CompactPCI®

Phoenix BIOS

For Inova's High-Performance K6 CPU Boards

USER'S MANUAL

Publication Number: PD00030016.400
MAN-PHOENIX-BIOS-K6

inova® Computers

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Preface

Revision History

Revision History			
Manual	PD00030016.400		
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Issue	**Brief Description of Changes**	**Author**	**Date of Issue**
PD00030016.364	First Release (3.64) for Inova ICP-K6 CPUs	AB	10-Dec-99
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PD00030016.400	Brought Up-to-Date to include BIOS Revisions to 4.00 USB keyboard, mouse and USB boot support Power Management Features Automatic Duty Cycle Reduction (Over-Temperature) Watchdog Support (if available) Rear I/O (RIO) Floppy Support Hard Disk S.M.A.R.T Support Improved Boot Order Enabled AMD Write Allocation Feature New Network Boot ROM: Etherboot New BIOS Setup Screens	AB	17-Apr-02

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CompactPCI®

Phoenix BIOS

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BIOS Contents

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1.0 Introduction

Inova's K6 family of CompactPCI CPUs are equipped with Phoenix BIOS which, through the use of a menu-driven setup sequence, allows the integrator to make specific changes to the CPUs settings. This enables, for example, the parameters of a hard disk to be modified or the boot sequence to be altered etc. It even allows the system to recognize newly installed hardware such as a floppy drive.

The entries shown in italics in the following tables illustrate default or factory set values.

1.1 Configuration Options

The Phoenix BIOS setup comprises a number of menus and sub-menus allowing the system integrator to tailor the system for optimum performance. The menus illustrated in this section are of a typical system and may differ to the menu actually appearing on the user's monitor.

> *Note:*
>
> *Altering the factory settings or modifying the BIOS settings without due care and attention can cause the computer to malfunction.*

1.11 Main Menu

The Setup utility may be accessed by:

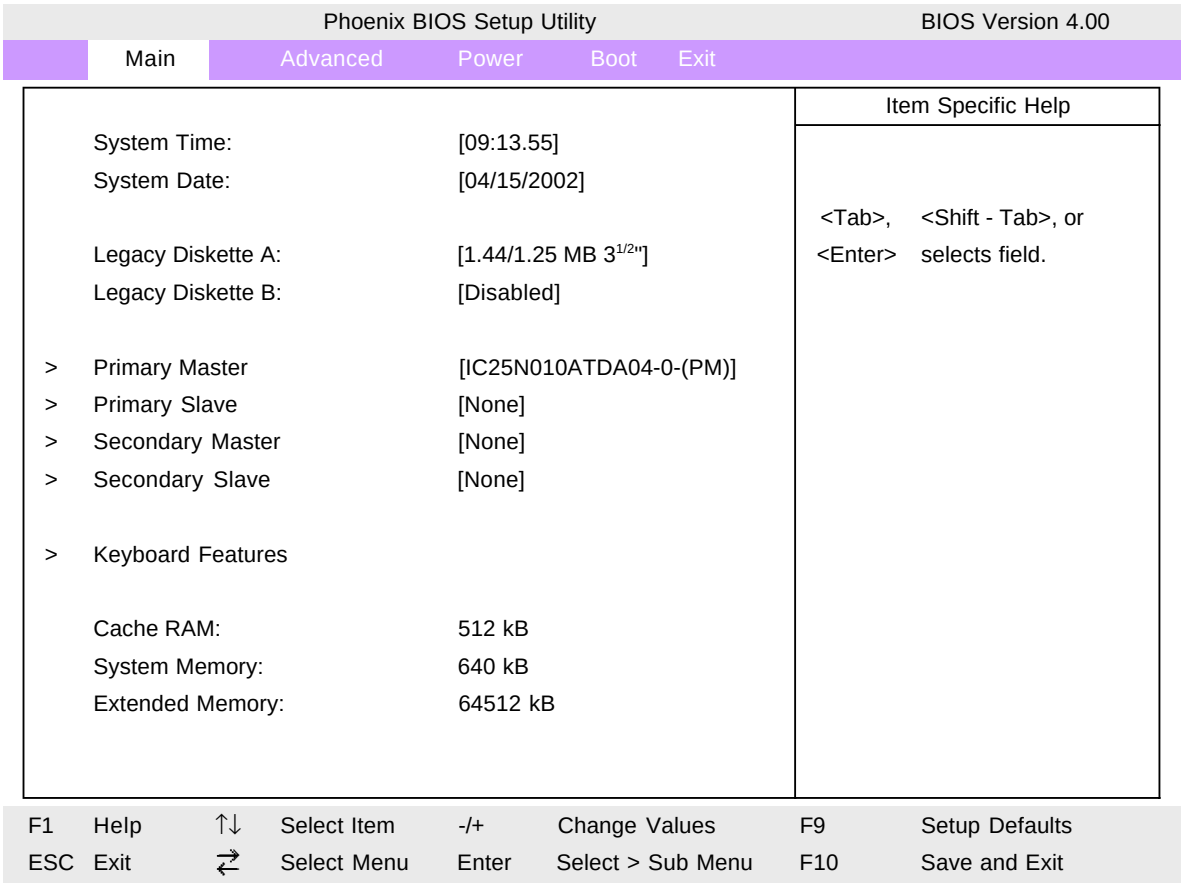
- Turning on or rebooting the system.

The BIOS displays the message:

- Press <F2> to enter SETUP

Pressing <F2> displays the Main Menu illustrated in figure 1.11.

Figure 1.11 Phoenix BIOS Main Menu



1.12 Menu Bar

The menu bar shown at the top of Figure 1.1 allows BIOS navigation as explained in Table 1.12.

Table 1.12 Menu Bar

Option	Function
Main	Use this menu for basic system configuration
Advanced	Use this menu option to take advantage of the advanced chipset features
Power	Configures Power Management features
Boot	Use this menu to influence the boot procedure
Exit	Exits the current menu and displays exit menu

- Navigation is performed by using the "←" or "→" arrow keys
- Refer to the section "Exiting Setup" to quit the main menu

1.13 Legend Bar

Use the keys displayed in the legend bar (shown at the bottom of the "screen" in Figure 1.11 to make selections, alter values or exit the current menu. Table 1.13 describes the function of these legend keys and their effects.

Table 1.13 Legend Bar

Option	Function
<F1> or <Alt-H>	General help window (see below)
<ESC>	Exits the current menu and displays exit menu
← or → keys	Select a different menu (Menu Bar)
↑ or ↓ keys	Move cursor to the previous (up) or next (down) field
<Tab> or <Shift-Tab>	Move cursor to the next (right) or previous (left) field
<Home> or <End>	Move cursor to the top or bottom of the window
<PgUp> or <PgDn>	Move cursor to the previous or next window
<F5> or <->	Select the previous value entered for this field
<F6> or <+> or <Space>	Select the next value for this field
<F9>	Load the default configuration values
<F10>	Save and exit
<Enter>	Execute command or select sub-menu

To select an item, use the keys or combination of keys as described in table 1.13 then select the value for this field by pressing the appropriate keys.

The Save Values command in the Exit Menu saves the values currently displayed in ALL menus.

Sub-menus are displayed by the ">" symbol appearing before the entry which can be accessed by pressing the <Enter> when the cursor is located on the entry.

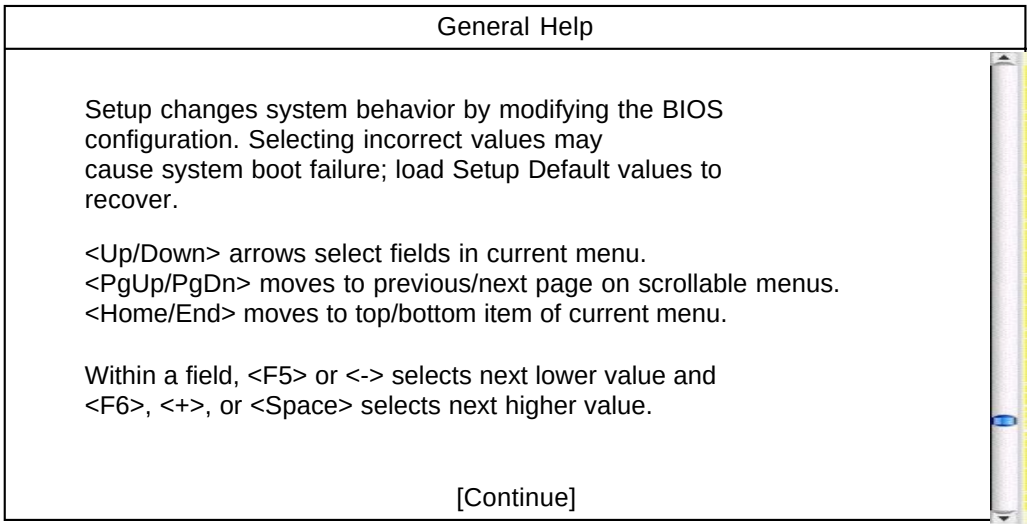
1.14 Help Window

The help window appears to the right of the main screen and displays contextual information pertaining to the item the cursor is currently located on. Hence, as the cursor moves, so this information is updated accordingly.

1.15 General Help Window

Pressing either <F1> or <Alt H> in any of the menus displays the General Help Window which provides on-line information on menu navigation and confirms the information provided in Table 1.13 on the previous page.

Table 1.15 General Help Window



A scroll bar to the right of any window indicates that there is more than one page of information for that item. Use <PgUp> and <PgDn> to scroll these pages. Pressing <Home> or <End> displays the first and last page respectively. Pressing <Enter> or <ESC> will exit the current window and continue with the BIOS setup routine.

1.16 Main Menu Selections

Table 1.16 illustrates the selections and their function that are possible within the Main Menu itself. Sub-menus (appearing later in this section) have extended functionality.

Table 1.16 Main Menu Selections

Feature	Options	Description
System Time	HH:MM:SS	Set the system time
System Date	MM/DD/YYYY	Set the system date (Note the U.S. date format)
Legacy Diskette A	Disabled 360 kB 51/4" 1.2 MB 51/4" 720 kB 31/2" *1.44 / 1.25 MB 31/2"* 2.88 MB 31/2"	Select the type of floppy-disk drive installed. Note that the 1.25MByte type is a Japanese media format that requires a 31/2" 3 mode diskette drive.
Legacy Diskette B	*Disabled* 360 kB 51/4" 1.2 MB 51/4" 720 kB 31/2" 1.44 / 1.25 MB *31/2"* 2.88 MB 31/2"	Select the type of floppy-disk drive installed. Note that the 1.25MByte type is a Japanese media format that requires a 31/2" 3 mode diskette drive.
Primary Master Primary Slave Secondary Master Secondary Slave	N/A	Displays "Advanced Hard Disk Features" sub-menu for that drive
Keyboard Features	N/A	Displays "Keyboard Features" sub-menu
Cache RAM	N/A	Displays the amount of detected L2 cache memory
System Memory	N/A	Displays the amount of detected conventional memory
Extended Memory	N/A	Displays the amount of detected extended memory

1.17 Master and Slave Drives

Table 1.16 refers to Master and Slave Primary and Secondary drives. These devices are:

- Hard-Disk Drives (HDD)
- Removable Disk Drives (e.g. LS-120)
- CD-ROM Drives

The Phoenix BIOS supports up to two EIDE disk adapters called primary and secondary adapters. Each adapter can support one master and an optional slave drive as follows:

- 1 Master
- 1 Master and 1 Slave
- 2 Masters
- 2 Masters and 1 Slave
- 2 Masters and 2 Slaves

} A Master MUST be present. Slave only configurations will NOT work

Note:

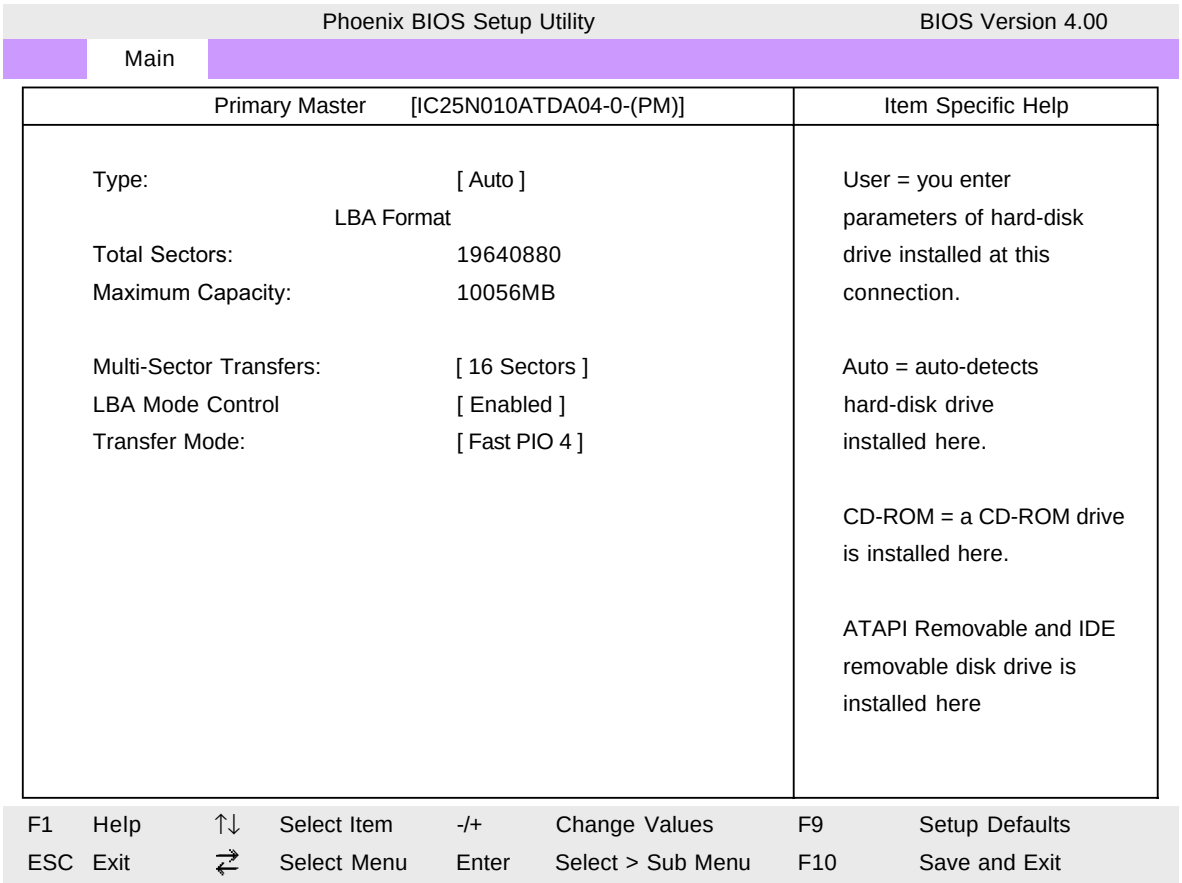
Do not attempt to change these settings unless a drive is installed that does NOT support auto-detect (older hard-disks).

If the drive settings need to be altered use the Master and Slave sub-menus as explained in Figure 1.18.

1.18 Advanced Hard Disk Features

Figure 1.18 illustrates the Master or Slave sub-menu that is displayed after pressing the <Enter> key with the cursor placed on these positions in the Main Menu.

Figure 1.18 Hard-Disk Parameters



> ***Note:***
>
> ***The values shown in Figure 1.18 are for illustration purposes only and may differ from system to system. Also, this sub-menu is similar for each of the Master & Slave devices shown in the Main Menu and therefore will not be repeated for clarity.***

Table 1.18 Drive Parameter Options

Feature	Options	Description
Type	*Auto*	The system tries to auto-detect the drive parameters. This setting works with most modern drives and should only be altered if problems arise
	None	Disables this drive
	IDE Removable	Removable disk drive (e.g. ZIP, MO, etc.)
	ATAPI Removable	Removable disk (e.g. LS-120)
	CD-ROM	CD-ROM drive
	User	The user must supply the drive information
Cylinders	0 to 65,535	Number of cylinders [Only shown in User mode]
Heads	1 to 16	Number of heads [Only shown in User mode]
Sectors	0 to 63	Number of sectors per track [Only shown in User mode]
Multi-Sector Transfers	Disabled 2 Sectors 4 Sectors 8 Sectors *16 Sectors*	Any selection except 'Disabled' determines the number of sectors transferred per block. Disabled means 1 sector per block
LBA Mode Control	Disabled *Enabled*	Disabling LBA causes the values entered for the cylinders, heads and sectors (CHS) to be used in place of Logical Block Addressing (LBA)
Transfer Mode	Standard Fast PIO 1 Fast PIO 2 Fast PIO 3 *Fast PIO 4* FPIO 3 / DMA 1 FPIO 4 / DMA 2	Selects the method for transferring the data to / from the drive.

1.19 Keyboard Features

This menu option allows the keyboard parameters to be determined.

Figure 1.19 Keyboard Features Menu

Phoenix BIOS Setup Utility							BIOS Version 4.00
Main							
Keyboard Features						Item Specific Help	
NumLock:	[Auto]					Select Power-on state for NumLock	
Key Click:	[Disabled]						
Keyboard auto-repeat rate:	[30/sec]						
Keyboard auto-repeat delay:	[1/2 sec]						
F1 Help	↑↓	Select Item	-/+	Change Values	F9	Setup Defaults	
ESC Exit	⇄	Select Menu	Enter	Select > Sub Menu	F10	Save and Exit	

Table 1.19 Keyboard Features

Feature	Options	Description
NumLock	*Auto* On Off	Turns NumLock on ONLY if numeric keypad is found Turns NumLock on Turns NumLock off
Key Click	*Disabled* Enabled	Turns the audible key click on or off
Keyboard auto-repeat rate	*30/sec* 26.7/sec 21.8/sec 18.5/sec 13.3/sec 10/sec 6/sec 2/sec	Sets the number of times per second a keystroke is repeated when that key is held down
Keyboard auto-repeat delay	1/4 sec *1/2 sec* 3/4 sec 1 sec	Sets the delay time after which a keystroke is repeated if a key is held down

1.20 Advanced Menu Option

The Advanced Menu allows system critical or sensitive components to be configured.

> ***Note:***
>
> ***The warning message displayed in this menu option is important. Within this menu, hardware specific components can be set and it is advised that the configurator should possess extensive knowledge of the hardware before the factory settings are altered.***

Figure 1.20 The Advanced Menu

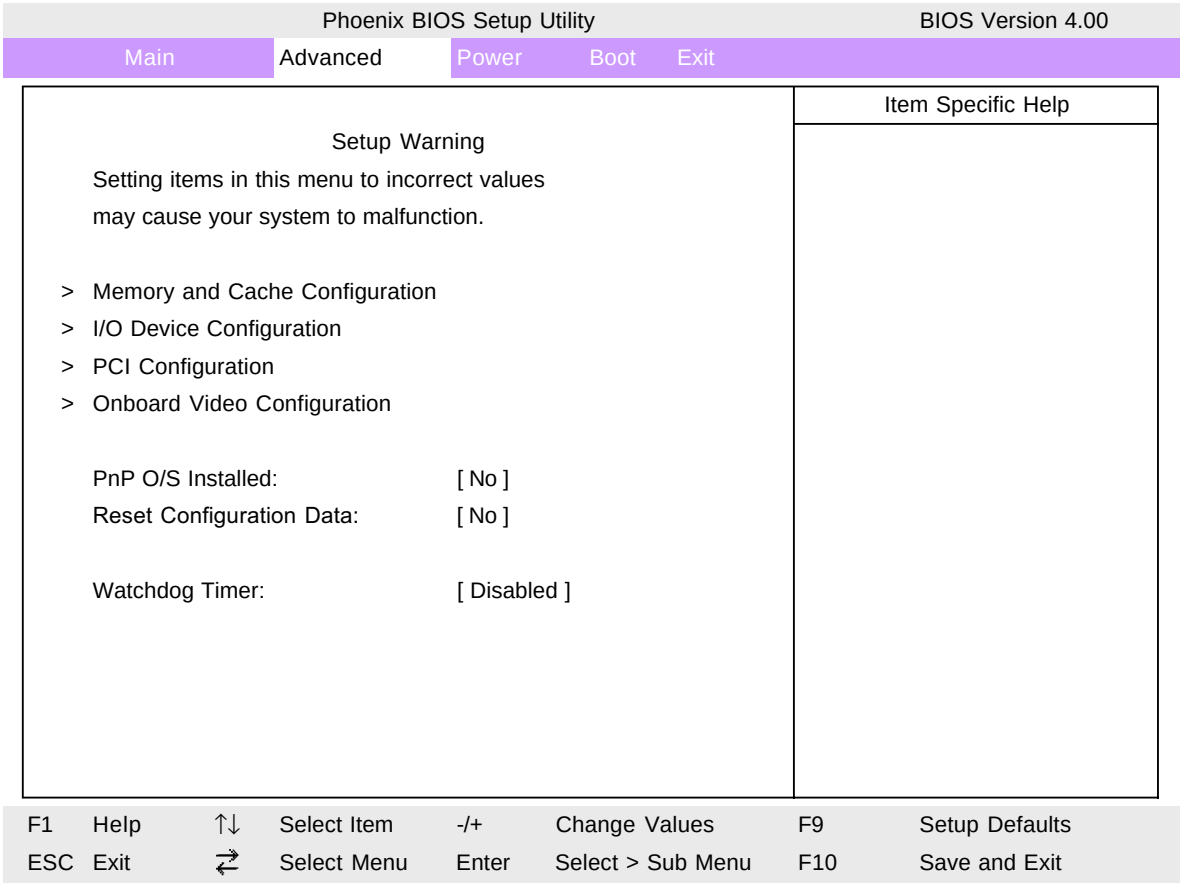


Table 1.20 The Advanced Menu Description

Feature	Options	Description
Memory & Cache Config.	N/A	Displays "Memory and Cache Config." sub-menu
I/O Device Configuration	N/A	Displays "I/O Device Configuration" sub-menu
PCI Configuration	N/A	Displays "PCI Configuration" sub-menu
Video Configuration	N/A	Displays "Video Configuration" sub-menu
PnP O/S Installed	*No* Yes	If the Operating System supports Plug & Play then "Yes" allows the OS to configure these devices otherwise configuration is performed via BIOS
Reset Configuration Data	*No* Yes	"Yes" erases all configuration data stored in Extended System Configuration Data (ESCD) which stores the configuration settings for non PnP plug-in devices. Select "Yes" when the manufacturer's default values need to be restored
Watchdog Timer	*Disabled* 1 to 5 Minutes	Selects the Watchdog timer timeout between disabled and 1 to 5 minutes. Application software and suitable driver are required to trigger the timer before the timeout period expires. Failing to do so results in a hardware reset

1.21 Memory and Cache Configuration

Enabling cache is analogous to a turbo drive in a modern car. The most recently accessed CPU data held in dynamic RAM or DRAM is stored temporarily in static RAM or SRAM which has faster access times. Before accessing the regular memory the CPU first interrogates the cache and only turns to the regular memory if the data it is looking for is no longer in the cache or cannot be found.

Figure 1.21 Memory & Cache Control

Phoenix BIOS Setup Utility			BIOS Version 4.00
	Advanced		

Memory and Cache Configuration			Item Specific Help
Memory Cache		[Enabled]	Sets the state of the memory cache.
Cache Video BIOS area:		[Enabled]	
Cache C800	- CBFF:	[Disabled]	
Cache CC00	- CFFF:	[Disabled]	
Cache D000	- D3FF:	[Disabled]	
Cache D400	- D7FF:	[Disabled]	
Cache D800	- DBFF:	[Disabled]	
Cache DC00	- DFFF:	[Disabled]	
VGA Frame Buffer		[4 MB]	

F1	Help	↑↓	Select Item	-/+	Change Values	F9	Setup Defaults
ESC	Exit	⇄	Select Menu	Enter	Select > Sub Menu	F10	Save and Exit

Note:

Disabling Memory Cache disables all the cacheable areas.

The area of the memory map reserved for M-Systems FLASH must NOT be made cacheable. Failing to do so with this FLASH installed will cause the system to fail to boot. In such an event the FLASH piggyback must be removed from the CPU and the system re-booted and the Setup modified accordingly.

Table 1.21 Memory and Cache Configuration

Feature	Options	Description
Memory Cache	Disabled *Enabled*	Enables / Disables all the memory cache options If Enabled all options are enabled too
Cache Video BIOS area	Disabled *Enabled*	Caches the video BIOS are for improved performance
Cache xxxx - yyyy	*Disabled* Enabled	Controls the cache of individual segments of memory usually reserved for system shadowing or option ROMs etc.
VGA Frame Buffer	Disabled 1 MB 2 MB *4 MB* 8 MB 16 MB	PCI Programmable Frame Buffer Memory Region

1.22 Device Configuration Menu

Most devices on the computer require the exclusive use of system resources for operation. These system resources can include input and output (I/O) port addresses and interrupt lines.

Allocation of these resources is accomplished in the Device Configuration Menu of Figure 1.22

Figure 1.22 I/O Device Configuration

Phoenix BIOS Setup Utility		BIOS Version 4.00
	Advanced	

I/O Device Configuration		Item Specific Help
Serial Port A:	[Auto]	Configure serial port A
Serial Port B:	[Auto]	using options:
Parallel Port:	[Auto]	
Mode:	[Bi-directional]	[Disabled]
		No configuration
Floppy Disk Controller:	[Enabled]	
Floppy Connector:	[On CPU]	[Enabled]
		User configuration
Local Bus IDE Adapter:	[Both]	
Smart Device Monitoring:	[Disabled]	[Auto]
		BIOS or OS chooses
USB Host Controller:	[Enabled]	configuration
USB BIOS Legacy Support:	[Enabled]	

F1	Help	↑↓	Select Item	-/+	Change Values	F9	Setup Defaults
ESC	Exit	⇄	Select Menu	Enter	Select > Sub Menu	F10	Save and Exit

Note:

Selecting the Floppy Connector in the menu above to "Via RIO" [Rear I/O] will disable the function of the LPT both onboard and via rear I/O (if installed).

The physical data lines of the LPT port embedded within the CompactPCI connector are mapped to the Floppy if the Rear I/O option is selected.

Table 1.22a Configuration of Input / Output Settings

Feature	Options	Description
Serial Port A, B	Disabled	The port is inactive
	Enabled	Opens the base address & IRQ sub-menu
	Auto	BIOS configures the port automatically during POST
Base I/O Address	*3F8 (Port A)*	Serial Port A/B becomes typically COM1
	2F8 (Port B)	Serial Port A/B becomes typically COM2
	3E8	Serial Port A/B becomes typically COM3
	2E8	Serial Port A/B becomes typically COM4
Interrupt	*IRQ 3 (Port B)*	If the serial port (A/B) is enabled, the IRQ has to be assigned to it
	IRQ 4 (Port A)	
Parallel Port	Disabled	The port is inactive
	Enabled	Opens the base address & IRQ sub-menu
	Auto	BIOS configures the port automatically during POST
Mode	Output Only	The standard one-way protocol for a parallel device
	Bi-directional	This setting is for a bi-directional protocol
	EPP	Enhanced Parallel Printer
	ECP	Extended Capabilities Port
Base I/O Address	*378*	Parallel Port I/O address (LPT1)
	278	
	3BC	
Interrupt	IRQ 5	If the parallel port is enabled, an IRQ has to be assigned to it.
	IRQ 7	Normally IRQ 5 is used with a base address of 278 and IRQ 7 with a base address of 378

Table 1.22a Configuration of Input / Output Settings Cont.

Feature	Options	Description
Floppy Disk Controller	Disabled *Enabled*	Enables or disables the floppy-disk controller
Floppy Connector	*On CPU* Via RIO	Defines where the BIOS should look for an attached floppy disk device. Default is the onboard CPU connector however, the Rear I/O option (RIO) permits the floppy disk to be installed without being connected to the main CPU board itself but disables all LPT functions due to signal sharing
Local Bus EIDE Adapter	Disabled Primary Secondary *Both*	Enables or disables primary and/or secondary channels of the IDE adapter
Smart Device Monitoring	*Disabled* Enabled	Disables or enables Self-Monitoring Analysis-Reporting Technology, which can be enabled to monitor the condition of the hard-drive and reports when a catastrophic IDE failure is about to happen
USB Host Controller	Disabled *Enabled*	Enables or disables the USB hardware (Disabled resources will be freed up for other uses.)
USB BIOS Legacy Support	Disabled *Enabled*	Enables or disables support for USB keyboards and mice. (Enable for use with non USB aware OS such as DOS or UNIX.) If this function is not needed then the function should be disabled to avoid potential system instability and conflict (e.g. when using SCSI devices or Inova Serial I/O piggybacks)

Note:

If the same I/O address or interrupt is used for more than one port then the menu displays an asterisk (*) for this conflict.

Note:

If USB BIOS Legacy Support is enabled, certain Realtime Operating Systems or Extensions will not work! Not all USB devices have been tested!

Table 1.22b USB Compatibility

Device Type	Name	Comments
USB Keyboard	Cherry G81-3504 USB Keyboard with Hub	Tested by Inova
	QTRONIX (Scorpius) 980NPIUS/980	Tested by Phoenix
	SAMSUNG (Magic Station) 2 USB port SDM4510UH	Tested by Phoenix
	Key Tronic E03640US001-C	Tested by Phoenix
USB Mouse	Logitech (Pilot Wheel Mouse) M-UB48	Tested by Inova
	Microsoft IntelliMouse 51381-577-2276301-00000	Tested by Phoenix
	Microsoft IntelliMouse 1.1A 81993-OEM-0533505-00000	Tested by Phoenix
	Logitech (Mini Wheel Mouse) M-BE55	Tested by Phoenix
	INTEREX MOSXU	Tested by Phoenix
	BELKIN 980044356	Tested by Phoenix
	DB China 807226607	Tested by Phoenix
	Genius NetScroll+	**Not Compatible**
USB HUB	NIC 4 Port hub 856-3070101-000	Tested by Phoenix
	D-LINK DSB-H7 7 port hub 052 202 838	Tested by Phoenix
	BELKIN 7 port hub UTK000700099	Tested by Phoenix
	ADS Technologies, Inc 4 port Ultra Hub USBH-604	Tested by Phoenix
	ASANTE FriendlyNet 4 port hub	Tested by Phoenix
	SIIG, Inc. 4 port mini Hub JJU-H4M012 Ver. 2.0	Tested by Phoenix
	ANDROMEDA 4 port Hub U-HUB-AN1	Tested by Phoenix
USB Floppy	Teac FDD FD-05PUB	Tested by Inova
	VST FDD FDUSB-M	Tested by Phoenix
USB ZIP Drive	ZIP Drive IOMEGA 250MB ZIP Z250USBPCM V.06.25	Tested by Inova
	ZIP Drive IOMEGA 100MB ZIP Z100USB Ver.16.56	Tested by Phoenix
USB CD-ROM	IOMEGA ZipCD 650	Tested by Inova
	IOMEGA Predator 4x4x6x (CD-RW)	Tested by Inova
	FreeCom CD-ROM	**Not Compatible**
	Plextor Plexwriter 24/10/40U (CD-RW)	**Not Compatible**
USB DVD-ROM	Addonics model AD-285.	Tested by Phoenix
USB Hard Drive	Castlewood ORB 2.2GB	Tested by Inova
	LaCie 10GB Pocket Drive U&I	**Not Compatible**

1.23 PCI Devices Menu

PCI devices are those equipped for operation on the CompactPCI bus. The menu illustrated in Figure 1.23 allows these PCI devices to be configured.

Figure 1.23 PCI Devices Configuration

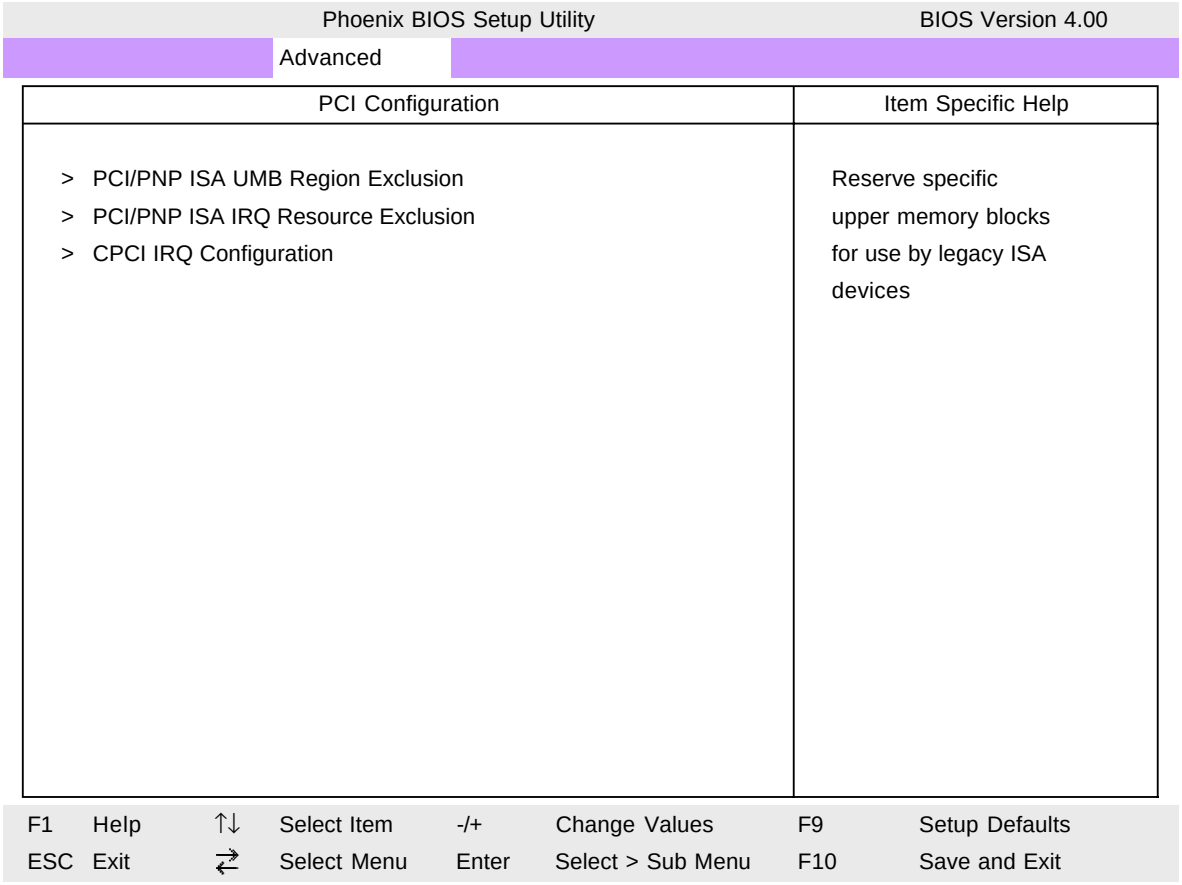


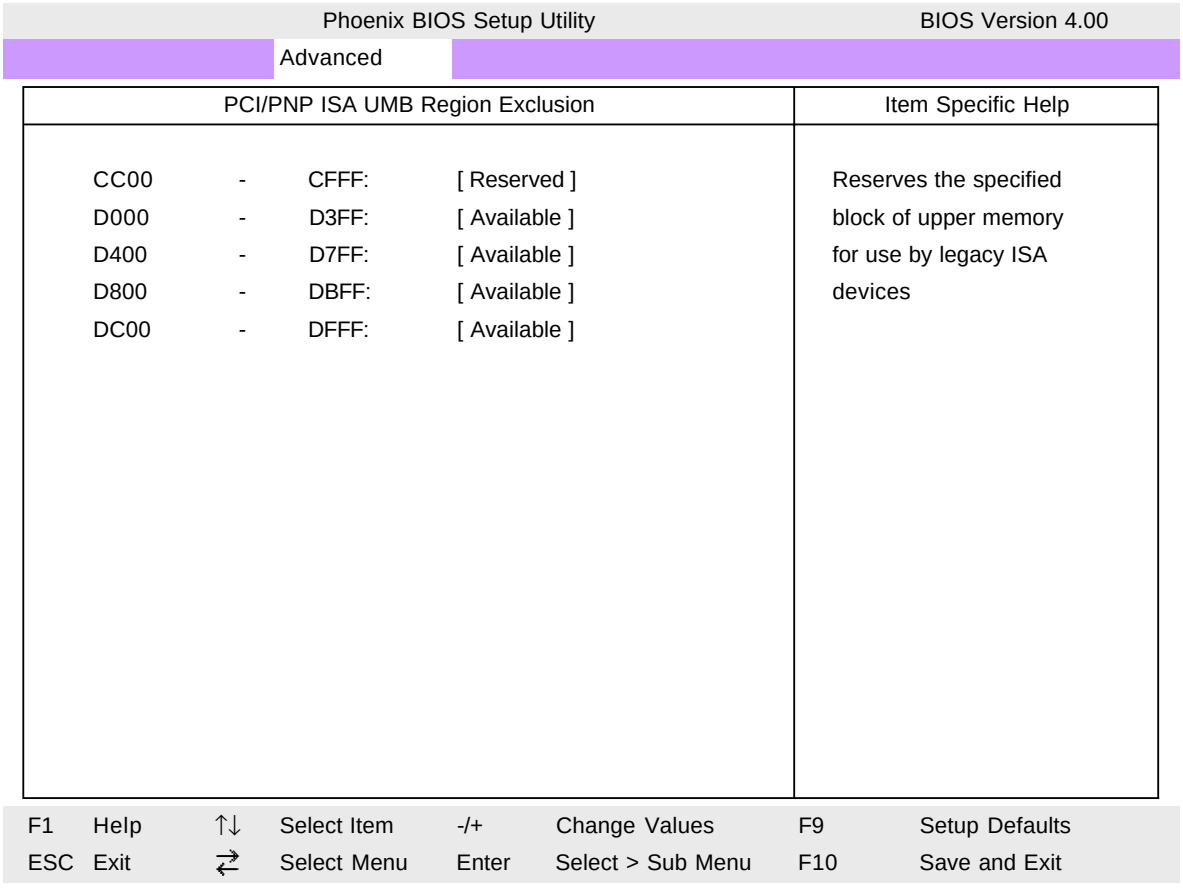
Table 1.23 Configuration of PCI Devices

Feature	Options	Description
PCI PNP ISA UMB Region Exclusion	N/A	Displays sub-menu
PCI PNP ISA UMB Resource Exclusion	N/A	Displays sub-menu
CPCI IRQ Configuration	N/A	Displays sub-menu

1.24 PCI/PNP ISA UMB Region Exclusion

If the system does not have any ISA devices requiring memory, the memory allocations illustrated in Figure 1.24 can be freed (made available) for CPU use otherwise they are reserved.

Figure 1.24 UMB Region Exclusion



Note:

The M-Systems FLASH memory area must be reserved. It is strongly suggested that the M-Systems documentation be referred to before altering these settings.

Table 1.24 ISA UMB Region Exclusion Settings

Feature	Options	Description
Region	*Available* Reserved	Reserves the specified block of upper memory for use by legacy ISA devices

1.25 PCI/PNP ISA IRQ Resource Exclusion

If the system does not have any interruptible ISA devices, then these IRQs illustrated in Figure 1.25 can be made available for CPU use, otherwise they are reserved.

Figure 1.25 IRQ Resource Exclusion Configuration

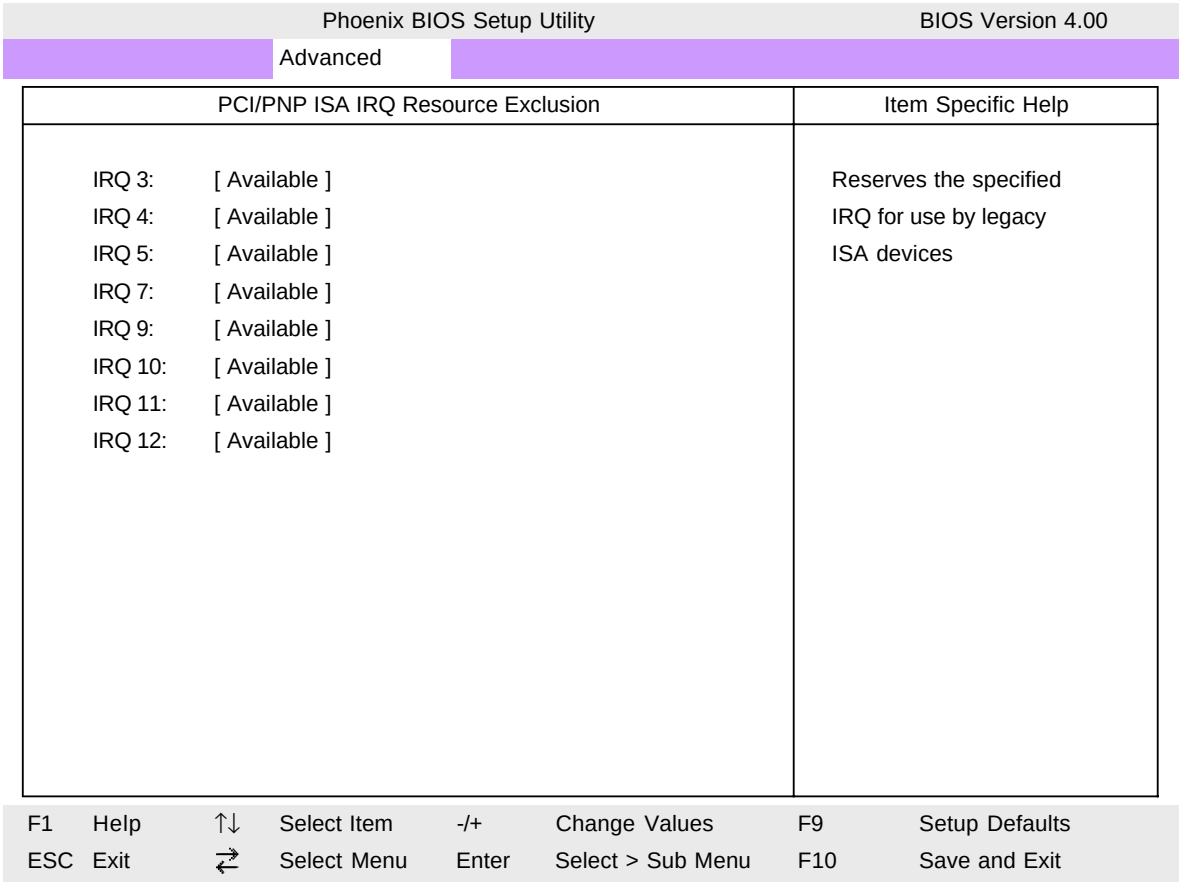


Table 1.25 PCI/PNP ISA IRQ Resource Exclusion Settings

Feature	Options	Description
IRQn	*Available* Reserved	Reserves the specified IRQ for use by legacy ISA devices

> ***Note:***
>
> ***Incorrect settings can cause the system to malfunction.***

1.26 CPCI IRQ Configuration

This menu allows PCI devices to be assigned IRQs.

Figure 1.26 CPCI IRQ Allocation

Phoenix BIOS Setup Utility — BIOS Version 4.00

Advanced

CPCI IRQ Configuration		Item Specific Help
PCI INTA:	[Auto Select]	The PCI interrupts (INTx) are routed to normal PC interrupts called IRQs. This is normally performed by the BIOS automatically. Only alter these settings if other devices do not need IRQs or there is a very good reason for doing so!
PCI INTB:	[Auto Select]	
PCI INTC:	[Auto Select]	
PCI INTD:	[Auto Select]	
USB IRQ:	[Auto Select]	

F1	Help	↑↓	Select Item	-/+	Change Values	F9	Setup Defaults
ESC	Exit	⇄	Select Menu	Enter	Select > Sub Menu	F10	Save and Exit

Table 1.26 PCI PIRQ Settings

Feature	Options	Description
INT x or USB IRQ	Disabled *Auto Select* 3/4/5/7/9/10/11/12/14/15	Select which PCI IRQ line is assigned a specific interrupt or choose 'Auto Select' to assign this task to BIOS. 'Disabled' does not assign an IRQ. Use 'Auto Select' only if there aren't any ISA or EISA devices in the system

Note:

Incorrect settings can cause the system to malfunction.

Note:

Some CompactPCI I/O boards use INTP or INTS on the backplane. These are typically configured to have IRQ14 and IRQ15 assigned to them and therefore care must be exercised to ensure that a conflict does not exist!

Note:

IRQ14 and IRQ15 are selectable in figure 1.25 if the primary and secondary IDE channels are disabled respectively

Note:

Should the '*' symbol appear in the menu then there is a device conflict - possibly due to incorrect IRQ allocation

1.27 Onboard Video Configuration

The Phoenix BIOS can offer the user some configuration possibilities. Figure 1.27 illustrates these possibilities.

Figure 1.27 Onboard Video Settings

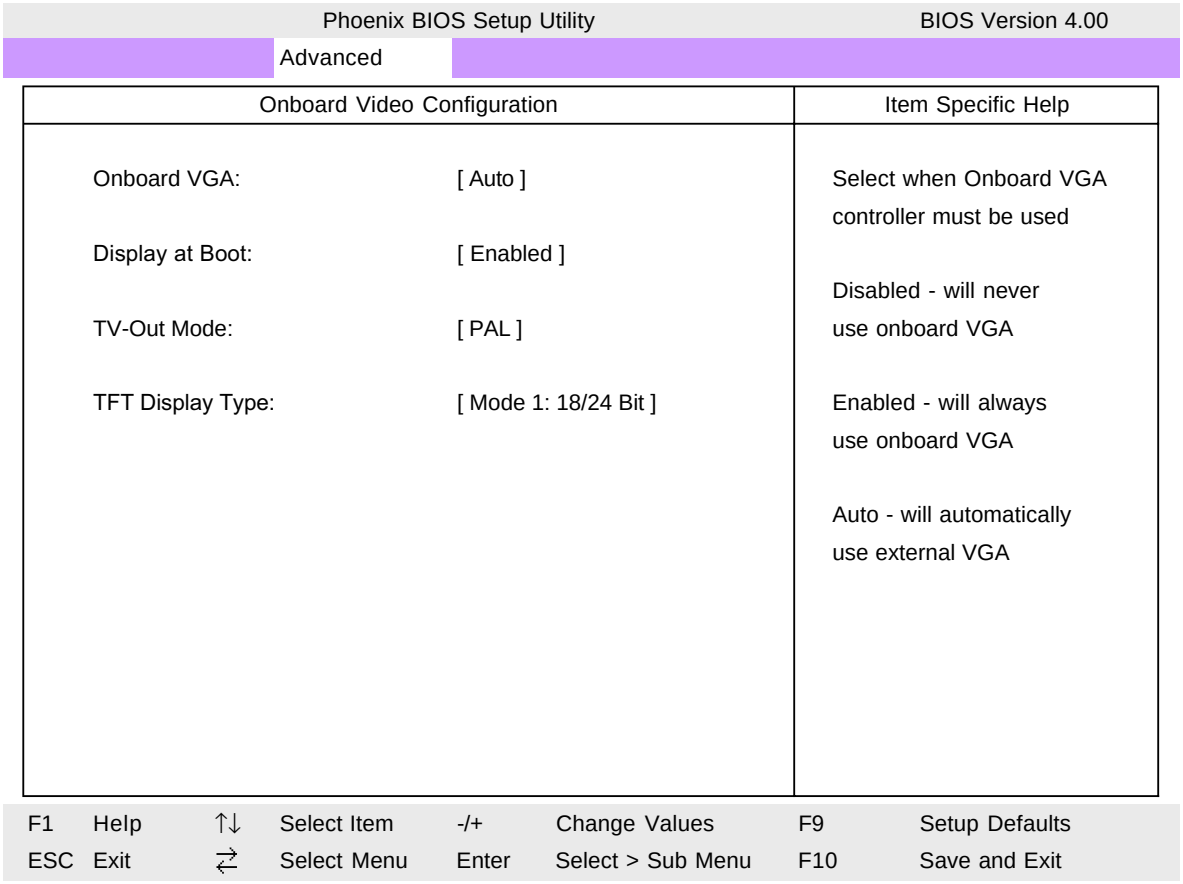


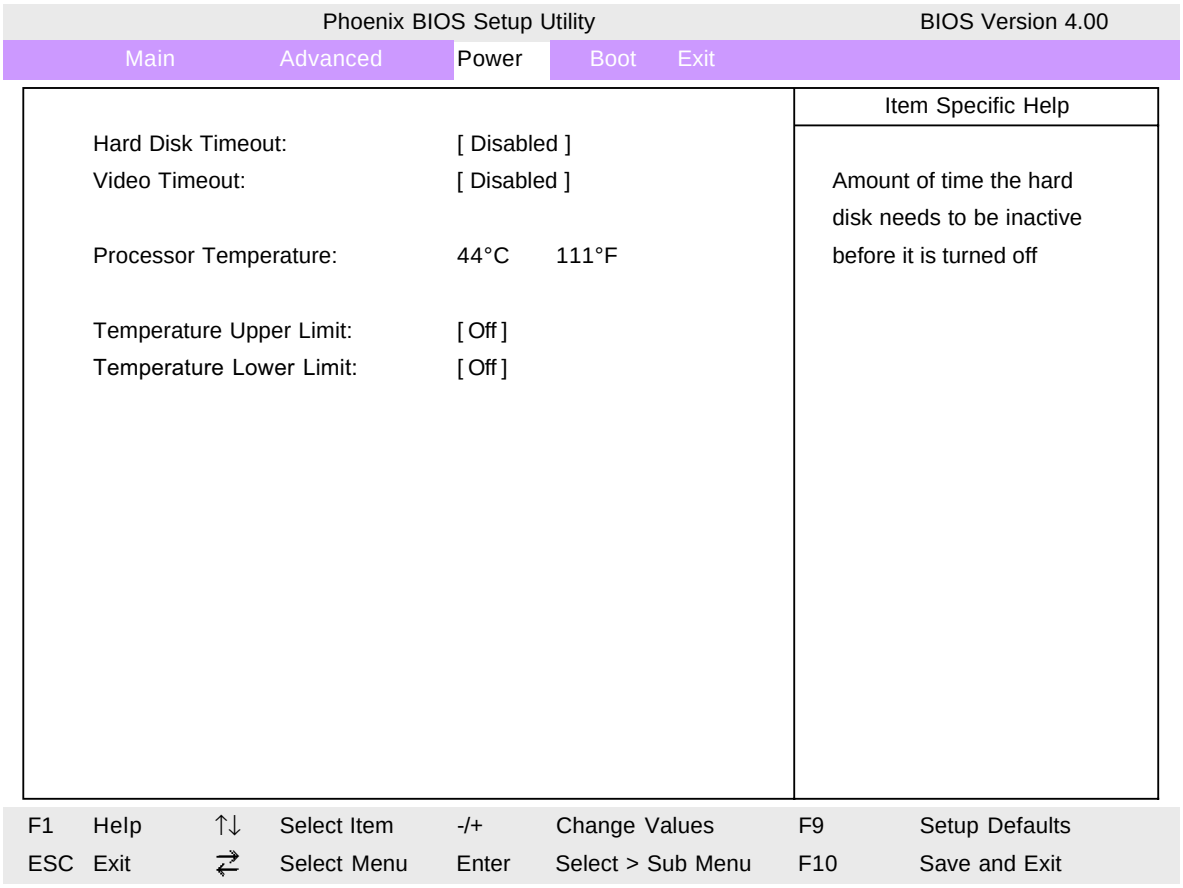
Table 1.27 Video Settings

Feature	Options	Description
Onboard VGA	Disabled Enabled *Auto*	Disabled - will never use onboard VGA Enabled - will always use onboard VGA Auto - will automatically use external VGA
Display at Boot	*Enabled* Black No Panel Clock	Enabled: Normal operation Black: Leaves the display black No Panel Clock: Same as 'Black' but does not send sync. signals to the flat panel display. The display is automatically enabled in setup and must be disabled to suppress boot messages again!
TV-Out Mode	NTSC *PAL*	Enter the correct video mode for the display output
TFT Display Type	*Mode 1: 18/24 Bit* Mode 0: 18 Bit	Selects the TFT display mode

1.28 Power Menu

Selecting 'Power' from the Menu Bar produces the display shown in figure 1.28.

Figure 1.28 Power Menu



Note:

If the temperature limits are set and the processor temperature exceeds the entered upper limit then the processor will be periodically halted (duty cycle reduction) allowing it to cool below the lower limit. Real time operating systems will not perform in a real-time manner!

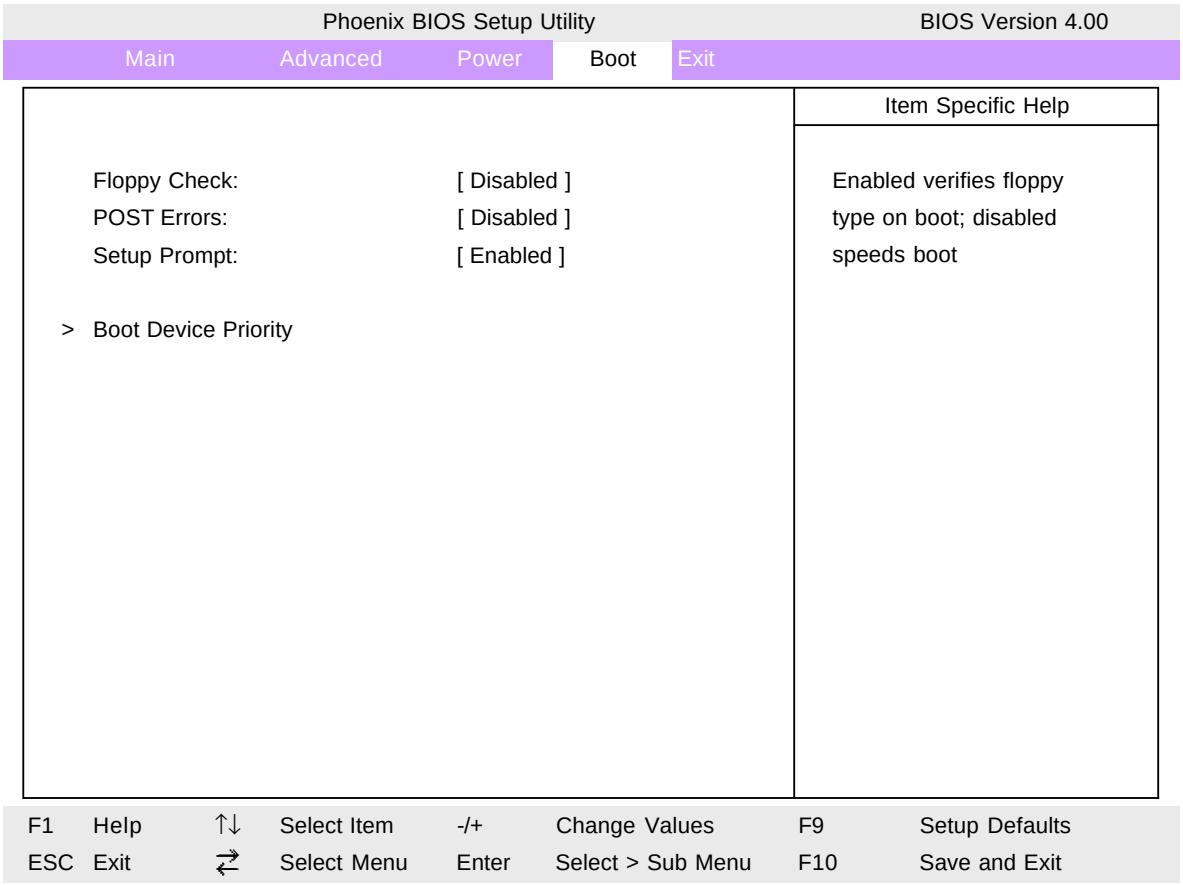
Table 1.28 Power Savings Configuration

Feature	Options	Description
Hard Disk Timeout	*Disabled* 10 Seconds 15 Seconds 30 Seconds 45 Seconds 1 Minute 2 Minutes 4 Minutes 6 Minutes 8 Minutes 10 Minutes 15 Minutes	Selects the amount of time the hard disk needs to be inactive before it is turned off.
Video Timeout	As for Hard Disk Timeout	Selects the amount of time the user input devices (mouse, keyboard) need to be inactive before the screen is turned off.
Temperature Upper Limit	*Off* 50°C to 85°C [122°F to 185°F] in 5°C [9°F] Steps	When the CPU reaches a predetermined temperature it will slow down its processes to enable the core to get cooler.
Temperature Lower Limit	*Off* 50°C to 85°C [122°F to 185°F] in 5°C [9°F] Steps	When the CPU reaches the selected value it will return to its default speed

1.29 Boot Menu

This menu configures boot options, devices and parameters.

Figure 1.29 Boot Menu



1.30 Floppy Check

Enabling this option verifies the type of floppy installed at the time of boot. Setting this option to "Disabled" will speed up the boot process by not making a specific device check.

1.31 POST Errors

With this option disabled, the system will still attempt to boot even if errors occur. With this option enabled however, the boot process is halted if an error occurs (e.g. keyboard not connected etc.) until action is taken.

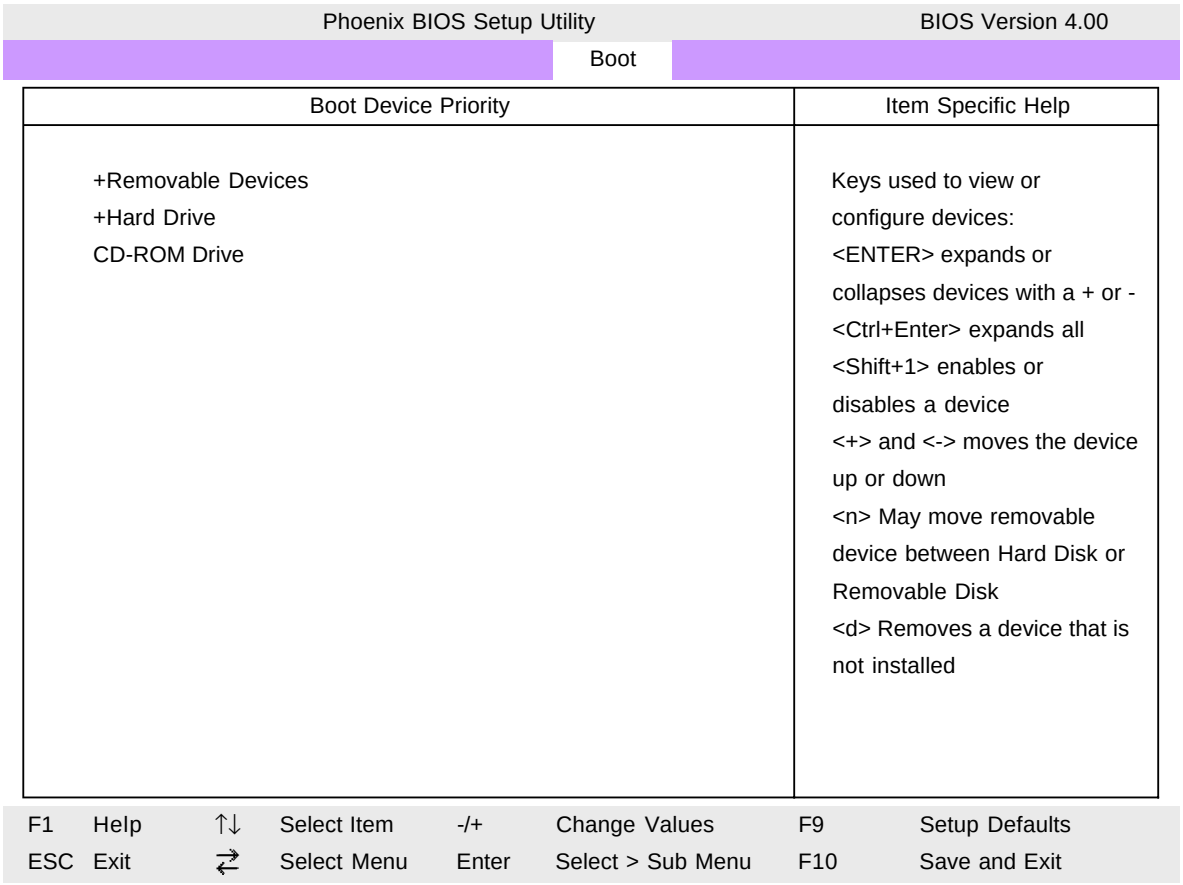
1.32 Setup Prompt

Enabling this option displays the setup prompt on boot. Even if this option is disabled, the setup can still be accessed ("F2").

1.33 Boot Device Priority

When the CPU has power applied the installed operating system (such as Windows NT) is loaded from a chosen drive. If the boot process cannot find an operating system image on the selected drive then it will search the other drives in the order listed in the Boot Device Priority Menu for an image.

Figure 1.33 Boot Device Priority



The order of the boot devices can be specified and altered using the navigation keys. To move a device, first select it with the "↑" or "↓" arrow keys (highlighted in white!) and move it within the pick list with the help of the "+" or "–" keys.

> ***Note:***
>
> ***Specifying any device as a boot device in the Boot Device Priority Menu requires a valid operating system to be installed on it.***

If more than one hard drive, or removable drive is installed, use the sub menus to specify which is to be used in the boot order list.

1.34 Removable Drives

If more than one removable drive is available the "Removable Drives" option in the Boot Menu displays the screen shown in Figure 1.34.

Figure 1.34 Removable Drives Menu

Phoenix BIOS Setup Utility							BIOS Version 4.00
			Boot				
Boot Device Priority					Item Specific Help		
-Removable Devices Legacy Floppy Drives +Hard Drive CD-ROM Drive					Keys used to view or configure devices: <ENTER> expands or collapses devices with a + or - <Ctrl+Enter> expands all <Shift+1> enables or disables a device <+> and <-> moves the device up or down <n> may move removable device between Hard Disk or Removable Disk <d> Removes a device that is not installed		
F1	Help	↑↓	Select Item	-/+	Change Values	F9	Setup Defaults
ESC	Exit	⇄	Select Menu	Enter	Select > Sub Menu	F10	Save and Exit

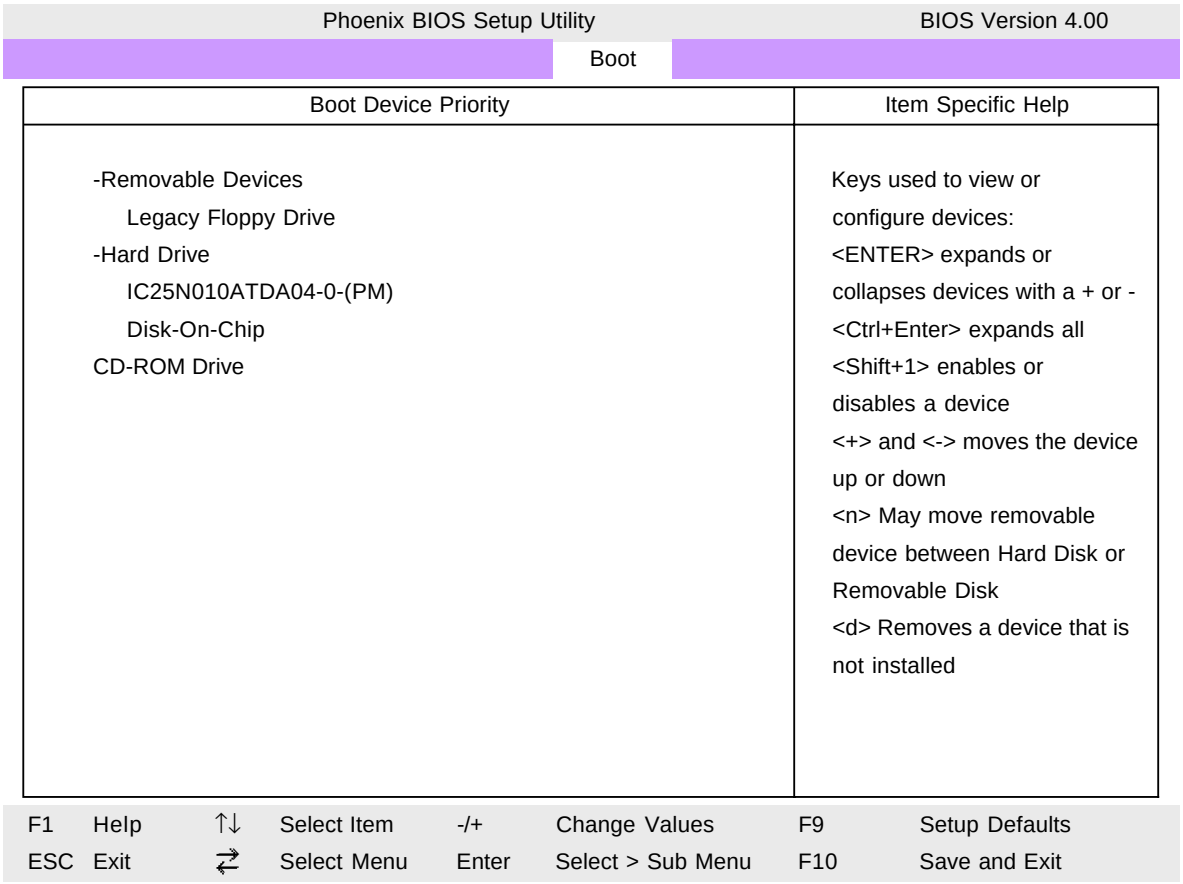
Select the removable drive to use for booting the operating system using the "↑" or "↓" arrow keys and move it to the top of the pick list with the help of the "+" key.

> ***Note:***
>
> ***The floppy drive specified here is the one assigned to Diskette A in the Main Menu. If a USB floppy is present and this should be the boot device then it should be made to appear before the "Legacy Floppy Drive" by using the <+> and <-> keys.***

1.35 Hard Disk Drives

If a hard drive is available (refer to the Main Menu), the "Hard Drives" option in the Boot Menu displays the screen shown in Figure 1.35.

Figure 1.35 Hard Drives Menu



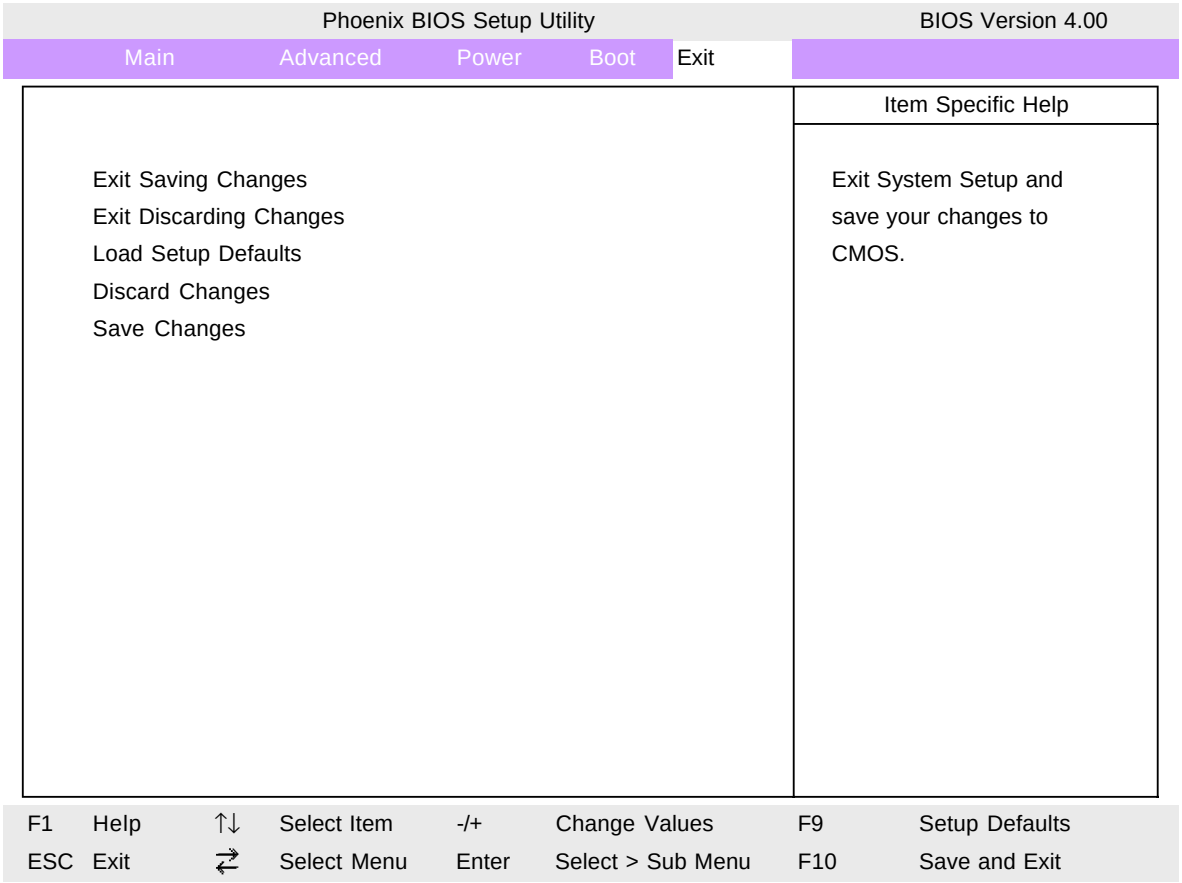
Select the hard drive to use for booting the operating system using the "↑" or "↓" arrow keys and move it to the top of the pick list with the help of the "+" key.

> ***Note:***
>
> ***A disabled item <Shift+1> has the character "!" appearing before it!.***

1.36 Exit Menu

Selecting “Exit” from the Main Menu produces the display shown in figure 1.37.

Figure 1.36 Exit Menu



Note:

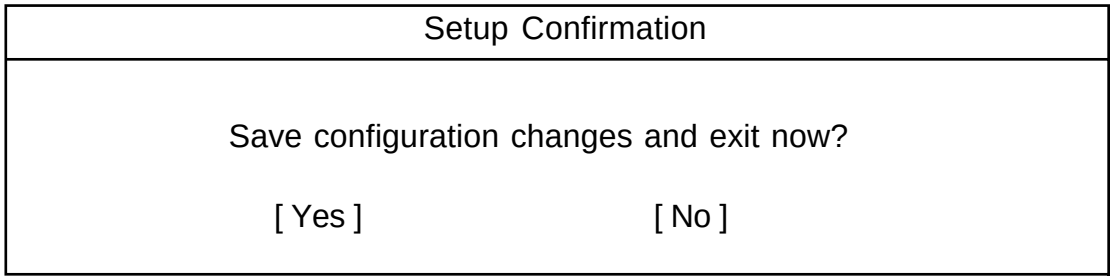
<ESC> is NOT available. One of the options MUST be selected for the setup to exit.

1.37 Exit Saving Changes

Once all the BIOS configuration parameters have been set and confirmed, choose “Exit Saving Changes” or “Save Changes”. Both procedures store the parameters in battery-backed CMOS memory, a section of memory that retains its data even if the system power is removed. The next time the system is powered-up or booted, these BIOS parameters are loaded and executed.

Once one of the save selections have been chosen, the user is required to confirm as illustrated in Figure 1.37.

Figure 1.37 Exit Confirmation



If an attempt is made to exit the configuration without saving the parameters, the program asks if this is really intended before exiting.

During boot, the Phoenix BIOS attempts to load the values stored in the battery-backed CMOS memory. If this memory is corrupt or the contents were incorrectly entered and the system fails to boot, restart the computer and press <F2> to enter Setup. This menu allows the default values to be returned to the CMOS memory or correction of the item(s) causing the CPU to fail to boot.

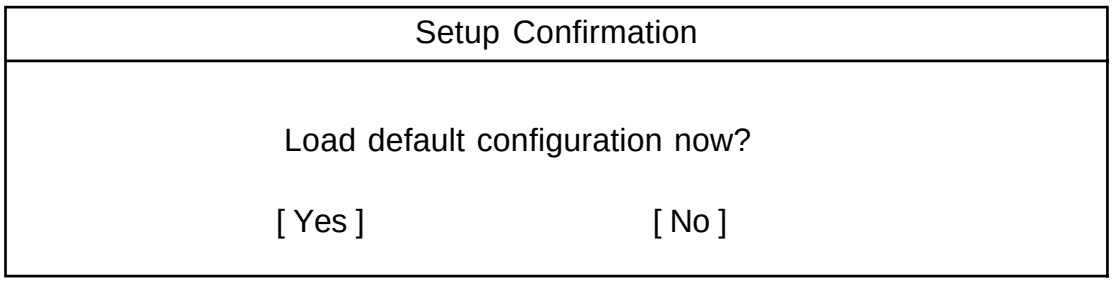
1.38 Exit Discarding Changes

Use this option to exit the setup procedure without overwriting or modifying any of the parameters in the CMOS memory.

1.39 Load Setup Defaults

To display the default values for all the parameters mentioned in the Setup menus, select “Load Setup Defaults” from the menu illustrated in figure 1.36. The program displays the message in figure 1.39.

Figure 1.39 Load Setup Defaults Confirmation



If, during bootup, the BIOS detects a problem with the integrity of the CMOS RAM parameters, the message “System CMOS checksum bad - run SETUP Press <F1> to resume, <F2> to Setup”.

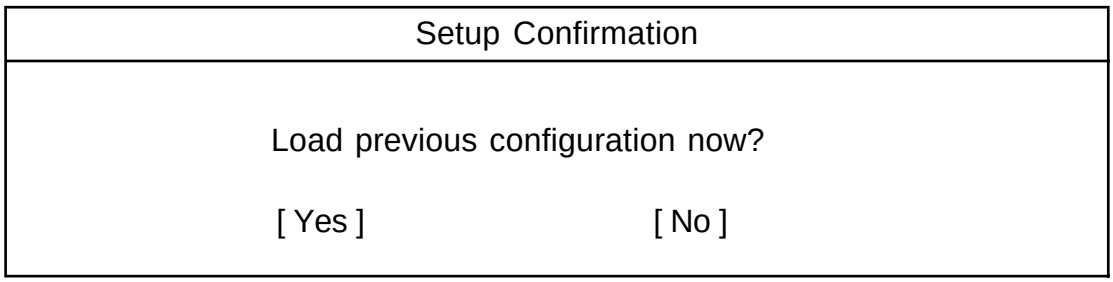
The CMOS RAM parameters can be modified by a program that has accessed these values and modified them perhaps unintentionally. Also, if the battery charge level is low and the system power has not been applied for some time then the data can also become corrupt.

Press <F1> to resume with the boot process or <F2> to run Setup with the ROM default values already loaded in the menus. Changes can be made before exiting and saving the new parameters to CMOS.

1.40 Discard Changes

If the changes made to the parameters in the Setup menus are not required then the process can be exited without modifying the CMOS RAM. Once this option has been selected, the previous CMOS values are restored and the screen displays the message shown in figure 1.40.

Figure 1.40 Load Previous Config. Confirmation



1.41 Save Changes

Selecting this option saves all the parameters as they appeared in the Setup menus to CMOS RAM thereby overwriting the existing values without exiting Setup. Menu navigation is still possible if further changes are necessary.

1.42 Phoenix BIOS Messages

Table 1.42 provides a list of possible BIOS error messages displayed during system boot. Most of them occur during POST and provide device-specific hardware information e.g. memory allocation while others may indicate a configuration problem.

Should the system display a message shown with an asterix (*) in Table 1.43 then try to load the BIOS with the system defaults. If the error still persists record the error number and contact the dealer.

If the system fails to boot after changes were made to the BIOS parameters, reset the computer and enter Setup to correct the fault or restore the default values.

Table 1.42 Phoenix BIOS Error Codes

Action	Code	Error Message	Description
	0200	Failure Fixed Disk	Fixed disk is not working or not configured properly. Check to see if a fixed disk is attached properly. Run Setup and check that the device is correctly identified.
	0210	Stuck Key BC	Key is stuck on the keyboard
	0211	Keyboard Error	Keyboard is not compatible or not working
*	0212	Keyboard Controller Failed	Keyboard controller failed POST. The controller may be defect and needs to be replaced
	0213	Keyboard Locked	Unlock the system to proceed
	0220	Monitor type does not match CMOS - Run Setup	monitor type is not recognised or correctly identified in the Setup
*	0230	Shadow RAM failed at offset	Shadow RAM failed at offset nnnn of the 64k block at which the error was detected
*	0231	System RAM failed at offset	System SDRAM failed at offset nnnn of the 64k block at which the error was detected
*	0232	Extended RAM failed at offset	nnnn Extended Memory is not working or not configured properly at offset nnnn
	0250	System battery is dead - Replace and run Setup	The CMOS clock battery indicator shows the battery is dead. Replace the battery and re-configure the system using Setup
	0251	System CMOS checksum bad - Default configur-ation used	System CMOS has become corrupt or modified incorrectly. The BIOS installed default values will be used. If these are not required, enter the Setup and re-configure the BIOS parameters manually. If the error persists, check the system battery or contact the dealer
*	0260	System timer error	The timer test failed. CPU board is defect
*	0270	Real-time clock error	Real-time clock failed BIOS POST. CPU board may be defect
	0271	Check Date & Time Settings	If the error persists, check the system battery or contact the dealer
	0280	Previous boot incomplete - Default configuration used	Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will also be likely to fail. Improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the parameter configuration is correct. This error is cleared the next time the system is booted
	0281	Memory size found by POST differed from CMOS	Check the memory values allocated in Setup
	02B0	Diskette drive A error	Drive A: or B: is present but failed the POST. Check that the drive is defined with the proper diskette type in Setup and that the drive is properly attached
	02B1	Diskette drive B error	

Table 1.42 Phoenix BIOS Error Codes Contd.

Action	Code	Error Message	Description
*	02D0	System cache error - cache disabled	System CMOS has become corrupt or modified incorrectly. The BIOS installed default values will be used. If these are not required, enter the Setup and re-configure the BIOS parameters manually. If the error persists, check the system battery or contact the dealer
	02F0	CPU ID	CPU socket number for multi-processor error
*	02F5	DMA Test Failed	Server BIOS2 test error: Cannot write to extended DMA (Direct Memory Access) registers
*	02F6	Software NMI failed	Server BIOS2 test error: Cannot write to software NMI (Non-Maskable Interrupt)
*	02F7	Fail-Safe Timer NMI failed	Server BIOS2 test error: Fail-safe timer takes too long

Table 1.43 Phoenix BIOS Status Messages

Action	Status Message	Description
	Device Address Conflict	Address conflict for specified device
	Allocation Error for: device	Run ISA or EISA Configuration Utility to resolve resource conflict for the specified device
	CD ROM Drive	CD-ROM has been identified
	Entering SETUP; . . . Starting Setup Program	
*	Failing Bits: nnnn	the hex number nnnn is a map of the bits at the RAM address which failed the memory test. Each '1' in this map indicates a failed bit. Refer to errors 230, 231 or 232 for the offset address of the System, Extended or Shadow memory
	Fixed Disk n	Fixed disk n (0 to 3) successfully identified
	Invalid System Configuration Data	Problem with the battery-backed CMOS RAM
	I/O device IRQ conflict	I/O device IRQ conflict error
	PS-2 Mouse Boot Summary Screen	PS-2 mouse installed
	nnnn kB Extended RAM passed	Where nnnn is the amout of RAM in kilobytes that have been successfully tested
	nnnn Cache SRAM passed	Where nnnn is the amout of system cache in kilobytes that have been successfully tested
	nnnn kB Shadow RAM passed	Where nnnn is the amount of shadow RAM in kilobytes that have been successfully tested
	nnnn kB System RAM passed	Where nnnn is the amount of system RAM in kilobytes that have been successfully tested
	Operating System not found	Operating system cannot be found on any of the defined drives. Enter Setup and check that the boot drive is correctly identified. If it is, check that the operating system on this drive is correctly installed
*	Parity Check 1 nnnn	Parity error found on the system bus. BIOS attempts to locate the address and display it on the screen. If the address cannot be located, "????" is displayed instead. Parity is a method used for checking errors in binary data. A parity error indicates that data is corrupt
*	Parity Check 2 nnnn	Parity error found on the I/O bus. BIOS attempts to locate the address and display it on the screen. If the address cannot be located, "????" is displayed instead

Table 1.43 Phoenix BIOS Status Messages Contd.

Action	Status Message	Description
	Press <F1> to resume, <F2> to resume setup, <F3> for previous	Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and alter the settings. Press <F3> to display the previous screen (usually an initialization error of an Option ROM.) Write down and follow the information shown on the screen
	Press <F2> to enter Setup	Optional message displayed during POST. It can be disabled
	System BIOS Shadowed	System BIOS copied to shadow RAM
	UMB, upper limit segment address: nnnn	Displays the address nnnn of the upper limit of Upper Memory Blocks, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager
	Video BIOS Shadowed	Video BIOS successfully copied to shadow RAM
	ERROR Invalid System Configuration Data - run configuration utility ERROR ……..	Please set "Reset Configuration Data" to "Yes" under "Advanced" in BIOS and restart
	ERROR Resource Conflict - PCI in slot 02 Bus:01, Device:0E, Function:00	A CompactPCI card on the bus has a problem or the PCI bridge on the CPU or backplane may be damaged. Slots are counted from right to left and devices are counted from left to right. Try to replace or move the CompactPCI card on the slot reporting the error. If the problem persists, please contact Inova support.