IEI Technology Corp.

MODEL:

ICEROCK-08A

Industrial Tablet PC 1.6 GHz Intel® Atom™ Z530P CPU On-board 1 GB DDR2 SDRAM, 802.11b/g/n Wireless, Mobile 3.75G, Gigabit Ethernet, USB, Mini USB, SD and CF card slots, RoHS Compliant, IP62 Compliant Front Panel

User Manual

Rev. 1.02 – 2 August, 2011

RoHS Lead Free

Revision

Date	Version	Changes
2 August, 2011	1.02	Modified the instruction of using hotkey
16 March, 2011	1.01	Deleted remote control information Updated Bluetooth specifications Some minor changes
13 December, 2010	1.00	Initial release

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Introduction

1.1 Overview

Figure 1-1: ICEROCK-08A

NOTE:

IEI recommends Windows XP Embedded preinstalled on a CompactFlash® card. Cards with Windows XP Embedded are available from IEI. Contact sales@iei.com.tw or go to http://www.ieiworld.com for more information.

The ICEROCK-08A is an industrial tablet PC with an 8 inch touchscreen and an IP62 compliant front panel. The ICEROCK-08A features a 1.6 GHz Intel® Atom™ Z530P with 1 GB DDR2 SDRAM on-board.

Storage needs are met by installing a CompactFlash® card and Secure Digital (SD) card. A CompactFlash® card with Windows XPE is also available.

Wireless networking is enabled through an 802.11b/g/n wireless adapter. A Bluetooth 3.0+HS module provides a connection to Bluetooth devices. An optional mobile 3.75G module provides a connection to mobile phone networks. Wired options are always available through RJ-45 connector on the side panel, with two USB ports and one Mini USB port for peripherals.

A 1.3 megapixel webcam and microphone provide video conferencing capabilities. Audio connections include one line-out for connecting to headphones and an input for an external microphone. Two 1 watt speakers are built-in.

1.2 Features

Some of the standard features of the ICEROCK-08A tablet PC include:

- Wireless LAN
- Gigabit Ethernet
- Bluetooth v3.0 + HS class 2
- G-Sensor to automatically change display mode from portrait to landscape
- Ambient light sensor
- One Key Recovery
- IP62 compliant front panel protection
- RoHS compliant

1.3 Front Panel

The ICEROCK-08A is made with black plastic chassis.

Figure 1-2: Front Panel

1.4 Rear Panel

The rear panel consists of the built-in stand and battery. The CF and SIM card slots can be accessed by removing the battery.

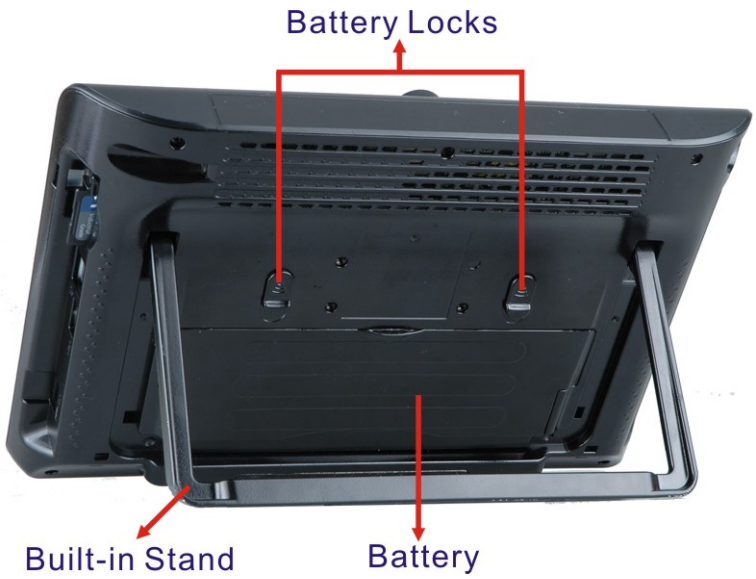


Figure 1-3: Rear Panel

1.5 Connectors

The side panels have the following slots, buttons and switches (Figure 1-4):

- 1 x RJ-45 port for Gigabit LAN
- 1 x 12 V DC power input
- 1 x Mini USB port
- 2 x USB ports
- 1 x Mic-in jack
- 1 x Headphones jack
- 1 x Power button
- 1 x Bluetooth/Wi-Fi On/Off switch
- 1 x Touch pen
- 1 x SD card slot with lock

Figure 1-4: Connectors

1.6 Front Panel Buttons

Figure 1-5: Front Panel Buttons

There are several buttons on the front panel of the ICEROCK-08A as show in the figure above. Following are descriptions of their functions:

- **Programmable Function Keys (F1~F8)**
  Function Keys F1~F8 can be programmed to simplify frequently used applications with the pressing of a single shortcut key.
- **Hotkey**
  Press the hotkey (then release it) followed by pressing a function key within the next two seconds to perform the following functions:
  - Hotkey + F1 = Sleep
  - Hotkey + F2 = Mute on/off
  - Hotkey + F3 = Volume up
  - Hotkey + F4 = Volume down

- Hotkey + F5 = Auto dimmer on/off. When the ambient light sensor is on, the screen brightness will adjust to match ambient light conditions. It is recommended that this sensor be disabled during nighttime use.
- Hotkey + F6 = Brightness up
- Hotkey + F7 = Brightness down
- Hotkey + F8 = LCD on/off

Press the hotkey for more than six seconds and release it to perform SAS (Secure Attention Sequence) function (CTRL+ALT+DEL).

- **Navigation Keypad**

  - Up, Down
  - Right, Left
  - Center (select or enter)

1.7 Technical Specifications

The technical specifications for the ICEROCK-08A systems are listed in the table below.

System	ICEROCK-08A-Z530
CPU	1.6 GHz Intel® Atom™ Z530P
Chipset	Intel® SCH US15WP
Memory	1.0 GB 533 MHz DDR2 SDRAM on-board
OS	Windows XP Embedded with optional CompactFlash® card
Storage	1 x CompactFlash® card slot 1 x SD card slot
Audio	2 x Speaker (1.5 W each) 1 x Analog microphone 1 x Digital microphone
Camera	1 x 1.3 megapixel webcam
Display	
LCD	8.0” LCD with resistive touchscreen and auto-dimming
Max. Resolution	800 x 600
Brightness (cd/m^2)	350
Contrast Ratio	500:1
LCD Colors	262,000

System	ICEROCK-08A-Z530
Pixel Pitch	0.2025 x 0.2025
Viewing Angle (H/V)	140/130
Backlight MTBF	50000
Communication	
LAN	1 x 10/100/1000 Mbps RJ-45
Wireless LAN	802.11b/g/n
Bluetooth	Bluetooth 3.0 + HS Class 2
WWAN (models with optional HSDPA module only)	HSPA/UMTS-800/850/900/1900/2100 MHz Quad-band EDGE/GPRS/GSM-850/900/1800/1900 MHz Dual-band EV-DO/CDMA-800/1900 MHz
Power	
Power Input	12 V DC input
Power Adapter	P/N: 63000-FSP036RAB608-RS 36 W Power Adapter Input: 90 V AC ~ 264 V AC, 50/60Hz Output: 12 V DC
Battery	4 hours of normal use (25% On state, 25% Standby, and 50% Off) 2 hours of continuous use 2400 mAh Lithium Ion Battery
Physical Character	
Construction Material	ABS + PC plastic front frame
Mounting	Mobile / optional Docking Station (VESA 75 mm x 75 mm)
Dimensions (W x H x D) (mm)	253.5 x 179.79 x 36.59
Operation Temperature	0ºC ~ 40ºC
Storage Temperature	-20ºC ~ 60ºC
Humidity	5% ~ 95% non-condensing
Net weight	1.044 kg with Battery pack (150 g)
IP level (front panel)	IP62
Safety	CE, FCC, CB, CCC

System	ICEROCK-08A-Z530
Connectors and Buttons	
I/O Ports and Switches	1 x 12 V DC input connector 2 x USB 2.0 1 x Gigabit Ethernet RJ-45 port 1 x Microphone line-in jack 1 x Audio line-out jack 1 x Mini USB 1 x Wi-Fi/Bluetooth On/Off switch 1 x Power button
Front Panel Buttons and LED Indicators	1 x Five-way navigation button 8 x Programmable buttons 1 x Hotkey 1 x Power LED 1 x Wi-Fi/Bluetooth LED 1 x HDD (CF Card) LED 1 x 3.75G LED 1 x Ambient Light Sensor

Table 1-1: Technical Specifications

1.8 Dimensions

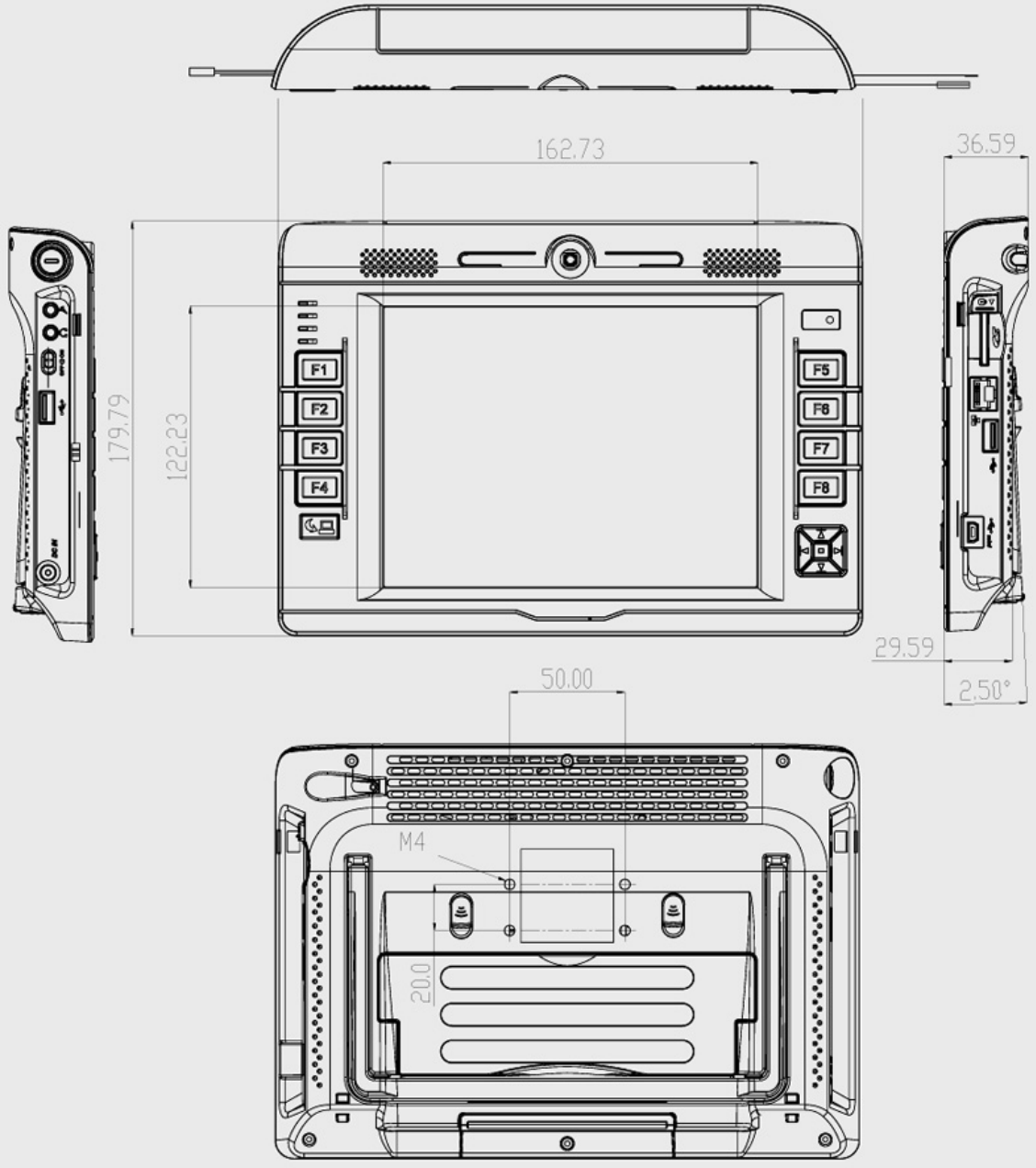


Figure 1-6: Dimensions (units in mm)

Chapter

2

Unpacking

WARNING:

When installing the ICEROCK-08A, make sure to:

- **Turn the power off**: Chance of electrocution. Turn off the monitor and unplug it from the power supply.
- **Only let certified engineers change the hardware settings**: Incorrect settings can cause irreparable damage to the product.
- **Take anti-static precautions**: Electrostatic discharge can destroy electrical components and injure the user. Users must ground themselves using an anti-static wristband or similar device.

The installation steps below should be followed in order.

Step 1: Unpack the tablet PC

Step 2: Check all the required parts are included

Step 3: Install the CompactFlash® card (if not included)

Step 4: Mount the tablet PC

Step 5: Connect peripheral devices to the side panels of the tablet PC

Step 6: Connect the power cable

Step 7: Configure the system

2.1 Unpack the tablet PC

To unpack the tablet PC, follow the steps below:

WARNING!

Only remove the protective plastic cover stuck to the front screen after installation. The plastic layer protects the monitor surface during installation process.

Step 1: Carefully cut the tape sealing the box. Only cut deep enough to break the tape.

Step 2: Open the outside box.

Step 3: Carefully cut the tape sealing the box. Only cut deep enough to break the tape.

Step 4: Open the inside box.

Step 5: Lift the table PC out of the boxes.

Step 6: Remove the peripheral parts box from the main box.

2.2 Packing List

The ICEROCK-08A tablet PC is shipped with the following components:

Quantity	Item	Image
1	ICEROCK-08A	
1	Power adapter (P/N: 63000-FSP036RAB608-RS)	
1	Power cable (P/N: 32000-000002-RS)	
1	Battery pack (P/N: 31603-000011-RS)	
1	Touchscreen pen (P/N: 7Z000-6051D0320101-RS)	

Quantity	Item	Image
1	Utility CD (P/N: IEI-7B000-000542-RS)	
1	Recovery CD (P/N: IEI-7B000-000478-RS)	

Table 2-1: Packing List

These optional items are also available.

Quantity	Item	Image
1	OS – Windows XP Embedded (CF card) (P/N: ICEROCKCF-08-XPE-R10)	
1	Battery pack (P/N: 31603-000011-RS)	
1	Docking station (P/N: ICEROCKDS-08A-R10)	
1	Car power module (P/N: IDD-930160-KIT)	
1	Protection jacket (P/N: ICEROCKPJ--00-R10)	
1	Carrying bag (P/N: ICEROCKCB--00-R10)	

Table 2-2: Packing List

Chapter

3

Installation

3.1 CompactFlash® Installation

This section covers the installation of the CompactFlash® card.

Step 1: Remove the battery. Unlock battery by sliding locks away from the battery. Lift the battery and remove.

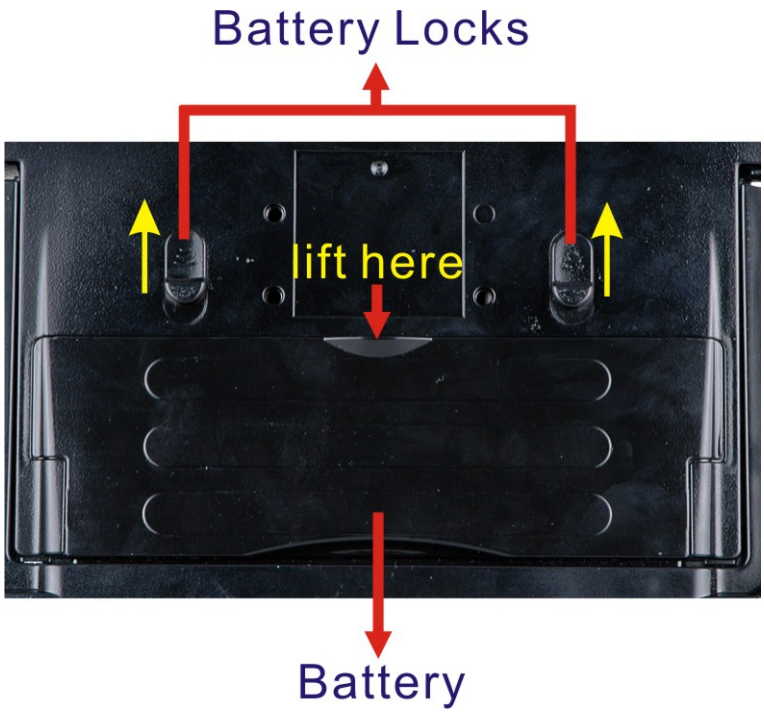


Figure 3-1: Battery Removal

Step 2: Install the CompactFlash® card in the slot indicated below. Fully insert the CF card when installing.

Figure 3-2: CompactFlash® Card Install

Step 3: To remove the CF card push the tab on the right.

Figure 3-3: CompactFlash® Card Removal

Step 4: Replace and securely lock the battery.

3.2 SIM Card Installation

This section covers the installation of a SIM card for mobile network connections on the ICEROCK-08A models with optional mobile 3.75G module.

Step 1: Remove the battery as shown above in **Section 3.1**, Step 1.

Step 2: Install the SIM card in the slot indicated below.

Figure 3-4: SIM Card Install

Step 3: Replace and securely lock the battery.

3.3 SD Card Installation

This section covers the installation of a SD card.

Step 1: Locate the SD card slot on the right side of the ICEROCK-08A.

Step 2: Install the SD card in the slot indicated below.

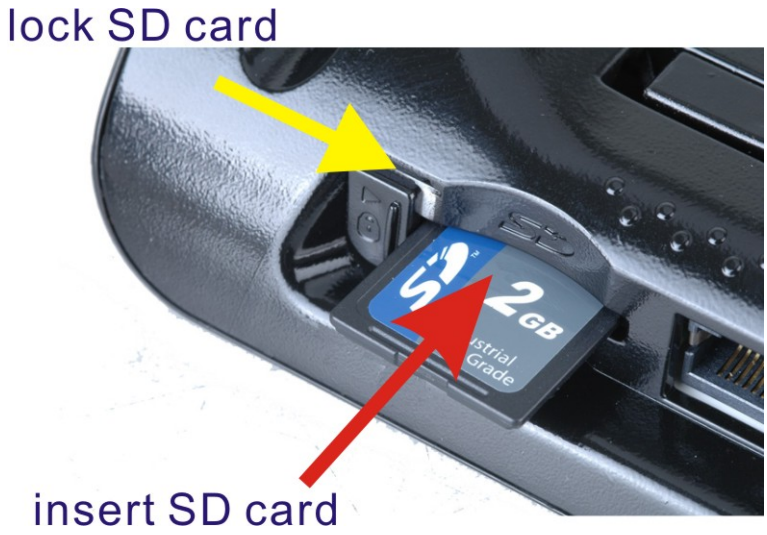


Figure 3-5: SD Card Install

Step 3: Slide the lock to secure the SD card.

3.4 Mounting the System

The following installation options are available:

- Docking Station
- Wall mounting with optional Docking Station

The installation instructions are included with the Docking station or stand.

3.5 I/O Connectors

The I/O connectors on either side of the ICEROCK-08A extend the capabilities of the panel PC but are not essential for operation (except power).**Figure 3-6**

Figure 3-6: Left and Right Side I/O Connectors

3.5.1 Audio connectors (Mic-in and Headphones)

The audio jacks on the external audio connector enable the ICEROCK-08A to be connected to a stereo sound setup. To install the audio devices, follow the steps below.

Step 1: **Identify the audio plugs**. The plugs on your home theater system or speakers may not match the colors on the rear panel. If audio plugs are plugged into the wrong jacks, sound quality will be very bad.

Step 2: **Plug the audio plugs into the audio jacks**. Plug the audio plugs into the audio jacks. If the plugs on your speakers are different, an adapter will need to be used to plug them into the audio jacks.

- **Line Out port (Lime):** Connects to a headphone or a speaker.
- **Microphone (Pink):** Connects to a microphone.

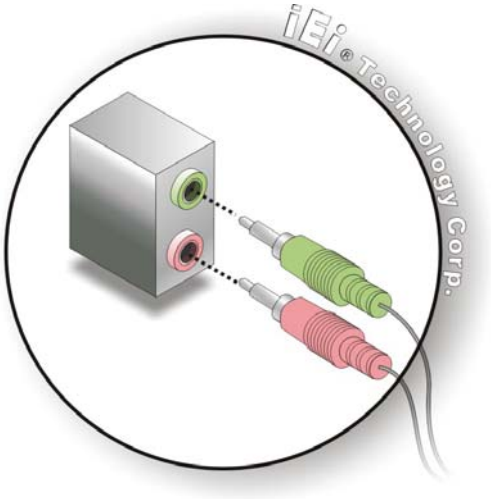


Figure 3-7: Audio Connectors

Step 3: **Check audio clarity**. Check that the sound is coming through the right speakers by adjusting the balance front to rear and left to right.

3.5.2 LAN Connection Cable

The RJ-45 connector enables connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: **Locate the RJ-45 connector** on the bottom panel.

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with the RJ-45 connector on the side panel. See Figure 3-8.

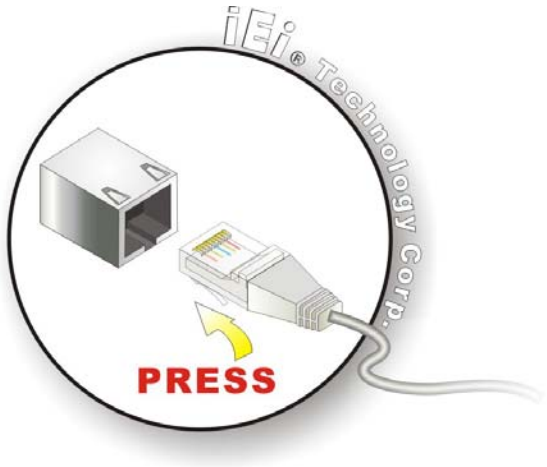


Figure 3-8: LAN Connection

Step 3: **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN cable RJ-45 connector into the onboard RJ-45 port.

3.5.3 Mini USB Device Connection

There is one Mini USB 2.0 connector. The Mini USB connector is on the right side of the ICEROCK-08A. To connect a USB 2.0 or USB 1.1 device, please follow the instructions below.

Step 1: **Located the Mini USB connector**. The location of the Mini USB connector is shown in **Figure 3-6**.

Step 2: **Align the connectors.** Align the Mini USB device connector with the connector on the ICEROCK-08A. See figure below.

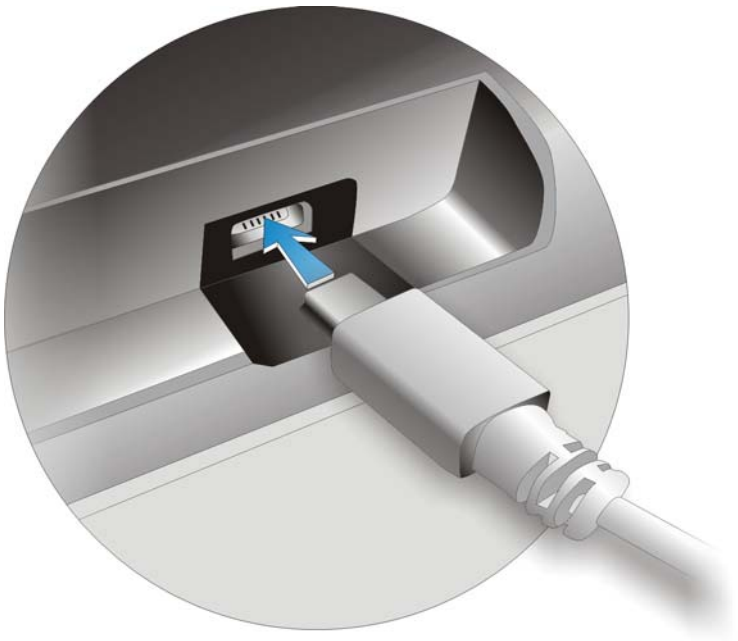


Figure 3-9: Mini USB Device Connection

Step 3: **Insert the device connector.** Once aligned, gently insert the Mini USB device connector into the on-board connector.

3.5.4 USB Device Connection

There are two USB 2.0 connectors. One connector is located on each side of the ICEROCK-08A, left and right. To connect a USB 2.0 or USB 1.1 device, please follow the instructions below.

Step 1: **Located the USB connectors**. The locations of the USB connectors are shown in **Figure 3-6**.

Step 2: **Align the connectors.** Align the USB device connector with one of the connectors on the ICEROCK-08A. See figure below.

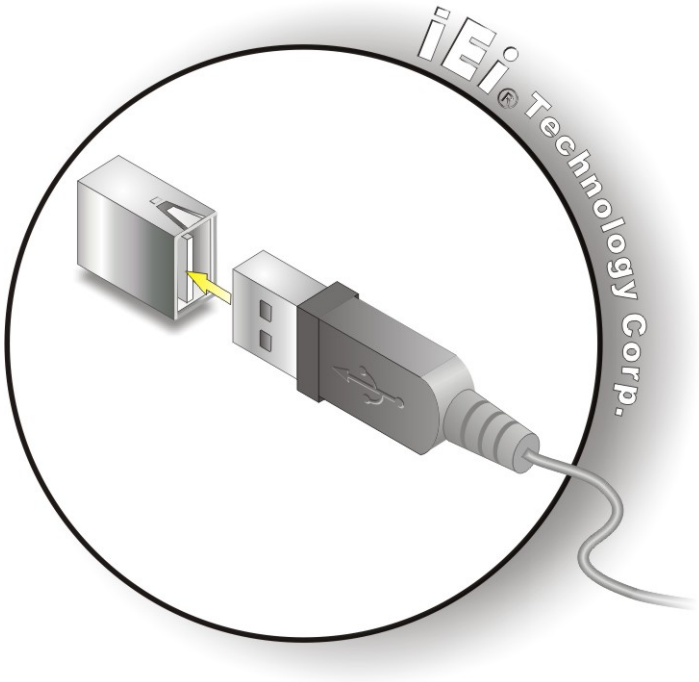


Figure 3-10: USB Device Connection

Step 3: **Insert the device connector.** Once aligned, gently insert the USB device connector into the on-board connector.

3.6 ICEROCK Docking Station I/O Connectors (Optional)

The I/O connectors on the rear panel of the ICEROCK-08A Docking Station extend the capabilities of the panel PC but are not essential for operation (except power).

Figure 3-11: ICEROCK Docking Station I/O Connectors

3.6.1 Serial Device Cable

The serial device connector is for connecting a RS-232 serial device. Follow the steps below to connect a serial device to the panel PC.

Step 1: **Locate the DB-9 connector**. The location of the DB-9 connector is shown in **Figure 3-11**.

Step 2: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the bottom panel. See Figure 3-12.

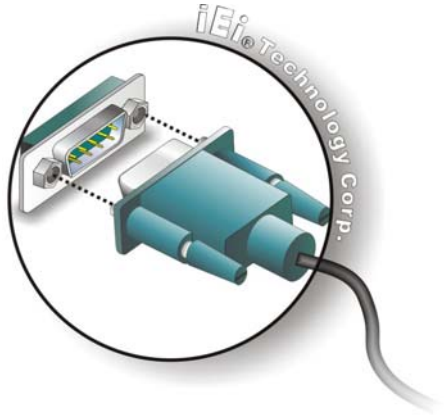


Figure 3-12: Serial Device Connector

Step 3: **Secure the connector**. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

3.6.1.1.1 RS-232 Serial Port Pinouts

Following are the RS-232 serial port pinouts.

Pin	Description	Pin	Description
1	DCD	6	DSR
2	RX	7	RTS
3	TX	8	CTS
4	DTR	9	RI
5	GND		

Table 3-1: Serial Port Pinouts

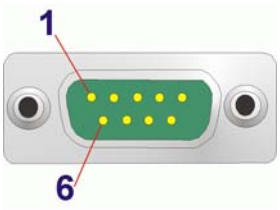


Figure 3-13: Serial Port Pinouts

3.6.2 VGA Monitor Connection

The ICEROCK-08A Docking Station has a single female DB-15 connector on the bottom peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a second monitor to the ICEROCK-08A, please follow the instructions below.

Step 1: **Locate the female DB-15 connector**. The location of the female DB-15 connector is shown in **Figure 3-11**.

Step 2: **Align the VGA connector**. Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.

Step 3: **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the ICEROCK-08A. See Figure 3-14.

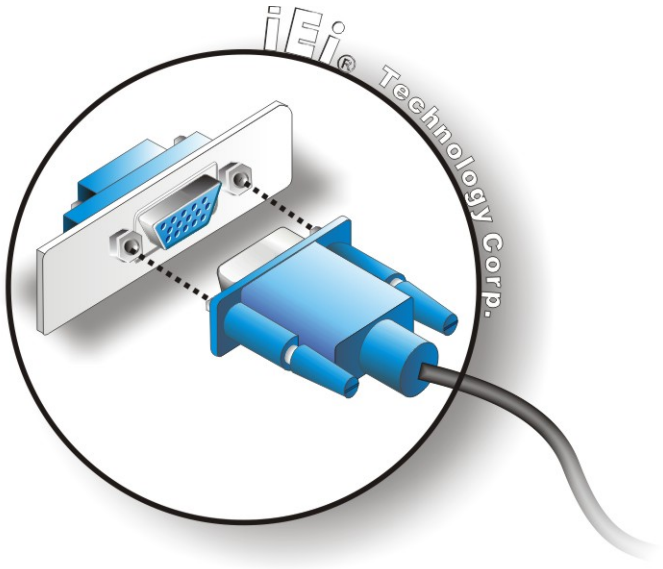


Figure 3-14: VGA Connector

Step 4: **Secure the connector**. Secure the DB-15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

3.7 Power Connection

The power cable connects the power adapter to the power outlet. The power adapter and power cable are required for operation of the ICEROCK-08A.

Step 1: Connect the power adapter to the panel PC.

Step 2: Connect the power cable to the included power adapter.

Step 3: Connect the power cable to the power outlet.

3.8 Driver Installation

NOTE:

The contents of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

The following drivers can be installed on the system; each driver is in its own directory on the driver CD:

- Chipset driver
- Graphics driver
- LAN driver
- Audio driver
- Touch panel driver
- Keypad utility driver
- Wireless LAN card driver

Chapter

4

BIOS Setup

4.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.

4.1.1 Starting Setup

The AMI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **ENTER** key as soon as the system is turned on or
2. Press the **ENTER** key when the "**Press Enter to enter SETUP**" message appears on the screen.

If the message disappears before the **ENTER** key is pressed, restart the computer and try again.

4.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown in.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
Page Up key	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu

Key	Function
F2 /F3 key	Change color from total 3 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 4-1: BIOS Navigation Keys

4.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

4.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults. Use the jumper described in Chapter **5**.

4.1.5 BIOS Menu Bar

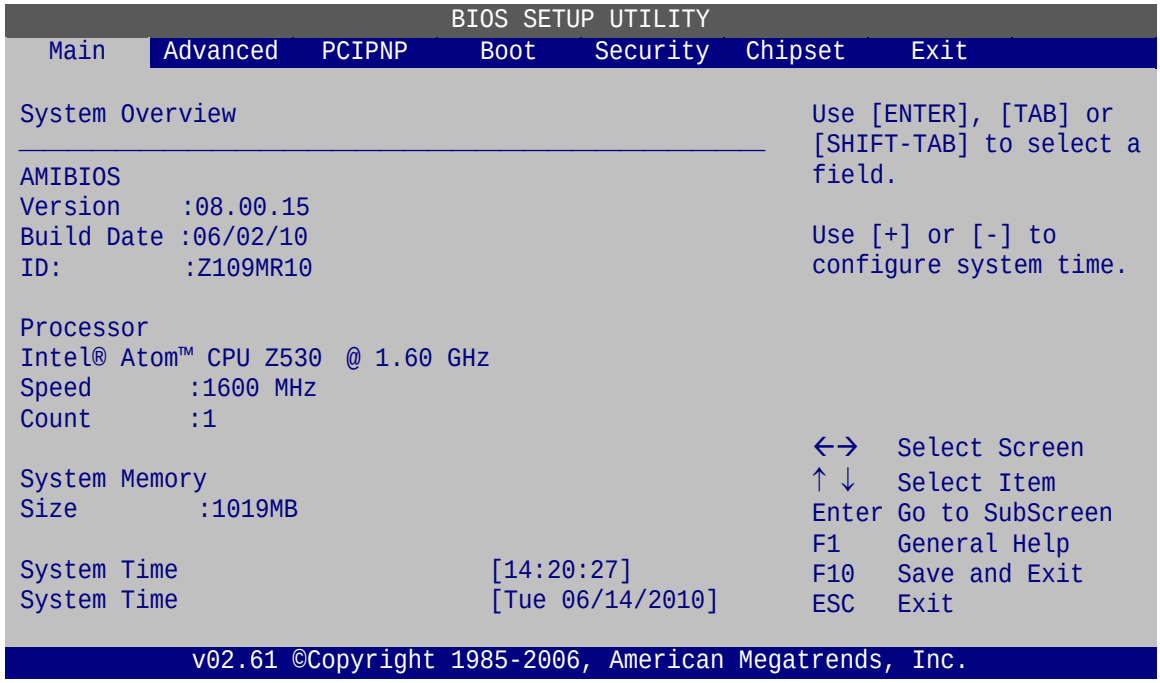
The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- PCIPnP – Changes the advanced PCI/PnP Settings
- Boot – Changes the system boot configuration.
- Security – Sets User and Supervisor Passwords.
- Chipset – Changes the chipset settings.
- Exit – Selects exit options and loads default settings

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

4.2 Main

The **Main** BIOS menu (BIOS Menu 1) appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.



BIOS Menu 1: Main

NOTE:

The BIOS ID may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

- **System Overview**

The **System Overview** lists a brief summary of different system components. The fields in **System Overview** cannot be changed. The items shown in the system overview include:

- AMI BIOS: Displays auto-detected BIOS information
  - **Version:** Current BIOS version
  - **Build Date:** Date the current BIOS version was made

- **ID:** Installed BIOS ID

- Processor: Displays auto-detected CPU specifications
  - **Type:** Names the currently installed processor
  - **Speed:** Lists the processor speed
  - **Count:** The number of CPUs on the motherboard
- System Memory: Displays the auto-detected system memory.
  - **Size:** Lists memory size

The System Overview field also has two user configurable fields:

- **System Time [xx:xx:xx]**

Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

- **System Date [xx/xx/xx]**

Use the **System Date** option to set the system date. Manually enter the day, month and year.

4.3 Advanced

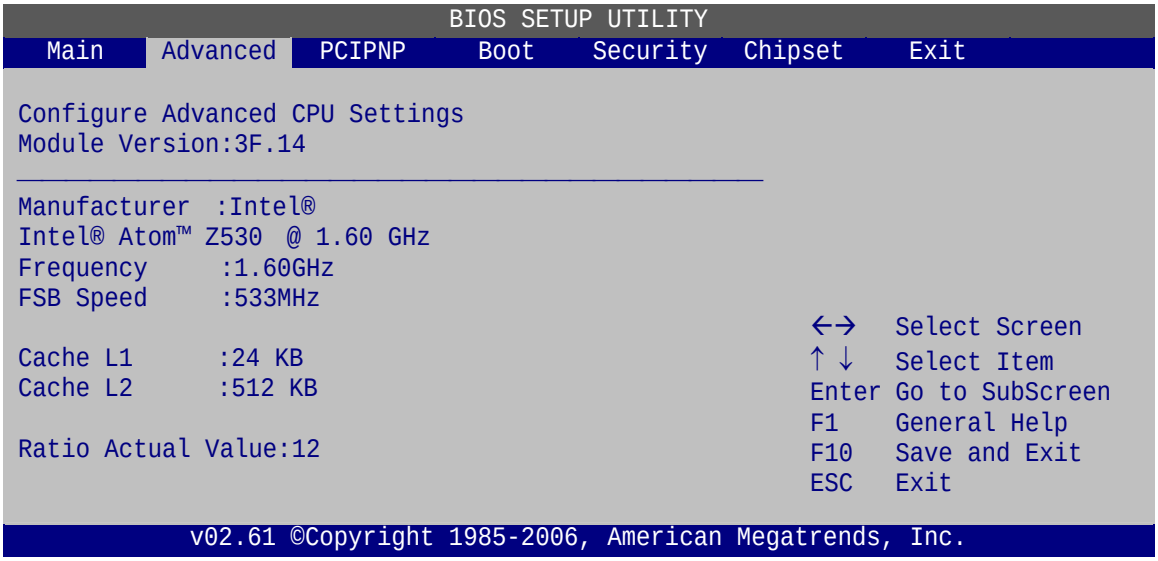
Use the **Advanced** menu (BIOS Menu 2) to configure the CPU and peripheral devices

```
                         BIOS SETUP UTILITY
  Main    Advanced   PCIPNP    Boot    Security   Chipset    Exit

Advanced Settings                                  Configure CPU
_____________________________________________________
WARNING: Setting wrong values in below sections may cause
system to malfunction

> CPU Configuration
> IDE Configuration
> Hardware Health Configuration
> Embedded Controller Configuration                ←→   Select Screen
> USB Configuration                                ↑ ↓   Select Item
                                                   Enter Go to SubScreen
                                                   F1    General Help
                                                   F10   Save and Exit
                                                   ESC   Exit
          v02.61 ©Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 2: Advanced

4.3.1 CPU Configuration

Use the **CPU Configuration** menu (BIOS Menu 3) to view detailed CPU specifications and configure the CPU.



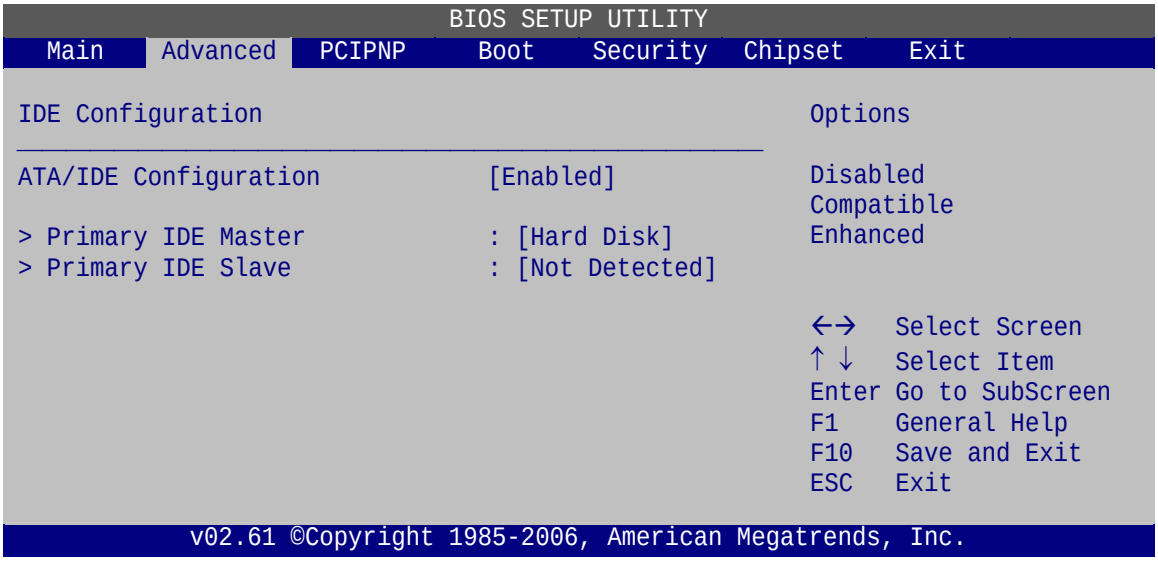
BIOS Menu 3: CPU Configuration

The CPU Configuration menu lists the following CPU details:

- Manufacturer: Lists the name of the CPU manufacturer
- Brand String: Lists the brand name of the CPU being used
- Frequency: Lists the CPU processing speed
- FSB Speed: Lists the FSB speed
- Cache L1: Lists the CPU L1 cache size
- Cache L2: Lists the CPU L2 cache size

4.3.2 IDE Configuration

Use the **IDE Configuration** menu (BIOS Menu 4) to change and/or set the configuration of the IDE devices installed in the system.



BIOS Menu 4: IDE Configuration

- **ATA/IDE Configuration [Compatible]**

Use the **ATA/IDE Configuration** option to configure the ATA/IDE controller.

➔ **Disabled**		Disables the on-board ATA/IDE controller.
➔ **Compatible**	**DEFAULT**	The SATA drive is configured on an IDE channel.
➔ **Enhanced**		Both IDE and SATA channels are configured separately.

- **Legacy IDE Channels [SATA Pri, PATA Sec]**

Use the **Legacy IDE Channels** option to configure SATA devices as normal IDE devices.

➔ **SATA Only**		Only SATA drives are on the IDE channels. IDE drives are disabled
➔ **SATA Pri, PATA Sec**	**DEFAULT**	SATA drives are configured on the Primary IDE channel. IDE drives on the Secondary IDE channel

➔ **PATA Only** Only the IDE drives are enabled. SATA drives are disabled

- **Configure SATA as [IDE]**

Use the **Configure SATA as** option to configure SATA devices as normal IDE devices.

➔ **IDE** **DEFAULT** Configures SATA devices as normal IDE device.

➔ **RAID** Used when a RAID setup is installed

➔ **AHCI** Enables advanced SATA drive features

4.3.2.1 IDE Master, IDE Slave

Use the **IDE Master** and **IDE Slave** configuration menu to view both primary and secondary IDE device details and configure the IDE devices connected to the system.

```
                        BIOS SETUP UTILITY
  Main    Advanced   PCIPNP    Boot    Security   Chipset    Exit

Primary IDE Master                                  Select the type
-------------------------------------------------   of device connected
Device        :Not Detected                         to the system
-------------------------------------------------

Type                              [Auto]
LBA/Large Mode                    [Auto]
Block (Multi-Sector Transfer)     [Auto]
PIO Mode                          [Auto]            ←    Select Screen
DMA Mode                          [Auto]            ↑ ↓  Select Item
S.M.A.R.T.                        [Auto]            +-   Change Option
32Bit Data Transfer               [Enabled]         F1   General Help
                                                    F10  Save and Exit
                                                    ESC  Exit

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```

BIOS Menu 5: IDE Master and IDE Slave Configuration

- **Auto-Detected Drive Parameters**

The “grayed-out” items in the left frame are IDE disk drive parameters automatically detected from the firmware of the selected IDE disk drive. The drive parameters are listed as follows:

  - Device: Lists the device type (e.g. hard disk, CD-ROM etc.)

- Type: Indicates the type of devices a user can manually select
- Vendor: Lists the device manufacturer
- Size: List the storage capacity of the device.
- LBA Mode: Indicates whether the LBA (Logical Block Addressing) is a method of addressing data on a disk drive is supported or not.
- Block Mode: Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
- PIO Mode: Indicates the PIO mode of the installed device.
- Async DMA: Indicates the highest Asynchronous DMA Mode that is supported.
- Ultra DMA: Indicates the highest Synchronous DMA Mode that is supported.
- S.M.A.R.T.: Indicates whether or not the Self-Monitoring Analysis and Reporting Technology protocol is supported.
- 32Bit Data Transfer: Enables 32-bit data transfer.

- **Type [Auto]**

Use the **Type** BIOS option select the type of device the AMIBIOS attempts to boot from after the Power-On Self-Test (POST) is complete.

➔ **Not Installed**		BIOS is prevented from searching for an IDE disk drive on the specified channel.
➔ **Auto**	**DEFAULT**	The BIOS auto detects the IDE disk drive type attached to the specified channel. This setting should be used if an IDE hard disk drive is attached to the specified channel.
➔ **CD/DVD**		The CD/DVD option specifies that an IDE CD-ROM drive is attached to the specified IDE channel. The BIOS does not attempt to search for other types of IDE disk drives on the specified channel.

➔ **ARMD** This option specifies an ATAPI Removable Media Device. These include, but are not limited to:

ZIP

LS-120

- **LBA/Large Mode [Auto]**

Use the **LBA/Large Mode** option to disable or enable BIOS to auto detects LBA (Logical Block Addressing). LBA is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB.

➔ **Disabled** BIOS is prevented from using the LBA mode control on the specified channel.

➔ **Auto** **DEFAULT** BIOS auto detects the LBA mode control on the specified channel.

- **Block (Multi Sector Transfer) [Auto]**

Use the **Block (Multi Sector Transfer)** to disable or enable BIOS to auto detect if the device supports multi-sector transfers.

➔ **Disabled** BIOS is prevented from using Multi-Sector Transfer on the specified channel. The data to and from the device occurs one sector at a time.

➔ **Auto** **DEFAULT** BIOS auto detects Multi-Sector Transfer support on the drive on the specified channel. If supported the data transfer to and from the device occurs multiple sectors at a time.

- **PIO Mode [Auto]**

Use the **PIO Mode** option to select the IDE PIO (Programmable I/O) mode program timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.

- **Auto** **DEFAULT** BIOS auto detects the PIO mode. Use this value if the IDE disk drive support cannot be determined.
- **0** PIO mode 0 selected with a maximum transfer rate of 3.3 MB/s
- **1** PIO mode 1 selected with a maximum transfer rate of 5.2 MB/s
- **2** PIO mode 2 selected with a maximum transfer rate of 8.3 MB/s
- **3** PIO mode 3 selected with a maximum transfer rate of 11.1 MB/s
- **4** PIO mode 4 selected with a maximum transfer rate of 16.6 MB/s

  (This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.)

▪ **DMA Mode [Auto]**

Use the **DMA Mode** BIOS selection to adjust the DMA mode options.

- **Auto** **DEFAULT** BIOS auto detects the DMA mode. Use this value if the IDE disk drive support cannot be determined.
- **SWDMA0** Single Word DMA mode 0 selected with a maximum data transfer rate of 2.1 MB/s
- **SWDMA1** Single Word DMA mode 1 selected with a maximum data transfer rate of 4.2 MB/s
- **SWDMA2** Single Word DMA mode 2 selected with a maximum data transfer rate of 8.3 MB/s
- **MWDMA0** Multi Word DMA mode 0 selected with a maximum data transfer rate of 4.2 MB/s
- **MWDMA1** Multi Word DMA mode 1 selected with a maximum data transfer rate of 13.3 MB/s
- **MWDMA2** Multi Word DMA mode 2 selected with a maximum data transfer rate of 16.6 MB/s
- **UDMA0** Ultra DMA mode 0 selected with a maximum data transfer rate of 16.6 MB/s

- **UDMA1** Ultra DMA mode 1 selected with a maximum data transfer rate of 25 MB/s
- **UDMA2** Ultra DMA mode 2 selected with a maximum data transfer rate of 33.3 MB/s
- **UDMA3** Ultra DMA mode 3 selected with a maximum data transfer rate of 44 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.)
- **UDMA4** Ultra DMA mode 4 selected with a maximum data transfer rate of 66.6 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.)
- **UDMA5** Ultra DMA mode 5 selected with a maximum data transfer rate of 99.9 MB/s (To use this mode, it is required that an 80-conductor ATA cable is used.)

▪ **S.M.A.R.T [Auto]**

Use the **S.M.A.R.T** option to auto-detect, disable or enable Self-Monitoring Analysis and Reporting Technology (SMART) on the drive on the specified channel. **S.M.A.R.T** predicts impending drive failures. The **S.M.A.R.T** BIOS option enables or disables this function.

- **Auto** **DEFAULT** BIOS auto detects HDD SMART support.
- **Disabled** Prevents BIOS from using the HDD SMART feature.
- **Enabled** Allows BIOS to use the HDD SMART feature

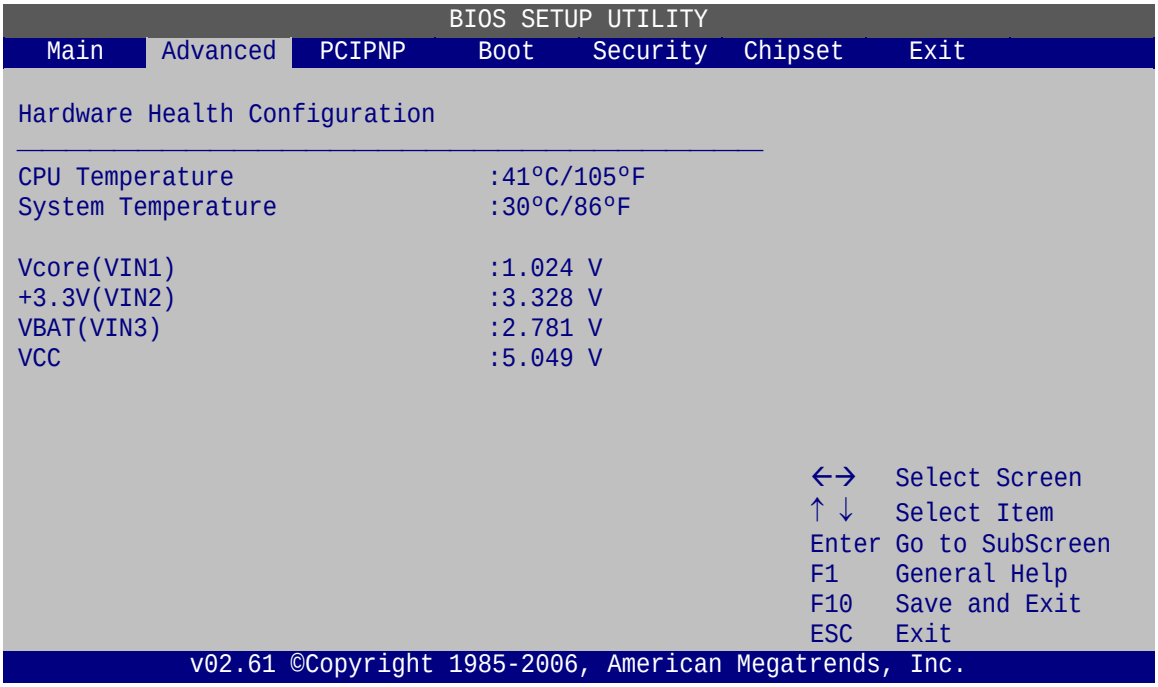
▪ **32Bit Data Transfer [Enabled]**

Use the **32Bit Data Transfer** BIOS option to enables or disable 32-bit data transfers.

- **Disabled** Prevents the BIOS from using 32-bit data transfers.
- **Enabled** **DEFAULT** Allows BIOS to use 32-bit data transfers on supported hard disk drives.

4.3.3 Hardware Health Configuration

The **Hardware Health Configuration** menu (BIOS Menu 6) shows the operating temperature, fan speeds and system voltages.



BIOS Menu 6: Hardware Health Configuration

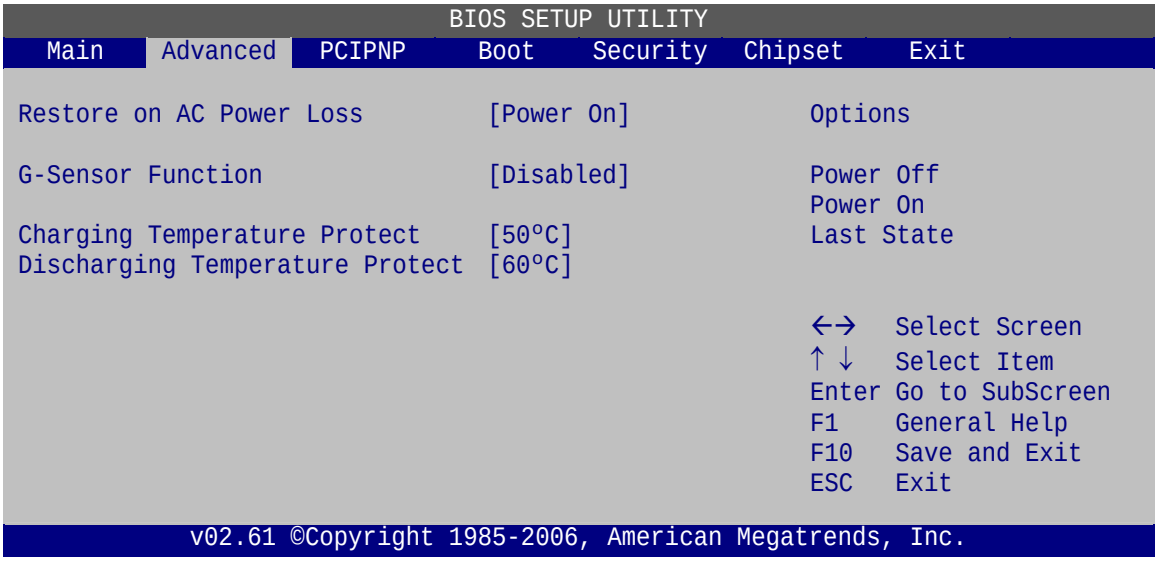
- **Monitored Values**

The following system parameters and values are shown. The system parameters that are monitored are:

- The following system temperatures are monitored:
  - CPU temperature
  - System temperature
- The following core voltages are monitored:
  - Vcore
  - +3.30V
  - VBAT
  - VCC

4.3.3.1 Embedded Controller Configuration

The **Embedded Controller Configuration** menu (BIOS Menu 7) allows the advanced power management options to be configured.



BIOS Menu 7: APM Configuration

- **Restore on AC Power Loss [Last State]**

Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

➔ **Power Off**		The system remains turned off
➔ **Power On**	**DEFAULT**	The system turns on
➔ **Last State**		The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

- **G-Sensor Function [On/Off]**

Use the **G-Sensor Function** BIOS to enable the G-Sensor function. When enabled, G-Sensor will sense the orientation of the tablet and automatically switch between portrait or landscape display mode.

➔ **Disabled** **DEFAULT** The G-Sensor function is disabled.

➔ **Enabled** The G-Sensor function is enabled

- **Charging Temperature Protect [50ºC]**

Battery charging will stop if this temperature is exceeded and will resume at a temperature that is 5ºC cooler than this temperature. This value cannot be changed.

- **Discharging Temperature Protect [60ºC]**

Battery discharging will stop if this temperature is exceeded and the system will shutdown. This value cannot be changed.

4.3.4 USB Configuration

Use the **USB Configuration** menu (BIOS Menu 8) to read USB configuration information and configure the USB settings.

```
                        BIOS SETUP UTILITY
  Main   Advanced   PCIPNP   Boot   Security   Chipset   Exit

USB Configuration                                  Options
-------------------------------------------------
Module Version - 2.24.3-13.4                       Disabled
                                                   Enabled
USB Devices Enabled:
  1 Keyboard, 1 Mouse

USB Function                    [Enabled]          ←→   Select Screen
USB 2.0 Controller              [Enabled]          ↑ ↓  Select Item
Legacy USB Support              [Enabled]          Enter Go to SubScreen
USB 2.0 Controller Mode         [HiSpeed]          F1   General Help
                                                   F10  Save and Exit
                                                   ESC  Exit

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```

BIOS Menu 8: USB Configuration

- **USB Configuration**

The **USB Configuration** field shows the system USB configuration. The items listed are:

  - Module Version: x.xxxxx.xxxxx

- **USB Devices Enabled**

  The **USB Devices Enabled** field lists the USB devices that are enabled on the system

- **USB Function [Enabled]**

  Use the **USB Function** BIOS option to enable or disable USB function support.

➔ **Disabled**		USB function support disabled
➔ **Enabled**	**DEFAULT**	USB function support enabled

- **USB 2.0 Controller [Enabled]**

  Use the **USB 2.0 Controller** BIOS option to enable or disable the USB 2.0 controller

➔ **Disabled**		USB 2.0 controller disabled
➔ **Enabled**	**DEFAULT**	USB 2.0 controller enabled

- **Legacy USB Support [Enabled]**

  Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

  Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

➔ **Disabled**		Legacy USB support disabled
➔ **Enabled**	**DEFAULT**	Legacy USB support enabled
➔ **Auto**		Legacy USB support disabled if no USB devices are connected

- **USB2.0 Controller Mode [HiSpeed]**

  Use the **USB2.0 Controller Mode** option to set the speed of the USB2.0 controller.

➔	**FullSpeed**		The controller is capable of operating at 12 Mb/s
➔	**HiSpeed**	**DEFAULT**	The controller is capable of operating at 480 Mb/s

4.3.4.1 USB Mass Storage Device Configuration

Use the **USB Mass Storage Device Configuration** menu (BIOS Menu 9) to configure USB mass storage class devices.

```
                        BIOS SETUP UTILITY
  Main    Advanced   PCIPNP     Boot     Security   Chipset     Exit

USB Mass Storage Device Configuration
_____________________________________________________________

USB Mass Storage Reset Delay     [20 Sec]

  Device #1           M-SysT5 Dell Memory Key 5.04
  Emulation Type                  [Auto]

                                          ←→   Select Screen
                                          ↑ ↓   Select Item
                                          Enter Go to SubScreen
                                          F1    General Help
                                          F10   Save and Exit
                                          ESC   Exit

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```

BIOS Menu 9: USB Mass Storage Device Configuration

- **USB Mass Storage Reset Delay [20 Sec]**

Use the **USB Mass Storage Reset Delay** option to set the number of seconds POST waits for the USB mass storage device after the start unit command.

➔	**10 Sec**		POST waits 10 seconds for the USB mass storage device after the start unit command.
➔	**20 Sec**	**DEFAULT**	POST waits 20 seconds for the USB mass storage device after the start unit command.
➔	**30 Sec**		POST waits 30 seconds for the USB mass storage device after the start unit command.
➔	**40 Sec**		POST waits 40 seconds for the USB mass storage device after the start unit command.

- **Device ##**

The **Device##** field lists the USB devices that are connected to the system.

- **Emulation Type [Auto]**

Use the **Emulation Type** BIOS option to specify the type of emulation BIOS has to provide for the USB device.

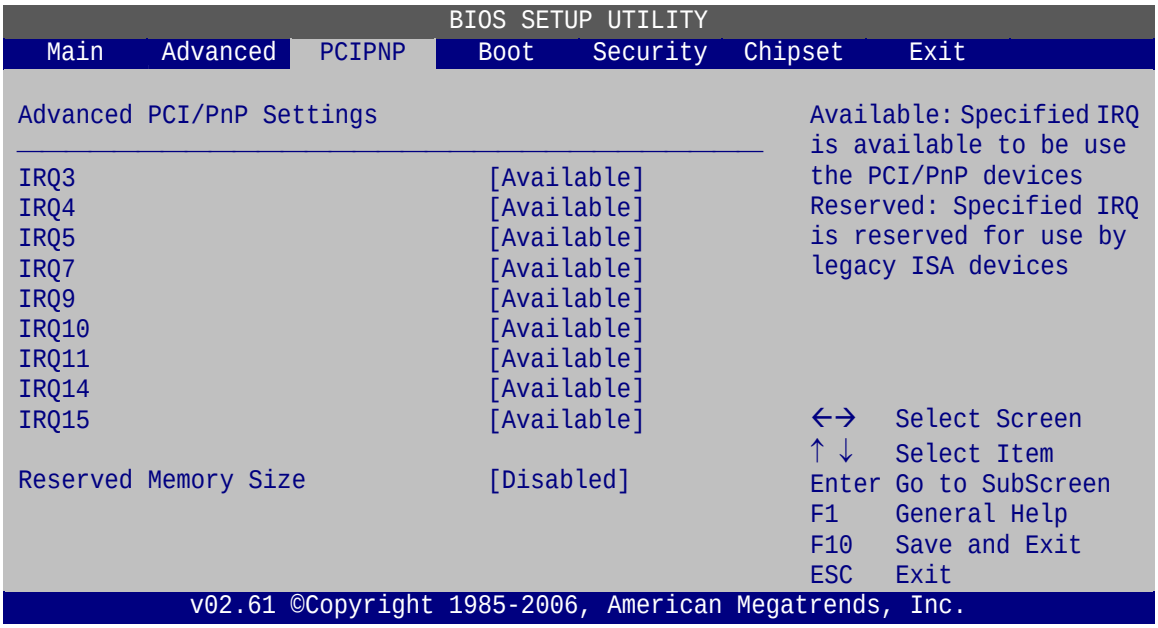
➔ **Auto**	**DEFAULT**	BIOS auto-detects the current USB.
➔ **Floppy**		The USB device will be emulated as a floppy drive. The device can be either A: or B: responding to INT13h calls that return DL = 0 or DL = 1 respectively.
➔ **Forced FDD**		Allows a hard disk image to be connected as a floppy image. This option works only for drives formatted with FAT12, FAT16 or FAT32.
➔ **Hard Disk**		Allows the USB device to be emulated as hard disk responding to INT13h calls that return DL values of 80h or above.
➔ **CDROM**		Assumes the CD-ROM is formatted as bootable media. All the devices that support block sizes greater than 512 bytes can only be booted using this option.

4.4 PCI/PnP

Use the **PCI/PnP** menu (BIOS Menu 10) to configure advanced PCI and PnP settings.

WARNING!

Setting wrong values for the BIOS selections in the PCIPnP BIOS menu may cause the system to malfunction.



BIOS Menu 10: PCI/PnP Configuration

- **IRQ# [Available]**

Use the **IRQ#** address to specify what IRQs can be assigned to a particular peripheral device.

➔ **Available** **DEFAULT** The specified IRQ is available to be used by PCI/PnP devices

➔ **Reserved** The specified IRQ is reserved for use by Legacy ISA devices

Available IRQ addresses are:

- IRQ3
- IRQ4
- IRQ5
- IRQ7
- IRQ9
- IRQ10
- IRQ 11
- IRQ 14
- IRQ 15

- **DMA Channel# [Available]**

Use the **DMA Channel#** option to assign a specific DMA channel to a particular PCI/PnP device.

➔ **Available**	**DEFAULT**	The specified DMA is available to be used by PCI/PnP devices
➔ **Reserved**		The specified DMA is reserved for use by Legacy ISA devices

Available DMA Channels are:

- DM Channel 0
- DM Channel 1
- DM Channel 3
- DM Channel 5
- DM Channel 6
- DM Channel 7

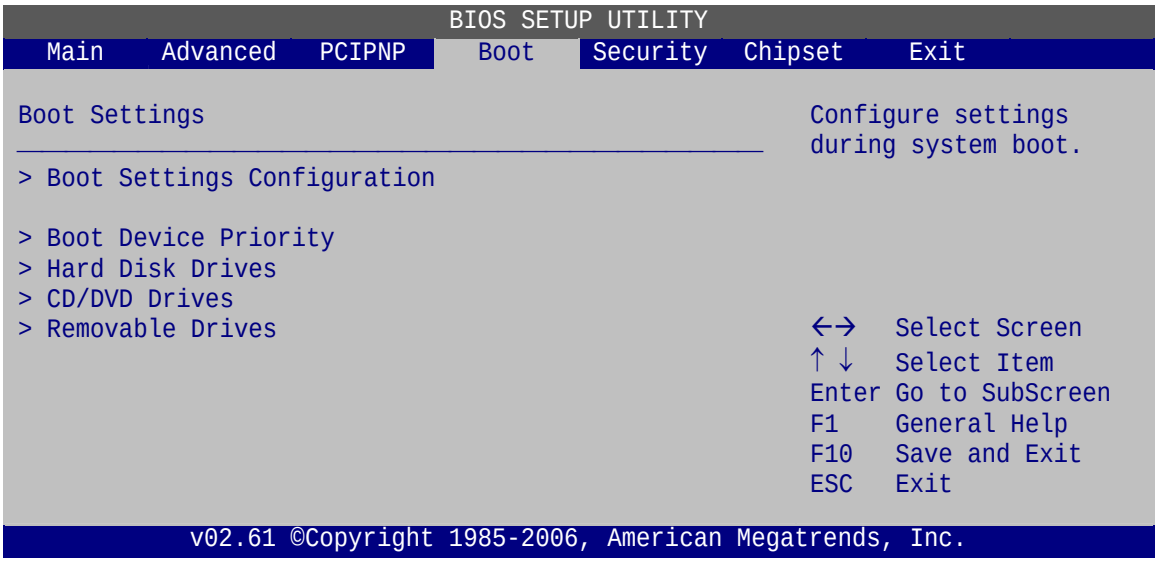
- **Reserved Memory Size [Disabled]**

Use the **Reserved Memory Size** BIOS option to specify the amount of memory that should be reserved for legacy ISA devices.

➔ **Disabled**	**DEFAULT**	No memory block reserved for legacy ISA devices
➔ **16K**		16 KB reserved for legacy ISA devices
➔ **32K**		32 KB reserved for legacy ISA devices
➔ **64K**		54 KB reserved for legacy ISA devices

4.5 Boot

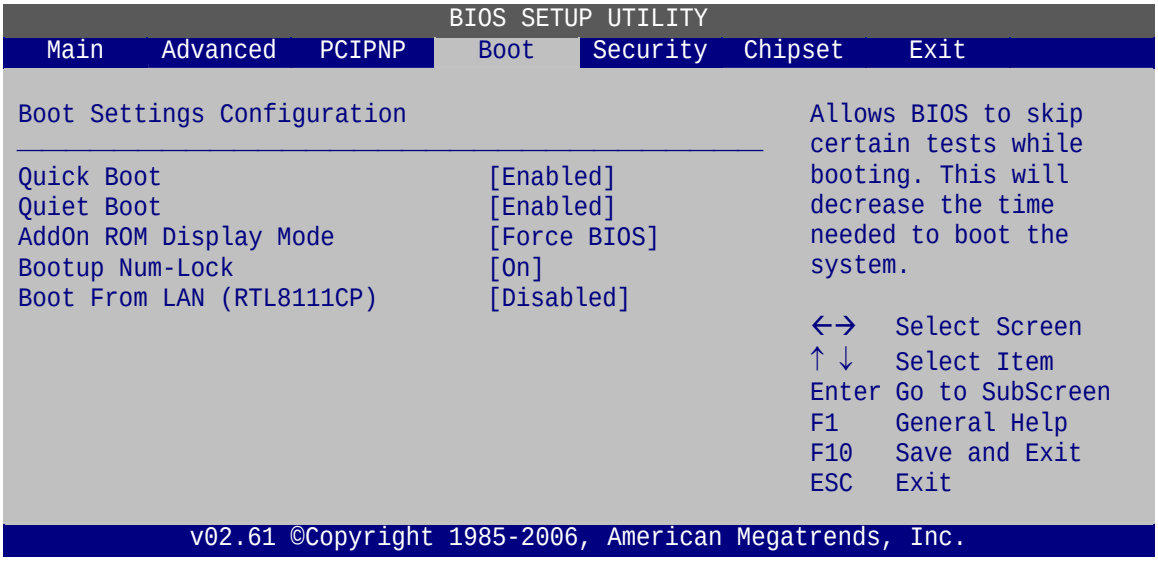
Use the **Boot** menu (BIOS Menu 11) to configure system boot options.



BIOS Menu 11: Boot

4.5.1 Boot Settings Configuration

Use the **Boot Settings Configuration** menu (BIOS Menu 12) to configure advanced system boot options.



BIOS Menu 12: Boot Settings Configuration

- **Quick Boot [Enabled]**

Use the **Quick Boot** BIOS option to make the computer speed up the boot process.

➔ **Disabled**		No POST procedures are skipped
➔ **Enabled**	**DEFAULT**	Some POST procedures are skipped to decrease the system boot time

- **Quiet Boot [Enabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔ **Disabled**	**DEFAULT**	Normal POST messages displayed
➔ **Enabled**		OEM Logo displayed instead of POST messages

- **AddOn ROM Display Mode [Force BIOS]**

Use the **AddOn ROM Display Mode** option to allow add-on ROM (read-only memory) messages to be displayed.

➔ **Force BIOS**	**DEFAULT**	The system forces third party BIOS to display during system boot.
➔ **Keep Current**		The system displays normal information during system boot.

- **Bootup Num-Lock [On]**

Use the **Bootup Num-Lock** BIOS option to specify if the number lock setting must be modified during boot up.

➔ **Off**	Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔ **On** **DEFAULT** Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

- **Boot From LAN (RTL81111CP) [Disabled]**

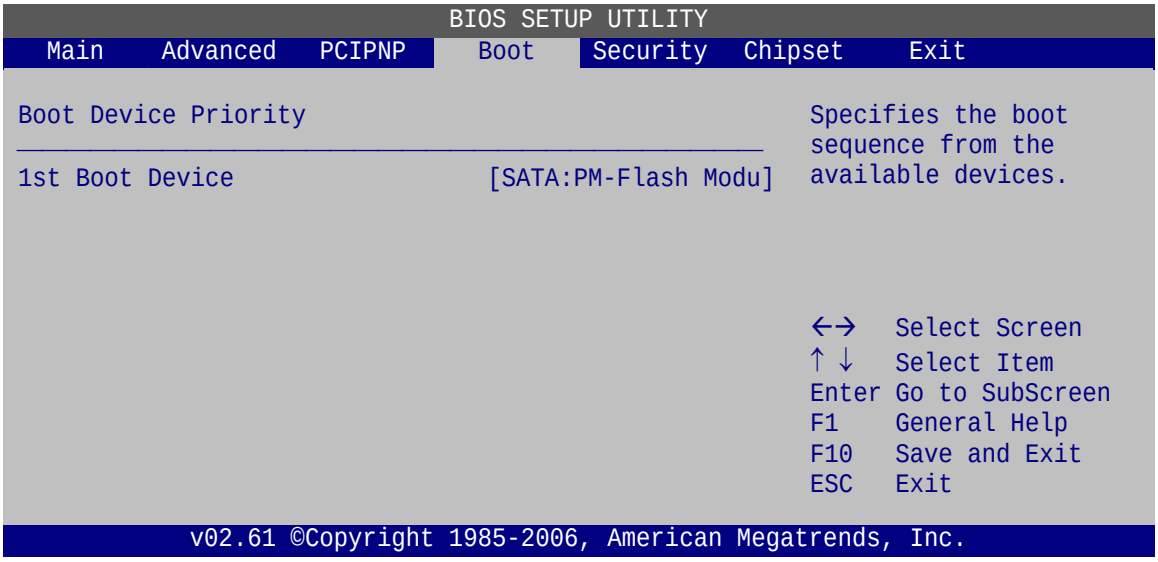
Use the **BOOT From LAN Support** option to enable the system to be booted from a remote system.

➔ **Disabled** **DEFAULT** Cannot be booted from a remote system through the LAN

➔ **Enabled** **DEFAULT** Can be booted from a remote system through the LAN

4.5.2 Boot Device Priority

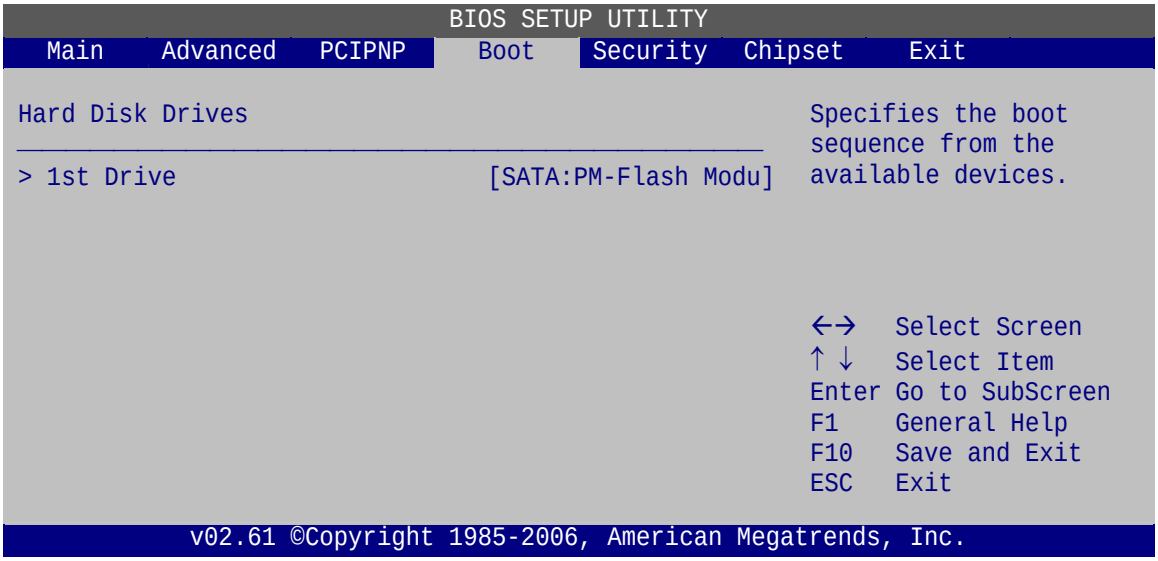
Use the **Boot Device Priority** menu (BIOS Menu 13) to specify the boot sequence from the available devices. The drive sequence also depends on the boot sequence in the individual device section.



BIOS Menu 13: Boot Device Priority Settings

4.5.3 Hard Disk Drives

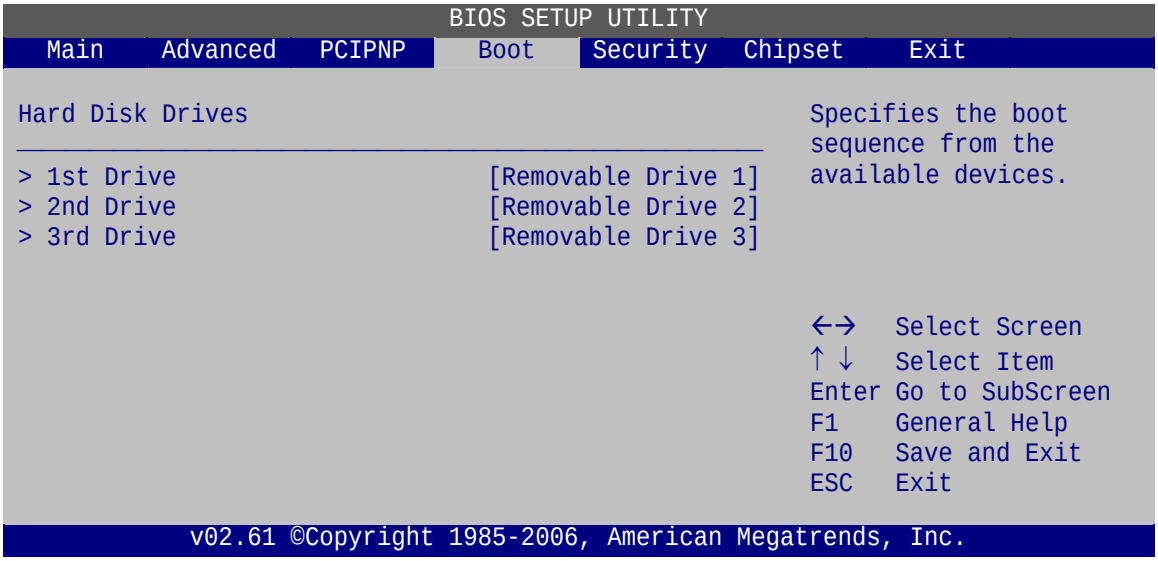
Use the **Hard Disk Drives** menu to specify the boot sequence of the available HDDs. Only installed hard drives are shown.



BIOS Menu 14: Hard Disk Drives

4.5.4 Removable Drives

Use the **Removable Drives** menu (BIOS Menu 15) to specify the boot sequence of the removable drives. Only connected drives are shown.



BIOS Menu 15: Removable Drives

4.5.5 CD/DVD Drives

Use the **CD/DVD Drives** menu to specify the boot sequence of the available CD/DVD drives. When the menu is opened, the CD drives and DVD drives connected to the system are listed as shown below:

- 1st Drive [CD/DVD: PM-(part ID)]
- 2nd Drive [HDD: PS-(part ID)]
- 3rd Drive [HDD: SM-(part ID)]
- 4th Drive [HDD: SM-(part ID)]

NOTE:

Only the drives connected to the system are shown. For example, if only two CDs or DVDs are connected only "**1st Drive**" and "**2nd Drive**" are listed.

The boot sequence from the available devices is selected. If the "**1st Drive**" option is selected a list of available CD/DVD drives is shown. Select the first CD/DVD drive the system boots from. If the "**1st Drive**" is not used for booting this option may be disabled.

```
                        BIOS SETUP UTILITY
  Main    Advanced   PCIPNP    Boot    Security   Chipset    Exit

Hard Disk Drives                                  Specifies the boot
                                                  sequence from the
> 1st Drive                    [CD/DVD 1]         available devices.
> 2nd Drive                    [CD/DVD 2]
> 3rd Drive                    [CD/DVD 3]


                                                  ←→   Select Screen
                                                  ↑ ↓   Select Item
                                                  Enter Go to SubScreen
                                                  F1    General Help
                                                  F10   Save and Exit
                                                  ESC   Exit

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```

BIOS Menu 16: CD/DVD Drives

4.6 Security

Use the **Security** menu (BIOS Menu 17) to set system and user passwords.

BIOS Menu 17: Security

- **Change Supervisor Password**

Use the **Change Supervisor Password** to set or change a supervisor password. The default for this option is **Not Installed**. If a supervisor password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change Supervisor Password**.

- **Change User Password**

Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password**.

4.7 Chipset

Use the **Chipset** menu (BIOS Menu 18) to access the Northbridge and Southbridge configuration menus

WARNING!

Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.

```
                        BIOS SETUP UTILITY
  Main    Advanced   PCIPNP    Boot    Security   Chipset    Exit

Advanced Chipset Settings
_____________________________________________________________

> Northbridge Configuration
> Southbridge Configuration




                                          ←→   Select Screen
                                          ↑ ↓  Select Item
                                          Enter Go to SubScreen
                                          F1   General Help
                                          F10  Save and Exit
                                          ESC  Exit

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```
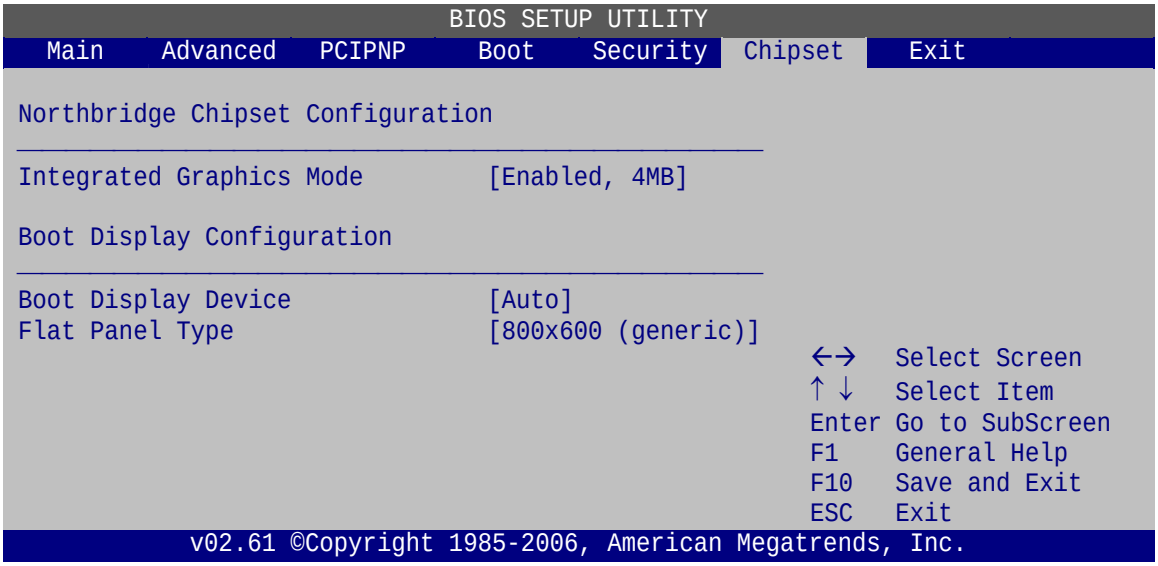

BIOS Menu 18: Chipset

4.7.1 Northbridge Configuration

Use the **Northbridge Chipset Configuration** menu (BIOS Menu 19) to configure the Northbridge chipset.



BIOS Menu 19: Northbridge Chipset Configuration

- **Internal Graphics Mode Select [Enable, 4 MB]**

Use the **Internal Graphic Mode Select** option to specify the amount of system memory that can be used by the internal graphics device.

➔	**Disable**		Disabled the onboard graphics
➔	**Enable, 1 MB**		Dedicates 1 MB of main memory for graphics
➔	**Enable, 4 MB**	**DEFAULT**	Dedicates 4 MB of main memory for graphics
➔	**Enable, 8 MB**		Dedicated 8 MB of main memory for graphics

- **Boot Display Device [Auto]**

Selects which graphics output to use first after the system is turned on. Auto selects the first available device.

- Auto **DEFAULT**
- LVDS

- CRT

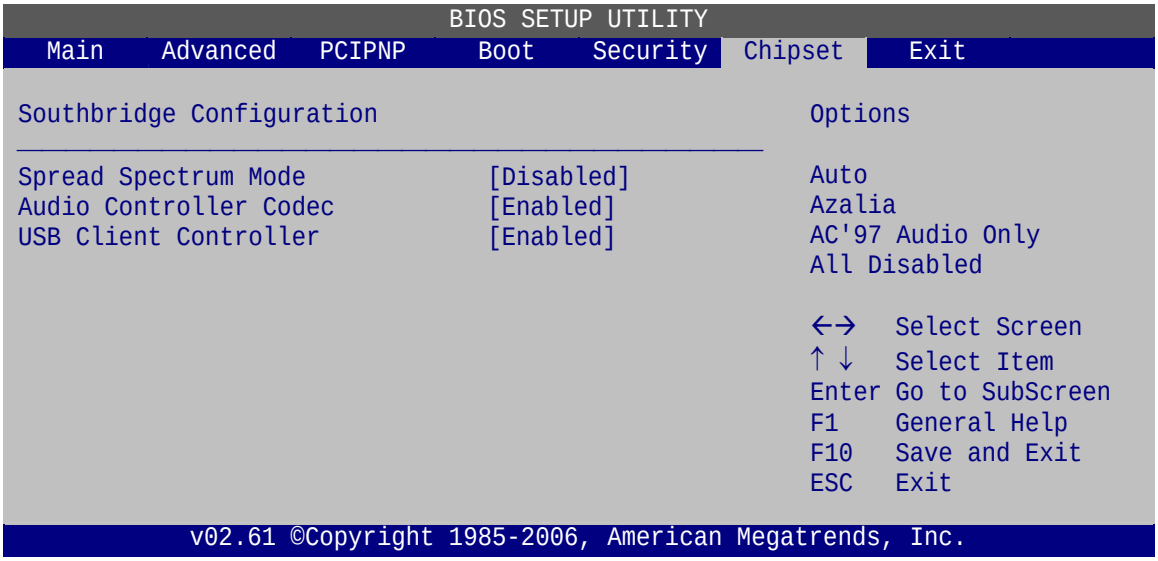
- **LFP Panel Type**

  Use the **Panel Type** to determine the LCD panel resolution. Configuration options are listed below:

  - 640x480 (generic)
  - 800x600 (generic) **DEFAULT**
  - 1024x768 (generic)
  - 640x480 (NEC 8.4")
  - 800x480 (NEC 9")
  - 1024x600 (TMD 5.61")
  - 1024x600 (Samsung 4.8")
  - 1024x768 (Samsung 15")
  - 1280x768 (Sharp 7.2")
  - 1280x800 (Samsung 15.4")
  - 1024x768 24bit
  - 800x480 24bit
  - 1360x768 24bit VESA
  - 1366x768 18bit
  - 1366x768 24bit

4.7.2 Southbridge Configuration

Use the **Southbridge Configuration** menu (BIOS Menu 20) to configure the Southbridge chipset.



BIOS Menu 20: Southbridge Chipset Configuration

- **Spread Spectrum [Disabled]**

Use the **Spread Spectrum** option to reduce the EMI. Excess EMI is generated when the system clock generator pulses have extreme values. Spreading the pulse spectrum modulates changes in the extreme values from spikes to flat curves, thus reducing the EMI. This benefit may in some cases be outweighed by problems with timing-critical devices, such as a clock-sensitive SCSI device.

➔	**Disabled**	**DEFAULT**	EMI not reduced
➔	**Enabled**		EMI reduced

- **Audio Controller [Auto]**

Use the **HDA Controller** option to enable or disable High Definition audio codec.

➔	**Azalia**	**DEFAULT**	Enabled High Definition audio
➔	**All disabled**		No audio

- **USB Client Controller**

Use the **USB Client Controller** option to enable or disable the USB client controller.

➔	**Enabled**	**DEFAULT**	The USB client controller is enabled.
➔	**Disabled**		The USB client controller is disabled.

4.8 Exit

Use the **Exit** menu (BIOS Menu 21) to load default BIOS values, optimal failsafe values and to save configuration changes.

```
                         BIOS SETUP UTILITY
  Main    Advanced   PCIPNP    Boot    Security  Chipset    Exit

Exit Options                                    Exit system setup after
------------------------------------------------saving the changes.
Save Changes and Exit
Discard Changes and Exit                        F10 key can be used for
Discard Changes                                 this operation

Load Optimal Defaults
Load Failsafe Defaults                          ←→   Select Screen
                                                ↑ ↓   Select Item
                                                Enter Go to SubScreen
                                                F1    General Help
                                                F10   Save and Exit
                                                ESC   Exit

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```

BIOS Menu 21: Exit

- **Save Changes and Exit**

Use the **Save Changes and Exit** option to save the changes made to the BIOS options and to exit the BIOS configuration setup program.

- **Discard Changes and Exit**

Use the **Discard Changes and Exit** option to exit the BIOS configuration setup program without saving the changes made to the system.

- **Discard Changes**

  Use the **Discard Changes** option to discard the changes and remain in the BIOS configuration setup program.

- **Load Optimal Defaults**

  Use the **Load Optimal Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F9 key can be used for this operation.**

- **Load Failsafe Defaults**

  Use the **Load Failsafe Defaults** option to load failsafe default values for each of the parameters on the Setup menus. **F8 key can be used for this operation.**

Chapter

5

System Maintenance

5.1 System Maintenance Introduction

If the components of the ICEROCK-08A fail they must be replaced, such as the wireless LAN module or the motherboard. Please contact the system reseller or vendor to purchase the replacement parts.

5.2 Motherboard Replacement

In the case of motherboard failure, please contact an IEI sales representative, reseller or system vendor. The motherboard is accessible after opening the rear cover.

Appendix

A

Safety Precautions

WARNING:

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the ICEROCK-08A.

A.1 Safety Precautions

Please follow the safety precautions outlined in the sections that follow:

A.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- ***Follow the electrostatic precautions*** outlined below whenever the ICEROCK-08A is opened.
- ***Make sure the power is turned off and the power cord is disconnected*** whenever the ICEROCK-08A is being installed, moved or modified.
- ***Do not apply voltage levels that exceed the specified voltage range***. Doing so may cause fire and/or an electrical shock.
- ***Electric shocks can occur*** if the ICEROCK-08A chassis is opened when the ICEROCK-08A is running.
- ***Do not drop or insert any objects*** into the ventilation openings of the ICEROCK-08A.
- ***If considerable amounts of dust, water, or fluids enter the ICEROCK-08A***, turn off the power supply immediately, unplug the power cord, and contact the ICEROCK-08A vendor.
- **DO NOT** do the following:
  - **DO NOT** drop the ICEROCK-08A against a hard surface.
  - **DO NOT** strike or exert excessive force onto the LCD panel.
  - **DO NOT** touch any of the LCD panels with a sharp object
  - **DO NOT** use the ICEROCK-08A in a site where the ambient temperature exceeds the rated temperature

A.1.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the ICEROCK-08A may result in permanent damage to the ICEROCK-08A and sever injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the ICEROCK-08A. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the ICEROCK-08A is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband***: Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- ***Self-grounding***: Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring or working with an electrical component, place it on an antic-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the electrical component***: When handling the electrical component, hold the electrical component by its edges.

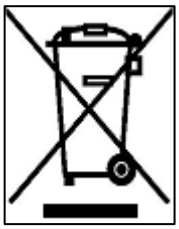
A.1.3 Product Disposal

CAUTION:

Risk of explosion if battery is replaced by and incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

- Outside the European Union - If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union:



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.

A.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the ICEROCK-08A, please follow the guidelines below.

A.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the ICEROCK-08A, please read the details below.

- Except for the LCD panel, never spray or squirt liquids directly onto any other components. To clean the LCD panel, gently wipe it with a piece of soft dry cloth or a slightly moistened cloth.
- The interior does not require cleaning. Keep fluids away from the interior.
- Be careful not to damage the small, removable components inside.
- Turn off before cleaning.
- Never drop any objects or liquids through the openings.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning.
- Avoid eating, drinking and smoking nearby.

A.2.2 Cleaning Tools

Some components may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use for cleaning.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol should be used.
- ***Using solvents*** – The use of solvents is not recommended as they may damage the plastic parts.
- ***Vacuum cleaner*** – Using a vacuum specifically designed for computers is one of the best methods of cleaning. Dust and dirt can restrict the airflow and cause circuitry to corrode
- ***Cotton swabs*** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- ***Foam swabs*** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

B

One Key Recovery

B.1 One Key Recovery Introduction

The IEI one key recovery is an easy-to-use front end for the Norton Ghost system backup and recovery tool. The one key recovery provides quick and easy shortcuts for creating a backup and reverting to that backup or for reverting to the factory default settings.

The IEI One Key Recovery tool menu is shown below.

Figure B-1: IEI One Key Recovery Tool Menu

Prior to using the IEI One Key Recovery tool (as shown in **Figure B-1**) to backup or restore Windows system, five setup procedures are required.

1. Hardware and BIOS setup (see **Section B.2.1**)
2. Create partitions (see **Section B.2.2**)
3. Install operating system, drivers and system applications (see **Section B.2.3**)
4. Build-up recovery partition (see **Section B.2.4**)
5. Create factory default image (see **Section B.2.5**)

After completing the five initial setup procedures as described above, users can access the recovery tool by pressing <**F3**> while booting up the system. The detailed information of each function is described in **Section B.4**.

NOTE:

The initial setup procedures for Linux system are described in **Section B.3**.

B.1.1 System Requirement

NOTE:

The recovery CD can only be used with IEI products. The software will fail to run and a warning message will appear when used on non-IEI hardware.

To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

The partition created for recovery images must be big enough to contain both the factory default image and the user backup image. The size must be calculated before creating the partitions. Please take the following table as a reference when calculating the size of the partition.

	OS	OS Image after Ghost	Compression Ratio
Windows® 7	7 GB	5 GB	70%
Windows® XPE	776 MB	560 MB	70%
Windows® CE 6.0	36 MB	28 MB	77%

NOTE:

Specialized tools are required to change the partition size if the operating system is already installed.

B.1.2 Supported Operating System

The recovery CD is compatible with both Microsoft Windows and Linux operating system (OS). The supported OS versions are listed below.

- Microsoft Windows
  - Windows XP (Service Pack 2 or 3 required)
  - Windows Vista
  - Windows 7
  - Windows CE 5.0
  - Windows CE 6.0
  - Windows XP Embedded
- Linux
  - Fedora Core 12 (Constantine)
  - Fedora Core 11 (Leonidas)
  - Fedora Core 10 (Cambridge)
  - Fedora Core 8 (Werewolf)
  - Fedora Core 7 (Moonshine)
  - RedHat RHEL-5.4
  - RedHat 9 (Ghirke)
  - Ubuntu 8.10 (Intrepid)
  - Ubuntu 7.10 (Gutsy)
  - Ubuntu 6.10 (Edgy)
  - Debian 5.0 (Lenny)
  - Debian 4.0 (Etch)
  - SuSe 11.2
  - SuSe 10.3

NOTE:

Installing unsupported OS versions may cause the recovery tool to fail.

B.2 Setup Procedure for Windows

Prior to using the recovery tool to backup or restore Windows system, a few setup procedures are required.

Step 1: Hardware and BIOS setup (see **Section B.2.1**)

Step 2: Create partitions (see **Section B.2.2**)

Step 3: Install operating system, drivers and system applications (see **Section B.2.3**)

Step 4: Build-up recovery partition (see **Section B.2.4**)

Step 5: Create factory default image (see **Section B.2.5**)

The detailed descriptions are described in the following sections.

NOTE:

The setup procedures described below are for Microsoft Windows operating system users. For Linux system, most setup procedures are the same with Microsoft Windows except for several steps which is described in **Section B.3**.

B.2.1 Hardware and BIOS Setup

Step 1: Make sure the system is powered off and unplugged.

Step 2: Install a hard drive or SSD in the system. An unformatted and unpartitioned disk is recommended.

Step 3: Connect an optical disk drive to the system and insert the recovery CD.

Step 4: Turn on the system.

Step 5: Press the <**DELETE**> key as soon as the system is turned on to enter the BIOS.

Step 6: Select the connected optical disk drive as the 1st boot device. (**Boot → Boot Device Priority → 1st Boot Device**).

Step 7: Save changes and restart the computer. Continue to the next section for instructions on partitioning the internal storage.

B.2.2 Create Partitions

To create the system backup, the main storage device must be split into two partitions (three partitions for Linux). The first partition will be for the operating system, while the second partition will be invisible to the operating system and contain the backup made by the one key recovery software.

Step 1: Put the recovery CD in the optical drive of the system.

Step 2: **Boot the system from recovery CD**. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

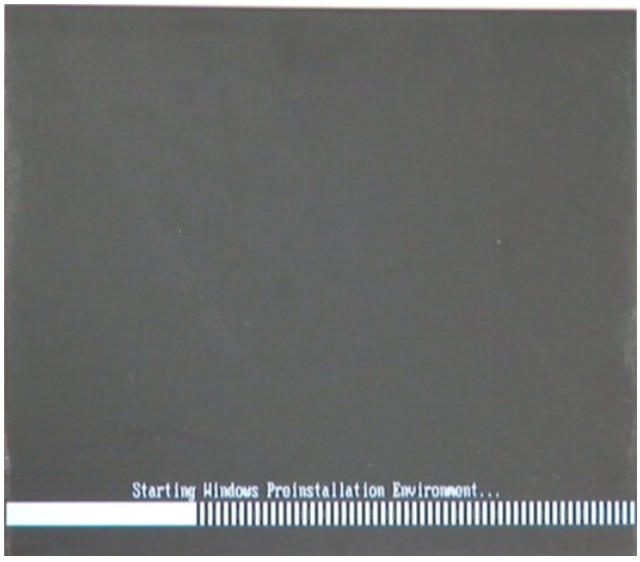


Figure B-2: Launching the Recovery Tool

Step 3: The recovery tool setup menu is shown as below.

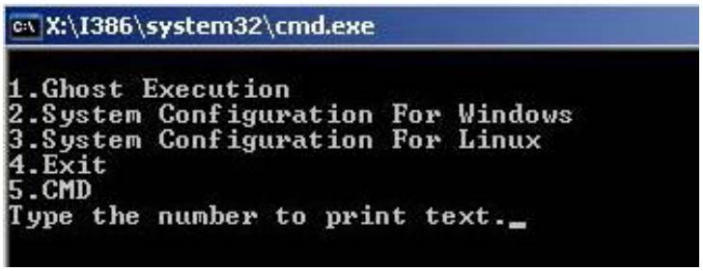


Figure B-3: Recovery Tool Setup Menu

Step 4: Press <**5**> then <Enter>.

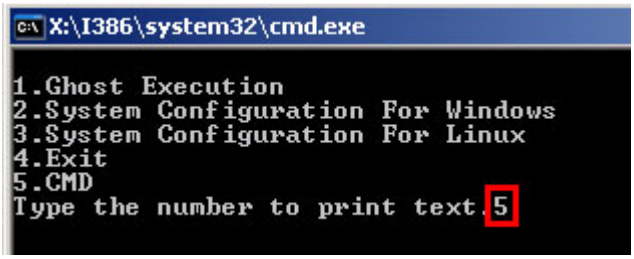


Figure B-4: Command Mode

Step 5: The command prompt window appears. Type the following commands (marked in red) to create two partitions. One is for the OS installation; the other is for saving recovery files and images which will be an invisible partition.

(Press <Enter> after entering each line below)

system32>diskpart

DISKPART>list vol

DISKPART>sel disk 0

DISKPART>create part pri size= ___

DISKPART>assign letter=N

DISKPART>create part pri size= ___

DISKPART>assign letter=F

DISKPART>exit

system32>format N: /fs:ntfs /q /y

```
system32>format F: /fs:ntfs /q /v:Recovery /y

system32>exit
```

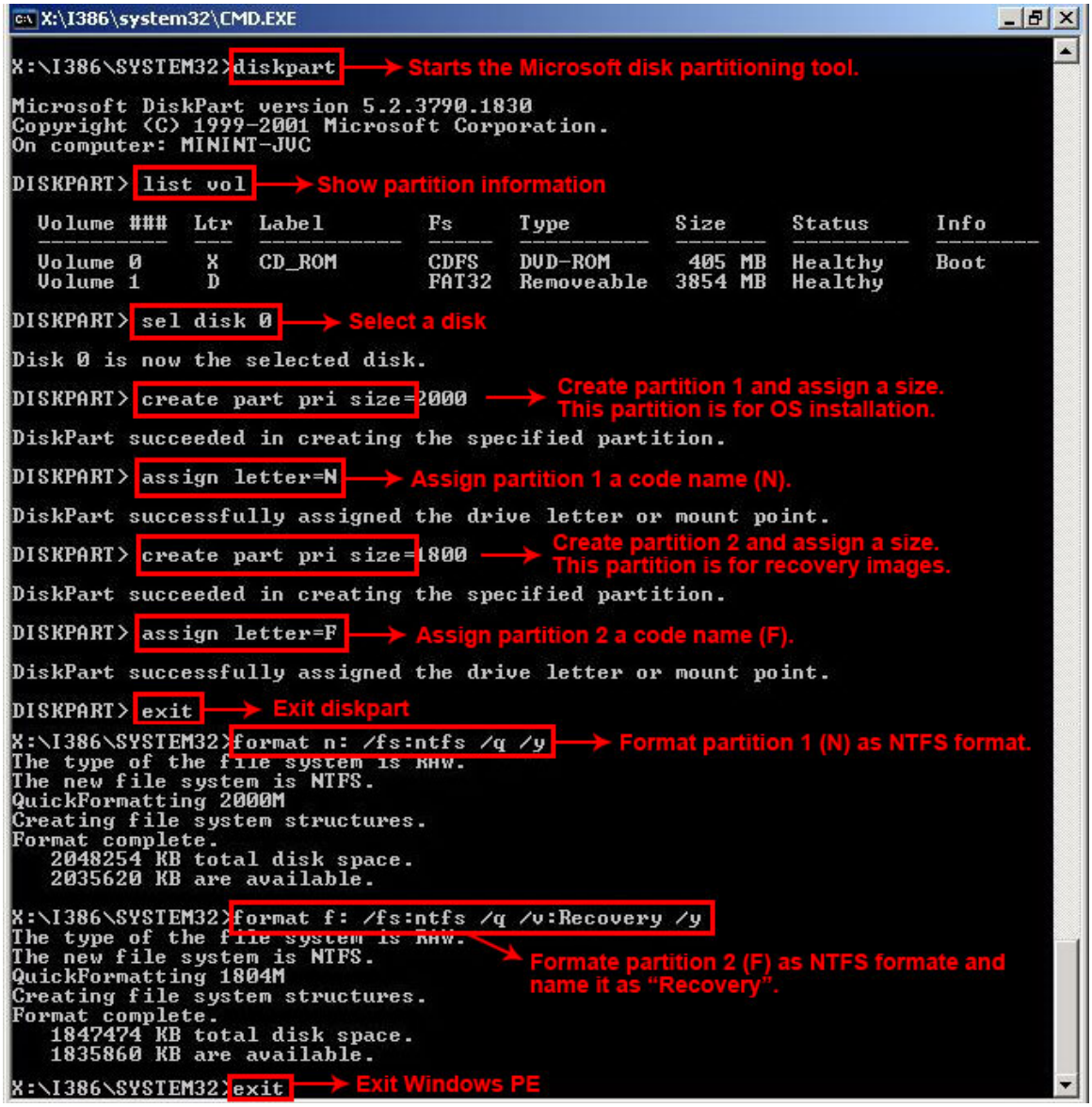
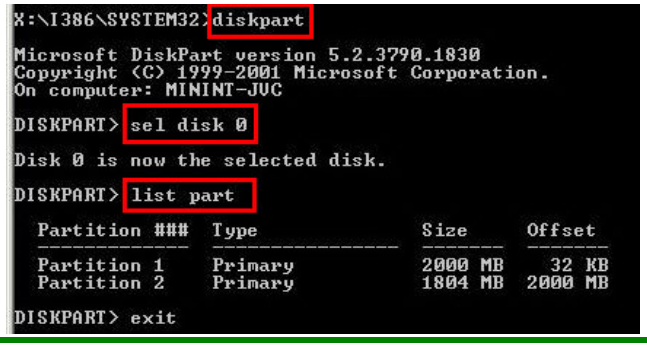


Figure B-5: Partition Creation Commands

NOTE:

Use the following commands to check if the partitions were created successfully.



Step 6: Press any key to exit the recovery tool and automatically reboot the system.

Please continue to the following procedure: Build-up Recovery Partition.

B.2.3 Install Operating System, Drivers and Applications

Install the operating system onto the unlabelled partition. The partition labeled as "Recovery" is for use by the system recovery tool and should not be used for installing the operating system or any applications.

NOTE:

The operating system installation program may offer to reformat the chosen partition. DO NOT format the partition again. The partition has already been formatted and is ready for installing the new operating system.

To install the operating system, insert the operating system installation CD into the optical drive. Restart the computer and follow the installation instructions.

B.2.4 Build-up Recovery Partition

Step 1: Put the recover CD in the optical drive.

Step 2: Start the system.

Step 3: **Boot the system from recovery CD**. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

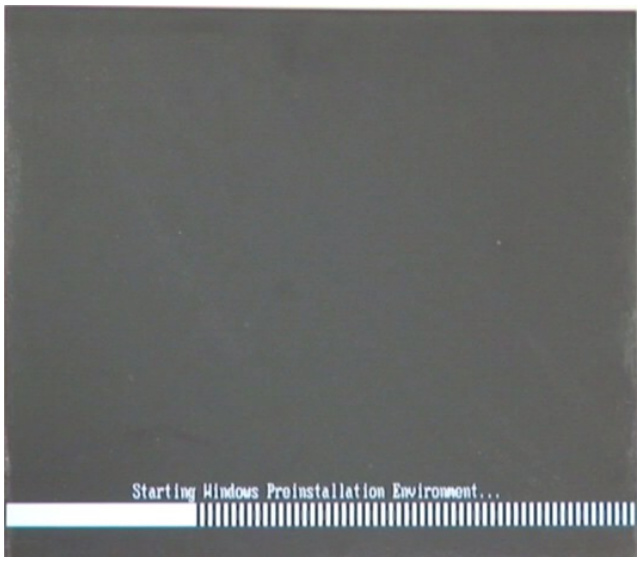


Figure B-6: Launching the Recovery Tool

Step 4: When the recovery tool setup menu appears, press <**2**> then <Enter>.

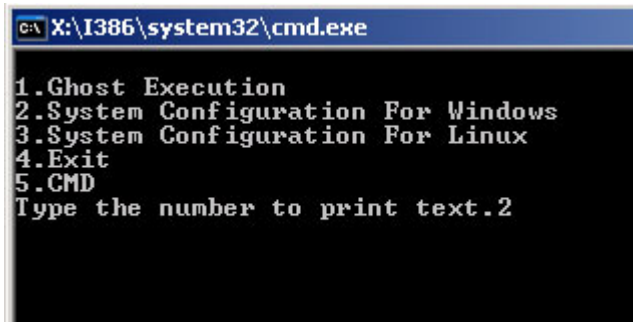


Figure B-7: System Configuration for Windows

Step 5: The Symantec Ghost window appears and starts configuring the system to build-up a recovery partition. In this process, the partition which is created for

recovery files in **Section B.2.2** is hidden and the recovery tool is saved in this partition.

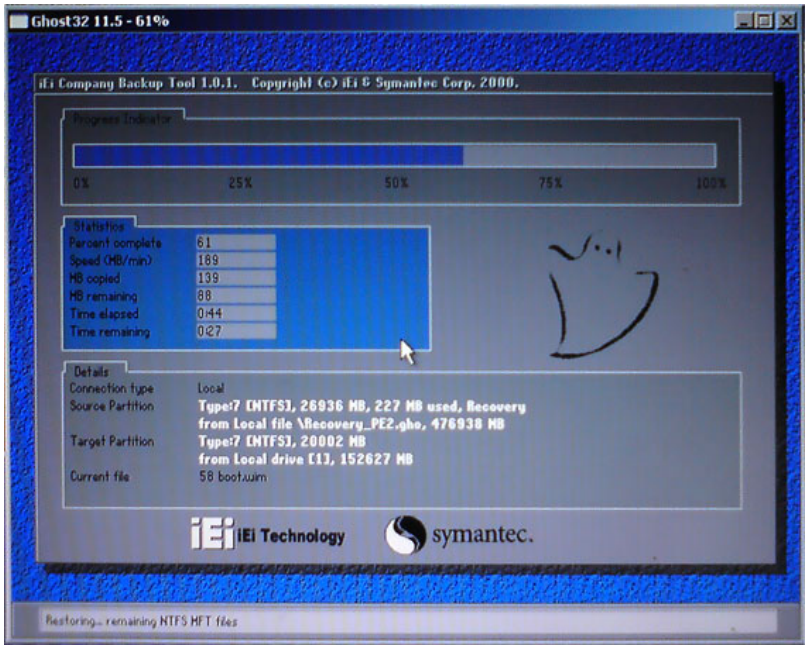


Figure B-8: Build-up Recovery Partition

Step 6: After completing the system configuration, press any key in the following window to reboot the system.

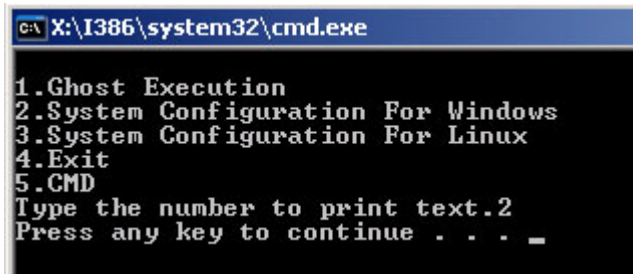


Figure B-9: Press any key to continue

Step 7: Eject the recovery CD.

B.2.5 Create Factory Default Image

NOTE:

Before creating the factory default image, please configure the system to a factory default environment, including driver and application installations.

To create a factory default image, please follow the steps below.

Step 1: Turn on the system. When the following screen displays (**Figure B-10**), press the <**F3**> key to access the recovery tool. The message will display for 10 seconds, please press F3 before the system boots into the operating system.

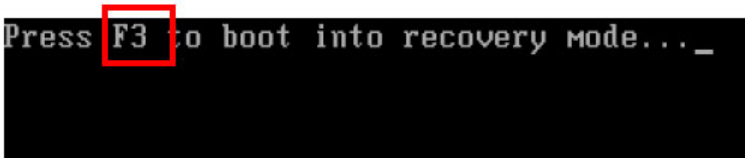


Figure B-10: Press F3 to Boot into Recovery Mode

Step 2: The recovery tool menu appears. Type <**4**> and press <**Enter**>. (**Figure B-11**)

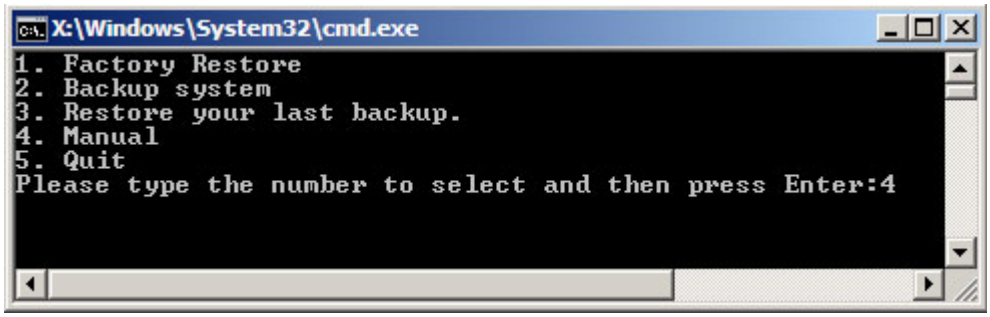


Figure B-11: Recovery Tool Menu

Step 3: The About Symantec Ghost window appears. Click **OK** button to continue.

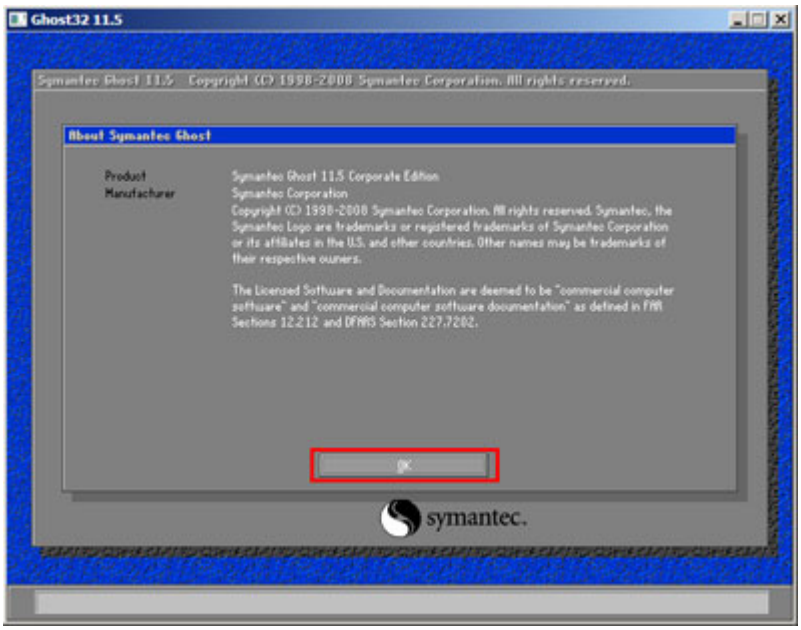


Figure B-12: About Symantec Ghost Window

Step 4: Use mouse to navigate to the option shown below (**Figure B-13**).

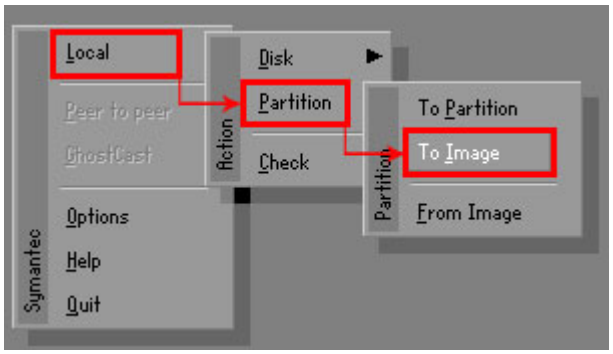


Figure B-13: Symantec Ghost Path

Step 5: Select the local source drive (Drive 1) as shown in **Figure B-14**. Then click OK.

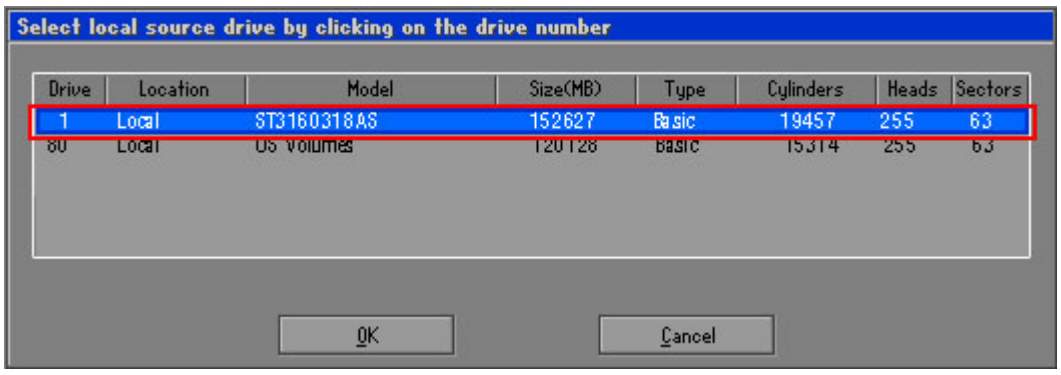


Figure B-14: Select a Local Source Drive

Step 6: Select a source partition (Part 1) from basic drive as shown in **Figure B-15**. Then click OK.

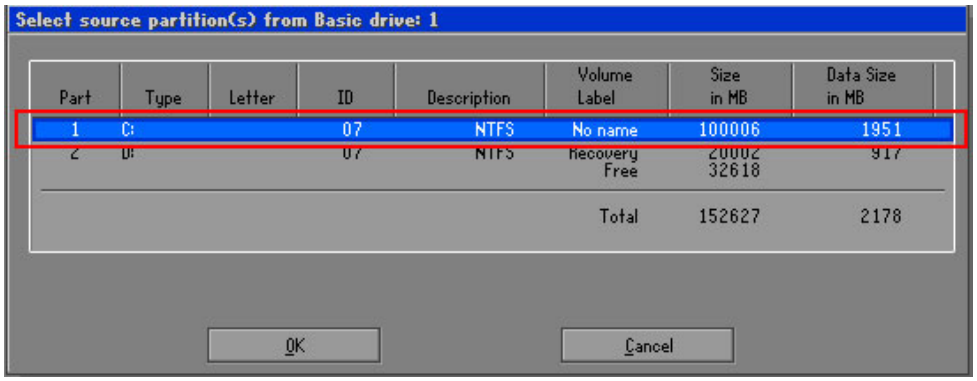


Figure B-15: Select a Source Partition from Basic Drive

Step 7: Select **1.2: [Recovery] NTFS drive** and enter a file name called **iei** (**Figure B-16**). Click **Save**. The factory default image will then be saved in the selected recovery drive and named IEI.GHO.

WARNING:

The file name of the factory default image must be **iei.GHO**.

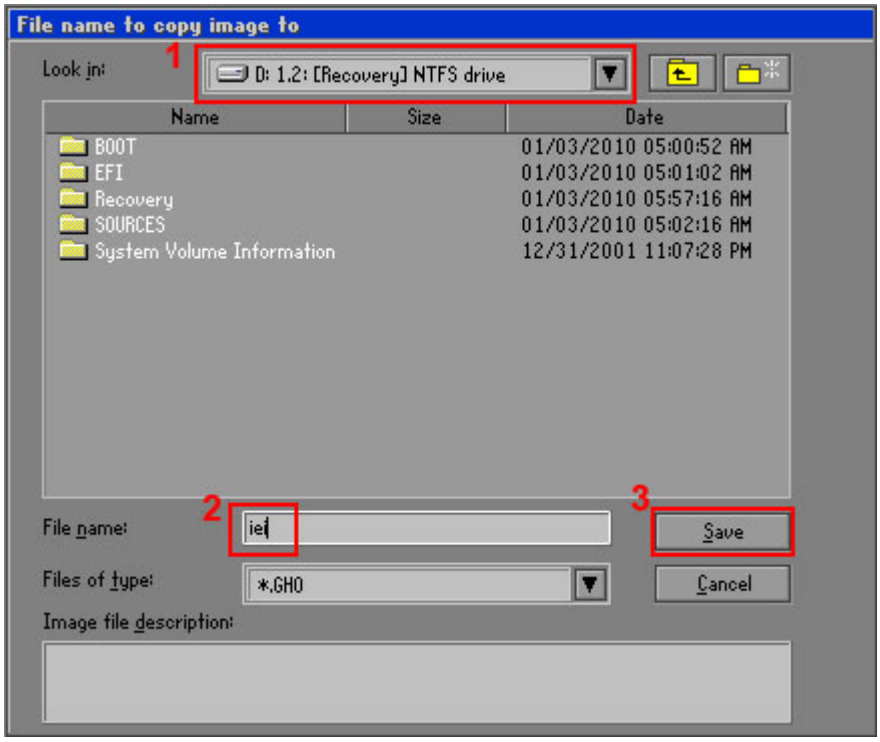


Figure B-16: File Name to Copy Image to

Step 8: When the Compress Image screen in **Figure B-17** prompts, click **High** to make the image file smaller.

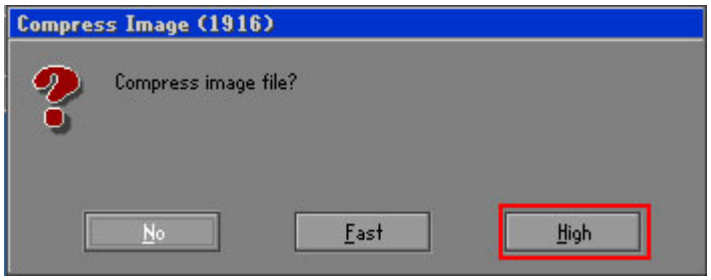


Figure B-17: Compress Image

Step 9: The Proceed with partition image creation window appears, click **Yes** to continue.

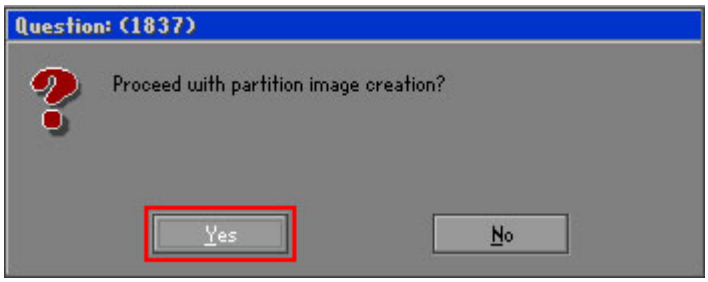


Figure B-18: Image Creation Confirmation

Step 10: The Symantec Ghost starts to create the factory default image (**Figure B-19**).

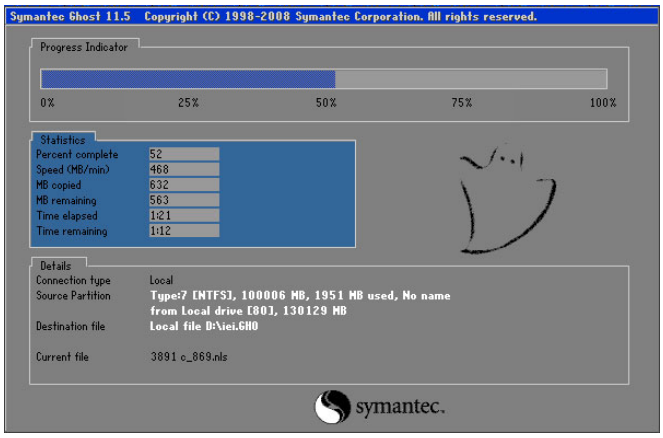


Figure B-19: Image Creation Complete

Step 11: When the image creation completes, a screen prompts as shown in **Figure B-20**. Click **Continue** and close the Ghost window to exit the program.

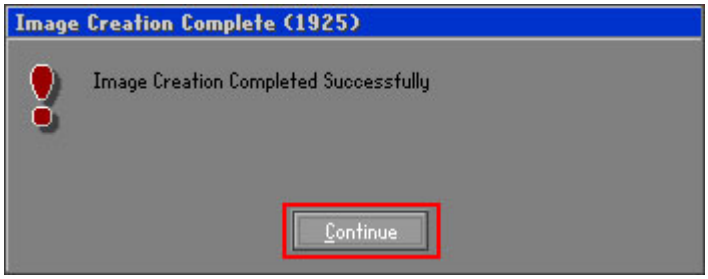


Figure B-20: Image Creation Complete

Step 12: The recovery tool main menu window is shown as below. Press any key to reboot the system.

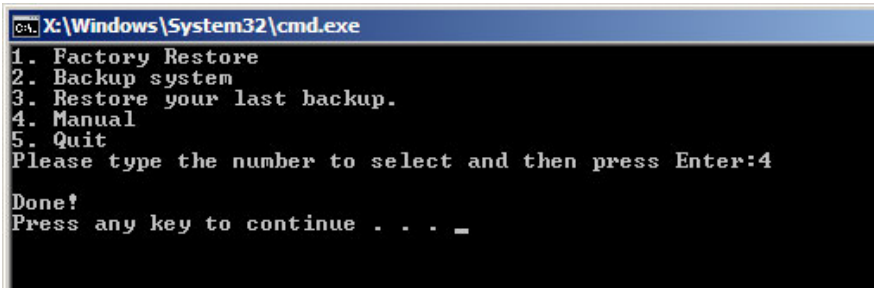


Figure B-21: Press Any Key to Continue

B.3 Setup Procedure for Linux

The initial setup procedures for Linux system are mostly the same with the procedure for Microsoft Windows. Please follow the steps below to setup recovery tool for Linux OS.

Step 1: **Hardware and BIOS setup**. Refer to **Section B.2.1**.

Step 2: **Install Linux operating system**. Make sure to install GRUB (v0.97 or earlier) MBR type and Ext3 partition type. Leave enough space on the hard drive to create the recover partition later.

NOTE:

If the Linux OS is not installed with GRUB (v0.97 or earlier) and Ext3, the Symantec Ghost may not function properly.

While installing Linux OS, please create two partitions:

- Partition 1: ***/***
- Partition 2: **SWAP**

NOTE:

Please reserve enough space for partition 3 for saving recovery images.

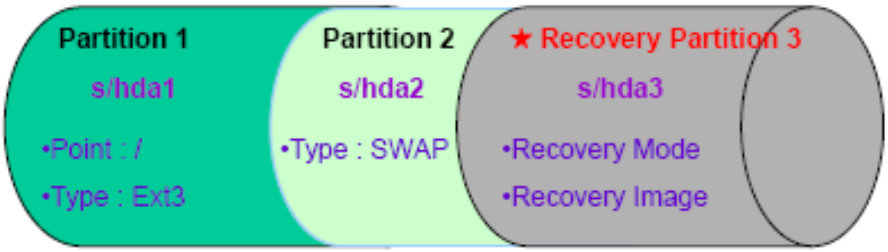


Figure B-22: Partitions for Linux

Step 3: **Create a recovery partition**. Insert the recovery CD into the optical disk drive. Follow **Step 1** ~ **Step 3** described in **Section B.2.2**. Then type the following commands (marked in red) to create a partition for recovery images.

system32>diskpart

DISKPART>list vol

DISKPART>sel disk 0

DISKPART>create part pri size= ___

DISKPART>assign letter=N

DISKPART>exit

system32>format N: /fs:ntfs /q /v:Recovery /y

system32>exit

Step 4: **Build-up recovery partition**. Press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient. When the recovery tool setup menu appears, type <**3**> and press <Enter> (**Figure B-23**). The Symantec Ghost window appears and starts configuring the system to build-up a recovery partition. After completing the system configuration, press any key to reboot the system. Eject the recovery CD.

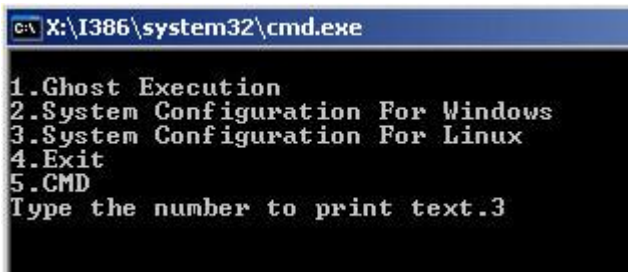


Figure B-23: System Configuration for Linux

Step 5: **Access the recovery tool main menu by modifying the "menu.lst"**. To first access the recovery tool main menu, the menu.lst must be modified. In Linux system, enter Administrator (root). When prompt appears, type:

cd /boot/grub

vi menu.lst

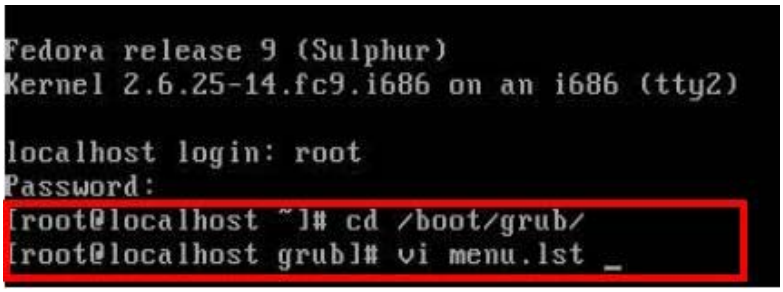
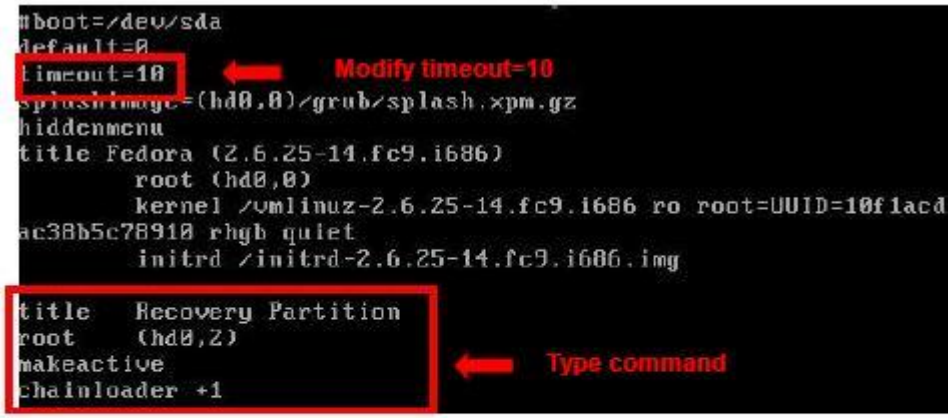


Figure B-24: Access menu.lst in Linux (Text Mode)

Step 6: Modify the menu.lst as shown below.



- Type command:

  title Recovery Partition

  root (hd0,2)

  makeactive

  chainloader +1

Step 7: The recovery tool menu appears. (**Figure B-25**)

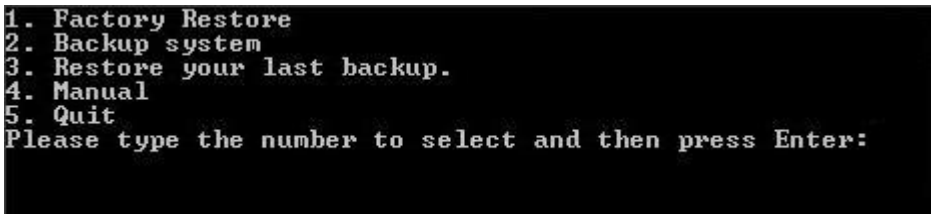


Figure B-25: Recovery Tool Menu

Step 8: **Create a factory default image**. Follow **Step 2** ~ **Step 12** described in **Section B.2.5** to create a factory default image.

B.4 Recovery Tool Functions

After completing the initial setup procedures as described above, users can access the recovery tool by pressing <**F3**> while booting up the system. The main menu of the recovery tool is shown below.

Figure B-26: Recovery Tool Main Menu

The recovery tool has several functions including:

1. Factory Restore: Restore the factory default image (iei.GHO) created in Section B.2.5.
2. **Backup system**: Create a system backup image (iei_user.GHO) which will be saved in the hidden partition.
3. **Restore your last backup**: Restore the last system backup image
4. **Manual**: Enter the Symantec Ghost window to configure manually.
5. **Quit**: Exit the recovery tool and restart the system.

WARNING:

Please do not turn off the system power during the process of system recovery or backup.

WARNING:

All data in the system will be deleted during the system recovery. Please backup the system files before restoring the system (either Factory Restore or Restore Backup).

B.4.1 Factory Restore

To restore the factory default image, please follow the steps below.

Step 1: Type <**1**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears and starts to restore the factory default. A factory default image called **iei.GHO** is created in the hidden Recovery partition.

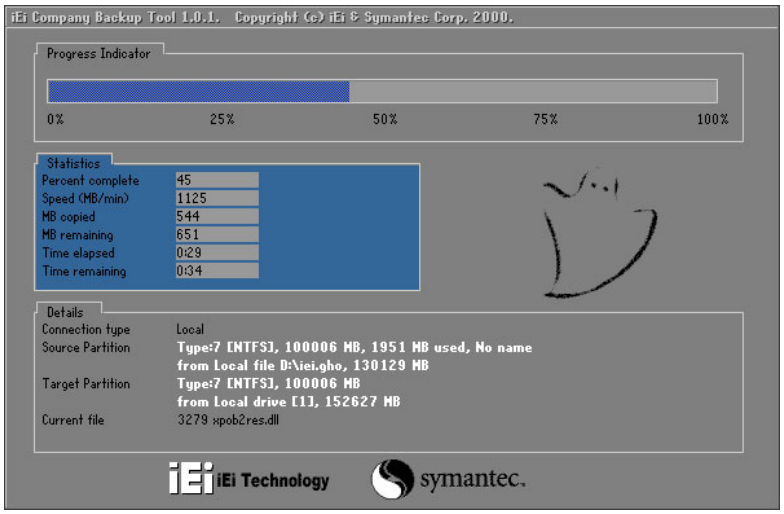


Figure B-27: Restore Factory Default

Step 3: The screen is shown as in **Figure B-28** when completed. Press any key to reboot the system.

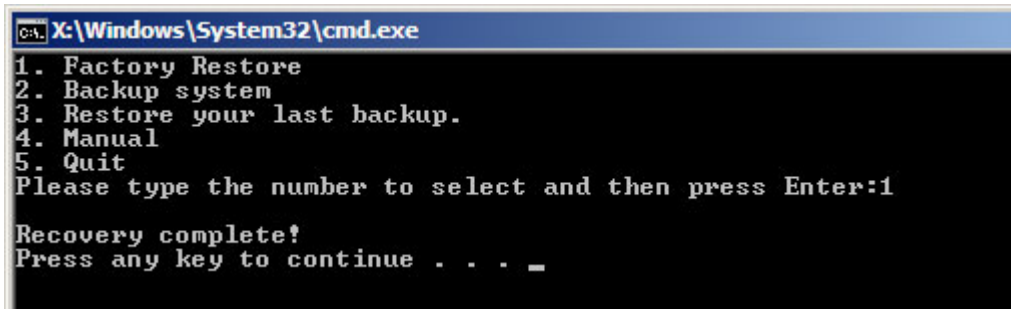


Figure B-28: Recovery Complete Window

B.4.2 Backup System

To backup the system, please follow the steps below.

Step 1: Type <**2**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears and starts to backup the system. A backup image called **iei_user.GHO** is created in the hidden Recovery partition.

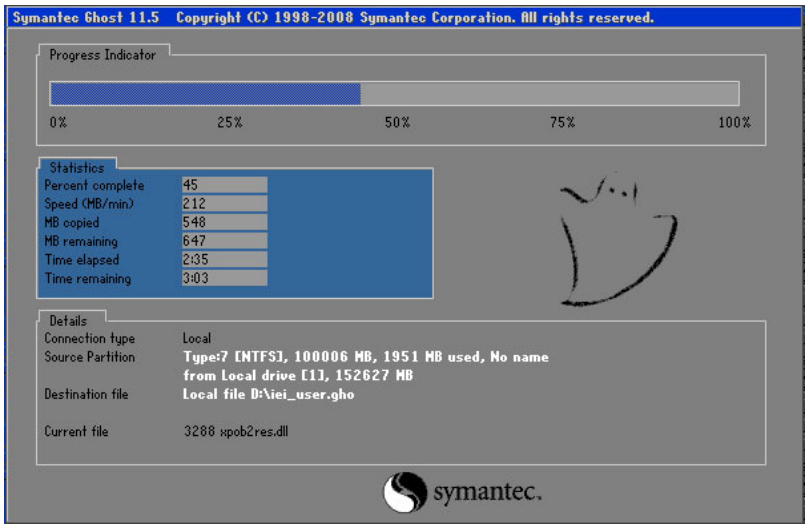


Figure B-29: Backup System

Step 3: The screen is shown as in **Figure B-30** when system backup is completed. Press any key to reboot the system.

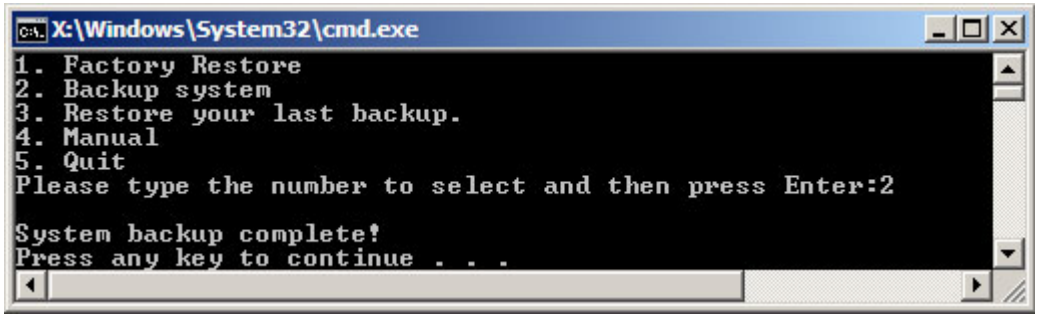


Figure B-30: System Backup Complete Window

B.4.3 Restore Your Last Backup

To restore the last system backup, please follow the steps below.

Step 1: Type <**3**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears and starts to restore the last backup image (iei_user.GHO).

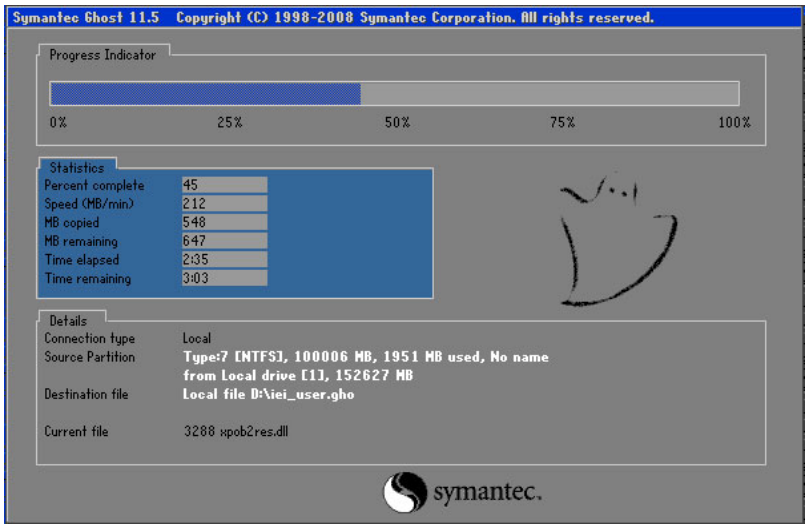


Figure B-31: Restore Backup

Step 3: The screen is shown as in **Figure B-32** when backup recovery is completed. Press any key to reboot the system.

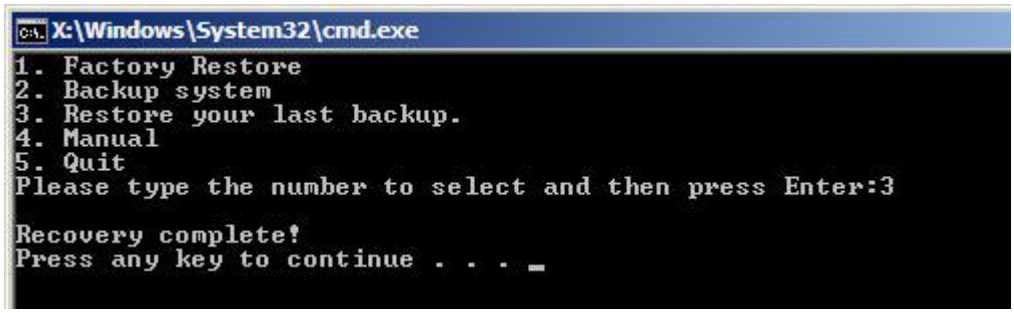


Figure B-32: Restore System Backup Complete Window

B.4.4 Manual

To restore the last system backup, please follow the steps below.

Step 1: Type <**4**> and press <**Enter**> in the main menu.

Step 2: The Symantec Ghost window appears. Use the Ghost program to backup or recover the system manually.

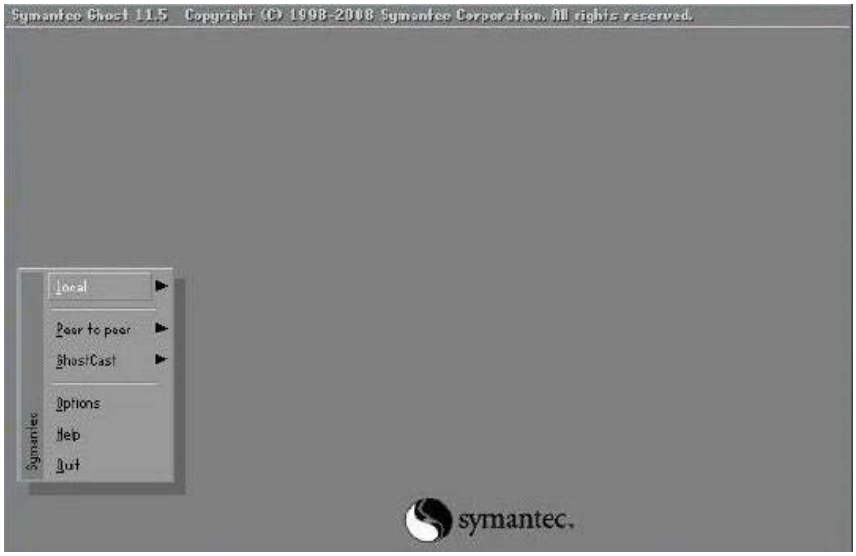


Figure B-33: Symantec Ghost Window

Step 3: When backup or recovery is completed, press any key to reboot the system.

B.5 Other Information

B.5.1 Using AHCI Mode or ALi M5283 / VIA VT6421A Controller

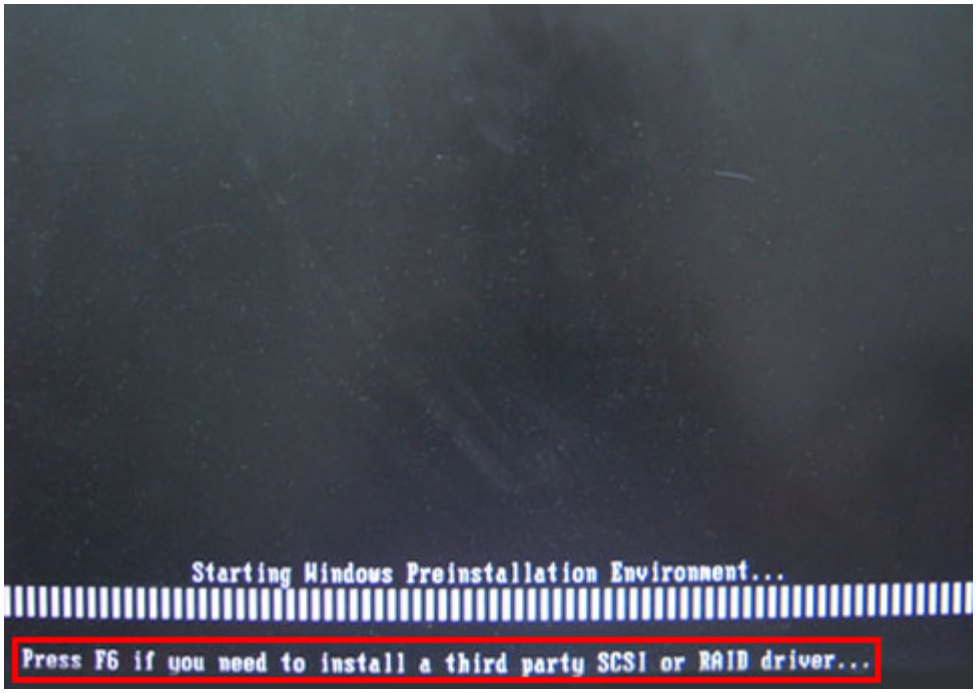
When the system uses AHCI mode or some specific SATA controllers such as ALi M5283 or VIA VT6421A, the SATA RAID/AHCI driver must be installed before using one key recovery. Please follow the steps below to install the SATA RAID/AHCI driver.

Step 1: Copy the SATA RAID/AHCI driver to a floppy disk and insert the floppy disk into a USB floppy disk drive. The SATA RAID/AHCI driver must be especially designed for the on-board SATA controller.

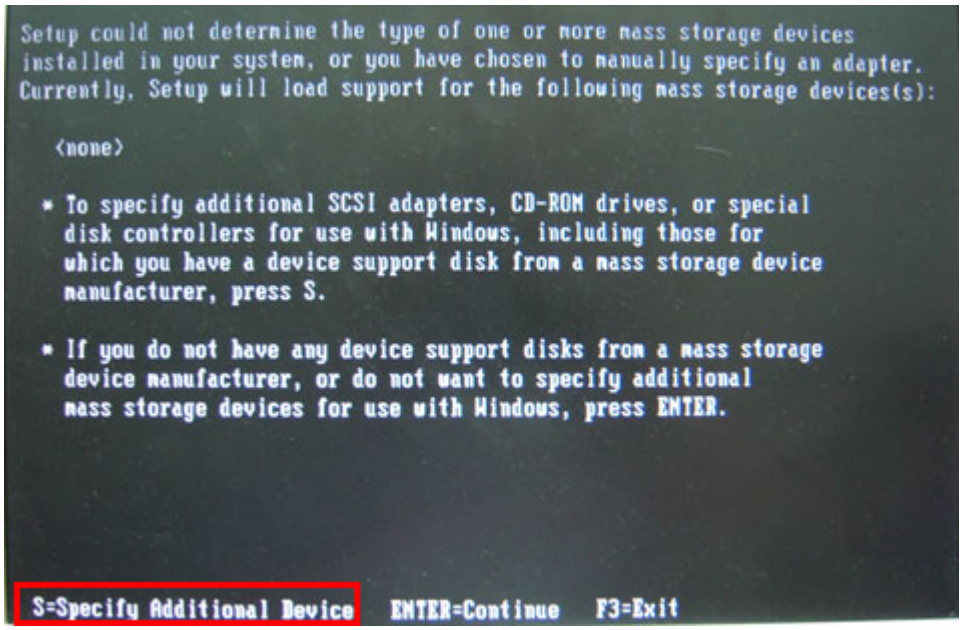
Step 2: Connect the USB floppy disk drive to the system.

Step 3: Insert the One Key Recovery CD into the system and boot the system from the CD.

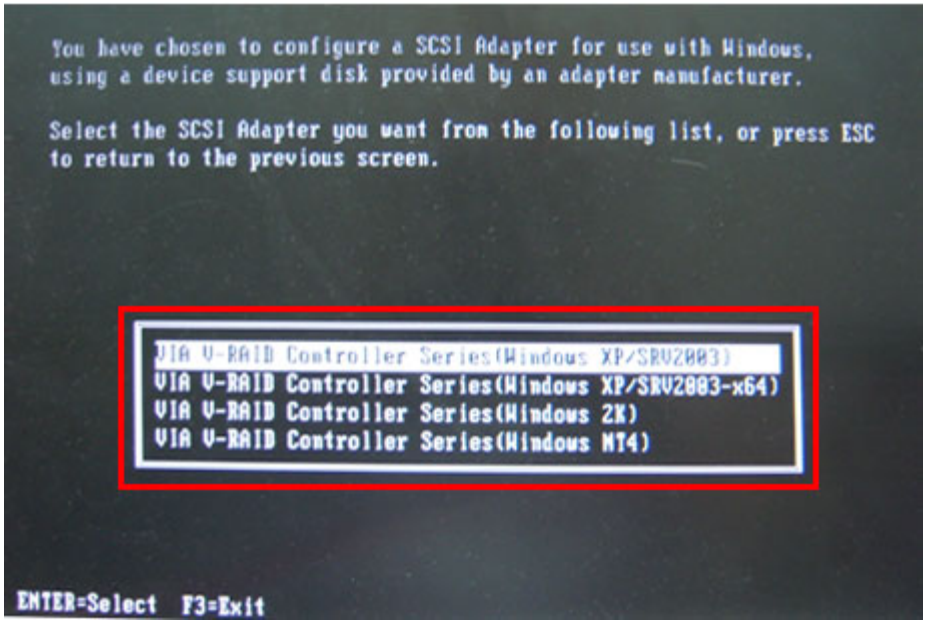
Step 4: When launching the recovery tool, press <**F6**>.



Step 5: When the following window appears, press <**S**> to select “Specify Additional Device”.



Step 6: In the following window, select a SATA controller mode used in the system. Then press <**Enter**>. The user can now start using the SATA HDD.



Step 7: After pressing <Enter>, the system will get into the recovery tool setup menu. Continue to follow the setup procedure from **Step 4** in **Section B.2.2 Create Partitions** to finish the whole setup process.

B.5.2 System Memory Requirement

To be able to access the recovery tool by pressing <**F3**> while booting up the system, please make sure to have enough system memory. The minimum memory requirement is listed below.

- **Using Award BIOS**: 128 MB system memory
- **Using AMI BIOS**: 512 MB system memory.

Appendix

C

BIOS Options

Below is a list of BIOS configuration options in the BIOS chapter.

Appendix

D

Terminology

AC '97	Audio Codec 97 (AC'97) refers to a codec standard developed by Intel® in 1997.
ACPI	Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface.
AHCI	Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface.
ATA	The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer.
ARMD	An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives.
ASKIR	Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude ("volume") of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1.
BIOS	The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user
CODEC	The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system.
CompactFlash®	CompactFlash® is a solid-state storage device. CompactFlash® devices use flash memory in a standard size enclosure. Type II is thicker than Type I, but a Type II slot can support both types.
CMOS	Complimentary metal-oxide-conductor is an integrated circuit used in chips like static RAM and microprocessors.
COM	COM refers to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal computer is usually a male DB-9 connector.
DAC	The Digital-to-Analog Converter (DAC) converts digital signals to analog signals.
DDR	Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal.

DMA	Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.
DIMM	Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module.
DIO	The digital inputs and digital outputs are general control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.
EHCI	The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.
EIDE	Enhanced IDE (EIDE) is a newer IDE interface standard that has data transfer rates between 4.0 MBps and 16.6 MBps.
EIST	Enhanced Intel® SpeedStep Technology (EIST) allows users to modify the power consumption levels and processor performance through application software. The application software changes the bus-to-core frequency ratio and the processor core voltage.
FSB	The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset.
GbE	Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard.
GPIO	General purpose input
HDD	Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data.
ICH	The Input/Ouput Control Hub (ICH) is an Intel® Southbridge chipset.
IrDA	Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.
L1 Cache	The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.
L2 Cache	The Level 2 Cache (L2 Cache) is an external processor memory cache.

LCD	Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between.
LVDS	Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer.
POST	The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.
RAM	Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives.
SATA	Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA II bus has data transfer speeds of up to 3.0 Gbps.
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives.
UART	Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports.
UHCI	The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers.
USB	The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12Mbps data transfer rates and USB 2.0 supports 480Mbps data transfer rates.
VGA	The Video Graphics Array (VGA) is a graphics display system developed by IBM.

Appendix

E

Watchdog Timer

NOTE:

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMIs or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table E-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30          ;time-out value is 48 seconds
        INT     15H
;
; ADD THE APPLICATION PROGRAM HERE
;
        CMP     EXIT_AP, 1      ;is the application over?
        JNE     W_LOOP          ;No, restart the application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT     15H
;
; EXIT ;
```

Appendix

F

Hazardous Materials Disclosure

F.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	X	O	O	O	O	X
Display	X	O	O	O	O	X
Printed Circuit Board	X	O	O	O	O	X
Metal Fasteners	X	O	O	O	O	O
Cable Assembly	X	O	O	O	O	X
Fan Assembly	X	O	O	O	O	X
Power Supply Assemblies	X	O	O	O	O	X
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	X	O	O	O	O	X
显示	X	O	O	O	O	X
印刷电路板	X	O	O	O	O	X
金属螺帽	X	O	O	O	O	O
电缆组装	X	O	O	O	O	X
风扇组装	X	O	O	O	O	X
电力供应组装	X	O	O	O	O	X
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。 X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。						