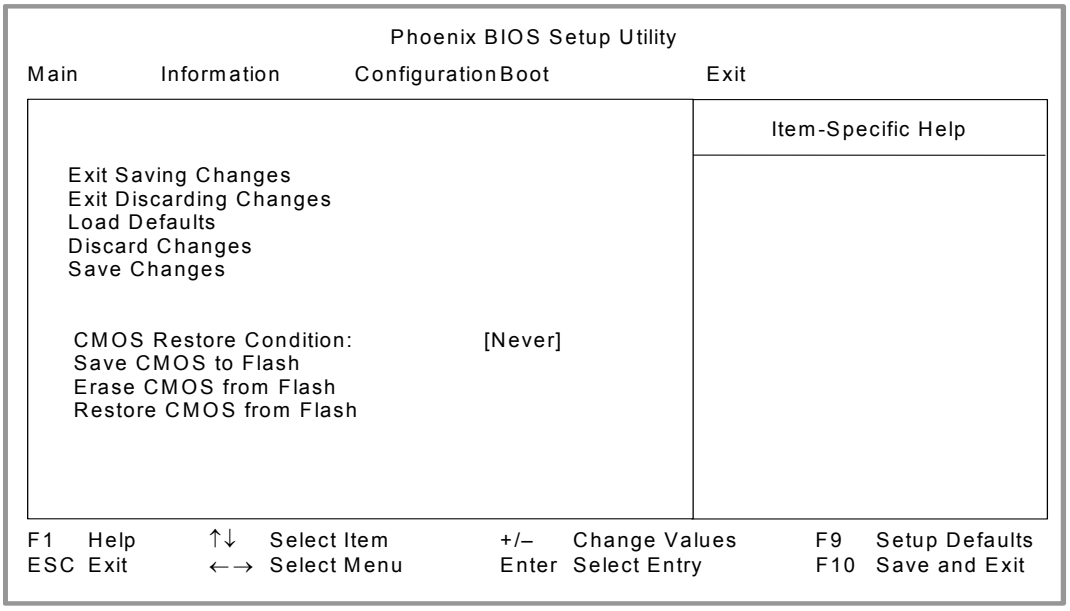
Figure 20. Boot Order



BIOS Item	Usage	Item-Specific Help
Boot Priority Order	This item displays a list of the devices that are used to boot the system. The listed devices are selected from the Available Boot Devices list. Function keys are used to adjust the boot priority order.	<↑>and <↓>: Select a device. <+> and <->: Move a device up or down. <f> and <r>: Make a device fixed or removable. <x>: Exclude or include a device to boot. <Shift+1>: Enable or disable a device. <1-4>: Load default boot sequence.
Available Boot Devices	This item displays all devices available to boot the system is displayed. Function keys are used to exclude or include a device to the boot priority order.	<↑>and <↓>: Select a device. <+> and <->: Move a device up or down. <f> and <r>: Make a device fixed or removable. <x>: Exclude or include a device for booting the system. <Shift+1>: Enable or disable a device. <1-4>: Load default boot sequence.

6. Exit menu

Figure 21. Exit menu



BIOS Item	Usage	Item-Specific Help
Exit Saving Changes	Executable command. A confirmation message window prompts with two interactive buttons: - Yes (default) - No	Exit the BIOS setup utility and save changes to CMOS.
Exit Discarding Changes	Executable command. A confirmation message window prompts with two interactive buttons: - Yes (default) - No	Exit the BIOS setup utility without saving changes to CMOS.
Load Setup Defaults	Executable command. A confirmation message window prompts with two interactive buttons: - Yes (default) - No	Before loading defaults, select the “Save CMOS to Flash” option to save your current configuration settings.
Discard Changes	Executable command. A confirmation message window prompts with two interactive buttons: - Yes (default) - No	Discard all changes made in this setup session before continuing.

BIOS Item	Usage	Item-Specific Help
Save Changes	Executable command. A confirmation message window prompts with two interactive buttons: - Yes (default) - No	Save all changes made in this setup session to CMOS.
CMOS Restore Condition	Changes to this item must be saved with the CMOS settings to flash memory before taking effect. Available options are: - Always: This option is usually useful when there is no CMOS battery on the carrier board. - Never (default) - CMOS Corruption	Specify the condition under which BIOS settings saved in the BIOS ROM flash memory will be automatically restored to CMOS in the BIOS RAM. Warning: If you select Always or CMOS Corruption, be sure to save CMOS settings to flash memory.
Save CMOS to Flash	Executable command. Performing this command will prompt a successful message window. This window provides a “Press any key to continue” button.	Take a moment to save current CMOS settings to nonvolatile flash memory. It takes effect after system reboot and allows you to restore your current BIOS configuration.
Erase CMOS from Flash	Executable command. Performing this command will prompt a successful message window. This window provides a “Press any key to continue” button.	Erase all previously-stored CMOS data from flash memory. It may take several seconds to complete the process.
Restore CMOS from Flash	Executable command. Performing this command will prompt a successful message window. This window provides a “Press any key to continue” button.	Manually restore CMOS settings from flash memory.