IEI Technology Corp.

MODEL:

IBX-300BC

Fanless Intel® Atom™ Embedded System
Eight Channels Video Input, Four USB, RS-232, VGA, GbE, RoHS Compliant

User Manual

Rev. 1.02 – 26 November, 2010

RoHS Lead Free

Revision

Date	Version	Changes
26 November, 2010	1.02	Modified power adapter information
16 August, 2010	1.01	Minor change
15 July, 2010	1.00	Initial release

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Introduction

1.1 IBX-300BC Embedded System Overview

Figure 1-1: IBX-300BC Embedded System

The IBX-300BC is a 1.6 GHz Intel® Atom™ D510 based embedded solution. The fanless motherboard has been optimized for security and surveillance applications that require minimum installation space. The main board supports a full range of functions for an AT/ATX-compatible industrial computer.

1.1.1 IBX-300BC Benefits

The IBX-300BC embedded system has the following benefits:

- Easy installation saves installation time
- Complete integration saves solution development time and cost
- Real-time video capture for digital security and surveillance
- Compact size saves space
- Powerful preinstalled 1.66 GHz Intel® Atom™ D510 CPU and motherboard ensures rigorous processing needs can be met

1.1.2 IBX-300BC Features

The IBX-300BC has the following features

- RoHS compliant design
- Fanless system
- Dual core 1.66 GHz Intel® Atom™ CPU
- Eight channels video capture input via BNC cable

- VGA display output resolution up to 2048 x 1536
- One GbE RJ-45 connectors supported
- One 2.5” SATA HDD supported
- Optional 802.11b/g wireless LAN module
- Wall mount supported

1.2 IBX-300BC Model Variation

There four models of the IBX-300BC series embedded system. Both models have a preinstalled 1.0 GB DDR2 memory module preinstalled. The model variations are listed in **Table 1-1** below.

Model	CPU	Video Capture	Wireless LAN
IBX-300BC	1.66 GHz Intel® Atom™ D510	Yes	No
IBX-300BCW	1.66 GHz Intel® Atom™ D510	Yes	Yes
IBX-300B	1.66 GHz Intel® Atom™ D510	No	No
IBX-300BW	1.66 GHz Intel® Atom™ D510	No	Yes

Table 1-1: Model Variation

1.3 Technical Specifications

The specifications for the Intel based embedded systems are listed below.

	IBX-300BC Series
CPU	1.66 GHz Intel® Atom™ D510 CPU with 1 MB L2 cache
System Chipset	Intel® ICH8M
System Memory	1.0 GB DDR2 SDRAM SO-DIMM preinstalled
BIOS	AMI BIOS (SPI Flash ROM)
Video Capture (IBX-300BC Model Only)	Eight video input channels via BNC cables Conexant CX25853 Multi-Channel Video Decoder Conexant CX25821 PCIe Media Bridge
Ethernet	One GbE (Intel® 82567V PHY via PCIe x1)

Display	VGA (2048 x 1536 @ 60 Hz)
USB	Four USB 2.0 ports supported
Serial Port	One RS-232/422/485 port
Audio	One line-out jack One line-in jack
Storage	Support one 2.5” SATA HDD
Wireless	802.11b/g wireless module (W model only)
Chassis Construction	Aluminum Alloy
Power Input	12 V DC input
Power Adapter	40 W power adapter with ERP and PSE certificates (12 V @ 3.33 A)
Power Mode	ATX (default) or AT (selected by jumper)
Operating Shock	Half-sine wave shock 3G; 11 ms; 3 shocks per axis
Operating Vibration	MIL-STD-810F 514.5C-1
Operating Temperature	IBX-300B: -10ºC ~ 50ºC with air flow* IBX-300BC: -10ºC ~ 40ºC with air flow* (*Ambient air speed per IEC-68-2-2 standard)
Net Weight (NW/GW)	1.0 g / 2.8 kg
Dimensions (W x D x H)	160 mm x 123.5 mm x 51.3 mm
Mounting	Desktop/Wall

Table 1-2: Technical Specifications

Chapter

2

Mechanical Description

2.1 Mechanical Overview

The IBX-300BC RoHS compliant, Intel® Atom™ fanless embedded system features industrial grade components that offer longer operating life, high shock/vibration resistance and endurance over a wide temperature range. The IBX-300BC combines these features in an aluminum enclosure designed for space critical applications that require low power consumption. Featuring one GbE, four USB, one RS-232/422/485 serial port, as well as audio, VGA, and video capture ports, the IBX-300BC offers system integrators and developers the best selection of robust and high performance surveillance system platforms. A 2.5" HDD bay inside the system supports one 2.5" SATA HDD.

2.2 Physical Dimensions

The dimensions of the IBX-300BC series are listed below and shown in **Figure 2-1**.

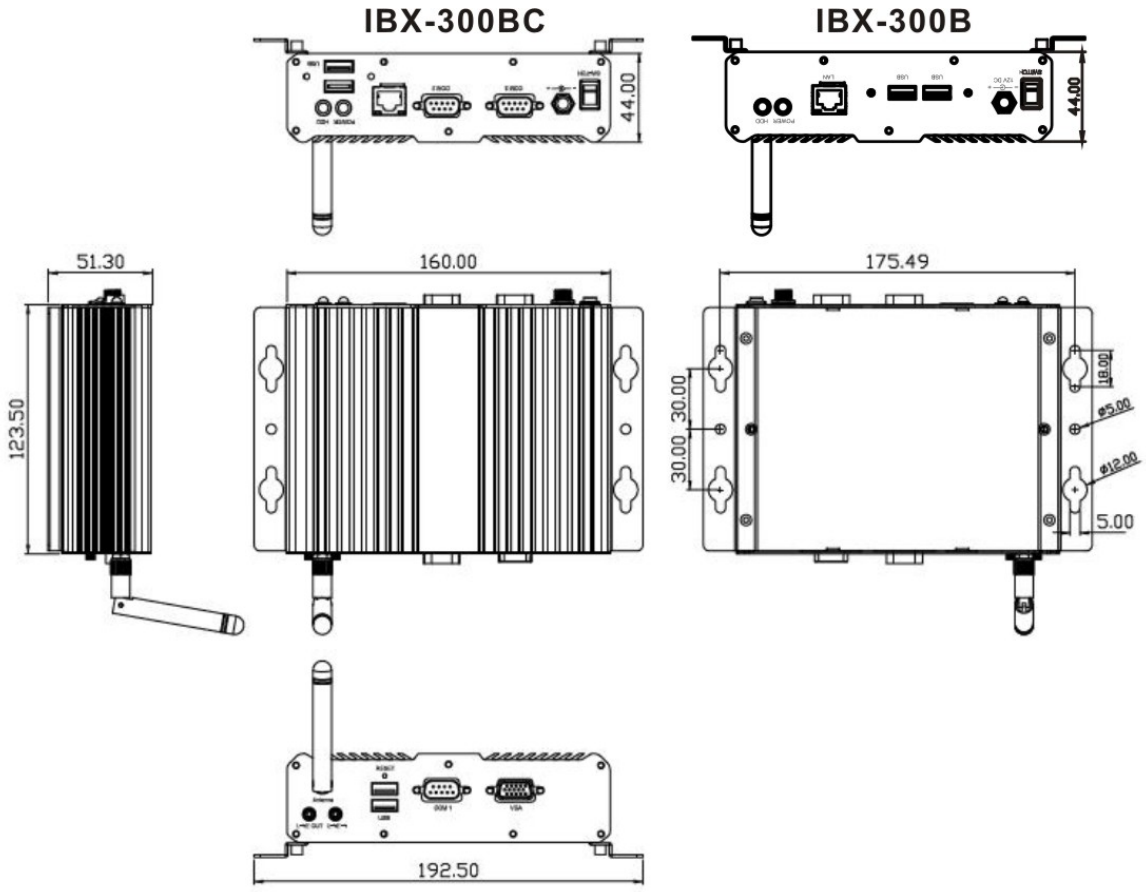


Figure 2-1: IBX-300BC Dimensions (mm)

2.3 External Overview

2.3.1 Front Panel

The IBX-300BC series front panel contains external I/O interface connectors, power connectors, status LEDs and switches. The front panel of the IBX-300BC and the IBX-300B is different. An overview of each model is listed below.

2.3.1.1 IBX-300BC Front Panel

An overview of the IBX-300BC front panel is shown in **Figure 2-2** below.

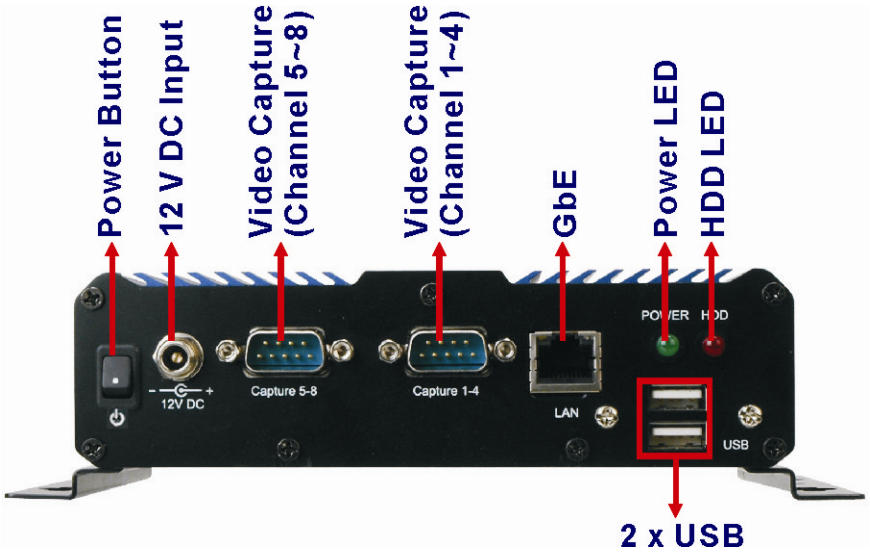


Figure 2-2: IBX-300BC Front Panel

The front panel I/O connectors are listed below:

- 1 x 12V DC inlet
- 2 x Video capture ports (support eight channels)
- 1 x RJ-45 GbE connectors
- 2 x USB 2.0 ports
- 1 x Power button

Status indicator LEDs on the front panel include:

- 1 x Power LED

- 1 x HDD LED

2.3.1.2 IBX-300B Front Panel

An overview of the IBX-300B front panel is shown in **Figure 2-3** below.

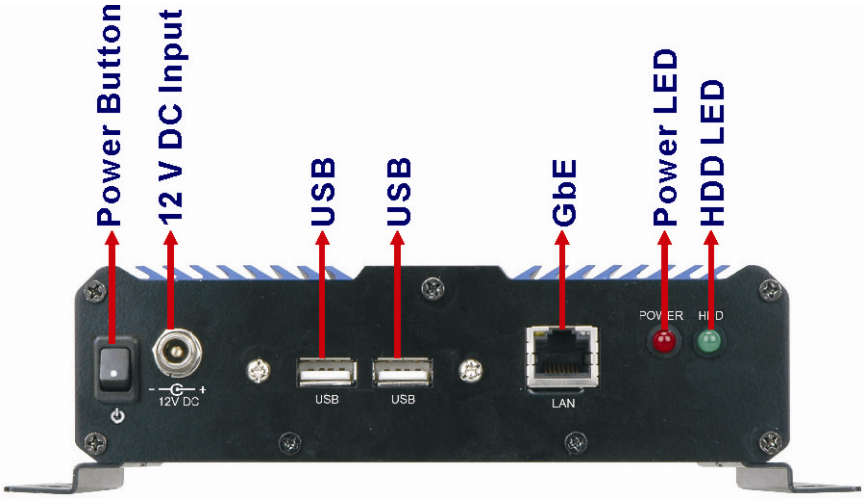


Figure 2-3: IBX-300B Front Panel

The front panel I/O connectors are listed below:

- 1 x 12V DC inlet
- 1 x RJ-45 GbE connectors
- 2 x USB 2.0 ports
- 1 x Power button

Status indicator LEDs on the front panel include:

- 1 x Power LED
- 1 x HDD LED

2.3.2 Rear Panel

The IBX-300BC series rear panel contains some external I/O interface connectors. An overview of the rear panel is shown in **Figure 2-4** below.

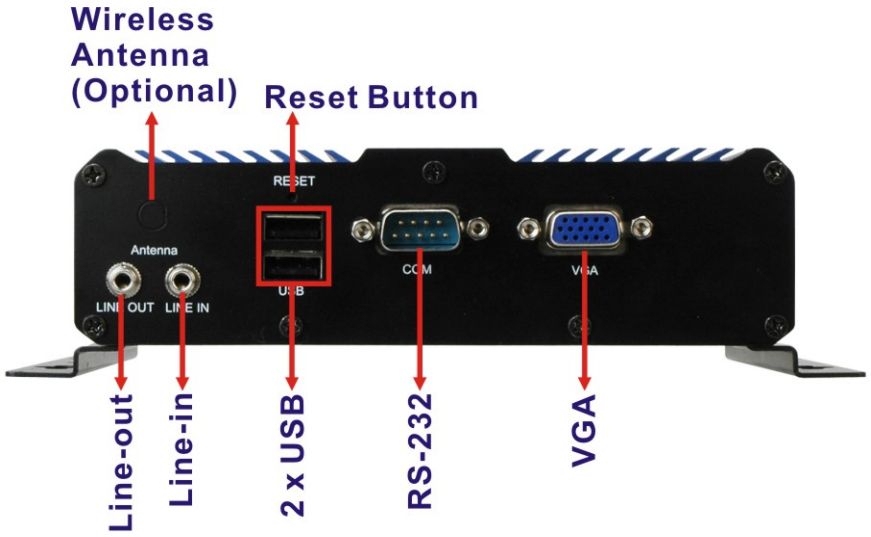


Figure 2-4: IBX-300BC Rear Panel

The rear panel I/O connectors are listed below:

- 1 x Line-in audio connector
- 1 x Line-out audio connector
- 1 x Wireless antenna connector (optional)
- 2 x USB 2.0 ports
- 1 x RS-232/422/485 serial port connector
- 1 x VGA connector
- 1 x Reset button

2.3.3 Bottom Surface

The bottom surface of the IBX-300BC provide access to internal system and contains holes for wall mounting.

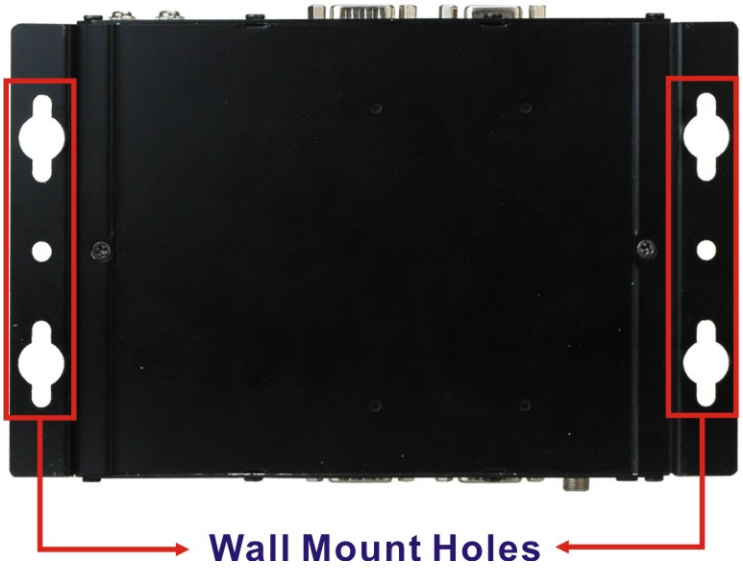


Figure 2-5: Bottom Surface

2.4 Internal Overview

The IBX-300BC internal components are listed below:

- 1 x IEI IBX-300MB-PV-D510 motherboard (preinstalled)
- 1 x 1.0 GB DDR2 SO-DIMM module (preinstalled)
- 1 x 802.11b/g wireless LAN module (optional)

All the components are accessed by removing the back cover.

Chapter

3

System Components

3.1 IBX-300BC Embedded System Motherboard

The IBX-300BC embedded system has an IBX-300MB-PV-D510 motherboard installed in the system. The following sections describe the relevant components and jumpers on the motherboard.

3.1.1 Intel® Atom™ D510 CPU

NOTE:

The IBX-300BC has a preinstalled 1.66 GHz Intel® Atom™ D510CPU on-board. If the CPU fails, the motherboard has to be replaced. Please contact the IEI reseller or vendor you purchased the IBX-300BC from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The IBX-300BC comes with an embedded 45 nm 1.66 GHz Intel® Atom™ processor D510. The processor has a 1.66 GHz 1 MB L2 cache. The low power processor has a maximum power of 13 W.

3.1.1.1 DDR2 Memory

There is one 200-pin DDR2 SO-DIMM socket on the motherboard preinstalled with one 1.0 GB DDR2 SO-DIMM. The socket supports DDR2 SO-DIMM with the following specifications:

- Maximum Memory supported 2 GB
- Support for DDR2 at 667 MHz and 800 MHz
- Max Memory bandwidth supported 6.4 GB/s

The SO-DIMM socket is shown in **Figure 3-1** below.

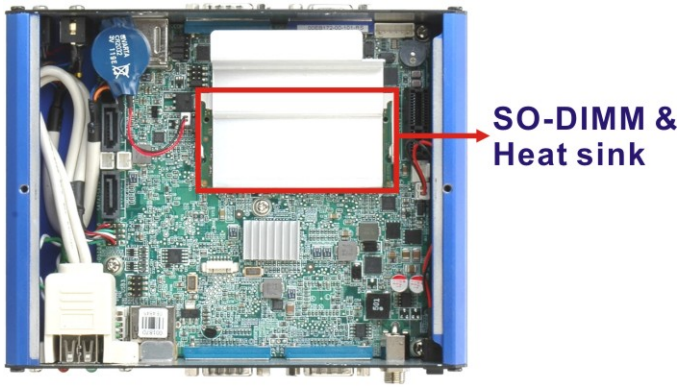


Figure 3-1: DDR2 SO-DIMM

3.1.1.2 Analog CRT Graphics

The analog CRT bus is integrated in the Intel® Atom™ D510 CPU and is interfaced to the external DB-15 female connector of the IBX-300BC. Some of the features of the CRT include:

- Analog Monitor Support up to 2048 x 1546
- Support for CRT Hot Plug

3.1.2 Intel® ICH8M Overview

The Intel® ICH8M chipset is connected to the Intel® Atom CPU through the chip-to-chip Direct Media Interface (DMI). Some of the features of the Intel® ICH8M are listed below.

- Complies with PCI Express Base Specification, Revision 1.1
- Integrated SATA host controller with DMA operations
- Supports the four USB 2.0 devices on the IBX-300BC
- Complies with System Management Bus (SMBus) Specification, Version 2.0
- Supports Intel® High Definition Audio
- Contains Low Pin Count (LPC) interface
- Supports Firmware Hub (FWH) interface
- Serial peripheral interface (SPI) support

3.1.2.1 Super I/O

The ICH8M LPC interface complies with the LPC 1.1 specifications. The LPC bus from the ICH8M is connected to the ITE IT8718F Super I/O chipset.

3.1.2.2 Video Capture

The Conexant CX25850 multi-channel video decoder and Conexant CX25821 PCIe media bridge are used on the motherboard to support eight channels video input.

3.1.2.3 PCIe GbE Ethernet

One PCIe lane of ICH8M is connected to the Intel® 82567V GbE PHY. The Intel® 82567V PHY is interface to the RJ-45 LAN connector on the front panel of the IBX-300BC.

3.1.2.4 SATA Controller

The integrated SATA controller on the ICH8M supports SATA drives with independent DMA operations. The IBX-300BC supports one SATA HDD bay with 3.0 Gb/s transfer speeds.

3.1.2.5 USB Controller

Up to four high-speed, full-speed or low-speed USB devices are supported by the ICH8M on the IBX-300BC. High-speed USB 2.0, with data transfers of up to 480MB/s, is enabled with the ICH8M integrated Enhanced Host Controller Interface (EHCI) compliant host controller. USB full-speed and low-speed signaling is supported by the ICH8M integrated Universal Host Controller Interface (UHCI) controllers.

3.2 External Peripheral Interface Connector Panel

The figure below shows the external peripheral interface connector (EPIC) panel. The EPIC panel consists of the following:

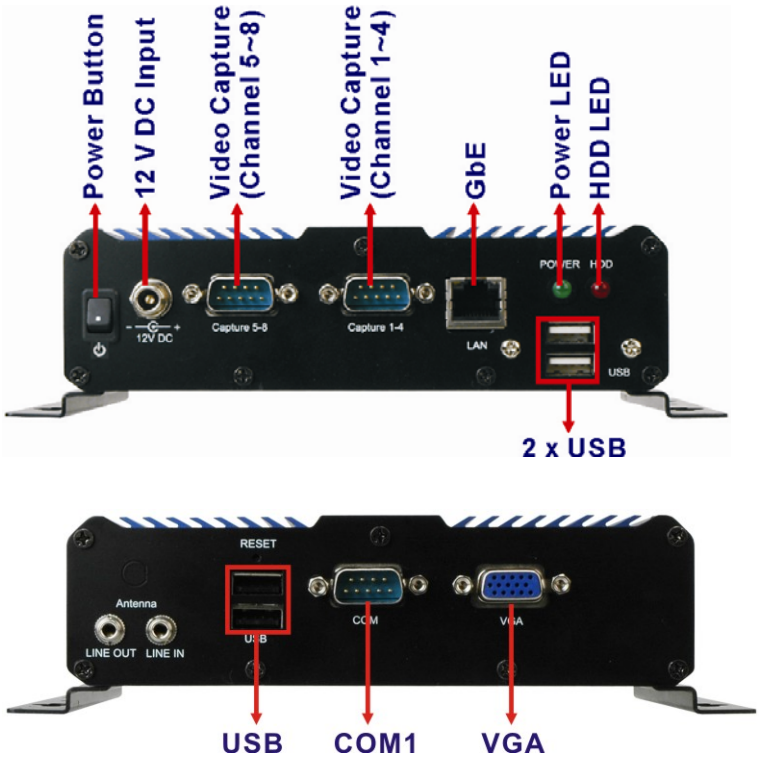


Figure 3-2: External Peripheral Interface Connector

3.2.1 LAN Connector

CN Label: **LAN**

CN Type: RJ-45

CN Location: See **Figure 3-2**

CN Pinouts: See **Table 3-1**

A 10/100/1000 Mb/s connection can be made to a Local Area Network.

Pin	Description	Pin	Description
1	LAN1_MDI0+	7	LAN1_MDI2+
2	LAN1_MDI0-	8	LAN1_MDI2-
3.	LAN1_MDI1+	9	LAN1_MDI3+
4.	LAN1_MDI1-	10	LAN1_MDI3-

Table 3-1: Ethernet Connector Pinouts

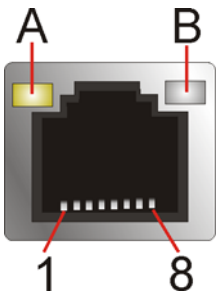


Figure 3-3: Ethernet Connector

LED	Description	LED	Description
A	yellow: linked blinking: data is being sent/received	B	off: 10 Mb/s green: 100 Mb/s orange: 1000 Mb/s

Table 3-2: Connector LEDs

3.2.2 Power Connector

CN Label: **J1**

CN Type: Power jack

CN Location: See **Figure 3-2**

CN Pinouts: See **Table 3-3**

Use the rear panel +12V DC jack to connect the IBX-300BC to a power source.

Pin	Description
1	+12V
2	GND
3	GND

Table 3-3: Serial Port Pinouts

3.2.3 Serial Port Connectors (COM1)

CN Label: **COM1**

CN Type: DB-9 connector

CN Location: See **Figure 3-2**

CN Pinouts: See **Table 3-4** and **Figure 3-4**

The serial port connects to a RS-232 serial communications device.

Pin	Description	Pin	Description
1	DCD / TXD485#	6	DSR
2	RXD / TXD485+	7	RTS
3	TXD / RXD485+	8	CTS
4	DTR / RXD485#	9	RI
5	GND		

Table 3-4: Serial Port Pinouts

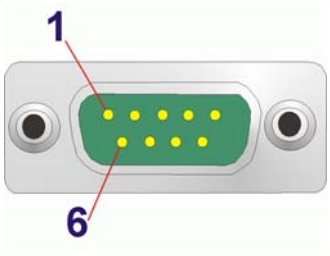


Figure 3-4: Serial Port Pinouts

3.2.4 USB Connector

CN Label: **USB_C1**

CN Type: USB port

CN Location: See **Figure 3-2**

CN Pinouts: See **Table 3-5**

The USB connector can be connected to a USB device.

Pin	Description	Pin	Description
1	USB_VCC	2	USB_VCC

Pin	Description	Pin	Description
3	DATA-	4	DATA-
5	DATA+	6	DATA+
7	GND	8	GND

Table 3-5: USB Port Pinouts

3.2.5 VGA Connector

CN Label: **VGA1**

CN Type: 15-pin Female

CN Location: See **Figure 3-2**

CN Pinouts: See **Figure 3-5** and **Table 3-6**

Connects to a monitor that accepts a standard VGA input.

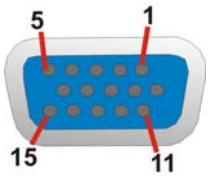


Figure 3-5: VGA Connector

Pin	Description	Pin	Description
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 3-6: VGA Connector Pinouts

3.2.6 Video Input Connector

CN Label: **CAP1, CAP2**

CN Type: DB-9 connector

CN Location: See **Figure 3-2**

CN Pinouts: See **Table 3-7** and **Table 3-8**

Two DB-9 connectors provide eight video input channels via BNC cables.

Pin	Description
1	VIN_1
2	VIN_2
3	VIN_3
4	VIN_4
5	GND
6	GND
7	GND
8	GND
9	GND

Table 3-7: Video Input Connector Pinouts (CAP1)

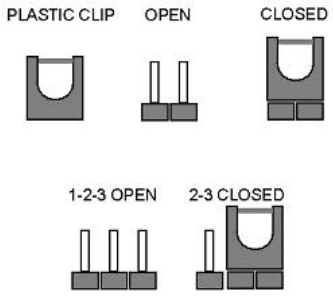
Pin	Description
1	VIN_5
2	VIN_6
3	VIN_7
4	VIN_8
5	GND
6	GND
7	GND
8	GND
9	GND

Table 3-8: Video Input Connector Pinouts (CAP2)

3.3 Jumper Settings

NOTE:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.



The following jumpers can be found on the motherboard installed in the IBX-300BC. Before the IBX-300BC is installed, the jumpers must be set in accordance with the desired configuration. The jumpers on the IBX-300BC motherboard are listed in **Table 3-9**.

Description	Label	Type
AT/ATX mode select	J_AUTOPWR1	2-pin header
Clear CMOS	J_COMS1	3-pin header
COM1 RS-232/422/485 select	JP2	8-pin header
	JP3	6-pin header
	JP4	6-pin header

Table 3-9: Jumpers

3.3.1 Access the Jumpers

To access the jumpers, remove the back panel. To remove the back panel, please refer to **Section 4.2.2**.

3.3.2 AT Power Select Jumper Settings

Jumper Label: **J_AUTOPWR1**

Jumper Type: 2-pin header

Jumper Settings: See **Table 3-10**

Jumper Location: See **Figure 3-6**

The AT Power Select jumper specifies the systems power mode as AT or ATX. AT Power Select jumper settings are shown in **Table 3-10**.

Setting	Description	
Short	Use ATX power	Default
Open	Use AT power	

Table 3-10: AT Power Select Jumper Settings

The location of the AT Power Select jumper is shown in **Figure 3-6** below.

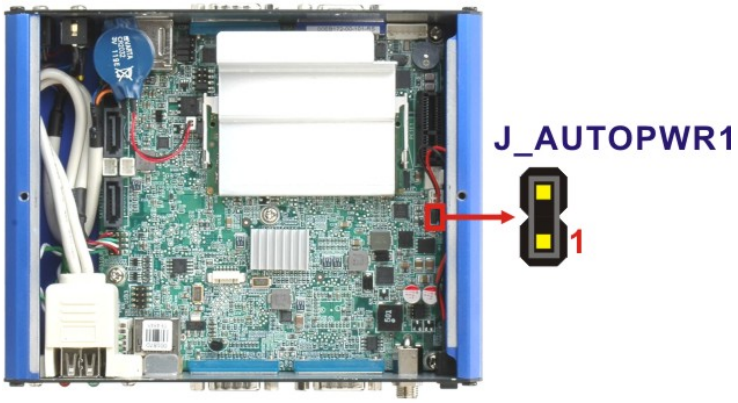


Figure 3-6: AT Power Select Jumper Location

3.3.3 Clear CMOS Jumper

Jumper Label: **J_CMOS1**

Jumper Type: 2-pin header

Jumper Settings: See **Table 3-11**

Jumper Location: See **Figure 3-7**

If the IBX-300BC fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close the pins for a few seconds then remove the jumper clip.

If the "CMOS Settings Wrong" message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu.

The clear CMOS jumper settings are shown in **Table 3-11**.

Clear CMOS	Description	
Short 1 - 2	Keep CMOS Setup	Default
Short 2 - 3	Clear CMOS Setup	

Table 3-11: Clear CMOS Jumper Settings

The location of the clear CMOS jumper is shown in **Figure 3-7** below.

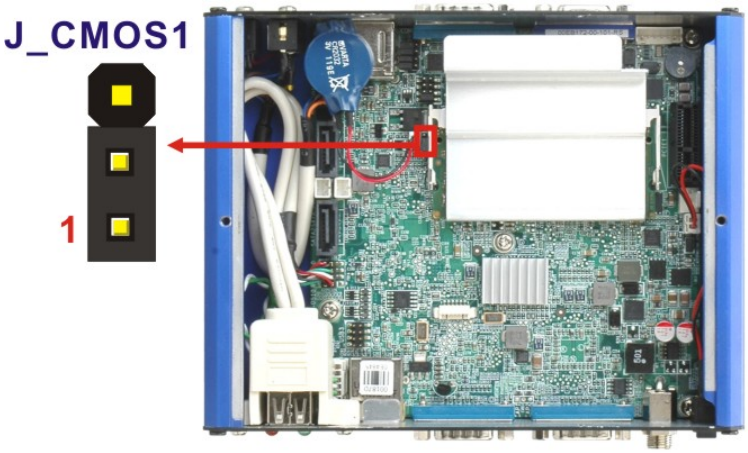


Figure 3-7: Clear CMOS Jumper

3.3.4 COM1 Mode Select Jumper

Jumper Label:	**JP2, JP3, JP4**
Jumper Type:	Pin header
Jumper Settings:	See **Table 3-12, Table 3-5, Table 3-6**
Jumper Location:	See **Figure 3-8**

The COM1 Mode Select jumper sets the serial communications port COM1 as RS-232, RS-422 or RS-485. The COM1 Mode Select jumper settings are shown in **Table 3-12**.

JP2	Description	
Short 1-2	RS-232	Default
Short 3-4	RS-422	
Short 5-6	RS-485	
Short 5-6, 7-8	RS-485 with RTS control	

Table 3-12: COM1 Mode Jumper Settings (JP2)

JP3	Description	
Short 1-3, 2-4	RS-232	Default
Short 3-5, 4-6	RS-422/485	

Table 3-13: COM1 Mode Select Jumper Settings (JP3)

JP4	Description	
Short 1-3, 2-4	RS-232	Default
Short 3-5, 4-6	RS-422/485	

Table 3-14: COM1 Mode Select Jumper Settings (JP4)

The COM1 Mode Select jumper locations are shown in **Figure 3-8**.

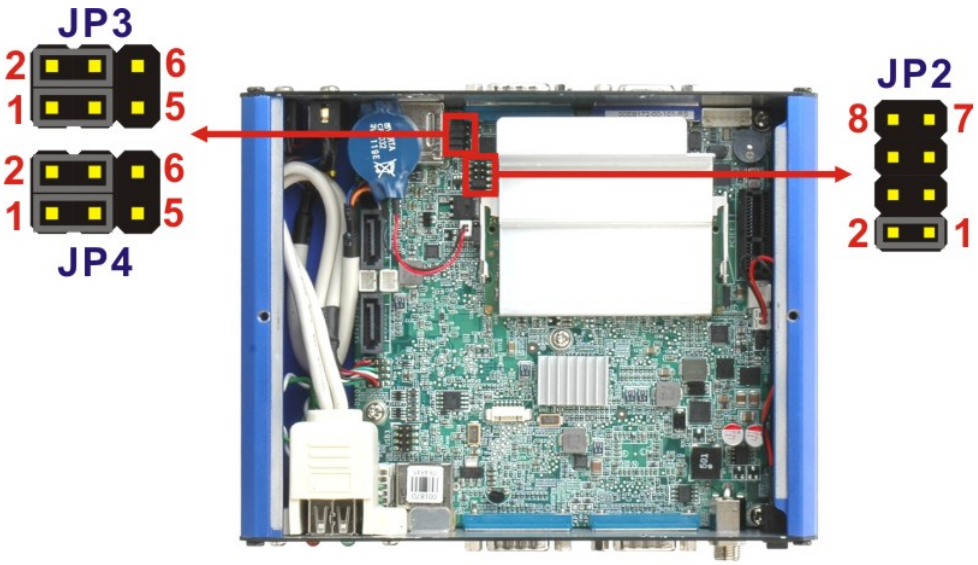


Figure 3-8: COM1 Mode Select Jumper Locations

3.3.4.1 COM1 RS-422 and RS-485 Pinouts

The pinouts for RS-422 and RS-485 operation of external serial port COM 1 are detailed below.

COM 1	RS-422 Description
Pin 1	TX-
Pin 2	TX+
Pin 3	RX+
Pin 4	RX-

Table 3-15: RS-422 Pinouts

COM 1	RS-485 Description
Pin 1	Data-
Pin 2	Data+

Table 3-16: RS-485 Pinouts

Chapter

4

Installation

4.1 Anti-static Precautions

WARNING:

If the following anti-static precautions are not followed, a user may be injured and the system irreparably damaged.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the motherboard. (Dry climates are especially susceptible to ESD.) It is therefore critical that whenever the IBX-300BC is opened and any electrical component 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 the board.
- ***Self-grounding***: Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.

4.2 Installation Procedure

To properly install the IBX-300BC, the following steps must be followed. Detailed descriptions of these instructions are listed in the sections that follow.

Step 1: Unpacking

Step 2: Configure the jumper settings.

Step 3: Install HDD.

Step 4: Mount the IBX-300BC

Step 5: Connect the external peripheral connectors

Step 6: Power the system up

4.2.1 Unpacking

After the IBX-300BC is received make sure the following components are included in the package. If any of these components are missing, please contact the IBX-300BC reseller or vendor where it was purchased or contact an IEI sales representative immediately.

Quantity	Item	Image
1	IBX-300BC embedded system	
1	Power adapter (40 W, 12 V @ 3.33 A) (with ERP and PSE certificates)	
1	Power cord	
1	Screw set	
1	Driver and manual CD	
2	Quad channel BNC cable (C models only)	
1	Wireless antenna (W models only)	

Table 4-1: Package List Contents

4.2.2 Bottom Cover Removal

Before the jumper settings can be configured, the bottom cover must be removed. To remove the bottom cover, please follow the steps below:

Step 1: Remove the bottom cover retention screws. The bottom cover is secured to the system with six retention screws, two in the front panel (**Figure 4-1**), two in the rear panel and two in the bottom panel (**Figure 4-2**). All six screws must be removed.

Figure 4-1: Bottom Cover Retention Screws (Front Panel)

Figure 4-2: Bottom Cover Retention Screws (Rear Panel)

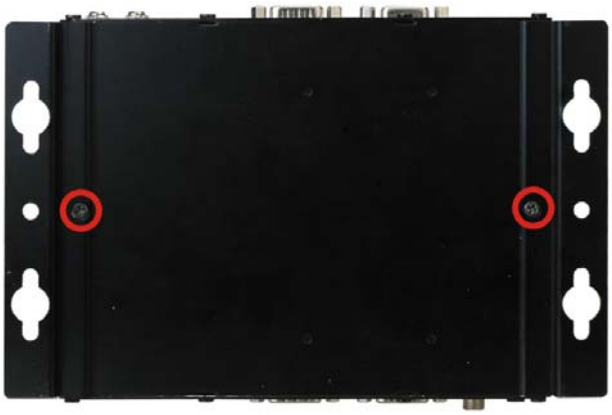


Figure 4-3: Bottom Cover Retention Screws (Bottom Panel)

Step 2: Gently remove the bottom cover from the IBX-300BC.

4.2.3 Configure the Jumper Settings

To configure the jumper settings, please follow the steps below.

Step 1: Remove the bottom cover. See **Section 4.2.2**.

Step 2: Locate the jumper settings on the embedded motherboard. See **Section 3.3**.

Step 3: Make the jumper settings in accordance with the settings described and defined in **Section 3.3**.

4.2.4 Installing HDD

The IBX-300BC supports one 2.5” SATA HDD. To install a HDD to the IBX-300BC, please follow the steps below.

Step 1: Remove the bottom cover. See **Section 4.2.2.**

Step 2: Locate the HDD bracket. The HDD bracket is preinstalled inside the bottom surface.

Step 3: Slide the HDD into the HDD bracket and connect the HDD with the SATA cable.

Step 4: Secure the HDD with four retention screws.

Figure 4-4: HDD Installation

Step 5: Reinstall the bottom panel with the four previously removed retention screws.

4.2.5 Mounting the System

To mount the embedded system onto a wall, please follow the steps below.

Step 1: Select the location on the wall for mounting the IBX-300BC.

Step 2: Carefully mark the locations of the four mounting screw holes (**Figure 4-5**) on the wall.

Figure 4-5: Mounting Screw Holes

Step 3: Drill four pilot holes at the marked locations on the wall for the bracket retention screws.

Step 4: Align the wall-mounting screw holes with the pilot holes.

Step 5: Secure the IBX-300BC to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 4-6**).

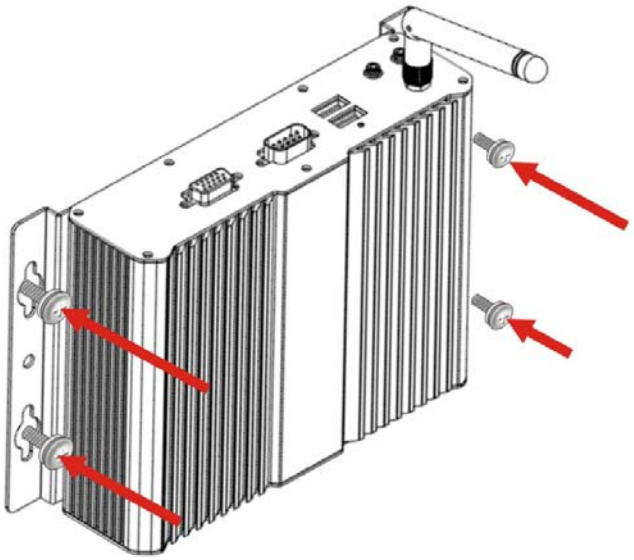


Figure 4-6: Wall-mounting Bracket

4.2.6 Cable Connections

Once the system has been mounted on the wall, the following connectors can be connected to the system.

- Video input connectors
- VGA cable connector
- Serial port connector
- RJ-45 connector
- Audio devices
- USB devices can be connected to the system.

The cable connection locations are shown in **Figure 2-2** and **Figure 2-4.**

4.3 Power-On Procedure

4.3.1 Installation Checklist

WARNING:

Make sure a power supply with the correct input voltage is being fed into the system. Incorrect voltages applied to the system may cause damage to the internal electronic components and may also cause injury to the user.

To power on the embedded system please make sure of the following:

- The memory module is installed
- The HDD is installed
- The bottom cover is installed
- All peripheral devices (VGA monitor, serial communications devices etc.) are connected
- The power cables are plugged in
- The system is securely mounted

4.3.2 Power-on Procedure

To power-on the IBX-300BC please follow the steps below:

Step 1: Push the power button.

Step 2: Once turned on, the green power LED should be turned on. See **Figure 4-7**.

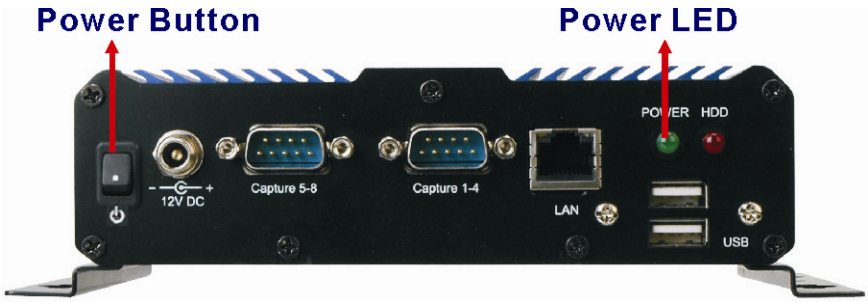


Figure 4-7: Power Button and Power LED

Chapter

5

AMI BIOS Setup

5.1 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.

5.1.1 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 **DELETE** key as soon as the system is turned on or
2. Press the **DELETE** key when the "**Press Del to enter SETUP**" message appears on the screen.

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

5.1.2 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 16 colors. F2 to select color forward.
F10 key	Save all the CMOS changes, only for Main Menu

Table 5-1: BIOS Navigation Keys

5.1.3 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.

5.1.4 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**.

5.1.5 BIOS Menu Bar

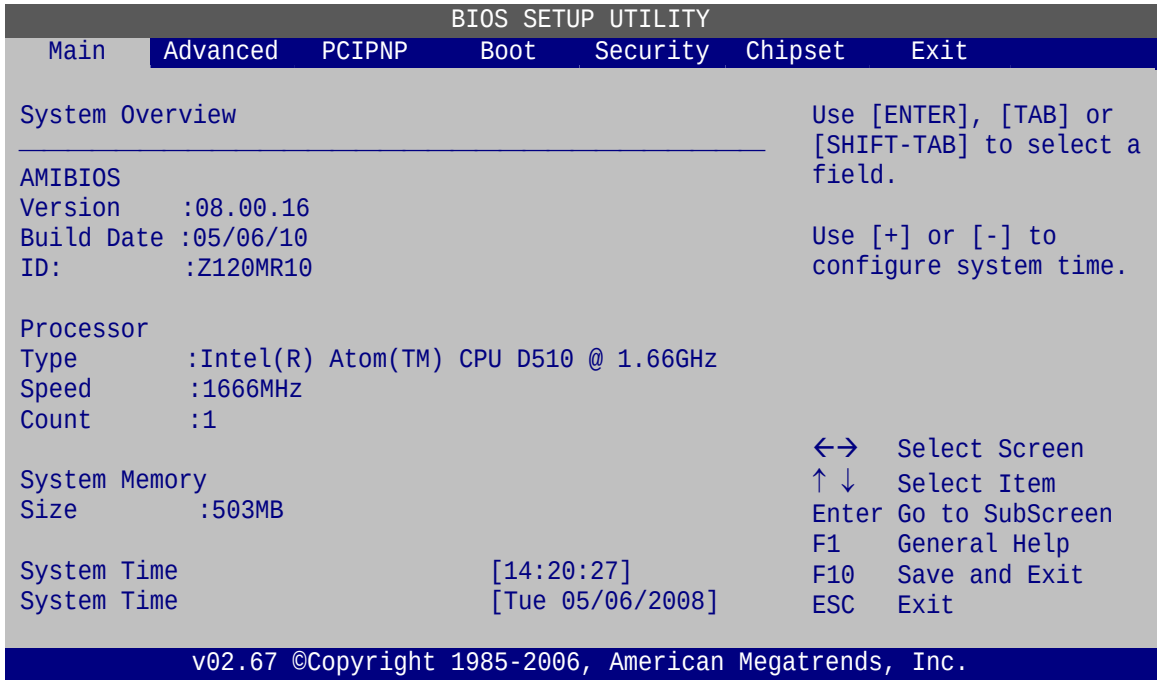
The **menu bar** on top of the BIOS screen has the following main items:

- 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.

5.2 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

➔ 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.

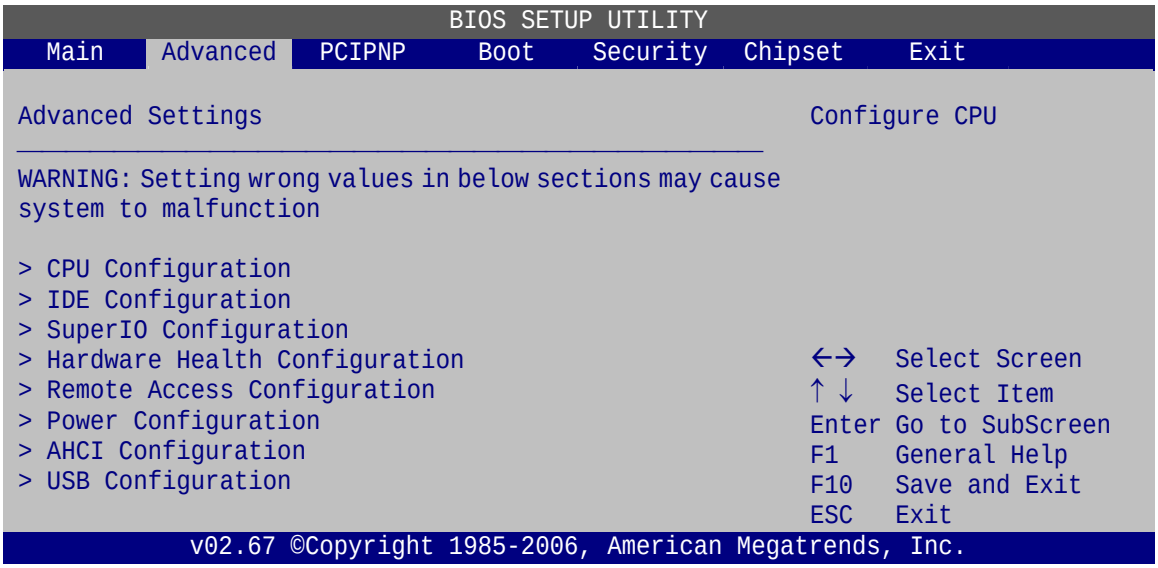
5.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

WARNING!

Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

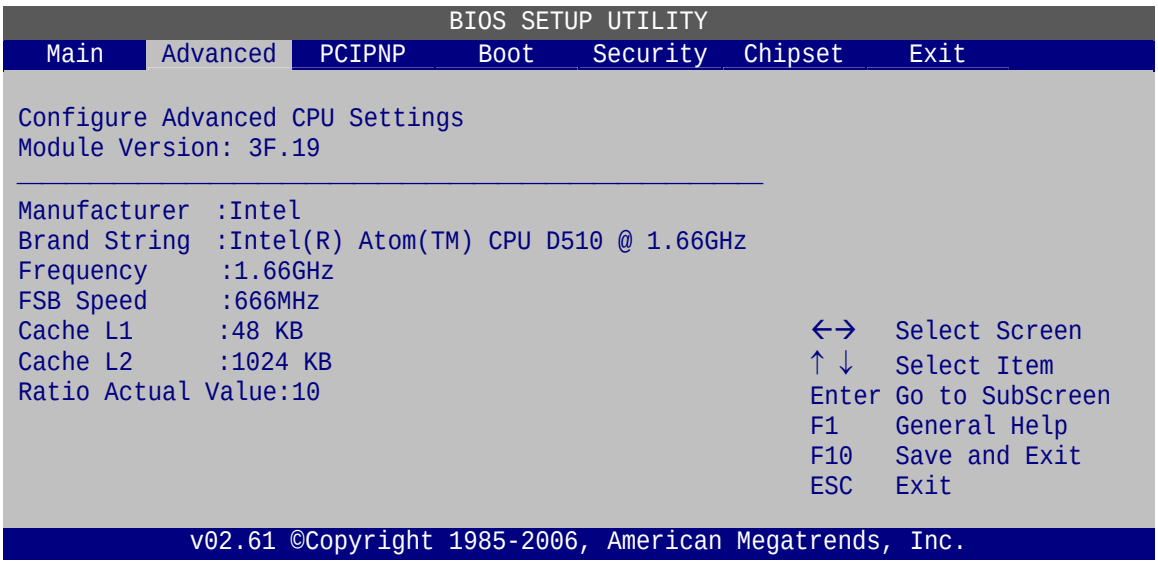
- CPU Configuration (see **Section 5.3.1**)
- IDE Configuration (see **Section 5.3.2**)
- Super IO Configuration (see **Section 5.3.3**)
- Hardware Health Configuration (see **Section 5.3.4**)
- Remote Access Configuration (see **Section 5.3.5**)
- Power Configuration (see **Section 5.3.6**)
- AHCI Configuration (see **Section 5.3.7**)
- USB Configuration (see **Section 5.3.8**)



BIOS Menu 2: Advanced

5.3.1 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 (**BIOS Menu 3**) 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

5.3.2 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 SETUP UTILITY
  Main    Advanced   PCIPNP    Boot    Security   Chipset    Exit

IDE Configuration                                  DISABLED: disable the
_____________________________________________      integrated IDE
ATA/IDE Configuration          [Enhanced]          controller.
  Configure SATA as            [IDE]               PRIMARY: enables only
                                                   the Primary IDE
> Primary IDE Master           : [Not Detected]    controller
> Secondary IDE Master         : [Not Detected]    SECONDARY: enables only
                                                   the Secondary IDE
                                                   controller.
                                                   BOTH: enables both IDE
                                                   controllers

                                                   ←→   Select Screen
                                                   ↑ ↓  Select Item
                                                   Enter Go to SubScreen
                                                   F1   General Help
                                                   F10  Save and Exit
                                                   ESC  Exit
          v02.67 ©Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 4: IDE Configuration

➔ **ATA/IDE Configurations [Enhanced]**

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

➔ **Disabled** Disables the on-board ATA/IDE controller.

➔ **Compatible** Configures the on-board ATA/IDE controller to be in compatible mode. In this mode, a SATA channel will replace one of the IDE channels. This mode supports up to 4 storage devices.

➔ **Enhanced** **DEFAULT** Configures the on-board ATA/IDE controller to be in Enhanced mode. In this mode, IDE channels and SATA channels are separated. This mode supports up to 6 storage devices. Some legacy OS do not support this mode.

➔ **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.

➔ **AHCI** Configures SATA devices as AHCI device.

➔ **IDE Master and IDE Slave**

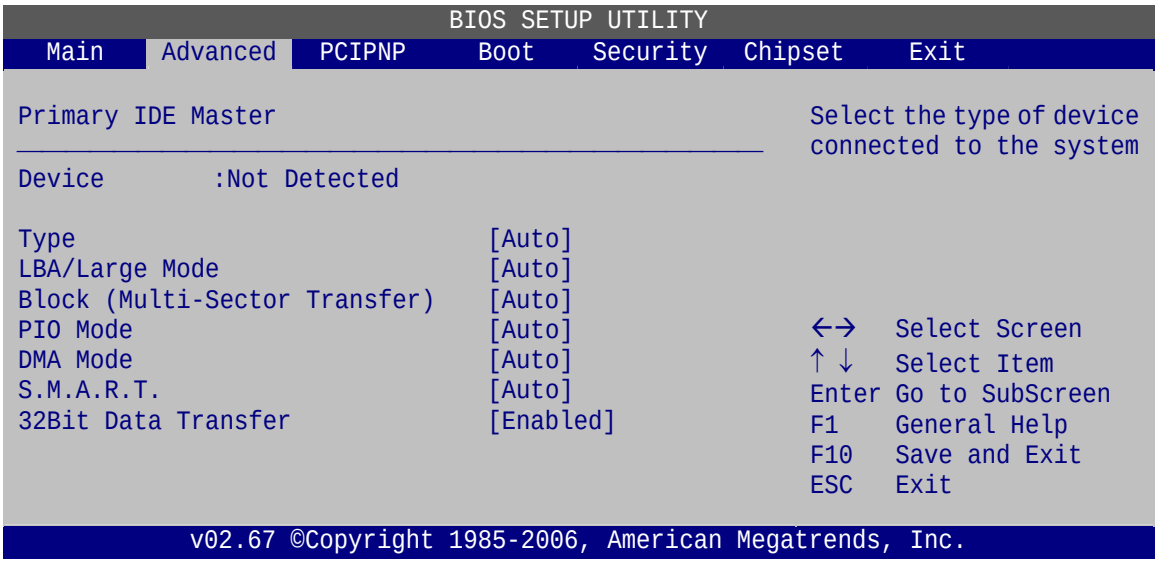
When entering setup, BIOS auto detects the presence of IDE devices. BIOS displays the status of the auto detected IDE devices. The following IDE devices are detected and are shown in the **IDE Configuration** menu:

- Primary IDE Master
- Secondary IDE Master

The **IDE Configuration** menu (**BIOS Menu 4**) allows changes to the configurations for the IDE devices installed in the system. If an IDE device is detected, and one of the above listed four BIOS configuration options are selected, the IDE configuration options shown in **Section 5.3.2.1** appear.

5.3.2.1 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 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.

➔ **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]**

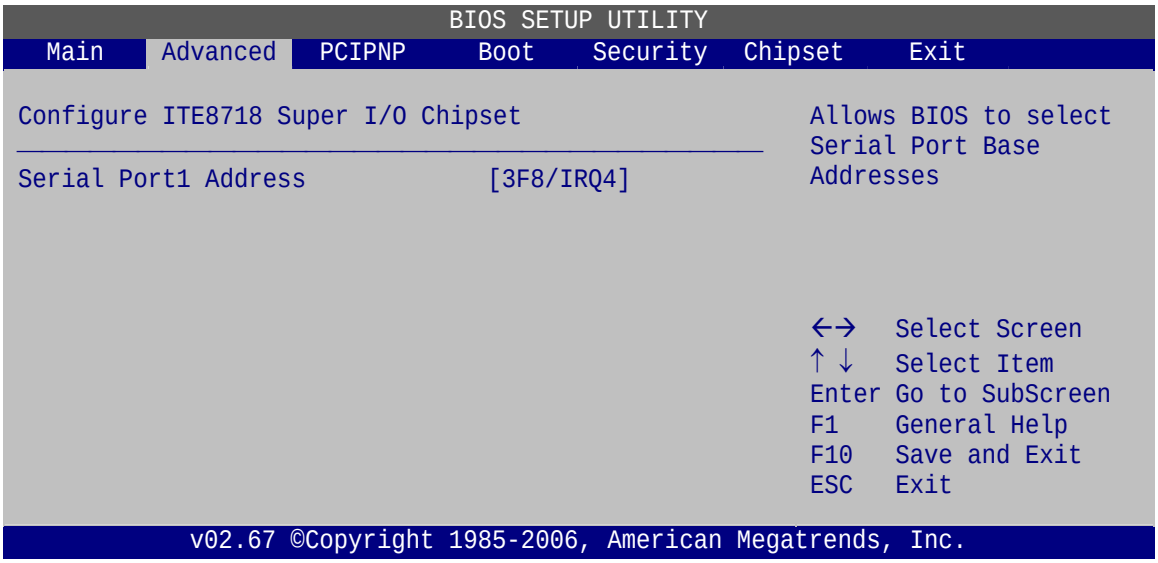
Use the **32Bit Data Transfer** BIOS option to enables or disable 32-bit data transfers.

➔ **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.

5.3.3 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 6**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.



BIOS Menu 6: Super IO Configuration

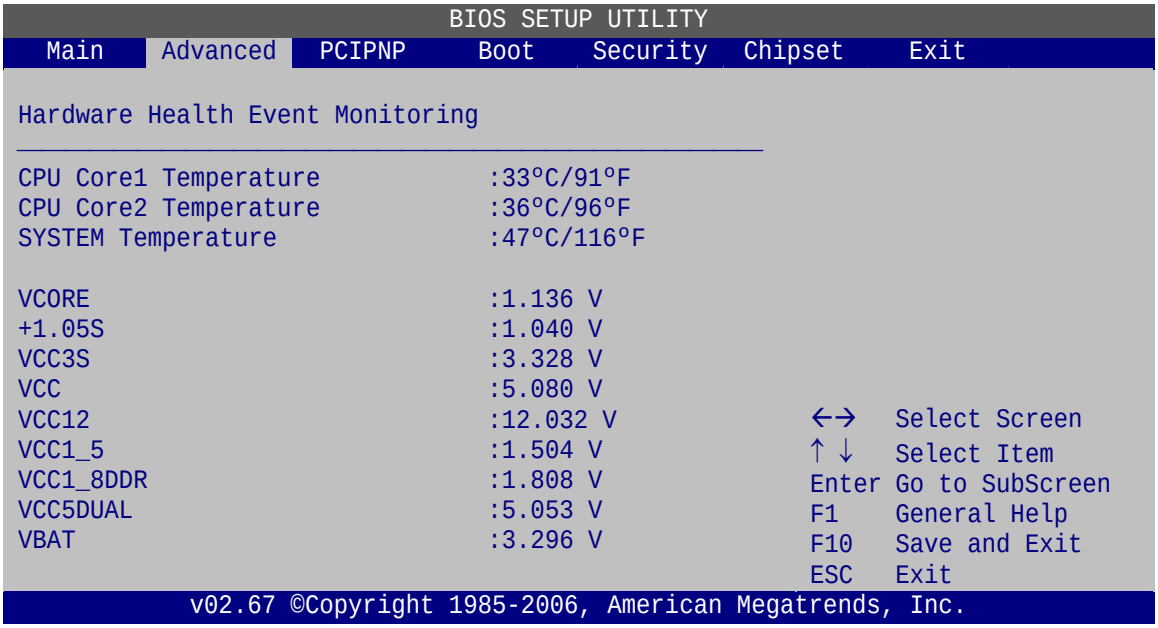
➔ **Serial Port1 Address [3F8/IRQ4]**

Use the **Serial Port1 Address** option to select the Serial Port 1 base address.

➔ **Disabled**		No base address is assigned to Serial Port 1
➔ **3F8/IRQ4**	**DEFAULT**	Serial Port 1 I/O port address is 3F8 and the interrupt address is IRQ4
➔ **2F8/IRQ3**		Serial Port 1 I/O port address is 2F8 and the interrupt address is IRQ3
➔ **3E8/IRQ4**		Serial Port 1 I/O port address is 3E8 and the interrupt address is IRQ4
➔ **2E8/IRQ3**		Serial Port 1 I/O port address is 2E8 and the interrupt address is IRQ3

5.3.4 Hardware Health Configuration

The **Hardware Health Configuration** menu (**BIOS Menu 7**) shows the operating temperature, fan speeds and system voltages.



BIOS Menu 7: Hardware Health Configuration

➔ **Hardware Health Monitoring**

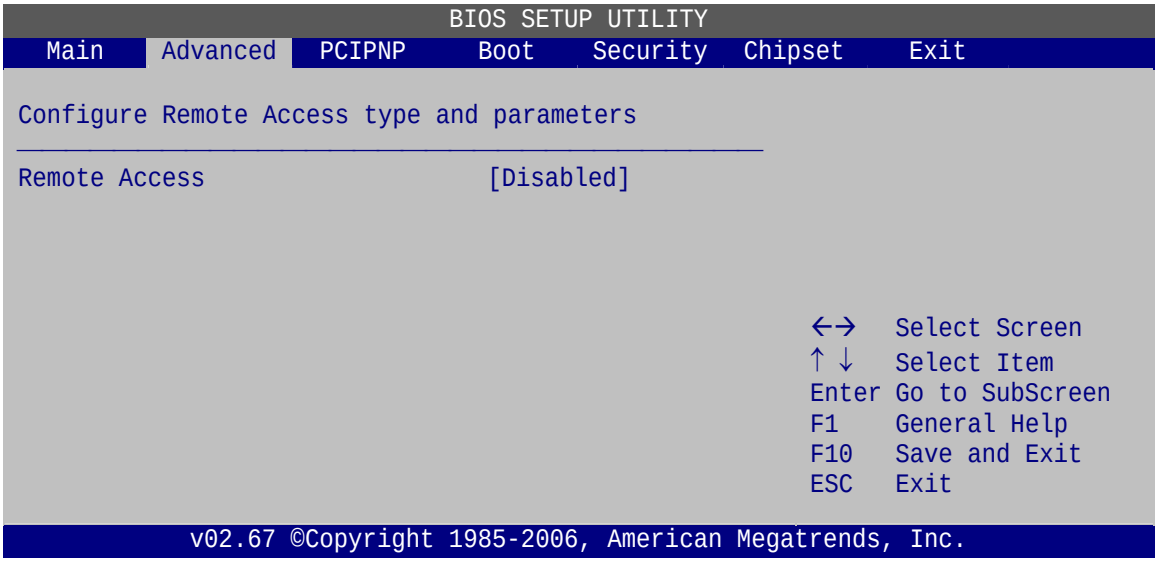
The following system parameters and values are shown. The system parameters that are monitored are:

- System Temperatures:
  - CPU Core1 Temperature
  - CPU Core2 Temperature
  - System Temperature
- Voltages:
  - VCORE
  - +1.05S
  - VCC3S
  - VCC
  - VCC12
  - VCC1_5

- VCC1_8DDR
- VCC5DUAL
- VBAT

5.3.5 Remote Access Configuration

Use the **Remote Access Configuration** menu (**BIOS Menu 8**) to configure remote access parameters. The **Remote Access Configuration** is an AMIBIOS feature and allows a remote host running a terminal program to display and configure the BIOS settings.



BIOS Menu 8: Remote Access Configuration

➔ **Remote Access [Disabled]**

Use the **Remote Access** option to enable or disable access to the remote functionalities of the system.

➔ **Disabled** **DEFAULT** Remote access is disabled.

➔ **Enabled** Remote access configuration options shown below appear:

- Serial Port Number
- Serial Port Mode
- Redirection after BIOS POST
- Terminal Type

These configuration options are discussed below.

➔ **Serial Port Number [COM1]**

Use the **Serial Port Number** option allows to select the serial port used for remote access.

➔ **COM1** **DEFAULT** System is remotely accessed through COM1

NOTE: Make sure the selected COM port is enabled through the Super I/O configuration menu.

➔ **Base Address, IRQ [3F8h, 4]**

The **Base Address, IRQ** option cannot be configured and only shows the interrupt address of the serial port listed above.

➔ **Serial Port Mode [115200 8,n,1]**

Use the **Serial Port Mode** option to select baud rate through which the console redirection is made. The following configuration options are available

- 115200 8,n,1 **DEFAULT**
- 57600 8,n,1
- 38400 8,n,1
- 19200 8,n,1
- 09600 8,n,1

NOTE:

Identical baud rate setting musts be set on the host (a management computer running a terminal software) and the slave

➔ **Redirection After BIOS POST [Always]**

Use the **Redirection After BIOS POST** option to specify when console redirection should occur.

➔ **Disabled**		The console is not redirected after POST
➔ **Boot Loader**		Redirection is active during POST and during Boot Loader
➔ **Always**	**DEFAULT**	Redirection is always active (Some OSes may not work if set to Always)

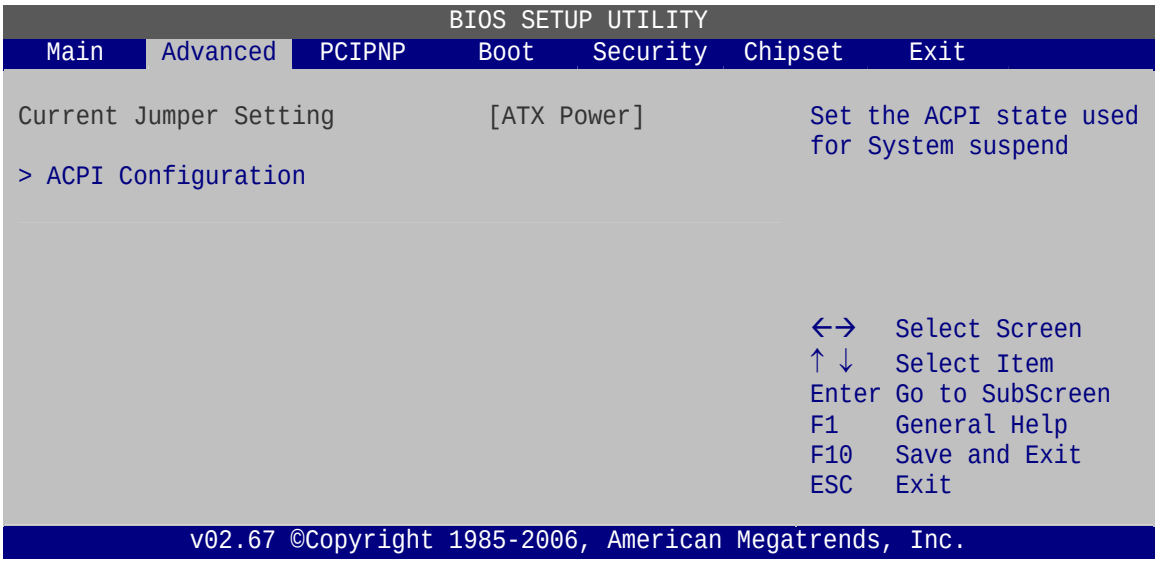
➔ **Terminal Type [ANSI]**

Use the **Terminal Type** BIOS option to specify the remote terminal type.

➔ **ANSI**	**DEFAULT**	The target terminal type is ANSI
➔ **VT100**		The target terminal type is VT100
➔ **VT-UTF8**		The target terminal type is VT-UTF8

5.3.6 Power Configuration

The **Power Configuration** menu (**BIOS Menu 9**) configures the Advanced Configuration and Power Interface (ACPI) options.



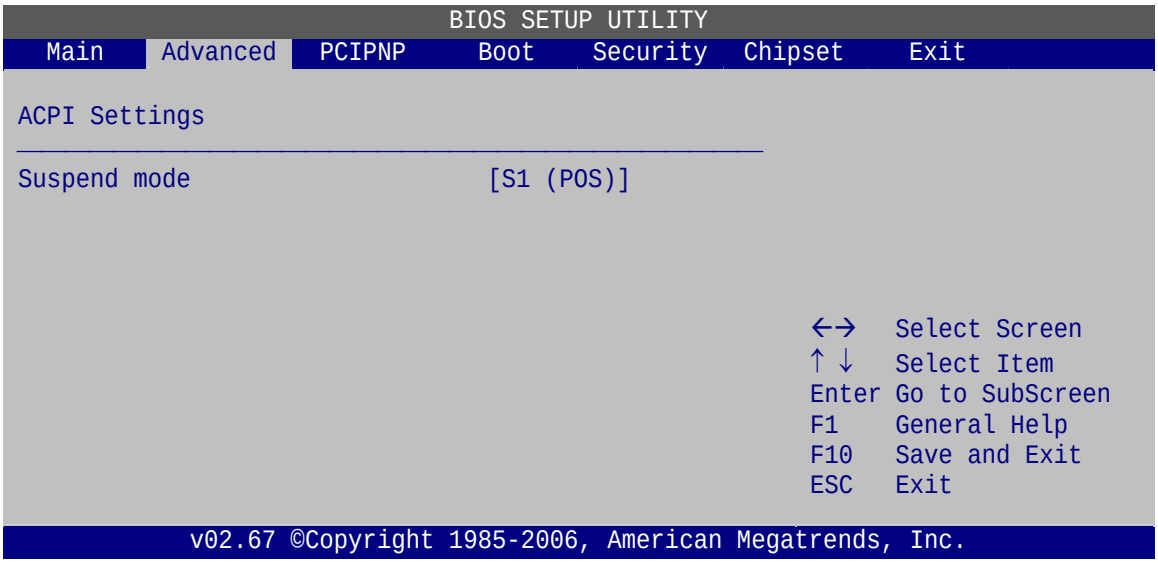
BIOS Menu 9: Power Configuration

➔ **Current Jumper Setting [ATX Power]**

The **Current Jumper Setting** BIOS option shows the current power mode setting of the system.

5.3.6.1 ACPI Configuration

Use the **ACPI Configuration** menu (**BIOS Menu 10**) to select the ACPI state when the system is suspended.



BIOS Menu 10: ACPI Configuration

➔ **Suspend Mode [S1(POS)]**

Use the **Suspend Mode** option to specify the sleep state the system enters when it is not being used.

➔ **S1 (POS)** **DEFAULT** The system enters S1 (POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

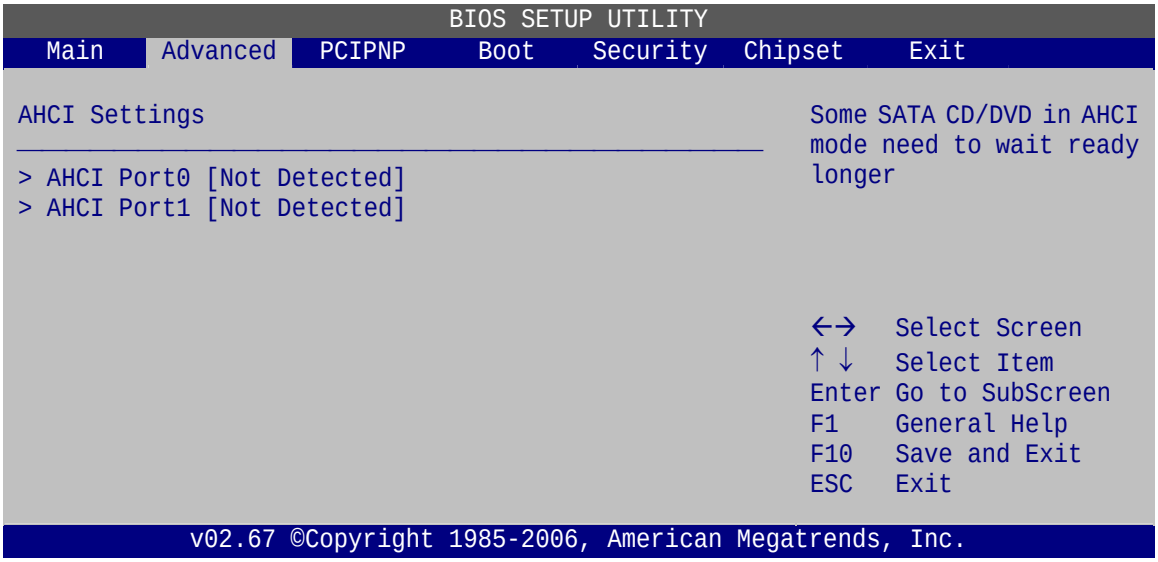
➔ **S3 (STR)** The system enters S3 (STR) state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

5.3.7 AHCI Configuration

NOTE:

Advanced Host Controller Interface (AHCI) is a new programming interface for SATA host controllers. AHCI systems do not have master/slave designation for SATA devices, each device is treated as a master, and hardware-assisted native command queuing.

Use the **AHCI Settings** menu (**BIOS Menu 11**) to report on the auto-detection of devices connected to the onboard SATA drive connectors.



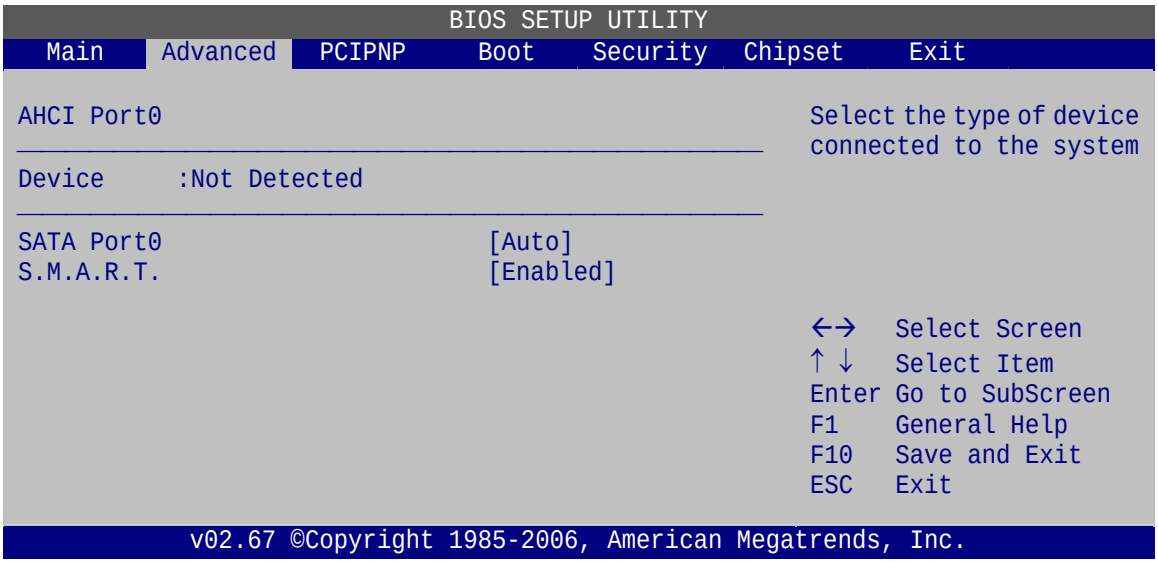
BIOS Menu 11: AHCI Configuration

➔ **AHCI Port n [Not Detected]**

Use the **AHCI Port n** BIOS option to check what AHCI (Advanced Host Controller Interface) devices are detected to a specified SATA drive connector. If a device is detected, selecting the BIOS option, e.g. "**AHCI Port 3**" opens a new window.

5.3.7.1 AHCI Port n

Use the **AHCI Port n** configuration menu (**BIOS Menu 12**) to configure the drive connected to SATA connector n.



BIOS Menu 12: AHCI Port n Configuration Menu

➔ **SATA Port n [Auto]**

Use the **SATA Port n** option to enable the system to auto-detect the type of drive connected to SATA drive connector n.

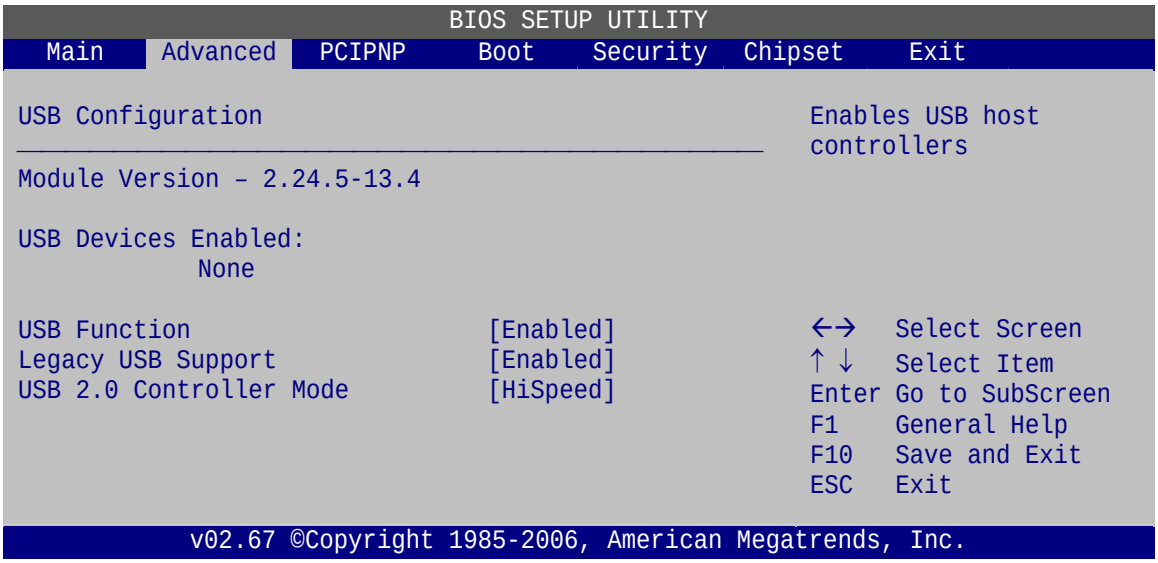
➔ **S.M.A.R.T [Enabled]**

Use the **S.M.A.R.T** option to enable S.M.A.R.T (Self-Monitoring, Analysis, and Reporting Technology) on the drive connected to SATA drive connector n.

➔ **Disabled**		S.M.A.R.T is disabled on the drive connected to SATA drive connector n on the system
➔ **Enabled**	**DEFAULT**	S.M.A.R.T is enabled on the drive connected to SATA drive connector n on the system

5.3.8 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 13**) to read USB configuration information and configure the USB settings.



BIOS Menu 13: 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

➔ **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.

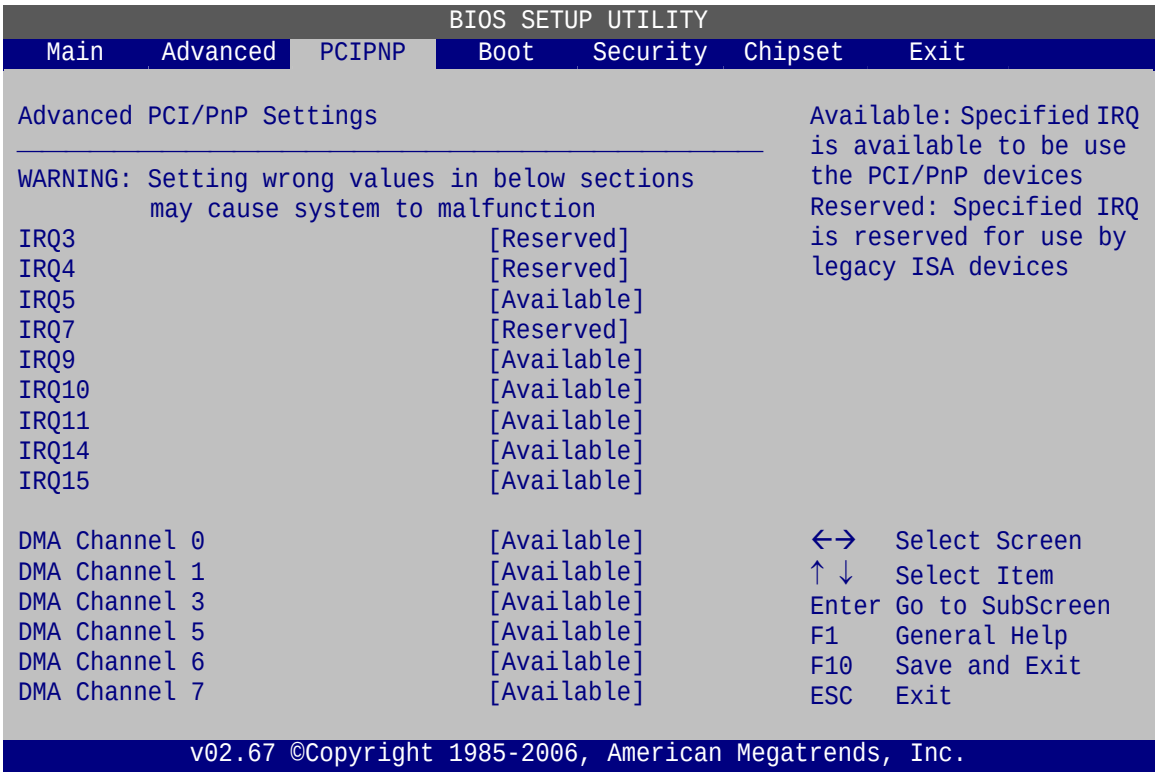
➔ **FullSpeed**		The controller is capable of operating at 12 Mb/s
➔ **HiSpeed**	**DEFAULT**	The controller is capable of operating at 480 Mb/s

5.4 PCI/PnP

Use the **PCI/PnP** menu (**BIOS Menu 14**) 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 14: 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

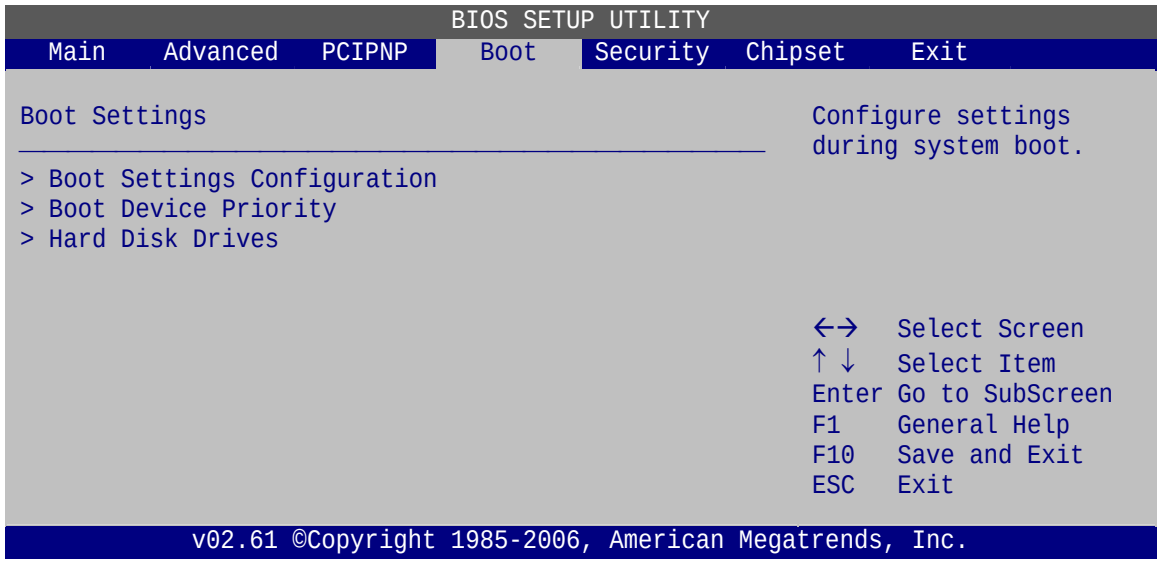
➔ **Reserved Memory Size [Disabled]**

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

5.5 Boot

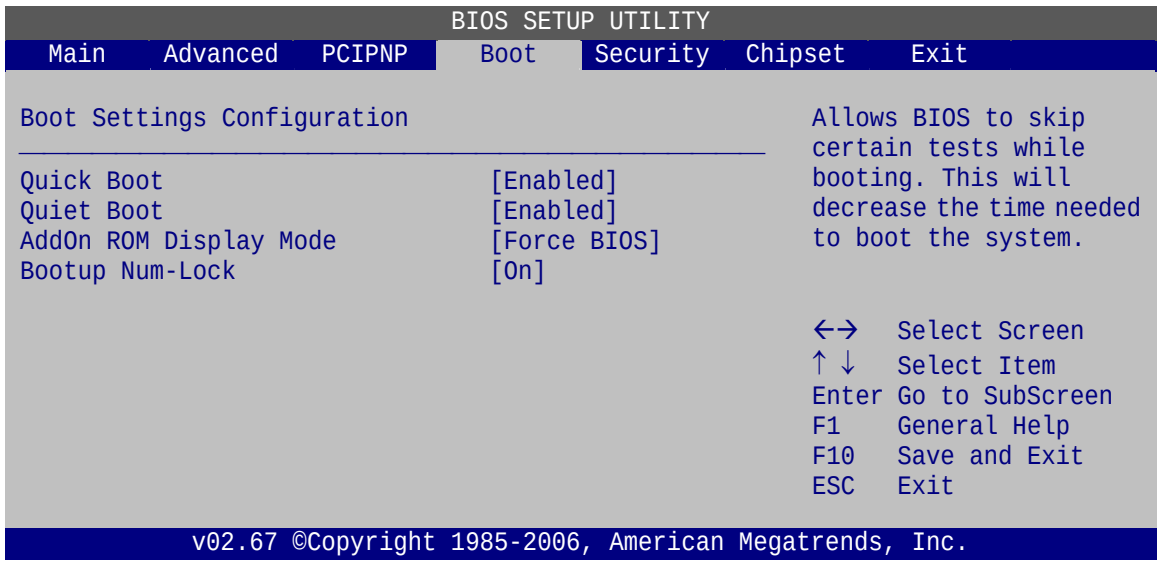
Use the **Boot** menu (**BIOS Menu 15**) to configure system boot options.



BIOS Menu 15: Boot

5.5.1 Boot Settings Configuration

Use the **Boot Settings Configuration** menu (**BIOS Menu 16**) to configure advanced system boot options.



BIOS Menu 16: 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**		Normal POST messages displayed
➔ **Enabled**	**DEFAULT**	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.

5.5.2 Boot Device Priority

Use the **Boot Device Priority** menu (**BIOS Menu 17**) to specify the boot sequence from the available devices. The drive sequence also depends on the boot sequence in the individual device section.

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

Boot Device Priority                              Specifies the boot
_____________________________________________     sequence from the
> 1st Boot Device              [1st Boot Device]  available devices.
> 2nd Boot Device              [2nd Boot Device]


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

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```
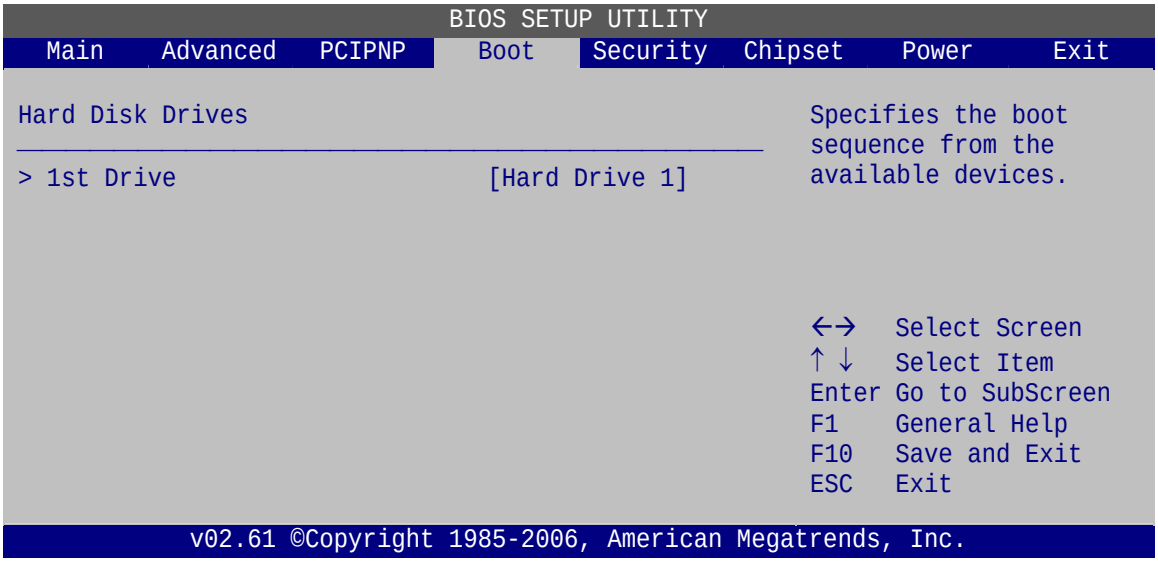

BIOS Menu 17: Boot Device Priority Settings

5.5.3 Hard Disk Drives

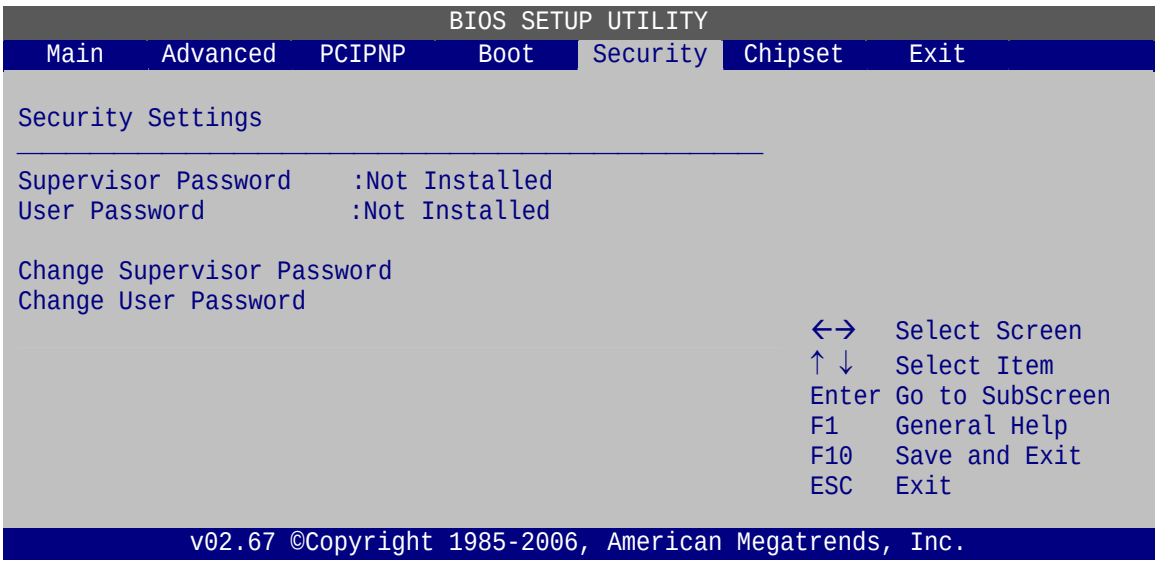
Use the **Hard Disk Drives** menu to specify the boot sequence of the available HDDs. Only installed hard drives are shown.



BIOS Menu 18: Hard Disk Drives

5.6 Security

Use the **Security** menu (**BIOS Menu 19**) to set system and user passwords.



BIOS Menu 19: 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**

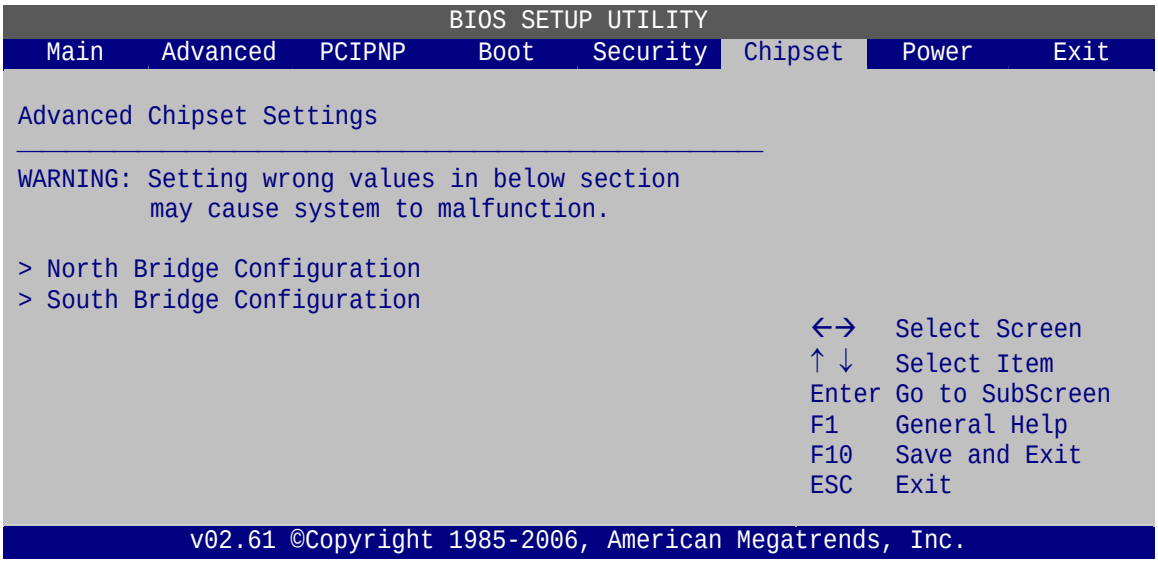
Use the **Change User Password** to set or change a user password. The default for this option is **Not Installed**. If a user password must be installed, select this field and enter the password. After the password has been added, **Install** appears next to **Change User Password**.

5.7 Chipset

Use the **Chipset** menu (**BIOS Menu 20**) to access the Northbridge and Southbridge configuration menus

WARNING!

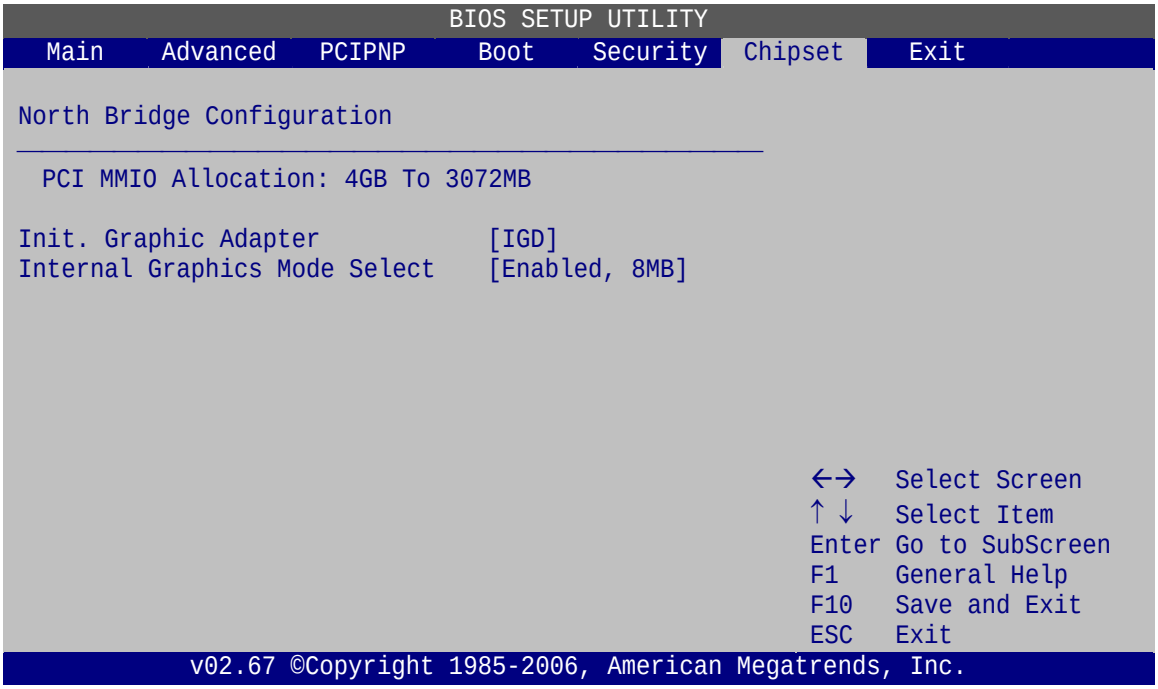
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 20: Chipset

5.7.1 Northbridge Configuration

Use the **Northbridge Chipset Configuration** menu (**BIOS Menu 21**) to configure the Northbridge chipset.



BIOS Menu 21: North Bridge Chipset Configuration

➔ **Initiate Graphic Adapter**

Use the **Initiate Graphic Adapter** option to select the graphics controller used as the primary boot device. Select either an integrated graphics controller (IGD) or a combination of PCI graphics controller, a PCI express (PEG) controller or an IGD. Configuration options are listed below:

- IGD **DEFAULT**
- PEG/IGD

➔ **Internal Graphics Mode Select [Enable, 8 MB]**

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

➔ **Enable, 8 MB** **DEFAULT** 8 MB of memory used by internal graphics device

5.7.2 Southbridge Configuration

Use the **Southbridge Configuration** menu (**BIOS Menu 22**) to configure the Southbridge chipset.

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

South Bridge Configuration
_____________________________________________________________

HDA Controller                  [Enabled]
Restore on AC Power Loss        [Power Off]
RTC Resume                      [Disabled]
_____________________________________________________________V
Spread Spectrum Function        [Disabled]


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

BIOS Menu 22:South Bridge Chipset Configuration

➔ **HDA Controller [Enabled]**

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

➔ **Enabled**	**DEFAULT**	The onboard High Definition Audio automatically detected and enabled
➔ **Disabled**		The onboard High Definition Audio is disabled

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

➔ **RTC Resume [Disabled]**

Use the **RTC Resume** option to specify the time the system should be roused from a suspended state.

➔ **Disabled**	**DEFAULT**	The real time clock (RTC) cannot generate a wake event
➔ **Enabled**		If selected, the following appears with values that can be selected: RTC Alarm Date (Days) System Time After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

➔ **Spread Spectrum Mode [Disabled]**

The **Spread Spectrum Mode** option can help to improve CPU EMI issues.

➔ **Disabled** **DEFAULT** The spread spectrum mode is disabled

➔ **Enabled** The spread spectrum mode is enabled

5.8 Exit

Use the **Exit** menu (**BIOS Menu 23**) 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 23: 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.**

Appendix

A

One Key Recovery

A.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 A-1: IEI One Key Recovery Tool Menu

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

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

NOTE:

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

A.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.

A.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.

A.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 A.2.1**)

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

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

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

Step 5: Create factory default image (see **Section A.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 A.3**.

A.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.

A.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!

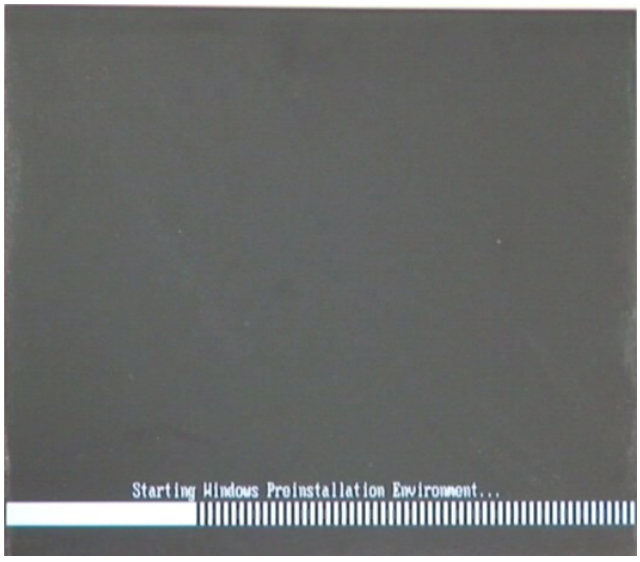


Figure A-2: Launching the Recovery Tool

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

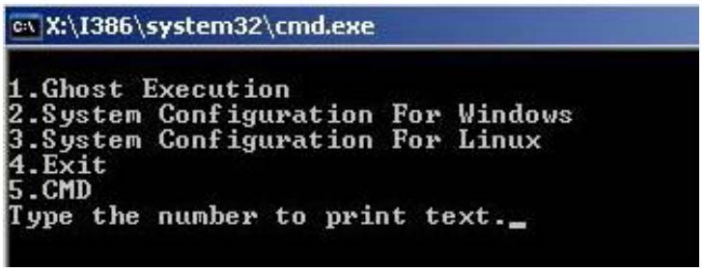


Figure A-3: Recovery Tool Setup Menu

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

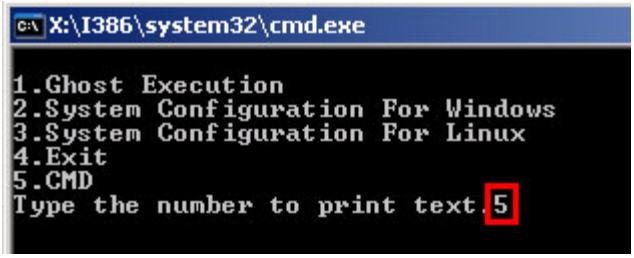


Figure A-4: Command Mode

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

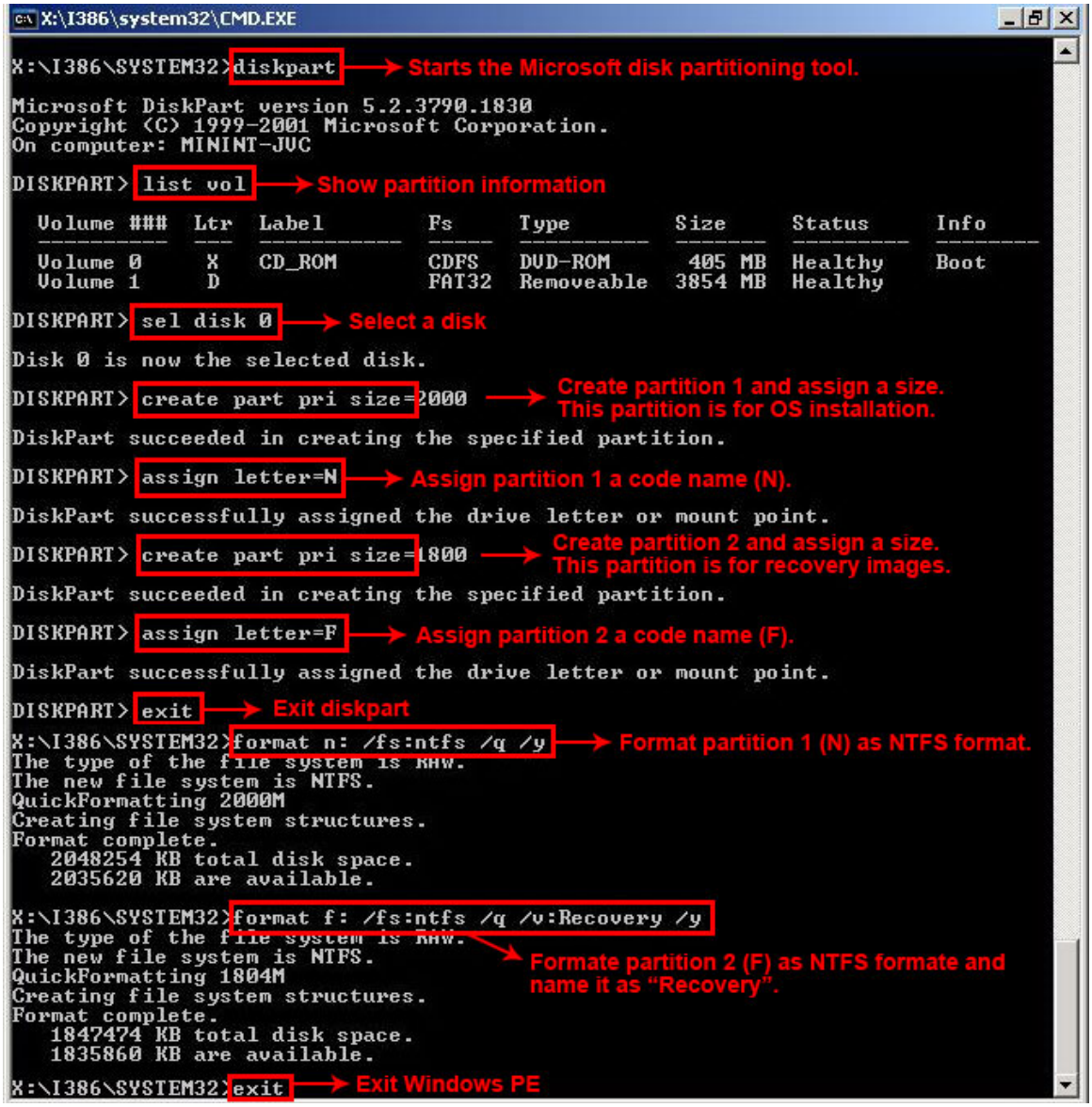
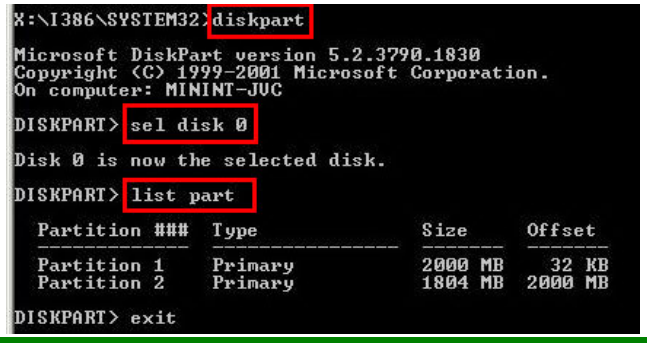


Figure A-5: Partition Creation Commands

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.

A.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.

A.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!

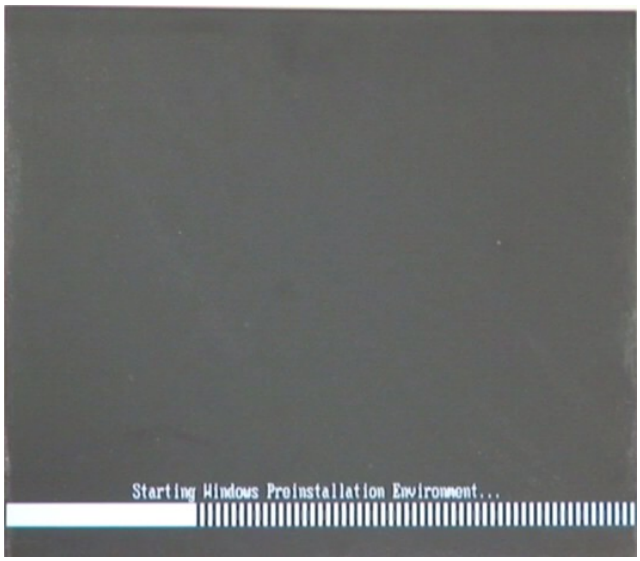


Figure A-6: Launching the Recovery Tool

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

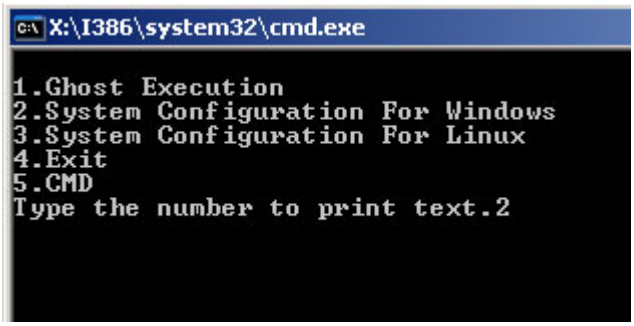


Figure A-7: System Configuration for Windows

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 A.2.2** is hidden and the recovery tool is saved in this partition.

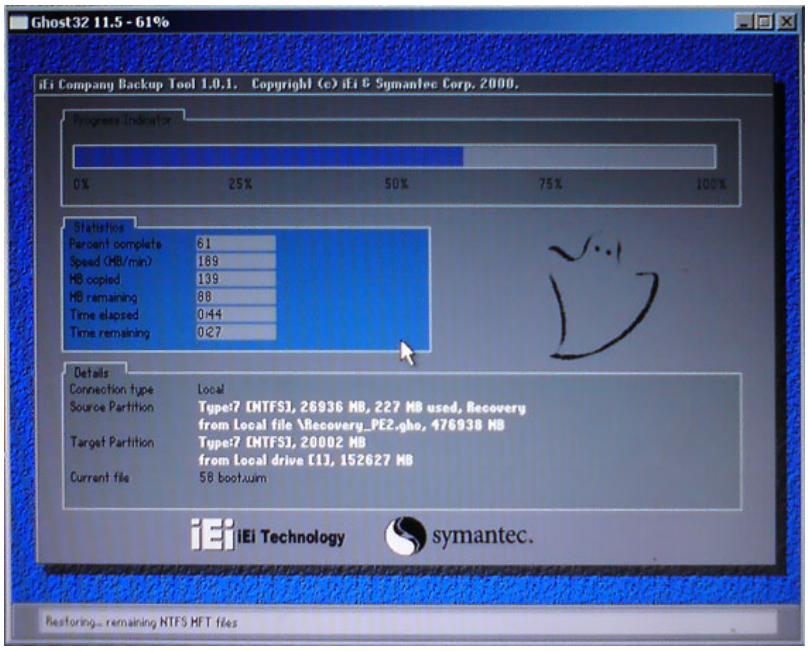


Figure A-8: Build-up Recovery Partition

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

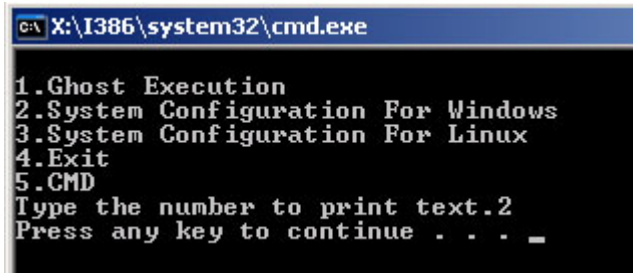


Figure A-9: Press any key to continue

Step 7: Eject the recovery CD.

A.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 A-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.

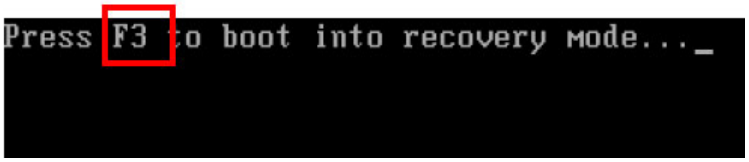


Figure A-10: Press F3 to Boot into Recovery Mode

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

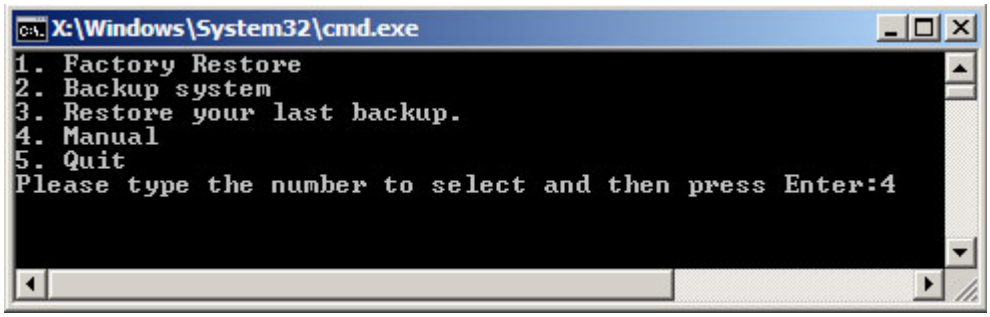


Figure A-11: Recovery Tool Menu

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

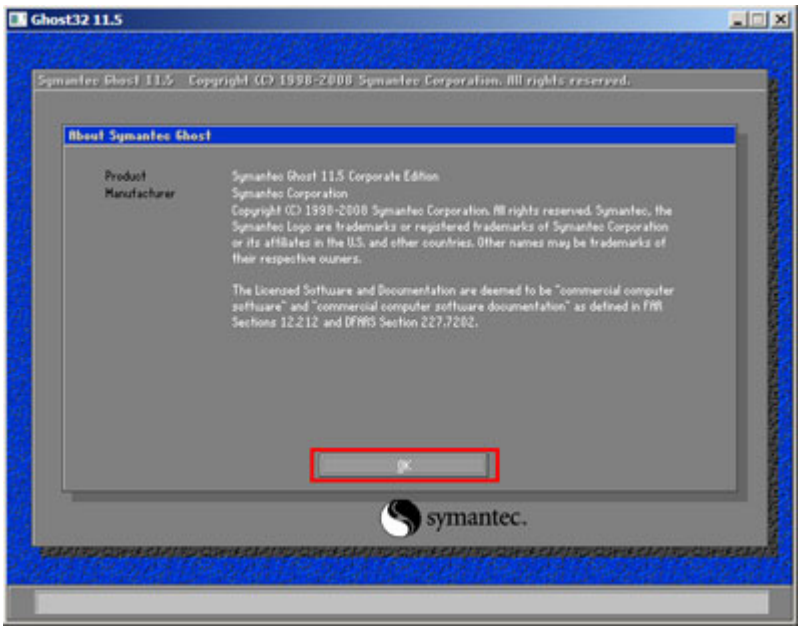


Figure A-12: About Symantec Ghost Window

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

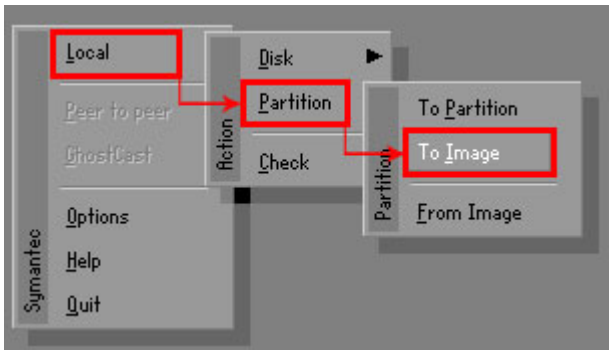


Figure A-13: Symantec Ghost Path

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

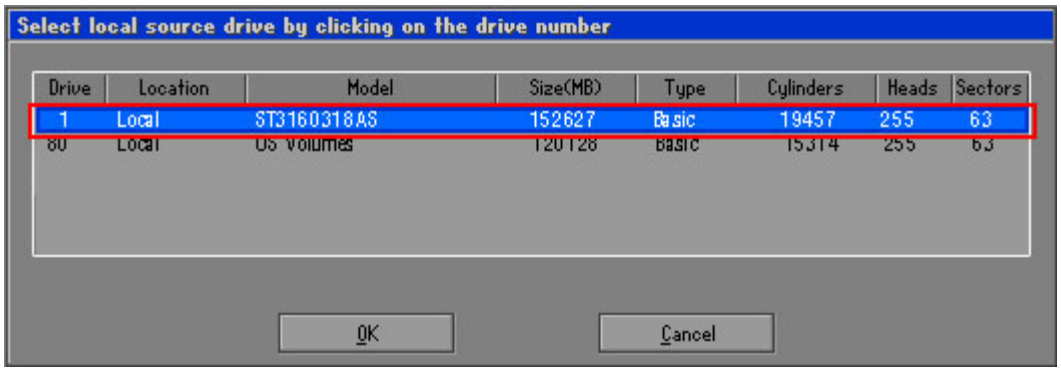


Figure A-14: Select a Local Source Drive

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

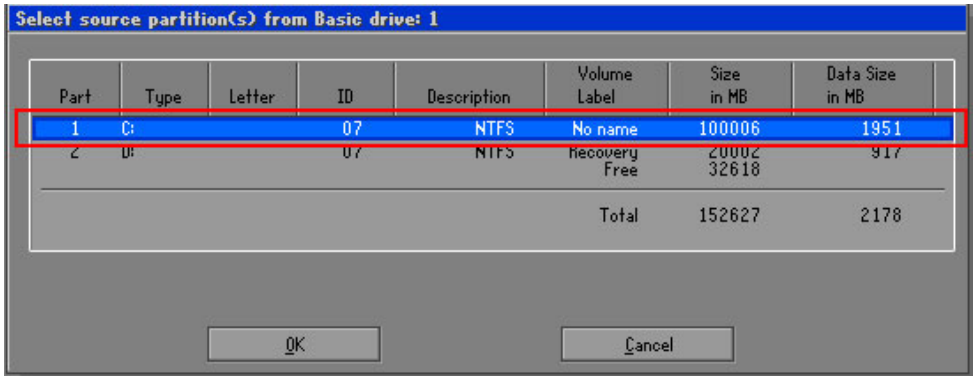


Figure A-15: Select a Source Partition from Basic Drive

Step 7: Select **1.2: [Recovery] NTFS drive** and enter a file name called **iei** (**Figure A-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**.

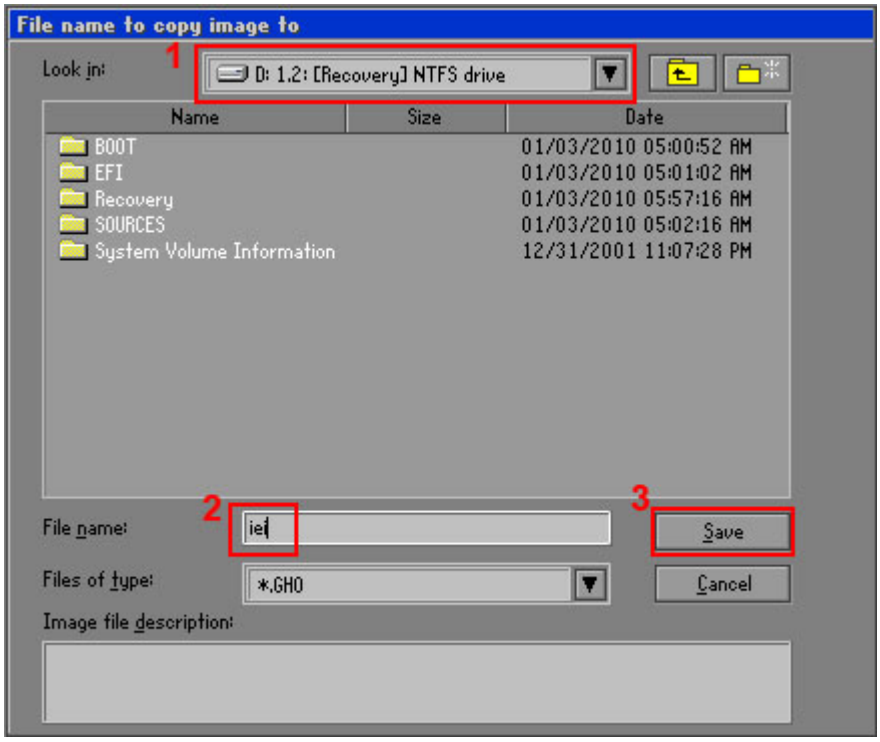


Figure A-16: File Name to Copy Image to

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

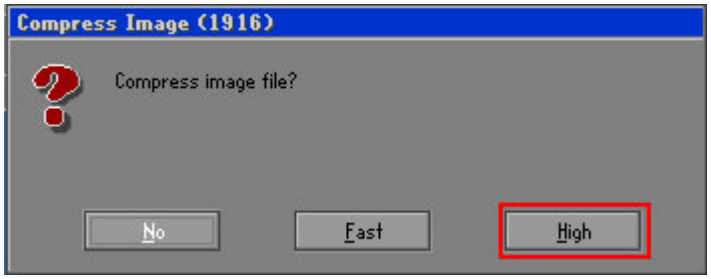


Figure A-17: Compress Image

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

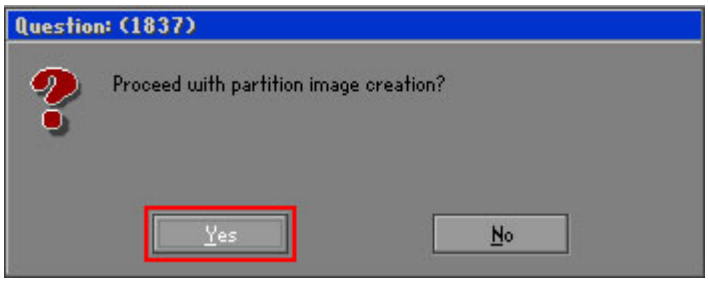


Figure A-18: Image Creation Confirmation

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

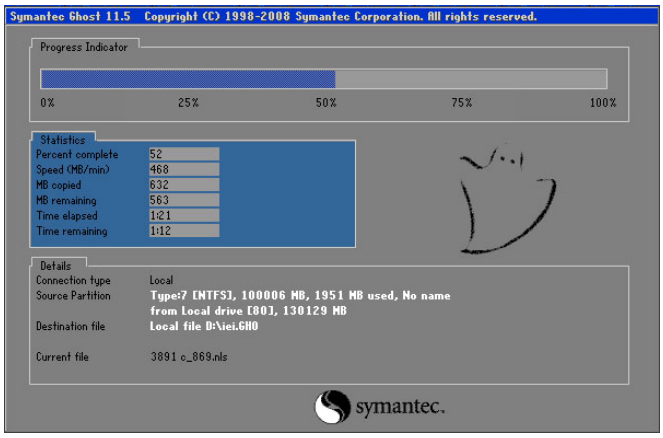


Figure A-19: Image Creation Process

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

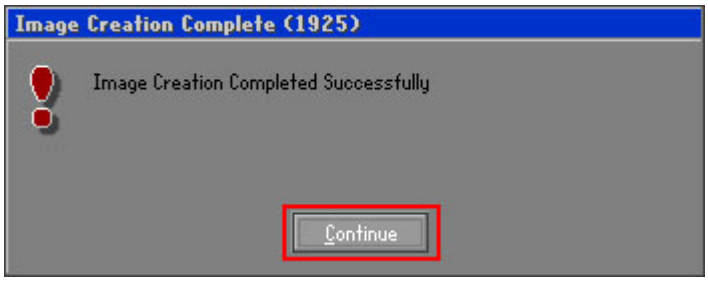


Figure A-20: Image Creation Complete

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

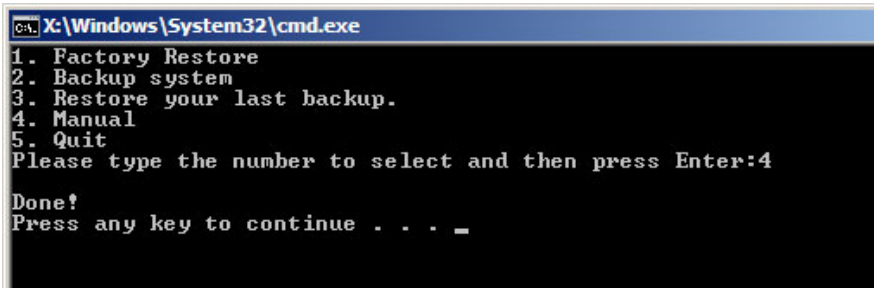


Figure A-21: Press Any Key to Continue

A.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 A.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.

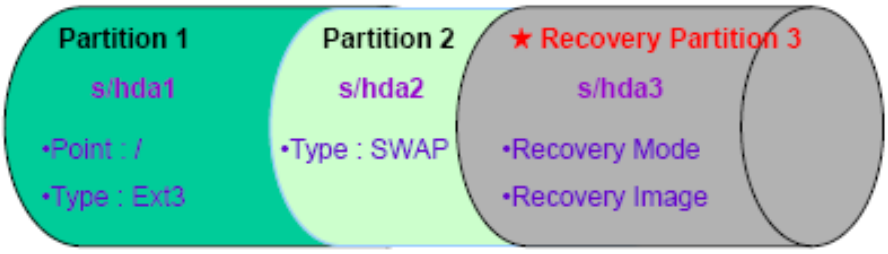


Figure A-22: Partitions for Linux

Step 3: **Create a recovery partition**. Insert the recovery CD into the optical disk drive. Follow **Step 1** ~ **Step 3** described in **Section A.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 A-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.

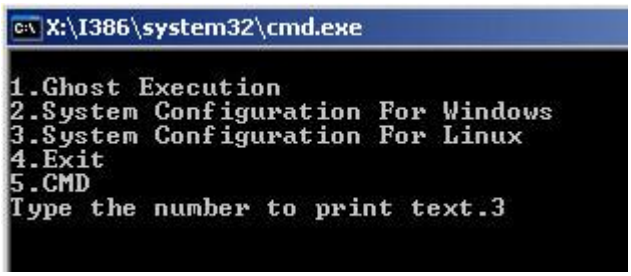


Figure A-23: System Configuration for Linux

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

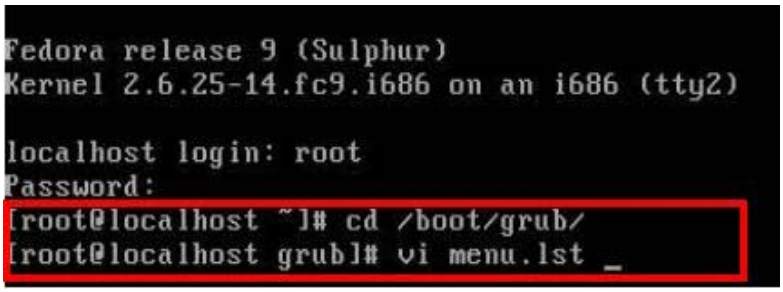
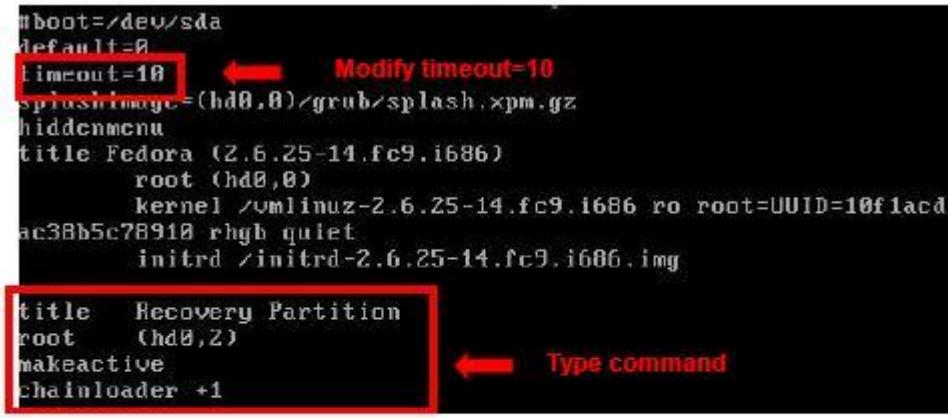


Figure A-24: Access menu.lst in Linux (Text Mode)

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 A-25**)

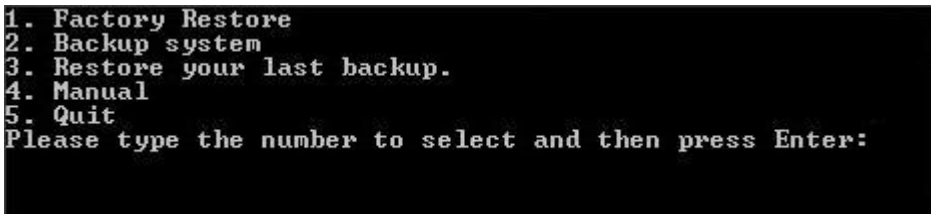


Figure A-25: Recovery Tool Menu

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

A.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 A-26: Recovery Tool Main Menu

The recovery tool has several functions including:

6. **Factory Restore**: Restore the factory default image (iei.GHO) created in **Section A.2.5**.
7. **Backup system**: Create a system backup image (iei_user.GHO) which will be saved in the hidden partition.
8. **Restore your last backup**: Restore the last system backup image
9. **Manual**: Enter the Symantec Ghost window to configure manually.
10. **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).

A.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 9: 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.

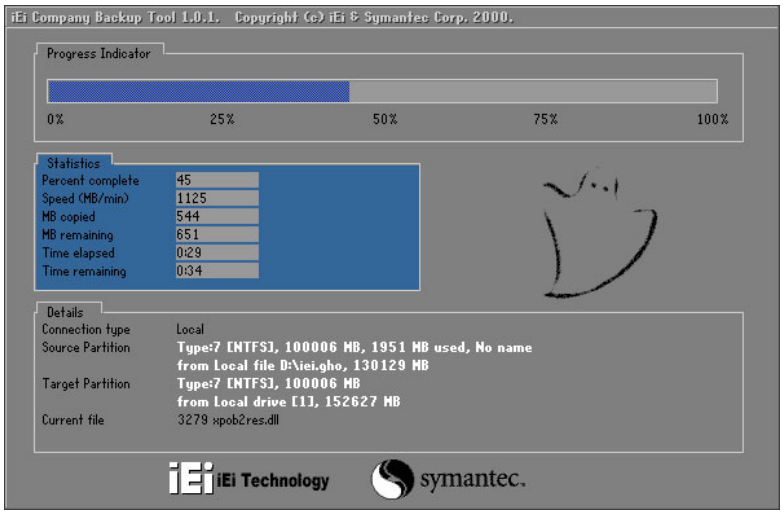


Figure A-27: Restore Factory Default

Step 10: The screen is shown as in **Figure A-28** when completed. Press any key to reboot the system.

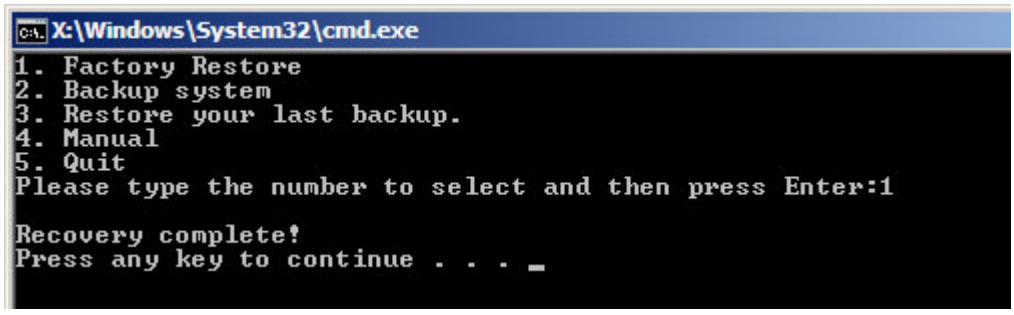


Figure A-28: Recovery Complete Window

A.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 11: 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.

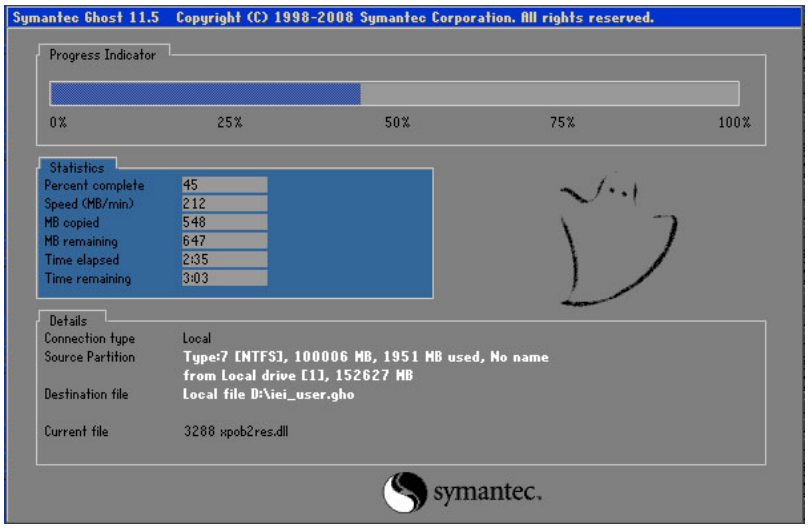


Figure A-29: Backup System

Step 12: The screen is shown as in **Figure A-30** when system backup is completed. Press any key to reboot the system.

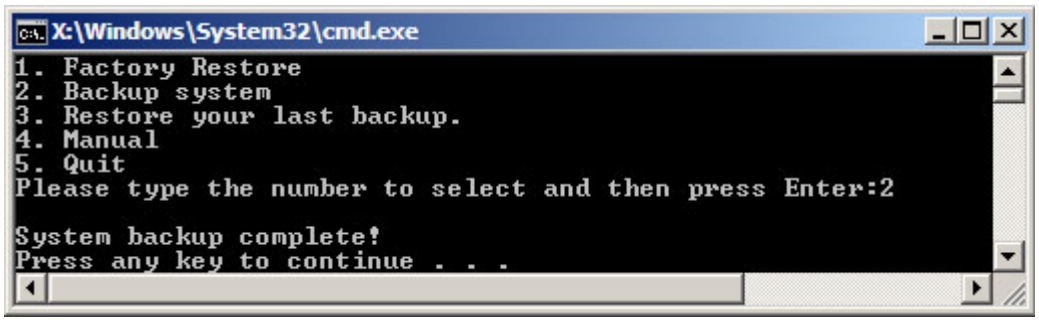


Figure A-30: System Backup Complete Window

A.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 13: The Symantec Ghost window appears and starts to restore the last backup image (iei_user.GHO).

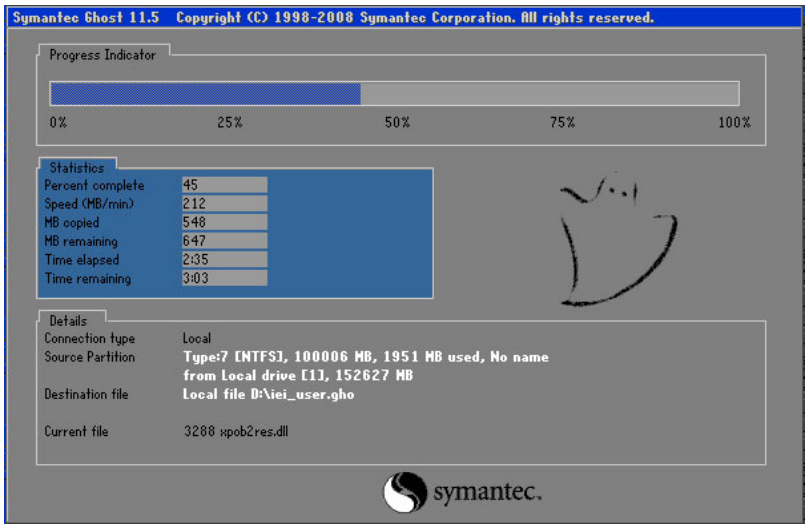


Figure A-31: Restore Backup

Step 14: The screen is shown as in **Figure A-32** when backup recovery is completed. Press any key to reboot the system.

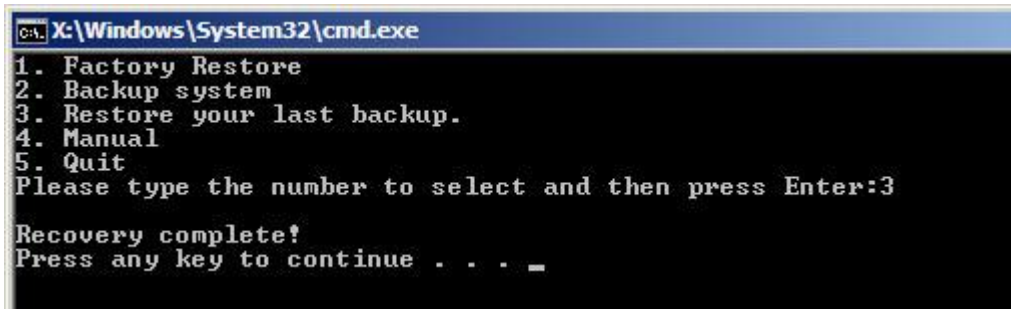


Figure A-32: Restore System Backup Complete Window

A.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 15: The Symantec Ghost window appears. Use the Ghost program to backup or recover the system manually.

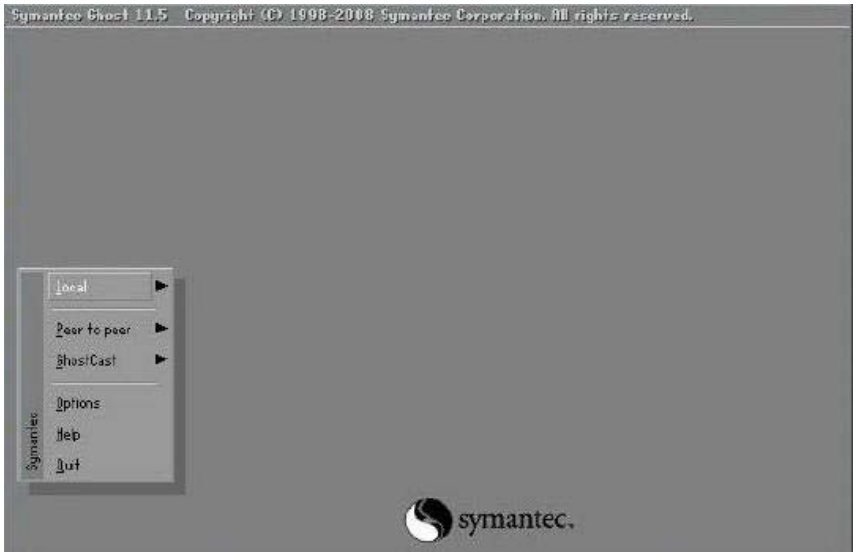


Figure A-33: Symantec Ghost Window

Step 16: When backup or recovery is completed, press any key to reboot the system.

A.5 Other Information

A.5.1 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

B

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 IBX-300BC.

B.1 Safety Precautions

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

B.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 IBX-300BC is opened.
- ***Make sure the power is turned off and the power cord is disconnected*** whenever the IBX-300BC 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 IBX-300BC chassis is opened when the IBX-300BC is running.
- ***Do not drop or insert any objects*** into the ventilation openings of the IBX-300BC.
- ***If considerable amounts of dust, water, or fluids enter the IBX-300BC***, turn off the power supply immediately, unplug the power cord, and contact the IBX-300BC vendor.
- **DO NOT**:
  - Drop the IBX-300BC against a hard surface.
  - Strike or exert excessive force onto the LCD panel.
  - Touch any of the LCD panels with a sharp object
  - In a site where the ambient temperature exceeds the rated temperature

B.1.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the IBX-300BC may result in permanent damage to the IBX-300BC and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IBX-300BC. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IBX-300BC 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.

B.1.3 Explanation of Graphical Symbols

This symbol warns the user that the part has this symbol is hot. Therefore, it is dangerous to make any kind of contact with this part.

This symbol alerts the user that important information concerning the operation and maintenance of this unit has been included. Therefore, the information should be read carefully in order to avoid any problems.

This symbol warns the user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any part inside this unit.

B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the IBX-300BC, please follow the guidelines below.

B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the IBX-300BC, 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 of the IBX-300BC does not require cleaning. Keep fluids away from the IBX-300BC interior.
- Be cautious of all small removable components when vacuuming the IBX-300BC.
- Turn the IBX-300BC off before cleaning the IBX-300BC.
- Never drop any objects or liquids through the openings of the IBX-300BC.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the IBX-300BC.
- Avoid eating, drinking and smoking within vicinity of the IBX-300BC.

B.2.2 Cleaning Tools

Some components in the IBX-300BC 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 when cleaning the IBX-300BC.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the IBX-300BC.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol can be used to clean the IBX-300BC.
- ***Using solvents*** – The use of solvents is not recommended when cleaning the IBX-300BC as they may damage the plastic parts.

- ***Vacuum cleaner*** – Using a vacuum specifically designed for computers is one of the best methods of cleaning the IBX-300BC. Dust and dirt can restrict the airflow in the IBX-300BC and cause its 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

C

Interface Connectors

C.1 Peripheral Interface Connectors

NOTE:

The jumpers and connectors shown in the section below are those jumpers and connectors that are relevant to the configuration and installation of the embedded system.

The IBX-300BC embedded system motherboard, the IBX-300MB-PV-D510 comes with a number of peripheral interface connectors. The pinouts for the internal connectors that are used in the IBX-300BC are listed below:

Pin	Description
1	Battery +3.3V
2	GND

TableeC-1: Battery Connector Pinouts (BT1)

Pin	Description
1	PWR_BTN+
2	PWR_BTN-

TableeC-2: Power Button Connector (PWR_BTN)

	Pin	Description
+5V	1	VCC
	2	GND
Power LED	3	PWR_LED+
	4	PWR_LED-
HDD LED	5	HDD_LED+
	6	HDD_LED-

TableeC-3: HDD LED and Power LED Connector Pinouts (CN5)

Pin	Description
1	GND
2	+5V

TableeC-4: SATA Power Connector Pinouts (SATA_PWR1)

Pin	Description
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND
8	N/C
9	GND

TableeC-5: External SATA Connector Pinouts (SATA1)

Pin	Description	Pin	Description
1	Line-out_R	2	Line-in_R
3	AUD_GND	4	AUD_GND
5	Line-out _L	6	Line-in _L
7	AUD_GND	8	AUD_GND
9	MIC1_R	10	MIC1_L

TableeC-6: Audio Connector Pinouts (AUDIO1)

Pin	Description	Pin	Description
1	USB_VCC	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	USB_VCC

TableeC-7: USB Connector Pinouts (USB2)

Appendix

D

BIOS Menu Options

D.1 BIOS Configuration Options

Below is a list of BIOS configuration options described in **Chapter 5**.

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 EMI 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. While 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 Material 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。