IEI Technology Corp.

MODEL:

ECW-281B-D2550

Fanless Embedded System with Intel® Atom™ D2550 CPU, Preinstalled 2.0 GB DDR3 SO-DIMM, Dual GbE, DIO, USB 2.0, Four COM Ports, RoHS Compliant

User Manual

Rev. 1.00 – 15 March, 2013

RoHS Lead Free

Revision

Date	Version	Changes
15 March, 2013	1.00	Initial release

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WARNING

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and(2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/ TV technician for help.

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void your authority to operate such equipment.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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1

Introduction

1.1 Overview

Figure 1-1: ECW-281B-D2550

The ECW-281B-D2550 fanless embedded system is powered by the Intel® Atom™ D2550 processor and preinstalled with a 2.0 GB DDR3 SO-DIMM. It features industrial grade components that offer longer operating life, high shock/vibration resistance and endurance over a wide temperature range.

The ECW-281B-D2550 supports one 2.5” SATA HDD and mSATA storage devices. Two GbE, four USB 2.0, three RS-232, one RS-422/485 and one 8-bit DIO provide rich I/O options for various applications.

1.2 Model Variations

The model variations of the ECW-281B-D2550 are listed below.

Model No.	Power	Wireless
ECW-281B-R10/D2550/2GB	12V DC input (60 W power adapter)	No
ECW-281BW-R10/D2550/2GB	12V DC input (60 W power adapter)	Yes
ECW-281BWD-R10/D2550/2GB	9V~36V DC input	No
ECW-281BWDW-R10/D2550/2GB	9V~36V DC input	Yes

Table 1-1: ECW-281B-D2550 Model Variations

1.3 Features

The ECW-281B-D2550 features are listed below:

- 1.86 GHz Intel® Atom™ D2550 dual-core processor
- 2.0 GB of DDR3 SO-DIMM preinstalled
- Fanless design
- Supports one 2.5” SATA HDD and mSATA storage devices
- Two PCIe Mini card slots (one full-size slot, one half-size slot)
- VGA display output
- Supports two GbE, four USB 2.0, three RS-232, one RS-422/485, one 8-bit DIO and one audio line-out
- Supports 9V~36V DC power input (WD models only)
- 802.11b/g/n 2T2R wireless module (wireless models only)
- RoHS compliant

1.4 External Overview

1.4.1 Front Panel

The ECW-281B-D2550 front panel contains:

- 1 x HDD LED indicator
- 1 x Power button
- 2 x USB 2.0 ports

An overview of the front panel is shown in **Figure 1-2**.

Figure 1-2: ECW-281B-D2550 Front Panel

1.4.2 Rear Panel

The ECW-281B-D2550 rear panel contains:

- 1 x 9V~36V DC power terminal block (WD models only)
- 1 x 8-bit digital I/O (4-bit input/4-bit output)
- 1 x 12V DC power jack
- 1 x Audio line-out jack
- 1 x Reset button
- 2 x RJ-45 GbE connectors
- 3 x RS-232 connectors (COM1, COM2, COM3)
- 1 x RS-422/485 connector (COM4)
- 2 x USB 2.0 ports
- 1 x VGA connector
- 2 x Wireless antenna connector (wireless models only)

An overview of the rear panel is shown in **Figure 1-3** below.

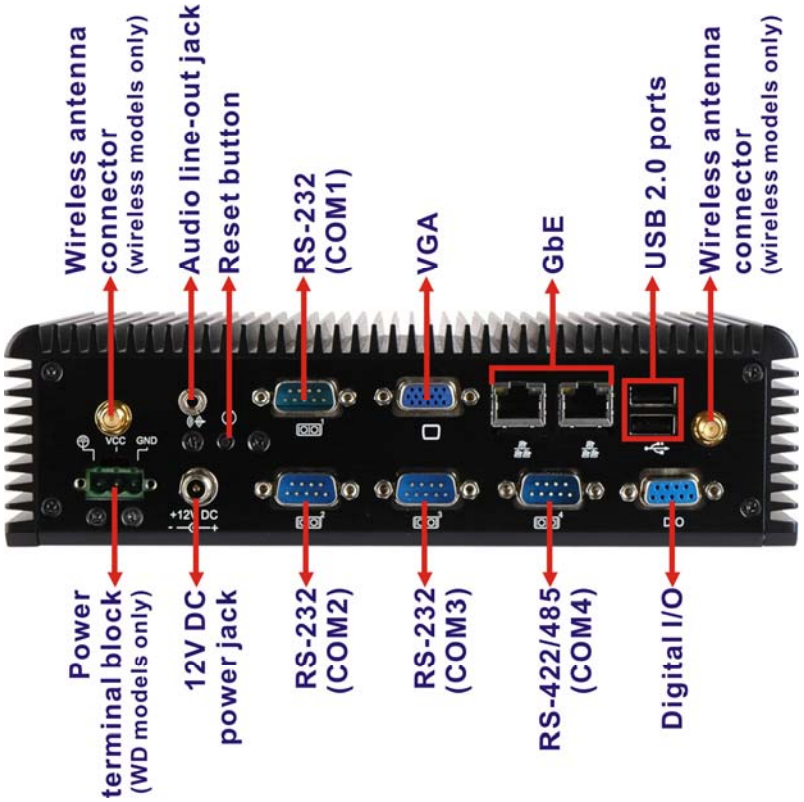


Figure 1-3: ECW-281B-D2550 Rear Panel

1.4.3 Bottom Surface

WARNING:

Never remove the bottom access panel from the chassis while power is still being fed into the system. Before removing the bottom access panel, make sure the system has been turned off and all power connectors unplugged.

The bottom surface of the ECW-281B-D2550 contains the retention screw holes for the VESA 100 wall mounting kit, two-side mounting brackets and DIN rail mounting kit.

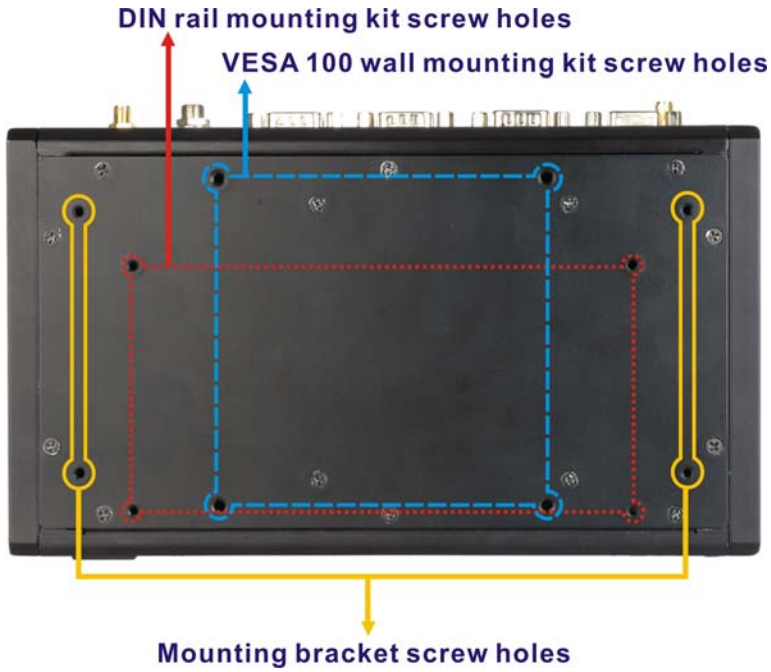


Figure 1-4: Bottom Surface

1.5 Internal Overview

The ECW-281B-D2550 internal components are listed below:

- 1 x Motherboard
- 1 x DDR3 SO-DIMM
- 1 x Power module (WD models only)
- 1 x Hard drive bracket (attached on the inside of the bottom panel)

All the components are accessed by removing the bottom surface.

Figure 1-5: Internal Overview

1.6 Technical Specifications

The ECW-281B-D2550 technical specifications are listed in **Table 1-2**.

Specifications	
System	
Motherboard Model	WAFER-CV-D25501
CPU	1.86 GHz Intel® Atom™ D2550 dual-core processor
Chipset	Intel® NM10
Memory	Preinstalled 2 GB 204-pin DDR3 SO-DIMM
Ethernet	Dual Realtek RTL8111E PCIe GbE controller
Wireless (Wireless Models Only)	802.11b/g/n 2T2R wireless module

Specifications	
Storage	
SATA	1 x 2.5” SATA HDD bay
I/O Interfaces	
Audio	1 x Audio line-out jack
Ethernet	2 x RJ-45 ports
RS-232	3 x DB-9 serial ports
RS-422/RS-485	1 x DB-9 serial port
USB	4 x USB 2.0 ports
Display	1 x VGA port (supports resolution up to 1920 x 1200 @ 60Hz)
Digital I/O	1 x 8-bit digital I/O connector (4-bit input/4-bit output)
Expansions	1 x Full-size PCIe Mini card slot (supports mSATA) 1 x Half-size PCIe Mini card slot
Buttons	Power button Reset button
Power	
Power Input	DC jack: 12V DC 3-pin terminal block: 9V~36V DC (WD models only)
Power Consumption	12V@1.53A (1.86 GHz Intel® Atom™ D2550 dual-core CPU with 1.0 GB DDR3 SO-DIMM)
Environmental and Mechanical	
Mounting	DIN rail, wall mount, VESA 100
Operating Temperature	-10°C ~ 50°C (with HDD)
Storage Temperature	-20°C ~ 60°C
Chassis Construction	Aluminum alloy with heavy duty metal
Chassis Color	Black
Operating Shock	Half-sine wave shock 3G, 11ms, 3 shocks per axis
Operating Vibration	MIL-STD-810F 514.5C-1 (HDD)

Specifications	
Weight (Net/Gross)	2.1 kg/3.9 kg
Physical Dimensions	229 mm x 132 mm x 64 mm (W x D x H)

Table 1-2: Technical Specifications

1.7 Power Module Specifications (Optional)

A DC-to-DC power module is preinstalled in the WD series model to provide 9 V ~ 36 V power input. The specifications for the IDD-936260A are shown in **Table 1-3**.

Model Name	IDD-936260A
Input	9 V DC ~ 36 V DC
Output:	
12V	3 A (Max.)
5V	10 A (Max.)
5VSB	0.5 A (Max.)
Max. Total Output	60 W
Performance Characteristics	
Noise & Ripple	< 240 mV
Line Regulation	< 20 mV
Load Regulation	<60 mV
Efficiency	Up to 90%
Dimensions	40 mm x 100 mm
Weight	58 g
Operating Temperature	-40°C ~ 85°C

Table 1-3: DC-to-DC Power Module Specifications

1.8 Power Adapter (Optional)

The ECW-281B-D2550 series models that feature 12 V DC input are shipped with a 60 W power adapter.

Figure 1-6: Power Adapter

The specifications for the adapter are listed in **Table 1-4**:

Input Voltage	90 V ~ 264 V AC
Input Frequency	47 Hz ~ 63 Hz
Output Voltage	12 V
Output Current	5 A
Efficiency	87%
Operating Temperature	0 ºC ~ 40 ºC
Storage Temperature	-20 ºC ~ 65 ºC

Table 1-4: Power Adapter Specifications

1.9 Dimensions

The physical dimensions are shown below:

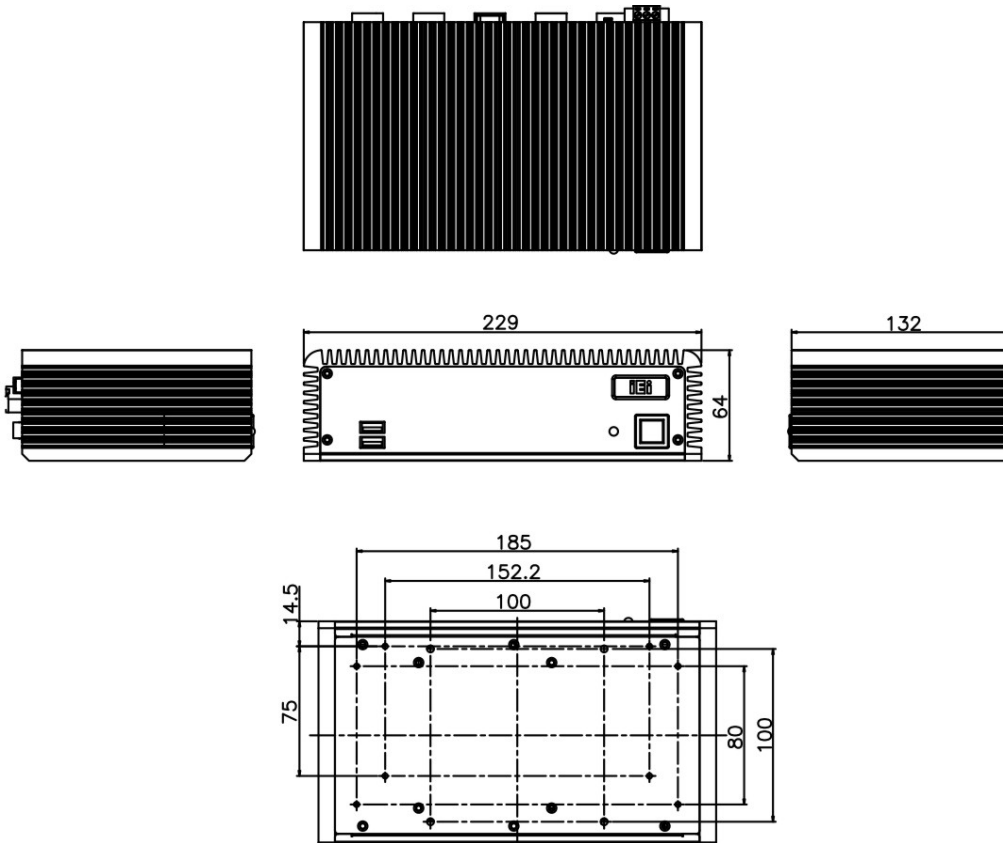


Figure 1-7: Physical Dimensions (millimeters)

Chapter

2

Unpacking

2.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during installation may result in permanent damage to the ECW-281B-D2550 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the ECW-281B-D2550. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the ECW-281B-D2550 or any other electrical component is 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.
- ***Use an anti-static pad***: When configuring the ECW-281B-D2550, place it on an antic-static pad. This reduces the possibility of ESD damaging the ECW-281B-D2550.

2.2 Unpacking Precautions

When the ECW-281B-D2550 is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 2.1**.
- Make sure the packing box is facing upwards so the ECW-281B-D2550 does not fall out of the box.
- Make sure all the components shown in **Section 2.3** are present.

2.3 Unpacking Checklist

NOTE:

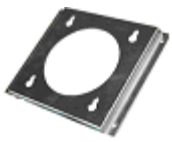
If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the ECW-281B-D2550 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The ECW-281B-D2550 is shipped with the following components:

Quantity	Item	Image
Standard		
1	ECW-281B-D2550	
2	Wall mounting bracket	
1	Screw set	
1	DIN rail mounting kit	
1	SATA and power cable	

Quantity	Item	Image
Standard		
1	Thermal pad for HDD	
2	Wireless antenna (wireless models only)	
1	Power cord (optional for WD models)	
1	12 V 60 W power adapter (optional for WD models) (**P/N**: 63000-FSP060DBAB1552-RS)	
1	Quick installation guide	
1	One Key Recovery CD	
1	User manual and driver CD	

The following table lists the optional items that can be purchased separately.

Optional	
VESA MIS-D 100 wall mounting kit	

Chapter

3

Installation

3.1 Installation Precautions

During installation, be aware of the precautions below:

- **Read the user manual**: The user manual provides a complete description of the ECW-281B-D2550, installation instructions and configuration options.
- **DANGER! Disconnect Power**: Power to the ECW-281B-D2550 must be disconnected during the installation process. Failing to disconnect the power may cause severe injury to the body and/or damage to the system.
- **Qualified Personnel**: The ECW-281B-D2550 must be installed and operated only by trained and qualified personnel. Maintenance, upgrades, or repairs may only be carried out by qualified personnel who are familiar with the associated dangers.
- **Air Circulation**: Make sure there is sufficient air circulation when installing the ECW-281B-D2550. The ECW-281B-D2550's cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the ECW-281B-D2550. Leave at least 5 cm of clearance around the ECW-281B-D2550 to prevent overheating.
- **Grounding**: The ECW-281B-D2550 should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection per the electrical values indicated on the label attached to the back of the ECW-281B-D2550.

3.2 Bottom Surface Removal

WARNING:

Over-tightening bottom cover screws will cause damage to the bottom surface. Maximum torque for cover screws is 5 kg-cm (0.36 lb-ft/0.49 Nm).

Before accessing the internal components of the ECW-281B-D2550, the bottom surface must be removed. To remove the bottom surface, please follow the steps below:

Step 1: Remove the bottom surface retention screws. The bottom surface is secured to the chassis with ten retention screws (**Figure 3-1**). All ten screws must be removed.

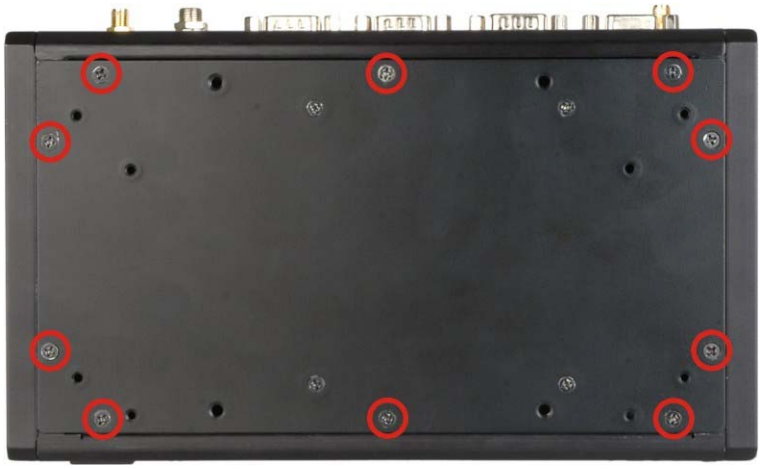


Figure 3-1: Bottom Surface Retention Screws

Step 2: Gently remove the bottom surface from the ECW-281B-D2550.

3.3 Hard Drive Installation

A 2.5” SATA hard drive can be installed into the hard drive bracket attached on the inside of the bottom panel (**Figure 3-2**).

Figure 3-2: Hard Drive Bracket

To install a hard drive into the system, please follow the steps below.

Step 1: Remove the bottom surface. See **Section 3.2**.

Step 2: Remove the hard drive bracket from the bottom surface by removing the four retention screws that secure the bracket to the bottom surface. (**Figure 3-3**)

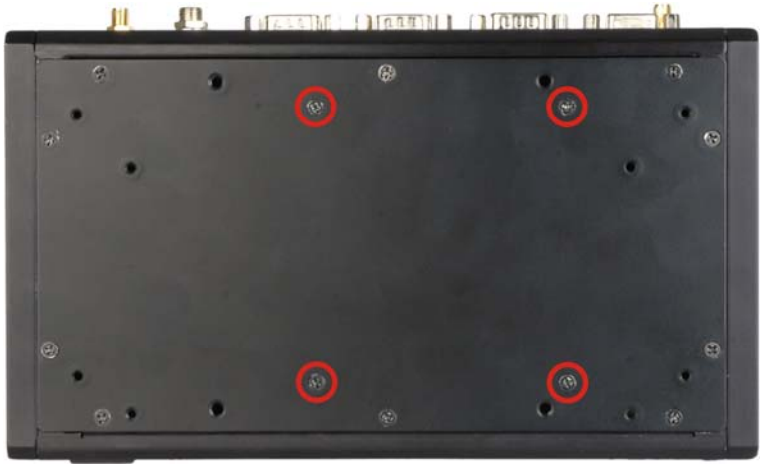


Figure 3-3: HDD Bracket Retention Screws

Step 3: Place the HDD into the bracket.

Step 4: Align the retention screw holes in the HDD with those in the bottom of the bracket.

Step 5: Secure the HDD with the bracket by inserting four retention screws into the bottom of the bracket (**Figure 3-4**).

Figure 3-4: HDD Retention Screws

Step 6: Locate the breather hole of the HDD. Cut off the corresponding area of the breather hole from the thermal pad.

Step 7: Adhere the thermal pad to the HDD. Make sure there is no obstacle covering the breather hole (**Figure 3-5**).

CAUTION:

Make sure the breather hole of the HDD is not covered. Covering the breather hole may cause damage to the HDD.

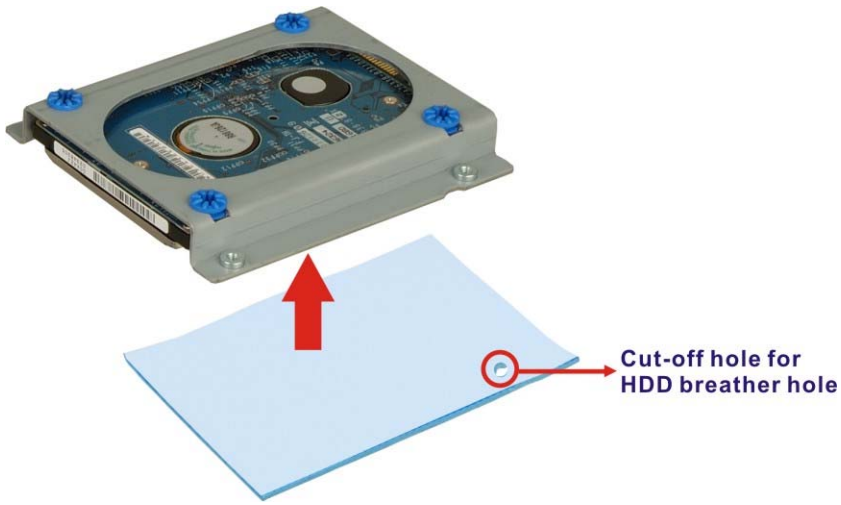


Figure 3-5: HDD Thermal Pad

Step 8: Replace the HDD bracket onto the bottom surface by aligning the four retention screw holes in the HDD bracket with those in the back of the bottom surface.

Step 9: Reinsert the four previously removed retention screws.

Step 10: Connect the supplied SATA and power cable to the ECW-281B-D2550 and HDD.

Step 11: Replace the bottom surface to the bottom panel by reinserting the ten previously removed retention screws.

WARNING:

Over-tightening bottom cover screws will cause damage to the bottom surface. Maximum torque for cover screws is 5 kg-cm (0.36 lb-ft/0.49 Nm).

3.4 Full-size PCIe Mini Card Installation

To install a full-size PCIe Mini card, please follow the steps below.

Step 1: Remove the bottom surface. See **Section 3.2**.

Step 2: Locate the full-size PCIe Mini card slot (**Figure 3-6**).

Figure 3-6: Full-size PCIe Mini Card Slot Location

Step 3: Remove the retention screw secured on the motherboard as shown in **Figure 3-7**.

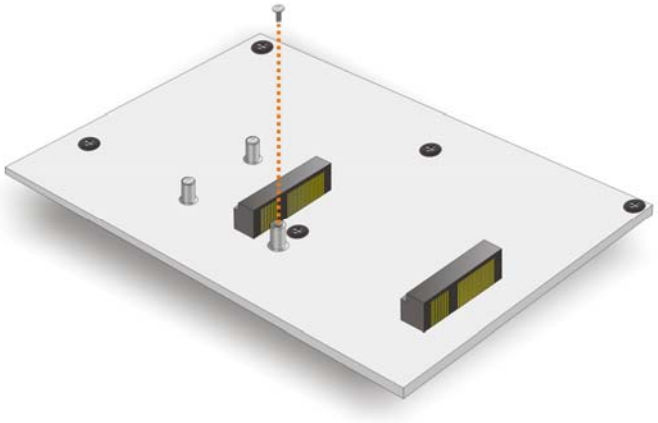


Figure 3-7: Remove the Retention Screw for the Full-size PCIe Mini Card

Step 4: Line up the notch on the PCIe Mini card with the notch on the connector. Slide the card into the socket at an angle of about 20º (**Figure 3-8**).

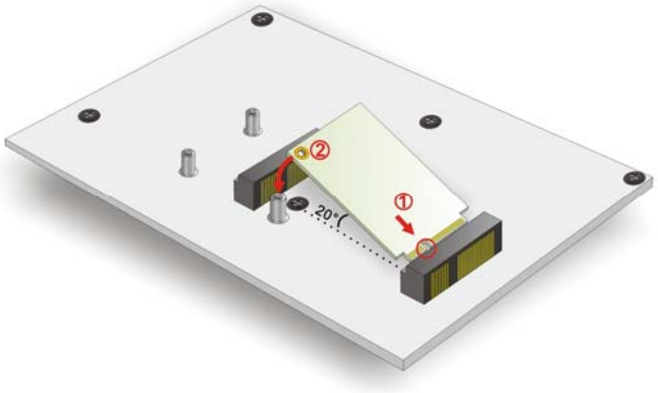


Figure 3-8: Insert the Full-size PCIe Mini Card into the Socket at an Angle

Step 5: Secure the full-size PCIe Mini card with the retention screw previously removed (**Figure 3-9**).

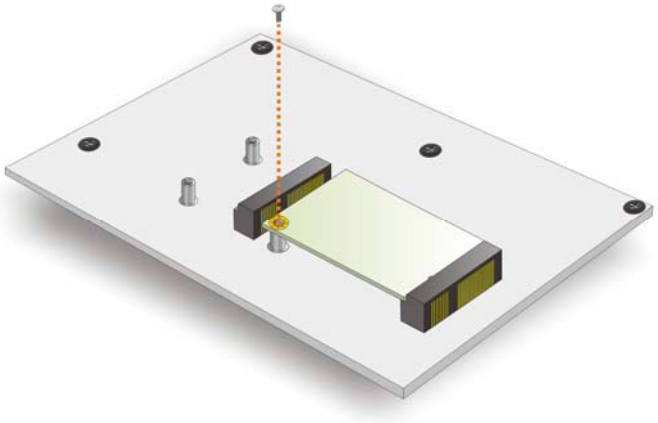


Figure 3-9: Secure the Full-size PCIe Mini Card

3.5 Half-size PCIe Mini Card Installation

To install a half-size PCIe Mini card, please follow the steps below.

Step 1: Remove the bottom surface. See Section **3.2**.

Step 2: Locate the half-size PCIe Mini card slot (**Figure 3-10**).

Figure 3-10: Half-size PCIe Mini Card Slot Location

Step 3: Remove the two retention screws secured on the motherboard as shown in **Figure 3-11**.

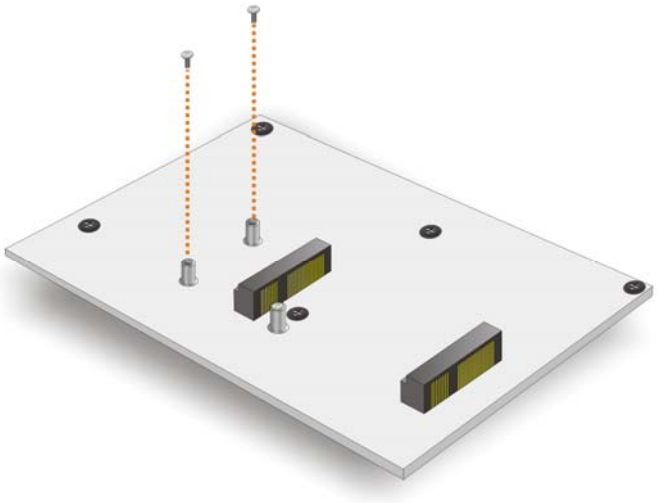


Figure 3-11: Remove the Retention Screws for the Half-size PCIe Mini Card

Step 4: Line up the notch on the PCIe Mini card with the notch on the connector. Slide the card into the socket at an angle of about 20º (**Figure 3-12**).

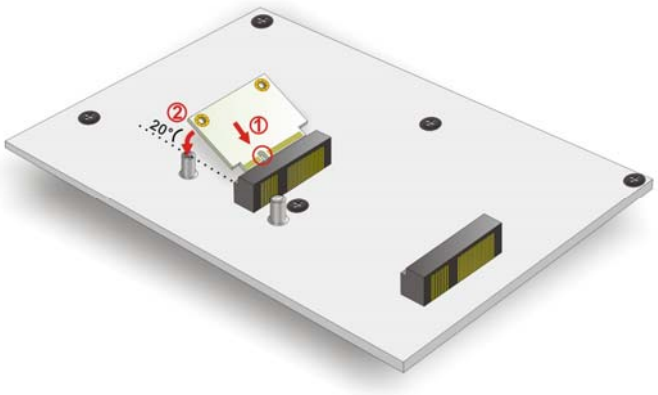


Figure 3-12: Insert the Half-size PCIe Mini Card into the Socket at an Angle

Step 5: Secure the half-size PCIe Mini card with the two retention screws previously removed (**Figure 3-13**).

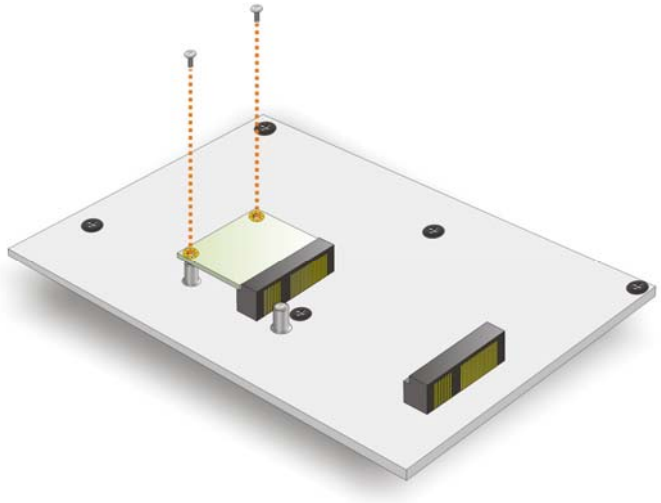
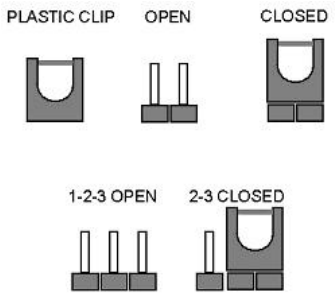


Figure 3-13: Secure the Half-size PCIe Mini Card

3.6 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 jumpers on the ECW-281B-D2550 motherboard are listed in **Table 3-1**.

Description	Label	Type
AT/ATX power selection	JP2	2-pin header
Clear CMOS	JP3	3-pin header

Table 3-1: Jumpers

3.6.1 AT/ATX Power Selection Jumper

Jumper Label: **JP2**

Jumper Type: 2-pin header

Jumper Settings: See **Table 3-2**

Jumper Location: See **Figure 3-14**

The AT/ATX power selection jumper specifies the system power mode as AT or ATX.

Setting	Description
Short 1-2	Use ATX power (Default)
Off	Use AT power

Table 3-2: AT/ATX Power Selection Jumper Settings

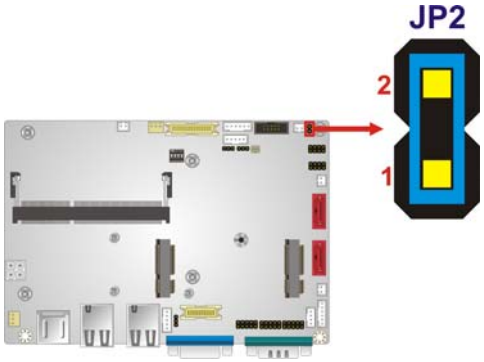


Figure 3-14: AT/ATX Power Selection Jumper Location

3.6.2 Clear CMOS Jumper

Jumper Label: **JP3**

Jumper Type: 3-pin header

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

Jumper Location: See **Figure 3-15**

If the ECW-281B-D2550 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 3-3**.

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

Table 3-3: Clear CMOS Jumper Settings

The clear CMOS jumper location is shown in **Figure 3-15** below.

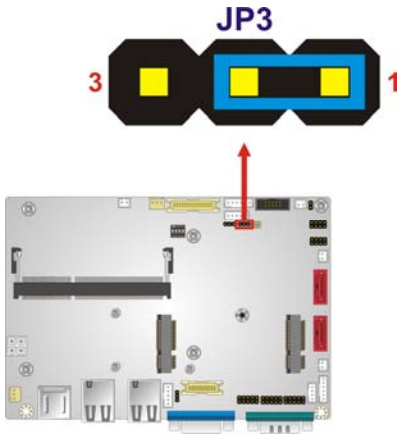


Figure 3-15: Clear CMOS Jumper Location

3.7 Mounting the System

3.7.1 Mounting the System with Mounting Brackets

To mount the embedded system onto a wall or some other surface using the two mounting brackets, please follow the steps below.

Step 1: Turn the embedded system over.

Step 2: Align the two retention screw holes in each bracket with the corresponding retention screw holes on the sides of the bottom surface.

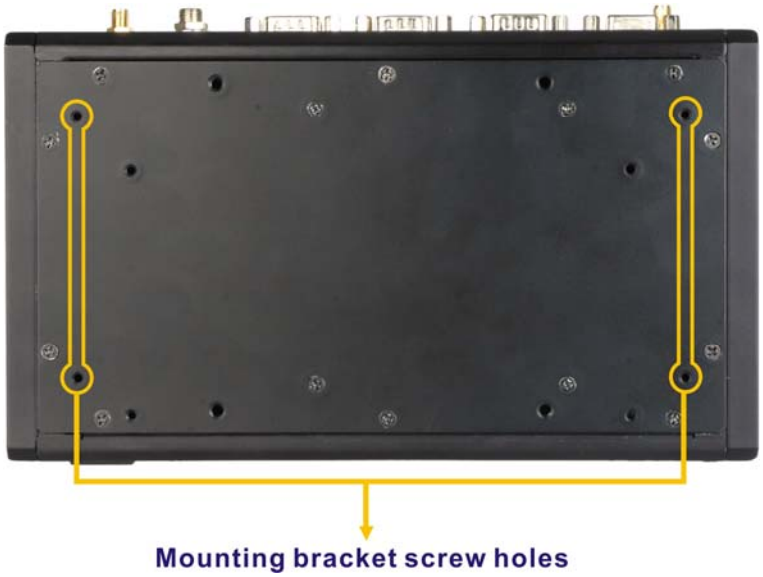


Figure 3-16: Mounting Bracket Screw Holes

Step 3: Secure the brackets to the system by inserting two retention screws into each bracket.

Step 4: Drill holes in the intended installation surface.

Step 5: Align the mounting holes in the sides of the mounting brackets with the predrilled holes in the mounting surface.

Step 6: Insert four retention screws, two in each bracket, to secure the system to the wall.

3.7.2 Mounting the System with Wall Mounting Kit (Optional)

To mount the embedded system onto a wall using the VESA MIS-D 100 wall mounting kit, please follow the steps below.

Step 1: Select the location on the wall for the wall mounting bracket.

Step 2: Carefully mark the locations of the four bracket screw holes on the wall.

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

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

Step 5: Secure the mounting bracket to the wall by inserting the retention screws into the four pilot holes and tightening them (**Figure 3-17**).

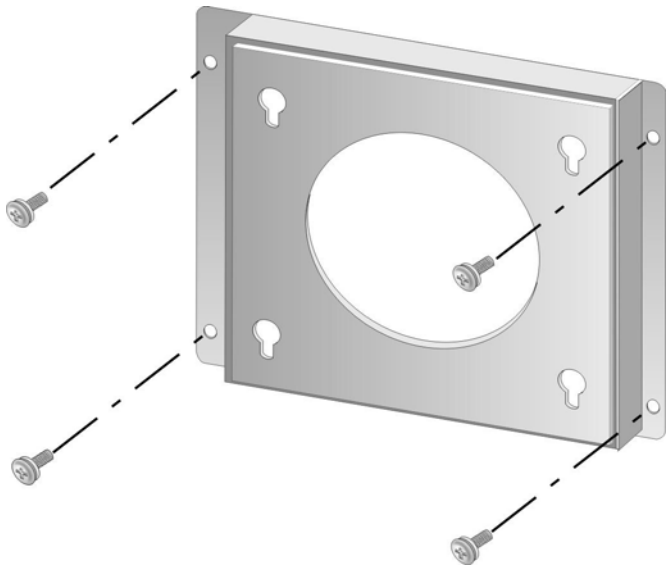


Figure 3-17: Wall Mounting Bracket

Step 6: Insert the four monitor mounting screws provided in the wall mounting kit into the four screw holes on the bottom panel of the system and tighten until the screw shank is secured against the bottom panel (**Figure 3-18**).

Step 7: Align the mounting screws on the ECW-281B-D2550 bottom panel with the mounting holes on the bracket.

Step 8: Carefully insert the screws through the holes and gently pull the monitor downwards until the ECW-281B-D2550 rests securely in the slotted holes (**Figure 3-18**). Ensure that all four of the mounting screws fit snuggly into their respective slotted holes.

NOTE:

In the diagram below the bracket is already installed on the wall.

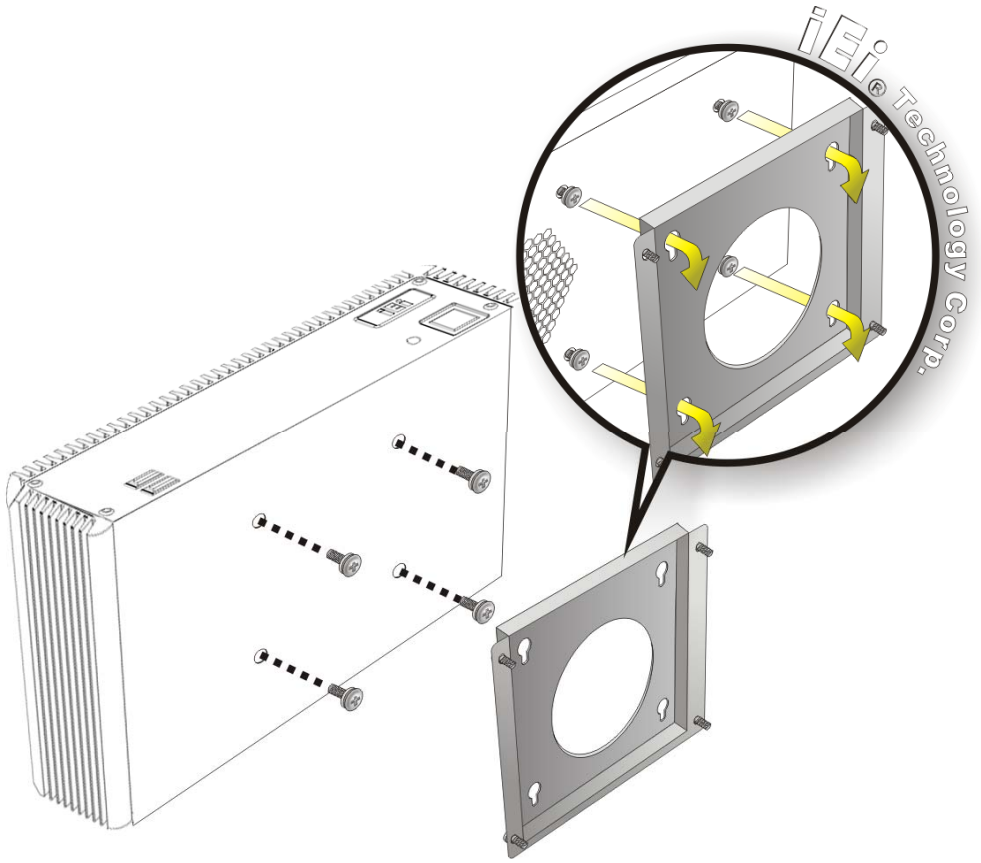


Figure 3-18: Mount the Embedded System

3.7.3 Mounting the System with DIN Rail Mounting Kit

To mount the ECW-281B-D2550 embedded system onto a DIN rail, please follow the steps below.

Step 1: Attach the DIN rail mounting bracket to the bottom panel of the embedded system. Secure the bracket to the embedded system with the supplied retention screws (**Figure 3-19**).

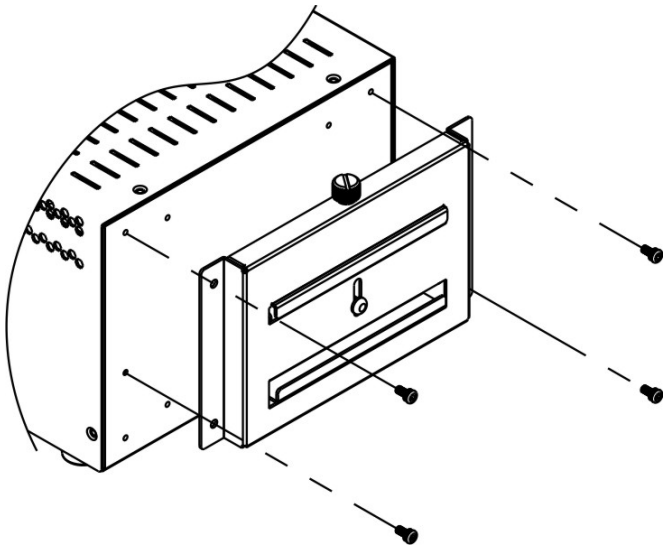


Figure 3-19: DIN Rail Mounting Bracket

Step 2: Make sure the inserted screw in the center of the bracket is at the lowest position of the elongated hole (**Figure 3-20**).

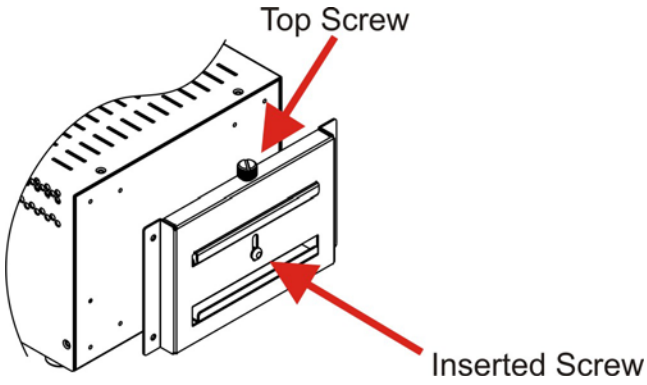


Figure 3-20: Screw Locations

Step 3: Place the DIN rail flush against the back of the mounting bracket making sure the edges of the rail are between the upper and lower clamps (**Figure 3-21**).

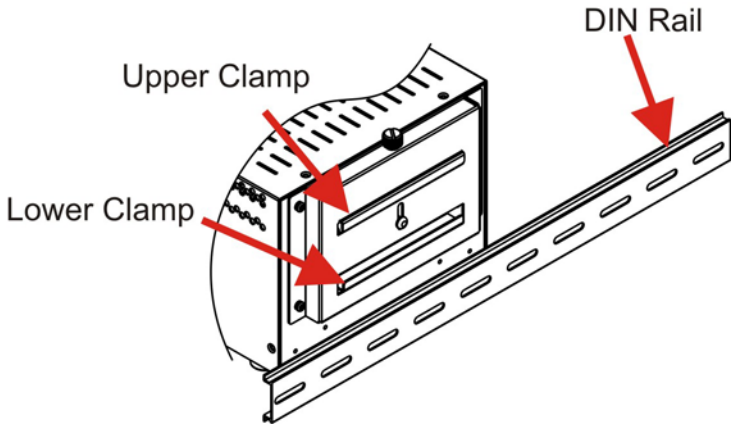


Figure 3-21: Mounting the DIN Rail

Step 4: Secure the DIN rail to the mounting bracket by turning the top screw clockwise. This draws the lower clamp up and secures the embedded system to the DIN rail (**Figure 3-22**).

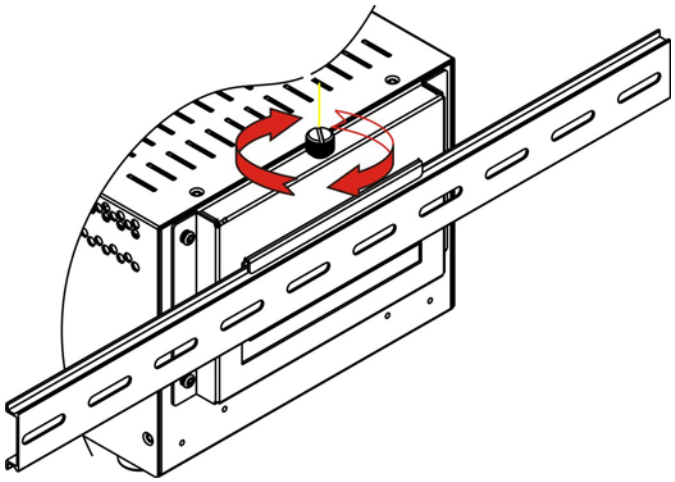


Figure 3-22: Secure the Assembly to the DIN Rail

3.7.4 Wireless Antenna Installation (Wireless Models Only)

To install the wireless antennas to the wireless ECW-281B-D2550 series for efficient wireless network transmission, follow the steps below.

Step 1: Locate the antenna connectors on the rear panel of the embedded system (refer to **Figure 1-3**).

Step 2: Install the wireless antennas to the antenna connectors (**Figure 3-23**).

Figure 3-23: Wireless Antenna Installation

3.8 External Peripheral Interface Connectors

The ECW-281B-D2550 has the following connectors. Detailed descriptions of the connectors can be found in the subsections below.

- Digital Input/Output (DIO)
- Ethernet
- Power input
- RS-232
- RS-422/485
- USB 2.0
- VGA

3.8.1 Digital Input/Output (DIO) Connector

CN Label: **DIO**

CN Type: DB-9 female connector

CN Location: See **Figure 1-3**

CN Pinouts: See **Table 3-4** and **Figure 3-24**

The digital I/O connector provides programmable input and output for external devices. The pinouts for the digital I/O connector are listed in the table below.

Pin	Description	Pin	Description
1	DIN0	6	DOUT2
2	DOUT0	7	DIN3
3	DIN1	8	DOUT3
4	DOUT1	9	VCC
5	DIN2		

Table 3-4: DIO Connector Pinouts

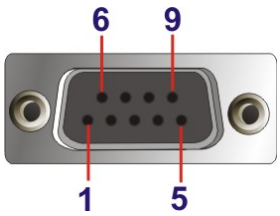


Figure 3-24: DIO Connector Pinout Location

3.8.2 LAN Connectors

CN Type: RJ-45

CN Location: See **Figure 1-3**

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

The LAN connectors allow connection to an external network.

Step 1: **Locate the RJ-45 connectors**. The locations of the RJ-45 connectors are shown in **Figure 1-3**.

Step 2: **Align the connectors**. Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the ECW-281B-D2550. See **Figure 3-25**.

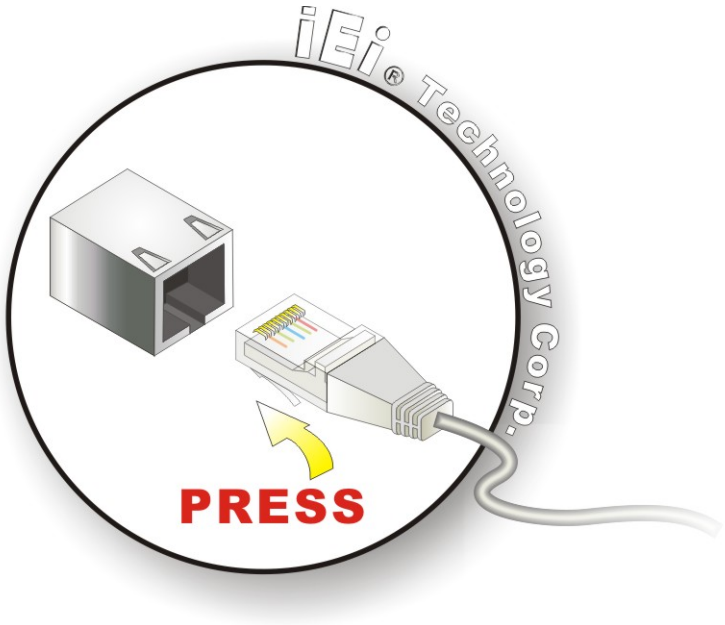


Figure 3-25: LAN Connection

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

Pin	Description	Pin	Description
1	MD0+	5	MD2+
2	MD0-	6	MD2-
3.	MD1+	7	MD3+
4.	MD1-	8	MD3-

Table 3-5: LAN Pinouts

Figure 3-26: RJ-45 Ethernet Connector

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked. See **Table 3-6**.

Activity/Link LED		Speed LED	
STATUS	**DESCRIPTION**	**STATUS**	**DESCRIPTION**
Off	No link	Off	10 Mbps connection
Yellow	Linked	Green	100 Mbps connection
Blinking	TX/RX activity	Orange	1 Gbps connection

Table 3-6: RJ-45 Ethernet Connector LEDs

3.8.3 Power Terminal Block (WD Models Only)

CN Type: 3-pin terminal block

CN Location: See **Figure 1-3**

CN Pinouts: See **Figure 3-27**

The terminal block pinouts are shown in **Figure 3-27**. The chassis ground is connected to the system internally. The cable ground is connected to the ground pin on the input power connector of the power module.

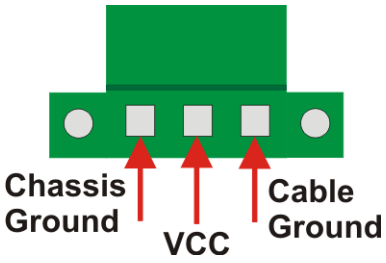


Figure 3-27: Power Terminal Block Pinouts

3.8.4 RS-232 Serial Port Connectors

CN Type:	DB-9 male connector
CN Location:	See **Figure 1-3**
CN Pinouts:	See **Table 3-7** and **Figure 3-29**

RS-232 serial port devices can be attached to the DB-9 ports on the rear panel.

Step 1: **Locate the DB-9 connector**. The locations of the DB-9 connectors are shown in **Figure 1-3**.

Step 2: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See **Figure 3-28**.

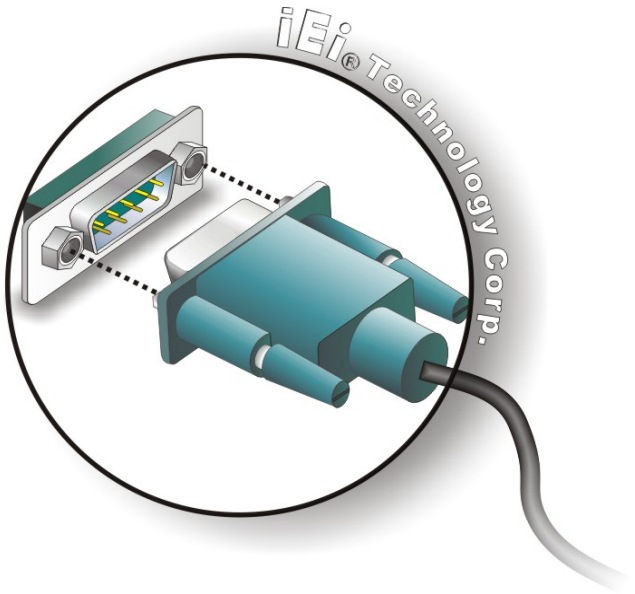


Figure 3-28: RS-232 Serial Device Connector

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

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

Table 3-7: RS-232 Serial Port Pinouts

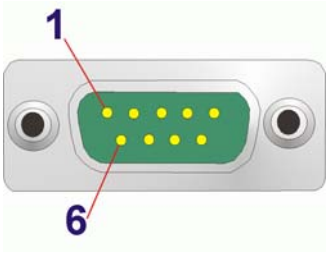


Figure 3-29: RS-232 Serial Port Pinout Location

3.8.5 RS-422/485 Serial Port Connector

CN Type: DB-9 male connector

CN Location: See **Figure 1-3**

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

RS-422/485 serial port device can be attached to the DB-9 port on the rear panel.

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

Step 2: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See **Figure 3-30**.

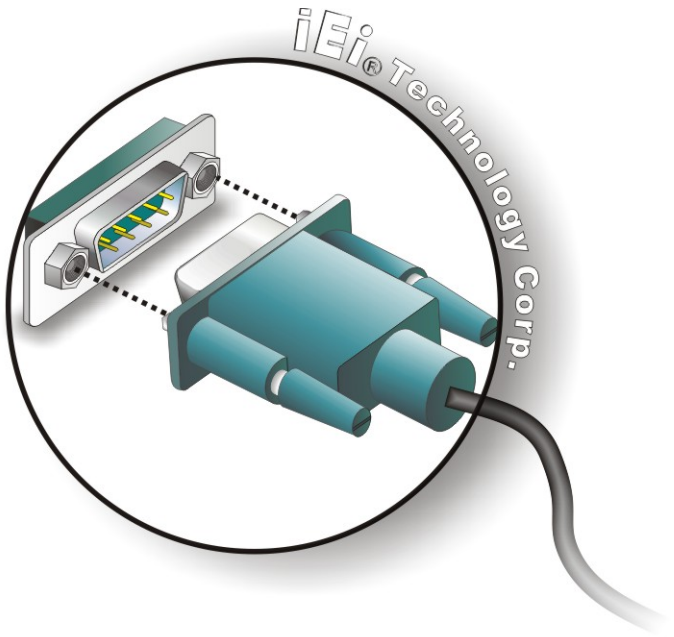


Figure 3-30: RS-422/485 Serial Device Connector

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

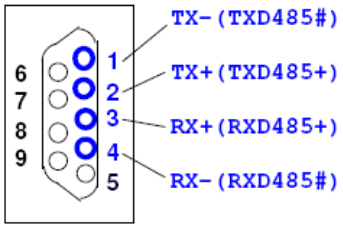
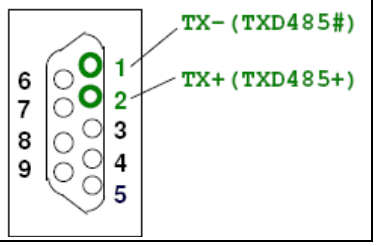
RS-422 Pinouts	RS-485 Pinouts
	

Table 3-8: RS-422/485 Serial Port Pinouts

3.8.6 USB 2.0 Connectors

CN Type: USB 2.0 port

CN Location: See **Figure 1-3**

CN Pinouts: See **Table 3-9**

The USB ports are for connecting USB peripheral devices to the system.

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

Step 2: **Align the connectors**. Align the USB device connector with one of the connectors. See **Figure 3-31**.

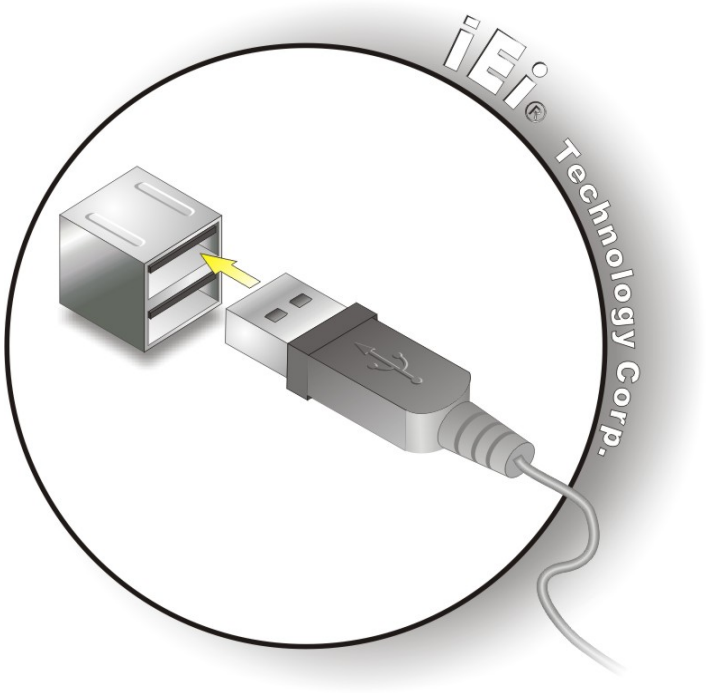


Figure 3-31: USB Device Connection

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

Pin	Description	Pin	Description
1	VCC	5	VCC
2	DATA-	6	DATA-
3	DATA+	7	DATA+
4	GROUND	8	GROUND

Table 3-9: USB 2.0 Port Pinouts

3.8.7 VGA Connector

CN Type:	15-pin DB-15 female
CN Location:	See **Figure 1-3**
CN Pinouts:	See **Figure 3-33** and **Table 3-10**

The VGA connector connects to a monitor that accepts VGA video input.

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

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

Step 3: **Insert the VGA connector**. Once the connectors are properly aligned with, insert the male connector from the VGA screen cable into the female connector on the ECW-281B-D2550. See **Figure 3-32**.

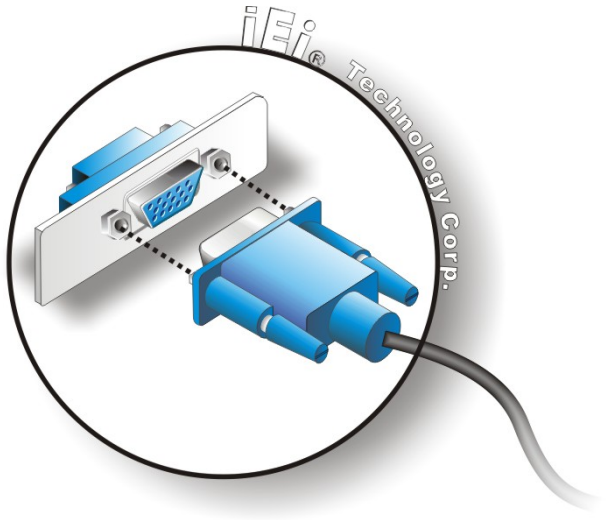


Figure 3-32: VGA Connector

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

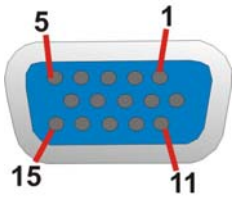


Figure 3-33: VGA Connector

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 3-10: VGA Connector Pinouts

3.9 Power-On Procedure

3.9.1 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 bottom surface panel is installed
- All peripheral devices (VGA monitor, serial communications devices etc.) are connected

- The power cables are plugged in
- The system is securely mounted

3.9.2 Powering On the System

To power on the ECW-281B-D2550, please follow the steps below:

Step 1: Push the power button.

Step 2: Once turned on, the power button should turn to blue.

Figure 3-34: Power Button

3.10 Driver Installation

NOTE:

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

The following drivers can be installed on the system:

- Chipset
- Graphics
- LAN
- Audio
- Wi-Fi (wireless models only)

To install the drivers, insert the CD into an optical disk drive connected to the system, and then locate the corresponding driver folders to install all the drivers listed above.

Chapter

4

System Maintenance

4.1 System Maintenance Introduction

The following system components may require maintenance.

- Motherboard
- SO-DIMM module

If these components fail, they must be replaced. Please contact the system reseller or vendor to purchase replacement parts. Replacement instructions for the above listed components are described below.

WARNING!

Before accessing any ECW-281B-D2550 internal components, make sure all power to the system has been disconnected. Failing to do so may cause severe damage to the ECW-281B-D2550 and injury to the user.

WARNING!

Please take antistatic precautions when working with the internal components. The interior of the ECW-281B-D2550 contains very sensitive electronic components. These components are easily damaged by electrostatic discharge (ESD). Before working with the internal components, make sure all anti-static precautions described earlier have been observed.

4.2 Motherboard Replacement

A user cannot replace a motherboard. If the motherboard fails it must be shipped back to IEI to be replaced. If the system motherboard has failed, please contact the system vendor, reseller or an IEI sales person directly.

4.3 SO-DIMM Replacement

To install/replace the SO-DIMM modules, please follow the steps below.

Step 1: **Remove the bottom surface panel.** Place the ECW-281B-D2550 on an anti-static pad with the bottom panel facing up and the bottom surface removed. (see **Section 3.2)**.

Step 2: Locate the SO-DIMM module on the motherboard.

Figure 4-1: SO-DIMM Module Location

Step 3: Release the SO-DIMM module by pulling both the spring retainer clips outward from the socket.

Step 4: Grasp the SO-DIMM module by the edges and carefully pull it out of the socket.

Step 5: Install the new SO-DIMM module by pushing it into the socket at an angle (**Figure 4-2**).

Step 6: Gently push the rear of the SO-DIMM module down (**Figure 4-2**). The spring retainer clips clip into place and secure the SO-DIMM module in the socket.

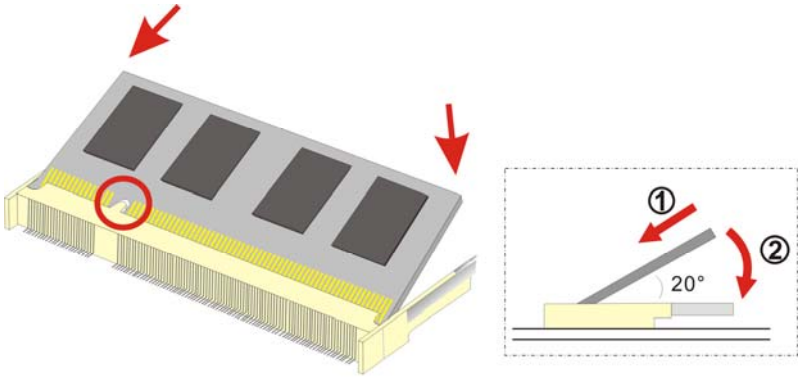


Figure 4-2: SO-DIMM Module Installation

Step 7: Push the new SO-DIMM module until it engages and the white plastic end clips click into place. Make sure the end clips are fully secured after installation.

Chapter

5

BIOS

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

1. Press the **DEL** or **F2** key as soon as the system is turned on or
2. Press the **DEL** or **F2** key when the "**Press DEL or F2 to enter SETUP**" message appears on the screen.

If the message disappears before the **DEL or F2** 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 the following table.

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
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes
Page Up key	Move to the next page
Page Dn key	Move to the previous page

Key	Function
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
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Load previous values
F3	Load optimized defaults
F4	Save changes and Exit BIOS

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 are made, CMOS defaults. Use the jumper described in Chapter 3.

5.1.5 BIOS Menu Bar

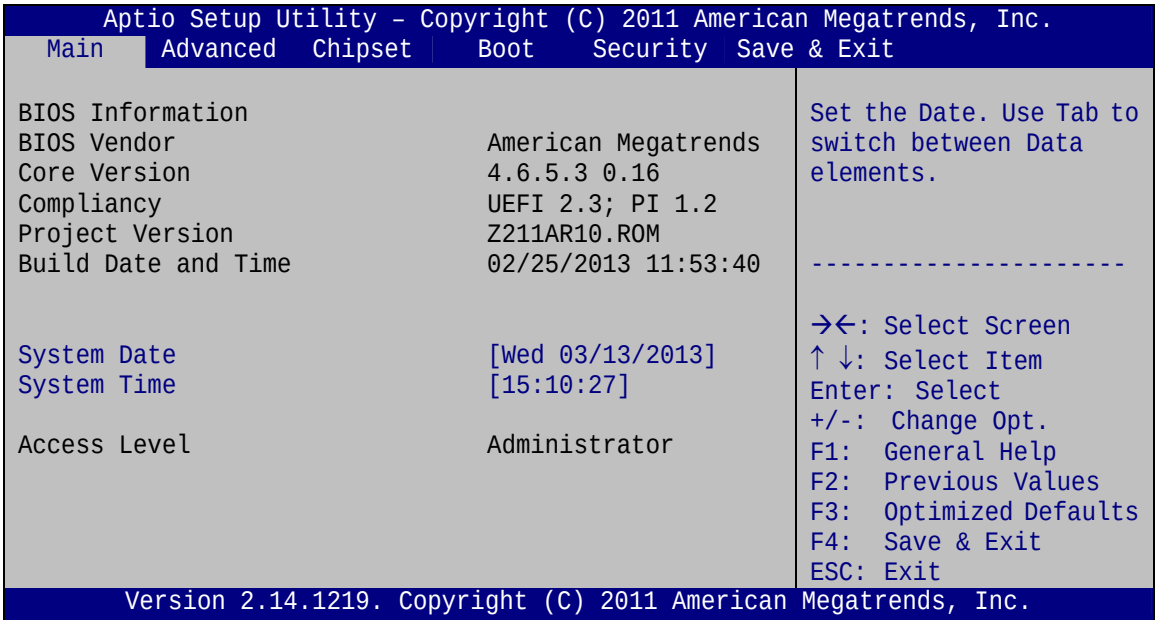
The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Boot – Changes the system boot configuration.
- Security – Sets User and Supervisor Passwords.
- Save & 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 **BIOS Information** lists a brief summary of the BIOS. The fields in **BIOS Information** cannot be changed. The items shown in the system overview include:

- **BIOS Vendor:** Installed BIOS vendor
- **Core Version:** Current BIOS version
- **Project Version:** the board version
- **Build Date and Time:** Date and time the current BIOS version was made

The System Overview field also has two user configurable fields:

➔ **System Date [xx/xx/xx]**

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

➔ **System Time [xx:xx:xx]**

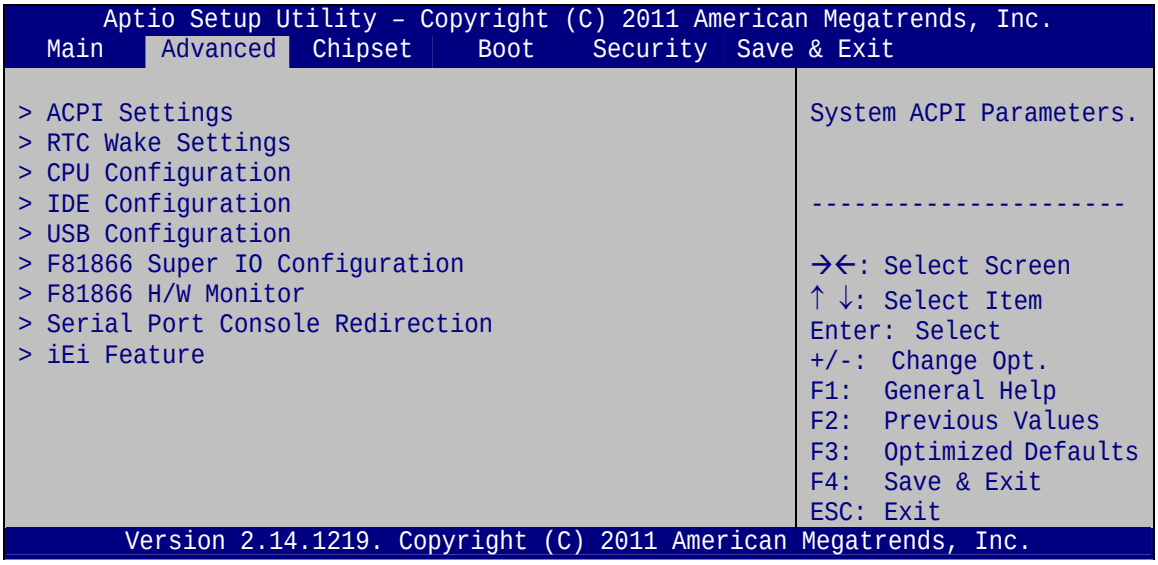
Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

5.3 Advanced

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

WARNING!

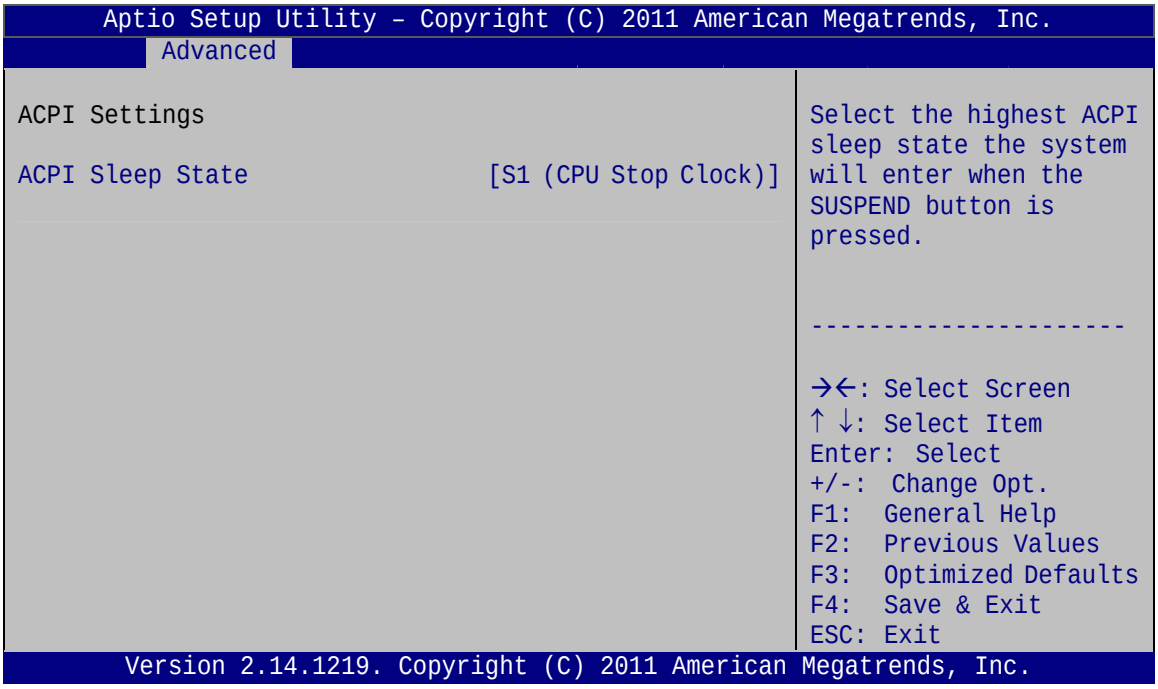
Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.



BIOS Menu 2: Advanced

5.3.1 ACPI Settings

The **ACPI Settings** menu (**BIOS Menu 3**) configures the Advanced Configuration and Power Interface (ACPI) options.



BIOS Menu 3: ACPI Configuration

➔ **ACPI Sleep State [S1 (CPU Stop Clock)]**

Use the **ACPI Sleep State** option to specify the sleep state the system enters when it is not being used.

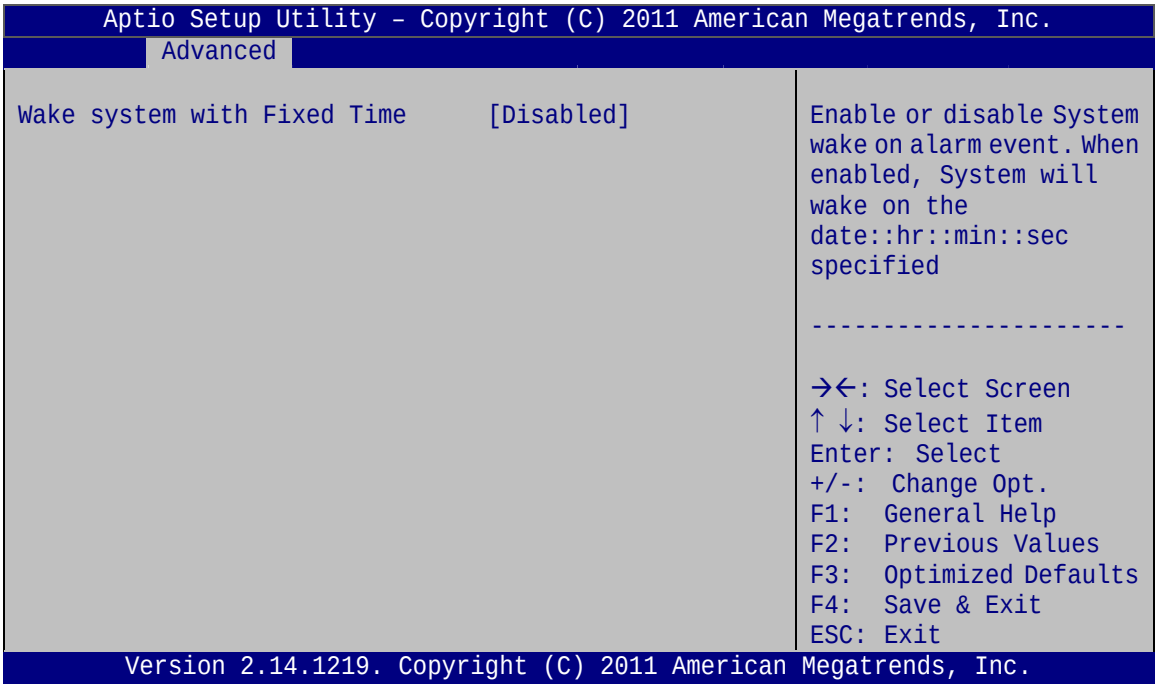
➔ **Suspend Disabled**

➔ **S1 (CPU Stop Clock)** (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 (Suspend to RAM)** The caches are flushed and the CPU is powered off. Power to the RAM is maintained. The computer returns slower to a working state, but more power is saved.

5.3.2 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 4**) enables the system to wake at the specified time.



BIOS Menu 4: RTC Wake Settings

➔ **Wake system with Fixed Time [Disabled]**

Use the **Wake system with Fixed Time** option to enable or disable the system wake on alarm event.

➔ **Disabled** **DEFAULT** The real time clock (RTC) cannot generate a wake event

➔ **Enabled** If selected, the **Wake up every day** option appears allowing you to enable to disable the system to wake every day at the specified time. Besides, the following options appear with values that can be selected:

Wake up date

Wake up hour

Wake up minute

Wake up second

After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

5.3.3 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 5**) to view detailed CPU specifications and configure the CPU.

```
      Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
          Advanced
 CPU Configuration                                  | Enabled for Windows XP
                                                    | and Linux (OS optimized
 Processor Type                 Intel(R) Atom(TM)   | for Hyper-Threading
                                CPU D2550 @ 1.86GHz | Technology) and Disabled
 EMT64                          Supported           | for other OS (OS not
 Processor Speed                1865 MHz            | optimized for
 System Bus Speed               533 MHz             | Hyper-Threading
 Ratio Status                   16                  | Technology).
 Actual Ratio                   16                  |
 System Bus Speed               533 MHz             |  ----------------------
 Processor Stepping             30661               |
 Microcode Revision             269                 | →←: Select Screen
 L1 Cache RAM                   2x56 k              | ↑ ↓: Select Item
 L2 Cache RAM                   2x512 k             | Enter: Select
 Processor Core                 Dual                | +/-: Change Opt.
 Hyper-Threading                Supported           | F1: General Help
                                                    | F2: Previous Values
 Hyper-Threading                [Enabled]           | F3: Optimized Defaults
                                                    | F4: Save & Exit
                                                    | ESC: Exit
      Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Menu 5: CPU Configuration

The CPU Configuration menu (**BIOS Menu 5**) lists the following CPU details:

- **Processor Type**: Lists the brand name of the CPU being used.
- **EMT64**: Indicates if EMT64 is supported by the CPU.
- **Processor Speed**: Lists the CPU processing speed.
- **System Bus Speed**: Lists the system bus speed.
- **Ratio Status**: Lists the ratio status.
- **Actual Ratio**: Lists the ratio of the frequency to the clock speed.
- **Processor Stepping**: Lists the CPU ID.

- **Microcode Revision**: Lists the microcode revision.
- **L1 Cache RAM**: Lists the CPU L1 cache size.
- **L2 Cache RAM**: Lists the CPU L2 cache size.
- **Processor Core**: Lists the number of the processor core.
- **Hyper-Threading**: Indicates if Intel HT Technology is supported by the CPU.

➔ **Hyper-Threading [Enabled]**

Use the **Hyper-Threading** function to enable or disable the Intel Hyper-Threading Technology.

➔ **Disabled**		Disables the Intel Hyper-Threading Technology.
➔ **Enabled**	**DEFAULT**	Enables the Intel Hyper-Threading Technology.

5.3.4 IDE Configuration

Use the **IDE Configuration** menu (**BIOS Menu 6**) to change and/or set the configuration of the SATA devices installed in the system.

```
      Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
          Advanced

SATA Port0                        Not Present       Select a configuration
SATA Port1                        Not Present       for SATA Controller.

  Configure SATA as               [IDE]
                                                    ---------------------

                                                    →←: Select Screen
                                                    ↑ ↓: Select Item
                                                    Enter: Select
                                                    +/-:  Change Opt.
                                                    F1:   General Help
                                                    F2:   Previous Values
                                                    F3:   Optimized Defaults
                                                    F4:   Save & Exit
                                                    ESC:  Exit
        Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Menu 6: IDE Configuration

➔ **Configure SATA as [IDE]**

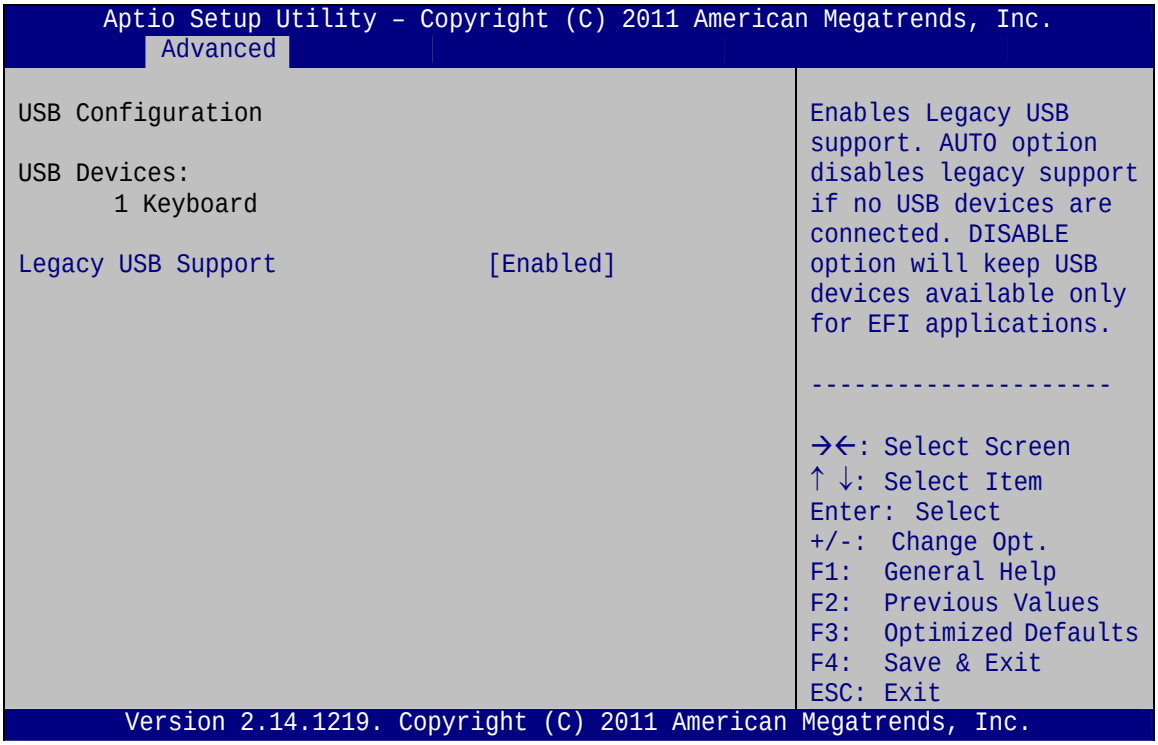
Use the **Configure SATA as** option to configure SATA devices as normal IDE or AHCI devices.

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

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

5.3.5 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 7**) to read USB configuration information and configure the USB settings.



BIOS Menu 7: USB Configuration

➔ **USB Devices**

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

➔ **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.

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

5.3.6 F81866 Super IO Configuration

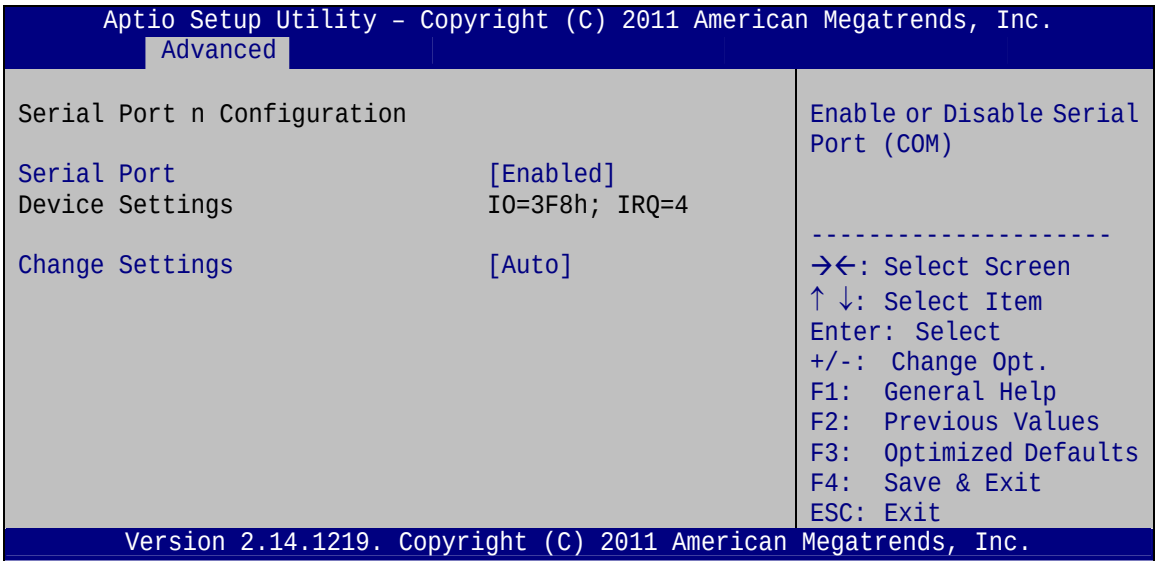
Use the **F81866 Super IO Configuration** menu (**BIOS Menu 8**) to set or change the configurations for the serial ports.

```
Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
        Advanced
F81866 Super IO Configuration                  Set Parameters of Serial
                                               Port 1 (COMA)
F81866 Super IO Chip              F81866
> Serial Port 1 Configuration
> Serial Port 2 Configuration                  ----------------------
> Serial Port 3 Configuration                  →←: Select Screen
> Serial Port 4 Configuration                  ↑ ↓: Select Item
> Serial Port 5 Configuration                  Enter: Select
> Serial Port 6 Configuration                  +/-:  Change Opt.
                                               F1:   General Help
                                               F2:   Previous Values
                                               F3:   Optimized Defaults
                                               F4:   Save & Exit
                                               ESC:  Exit
        Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Menu 8: F81866 Super IO Configuration

5.3.6.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 9**) to configure the serial port n.



BIOS Menu 9: Serial Port n Configuration Menu

5.3.6.1.1 Serial Port 1 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**		Disable the serial port
➔ **Enabled**	**DEFAULT**	Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔ **Auto**	**DEFAULT**	The serial port IO port address and interrupt address are automatically detected.
➔ **IO=3F8h; IRQ=4**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ4

➔ **IO=3F8h; IRQ=3, 4**	Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
➔ **IO=2F8h; IRQ=3, 4**	Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4
➔ **IO=3E8h; IRQ=3, 4**	Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4
➔ **IO=2E8h; IRQ=3, 4**	Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4

5.3.6.1.2 Serial Port 2 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**		Disable the serial port
➔ **Enabled**	**DEFAULT**	Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔ **Auto**	**DEFAULT**	The serial port IO port address and interrupt address are automatically detected.
➔ **IO=2F8h; IRQ=3**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ3
➔ **IO=3F8h; IRQ=3, 4**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
➔ **IO=2F8h; IRQ=3, 4**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4
➔ **IO=3E8h; IRQ=3, 4**		Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4

➔ **IO=2E8h; IRQ=3, 4**		Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4

5.3.6.1.3 Serial Port 3 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**		Disable the serial port
➔ **Enabled**	**DEFAULT**	Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔ **Auto**	**DEFAULT**	The serial port IO port address and interrupt address are automatically detected.
➔ **IO=3E8h; IRQ=10**		Serial Port I/O port address is 3E8h and the interrupt address is IRQ10
➔ **IO=3F8h; IRQ=10, 11**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ10, 11
➔ **IO=2F8h; IRQ=10, 11**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ10, 11
➔ **IO=3E8h; IRQ=10, 11**		Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11
➔ **IO=2E8h; IRQ=10, 11**		Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11
➔ **IO=250h; IRQ=10, 11**		Serial Port I/O port address is 250h and the interrupt address is IRQ10, 11
➔ **IO=2E0h; IRQ=10, 11**		Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11

5.3.6.1.4 Serial Port 4 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**		Disable the serial port
➔ **Enabled**	**DEFAULT**	Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔ **Auto**	**DEFAULT**	The serial port IO port address and interrupt address are automatically detected.
➔ **IO=2E8h; IRQ=10**		Serial Port I/O port address is 2E8h and the interrupt address is IRQ10
➔ **IO=3F8h; IRQ=10, 11**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ10, 11
➔ **IO=2F8h; IRQ=10, 11**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ10, 11
➔ **IO=3E8h; IRQ=10, 11**		Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11
➔ **IO=2E8h; IRQ=10, 11**		Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11
➔ **IO=250h; IRQ=10, 11**		Serial Port I/O port address is 250h and the interrupt address is IRQ10, 11
➔ **IO=2E0h; IRQ=10, 11**		Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11

5.3.6.1.5 Serial Port 5 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**		Disable the serial port
➔ **Enabled**	**DEFAULT**	Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔ **Auto**	**DEFAULT**	The serial port IO port address and interrupt address are automatically detected.
➔ **IO=250h; IRQ=10**		Serial Port I/O port address is 250h and the interrupt address is IRQ10
➔ **IO=3F8h; IRQ=10, 11**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ10, 11
➔ **O=2F8h; IRQ=10, 11**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ10, 11
➔ **IO=3E8h; IRQ=10, 11**		Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11
➔ **IO=2E8h; IRQ=10, 11**		Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11
➔ **IO=250h; IRQ=10, 11**		Serial Port I/O port address is 250h and the interrupt address is IRQ10, 11
➔ **IO=2E0h; IRQ=10, 11**		Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11

5.3.6.1.6 Serial Port 6 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**		Disable the serial port
➔ **Enabled**	**DEFAULT**	Enable the serial port

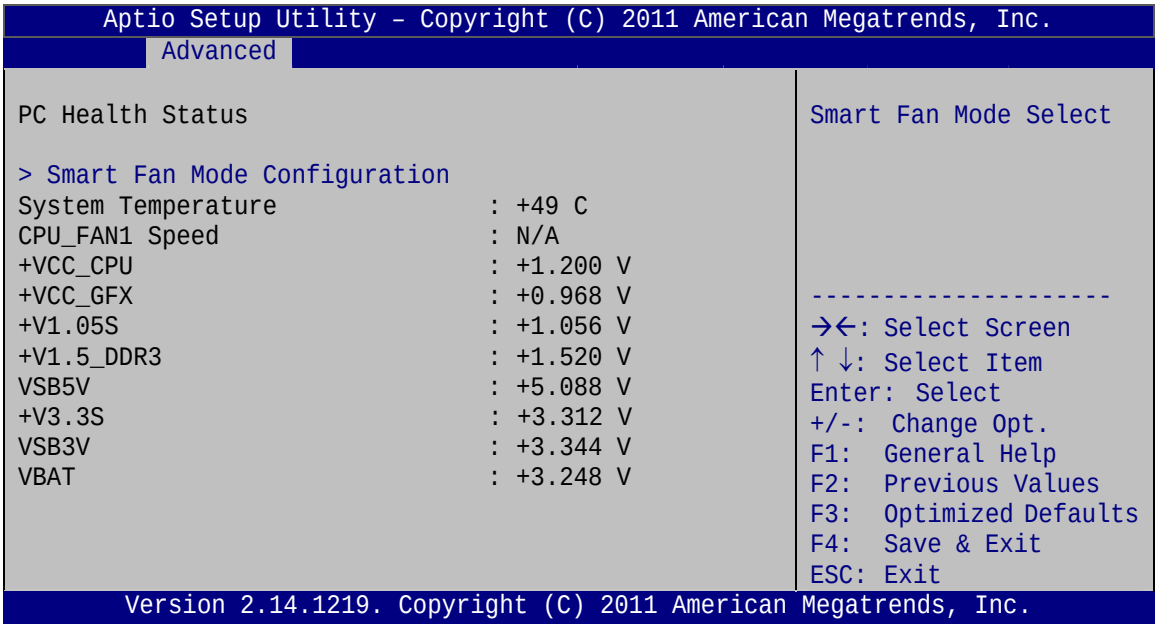
➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔ **Auto**	**DEFAULT**	The serial port IO port address and interrupt address are automatically detected.
➔ **IO=2E0h; IRQ=10**		Serial Port I/O port address is 2E0h and the interrupt address is IRQ10
➔ **IO=3F8h; IRQ=10, 11**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ10, 11
➔ **O=2F8h; IRQ=10, 11**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ10, 11
➔ **IO=3E8h; IRQ=10, 11**		Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11
➔ **IO=2E8h; IRQ=10, 11**		Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11
➔ **IO=250h; IRQ=10, 11**		Serial Port I/O port address is 250h and the interrupt address is IRQ10, 11
➔ **IO=2E0h; IRQ=10, 11**		Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11

5.3.7 F81866 H/W Monitor

The **F81866 H/W Monitor** menu (**BIOS Menu 10**) contains the fan configuration submenus and displays operating temperature, fan speed and system voltages.



BIOS Menu 10: H/W Monitor

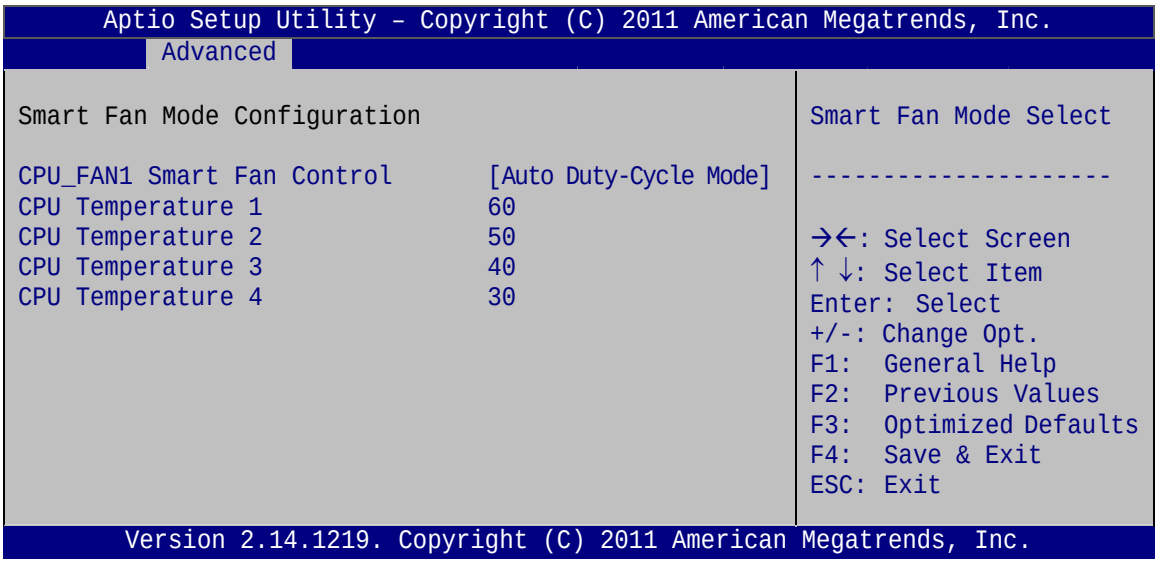
➔ **PC Health Status**

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

- System Temperature
- CPU Fan Speed
- Voltages:
  - +VCC_CPU
  - +VCC_GFX
  - +V1.05S
  - +1.5_DDR3
  - VSB5V
  - +V3.3S
  - VSB3V
  - VBAT

5.3.7.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 11**) to configure fan temperature and speed settings.



BIOS Menu 11: Smart Fan Mode Configuration

➔ **CPU_FAN1 Smart Fan Control [Auto Duty-Cycle Mode]**

Use the **CPU_FAN1 Smart Fan Control** option to configure the CPU Smart Fan.

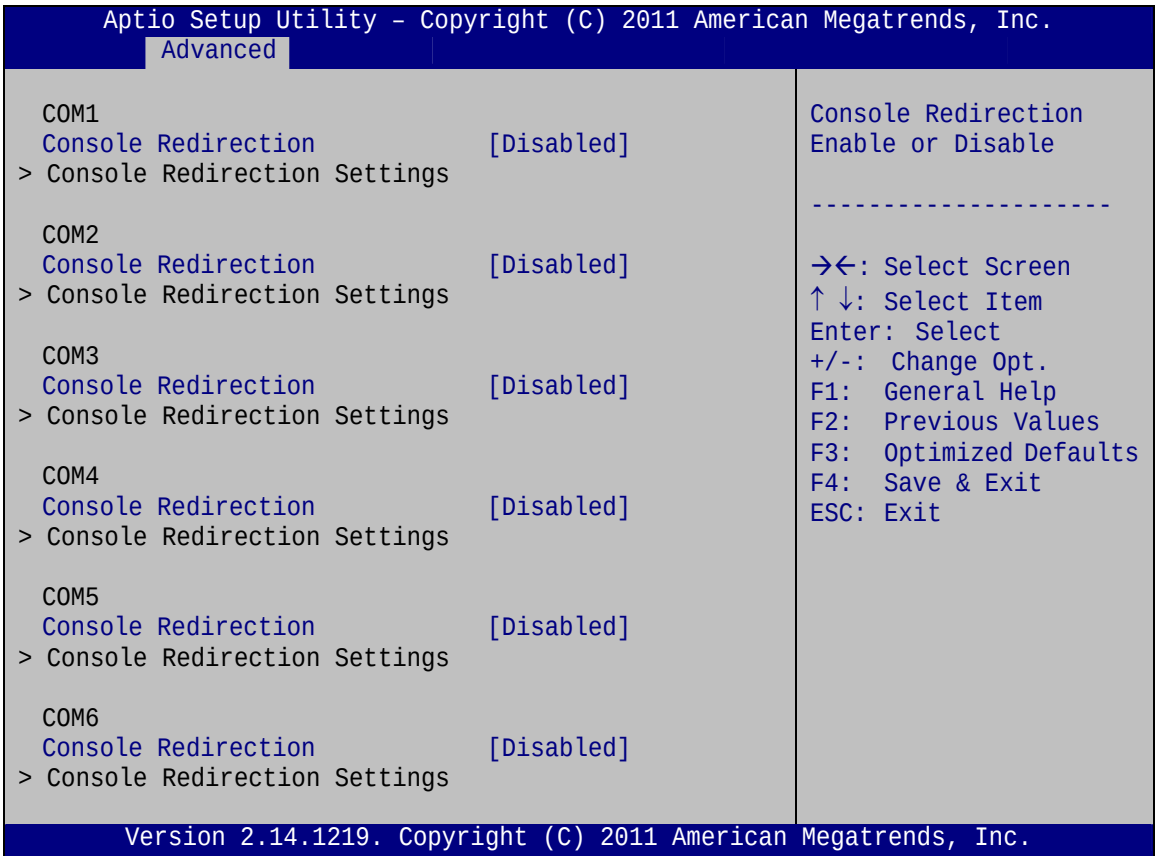
➔ **Auto Duty-Cycle Mode**	**DEFAULT**	The fan adjusts its speed using Auto Duty-Cycle settings
➔ **Manual Duty Mode**		The fan spins at the speed set in Manual Duty Mode settings

➔ **CPU Temperature n**

Use the +/– key or enter a decimal number to change the **CPU Temperature n** value.

5.3.8 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 12**) allows the console redirection options to be configured. Console redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.



BIOS Menu 12: Serial Port Console Redirection

➔ **Console Redirection [Disabled]**

Use **Console Redirection** option to enable or disable the console redirection function.

➔	**Disabled**	**DEFAULT**	Disabled the console redirection function
➔	**Enabled**		Enabled the console redirection function

➔ **Terminal Type [ANSI]**

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

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

➔ **Bits per second [115200]**

Use the **Bits per second** option to specify the serial port transmission speed. The speed must match the other side. Long or noisy lines may require lower speeds.

➔ **9600**		Sets the serial port transmission speed at 9600.
➔ **19200**		Sets the serial port transmission speed at 19200.
➔ **38400**		Sets the serial port transmission speed at 38400.
➔ **57600**		Sets the serial port transmission speed at 57600.
➔ **115200**	**DEFAULT**	Sets the serial port transmission speed at 115200.

➔ **Data Bits [8]**

Use the **Data Bits** option to specify the number of data bits.

➔ **7**		Sets the data bits at 7.
➔ **8**	**DEFAULT**	Sets the data bits at 8.

➔ **Parity [None]**

Use the **Parity** option to specify the parity bit that can be sent with the data bits for detecting the transmission errors.

➔ **None**	**DEFAULT**	No parity bit is sent with the data bits.
➔ **Even**		The parity bit is 0 if the number of ones in the data bits is even.
➔ **Odd**		The parity bit is 0 if the number of ones in the data bits is odd.
➔ **Mark**		The parity bit is always 1. This option does not provide error detection.
➔ **Space**		The parity bit is always 0. This option does not provide error detection.

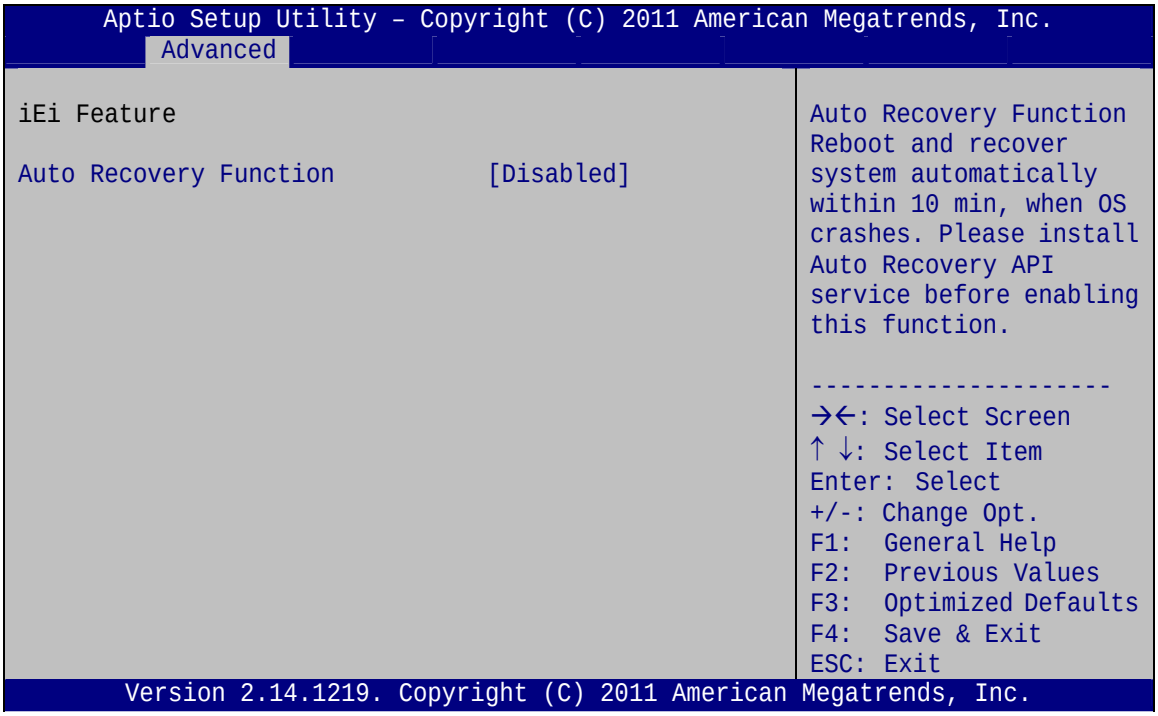
➔ **Stop Bits [1]**

Use the **Stop Bits** option to specify the number of stop bits used to indicate the end of a serial data packet. Communication with slow devices may require more than 1 stop bit.

➔	**1**	**DEFAULT**	Sets the number of stop bits at 1.
➔	**2**		Sets the number of stop bits at 2.

5.3.9 iEi Feature

Use the **iEi Feature** menu (**BIOS Menu 13**) to configure One Key Recovery function.



BIOS Menu 13: iEi Feature

➔ **Auto Recovery Function [Disabled]**

Use the **Auto Recovery Function** BIOS option to enable or disable the auto recovery function of the IEI One Key Recovery.

➔	**Disabled**	**DEFAULT**	Auto recovery function disabled
➔	**Enabled**		Auto recovery function enabled

5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 14**) to access the Host Bridge and Southbridge configuration menus.

WARNING!

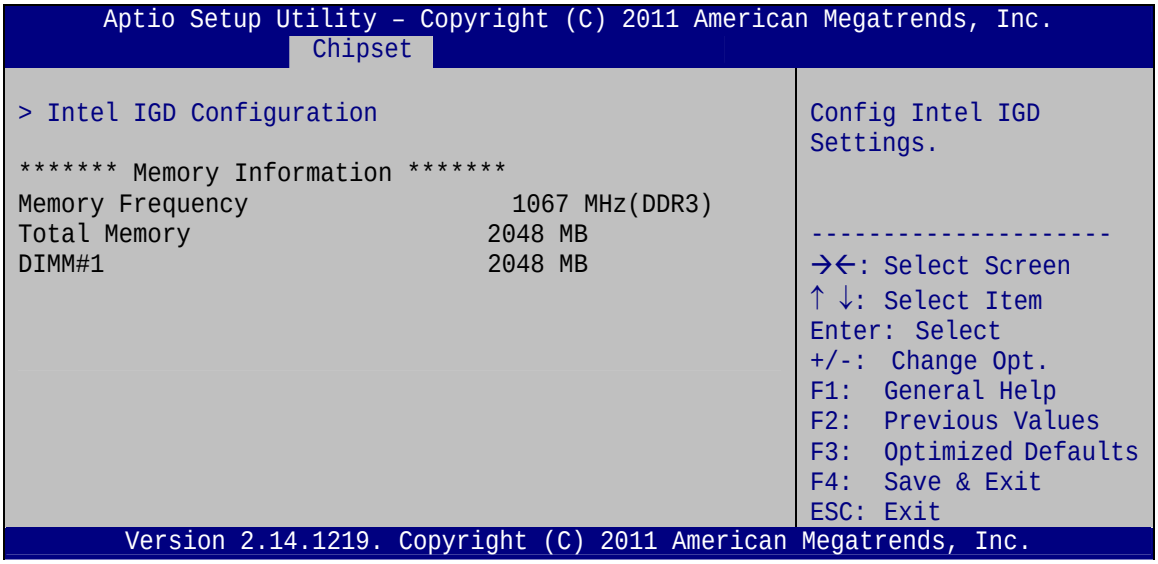
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.

```
      Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
  Main    Advanced  Chipset    Boot    Security  Save & Exit

> Host Bridge                                   Host Bridge Parameters
> South Bridge


                                                ---------------------
                                                →←: Select Screen
                                                ↑ ↓: Select Item
                                                Enter:  Select
                                                +/-:  Change Opt.
                                                F1:   General Help
                                                F2:   Previous Values
                                                F3:   Optimized Defaults
                                                F4:   Save & Exit
                                                ESC:  Exit
        Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Menu 14: Chipset

5.4.1 Host Bridge Configuration

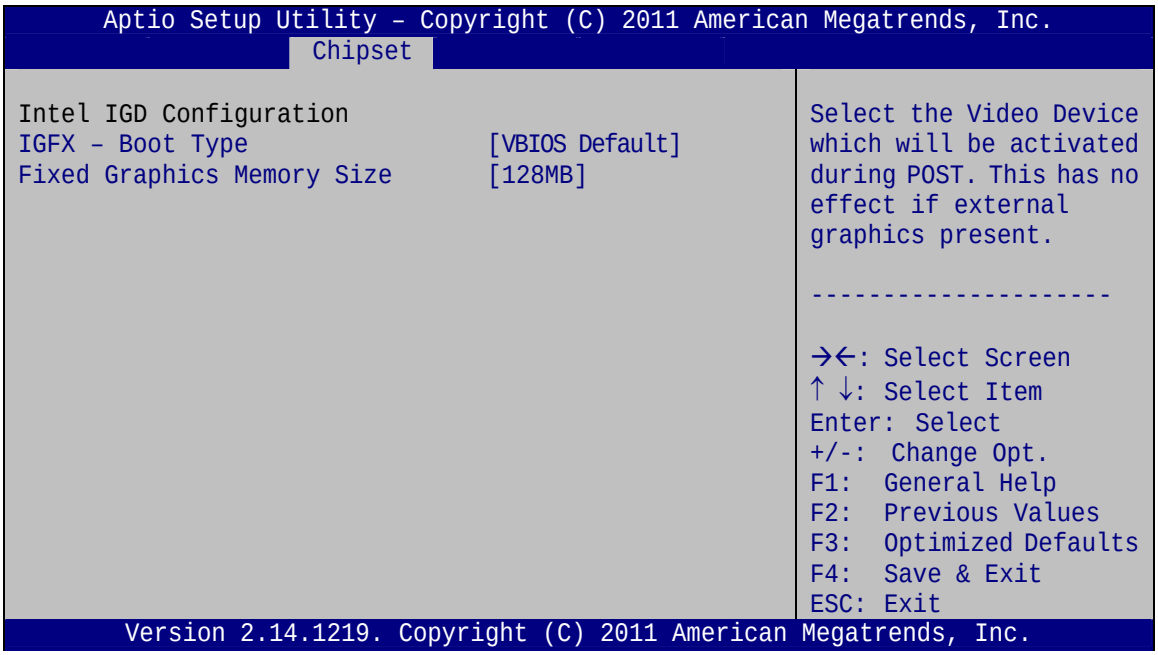
Use the **Host Bridge Configuration** menu (**BIOS Menu 15**) to configure the Intel IGD Configuration and display the memory information.



BIOS Menu 15: Host Bridge Configuration

5.4.1.1 Intel IGD Configuration

Use the **Intel IGD Configuration** menu (**BIOS Menu 16**) to configure the graphics options.



BIOS Menu 16: Intel IGD Configuration

➔ **IGFX - Boot Type [VBIOS Default]**

Use the **IGFX - Boot Type** option to select the display device used by the system when it boots. Configuration options are listed below.

- VBIOS Default **DEFAULT**
- CRT

➔ **Fixed Graphics Memory Size [128MB]**

Use the **Fixed Graphics Memory Size** option to specify the maximum amount of memory that can be allocated as graphics memory. Configuration options are listed below.

- 128MB **DEFAULT**
- 256MB

5.4.2 South Bridge Configuration

Use the **South Bridge Configuration** menu (**BIOS Menu 17**) to configure the Southbridge chipset.

```
Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
                    Chipset
Auto Power Button Status        [Disabled(ATX)]     Select AC power state
                                                    when power is re-applied
Restore AC Power Loss           [Last State]        after a power failure.
Power Saving Function(ERP)      [Disabled]

Azalia Controller               [Enabled]           ----------------------

Set Spread Spectrum function    [Disabled]          →←: Select Screen
                                                    ↑ ↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Menu 17: South Bridge Configuration

➔ **Restore AC Power Loss [Last State]**

Use the **Restore 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.

➔ **Power Saving Function(ERP) [Disabled]**

Use the **Power Saving Function(ERP)** option to enable or disable the power saving function.

➔ **Disabled**	**DEFAULT**	Disables the power saving function.
➔ **Enabled**		Enables the power saving function.

➔ **Azalia Controller [Enabled]**

Use the **Azalia Controller** option to enable or disable the High Definition Audio controller.

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

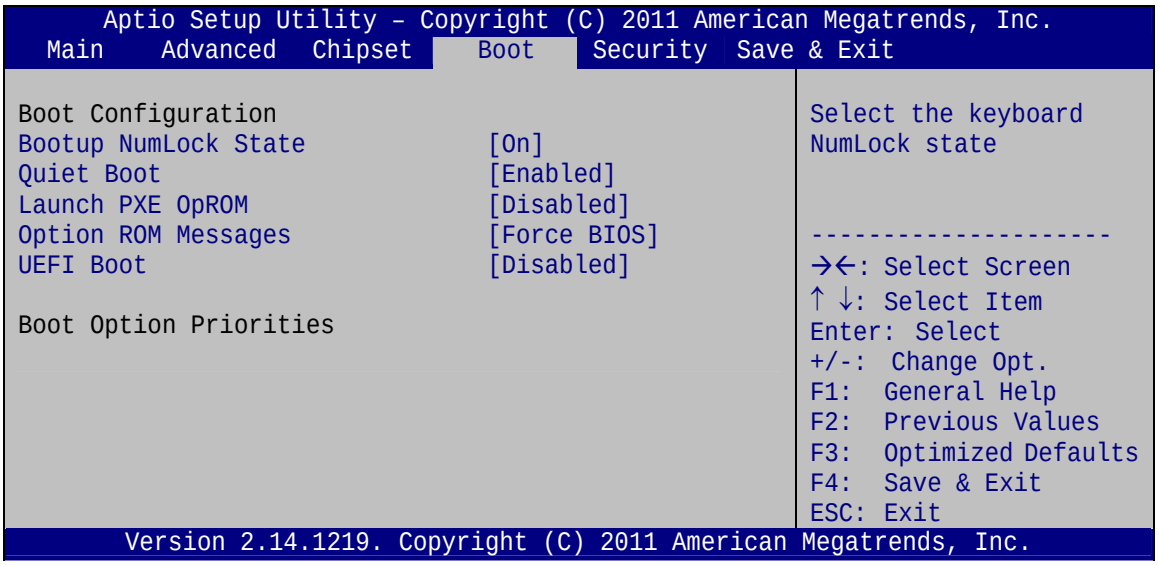
➔ **Set Spread Spectrum Function [Disabled]**

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

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

5.5 Boot

Use the **Boot** menu (**BIOS Menu 18**) to configure system boot options.



BIOS Menu 18: Boot

➔ Bootup NumLock State [On]

Use the **Bootup NumLock State** BIOS option to specify if the number lock setting must be modified during boot up.

➔ **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.

➔ **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.

➔ **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

➔ **Launch PXE OpROM [Disabled]**

Use the **Launch PXE OpROM** option to enable or disable boot option for legacy network devices.

➔ **Disabled**	**DEFAULT**	Ignore all PXE Option ROMs
➔ **Enabled**		Load PXE Option ROMs.

➔ **Option ROM Messages [Force BIOS]**

Use the **Option ROM Messages** option to set the Option ROM display mode.

➔ **Force BIOS**	**DEFAULT**	Sets display mode to force BIOS.
➔ **Keep Current**		Sets display mode to current.

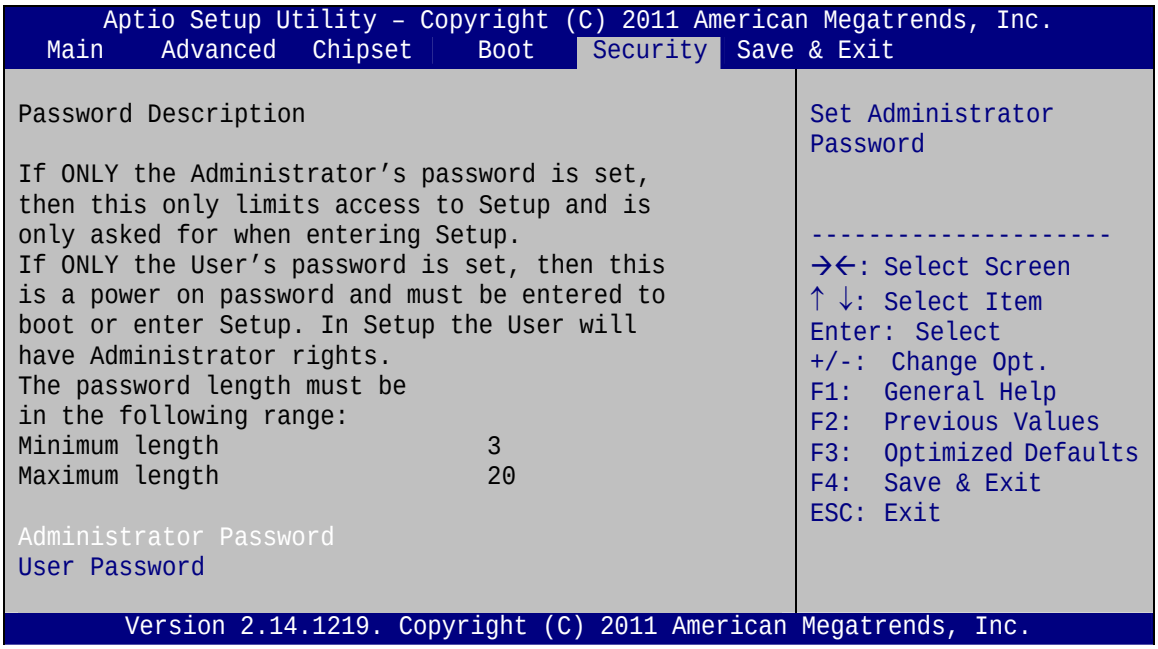
➔ **UEFI Boot [Disabled]**

Use the **UEFI Boot** BIOS option to allow the system to boot from the UEFI devices.

➔ **Disabled**	**DEFAULT**	Disables to boot from the UEFI devices.
➔ **Enabled**		Enables to boot from the UEFI devices.

5.6 Security

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



BIOS Menu 19: Security

➔ **Administrator Password**

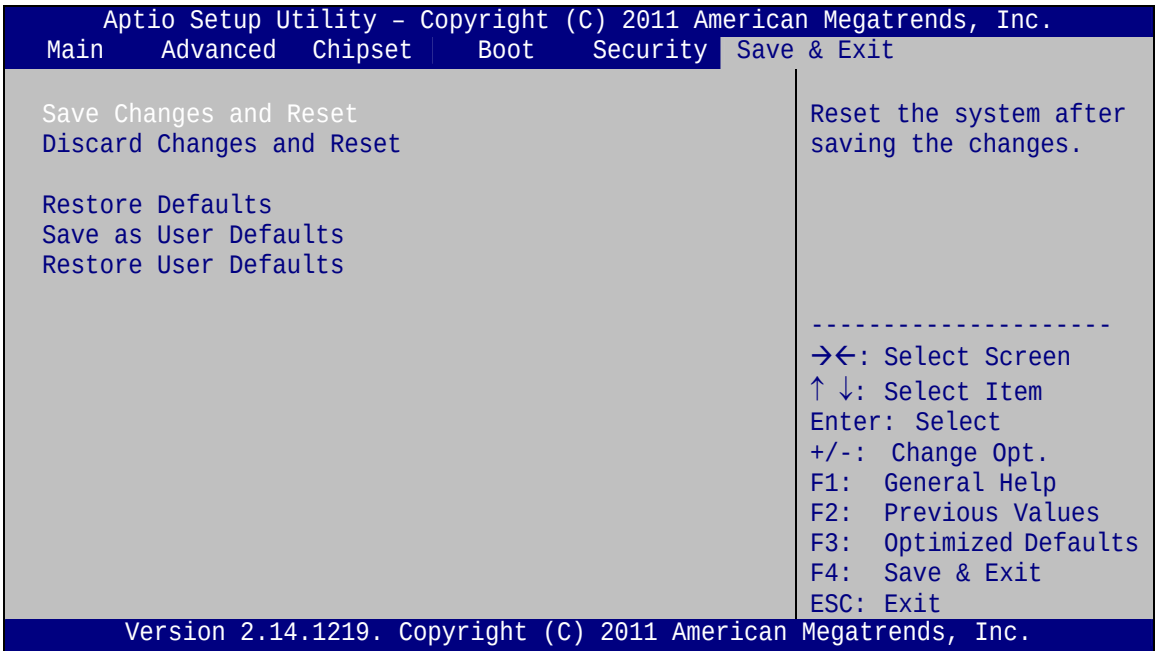
Use the **Administrator Password** to set or change an administrator password.

➔ **User Password**

Use the **User Password** to set or change a user password.

5.7 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 20**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 20: Save & Exit

➔ **Save Changes and Reset**

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

➔ **Discard Changes and Reset**

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

➔ **Restore Defaults**

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

➔ **Save as User Defaults**

Use the **Save as User Defaults** option to save the changes done so far as user defaults.

➔ **Restore User Defaults**

Use the **Restore User Defaults** option to restore the user defaults to all the setup options.

Chapter

6

Interface Connectors

6.1 Peripheral Interface Connectors

The ECW-281B-D2550 embedded system motherboard comes with a number of peripheral interface connectors and configuration jumpers. The connector locations are shown in **Figure 6-1**. The Pin 1 locations of the on-board connectors are also indicated in the diagrams. The connector pinouts for these connectors are listed in the following sections.

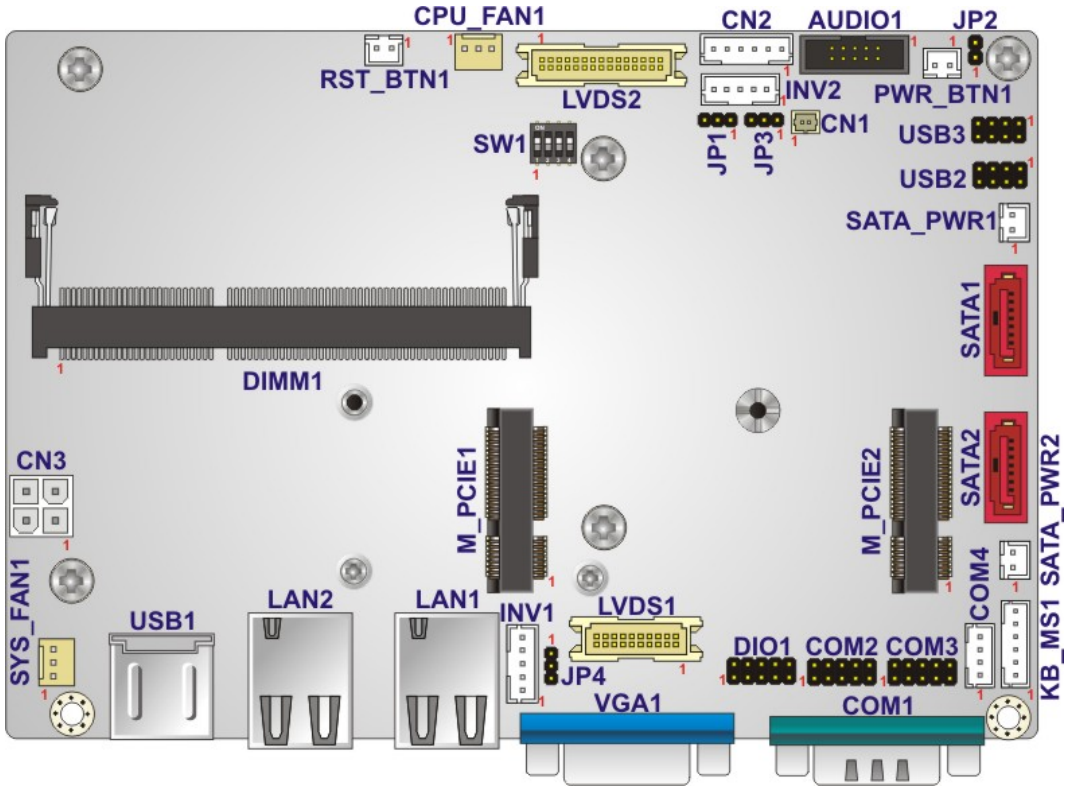


Figure 6-1: Main Board Layout Diagram

6.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. The table below shows a list of the peripheral interface connectors on the ECW-281B-D2550 motherboard. Pinouts of these connectors can be found in the following sections.

Connector	Type	Label
5 V SATA power connectors	2-pin wafer	SATA_PWR1, SATA_PWR2
12 V power connector	4-pin Molex power connector	CN3
Audio connector	10-pin box header	AUDIO1
Backlight inverter connectors	5-pin wafer	INV1, INV2
Battery connector	2-pin wafer	CN1
Digital Input/Output (DIO) connector	10-pin header	DIO1
Fan connectors	3-pin wafer	CPU_FAN1, SYS_FAN2
Keyboard and mouse connector	6-pin wafer	KB_MS1
LVDS connectors	20-pin/30-pin crimp	LVDS1, LVDS2
PCIe Mini card slots	52-pin PCIe Mini	M_PCIE1, M_PCIE2
Power & HDD LED connector	6-pin header	CN2
Power button connector	2-pin wafer	PWR_BTN1
Reset button connector	2-pin wafer	RST_BTN1
RS-232 serial port connectors	10-pin header	COM2, COM3
RS-422/485 serial port connector	4-pin wafer	COM4
Serial ATA (SATA) drive connectors	7-pin SATA	SATA1, SATA2
USB 2.0 connectors	8-pin header	USB2, USB3

Table 6-1: Peripheral Interface Connectors

6.2.1 5 V SATA Power Connectors (SATA_PWR1, SATA_PWR2)

PIN NO.	DESCRIPTION
1	+5V
2	Ground

Table 6-2: 5 V SATA Power Connector Pinouts

6.2.2 12 V Power Connector (CN3)

PIN NO.	DESCRIPTION
1	GND
2	GND
3	+12V
4	+12V

Table 6-3: 12 V Power Connector (CN3) Pinouts

6.2.3 Audio Connector (AUDIO1)

PIN NO.	DESCRIPTION	PIN NO.	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

Table 6-4: Audio Connector (AUDIO1) Pinouts

6.2.4 Backlight Inverter Connectors (INV1, INV2)

PIN NO.	DESCRIPTION
1	LCD_BKLTCTL
2	GROUND
3	+12V
4	GROUND
5	LCD_BKLEN

Table 6-5: Backlight Inverter Connector (INV1, INV2) Pinouts

6.2.5 Battery Connector (CN1)

PIN NO.	DESCRIPTION
1	Battery+
2	GND

Table 6-6: Battery Connector (CN1) Pinouts

6.2.6 Digital I/O Connector (DIO1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

Table 6-7: Digital I/O Connector (DIO1) Pinouts

6.2.7 Fan Connectors (CPU_FAN1, SYS_FAN1)

PIN NO.	DESCRIPTION
1	GND
2	+12 V
3	Fan Speed Detect

Table 6-8: Fan Connector (CPU_FAN1, SYS_FAN1) Pinouts

6.2.8 Keyboard/Mouse Connector (KB_MS1)

PIN NO.	DESCRIPTION
1	+5 V KB DATA
2	MS DATA
3	MS CLK
3	KB DATA
5	KB CLK
6	GROUND

Table 6-9: Keyboard/Mouse Connector (KB_MS1) Pinouts

6.2.9 LVDS1 Connector (LVDS1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	LVDS_DATA0	4	LVDS_DATA0#
5	LVDS_DATA1	6	LVDS_DATA1#
7	LVDS_DATA2	8	LVDS_DATA2#
9	LVDS_CLK	10	LVDS_CLK#
11	LVDS_DATA3	12	LVDS_DATA3#
13	GND	14	GND
15	LDDC_DATA	16	LDDC_CLK
17	VCC_LCD	18	VCC_LCD
19	VCC_LCD	20	VCC_LCD

Table 6-10: LVDS1 Connector (LVDS1) Pinouts

6.2.10 LVDS2 Connector (LVDS2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	LVDS_DATA0	4	LVDS_DATA0#
5	LVDS_DATA1	6	LVDS_DATA1#
7	LVDS_DATA2	8	LVDS_DATA2#
9	LVDS_CLK1	10	LVDS_CLK1#
11	LVDS_DATA3	12	LVDS_DATA3#
13	GND	14	GND
15	LVDS_DATA4	16	LVDS_DATA4#
17	LVDS_DATA5	18	LVDS_DATA5#
19	LVDS_DATA6	20	LVDS_DATA6#
21	LVDS_CLK2	22	LVDS_CLK2#
23	LVDS_DATA7	24	LVDS_DATA7#
25	GND	26	GND
27	VCC_LCD	28	VCC_LCD
29	VCC_LCD	30	VCC_LCD

Table 6-11: LVDS2 Connector (LVDS2) Pinouts

6.2.11 PCIe Mini Card Slots (M_PCIE1, M_PCIE2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PCIE_WAKE#	2	VCC3
3	N/C	4	GND
5	N/C	6	1.5V
7	N/C	8	N/C
9	GND	10	N/C
11	PCIE_CLK#	12	N/C
13	PCIE_CLK	14	N/C
15	GND	16	N/C
17	N/C	18	GND
19	N/C	20	N/C

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
21	GND	22	PCIRST#
23	PCIE_RXN	24	VCC3
25	PCIE_RXP	26	GND
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PCIE_TXN	32	SMBDATA
33	PCIE_TXP	34	GND
35	GND	36	USBD-
37	GND	38	USBD+
39	VCC3	40	GND
41	VCC3	42	N/C
43	GND	44	N/C
45	N/C	46	N/C
47	N/C	48	1.5V
49	N/C	50	GND
51	N/C	52	VCC3

Table 6-12: PCIe Mini Card Slot (M_PCIE1, M_PCIE2) Pinouts

6.2.12 Power & HDD LED Connector (CN2)

PIN NO.	DESCRIPTION
1	+5V
2	GND
3	Power LED+
3	Power LED-
5	HDD LED+
6	HDD LED-

Table 6-13: Power & HDD LED Connector (CN2) Pinouts

6.2.13 Power Button Connector (PWR_BTN1)

PIN NO.	DESCRIPTION
1	PWR_BTN+
2	PWR_BTN-

Table 6-14: Power Button Connector (PWR_BTN1) Pinouts

6.2.14 Reset Button Connector (RST_BTN1)

PIN NO.	DESCRIPTION
1	RESET+
2	RESET-

Table 6-15: Reset Button Connector (RST_BTN1) Pinouts

6.2.15 RS-232 Serial Port Connectors (COM2, COM3)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND

Table 6-16: RS-232 Serial Port Connector (COM2, COM3) Pinouts

6.2.16 RS-422/485 Serial Port Connector (COM4)

PIN NO.	DESCRIPTION
1	RXD422-
2	RXD422+
3	TXD422+/TXD485+
4	TXD422-/TXD485-

Table 6-17: RS-422/485 Serial Port Connector (COM4) Pinouts

6.2.17 SATA Drive Connectors (SATA1, SATA2)

PIN NO.	DESCRIPTION
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

Table 6-18: SATA Drive Connector (SATA1, SATA2) Pinouts

6.2.18 USB Connectors (USB2, USB3)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	USB_VCC	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	USB_VCC

Table 6-19: USB Connectors (USB2, USB3) Pinouts

6.3 External Interface Panel Connectors

The table below lists the rear panel connectors on the ECW-281B-D2550 motherboard. Pinouts of these connectors can be found in the following sections.

Connector	Type	Label
Dual USB port	Dual USB port	USB1
Ethernet connectors	RJ-45	LAN1, LAN2
RS-232 serial port connector	Male DB-9	COM1
VGA connector	15-pin female	VGA1

Table 6-20: Rear Panel Connectors

6.3.1 Ethernet Connectors (LAN1, LAN2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	MD0+	5	MD2+
2	MD0-	6	MD2-
3	MD1+	7	MD3+
4	MD1-	8	MD3-

Table 6-21: Ethernet Connector Pinouts

6.3.2 RS-232 Serial Port (COM1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND		

Table 6-22: RS-232 Serial Port Pinouts

6.3.3 USB Connectors (USB1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	VCC
2	DATA-	4	DATA-
3	DATA+	6	DATA+
4	GROUND	8	GROUND

Table 6-23: USB Connector (USB1) Pinouts

6.3.4 VGA Connector (VGA1)

PIN NO.	DESCRIPTION	PIN NO.	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 6-24: VGA Connector (VGA1) Pinouts

6.4 Jumper Settings

The table below lists the jumpers on the ECW-281B-D2550 motherboard.

Jumper Name	Label	Type
AT/ATX power selection	JP2	2-pin header
Clear CMOS	JP3	3-pin header
LVDS1 voltage selection	JP4	3-pin header
LVDS2 voltage selection	JP1	3-pin header
LVDS2 panel type selection	SW1	DIP switch

Table 6-25: Jumpers

6.4.1 AT/ATX Power Selection Jumper (JP2)

Pin	Description
Short 1-2	Use ATX power (Default)
Off	Use AT power

Table 6-26: AT/ATX Power Selection Jumper (JP2) Settings

6.4.2 Clear CMOS Jumper (JP3)

Pin	Description
Short 1-2	Keep CMOS Setup (Default)
Short 2-3	Clear CMOS Setup

Table 6-27: Clear CMOS Jumper (JP3) Settings

6.4.3 LVDS1 Voltage Selection Jumper (JP4)

Pin	Description
Short 1-2	+3.3V LVDS (Default)
Short 2-3	+5V LVDS

Table 6-28: LVDS1 Voltage Selection Jumper (JP4) Settings

6.4.4 LVDS2 Voltage Selection Jumper (JP1)

Pin	Description
Short 1-2	+3.3V LVDS (Default)
Short 2-3	+5V LVDS

Table 6-29: LVDS2 Voltage Selection Jumper (JP1) Settings

6.4.5 LVDS2 Panel Type Selection Switch (SW1)

Pin No. 4321	EDID Resolution	Color Depth	Channel
0000	800 x 600 @ 60 Hz	18-bit	Single
0001	1024 x 768 @ 60Hz	18-bit	Single
0010	1024 x 768 @ 60Hz	24-bit	Single
0011	1280 x 768 @ 60Hz	18-bit	Single
0100	1280 x 800 @ 60Hz	18-bit	Single
0101	1280 x 960 @ 60Hz	18-bit	Single
0110	1280 x 1024 @ 60Hz	24-bit	Dual
0111	1366 x 768 @ 60Hz	18-bit	Single

Pin No. 4321	EDID Resolution	Color Depth	Channel
1000	1366 x 768 @ 60Hz	24-bit	Single
1001	1440 x 900 @ 60Hz	24-bit	Dual
1010	1440 x 1050 @ 60Hz	24-bit	Dual
1011	1600 x 900 @ 60Hz	24-bit	Dual
1100	1680 x 1050 @ 60Hz	24-bit	Dual
1101	1600 x 1200 @ 60Hz	24-bit	Dual
1110	1920 x 1080 @ 60Hz	24-bit	Dual
1111	1920 x 1200 @ 60Hz	24-bit	Dual

Table 6-30: LVDS2 Panel Type Selection Switch (SW1) Settings

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. This tool provides quick and easy shortcuts for creating a backup and reverting to that backup or reverting to the factory default settings.

NOTE:

The latest One Key Recovery software provides an auto recovery function that allows a system running Microsoft Windows OS to automatically restore from the factory default image after encountering a Blue Screen of Death (BSoD) or a hang for around 10 minutes. Please refer to **Section A.3** for the detailed setup procedure.

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 the 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.5**.

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 2000
  - Windows XP (Service Pack 2 or 3 required)
  - Windows Vista
  - Windows 7
  - Windows CE 5.0
  - Windows CE 6.0
  - Windows XP Embedded
  - Windows Embedded Standard 7

NOTE:

The auto recovery function (described in **Section A.3**) and the restore through LAN function (described in **Section A.6**) are not supported in the Windows CE 5.0/6.0 operating system environment.

- 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, 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 the recovery partition (see **Section A.2.4**) or build the auto recovery partition (see **Section A.3**)

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, most of the setup procedures are the same except for several steps 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!

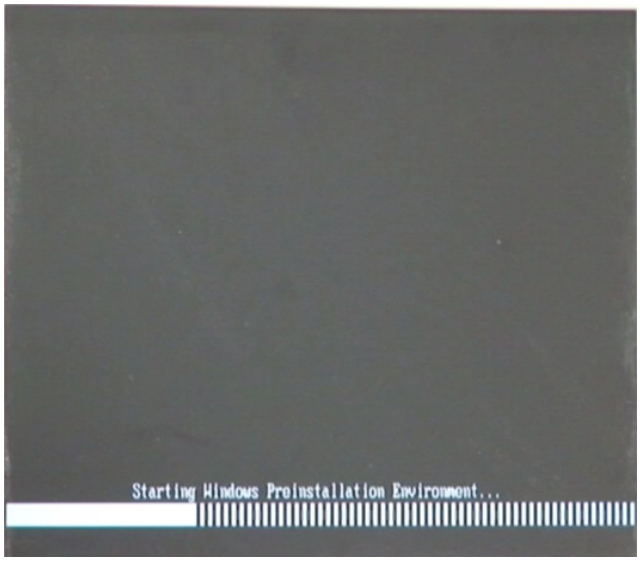


Figure A-2: Launching the Recovery Tool

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

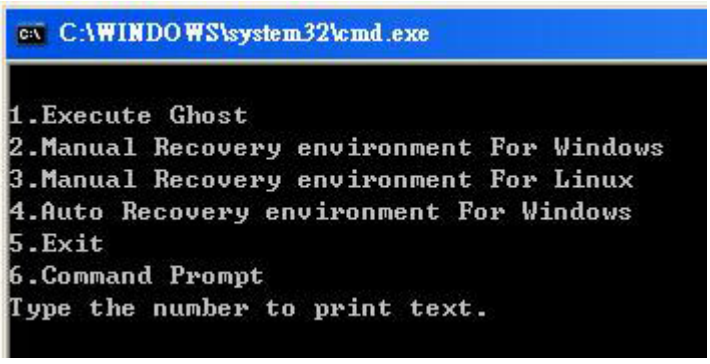


Figure A-3: Recovery Tool Setup Menu

Step 4: Press <**6**> then <Enter>.

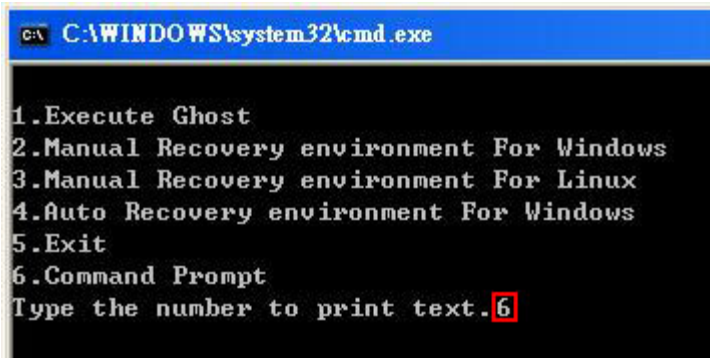


Figure A-4: Command Mode

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

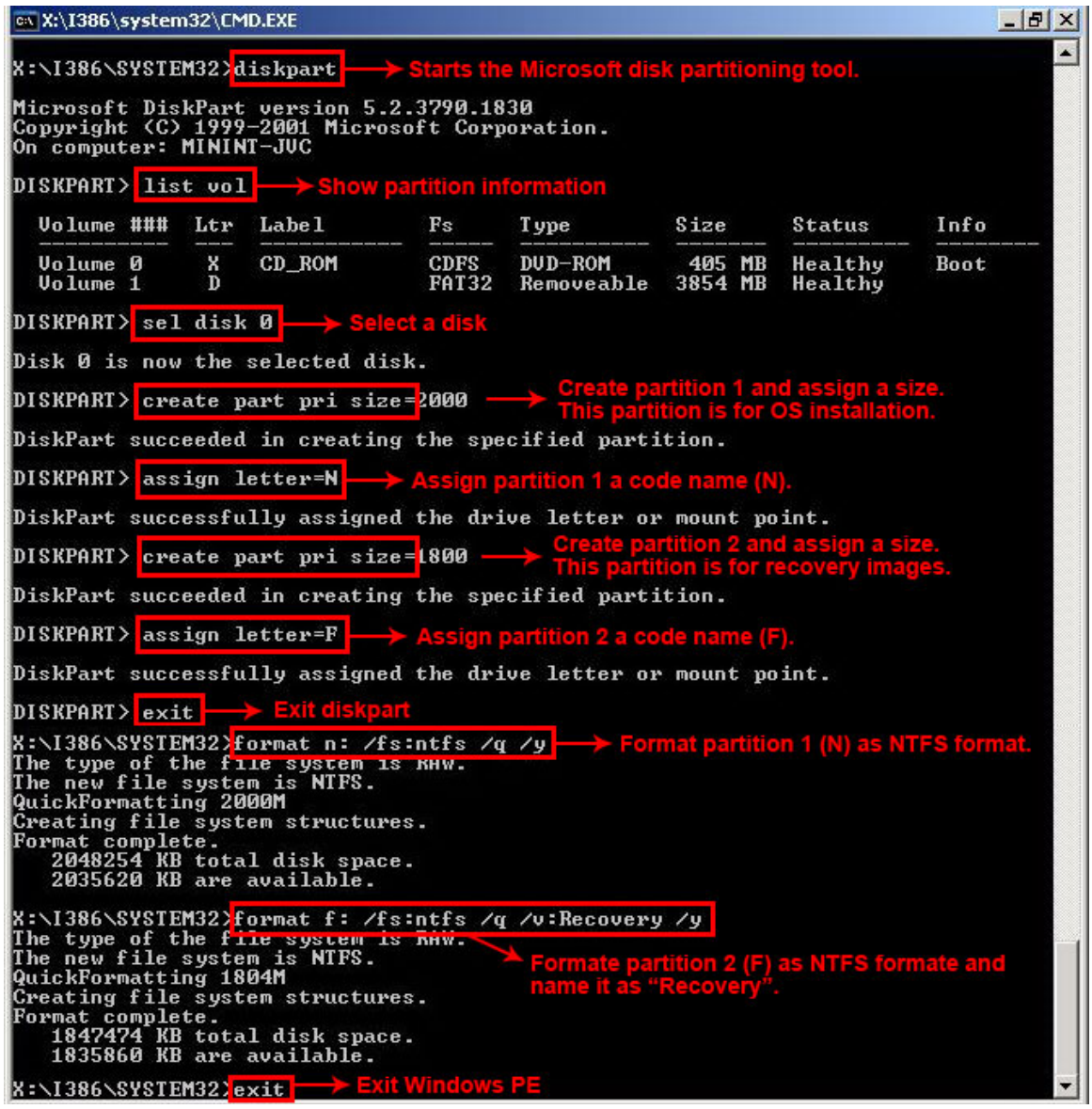
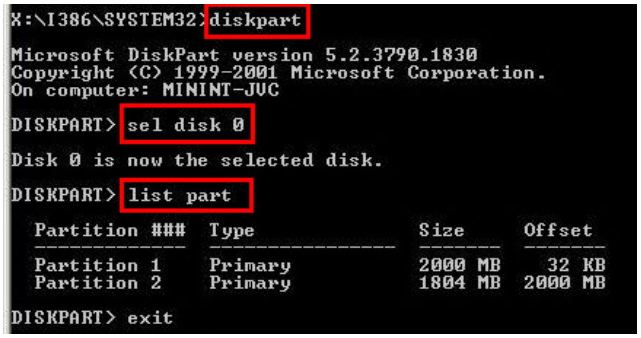


Figure A-5: Partition Creation Commands

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 "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!

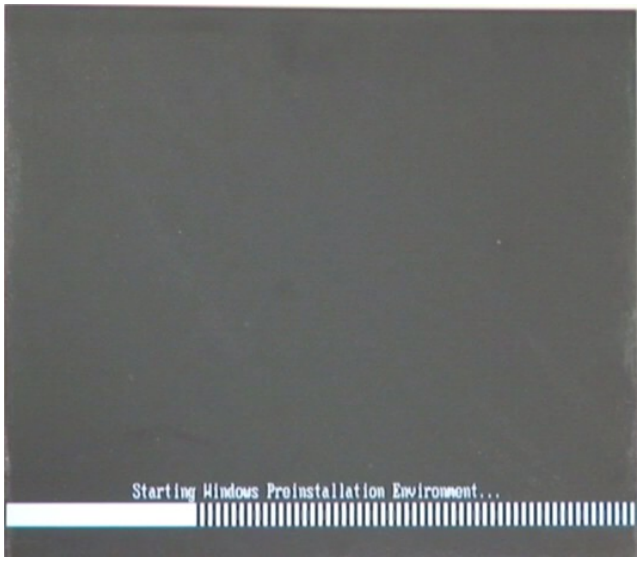


Figure A-6: Launching the Recovery Tool

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

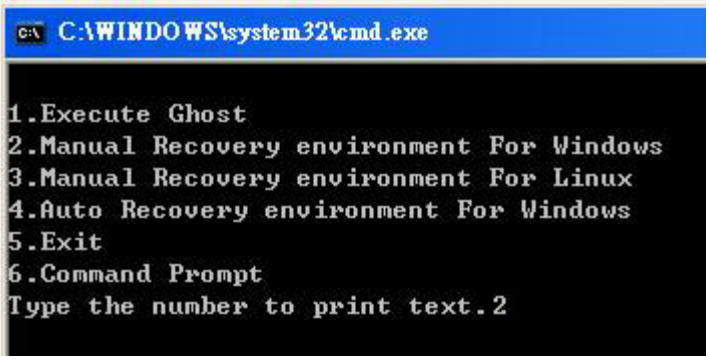


Figure A-7: Manual Recovery Environment for Windows

Step 5: The Symantec Ghost window appears and starts configuring the system to build a recovery partition. In this process the partition created for recovery files in **Section A.2.2** is hidden and the recovery tool is saved in this partition.

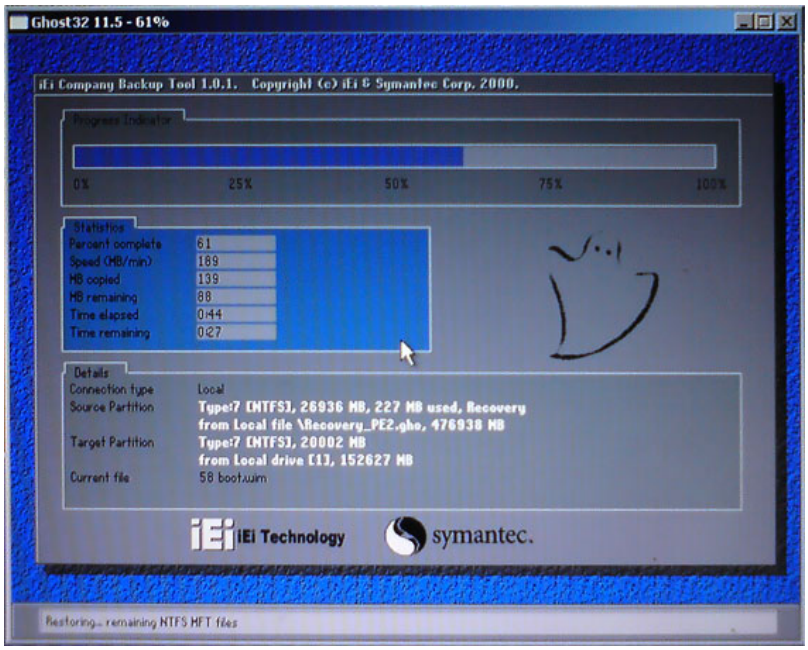


Figure A-8: Building the Recovery Partition

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

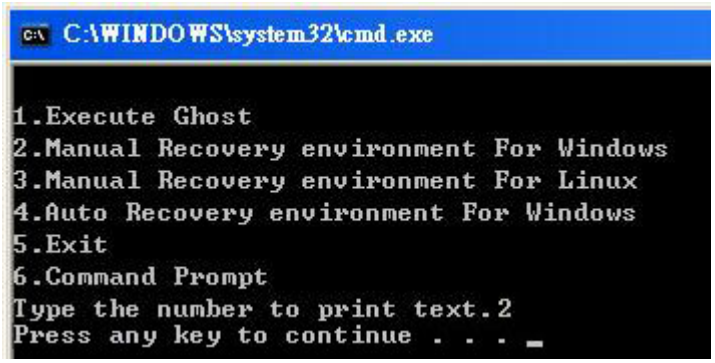


Figure A-9: Press Any Key to Continue

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.

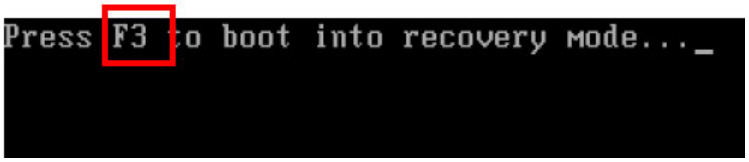


Figure A-10: Press F3 to Boot into Recovery Mode

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

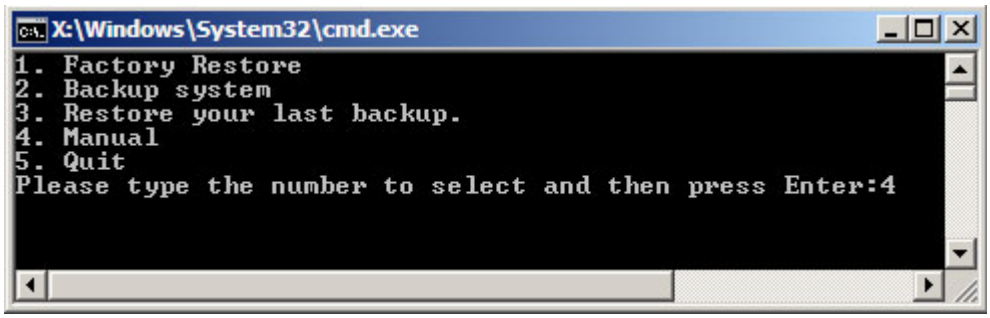


Figure A-11: Recovery Tool Menu

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

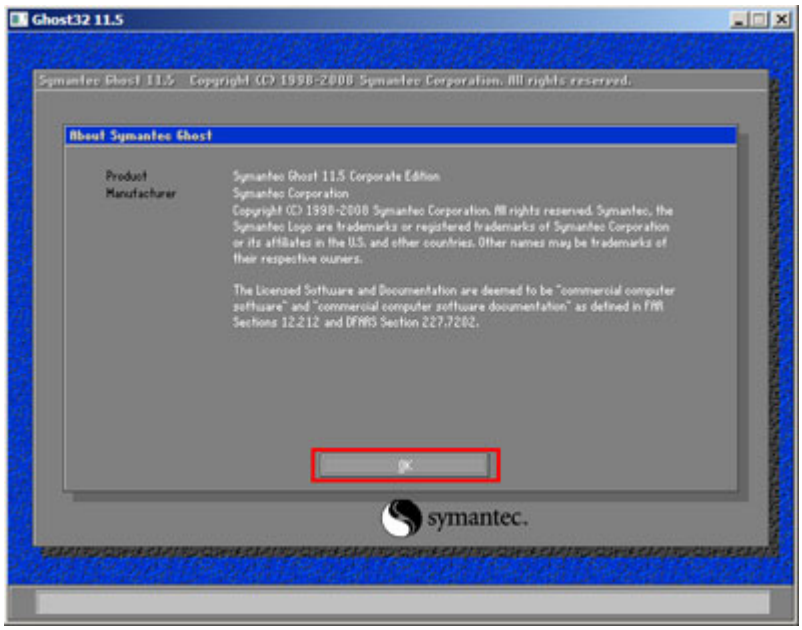


Figure A-12: About Symantec Ghost Window

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

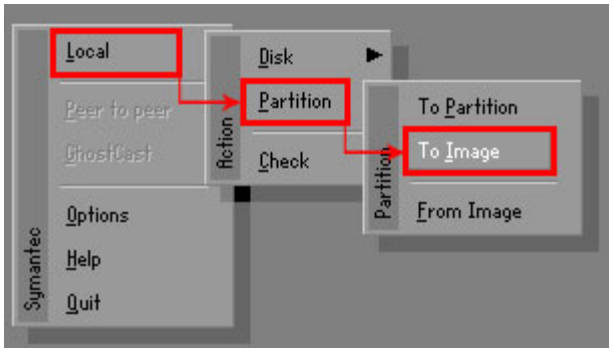


Figure A-13: Symantec Ghost Path

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

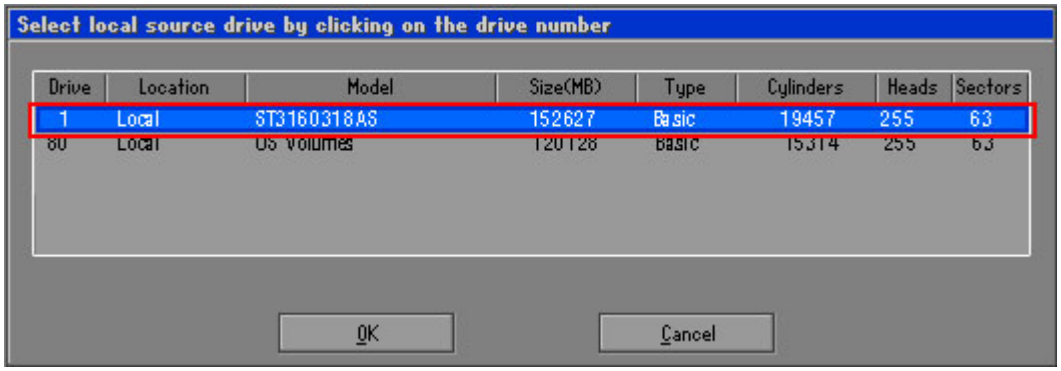


Figure A-14: Select a Local Source Drive

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

Then click OK.

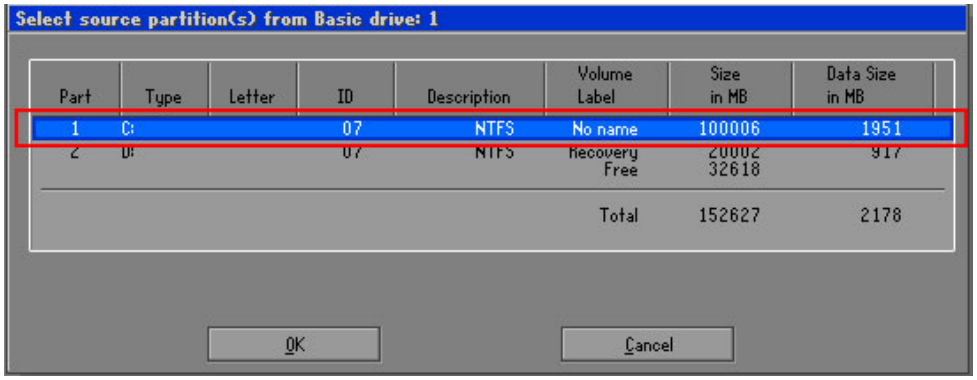


Figure A-15: Select a Source Partition from Basic Drive

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**.

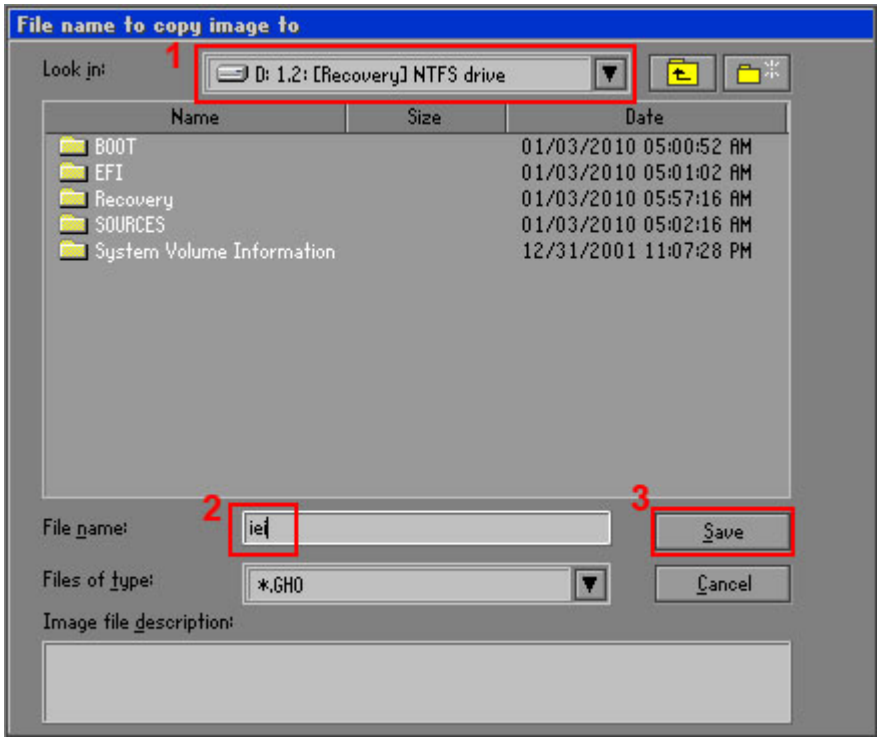


Figure A-16: File Name to Copy Image to

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

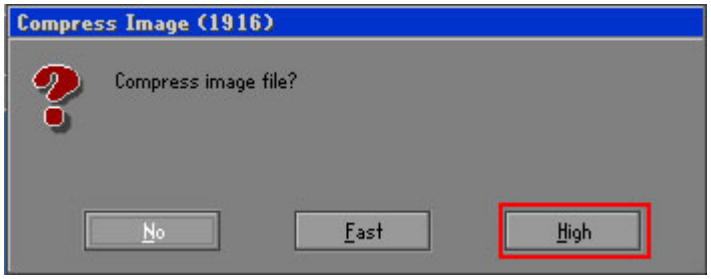


Figure A-17: Compress Image

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

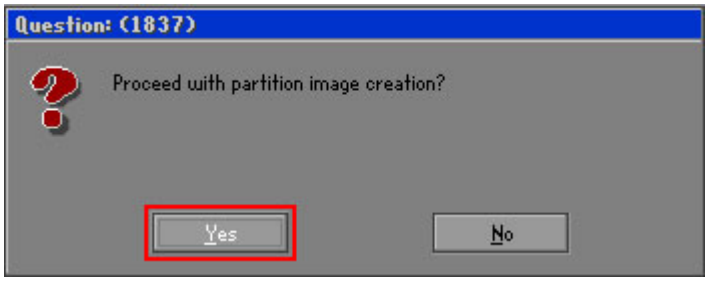


Figure A-18: Image Creation Confirmation

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

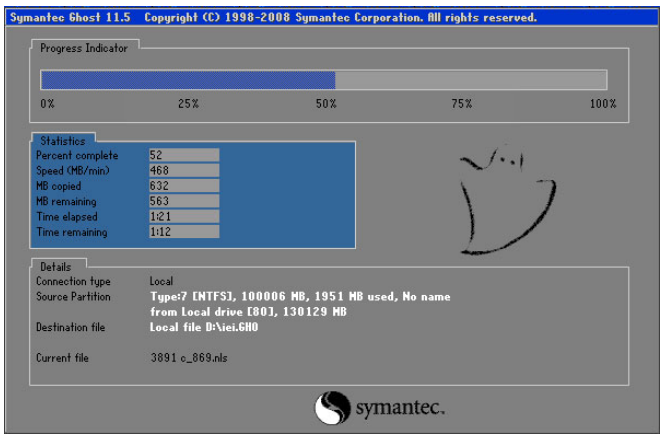


Figure A-19: Image Creation Process

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.

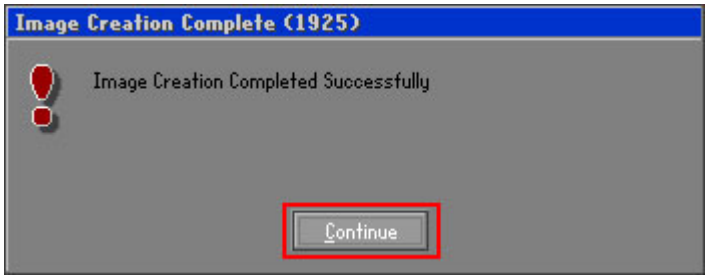


Figure A-20: Image Creation Complete

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

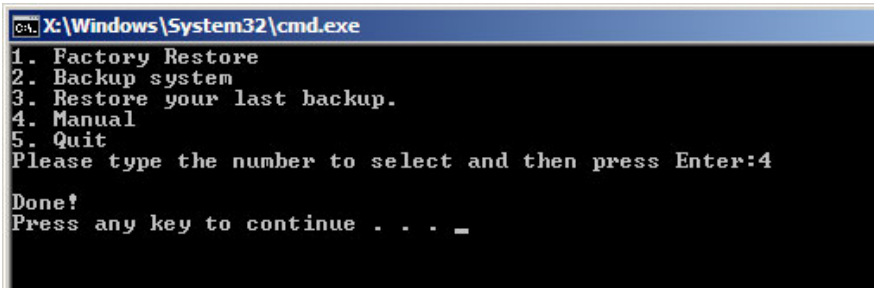


Figure A-21: Press Any Key to Continue

A.3 Auto Recovery Setup Procedure

The auto recovery function allows a system to automatically restore from the factory default image after encountering a Blue Screen of Death (BSoD) or a hang for around 10 minutes. To use the auto recovery function, follow the steps described in the following sections.

CAUTION:

The auto recovery function can only run on a Microsoft Windows system with the following OS versions:

- Windows 2000
- Windows XP
- Windows Vista
- Windows 7
- Windows XP Embedded
- Windows Embedded Standard 7

CAUTION:

The setup procedure may include a step to create a factory default image. It is suggested to configure the system to a factory default environment before the configuration, including driver and application installations.

Step 1: Follow the steps described in **Section A.2.1 ~ Section A.2.3** to setup BIOS, create partitions and install operating system.

Step 2: Install the auto recovery utility into the system by double clicking the **Utility/AUTORECOVERY-SETUP.exe** in the One Key Recovery CD. This utility MUST be installed in the system, otherwise, the system will automatically restore from the factory default image every ten (10) minutes.

Figure A-22: Auto Recovery Utility

Step 3: **Disable the automatically restart function before creating the factory default image**. Go to: My Computer → Properties → Advanced. Click the

Settings button of Startup and Recovery. Deselect “Automatically restart”. Click OK to save the settings and exit. (See **Figure A-23**)

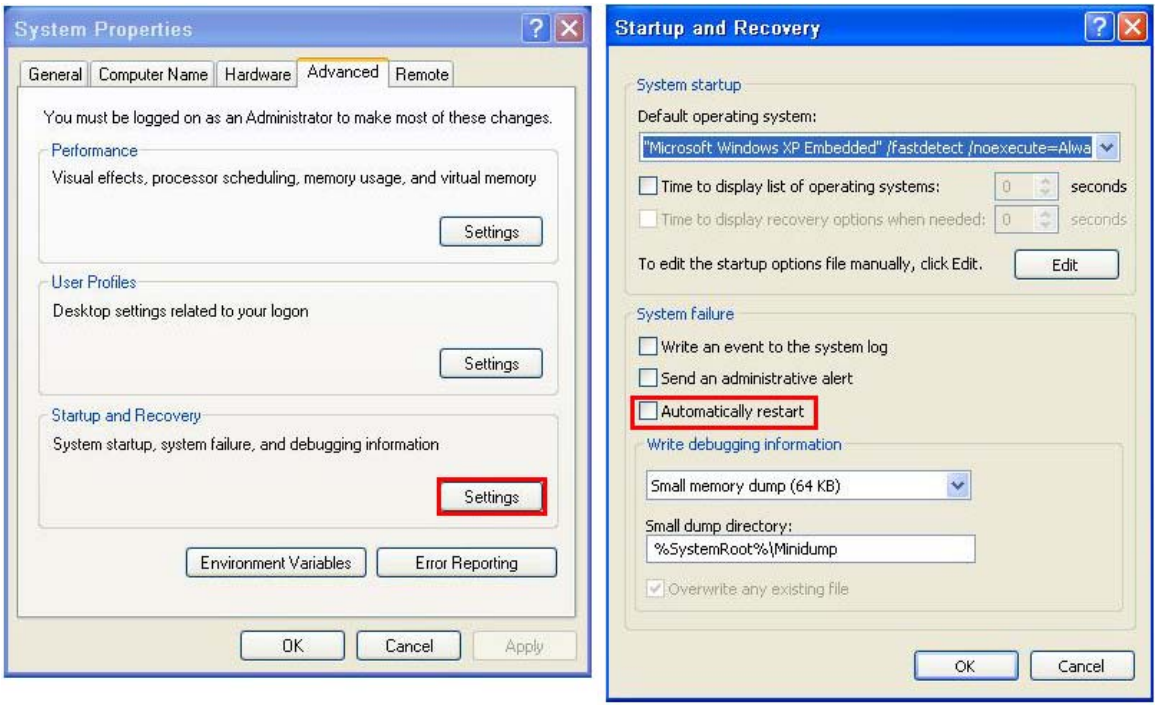


Figure A-23: Disable Automatically Restart

Step 4: Reboot the system from the 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!

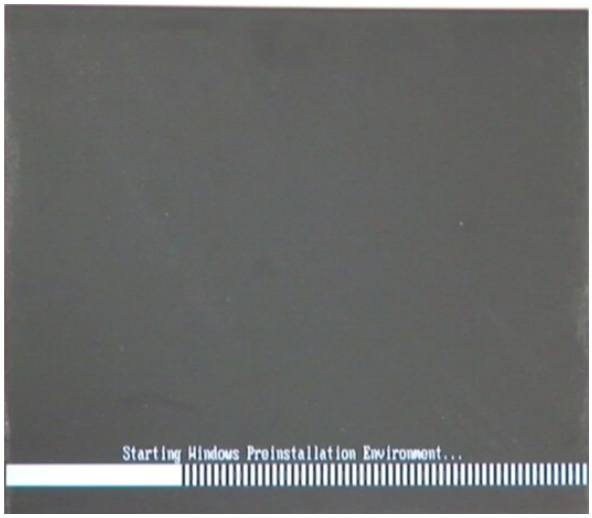


Figure A-24: Launching the Recovery Tool

Step 5: When the recovery tool setup menu appears, press <**4**> then <Enter>.

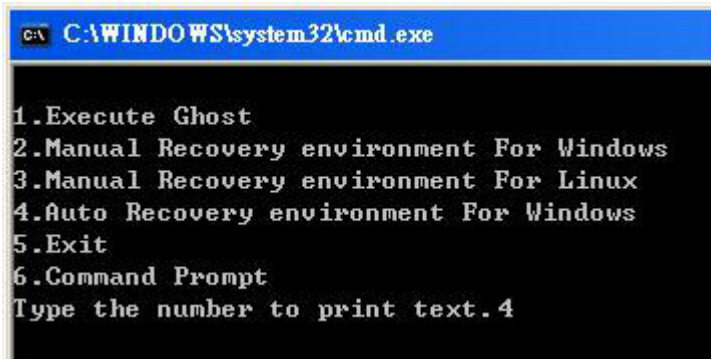


Figure A-25: Auto Recovery Environment for Windows

Step 6: The Symantec Ghost window appears and starts configuring the system to build an auto recovery partition. In this process the partition created for recovery files in **Section A.2.2** is hidden and the auto recovery tool is saved in this partition.

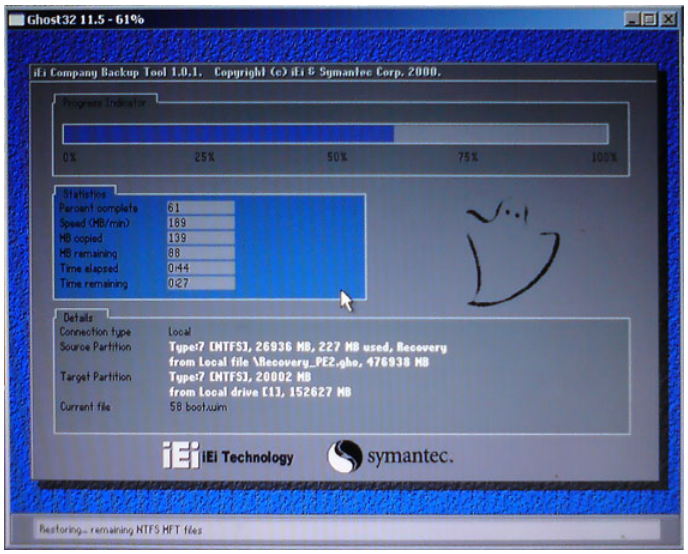


Figure A-26: Building the Auto Recovery Partition

Step 7: After completing the system configuration, the following message prompts to confirm whether to create a factory default image. Type **Y** to have the system create a factory default image automatically. Type **N** within 6 seconds to skip this

process (The default option is YES). It is suggested to choose YES for this option.

Figure A-27: Factory Default Image Confirmation

Step 8: The Symantec Ghost starts to create the factory default image (**Figure A-28**).

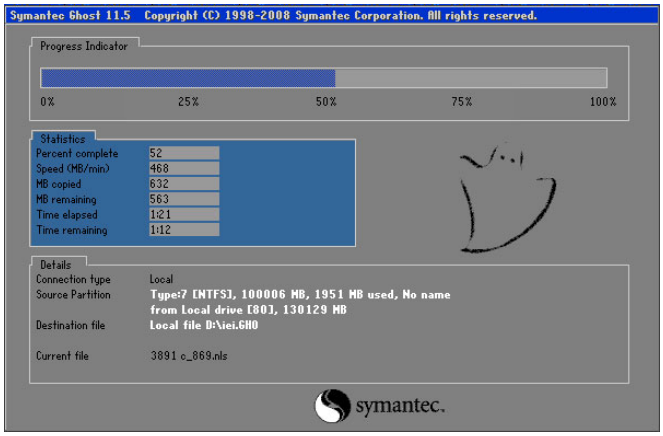


Figure A-28: Image Creation Complete

Step 9: After completing the system configuration, press any key in the following window to restart the system.

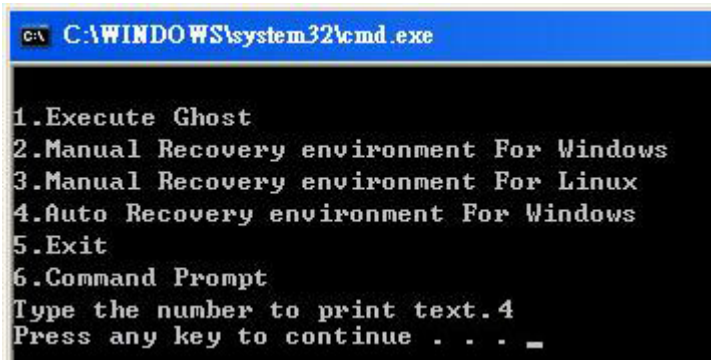


Figure A-29: Press any key to continue

Step 10: Eject the One Key Recovery CD and restart the system.

Step 11: Press the <**DELETE**> key as soon as the system is turned on to enter the BIOS.

Step 12: Enable the Auto Recovery Function option (**Advanced → iEi Feature → Auto Recovery Function**).

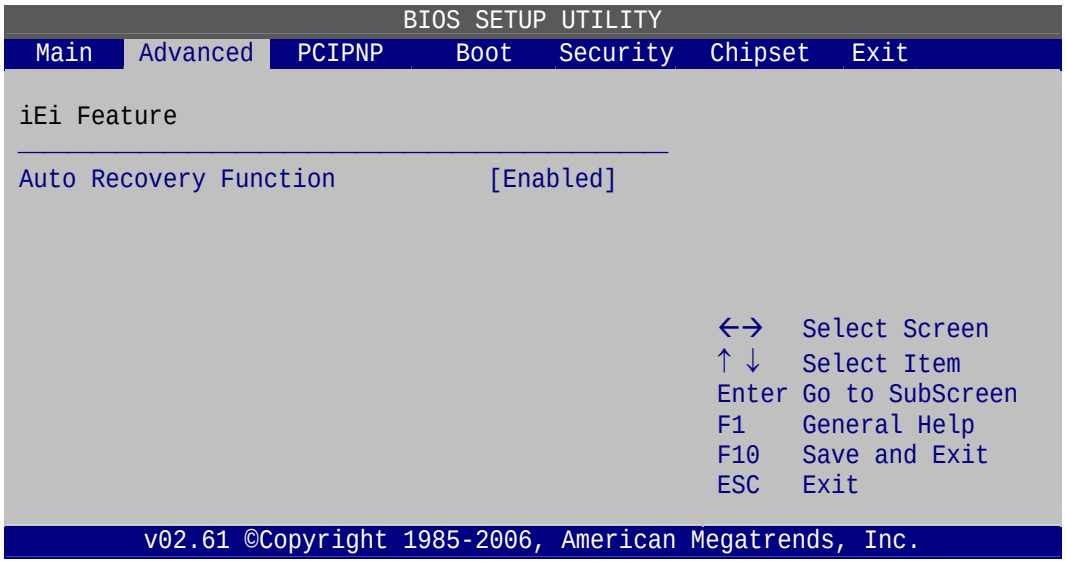


Figure A-30: IEI Feature

Step 13: Save changes and restart the system. If the system encounters a Blue Screen of Death (BSoD) or a hang for around 10 minutes, it will automatically restore from the factory default image.

A.4 Setup Procedure for Linux

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

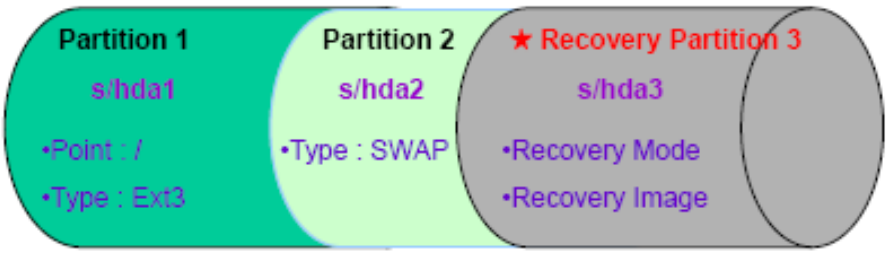


Figure A-31: Partitions for Linux

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-32**). 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.

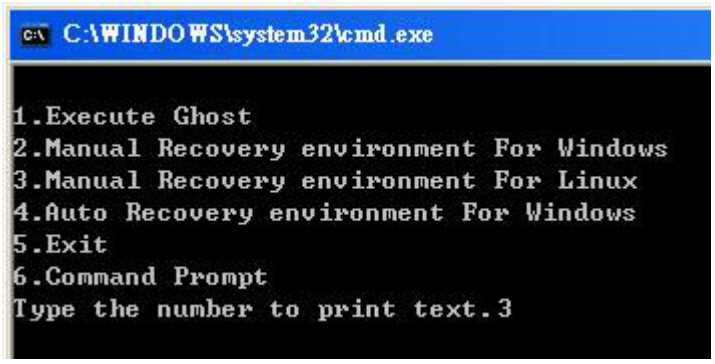


Figure A-32: System Configuration for Linux

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

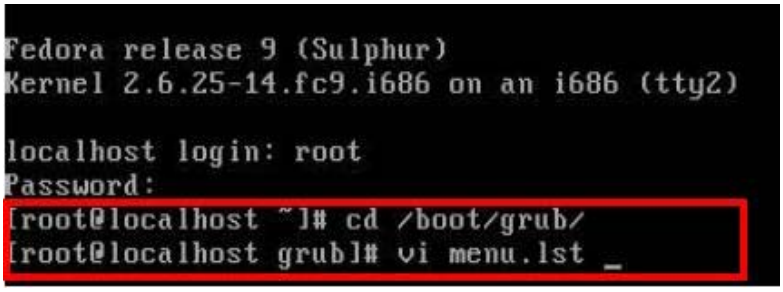
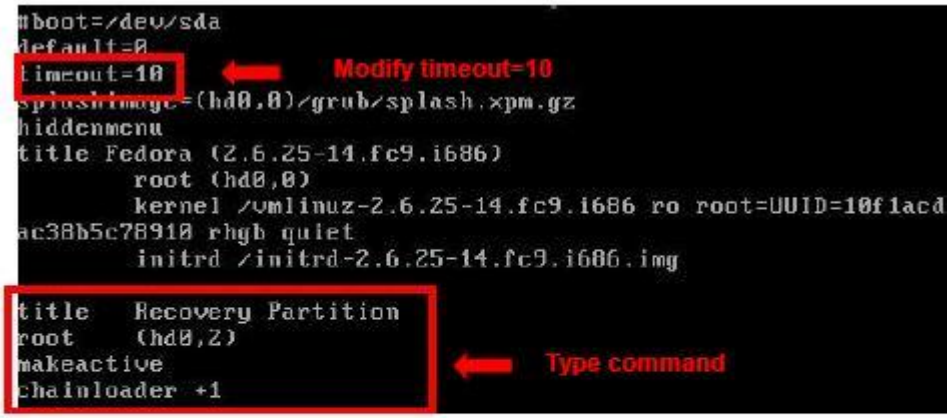


Figure A-33: Access menu.lst in Linux (Text Mode)

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-34**)

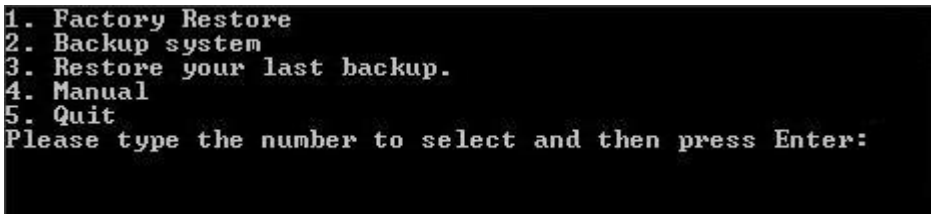


Figure A-34: Recovery Tool Menu

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.5 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. However, if the setup procedure in Section **A.3** has been completed and the auto recovery function is enabled, the system will automatically restore from the factory default image without pressing the F3 key. The recovery tool main menu is shown below.

Figure A-35: Recovery Tool Main Menu

The recovery tool has several functions including:

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

WARNING:

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

WARNING:

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

A.5.1 Factory Restore

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

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

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

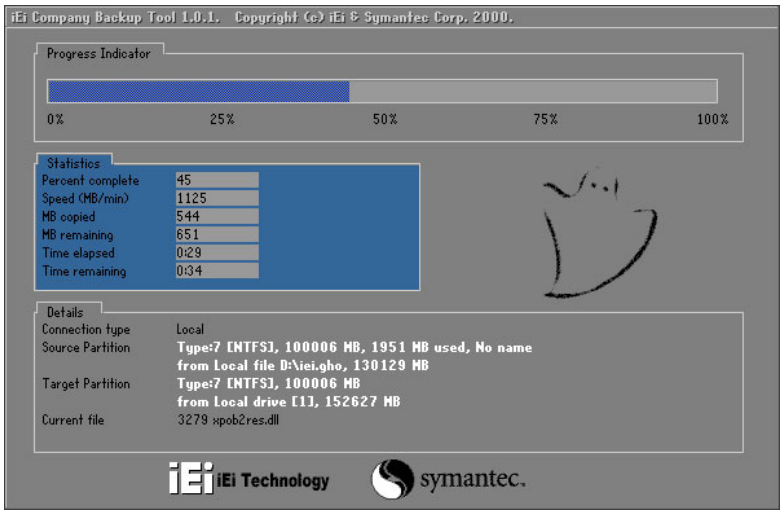


Figure A-36: Restore Factory Default

Step 3: The screen is shown as in **Figure A-37** when completed. Press any key to reboot the system.

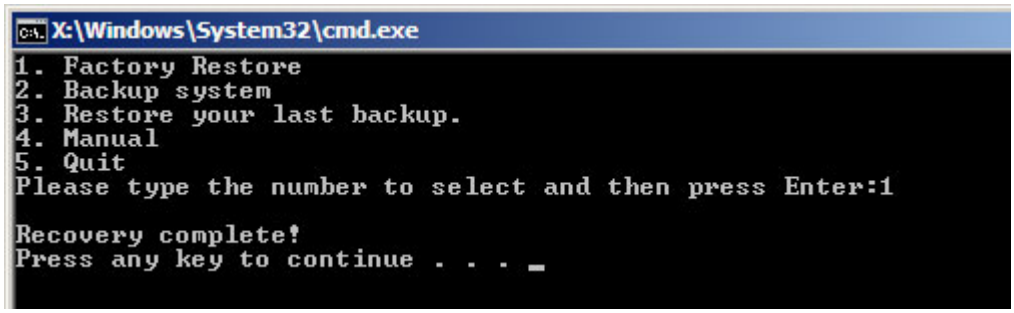


Figure A-37: Recovery Complete Window

A.5.2 Backup System

To backup the system, please follow the steps below.

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

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

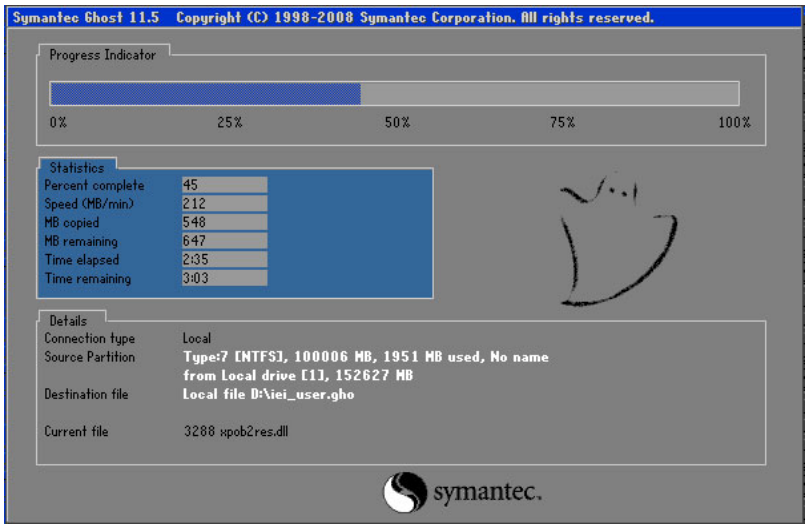


Figure A-38: Backup System

Step 3: The screen is shown as in **Figure A-39** when system backup is complete. Press any key to reboot the system.

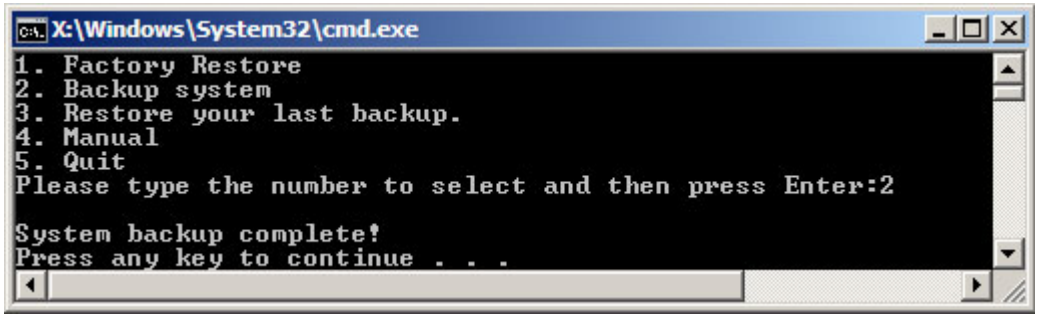


Figure A-39: System Backup Complete Window

A.5.3 Restore Your Last Backup

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

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

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

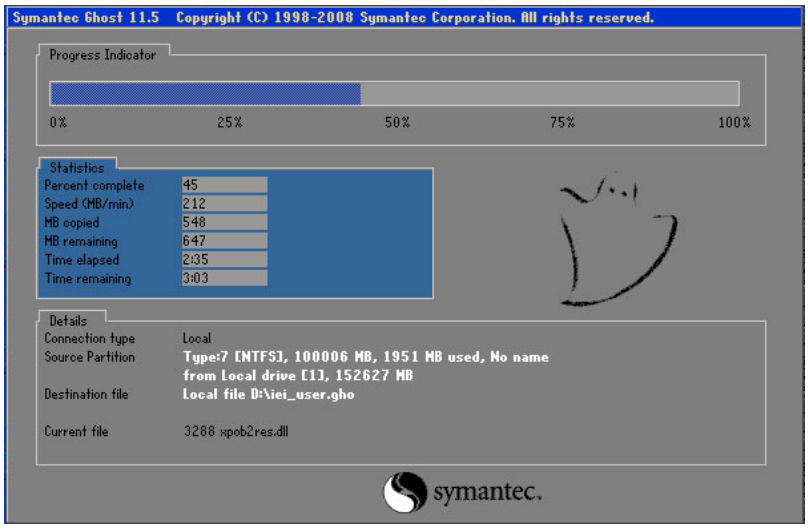


Figure A-40: Restore Backup

Step 3: The screen is shown as in **Figure A-41** when backup recovery is completed. Press any key to reboot the system.

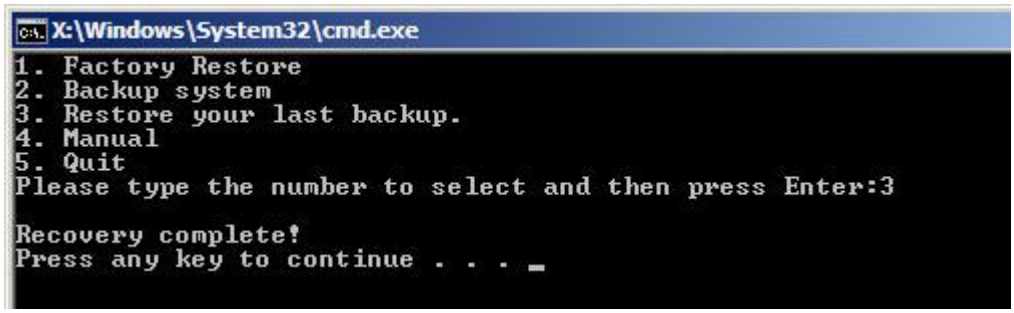


Figure A-41: Restore System Backup Complete Window

A.5.4 Manual

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

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

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

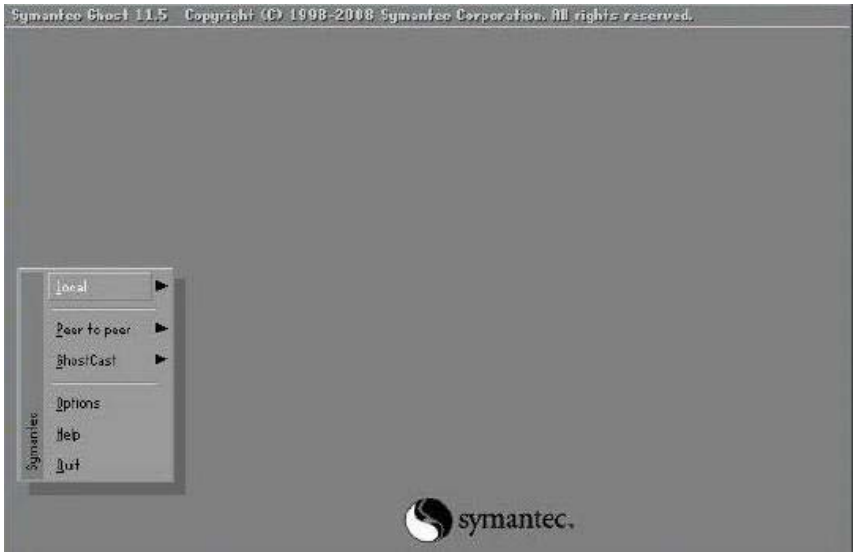
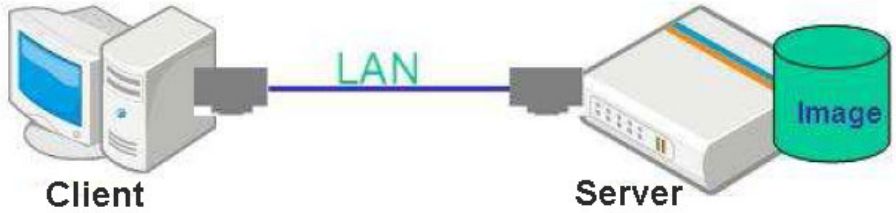


Figure A-42: Symantec Ghost Window

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

A.6 Restore Systems from a Linux Server through LAN

The One Key Recovery allows a client system to automatically restore to a factory default image saved in a Linux system (the server) through LAN connectivity after encountering a Blue Screen of Death (BSoD) or a hang for around 10 minutes. To be able to use this function, the client system and the Linux system MUST reside in the same domain.



NOTE:

The supported client OS includes:

- Windows 2000
- Windows XP
- Windows Vista
- Windows 7
- Windows CE
- Windows XP Embedded

Prior to restoring client systems from a Linux server, a few setup procedures are required.

Step 1: Configure DHCP server settings

Step 2: Configure TFTP settings

Step 3: Configure One Key Recovery server settings

Step 4: Start DHCP, TFTP and HTTP

Step 5: Create a shared directory

Step 6: Setup a client system for auto recovery

The detailed descriptions are described in the following sections. In this document, two types of Linux OS are used as examples to explain the configuration process – CentOS 5.5 (Kernel 2.6.18) and Debian 5.0.7 (Kernel 2.6.26).

A.6.1 Configure DHCP Server Settings

Step 1: Install the DHCP

#yum install dhcp (CentOS, commands marked in red)

#apt-get install dhcp3-server (Debian, commands marked in blue)

Step 2: Confirm the operating system default settings: dhcpd.conf.

CentOS

Use the following command to show the DHCP server sample location:

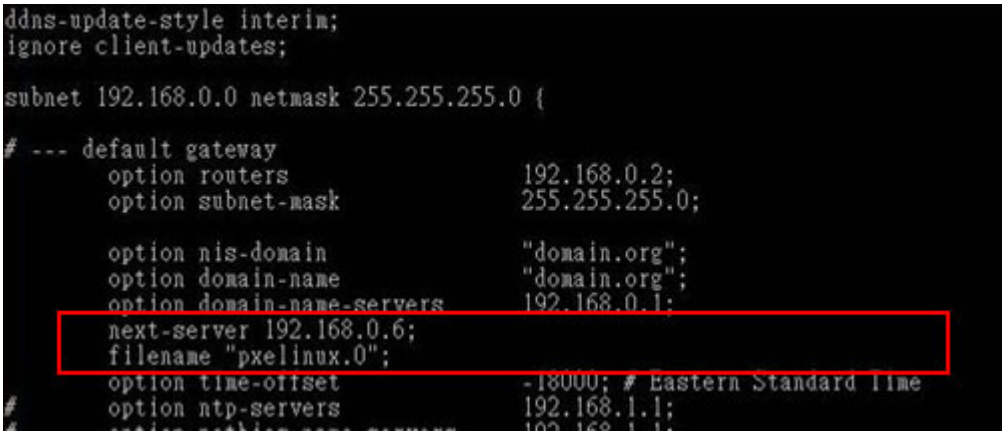
#vi /etc/dhcpd.conf

The DHCP server sample location is shown as below:

Use the following command to copy the DHCP server sample to etc/dhcpd.conf:

#cp /usr/share/doc/dhcp-3.0.5/dhcpd.conf.sample /etc/dhcpd.conf

#vi /etc/dhcpd.conf



Debian

#vi /etc/dhcpd.conf

Edit “/etc/dhcpd.conf” for your environment. For example, add

next-server PXE server IP address;

filename “pxelinux.0”;

```
ddns-update-style interim;
ignore client-updates;

subnet 192.168.0.0 netmask 255.255.255.0 {

# --- default gateway
        option routers                  192.168.0.2;
        option subnet-mask              255.255.255.0;

        option nis-domain               "domain.org";
        option domain-name              "domain.org";
        option domain-name-servers      192.168.0.1;
        next-server 192.168.0.6;
        filename "pxelinux.0";
        option time-offset              -18000; # Eastern Standard Time
#       option ntp-servers              192.168.1.1;
```

A.6.2 Configure TFTP Settings

Step 1: Install the tftp, httpd and syslinux.

#yum install tftp-server httpd syslinux (CentOS)

#apt-get install tftpd-hpa xinetd syslinux (Debian)

Step 2: Enable the TFTP server by editing the “/etc/xinetd.d/tftp” file and make it use the remap file. The “-vvv” is optional but it could definitely help on getting more information while running the remap file. For example:

CentOS

#vi /etc/xinetd.d/tftp

Modify:

disable = no

server_args = -s /tftpboot –m /tftpboot/tftpd.remap -vvv_

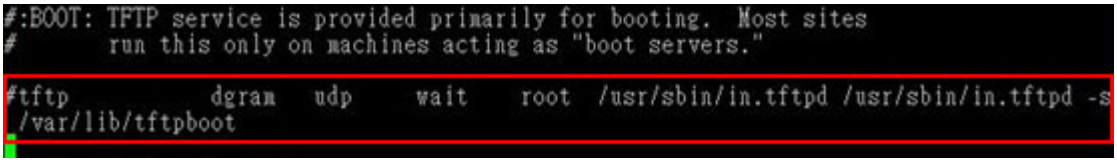
```
{
        socket_type             = dgram
        protocol                = udp
        wait                    = yes
        user                    = root
        server                  = /usr/sbin/in.tftpd
        server_args             = -s /tftpboot -m /tftpboot/tftpd.remap -vvv
        disable                 = no
        per_source              = 11
        cps                     = 100 2
        flags                   = IPv4
```

Debian

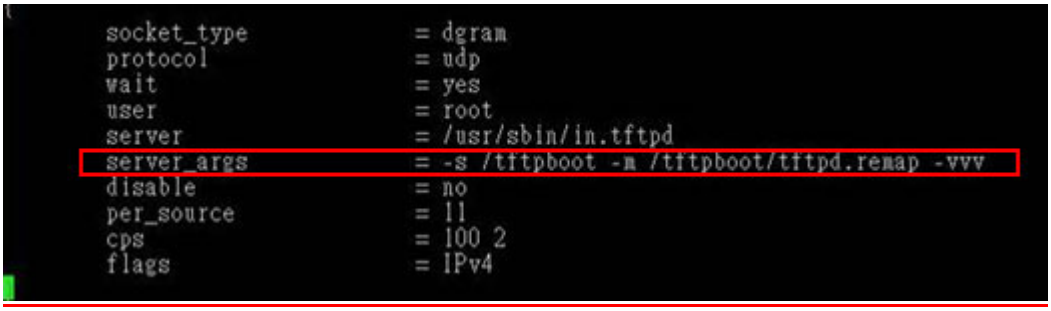
Replace the TFTP settings from “inetd” to “xinetd” and annotate the “inetd” by adding “#”.

#vi /etc/inetd.conf

Modify: #tftp dgram udp wait root /usr/sbin..... (as shown below)



#vi /etc/xinetd.d/tftp



A.6.3 Configure One Key Recovery Server Settings

Step 1: Copy the **Utility/RECOVERYR10.TAR.BZ2** package from the One Key Recovery CD to the system (server side).

Step 2: Extract the recovery package to /.

#cp RecoveryR10.tar.bz2 /

#cd /

#tar –xvjf RecoveryR10.tar.bz2

Step 3: Copy “pxelinux.0” from “syslinux” and install to “/tftboot”.

#cp /usr/lib/syslinux/pxelinux.0 /tftpboot/

A.6.4 Start the DHCP, TFTP and HTTP

Start the DHCP, TFTP and HTTP. For example:

CentOS

#service xinetd restart

#service httpd restart

#service dhcpd restart

Debian

#/etc/init.d/xinetd reload

#/etc/init.d/xinetd restart

#/etc/init.d/dhcp3-server restart

A.6.5 Create Shared Directory

Step 1: Install the samba.

#yum install samba

Step 2: Create a shared directory for the factory default image.

#mkdir /share

#cd /share

#mkdir /image

#cp iei.gho /image

WARNING:

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

Step 3: Confirm the operating system default settings: smb.conf.

#vi /etc/samba/smb.conf

Modify:

[image]

comment = One Key Recovery

path = /share/image

browseable = yes

writable = yes

public = yes

create mask = 0644

directory mask = 0755

Step 4: Edit “/etc/samba/smb.conf” for your environment. For example:

```
# "security = user" is always a good idea. This will require a Unix account
# in this server for every user accessing the server. See
# /usr/share/doc/samba-doc/htmldocs/Samba3-HOWTO/ServerType.html
# in the samba-doc package for details.
   security = share
```

```
[image]
   comment = One Key Recovery
   path = /share/image
   browseable = yes
   writable = yes
   public = yes
   create mask = 0644
   directory mask = 0755
```

Step 5: Modify the hostname

#vi /etc/hostname

Modify: RecoveryServer

```
RecoveryServer
~
```

A.6.6 Setup a Client System for Auto Recovery

Step 1: **Disable the automatically restart function before creating the factory default image**. Go to: My Computer → Properties → Advanced. Click the Settings button of Startup and Recovery. Deselect “Automatically restart”. Click OK to save the settings and exit. (See **Figure A-43**).

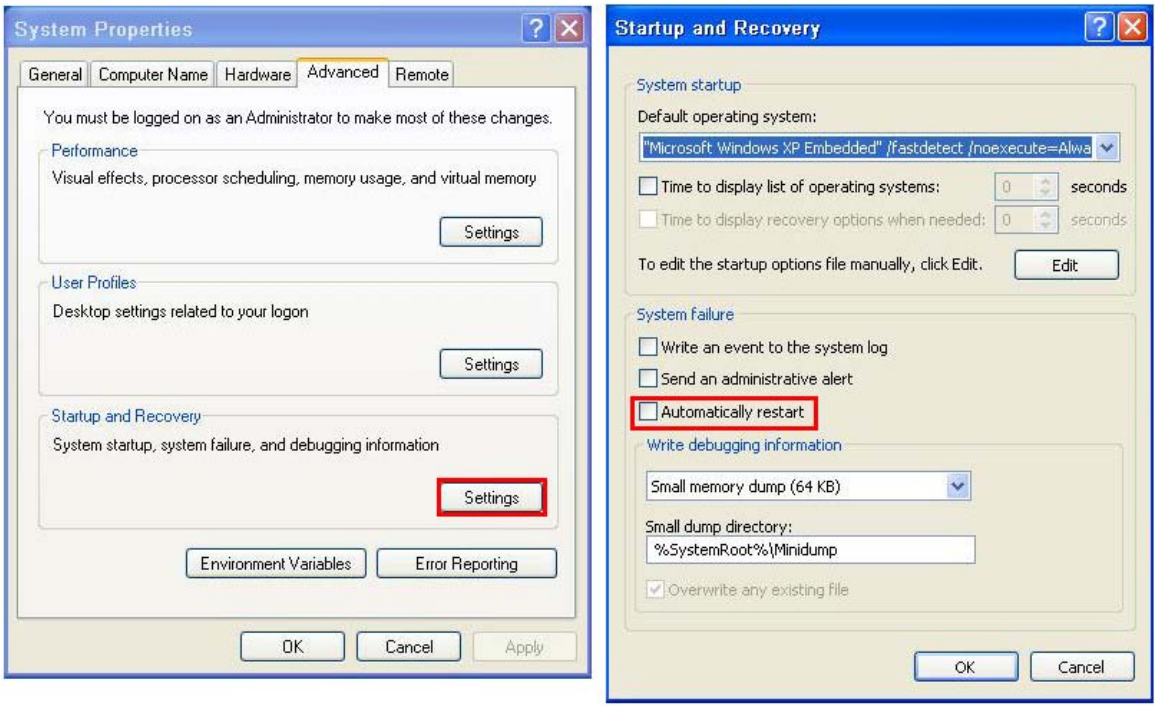


Figure A-43: Disable Automatically Restart

Step 2: Configure the following BIOS options of the client system.

Advanced → iEi Feature → Auto Recovery Function → **Enabled**

Advanced → iEi Feature → Recover from PXE → **Enabled**

Boot → Launch PXE OpROM → **Enabled**

Step 3: Continue to configure the **Boot Option Priorities** BIOS option of the client system:

Boot Option #1 → remain the default setting to boot from the original OS.

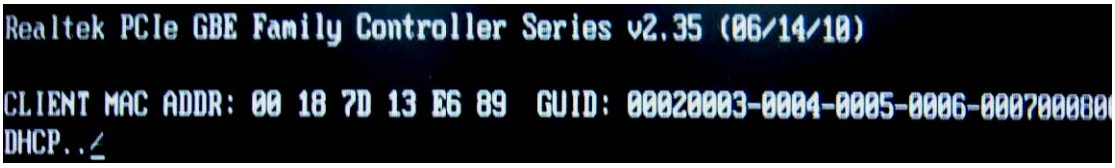
Boot Option #2 → select the boot from LAN option.

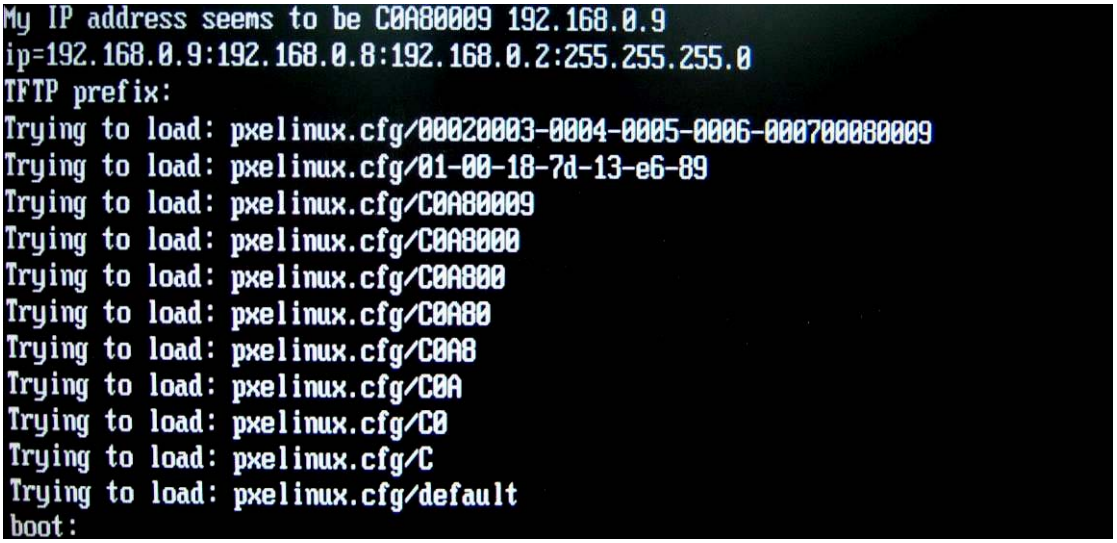
Step 4: Save changes and exit BIOS menu.

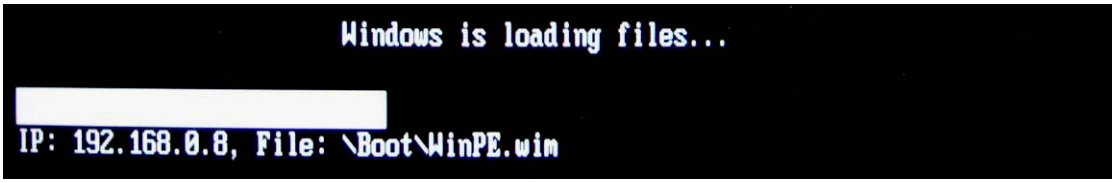
Exit → **Save Changes and Exit**

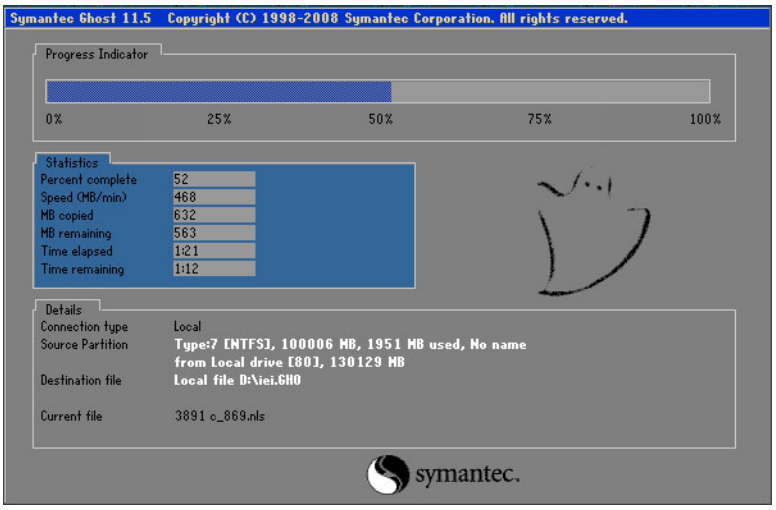
Step 5: Install the auto recovery utility into the system by double clicking the **Utility/AUTORECOVERY-SETUP.exe** in the One Key Recovery CD. This utility MUST be installed in the system, otherwise, the system will automatically restore from the factory default image every ten (10) minutes.

Step 6: Restart the client system from LAN. If the system encounters a Blue Screen of Death (BSoD) or a hang for around 10 minutes, it will automatically restore from the factory default image. The following screens will show when the system starts auto recovering.









NOTE:

A firewall or a SELinux is not in use in the whole setup process described above. If there is a firewall or a SELinux protecting the system, modify the configuration information to accommodate them.

A.7 Other Information

A.7.1 Using AHCI Mode or ALi M5283 / VIA VT6421A Controller

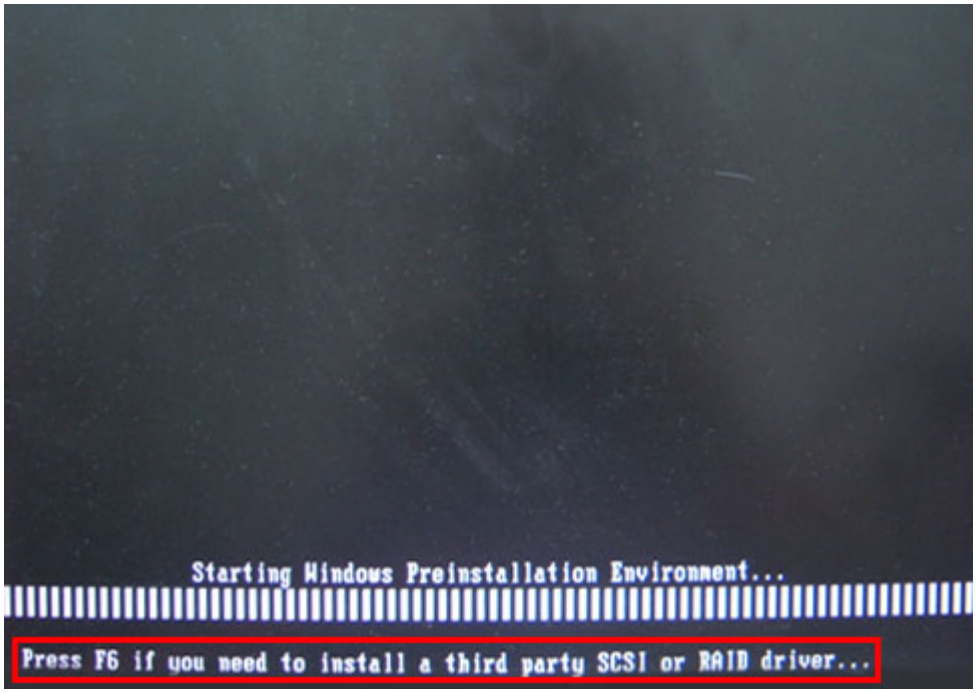
When the system uses AHCI mode or some specific SATA controllers such as ALi M5283 or VIA VT6421A, the SATA RAID/AHCI driver must be installed before using one key recovery. Please follow the steps below to install the SATA RAID/AHCI driver.

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

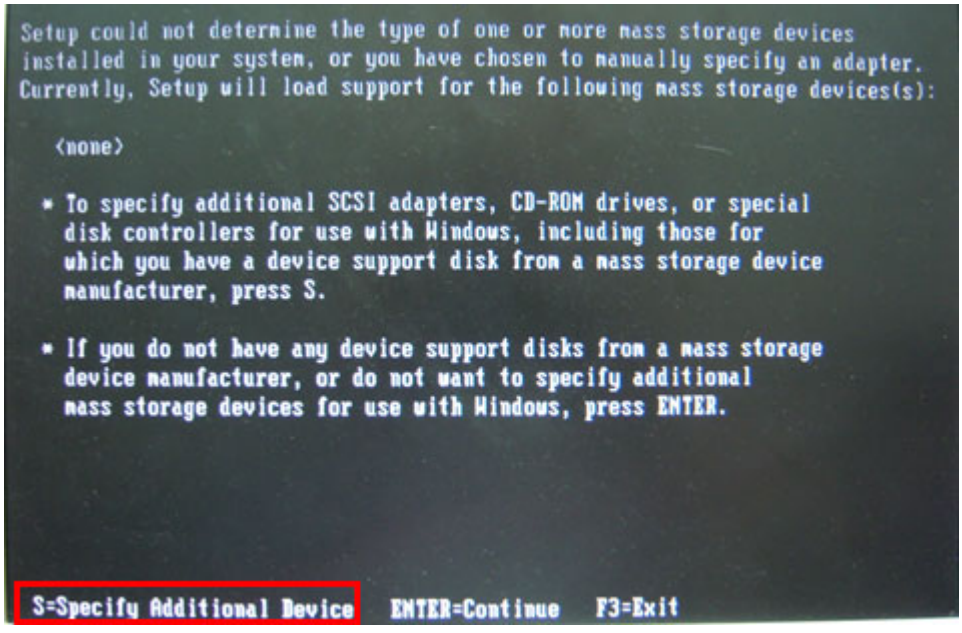
Step 2: Connect the USB floppy disk drive to the system.

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

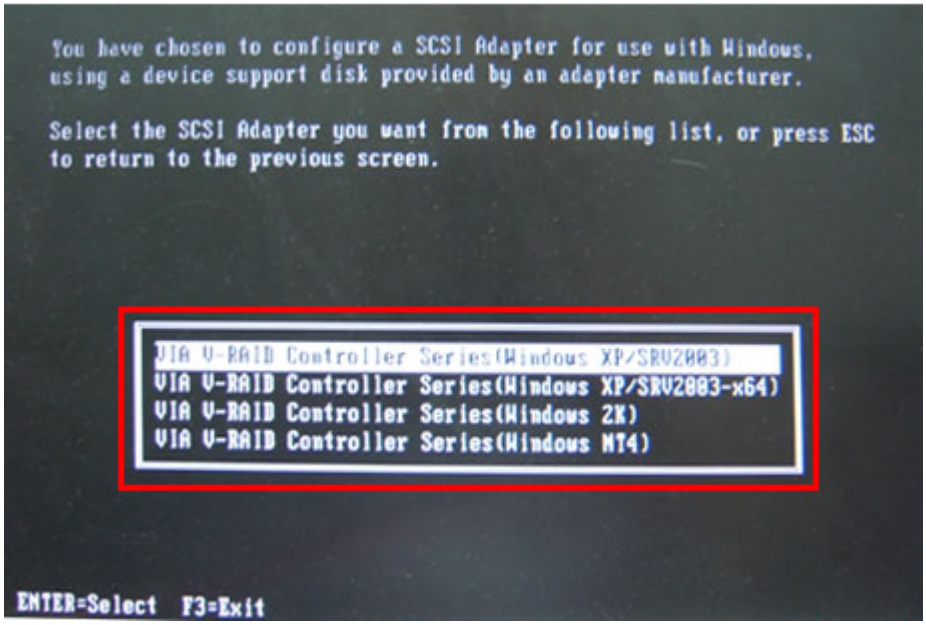
Step 4: When launching the recovery tool, press <**F6**>.



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



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



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

A.7.2 System Memory Requirement

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

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

Appendix

B

Safety Precautions

B.1 Safety Precautions

WARNING:

The precautions outlined in this appendix should be strictly followed. Failure to follow these precautions may result in permanent damage to the ECW-281B-D2550.

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.

- ***Make sure the power is turned off and the power cord is disconnected*** when moving, installing or modifying the system.
- ***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 opened while still powered on.
- ***Do not drop or insert any objects*** into the ventilation openings.
- ***If considerable amounts of dust, water, or fluids enter the system***, turn off the power supply immediately, unplug the power cord, and contact the system vendor.
- **DO NOT**:
  - Drop the system 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 ECW-281B-D2550 may result in permanent damage to the ECW-281B-D2550 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the ECW-281B-D2550. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the ECW-281B-D2550 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.

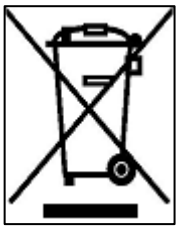
B.1.4 Product Disposal

CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

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



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

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

B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the ECW-281B-D2550, please follow the guidelines below.

B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the ECW-281B-D2550, please read the details below.

- The interior of the ECW-281B-D2550 does not require cleaning. Keep fluids away from the ECW-281B-D2550 interior.
- Be cautious of all small removable components when vacuuming the ECW-281B-D2550.
- Turn the ECW-281B-D2550 off before cleaning the ECW-281B-D2550.
- Never drop any objects or liquids through the openings of the ECW-281B-D2550.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the ECW-281B-D2550.
- Avoid eating, drinking and smoking within vicinity of the ECW-281B-D2550.

B.2.2 Cleaning Tools

Some components in the ECW-281B-D2550 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 ECW-281B-D2550.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the ECW-281B-D2550.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol can be used to clean the ECW-281B-D2550.
- ***Using solvents*** – The use of solvents is not recommended when cleaning the ECW-281B-D2550 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 ECW-281B-D2550. Dust and dirt can restrict the airflow in the ECW-281B-D2550 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

Digital I/O Interface

C.1 Introduction

The DIO connector on the ECW-281B-D2550 is interfaced to GPIO ports on the Super I/O chipset. The DIO has both 4-bit digital inputs and 4-bit digital outputs. The digital inputs and digital outputs are generally control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.

NOTE:

For further information, please refer to the datasheet for the Super I/O chipset.

C.2 DIO Connector Pinouts

The following table describes how the DIO connector pins are connected to the Super I/O GPIO port 1.

Pin	Description	Super I/O Pin	Super I/O Pin Description
1	Ground	N/A	N/A
2	VCC	N/A	N/A
3	Output 3	GP27	General purpose I/O port 2 bit 7.
4	Output 2	GP26	General purpose I/O port 2 bit 6.
5	Output 1	GP25	General purpose I/O port 2 bit 5.
6	Output 0	GP24	General purpose I/O port 2 bit 4.
7	Input 3	GP23	General purpose I/O port 2 bit 3.
8	Input 2	GP22	General purpose I/O port 2 bit 2
9	Input 1	GP21	General purpose I/O port 2 bit 1
10	Input 0	GP20	General purpose I/O port 2 bit 0

Table C-1: Digital I/O Connector Pinouts

C.3 Assembly Language Samples

C.3.1 Enable the DIO Input Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O input functions is listed below.

MOV	**AX, 6F08H**	Sets the digital port as input
INT	**15H**	Initiates the INT 15H BIOS call

C.3.2 Enable the DIO Output Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O output functions is listed below.

MOV	**AX, 6F09H**	Sets the digital port as output
MOV	**BL, 09H**	
INT	**15H**	Initiates the INT 15H BIOS call

Appendix

D

Hazardous Materials Disclosure

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

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

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

Please refer to the table on the next page.

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

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

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

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

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

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