IEI Technology Corp.

TANK-700
USB 3.0
CAN BUS
ISOLATION
RS 422 / 485
RS 232
AT
ATX
CAN

MODEL:

TANK-700

High Performance Fanless Embedded System with Intel® 32nm CPU, On-board 2.0 GB DDR3 Memory, VGA/HDMI, USB 3.0, Dual Combo (SFP Fiber/RJ-45) Gigabit LAN, Isolated CAN-bus, Audio, 9V~36V DC Input, RoHS Compliant

User Manual

Rev. 2.00 – 28 April, 2013

Revision

Date	Version	Changes
28 April, 2013	2.00	Update Section 3.2: Hard Disk Drive (HDD) Installation
18 December, 2012	1.12	Updated Section 3.9.11: Remote Control Connector
15 October, 2012	1.11	Updated memory spec
5 December, 2011	1.10	Updated Section 2.3: Unpacking Checklist Updated Section 3.9.13: RJ-45 RS-422/485 Serial Ports Updated Appendix A: One Key Recovery
17 October, 2011	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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Chapter

1

Introduction

1.1 Overview

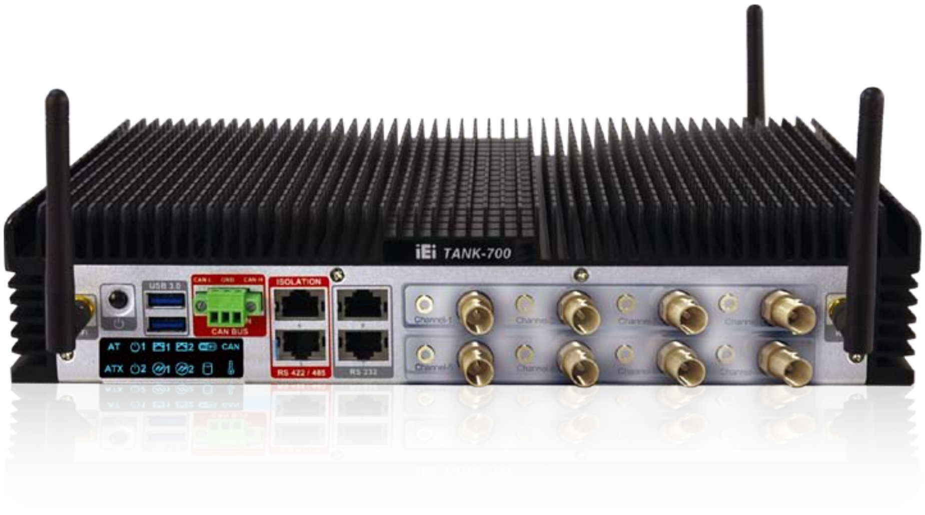


Figure 1-1: TANK-700

The TANK-700 Series fanless embedded system is powered by the Intel® 32nm mobile Core™ i7/i5/i3 or Celeron® processor, uses the Intel® QM67 chipset and has 2.0 GB of DDR3 memory. It supports dual display via VGA and HDMI. Two SATA 6Gb/s, two USB 3.0 and four USB 2.0 ports provide flexible expansion options. Serial device connectivity is provided by six RS-232 and two RS-422/485 ports.

1.2 Model Variations

The model variations of the TANK-700 Series are listed below.

Model No.	8-Channel Audio/Video Capture Card	802.11a/b/g/n 3T3R Wi-Fi
TANK-700-QM67/C/2G-R10	Yes	No
TANK-700-QM67/2G-R10	No	No
TANK-700-QM67W/C/2G-R10	Yes	Yes
TANK-700-QM67W/2G-R10	No	Yes

Table 1-1: TANK-700 Model Variations

1.3 Features

The TANK-700 features are listed below:

- Intel® 32nm mobile Core™ i7/i5/i3 or Celeron® processor
- Intel® HD graphics supports H.264/AVC-MPEG2/VC1, DirectX 10.1 and OpenGL 3.0
- 2.0 GB of DDR3 memory preinstalled
- Dual Combo Gigabit Ethernet ports (SFP Fiber/RJ-45)
- 8-Channel audio/video capture support
- Dual display via VGA and HDMI
- Dual-band 2.4/5 GHz 802.11a/b/g/n 3T3R MIMO Wi-Fi for high speed wireless transmission
- Redundant dual DC input (9V~36V)
- CAN-bus interface with isolation
- Two USB 3.0 ports
- Four USB 2.0 ports
- Two SATA 6Gb/s ports
- Eight COM ports (four with isolation)
- Extended temperature fanless design supports -20°C~70°C

1.4 Technical Specifications

The TANK-700 technical specifications are listed in **Table 1-2**.

Specifications	
System	
CPU	Intel® 32nm mobile Core™ i7/i5/i3 or Celeron® processor
Chipset	Intel® QM67
Memory	1 x 204-pin 1066/1333 MHz dual-channel DDR3 SDRAM SO-DIMM slot (system max. 10 GB) 2.0 GB of DDR3 memory preinstalled
Ethernet Controller	Intel® 82579 PHY with Intel® AMT 7.0 support Intel® 82583V Ethernet controller

Specifications	
I/O and Indicators	
Ethernet	2 x Combo (SFP Fiber/RJ-45) Gigabit LAN
RS-232	4 x DB-9 serial ports on rear panel 2 x RJ-45 serial ports with isolation on front panel
RS-422/RS-485	2 x RJ-45 serial ports with isolation on front panel
USB Interfaces	2 x USB 3.0 ports on front panel 4 x USB 2.0 ports on rear panel
Display	1 x VGA port (supports resolution up to 2048 x 1536 @ 75Hz) 1 x HDMI port (supports resolution up to 1920 x 1200 @ 60Hz)
Audio Connector	1 x Line-out port 1 x Mic-in port
CAN-bus	1 x Phoenix terminal block on front panel
Audio/Video Capture	Optional 4-channel audio/video input PCIe Mini card (up to two cards)
Digital I/O	1 x DIO port (8 bits)
LED Indicators	AT power mode LED ATX power mode LED CAN-bus LED CPU temperature alert LED HDD LED LAN 1 LED LAN 2 LED Power 1 LED Power 2 LED SFP Fiber 1 LED SFP Fiber 2 LED Wireless LED
Storage	
SATA	2 x SATA 6Gb/s with 2.5" HDD/SSD support

Specifications	
Power	
Power Supply	Redundant dual DC input 9V~36V Power 1 (terminal block): 9 V (+/-0.3 V) ~ 36 V Power 2 (DC jack): 10.5 V (+/-0.3 V) ~ 36 V
Power Consumption	19V@3.3A (Intel® Core™ i5-2540M processor with 4.0 GB DDR3 memory)
Environmental and Mechanical	
Operating Temperature	-20°C~70°C, 5%~95%, non-condensing
Storage Temperature	-30°C~80°C
Mounting	Desktop, wall mount
Color	Black C + Silver C
Weight (Net/Gross)	3.8 Kg/6.5 Kg
Physical Dimensions	310 mm x 200 mm x 62 mm (W x D x H)

Table 1-2: Technical Specifications

1.5 Connector Panel

1.5.1 Front Panel

The TANK-700 front panel contains:

- 2 x 4-channel audio/video input (on selected models)
- 1 x CAN-bus terminal block with isolation
- 12 x LED indicators
- 1 x Power button
- 2 x RS-232 serial ports with isolation
- 2 x RS-422/485 serial ports with isolation
- 2 x USB 3.0 port connectors
- 2 x Wireless antenna connectors

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

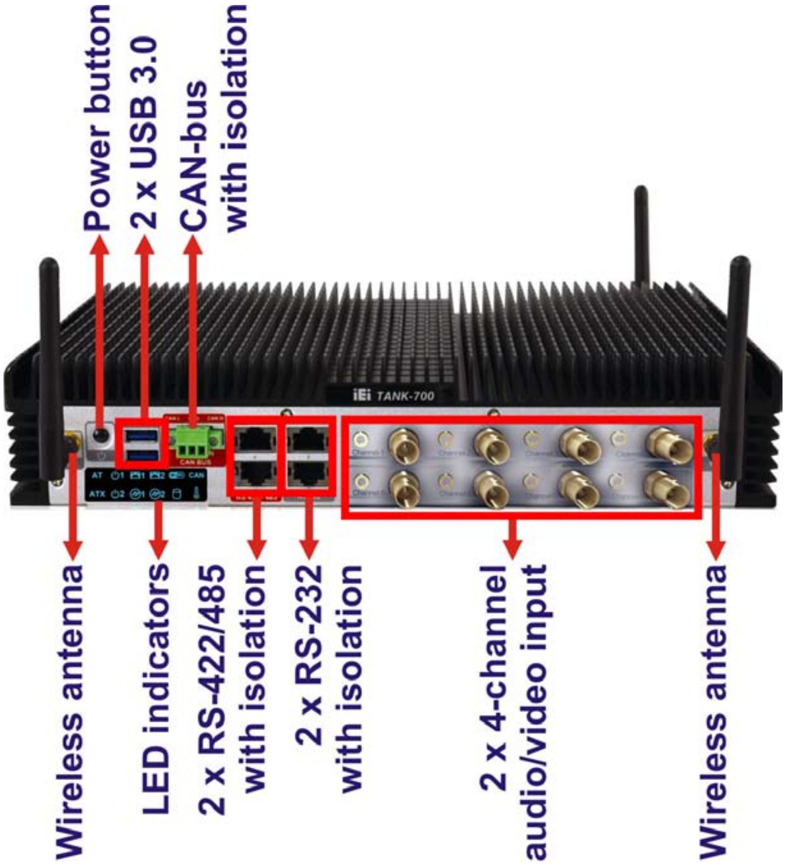

Power button
2 x USB 3.0
CAN-bus with isolation
Wireless antenna
LED indicators
2 x RS-422/485 with isolation
2 x RS-232 with isolation
2 x 4-channel audio/video input
Wireless antenna

Figure 1-2: TANK-700 Front Panel

1.5.2 Rear Panel

The TANK-700 rear panel contains:

- 1 x DIO port
- 1 x 2-pin terminal block for remote control
- 2 x RJ-45 Gigabit LAN ports
- 1 x HDMI port
- 1 x Line-out port (green)
- 1 x Mic-in port (pink)
- 1 x 4-pin power jack for 10.5V (+/-0.3V) ~ 36V power input
- 1 x Power terminal block for 9V (+/-0.3V) ~ 36V power input
- 1 x Reset button
- 4 x RS-232 serial ports
- 2 x SFP Fiber Gigabit LAN ports

- 4 x USB 2.0 port connectors
- 1 x VGA output
- 1 x Wireless antenna connector

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

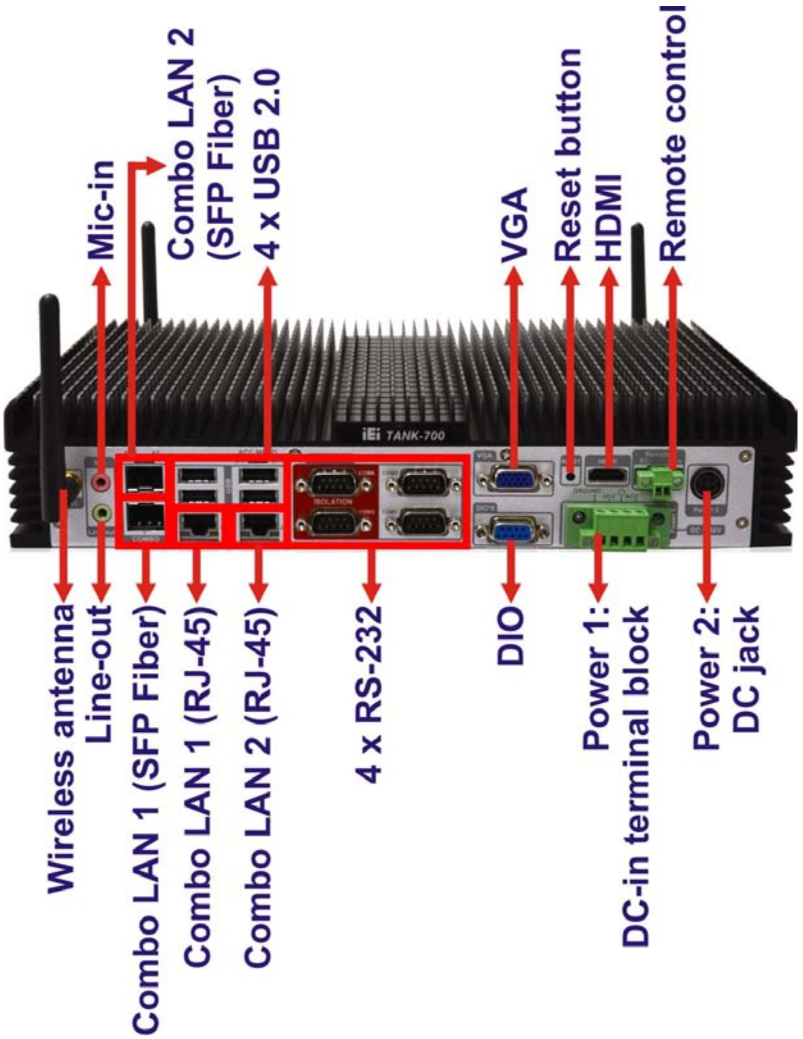

Mic-in
Combo LAN 2 (SFP Fiber)
4 x USB 2.0
VGA
Reset button
HDMI
Remote control
Wireless antenna
Line-out
Combo LAN 1 (SFP Fiber)
Combo LAN 1 (RJ-45)
Combo LAN 2 (RJ-45)
4 x RS-232
DIO
Power 1: DC-in terminal block
Power 2: DC jack

Figure 1-3: TANK-700 Rear Panel

NOTE:

The TANK-700 provides two pairs of combo LANs. For each pair of combo LAN, only one LAN port can work at one time, and the SFP Fiber port works prior to the RJ-45 one. When a LAN port is working, the corresponding LED indicator lights up. Refer to **Section 1.6** for the locations of the LED indicators.

1.6 LED Indicators

There are several indicators on the front panel of the TANK-700 as shown in **Figure 1-4**.

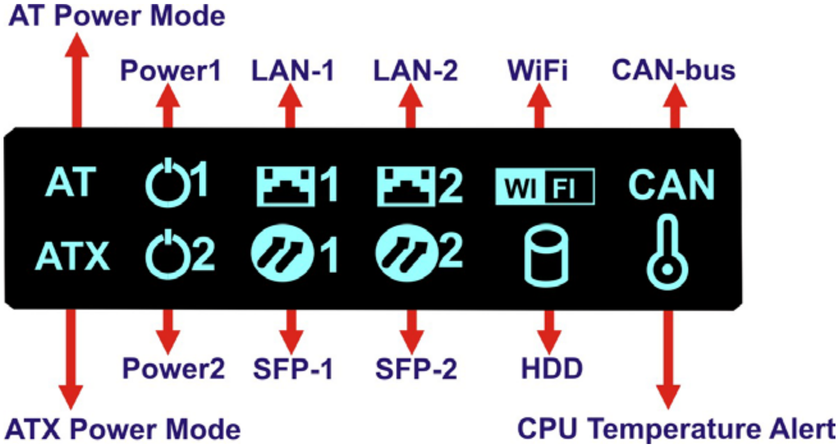

AT Power Mode
Power1
LAN-1
LAN-2
WiFi
CAN-bus
AT
1
1
2
WI FI
CAN
ATX
2
1
2
Power2
SFP-1
SFP-2
HDD
ATX Power Mode
CPU Temperature Alert

Figure 1-4: TANK-700 LED Indicators

WARNING:

The CPU Temperature Alert LED turns red when the CPU temperature is too high. If this situation occurs, lower the environment temperature or close some running applications to cool down the CPU.

1.7 Dimensions

The physical dimensions are shown below:

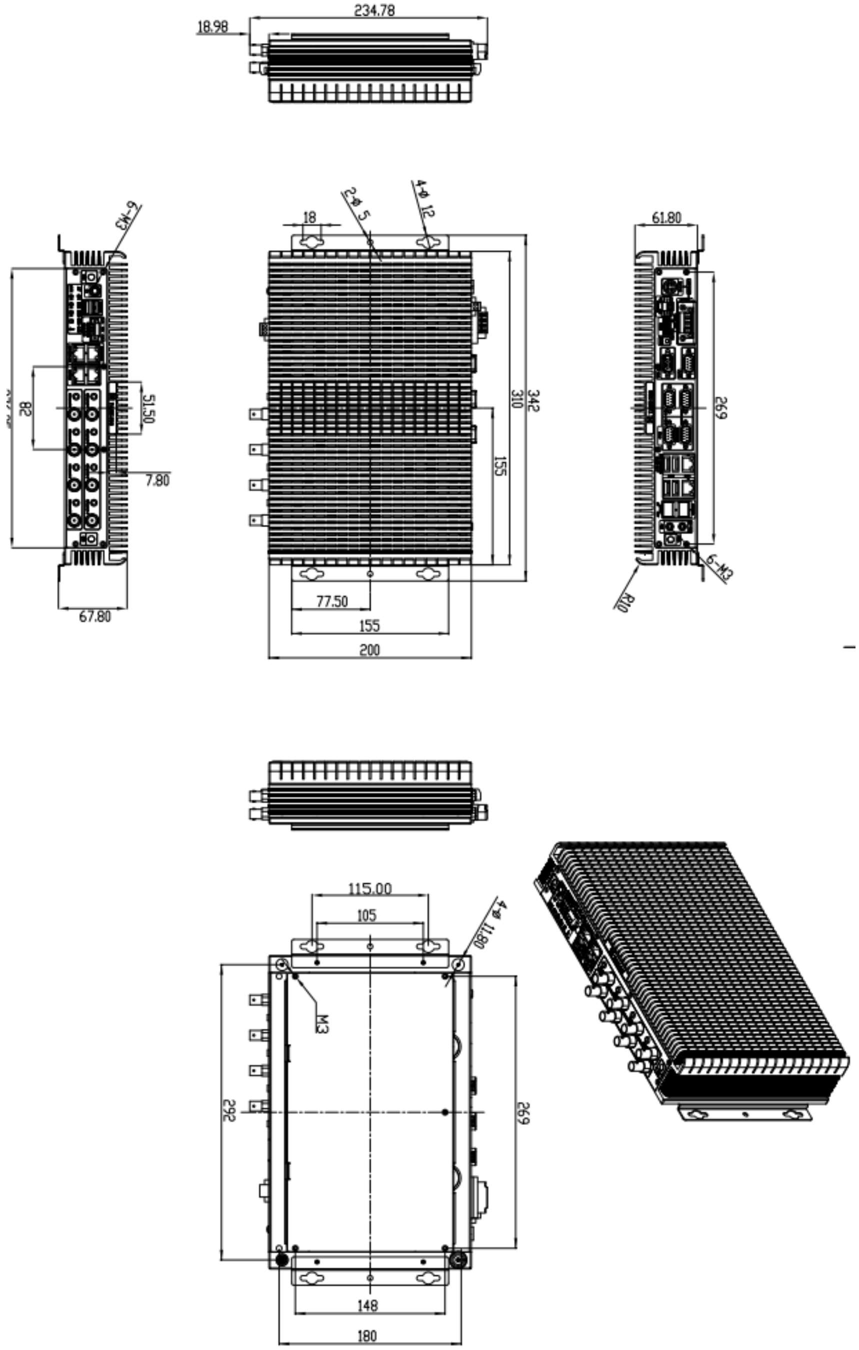

18.98
234.78
6-M3
2-Φ5
4-Φ12
18
61.80
82
51.50
7.80
342
310
155
269
67.80
77.50
155
200
6-M3
R10
115.00
105
4-Φ11.80
M3
292
269
148
180

Figure 1-5: 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 TANK-700 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the TANK-700. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the TANK-700 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 TANK-700, place it on an antic-static pad. This reduces the possibility of ESD damaging the TANK-700.

2.2 Unpacking Precautions

When the TANK-700 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 TANK-700 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 TANK-700 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@iei.com.tw.

The TANK-700 is shipped with the following components:

Quantity	Item and Part Number	Image
Standard		
1	TANK-700 Series	
1	Power adapter (**P/N**: 63040-010090-020-RS)	
1	Power cord (**P/N**: 32702-000401-100-RS)	
1	Power transfer cable (**P/N**: 32000-089400-RS)	
2	Mounting bracket (**P/N**: 41020-0163J4-00-RS)	

Quantity	Item and Part Number	Image
Standard		
8	Mounting bracket screw (**P/N**: 44033-030062-RS)	
8	Chassis screw (**P/N**: 44013-030041-RS)	
4	RJ-45 to DB-9 COM port cable (**P/N**: 32005-000200-200-RS)	
3	Wireless antenna (**P/N**: 32505-000900-100-RS)	
1	Pluggable DC-in terminal block (**P/N**: 33502-000055-RS)	
1	Pluggable CAN-bus terminal block (**P/N**: 33502-000007-RS)	
1	Pluggable remote control terminal block (**P/N**: 33101-000422-RS)	
1	One Key Recovery CD (**P/N**: 7B000-000724-RS)	

Quantity	Item and Part Number	Image
Standard		
1	User manual and driver CD (**P/N**: 7B000-000740-RS)	

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

Optional	
Gigabit Ethernet SFP module (**P/N**: SFP1G-SX/-I SFP1G-MLX/-I SFP1G-LX10/-I SFP1G-ZX70/-I)	
Fiber cord (**P/N**: FPC-LCLC-MM3M FPC-LCLC-SS3M)	
OS: Win CE 6.0 (CD-ROM) (**P/N**: TANK-700-QM67-CE060-R10)	
OS: Win XPE (CD-ROM) (**P/N**: TANK-700-QM67-XPE-R10)	
OS: Linux (CD-ROM) (**P/N**: TANK-700-QM67-LNX-R10)	
OS: Win 7 Embedded (CD-ROM) (**P/N**: TANK-700-QM67-WES7E-R10)	

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 TANK-700, installation instructions and configuration options.
- **DANGER! Disconnect Power**: Power to the TANK-700 must be disconnected during the installation process, or before any attempt is made to access the rear panel. Electric shock and personal injury might occur if the rear panel of the TANK-700 is opened while the power cord is still connected to an electrical outlet.
- **Qualified Personnel**: The TANK-700 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 TANK-700. The TANK-700's cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the TANK-700. Leave at least 5 cm of clearance around the TANK-700 to prevent overheating.
- **Grounding**: The TANK-700 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 TANK-700.

3.2 Hard Disk Drive (HDD) Installation

To install the hard drive, please follow the steps below:

Step 1: Remove the bottom panel by removing the five retention screws from the bottom panel.

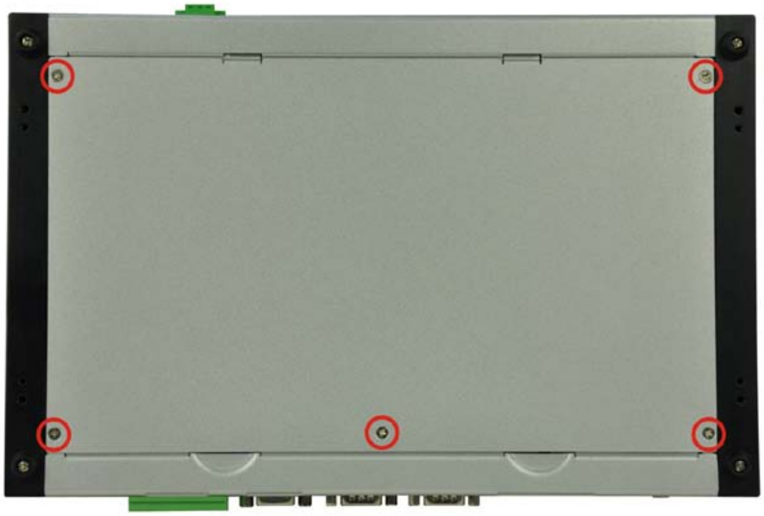


Figure 3-1: Bottom Panel Retention Screws

Step 2: Remove the four HDD bracket retention screws and unplug the SATA signal and power cables connected to the TANK-700. And then lift the HDD bracket out of the TANK-700 and put it on a flat surface.

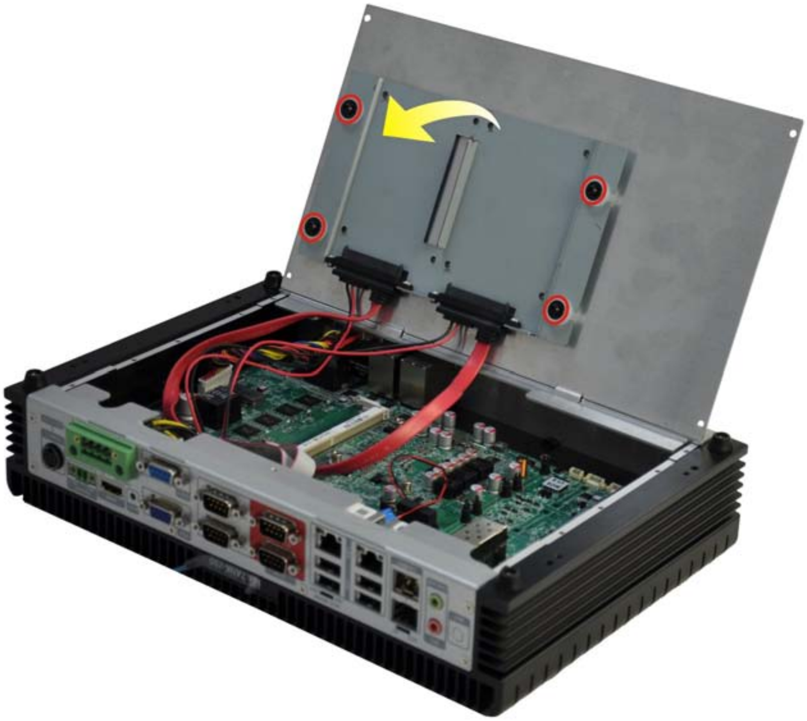


Figure 3-2: HDD Bracket Retention Screws

Step 3: Attach each HDD to the HDD bracket, and then slide each HDD to connect the SATA connectors.

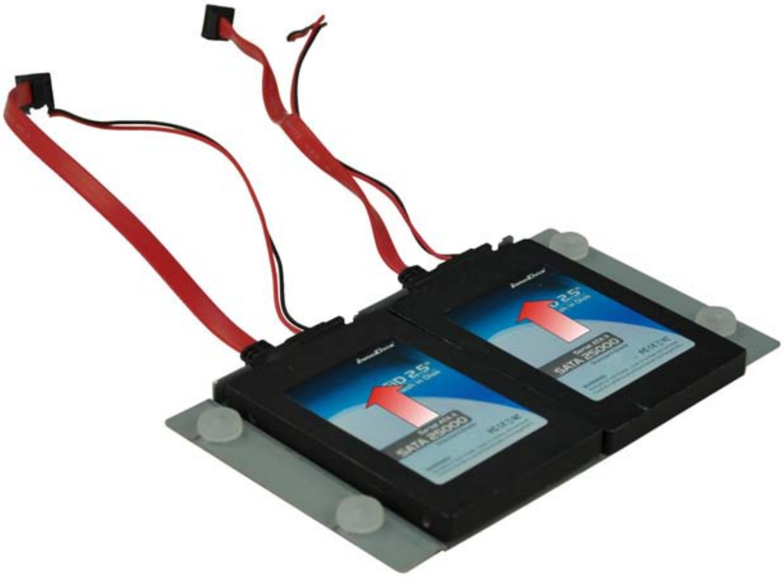


Figure 3-3: HDD Installation

Step 4: Secure each HDD with the HDD bracket by four retention screws (eight in all).

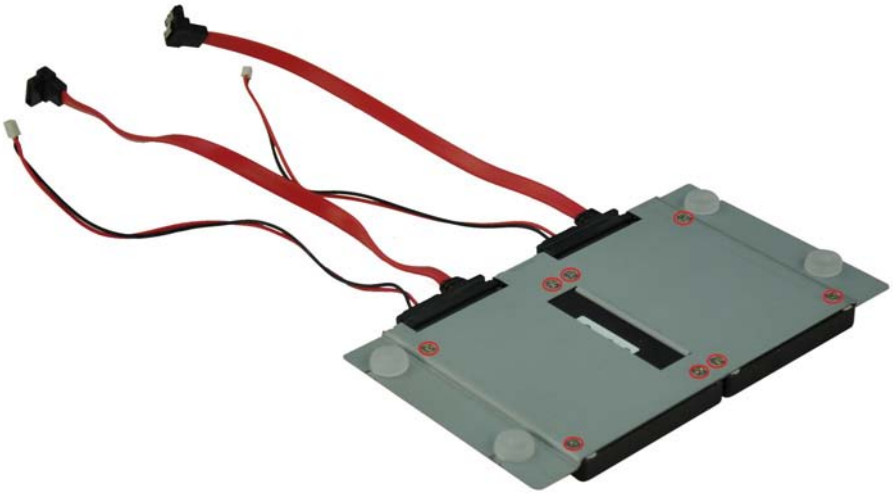


Figure 3-4: HDD Retention Screws

Step 5: Secure the HDD bracket with TANK-700 by the four retention screws that were previously removed.

Step 6: Reconnect the SATA signal and power cables to the TANK-700.

Step 7: Reinstall the bottom panel to the TANK-700.

3.3 Pluggable CAN-bus Terminal Block Installation

To install the pluggable CAN-bus terminal block, please follow the steps below:

Step 1: Locate the CAN-bus terminal block connector. The location of the connector is shown in **Figure 1-2**.

Step 2: Align the pluggable CAN-bus terminal block with the CAN-bus terminal block connector on the TANK-700.

Step 3: Once aligned, insert the pluggable CAN-bus terminal block into the CAN-bus terminal block connector.

Step 4: Secure the pluggable CAN-bus terminal block to the external interface by tightening the two retention screws on either side of the terminal block (**Figure 3-5**).

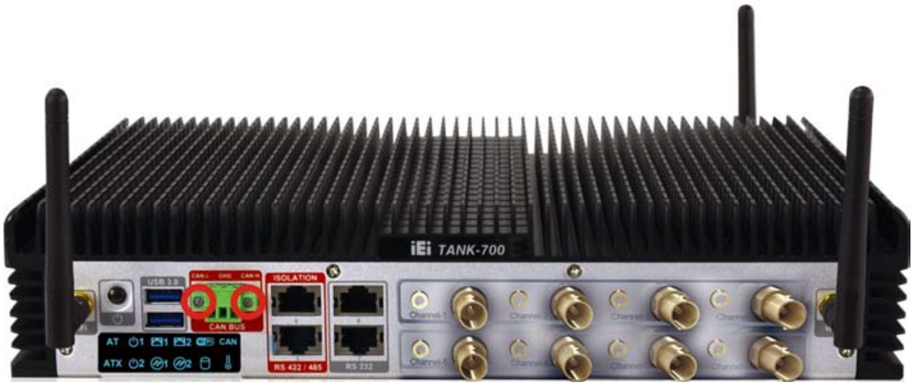


Figure 3-5: Pluggable CAN-bus Terminal Block Installation

3.4 Pluggable DC-In Terminal Block Installation

To install the pluggable DC-in terminal block, please follow the steps below:

Step 1: Locate the DC-in terminal block connector. The location of the connector is shown in **Figure 1-3**.

Step 2: Align the pluggable DC-in terminal block with the DC-in terminal block connector on the TANK-700.

Step 3: Once aligned, insert the pluggable DC-in terminal block into the DC-in terminal block connector.

Step 4: Secure the pluggable DC-in terminal block to the external interface by tightening the two retention screws on either side of the terminal block (**Figure 3-6**).

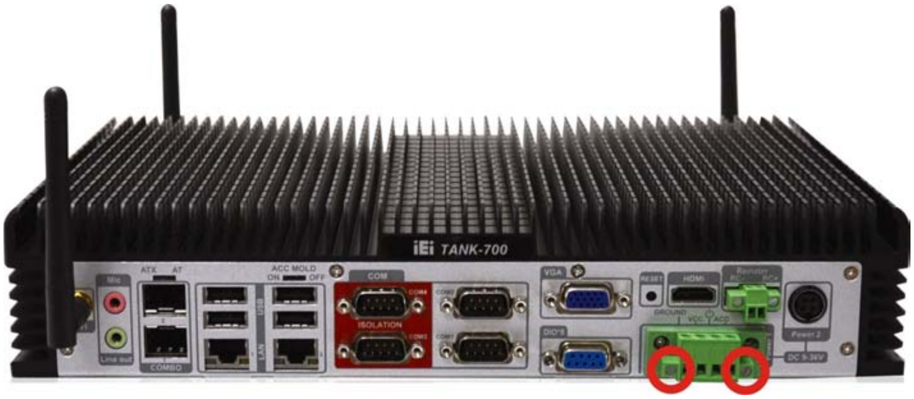


Figure 3-6: Pluggable DC-in Terminal Block Installation

3.5 Pluggable Remote Control Terminal Block Installation

To install the pluggable remote control terminal block, please follow the steps below:

Step 1: Locate the remote control terminal block connector. The location of the connector is shown in **Figure 1-3**.

Step 2: Align the pluggable remote control terminal block with the remote control terminal block connector on the TANK-700.

Step 3: Once aligned, insert the pluggable remote control terminal block into the remote control terminal block connector.

Step 4: Secure the pluggable remote control terminal block to the external interface by tightening the two retention screws on either side of the terminal block (**Figure 3-7**).

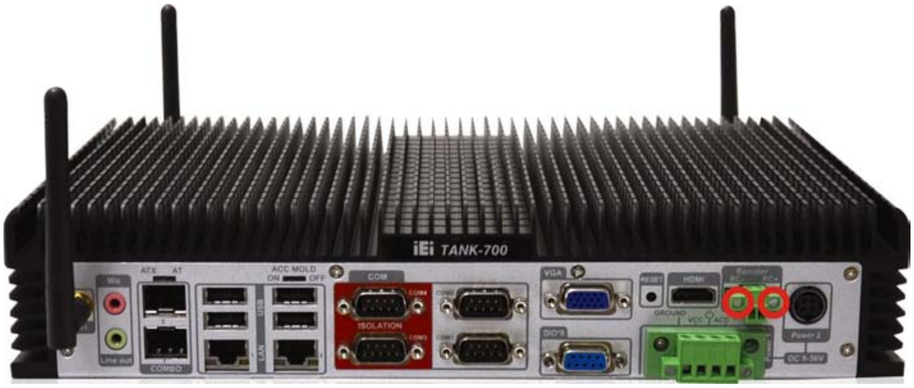

iEi TANK-700
Mic
Line out
ATX
AT
COMBO
ACC MOLD
ON
OFF
USB
LAN
COM
COM4
ISOLATION
COM3
VGA
DIO
RESET
HDMI
Remoter
GROUND
VCC
ACC
Power 2
DC 9-36V

Figure 3-7: Pluggable Remote Control Terminal Block Installation

3.6 SFP Module Installation

To install an SFP module, please follow the steps below:

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

Step 2: Align the SFP module with one of the SFP fiber connectors on the TANK-700 (**Figure 3-8**).

Step 3: Once aligned, slide the SFP module into place (**Figure 3-8**).

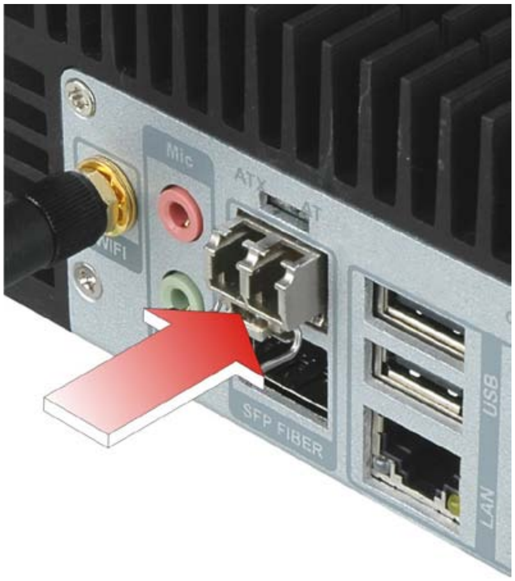

Mic
WiFi
ATX
AT
SFP FIBER
USB
LAN

Figure 3-8: SFP Module Installation

3.7 SO-DIMM Installation

WARNING:

Using incorrectly specified SO-DIMM may cause permanently damage the TANK-700. Please make sure the purchased SO-DIMM complies with the memory specifications of the TANK-700.

To install a SO-DIMM into a SO-DIMM socket, please follow the steps below.

Step 1: Remove the bottom panel by removing the five retention screws from the bottom panel (**Figure 3-1**).

Step 2: Unplug the SATA signal and power cables connected to the TANK-700, and then place the bottom panel on a flat surface.

Step 3: Locate the SO-DIMM socket on the motherboard (**Figure 3-9**).

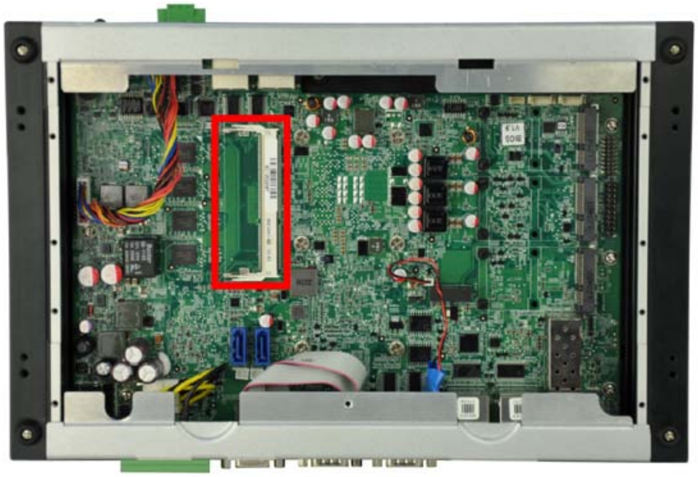


Figure 3-9: SO-DIMM Socket

Step 4: Align the SO-DIMM with the socket. The SO-DIMM must be oriented in such a way that the notch in the middle of the SO-DIMM must be aligned with the plastic bridge in the socket (**Figure 3-10**).

Step 5: Push the SO-DIMM into the socket at an angle (**Figure 3-10**).

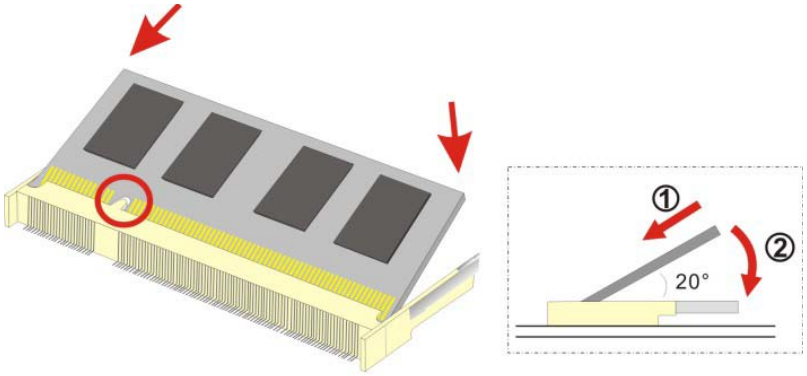


Figure 3-10: SO-DIMM Installation

Step 6: Gently pull the arms of the SO-DIMM socket out and push the rear of the SO-DIMM down (**Figure 3-10**).

Step 7: Release the arms on the SO-DIMM socket. They clip into place and secure the SO-DIMM in the socket.

Step 8: Install the bracket that was previously removed in the same position it was before.

Step 9: Reinstall the bottom panel to the TANK-700.

3.8 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 3-11**).

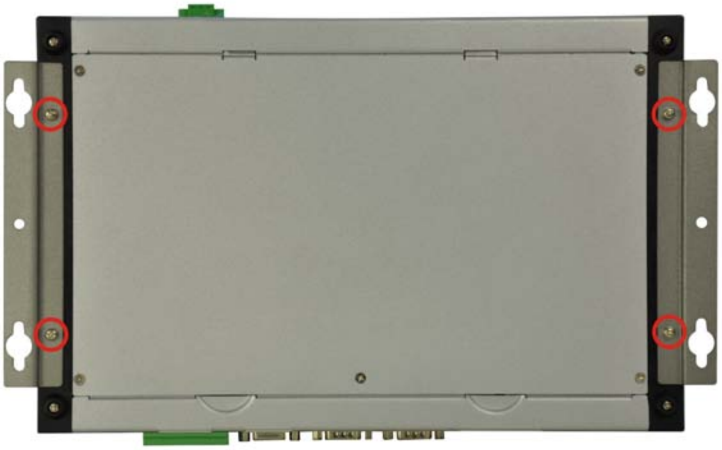


Figure 3-11: Mounting Bracket Retention Screws

Step 3: Secure the brackets to the system by inserting two retention screws into each bracket (**Figure 3-11**).

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.

3.9 External Peripheral Interface Connectors

The TANK-700 has the following connectors. Detailed descriptions of the connectors can be found in the subsections below.

- Audio
- Audio/video input connectors
- CAN-bus
- DIO
- Ethernet
- GPIO for remote control
- HDMI
- Power button
- Power input

- Reset button
- RS-232
- RS-422/485
- USB
- VGA
- Wireless antenna

3.9.1 ACC Mode Selection

The TANK-700 allows turning the ACC mode on or off. The setting can be made through the ACC mode switch on the rear panel as shown below.

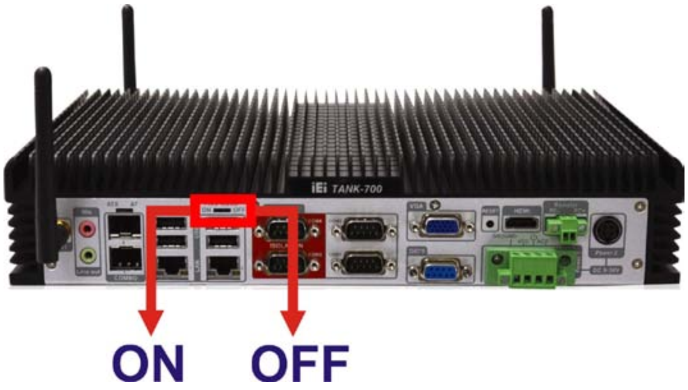


Figure 3-12: ACC Mode Switch

3.9.2 AT/ATX Power Mode Selection

The TANK-700 supports AT and ATX power modes. The setting can be made through the AT/ATX power mode switch on the rear panel as shown below.

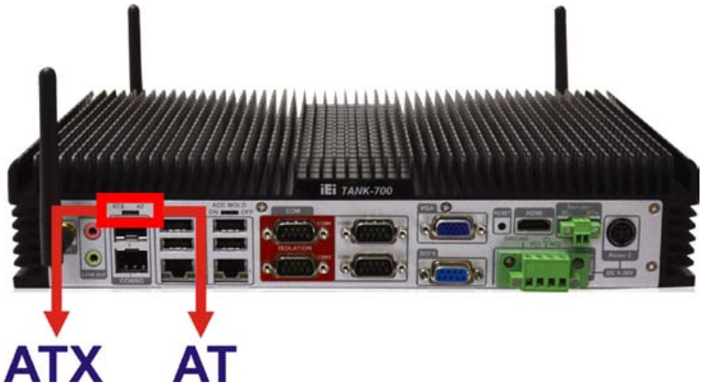


Figure 3-13: AT/ATX Power Mode Switch

3.9.3 Audio Connector

CN Label:	Line out and Mic
CN Type:	Audio jack
CN Location:	See **Figure 3-14**

The audio jacks connect to external audio devices.

- **Microphone (Pink):** Connects a microphone.
- **Line Out port (Green):** Connects to a headphone or a speaker. With multi-channel configurations, this port can also connect to front speakers.

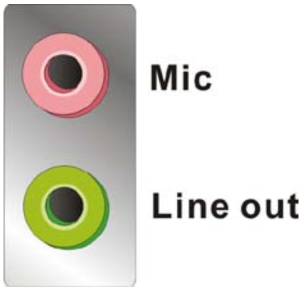


Figure 3-14: Audio Connector

3.9.4 Audio/Video Input Connectors

The TANK-700 can support up to eight video inputs and eight audio inputs through the BNC and RCA connectors on the front panel. The locations of the connectors are shown in **Figure 1-2**.

3.9.5 CAN-bus Terminal Block

There is one 3-pin CAN-bus terminal block. The pinouts are shown in **Figure 3-15**

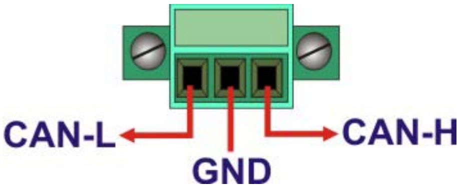


Figure 3-15: CAN-bus Terminal Block Pinouts

3.9.6 Digital Input/Output Connector

CN Label:	**DIO x 8**
CN Type:	DB-9 male connector
CN Location:	See **Figure 1-3**
CN Pinouts:	See **Table 3-1** and **Figure 3-16**

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	VCC5
5	DIN2		

Table 3-1: DIO Connector Pinouts

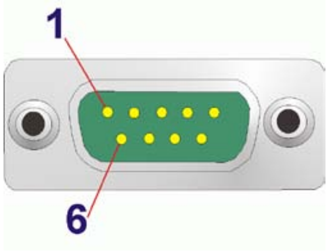


Figure 3-16: DIO Connector Pinout Location

3.9.7 HDMI Connector

CN Label:	**HDMI**
CN Type:	HDMI type A connector
CN Location:	See **Figure 1-3**
CN Pinouts:	See **Table 3-2**

The HDMI (High-Definition Multimedia Interface) connector connects to digital audio or video sources.

Pin	**Description**	**Pin**	**Description**
1	HDMI_DATA2	2	GND
3	HDMI_DATA2#	4	HDMI_DATA1
5	GND	6	HDMI_DATA1#
7	HDMI_DATA0	8	GND
9	HDMI_DATA0#	10	HDMI_CLK
11	GND	12	HDMI_CLK#
13	N/C	14	N/C
15	HDMI_SCL	16	HDMI_SDA
17	GND	18	+5V
19	HDMI_HPD	20	HDMI_GND
21	HDMI_GND	22	HDMI_GND
23	HDMI_GND		

Table 3-2: HDMI Connector Pinouts

3.9.8 LAN Connectors

CN Label:	**LAN**
CN Type:	RJ-45
CN Location:	See **Figure 1-3**
CN Pinouts:	See **Table 3-3**

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 TANK-700. See **Figure 3-17**.

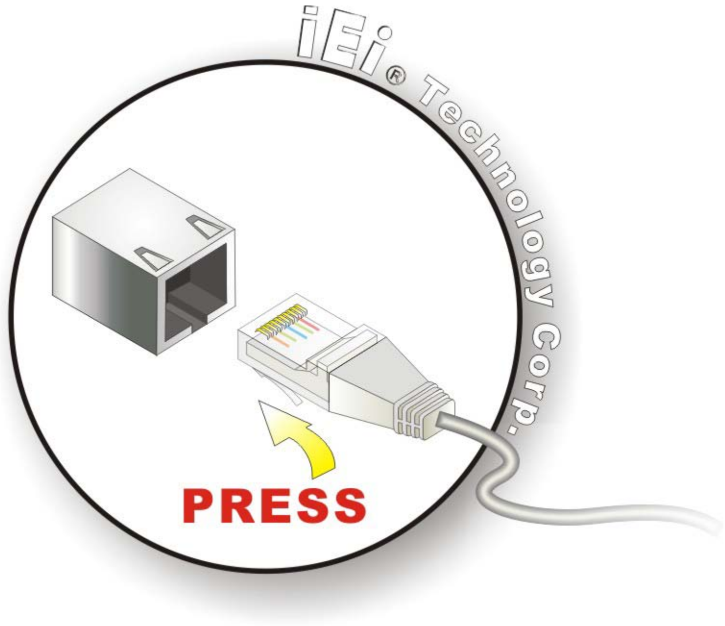


Figure 3-17: LAN Connection

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	TRD1P0	5	TRD1P2
2	TRD1N0	6	TRD1N2
3.	TRD1P1	7	TRD1P3
4.	TRD1N1	8	TRD1N3

Table 3-3: LAN Pinouts

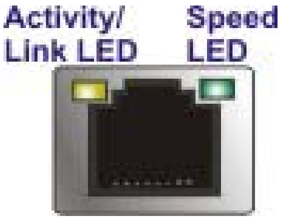


Figure 3-18: RJ-45 Ethernet Connector

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 3-4**.

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 3-4: RJ-45 Ethernet Connector LEDs

3.9.9 Power Input, 4-pin Terminal Block

CN Label:	**POWER 1**
CN Type:	4-pin terminal block
CN Location:	See **Figure 1-3**
CN Pinouts:	See **Table 3-5** and **Figure 3-19**

Connect the leads of a 9V~36V DC power supply into the terminal block. Make sure that the power and ground wires are attached to the correct sockets of the connector.

Pin	Description	Pin	Description
1	GND	3	Power button
2	VCC	4	ACC

Table 3-5: 4-pin Terminal Block Pinouts

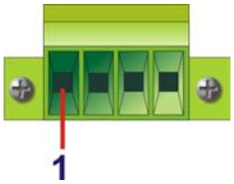


Figure 3-19: 4-pin Terminal Block Pinout Location

3.9.10 Power Input, 4-pin DIN Connector

CN Label:	POWER 2
CN Type:	4-pin DIN connector
CN Location:	See **Figure 1-3**
CN Pinouts:	See **Table 3-6** and **Figure 3-20**

The power connector connects to the 10.5V~36V DC power adapter.

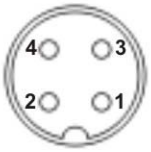


Figure 3-20: Power Input Connector

Pin	Description	Pin	Description
1	+12V	3	+12V
2	GND	4	GND

Table 3-6: Power Input Pinouts

3.9.11 Remote Control Connector (For AT Power Mode Only)

CN Label:	**Remoter**
CN Type:	2-pin terminal block
CN Location:	See **Figure 1-3**
CN Pinouts:	See **Figure 3-21**

The 2-pin terminal block connects to a remote control device. Users can control the system power on/off by inputting high or low voltage into the terminal block.

- **Turn off** the system: **2 V** ~ **5 V** input
- **Turn on** the system: **less than 0.4 V** input

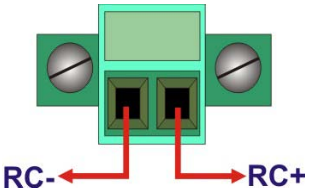


Figure 3-21: Remote Control Terminal Block Pinout Location

3.9.12 RJ-45 RS-232 Serial Ports

CN Label:	**RS 232**
CN Type:	RJ-45
CN Location:	See **Figure 1-2**
CN Pinouts:	See **Table 3-7** and **Figure 3-23**

RS-232 serial port devices can be attached to the RJ-45 RS-232 serial ports on the front panel.

Step 1: **Locate the RJ-45 RS-232 connectors**. The locations of the RJ-45 RS-232 connectors are shown in **Figure 1-2**.

Step 2: **Insert the RJ-45 connector**. Insert the RJ-45 connector on the RJ-45 to DB-9 COM port cable to one of the RJ-45 RS-232 connectors on the TANK-700. See **Figure 3-22**.

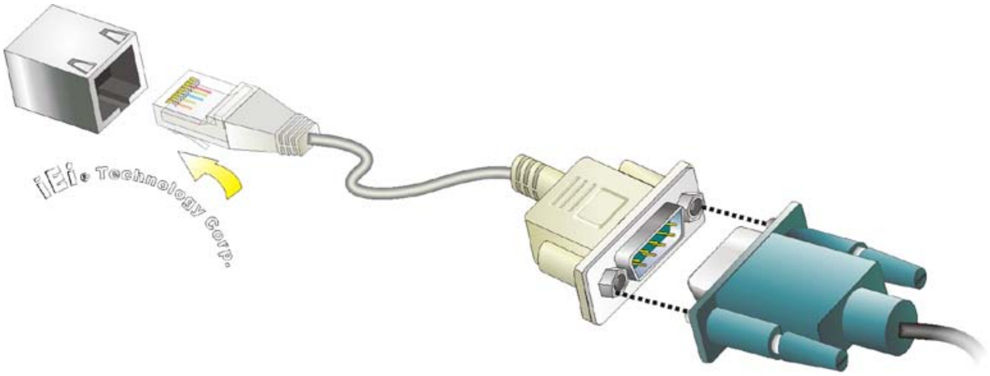

iEi Technology Corp.

Figure 3-22: RJ-45 RS-232 Serial Device Connection

Step 3: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the RJ-45 to DB-9 COM port cable.

Step 4: **Secure the connector**. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

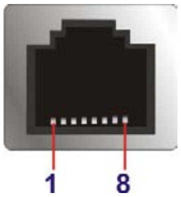


Figure 3-23: RJ-45 RS-232 Serial Port Pinout Location

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

Table 3-7: RJ-45 RS-232 Serial Port Pinouts

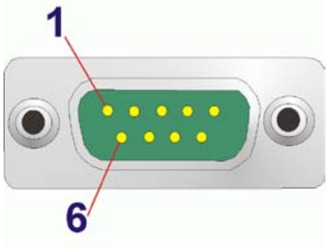


Figure 3-24: DB-9 Connector Pinout Location

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

Table 3-8: DB-9 Connector Pinouts

3.9.13 RJ-45 RS-422/485 Serial Ports

CN Label:	**RS 422/485**
CN Type:	RJ-45
CN Location:	See **Figure 1-2**
CN Pinouts:	See **Table 3-9** and **Figure 3-26**

RS-422/485 serial port devices can be attached to the RJ-45 RS-422/485 serial ports on the front panel.

Step 1: **Locate the RJ-45 RS-422/485 connectors**. The locations of the RJ-45 RS-422/485 connectors are shown in **Figure 1-2**.

Step 2: **Insert the RJ-45 connector**. Insert the RJ-45 connector on the RJ-45 to DB-9 COM port cable to one of the RJ-45 RS-422/485 connectors on the TANK-700. See **Figure 3-25**.

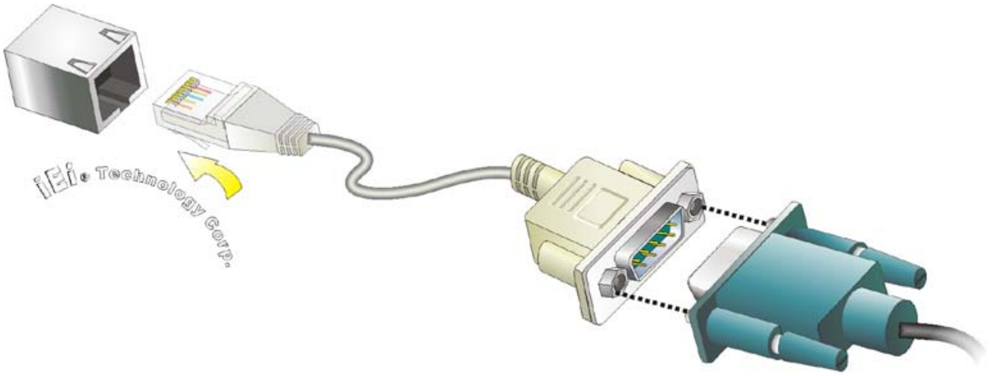

iEi Technology Corp.

Figure 3-25: RJ-45 RS-422/485 Serial Device Connection

Step 3: **Insert the serial connector**. Insert the DB-9 connector of a serial device into the DB-9 connector on the RJ-45 to DB-9 COM port cable.

Step 4: **Secure the connector**. Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.

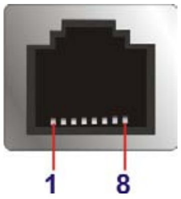


Figure 3-26: RJ-45 RS-422/485 Serial Port Pinout Location

Pin	Description (RS-422)	Description (RS-485)
1	N/A	N/A
2	TXD422#	TXD485#
3	N/A	N/A
4	TXD422+	TXD485+
5	N/A	N/A
6	RXD422#	N/A
7	N/A	N/A
8	RXD422+	N/A

Table 3-9: RJ-45 RS-422/485 Serial Port Pinouts

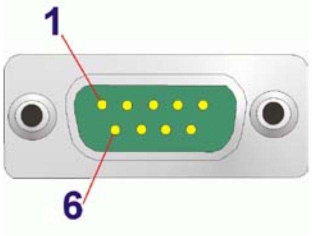


Figure 3-27: DB-9 Connector Pinout Location

Pin	Description (RS-422)	Description (RS-485)
1	RXD422+	N/A
2	RXD422#	N/A
3	TXD422+	TXD485+
4	TXD422#	TXD485#
5	GND	GND
6	N/A	N/A
7	N/A	N/A
8	N/A	N/A
9	N/A	N/A

Table 3-10: DB-9 Connector Pinouts

3.9.14 RS-232 Serial Port Connectors

CN Label:	**COM1**, **COM2**, **COM3** and **COM4**
CN Type:	DB-9 connectors
CN Location:	See **Figure 1-3**
CN Pinouts:	See **Table 3-11** 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**.

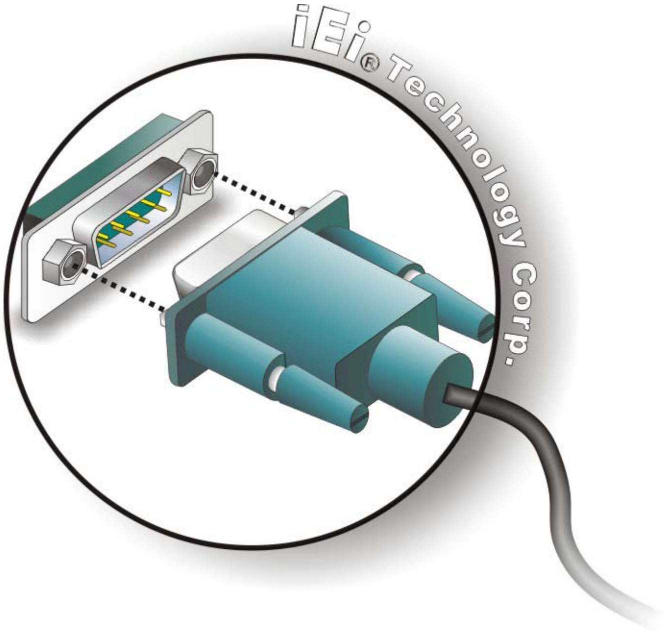

iEi® Technology Corp.

Figure 3-28: 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	RX	7	RTS
3	TX	8	CTS
4	DTR	9	RI
5	GND		

Table 3-11: Serial Port Pinouts

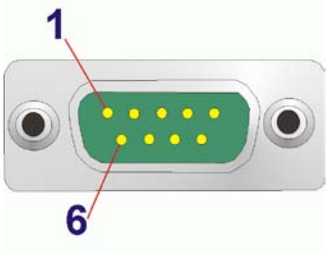


Figure 3-29: Serial Port Pinout Location

3.9.15 SFP Fiber Connectors

The TANK-700 has two SFP fiber connectors. The locations of the connectors are shown in **Figure 1-3**. To install an SFP module, refer to **Section 3.6**.

3.9.16 USB Connectors

CN Label:	USB
CN Type:	USB port
CN Location:	See **Figure 1-2** and **Figure 1-3**
CN Pinouts:	See **Table 3-12**

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 3-30**.

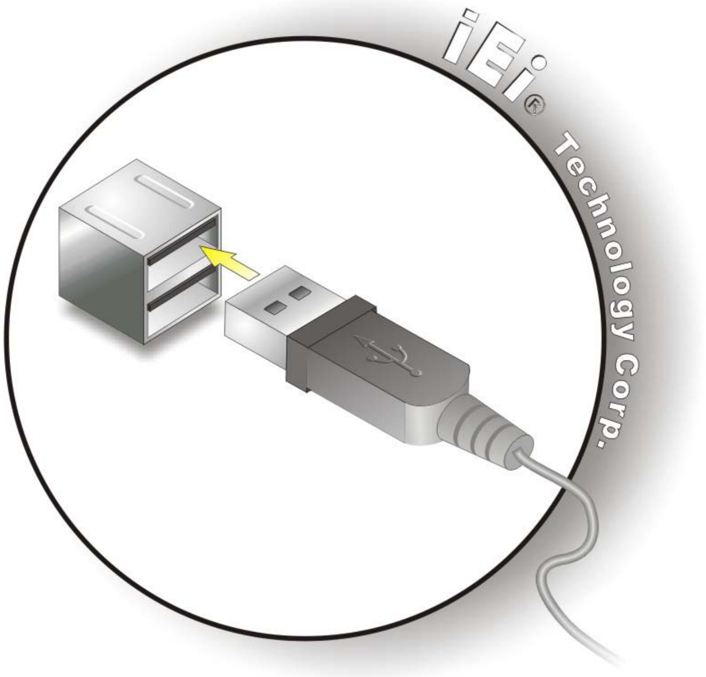

iEi® Technology Corp.

Figure 3-30: 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 3-12: USB Port Pinouts

3.9.17 VGA Connector

CN Label:	VGA
CN Type:	15-pin Female
CN Location:	See **Figure 1-3**
CN Pinouts:	See **Figure 3-32** and **Table 3-13**

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 TANK-700. See **Figure 3-31**.

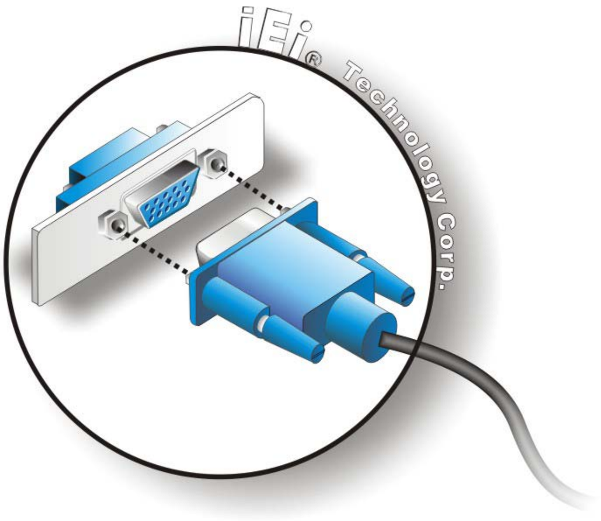

iEi® Technology Corp.

Figure 3-31: 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.

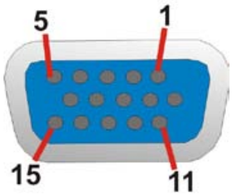


Figure 3-32: VGA Connector

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

Table 3-13: VGA Connector Pinouts

3.10 Powering On/Off the System

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.

- **Power on** the system: press the power button for 3 seconds
- **Power off** the system: press the power button for 6 seconds

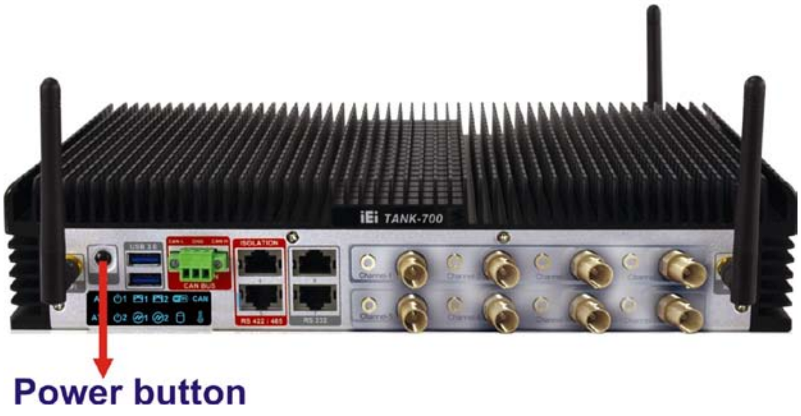


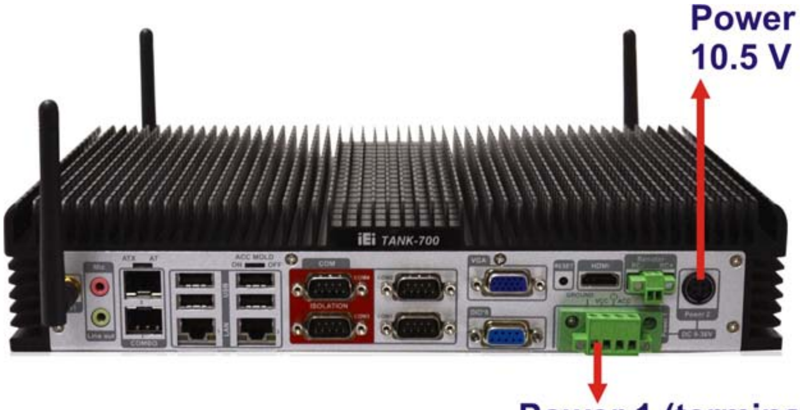
Figure 3-33: Power Button

3.11 Redundant Power

The TANK-700 is a system that supports redundant power. The redundant power input increases the reliability of the system and prevents data loss and system corruption from sudden power failure. The system can instantly and uninterruptedly switch to the second power input when the main power is unavailable or in low voltage capacity.

There are two power connectors on the rear panel. Power 1 connector is a 4-pin terminal block that supports ACC On signal. Power 2 connector is a DIN connector that can directly connect to a power adapter. The supported power input voltages are:

- **Power 1 (terminal block)**: 9 V (+/-0.3 V) ~ 36 V
- **Power 2 (DC jack)**: 10.5 V (+/-0.3 V) ~ 36 V



Power 2 (DC jack):
10.5 V (+/-0.3 V) ~ 36 V

Power 1 (terminal block):
9 V (+/-0.3 V) ~ 36 V

Figure 3-34: Power Connectors

When the system is in ACC On mode, the main power input is from Power 1 connector; when the system is in ACC Off mode, the main power input is from Power 2 connector. The ACC on/off mode is selected by the ACC mode switch on the rear panel (**Figure 3-12**).

The following sections describe how the redundant power works in ACC On mode and ACC Off mode.

3.11.1 ACC ON

NOTE:

In ACC On mode, the Power 1 connector must connect to the ACC on signal to be able to control system power.

The ACC On mode is designed for vehicle applications. When the TANK-700 is in ACC On mode, the main power input is the Power 1 connector and the backup power is from the Power 2 connector.

3.11.1.1 Boot-up

When both power connectors are connected to a power source with over 9 V, the two power LEDs on the front panel remain off until **the ACC ON signal jumps from low to high**. The user can choose AT power mode or ATX power mode to control the system. The following flow diagrams show the boot-up process and the LED status in AT and ATX power modes.

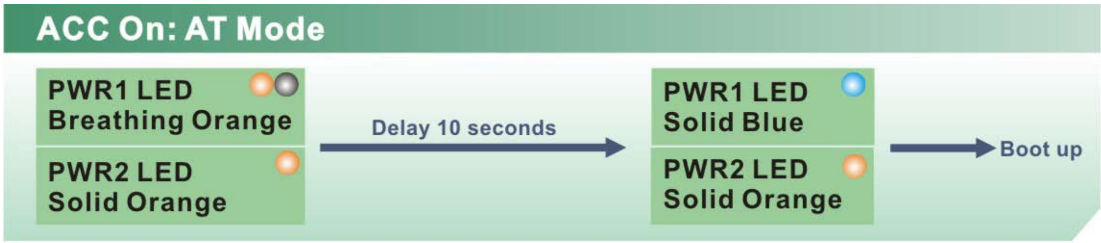

ACC On: AT Mode
PWR1 LED
Breathing Orange
PWR2 LED
Solid Orange
Delay 10 seconds
PWR1 LED
Solid Blue
PWR2 LED
Solid Orange
Boot up

Figure 3-35: ACC On: AT Mode

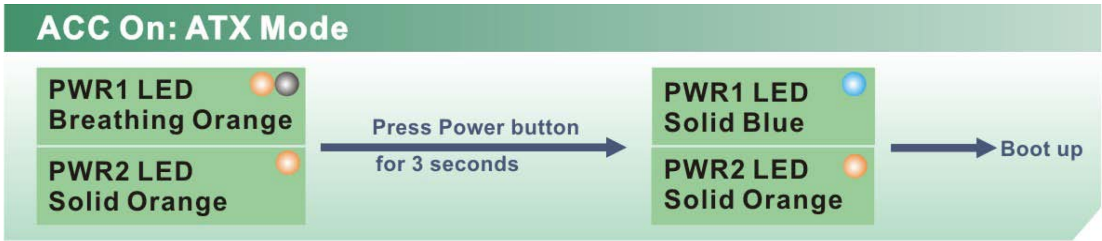

ACC On: ATX Mode
PWR1 LED
Breathing Orange
PWR2 LED
Solid Orange
Press Power button
for 3 seconds
PWR1 LED
Solid Blue
PWR2 LED
Solid Orange
Boot up

Figure 3-36: ACC On: ATX Mode

3.11.1.2 Switch to Backup Power

During operation, system power will switch from Power 1 to Power 2 automatically when the following situations occur:

- Power 1 < 9V and Power 2 > 10.5V
- Power 1 > 9V, but the ACC ON signal jumps from high to low
- Power 1 is unplugged and Power 2 > 10.5V

The following flow diagram shows how the power is switched between Power 1 and Power 2 and their LED statuses.

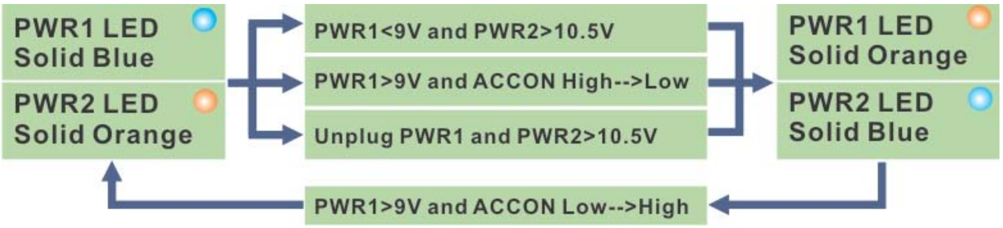

PWR1 LED Solid Blue
PWR2 LED Solid Orange
PWR1<9V and PWR2>10.5V
PWR1>9V and ACCON High-->Low
Unplug PWR1 and PWR2>10.5V
PWR1 LED Solid Orange
PWR2 LED Solid Blue
PWR1>9V and ACCON Low-->High

Figure 3-37: ACC On: Switch Between PWR1 and PWR2

3.11.1.3 Shutdown

The system will shutdown in the following situations:

- Power 1 < 9V and Power 2 < 10.5V
- Power 1 > 9V, Power 2 < 10.5V and ACC ON signal jumps from high to low
- Press Power button for 6 seconds

The following flow diagram shows the system shutdown process and the LED statuses.

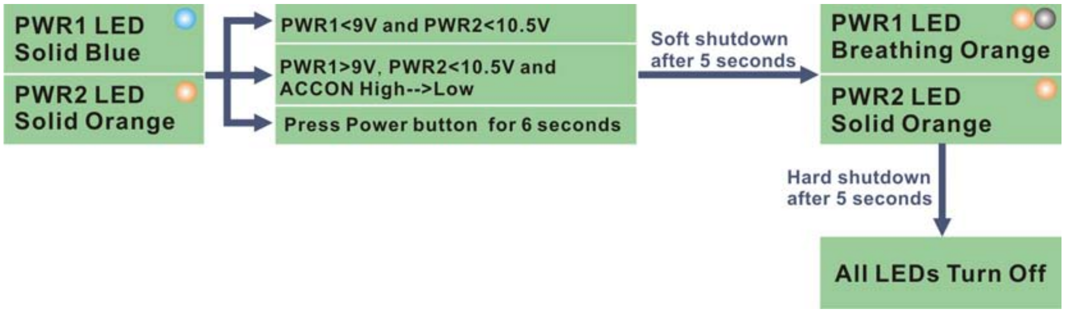

PWR1 LED Solid Blue
PWR2 LED Solid Orange
PWR1<9V and PWR2<10.5V
PWR1>9V, PWR2<10.5V and ACCON High-->Low
Press Power button for 6 seconds
Soft shutdown after 5 seconds
PWR1 LED Breathing Orange
PWR2 LED Solid Orange
Hard shutdown after 5 seconds
All LEDs Turn Off

Figure 3-38: ACC On: Shutdown

NOTE:

To turn on the system in ATX power mode, press the Power button for three seconds. Press the Power button for six seconds to turn off the system.

3.11.2 ACC OFF

When the TANK-700 is in ACC Off mode, the main power input is the Power 2 connector and the backup power is from the Power 1 connector.

3.11.2.1 Boot-up

When both power connectors are connected to a power source with over 9 V, the two power LEDs on the front panel turn on. The user can choose AT power mode or ATX power mode to control the system. The following flow diagrams show the boot-up process and the LED status in AT and ATX power modes.

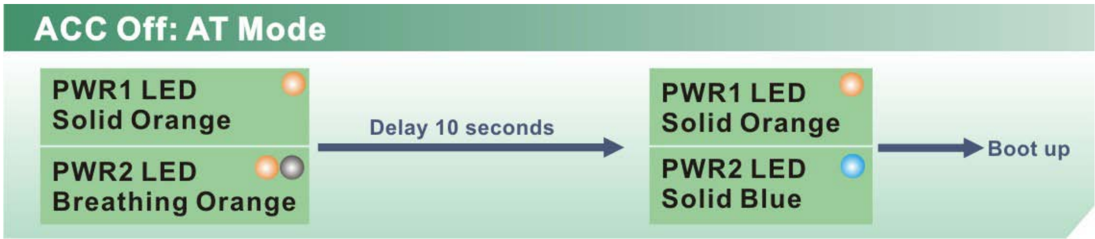

ACC Off: AT Mode
PWR1 LED
Solid Orange
PWR2 LED
Breathing Orange
Delay 10 seconds
PWR1 LED
Solid Orange
PWR2 LED
Solid Blue
Boot up

Figure 3-39: ACC Off: AT Mode

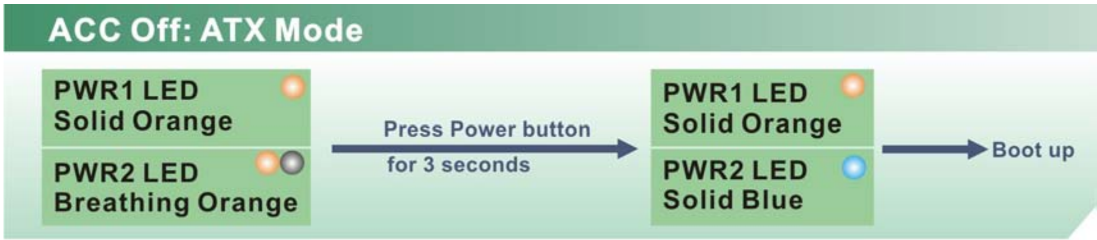

ACC Off: ATX Mode
PWR1 LED
Solid Orange
PWR2 LED
Breathing Orange
Press Power button
for 3 seconds
PWR1 LED
Solid Orange
PWR2 LED
Solid Blue
Boot up

Figure 3-40: ACC Off: ATX Mode

3.11.2.2 Switch to Backup Power

During operation, system power switches from Power 2 to Power 1 automatically when the following situations occur:

- Power 2 < 10.5V and Power 1 > 9V
- Power 2 is unplugged and Power 1 > 9V

The following flow diagram shows how the power is switched between Power 2 and Power 1 and their LED statuses.

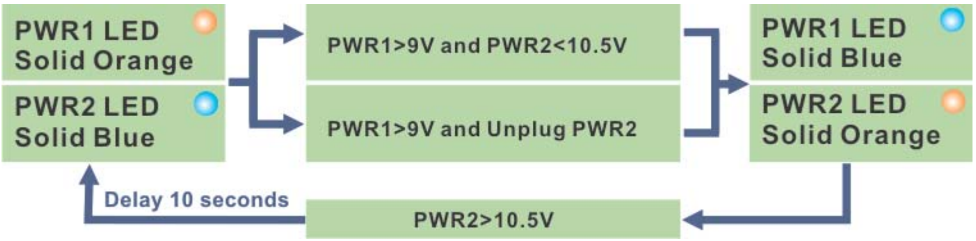

PWR1 LED
Solid Orange
PWR2 LED
Solid Blue
PWR1>9V and PWR2<10.5V
PWR1>9V and Unplug PWR2
PWR1 LED
Solid Blue
PWR2 LED
Solid Orange
Delay 10 seconds
PWR2>10.5V

Figure 3-41: ACC Off: Switch Between PWR1 and PWR2

NOTE:

System power can switch between Power 2 and Power 1 automatically when a 12 V power adapter is being connected to Power 2 and the power input of Power 1 is from 9 V to 16 V. If Power 2 is unplugged and the power input of Power 1 is over 16 V, system power will switch to Power 1 automatically. However, the system remains using the power source from Power 1 even if Power 2 is re-plugged.

System power can switch between Power 2 and Power 1 automatically when a 19 V power adapter is being connected to Power 2 and the power input of Power 1 is from 9 V to 26 V. If Power 2 is unplugged and the power input of Power 1 is over 26 V, system power will switch to Power 1 automatically. However, the system remains using the power source from Power 1 even if Power 2 is re-plugged.

3.11.2.3 Shutdown

The system will shutdown in the following situations:

- Power 2 < 10.5V and Power 1 < 9V
- Press Power buttons for 6 seconds

The following flow diagram shows the system shutdown process and the LED statuses.

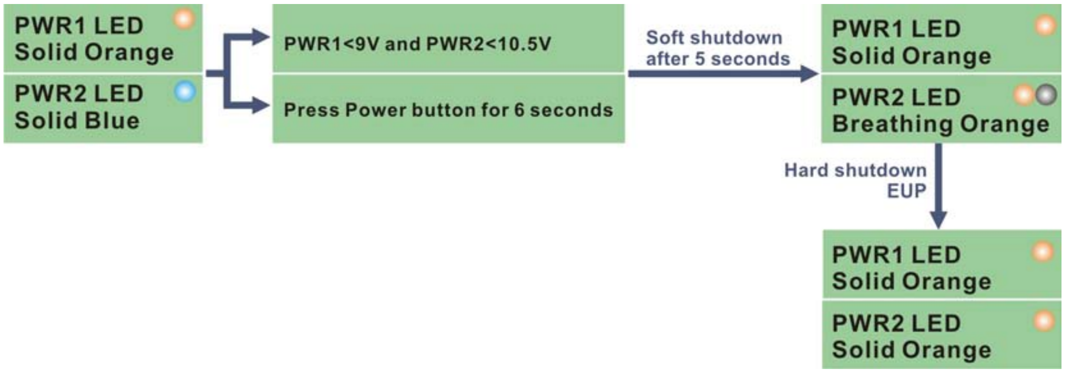

PWR1 LED
Solid Orange
PWR2 LED
Solid Blue
PWR1<9V and PWR2<10.5V
Press Power button for 6 seconds
Soft shutdown
after 5 seconds
PWR1 LED
Solid Orange
PWR2 LED
Breathing Orange
Hard shutdown
EUP
PWR1 LED
Solid Orange
PWR2 LED
Solid Orange

Figure 3-42: ACC Off: Shutdown

NOTE:

The power LED turns off when the power cable is unplugged from the system.

Chapter

4

BIOS

4.1 Introduction

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

4.1.1 Starting Setup

The 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.

4.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown in 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	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes

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	Previous values
F3	Load optimized defaults
F4	Save changes and Exit BIOS

Table 4-1: BIOS Navigation Keys

4.1.3 Getting Help

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

4.1.4 Unable to Reboot After Configuration Changes

If the computer cannot boot after changes to the system configuration are made, CMOS defaults. Use the jumper described in Chapter 2.

4.1.5 BIOS Menu Bar

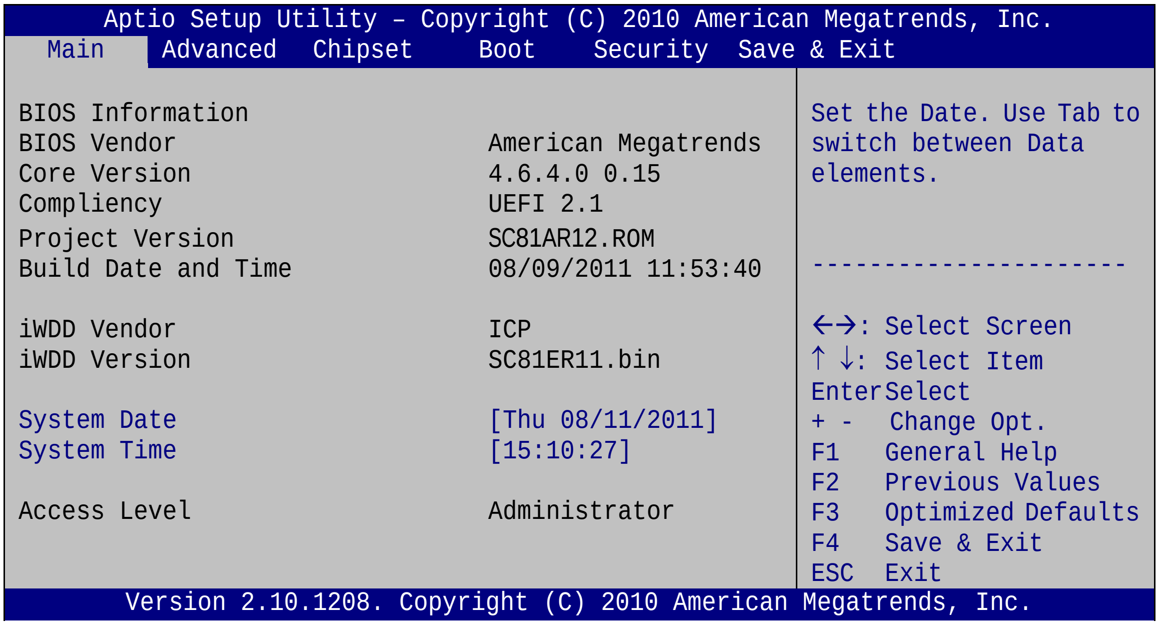
The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- 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.

4.2 Main

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



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
   Main     Advanced   Chipset     Boot     Security  Save & Exit

 BIOS Information                                  Set the Date. Use Tab to
 BIOS Vendor                 American Megatrends   switch between Data
 Core Version                4.6.4.0 0.15          elements.
 Compliency                  UEFI 2.1
 Project Version             SC81AR12.ROM
 Build Date and Time         08/09/2011 11:53:40   ----------------------

 iWDD Vendor                 ICP                   ←→: Select Screen
 iWDD Version                SC81ER11.bin          ↑ ↓: Select Item
                                                   EnterSelect
 System Date                 [Thu 08/11/2011]      + -   Change Opt.
 System Time                 [15:10:27]            F1    General Help
                                                   F2    Previous Values
 Access Level                Administrator         F3    Optimized Defaults
                                                   F4    Save & Exit
                                                   ESC   Exit
      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

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]

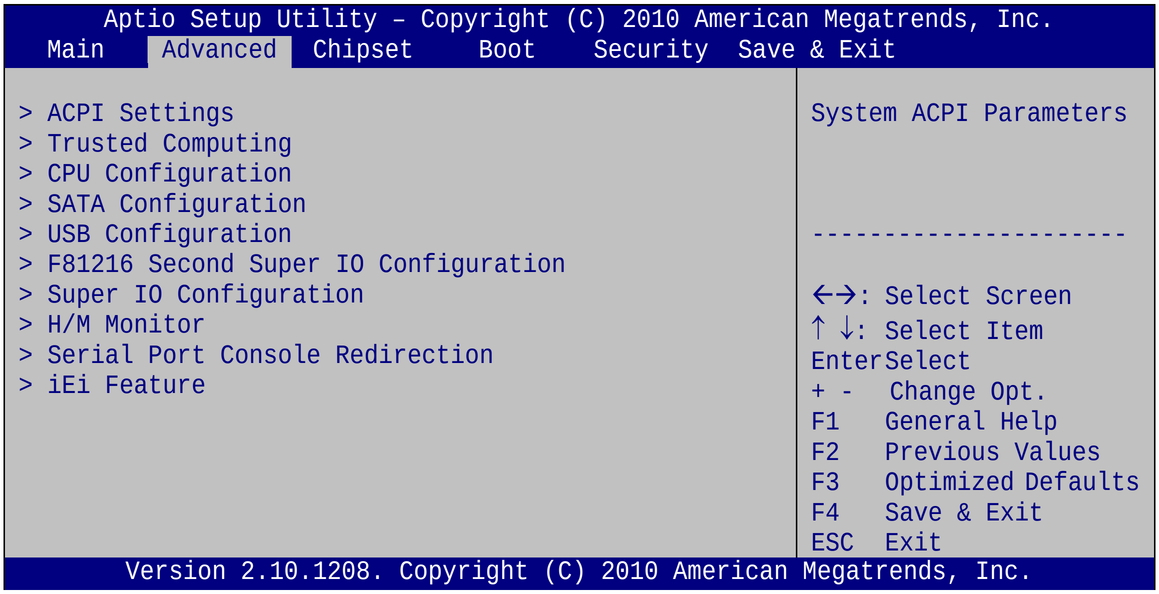
Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

4.3 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.

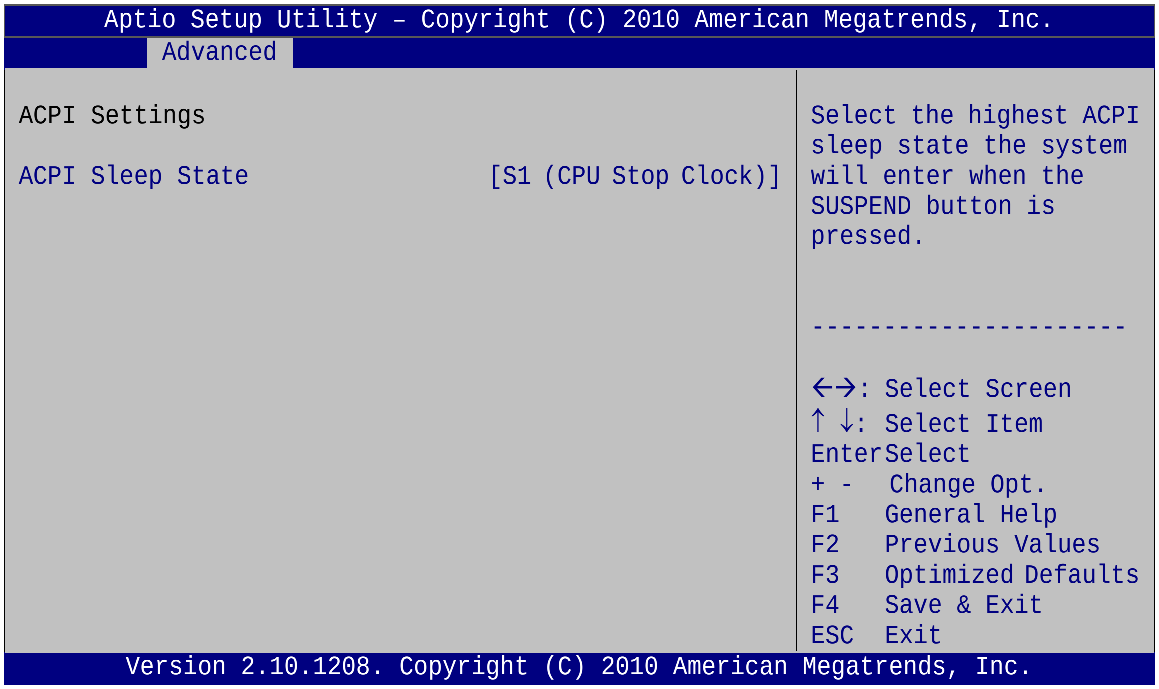


```
      Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
   Main    Advanced   Chipset     Boot     Security  Save & Exit

 > ACPI Settings                                      System ACPI Parameters
 > Trusted Computing
 > CPU Configuration
 > SATA Configuration
 > USB Configuration                                  ----------------------
 > F81216 Second Super IO Configuration
 > Super IO Configuration                             ←→: Select Screen
 > H/M Monitor                                        ↑ ↓: Select Item
 > Serial Port Console Redirection                    EnterSelect
 > iEi Feature                                        + -   Change Opt.
                                                      F1    General Help
                                                      F2    Previous Values
                                                      F3    Optimized Defaults
                                                      F4    Save & Exit
                                                      ESC   Exit
        Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 2: Advanced

4.3.1 ACPI Settings

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



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
               Advanced

ACPI Settings                                     Select the highest ACPI
                                                  sleep state the system
ACPI Sleep State             [S1 (CPU Stop Clock)] will enter when the
                                                  SUSPEND button is
                                                  pressed.



                                                  ----------------------

                                                  ←→: Select Screen
                                                  ↑ ↓: Select Item
                                                  EnterSelect
                                                  + -   Change Opt.
                                                  F1    General Help
                                                  F2    Previous Values
                                                  F3    Optimized Defaults
                                                  F4    Save & Exit
                                                  ESC   Exit
      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 3: ACPI Configuration

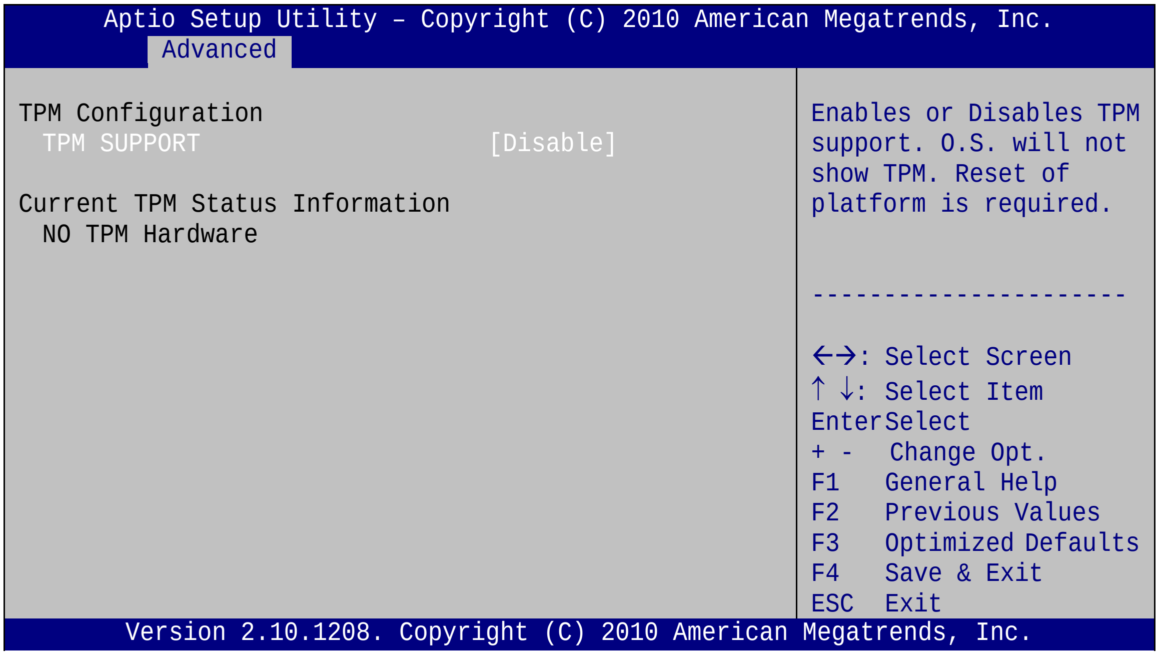
➔ ACPI Sleep State [S1 (CPU Stop Clock)]

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.

4.3.2 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 4**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



```
         Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
                Advanced

TPM Configuration                                      Enables or Disables TPM
  TPM SUPPORT                         [Disable]        support. O.S. will not
                                                       show TPM. Reset of
Current TPM Status Information                         platform is required.
  NO TPM Hardware

                                                       ----------------------

                                                       ←→: Select Screen
                                                       ↑ ↓: Select Item
                                                       EnterSelect
                                                       + -   Change Opt.
                                                       F1    General Help
                                                       F2    Previous Values
                                                       F3    Optimized Defaults
                                                       F4    Save & Exit
                                                       ESC   Exit
          Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 4: TPM Configuration

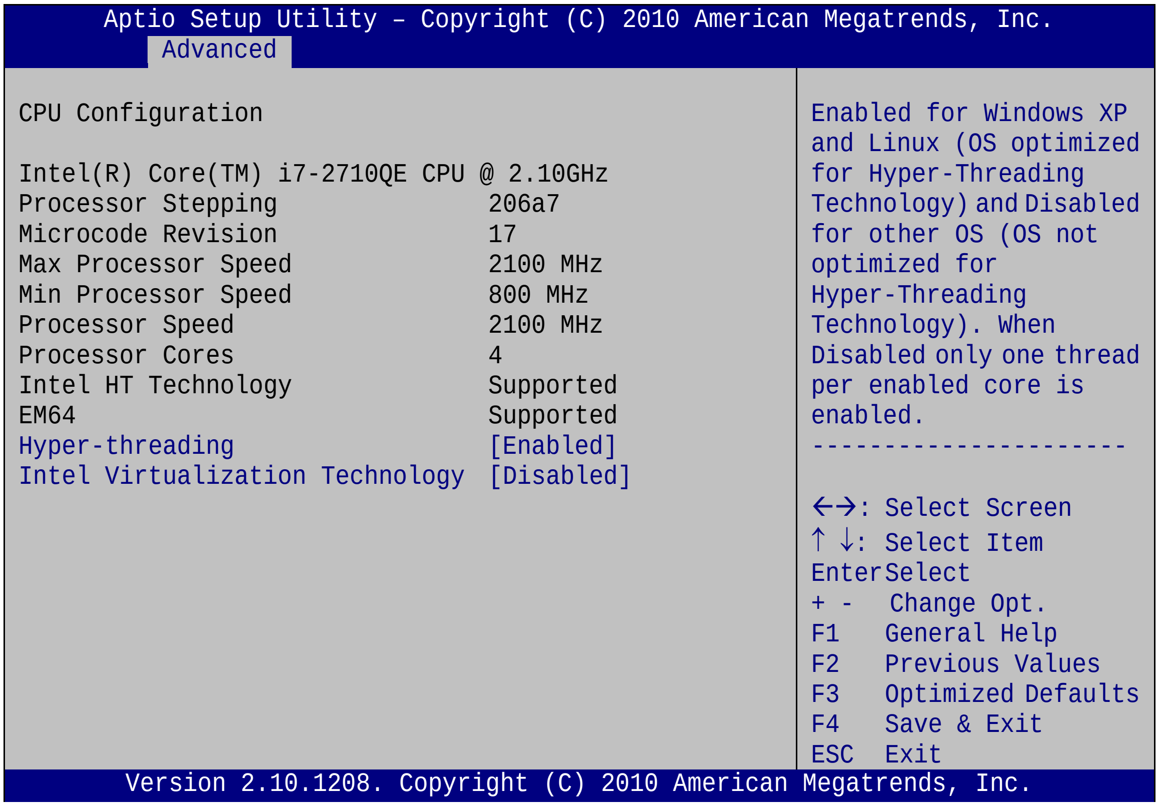
➔ TPM Support [Disable]

Use the **TPM Support** option to configure support for the TPM.

➔ **Disable**	**DEFAULT**	TPM support is disabled.
➔ **Enable**		TPM support is enabled.

4.3.3 CPU Configuration

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



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
           Advanced

CPU Configuration                                    Enabled for Windows XP
                                                     and Linux (OS optimized
Intel(R) Core(TM) i7-2710QE CPU @ 2.10GHz            for Hyper-Threading
Processor Stepping                 206a7             Technology) and Disabled
Microcode Revision                 17                for other OS (OS not
Max Processor Speed                2100 MHz          optimized for
Min Processor Speed                800 MHz           Hyper-Threading
Processor Speed                    2100 MHz          Technology). When
Processor Cores                    4                 Disabled only one thread
Intel HT Technology                Supported         per enabled core is
EM64                               Supported         enabled.
Hyper-threading                    [Enabled]         ----------------------
Intel Virtualization Technology    [Disabled]
                                                     ←→: Select Screen
                                                     ↑ ↓: Select Item
                                                     Enter Select
                                                     + -   Change Opt.
                                                     F1    General Help
                                                     F2    Previous Values
                                                     F3    Optimized Defaults
                                                     F4    Save & Exit
                                                     ESC   Exit
       Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 5: CPU Configuration

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

- Processor Type
- Processor Stepping: Lists the CPU processing stepping
- Microcode Revision: Lists the microcode revision
- Max Processor Speed: Lists the maximum CPU processing speed
- Min Processor Speed: Lists the minimum CPU processing speed
- Processor Speed: Lists the CPU processing speed
- Processor Cores: Lists the number of the processor core
- Intel HT Technology: Indicates if the Intel Hyper-Threading Technology is supported by the CPU.
- EMT64: Indicates if the EM64T is supported by the CPU.

➔ Hyper-threading [Enabled]

Use the **Hyper-threading** function to enable or disable the CPU hyper threading function.

➔	**Disabled**		Disables the use of hyper threading technology
➔	**Enabled**	**DEFAULT**	Enables the use of hyper threading technology

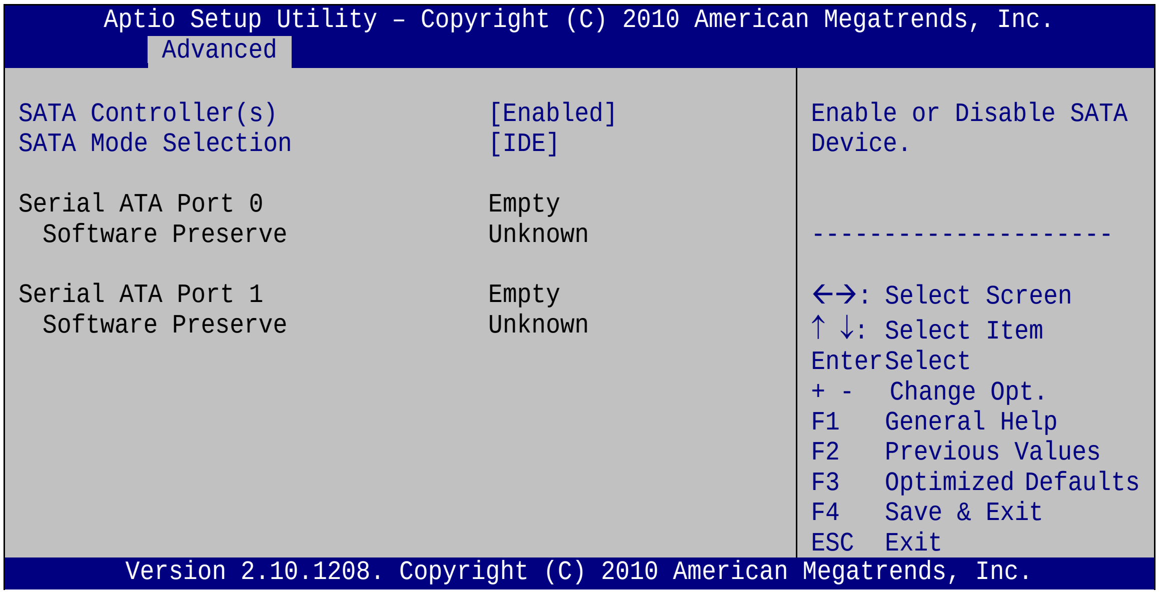
➔ Intel Virtualization Technology [Disabled]

Use the **Intel Virtualization Technology** option to enable or disable virtualization on the system. When combined with third party software, Intel® Virtualization technology allows several OSs to run on the same system at the same time.

➔	**Disabled**	**DEFAULT**	Disables Intel Virtualization Technology.
➔	**Enabled**		Enables Intel Virtualization Technology.

4.3.4 SATA Configuration

Use the **SATA 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) 2010 American Megatrends, Inc.
             Advanced

SATA Controller(s)                  [Enabled]      Enable or Disable SATA
SATA Mode Selection                 [IDE]          Device.

Serial ATA Port 0                   Empty
  Software Preserve                 Unknown        --------------------

Serial ATA Port 1                   Empty          ←→: Select Screen
  Software Preserve                 Unknown        ↑ ↓: Select Item
                                                   EnterSelect
                                                   + -   Change Opt.
                                                   F1    General Help
                                                   F2    Previous Values
                                                   F3    Optimized Defaults
                                                   F4    Save & Exit
                                                   ESC   Exit
      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 6: SATA Configuration

→ SATA Controller(s) [Enabled]

Use the **SATA Controller(s)** option to enable or disable the SATA controller.

→	**Enabled**	**DEFAULT**	Enables the on-board SATA controller.
→	**Disabled**		Disables the on-board SATA controller.

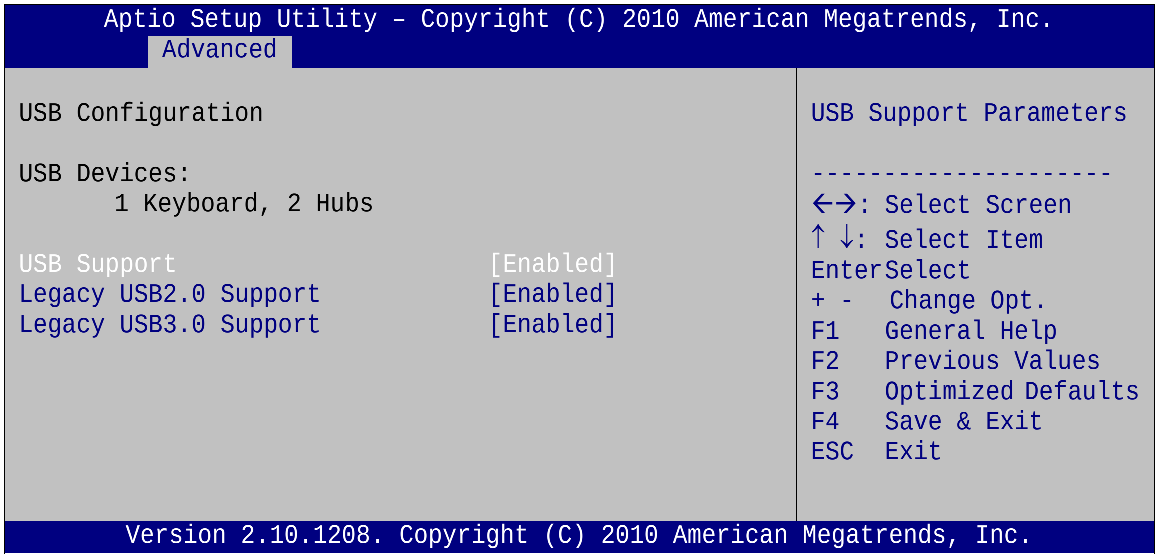
→ SATA Mode Selection [IDE]

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

→	**IDE**	**DEFAULT**	Configures SATA devices as normal IDE device.
→	**AHCI**		Configures SATA devices as AHCI device.
→	**RAID**		Configures SATA devices as RAID device.

4.3.5 USB Configuration

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



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
          Advanced

USB Configuration                              USB Support Parameters

USB Devices:                                   ---------------------
      1 Keyboard, 2 Hubs                       ←→: Select Screen
                                               ↑ ↓: Select Item
USB Support                     [Enabled]      EnterSelect
Legacy USB2.0 Support           [Enabled]      + -   Change Opt.
Legacy USB3.0 Support           [Enabled]      F1    General Help
                                               F2    Previous Values
                                               F3    Optimized Defaults
                                               F4    Save & Exit
                                               ESC   Exit

        Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 7: USB Configuration

→ USB Devices

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

➔ USB2.0 Support [Enabled]

Use the **USB2.0 Support** option to enable or disable USB 2.0 support on the system.

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

➔ Legacy USB2.0 Support [Enabled]

Use the **Legacy USB2.0 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

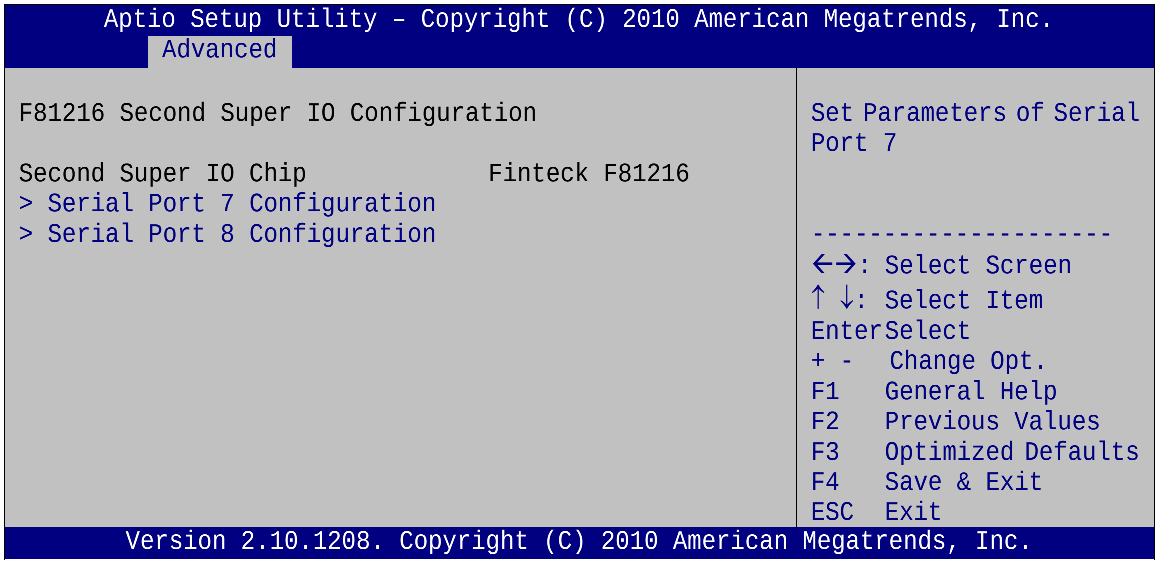
➔ Legacy USB3.0 Support [Enabled]

Use the **USB3.0 Support** option to enable or disable USB 3.0 support on the system.

➔	**Enabled**	**DEFAULT**	USB 3.0 support enabled
➔	**Disabled**		USB 3.0 support disabled

4.3.6 Second Super IO Configuration

Use the **F81216 Second Super IO Configuration** menu (**BIOS Menu 8**) to set or change the configurations for the serial ports.

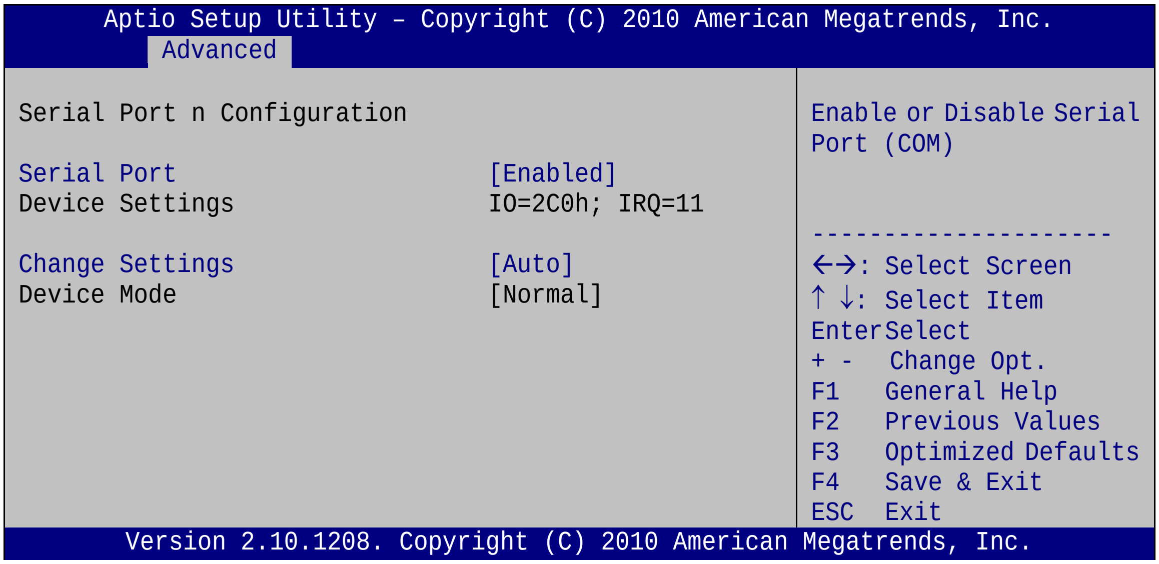


```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
          Advanced

F81216 Second Super IO Configuration               Set Parameters of Serial
                                                   Port 7
Second Super IO Chip            Finteck F81216
> Serial Port 7 Configuration
> Serial Port 8 Configuration
                                                   ---------------------
                                                   ←→: Select Screen
                                                   ↑ ↓: Select Item
                                                   EnterSelect
                                                   + -   Change Opt.
                                                   F1    General Help
                                                   F2    Previous Values
                                                   F3    Optimized Defaults
                                                   F4    Save & Exit
                                                   ESC   Exit
      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 8: F81216 Second Super IO Configuration

4.3.6.1 Serial Port n Configuration

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



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
          Advanced

Serial Port n Configuration                        Enable or Disable Serial
                                                   Port (COM)
Serial Port                     [Enabled]
Device Settings                 IO=2C0h; IRQ=11

Change Settings                 [Auto]             ---------------------
Device Mode                     [Normal]           ←→: Select Screen
                                                   ↑ ↓: Select Item
                                                   EnterSelect
                                                   + -   Change Opt.
                                                   F1    General Help
                                                   F2    Previous Values
                                                   F3    Optimized Defaults
                                                   F4    Save & Exit
                                                   ESC   Exit
      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 9: Serial Port n Configuration Menu

4.3.6.1.1 Serial Port 7 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=3**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ3
➔	**IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12
➔	**IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12
➔	**IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**		Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12
➔	**IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**		Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

➔ Device Mode [Normal]

Use the **Device Mode** option to enable or disable the serial port.

➔	**Normal**	**DEFAULT**	Sets the serial port mode to normal.
➔	**RS422/485**		Enables serial port RS-422/485 support.

4.3.6.1.2 Serial Port 8 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, 5, 6, 7, 9, 10, 11, 12**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12
➔	**IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

➔	**IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**	Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12
➔	**IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**	Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

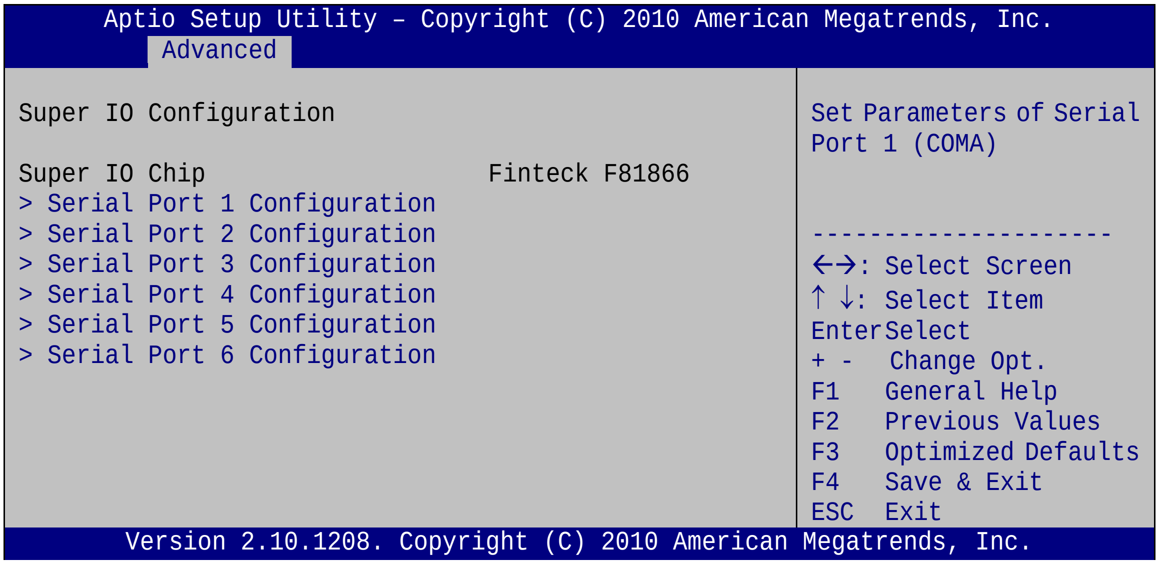
➔ Device Mode [Normal]

Use the **Device Mode** option to enable or disable the serial port.

➔	**Normal**	**DEFAULT**	Sets the serial port mode to normal.
➔	**RS422/485**		Enables serial port RS-422/485 support.

4.3.7 Super IO Configuration

Use the **Super IO Configuration** menu (**BIOS Menu 10**) to set or change the configurations for the serial ports.

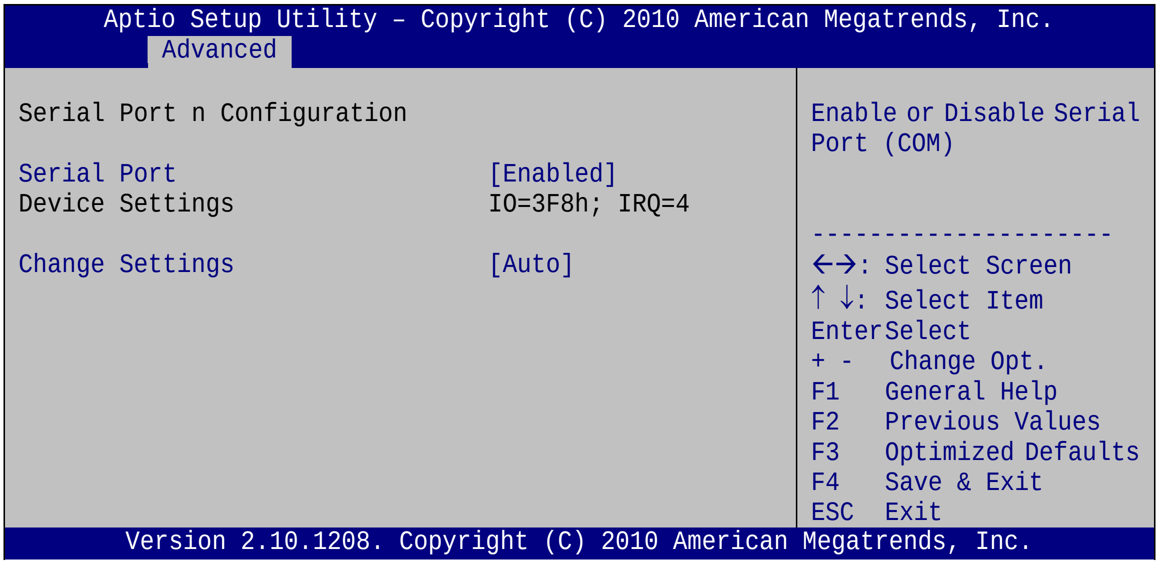


```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
          Advanced

Super IO Configuration                               Set Parameters of Serial
                                                     Port 1 (COMA)
Super IO Chip                     Finteck 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                        EnterSelect
> Serial Port 6 Configuration                        + -   Change Opt.
                                                     F1    General Help
                                                     F2    Previous Values
                                                     F3    Optimized Defaults
                                                     F4    Save & Exit
                                                     ESC   Exit
     Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 10: Super IO Configuration

4.3.7.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 11**) to configure the serial port n.



```
      Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
              Advanced

Serial Port n Configuration                          Enable or Disable Serial
                                                     Port (COM)
Serial Port                     [Enabled]
Device Settings                 IO=3F8h; IRQ=4

Change Settings                 [Auto]               ---------------------
                                                     ←→: Select Screen
                                                     ↑ ↓: Select Item
                                                     EnterSelect
                                                     + -   Change Opt.
                                                     F1    General Help
                                                     F2    Previous Values
                                                     F3    Optimized Defaults
                                                     F4    Save & Exit
                                                     ESC   Exit
       Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 11: Serial Port n Configuration Menu

4.3.7.1.1 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=2C0h;** **IRQ=3, 4**		Serial Port I/O port address is 2C0h and the interrupt address is IRQ3, 4
➔	**IO=2C8h;** **IRQ=3, 4**		Serial Port I/O port address is 2C8h and the interrupt address is IRQ3, 4

4.3.7.1.2 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=2C0h;** **IRQ=3, 4**		Serial Port I/O port address is 2C0h and the interrupt address is IRQ3, 4

➔ **IO=2C8h; IRQ=3, 4**		Serial Port I/O port address is 2C8h and the interrupt address is IRQ3, 4

4.3.7.1.3 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=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=2D0h; IRQ=10, 11**		Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
➔ **IO=2D8h; IRQ=10, 11**		Serial Port I/O port address is 2D8h and the interrupt address is IRQ10, 11

4.3.7.1.4 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=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=2D0h; IRQ=10, 11**		Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
➔ **IO=2D8h; IRQ=10, 11**		Serial Port I/O port address is 2D8h and the interrupt address is IRQ10, 11

4.3.7.1.5 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=2C0h; IRQ=10**		Serial Port I/O port address is 2C0h and the interrupt address is IRQ10
→	**IO=2C0h; IRQ=10, 11**		Serial Port I/O port address is 2C0h and the interrupt address is IRQ10, 11
→	**IO=2C8h; IRQ=10, 11**		Serial Port I/O port address is 2C8h and the interrupt address is IRQ10, 11
→	**IO=2D0h; IRQ=10, 11**		Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
→	**IO=2D8h; IRQ=10, 11**		Serial Port I/O port address is 2D8h 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

4.3.7.1.6 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

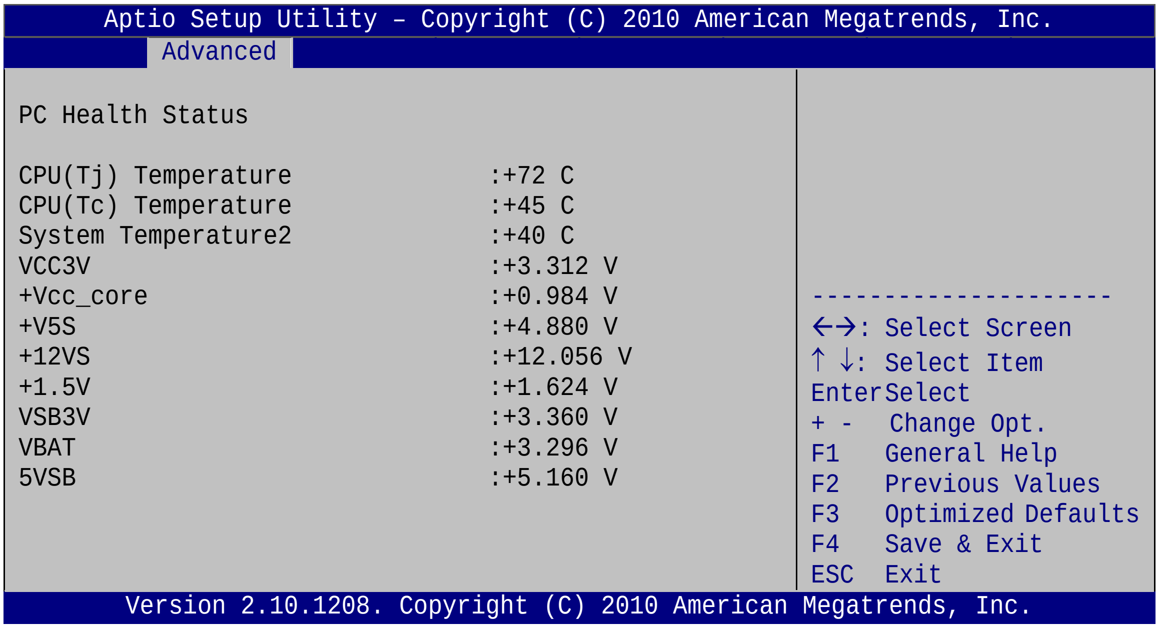
→ Change Settings [Auto]

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=2C0h; IRQ=10, 11**		Serial Port I/O port address is 2C0h and the interrupt address is IRQ10, 11
→ **IO=2C8h; IRQ=10, 11**		Serial Port I/O port address is 2C8h and the interrupt address is IRQ10, 11
→ **IO=2D0h; IRQ=10, 11**		Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
→ **IO=2D8h; IRQ=10, 11**		Serial Port I/O port address is 2D8h 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

4.3.8 H/W Monitor

The **H/W Monitor** menu (**BIOS Menu 12**) shows the operating temperature, fan speeds and system voltages.



```
Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
          Advanced

PC Health Status

CPU(Tj) Temperature                :+72 C
CPU(Tc) Temperature                :+45 C
System Temperature2                :+40 C
VCC3V                              :+3.312 V
+Vcc_core                          :+0.984 V                     ---------------------
+V5S                               :+4.880 V                     ←→: Select Screen
+12VS                              :+12.056 V                    ↑ ↓: Select Item
+1.5V                              :+1.624 V                     EnterSelect
VSB3V                              :+3.360 V                     + -   Change Opt.
VBAT                               :+3.296 V                     F1    General Help
5VSB                               :+5.160 V                     F2    Previous Values
                                                                 F3    Optimized Defaults
                                                                 F4    Save & Exit
                                                                 ESC   Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 12: H/W Monitor

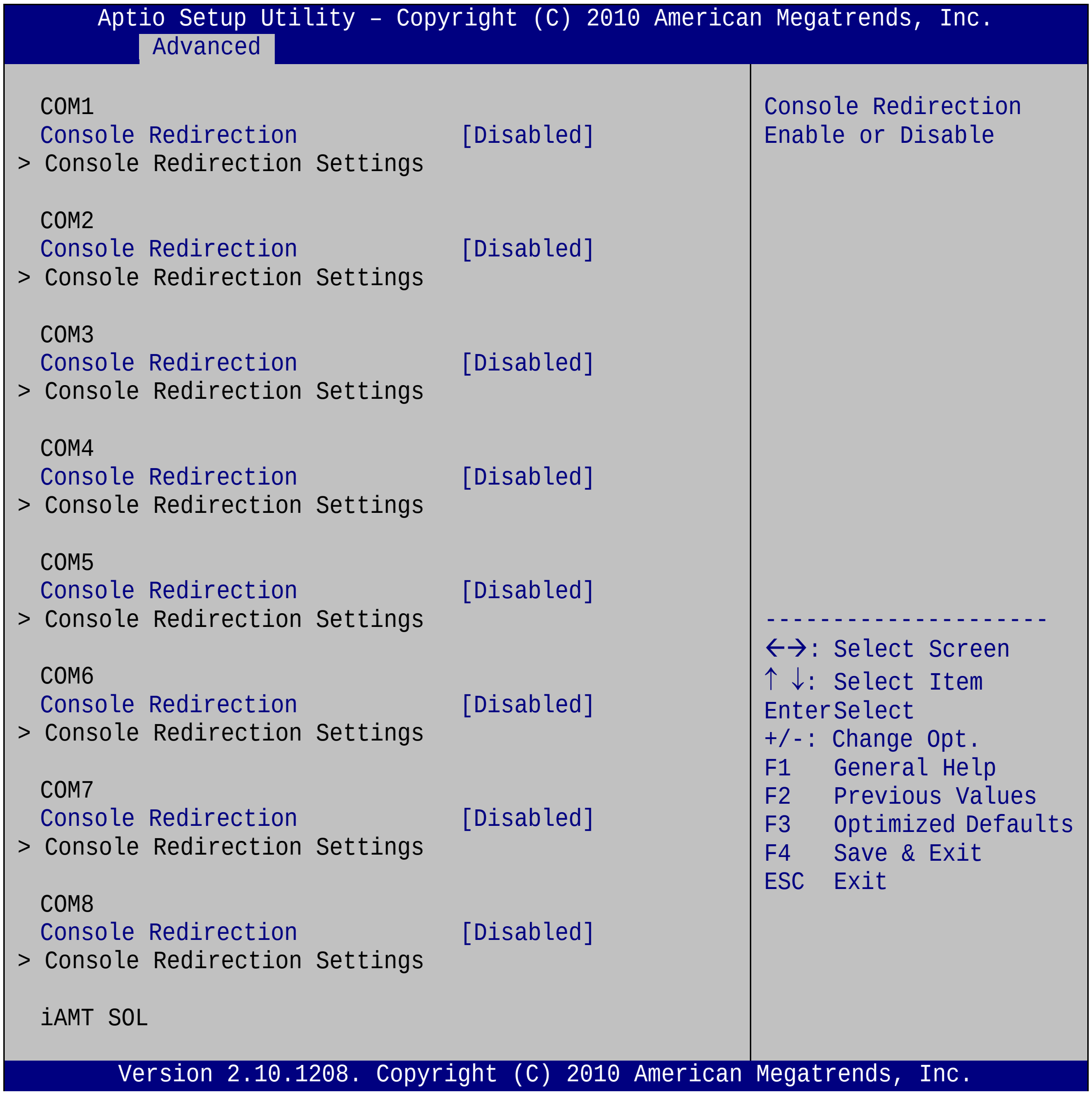
➔ PC Health Status

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

- System Temperatures:
  - CPU Temperature
  - System Temperature
- Voltages:
  - VCC3V
  - Vcc_core
  - +V5S
  - +V12S
  - +1.5V
  - VSB3V
  - VBAT
  - 5VSB

4.3.9 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 13**) 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.



```
      Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
          Advanced

  COM1                                          Console Redirection
  Console Redirection          [Disabled]       Enable or Disable
> Console Redirection Settings

  COM2
  Console Redirection          [Disabled]
> Console Redirection Settings

  COM3
  Console Redirection          [Disabled]
> Console Redirection Settings

  COM4
  Console Redirection          [Disabled]
> Console Redirection Settings

  COM5
  Console Redirection          [Disabled]
> Console Redirection Settings                  ---------------------
                                                ←→: Select Screen
  COM6                                          ↑ ↓: Select Item
  Console Redirection          [Disabled]       EnterSelect
> Console Redirection Settings                  +/-: Change Opt.
                                                F1   General Help
  COM7                                          F2   Previous Values
  Console Redirection          [Disabled]       F3   Optimized Defaults
> Console Redirection Settings                  F4   Save & Exit
                                                ESC  Exit
  COM8
  Console Redirection          [Disabled]
> Console Redirection Settings

  iAMT SOL
      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 13: 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 [VT100+]

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

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

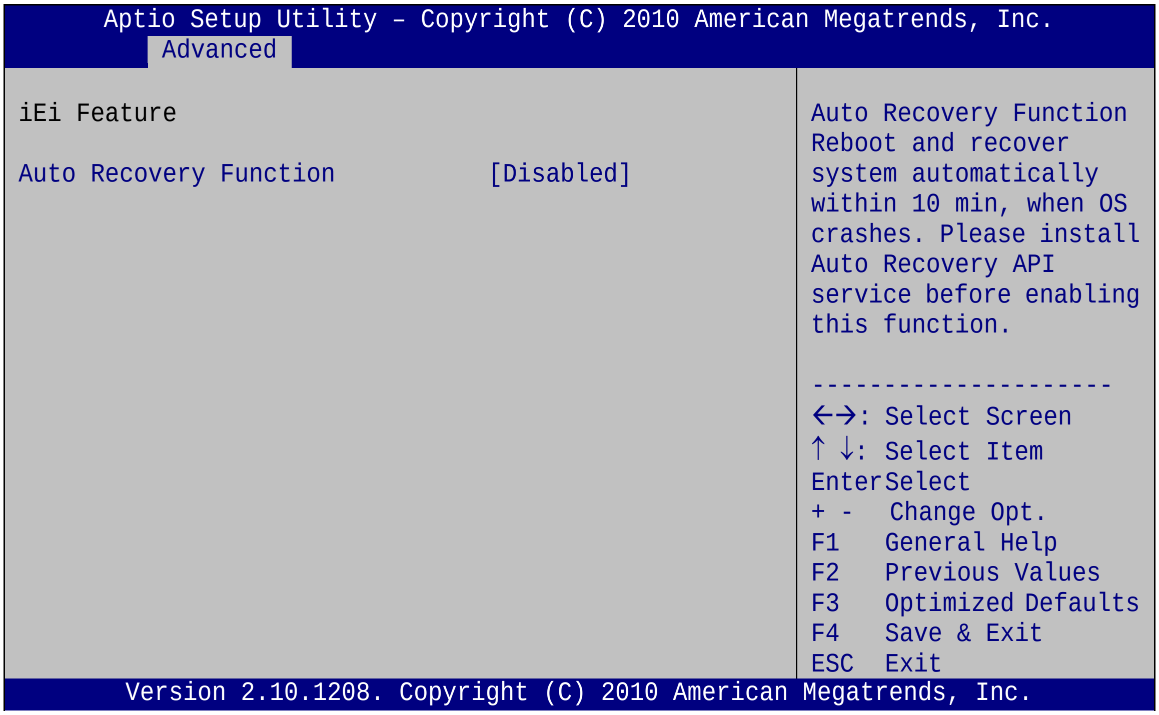
Bits per second [115200]

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.

4.3.10 iEi Feature

Use the **iEi Feature** menu (**BIOS Menu 14**) to configure the iEi features.



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
          Advanced

iEi Feature                                        Auto Recovery Function
                                                   Reboot and recover
Auto Recovery Function          [Disabled]         system automatically
                                                   within 10 min, when OS
                                                   crashes. Please install
                                                   Auto Recovery API
                                                   service before enabling
                                                   this function.

                                                   ---------------------
                                                   ←→: Select Screen
                                                   ↑ ↓: Select Item
                                                   EnterSelect
                                                   + -   Change Opt.
                                                   F1    General Help
                                                   F2    Previous Values
                                                   F3    Optimized Defaults
                                                   F4    Save & Exit
                                                   ESC   Exit
       Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 14: iEi Feature

➔ Auto Recovery Function [Disabled]

Use **Auto Recovery Function** option to enable or disable the auto recovery function.

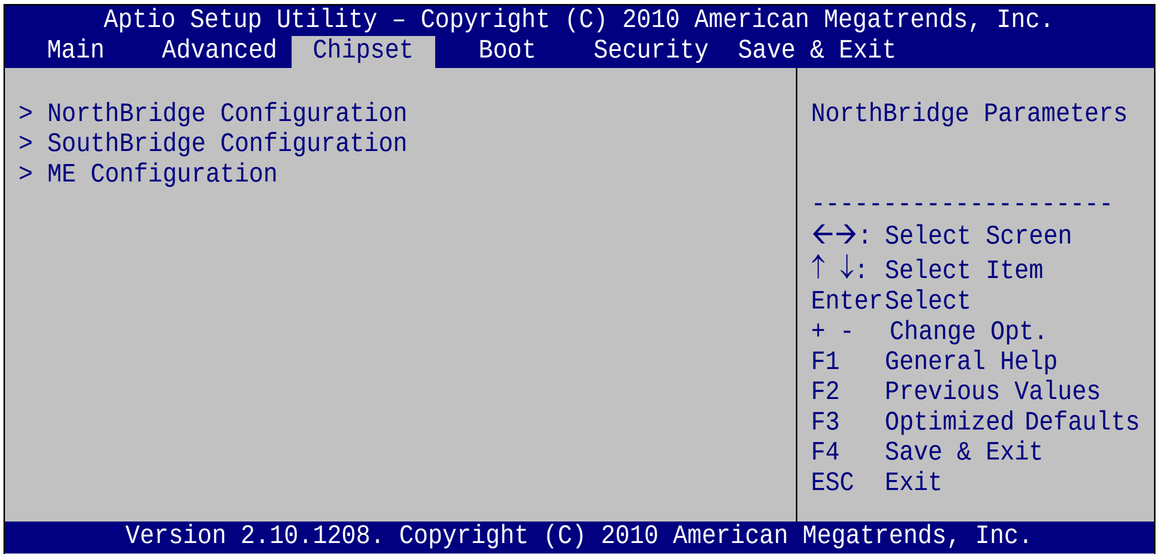
➔	**Disabled**	**DEFAULT**	Disabled the auto recovery function
➔	**Enabled**		Enabled the auto recovery function

4.4 Chipset

Use the **Chipset** menu (**BIOS Menu 15**) to access the Northbridge and Southbridge configuration menus.

WARNING!

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

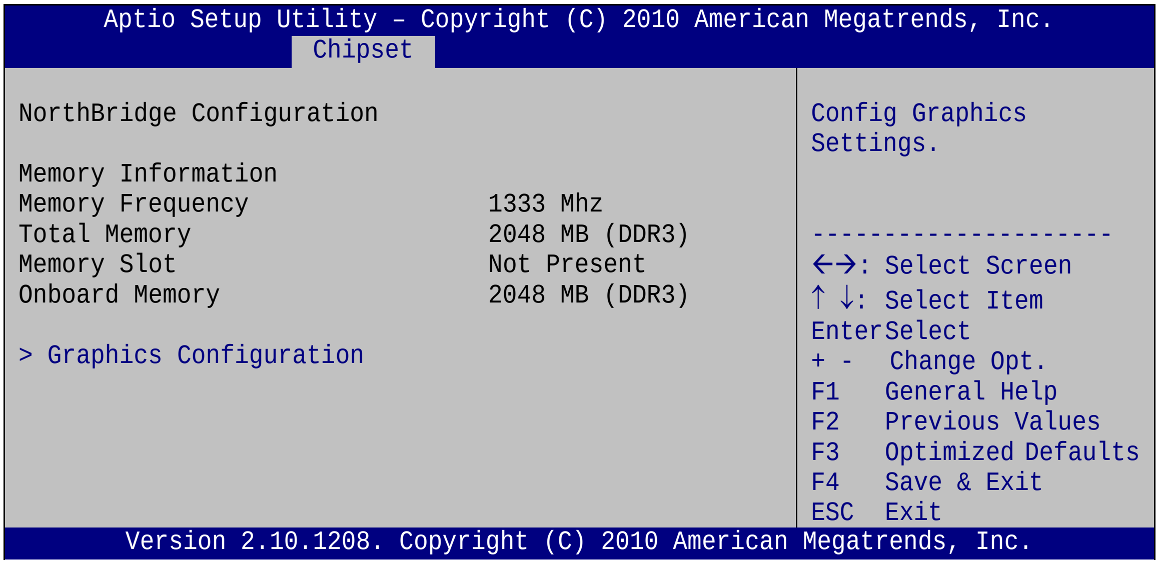


```
      Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
   Main     Advanced   Chipset     Boot     Security  Save & Exit

> NorthBridge Configuration                        NorthBridge Parameters
> SouthBridge Configuration
> ME Configuration
                                                   ---------------------
                                                   ←→: Select Screen
                                                   ↑ ↓: Select Item
                                                   EnterSelect
                                                   + -   Change Opt.
                                                   F1    General Help
                                                   F2    Previous Values
                                                   F3    Optimized Defaults
                                                   F4    Save & Exit
                                                   ESC   Exit
        Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 15: Chipset

4.4.1 NorthBridge Configuration

Use the **NorthBridge Configuration** menu (**BIOS Menu 16**) to configure the Northbridge chipset.

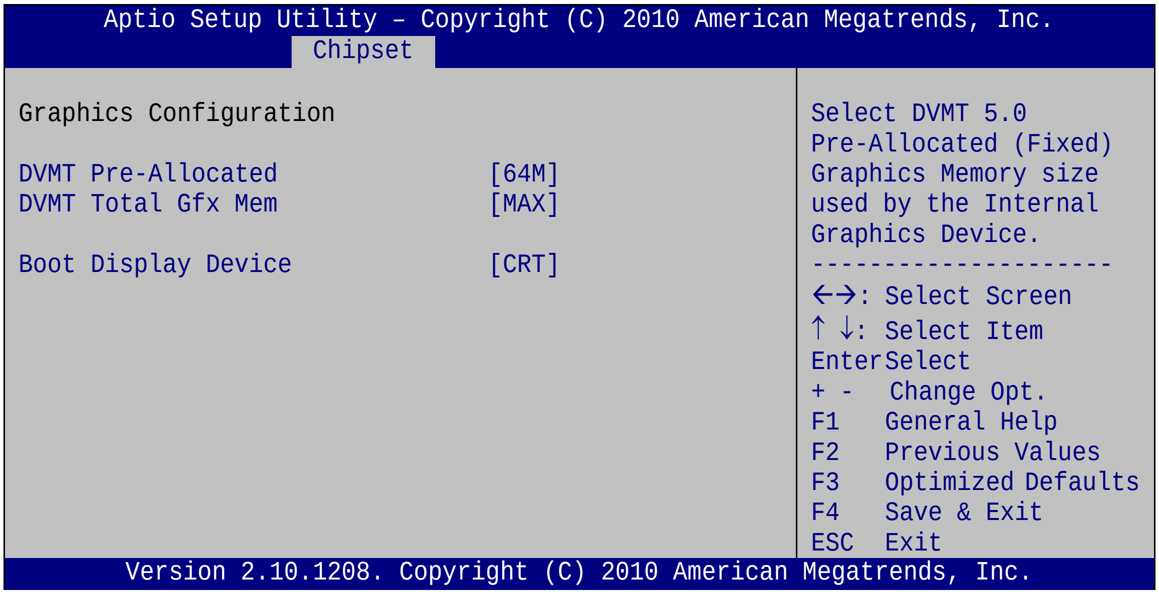


```
  Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
                    Chipset

NorthBridge Configuration                          Config Graphics
                                                   Settings.
Memory Information
Memory Frequency                 1333 Mhz
Total Memory                     2048 MB (DDR3)    ---------------------
Memory Slot                      Not Present       ←→: Select Screen
Onboard Memory                   2048 MB (DDR3)    ↑ ↓: Select Item
                                                   EnterSelect
> Graphics Configuration                           + -   Change Opt.
                                                   F1    General Help
                                                   F2    Previous Values
                                                   F3    Optimized Defaults
                                                   F4    Save & Exit
                                                   ESC   Exit
    Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 16: Northbridge Chipset Configuration

4.4.1.1 Graphics Configuration

Use the **Graphics Configuration** menu (**BIOS Menu 17**) to configure the graphics options.



```
  Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
                    Chipset

Graphics Configuration                             Select DVMT 5.0
                                                   Pre-Allocated (Fixed)
DVMT Pre-Allocated               [64M]             Graphics Memory size
DVMT Total Gfx Mem               [MAX]             used by the Internal
                                                   Graphics Device.
Boot Display Device              [CRT]             ---------------------
                                                   ←→: Select Screen
                                                   ↑ ↓: Select Item
                                                   EnterSelect
                                                   + -   Change Opt.
                                                   F1    General Help
                                                   F2    Previous Values
                                                   F3    Optimized Defaults
                                                   F4    Save & Exit
                                                   ESC   Exit
    Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 17: Graphics Configuration

➔ DVMT Pre-Allocated [64 M]

Use the **DVMT Pre-Allocated** option to specify the amount of system memory that can be used by the Internal Graphics Device.

➔ **0M**		0 MB of memory used by internal graphics device
➔ **32 M**		32 MB of memory used by internal graphics device
➔ **64 M**	**DEFAULT**	64 MB of memory used by internal graphics device
➔ **96 M**		96 MB of memory used by internal graphics device
➔ **128 M**		128 MB of memory used by internal graphics device
➔ **160 M**		160 MB of memory used by internal graphics device
➔ **192 M**		192 MB of memory used by internal graphics device
➔ **224 M**		224 MB of memory used by internal graphics device
➔ **256 M**		256 MB of memory used by internal graphics device
➔ **288 M**		288 MB of memory used by internal graphics device
➔ **320 M**		320 MB of memory used by internal graphics device
➔ **352 M**		352 MB of memory used by internal graphics device
➔ **384 M**		384 MB of memory used by internal graphics device
➔ **416 M**		416 MB of memory used by internal graphics device
➔ **448 M**		448 MB of memory used by internal graphics device

→	**480 M**		480 MB of memory used by internal graphics device
→	**512 M**		512 MB of memory used by internal graphics device

→ DVMT Total Gfx Mem [MAX]

Use the **DVMT Total Gfx Mem** option to select the amount of DVMT5.0 total memory used by the Internal Graphics Device.

→	**128M**		128 MB of memory used by internal graphics device
→	**256M**		256MB of memory used by internal graphics device
→	**MAX**	**DEFAULT**	Maximum amount of memory used by internal graphics device

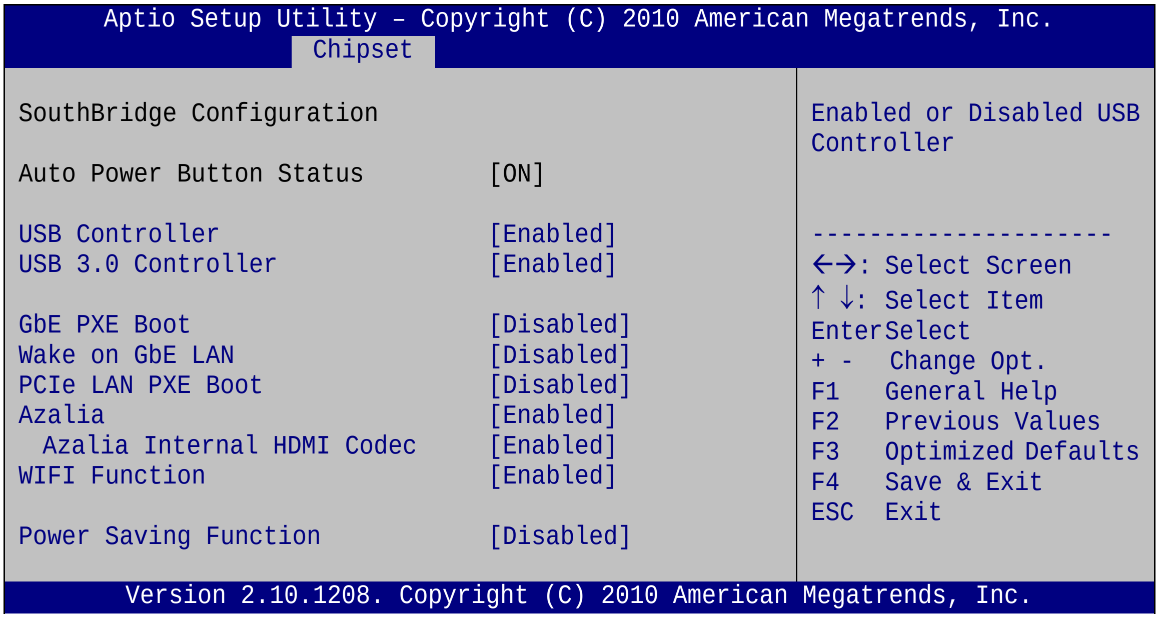
→ Boot Display Device [CRT]

Use the **Boot Display Device** option to configure the boot display device function.

→	**CRT**	**DEFAULT**	Enables CRT as the boot display device.
→	**HDMI**		Enables HDMI as the boot display device.

4.4.2 SouthBridge Configuration

Use the **SouthBridge Configuration** menu (**BIOS Menu 18**) to configure the Southbridge chipset.



```
      Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
                              Chipset

 SouthBridge Configuration                          Enabled or Disabled USB
                                                    Controller
 Auto Power Button Status         [ON]

 USB Controller                   [Enabled]         ---------------------
 USB 3.0 Controller               [Enabled]         ←→: Select Screen
                                                    ↑ ↓: Select Item
 GbE PXE Boot                     [Disabled]        EnterSelect
 Wake on GbE LAN                  [Disabled]        + -   Change Opt.
 PCIe LAN PXE Boot                [Disabled]        F1    General Help
 Azalia                           [Enabled]         F2    Previous Values
   Azalia Internal HDMI Codec     [Enabled]         F3    Optimized Defaults
 WIFI Function                    [Enabled]         F4    Save & Exit
                                                    ESC   Exit
 Power Saving Function            [Disabled]

      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 18: Southbridge Chipset Configuration

→ USB Controller [Enabled]

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

→ **Disabled**		USB controller disabled
→ **Enabled**	**DEFAULT**	USB controller enabled

→ USB 3.0 Controller [Enabled]

Use the **USB 3.0 Controller** BIOS option to enable or disable USB 3.0 controller.

→ **Enabled**	**DEFAULT**	USB 3.0 controller enabled
→ **Disabled**		USB 3.0 controller disabled

→ GbE PXE Boot [Disabled]

Use the **GbE PXE Boot** option to enable or disable the boot option for GbE devices.

→ **Disabled**	**DEFAULT**	Disables the GbE PXE Boot option
→ **Enabled**		Enables the GbE PXE Boot option

➔ Wake on GbE LAN [Disabled]

Use the **Wake on GbE LAN** option to enable or disable resuming from GbE LAN controller.

➔ **Disabled**	**DEFAULT**	Disables Resume on GbE LAN option
➔ **Enabled**		Enables Resume on GbE LAN option

➔ PCIe LAN PXE Boot [Disabled]

Use the **PCIe LAN PXE Boot** option to enable or disable the boot option for the PCIe LAN PXE.

➔ **Disabled**	**DEFAULT**	Disables PCIe LAN PXE Boot option
➔ **Enabled**		Enables PCIe LAN PXE Boot option

➔ Azalia [Enabled]

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

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

➔ Azalia Internal HDMI Codec [Enabled]

Use the **Azalia Internal HDMI Codec** option to enable or disable the internal HDMI codec for High Definition Audio.

➔ **Disabled**		Disables the internal HDMI codec for High Definition Audio
➔ **Enabled**	**DEFAULT**	Enables the internal HDMI codec for High Definition Audio

➔ WIFI Function [Enabled]

Use the **WIFI Function** BIOS option to enable or disable the WiFi function.

➔ **Disabled**		The WiFi function is disabled
➔ **Enabled**	**DEFAULT**	The WiFi function is enabled

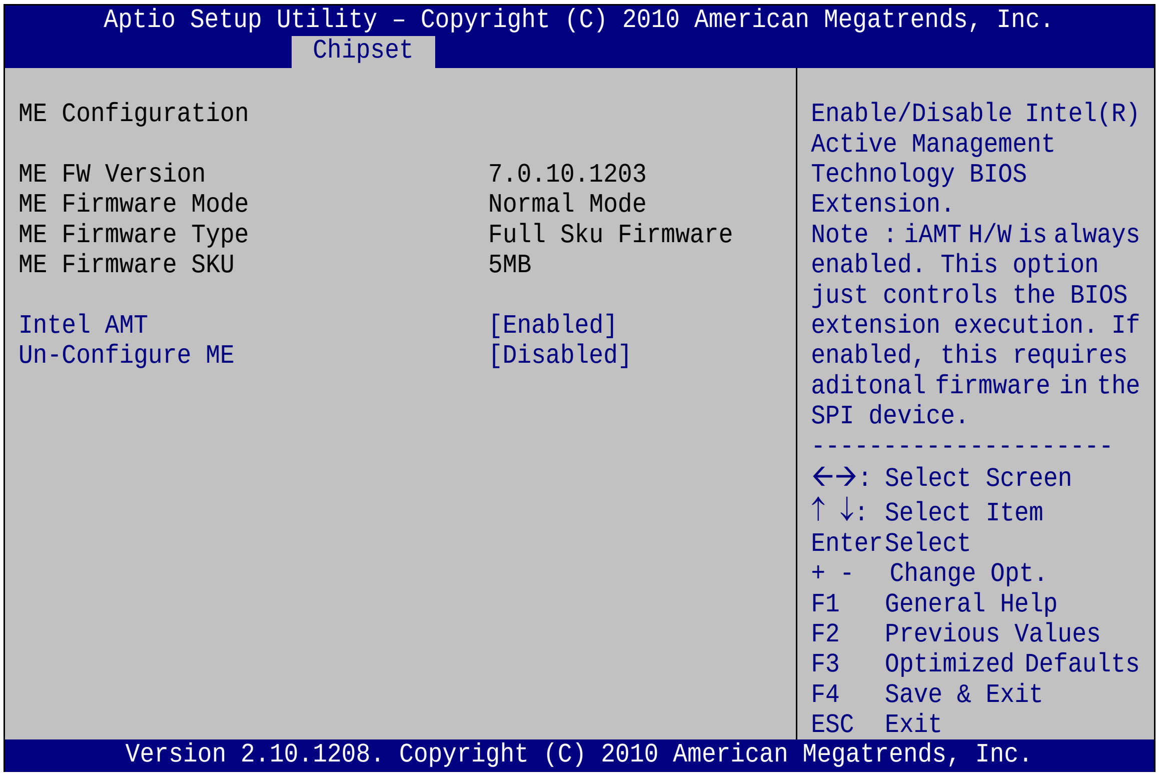
➔ Power Saving Function [Disabled]

Use the **Power Saving Function** BIOS option to enable or disable the power saving function.

➔ **Disabled**	**DEFAULT**	The power saving function is disabled
➔ **Enabled**		The power saving function is enabled

4.4.3 ME Configuration

Use the **ME Configuration** menu (**BIOS Menu 19**) to configure the Intel® Management Engine (ME) configuration options.



```
    Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
                          Chipset

ME Configuration                                  Enable/Disable Intel(R)
                                                  Active Management
ME FW Version               7.0.10.1203           Technology BIOS
ME Firmware Mode            Normal Mode           Extension.
ME Firmware Type            Full Sku Firmware     Note : iAMT H/W is always
ME Firmware SKU             5MB                   enabled. This option
                                                  just controls the BIOS
Intel AMT                   [Enabled]             extension execution. If
Un-Configure ME             [Disabled]            enabled, this requires
                                                  aditonal firmware in the
                                                  SPI device.
                                                  ---------------------
                                                  ←→: Select Screen
                                                  ↑ ↓: Select Item
                                                  EnterSelect
                                                  + -  Change Opt.
                                                  F1   General Help
                                                  F2   Previous Values
                                                  F3   Optimized Defaults
                                                  F4   Save & Exit
                                                  ESC  Exit
    Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 19: ME Configuration

➔ Intel AMT [Enabled]

Use **Intel AMT** option to enable or disable the Intel® AMT function.

➔ **Disabled**		Intel® AMT is disabled
➔ **Enabled**	**DEFAULT**	Intel® AMT is enabled

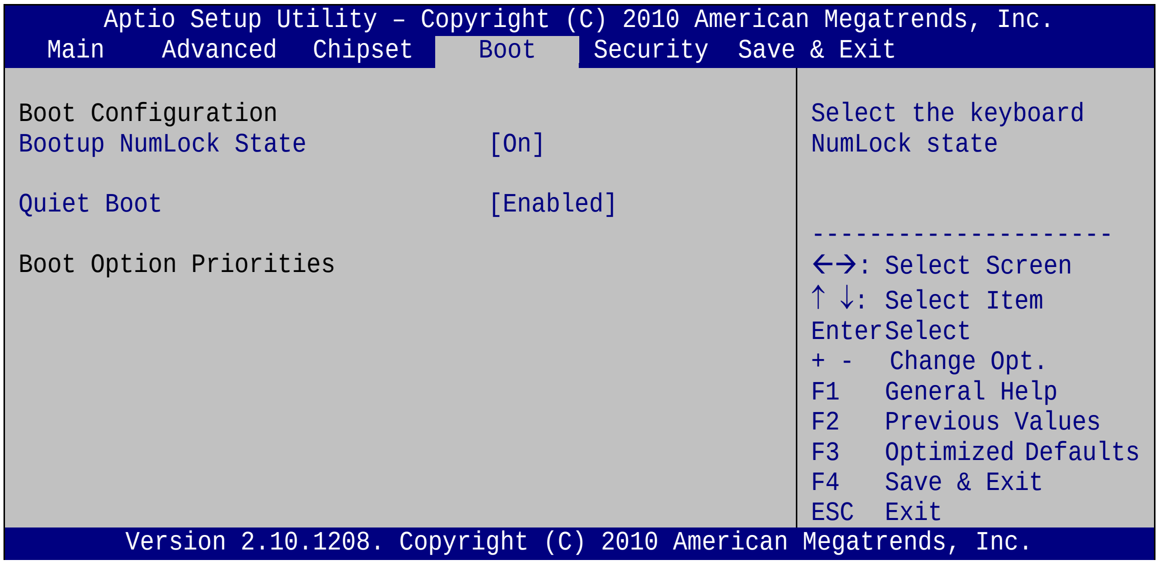
➔ Un-Configure ME [Disabled]

Use the **Un-Configure ME** option to perform ME un-configure without password operation.

- ➔ **Disabled** **DEFAULT** Disable ME un-configure
- ➔ **Enabled** Enable ME un-configure

4.5 Boot

Use the **Boot** menu (**BIOS Menu 20**) to configure system boot options.



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
  Main     Advanced   Chipset      Boot      Security   Save & Exit

 Boot Configuration                                 Select the keyboard
 Bootup NumLock State              [On]             NumLock state

 Quiet Boot                        [Enabled]
                                                    ---------------------
 Boot Option Priorities                             ←→: Select Screen
                                                    ↑ ↓: Select Item
                                                    EnterSelect
                                                    + -   Change Opt.
                                                    F1    General Help
                                                    F2    Previous Values
                                                    F3    Optimized Defaults
                                                    F4    Save & Exit
                                                    ESC   Exit
         Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 20: 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.

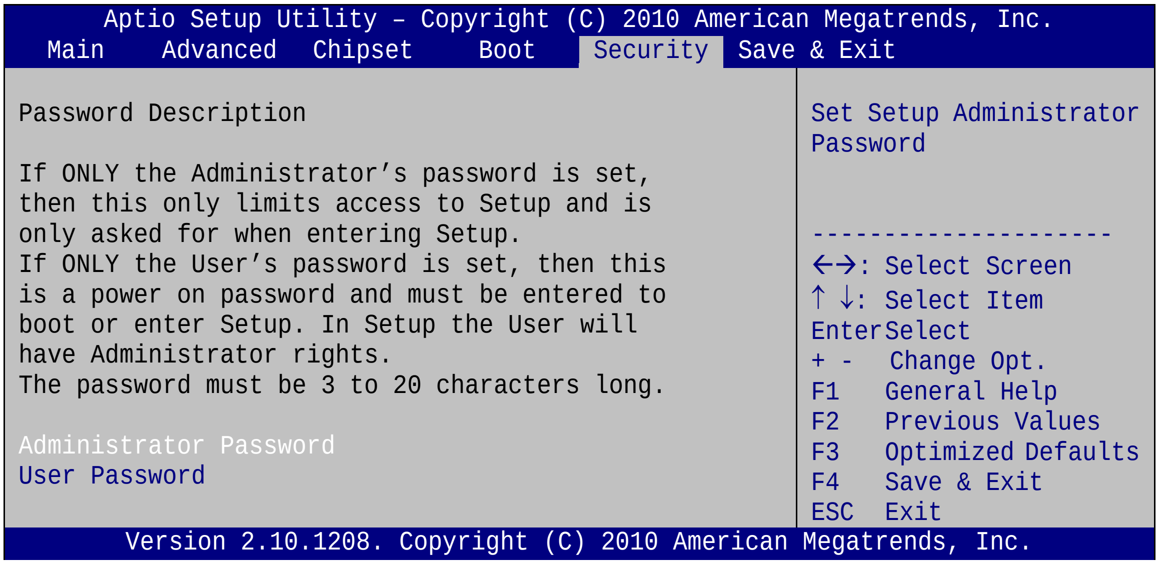
➔ Quiet Boot [Enabled]

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

4.6 Security

Use the **Security** menu (**BIOS Menu 21**) to set system and user passwords.



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
  Main    Advanced   Chipset     Boot    Security  Save & Exit

Password Description                                 Set Setup Administrator
                                                     Password
If ONLY the Administrator’s password is set,
then this only limits access to Setup and is
only asked for when entering Setup.                  --------------------
If ONLY the User’s password is set, then this        ←→: Select Screen
is a power on password and must be entered to        ↑ ↓: Select Item
boot or enter Setup. In Setup the User will          EnterSelect
have Administrator rights.                           + -   Change Opt.
The password must be 3 to 20 characters long.        F1   General Help
                                                     F2   Previous Values
Administrator Password                               F3   Optimized Defaults
User Password                                        F4   Save & Exit
                                                     ESC  Exit
      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 21: Security

➔ Administrator Password

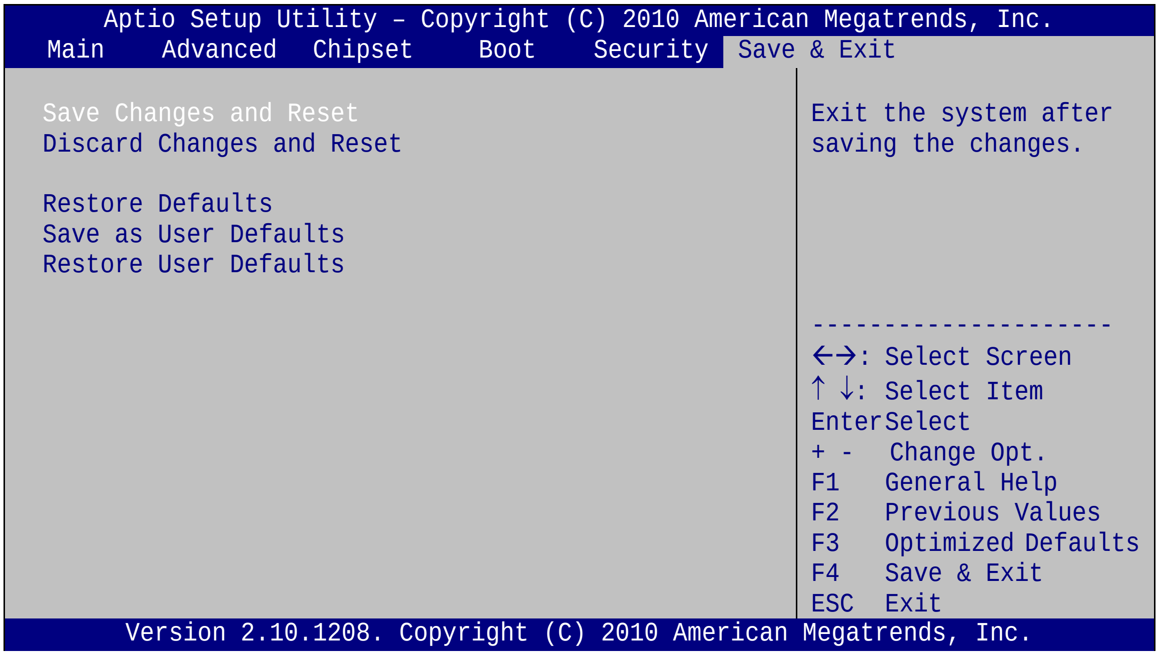
Use the **Administrator Password** to set or change a administrator password.

➔ User Password

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

4.7 Exit

Use the **Exit** menu (**BIOS Menu 22**) to load default BIOS values, optimal failsafe values and to save configuration changes.



```
     Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.
 Main    Advanced  Chipset    Boot    Security  Save & Exit

 Save Changes and Reset                           Exit the system after
 Discard Changes and Reset                        saving the changes.

 Restore Defaults
 Save as User Defaults
 Restore User Defaults



                                                  ---------------------
                                                  ←→: Select Screen
                                                  ↑ ↓: Select Item
                                                  EnterSelect
                                                  + -   Change Opt.
                                                  F1    General Help
                                                  F2    Previous Values
                                                  F3    Optimized Defaults
                                                  F4    Save & Exit
                                                  ESC   Exit
      Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 22: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.

Appendix A

One Key Recovery

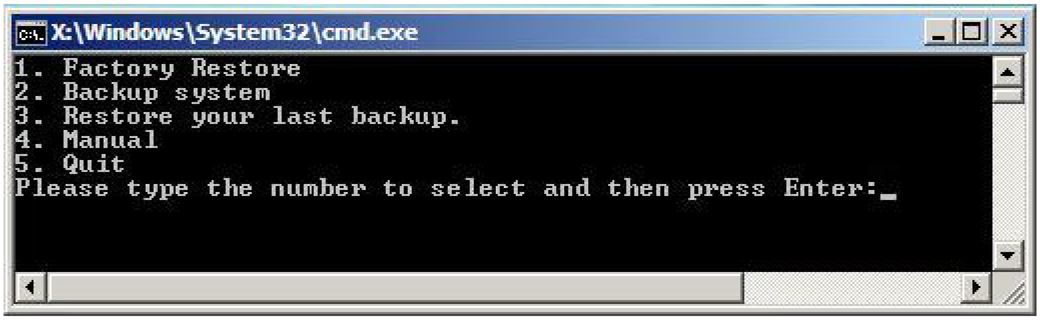
A.1 One Key Recovery Introduction

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.



```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:_
```

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**.

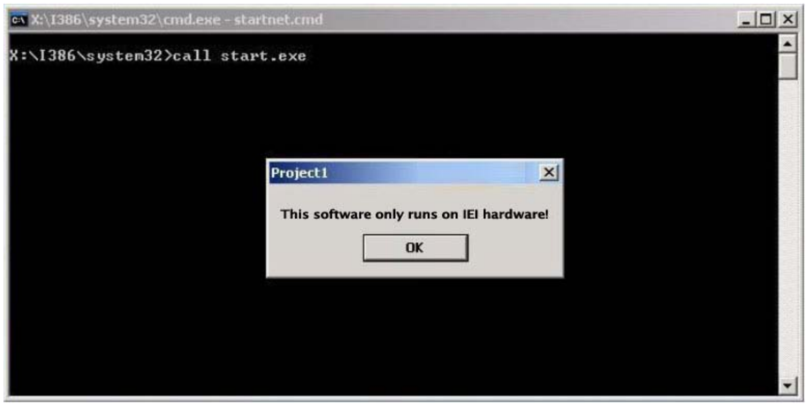
NOTE:

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.



```
X:\I386\system32>call start.exe
```

This software only runs on IEI hardware!

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

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

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

NOTE:

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

A.1.2 Supported Operating System

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

- Microsoft Windows
  - Windows XP (Service Pack 2 or 3 required)
  - Windows Vista
  - Windows 7
  - Windows CE 5.0
  - Windows CE 6.0
  - Windows XP Embedded
- Linux
  - Fedora Core 12 (Constantine)
  - Fedora Core 11 (Leonidas)
  - Fedora Core 10 (Cambridge)
  - Fedora Core 8 (Werewolf)
  - Fedora Core 7 (Moonshine)
  - RedHat RHEL-5.4
  - RedHat 9 (Ghirke)

- Ubuntu 8.10 (Intrepid)
- Ubuntu 7.10 (Gutsy)
- Ubuntu 6.10 (Edgy)
- Debian 5.0 (Lenny)
- Debian 4.0 (Etch)
- SuSe 11.2
- SuSe 10.3

NOTE:

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

A.2 Setup Procedure for Windows

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

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

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

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

Step 4: Build 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**).

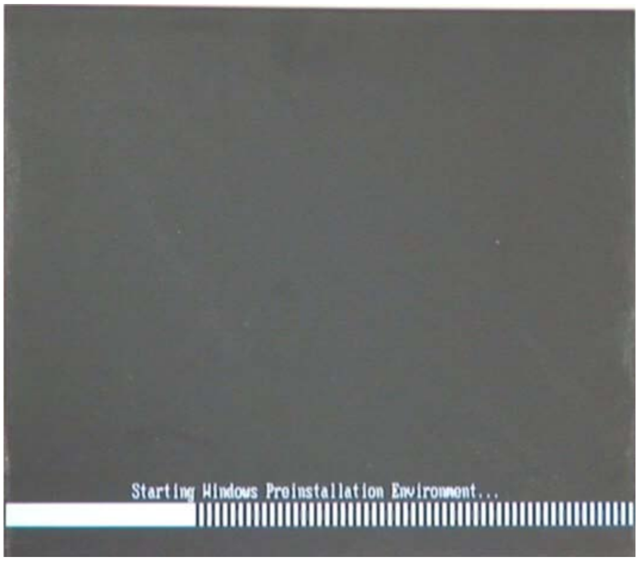
Step 7: Save changes and restart the computer. Continue to the next section for instructions on partitioning the internal storage.

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.

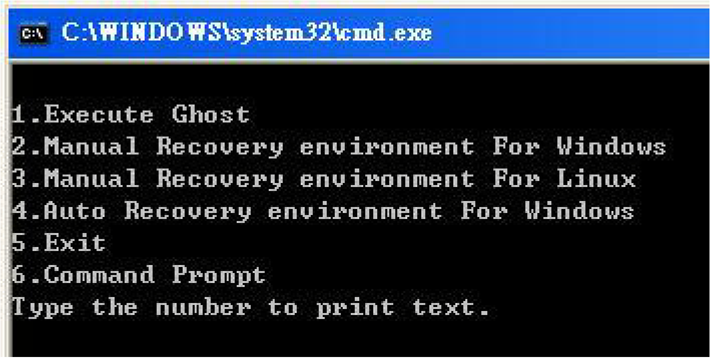
Step 2: **Boot the system from recovery CD**. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!



```
Starting Windows Preinstallation Environment...
```

Figure A-2: Launching the Recovery Tool

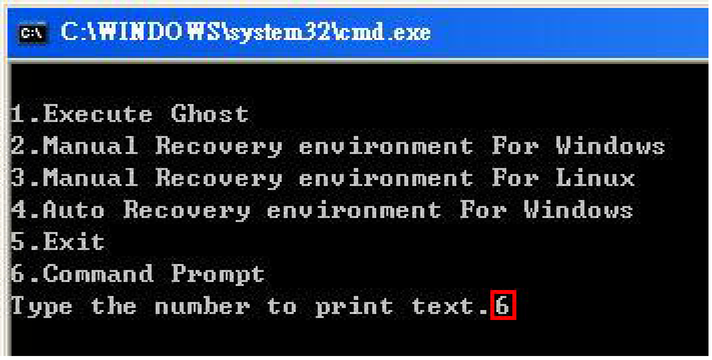
Step 3: The recovery tool setup menu is shown as below.



```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.
```

Figure A-3: Recovery Tool Setup Menu

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



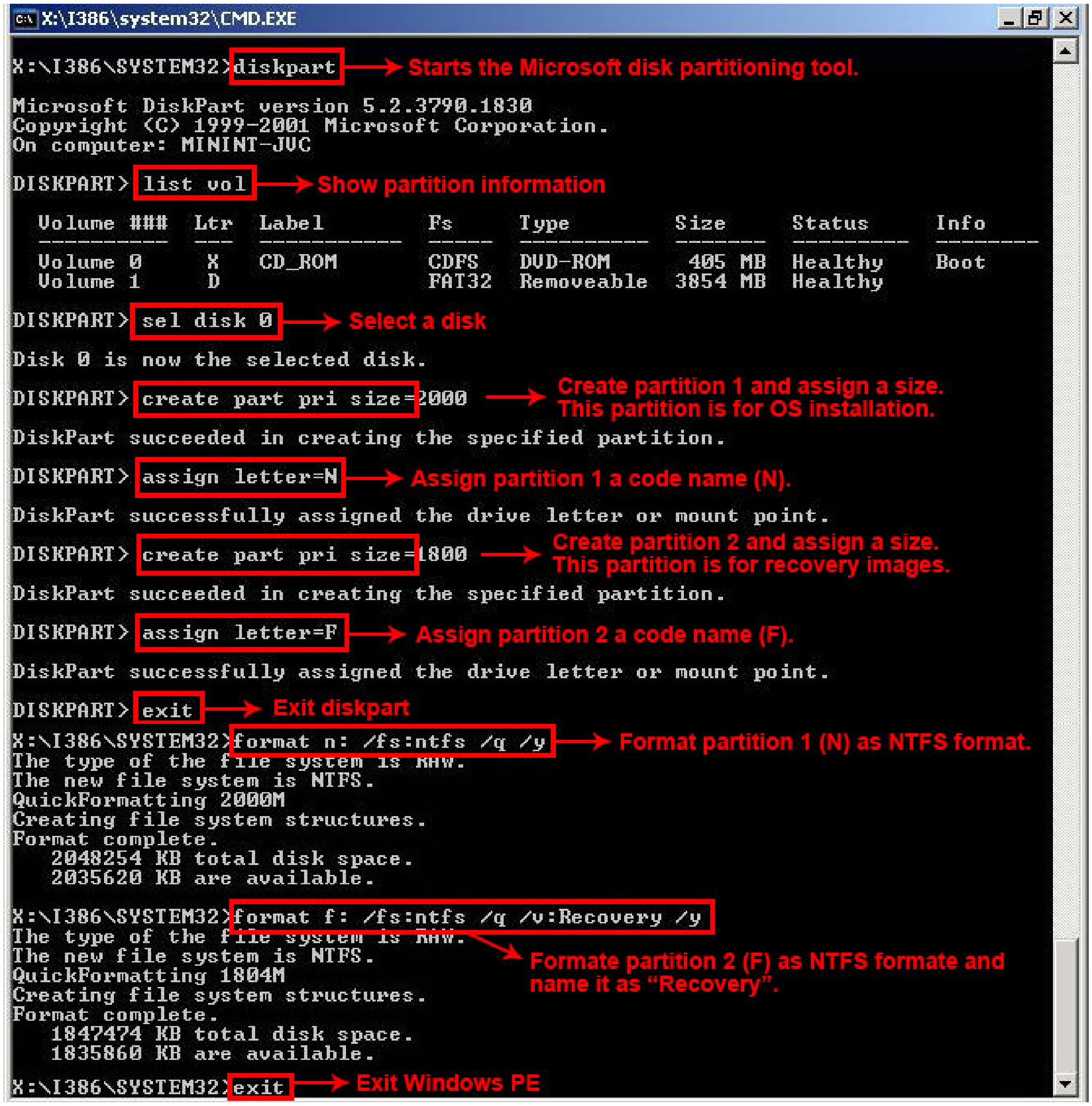
```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.6
```

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
```



```
X:\I386\SYSTEM32>diskpart

Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JVC

DISKPART> list vol

  Volume ###  Ltr  Label        Fs     Type        Size     Status     Info
  ----------  ---  -----------  -----  ----------  -------  ---------  --------
  Volume 0     X   CD_ROM       CDFS   DVD-ROM      405 MB  Healthy    Boot
  Volume 1     D                FAT32  Removeable  3854 MB  Healthy

DISKPART> sel disk 0

Disk 0 is now the selected disk.

DISKPART> create part pri size=2000

DiskPart succeeded in creating the specified partition.

DISKPART> assign letter=N

DiskPart successfully assigned the drive letter or mount point.

DISKPART> create part pri size=1800

DiskPart succeeded in creating the specified partition.

DISKPART> assign letter=F

DiskPart successfully assigned the drive letter or mount point.

DISKPART> exit

X:\I386\SYSTEM32>format n: /fs:ntfs /q /y
The type of the file system is RAW.
The new file system is NTFS.
QuickFormatting 2000M
Creating file system structures.
Format complete.
    2048254 KB total disk space.
    2035620 KB are available.

X:\I386\SYSTEM32>format f: /fs:ntfs /q /v:Recovery /y
The type of the file system is RAW.
The new file system is NTFS.
QuickFormatting 1804M
Creating file system structures.
Format complete.
    1847474 KB total disk space.
    1835860 KB are available.

X:\I386\SYSTEM32>exit
```

Starts the Microsoft disk partitioning tool.

Show partition information

Select a disk

Create partition 1 and assign a size.
This partition is for OS installation.

Assign partition 1 a code name (N).

Create partition 2 and assign a size.
This partition is for recovery images.

Assign partition 2 a code name (F).

Exit diskpart

Format partition 1 (N) as NTFS format.

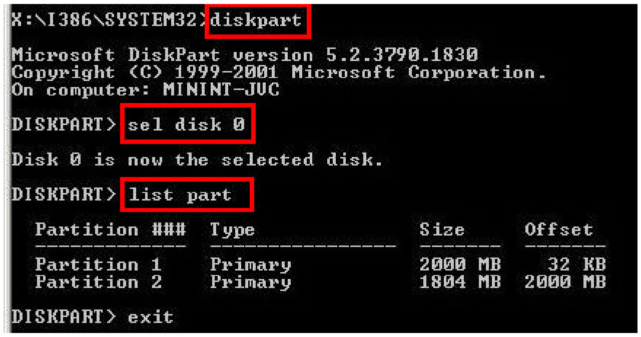
Formate partition 2 (F) as NTFS formate and name it as “Recovery”.

Exit Windows PE

Figure A-5: Partition Creation Commands

NOTE:

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



```
X:\I386\SYSTEM32>diskpart

Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JVC

DISKPART> sel disk 0

Disk 0 is now the selected disk.

DISKPART> list part

  Partition ###  Type              Size     Offset
  -------------  ----------------  -------  -------
  Partition 1    Primary           2000 MB    32 KB
  Partition 2    Primary           1804 MB  2000 MB

DISKPART> exit
```

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.

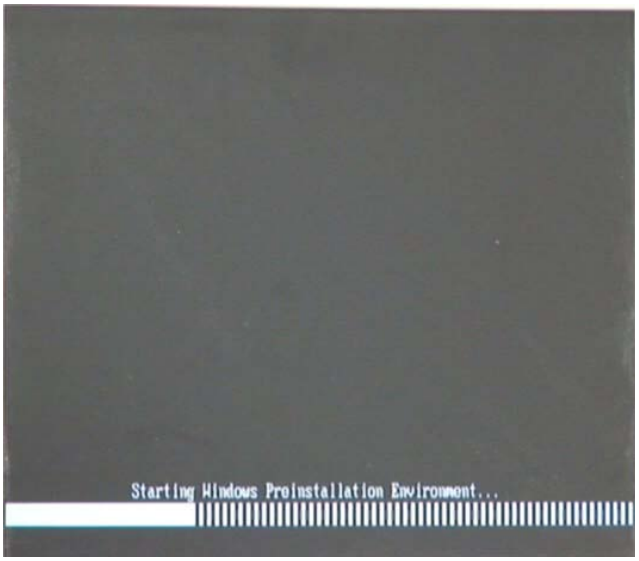
To install the operating system, insert the operating system installation CD into the optical drive. Restart the computer and follow the installation instructions.

A.2.4 Build-up Recovery Partition

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

Step 2: Start the system.

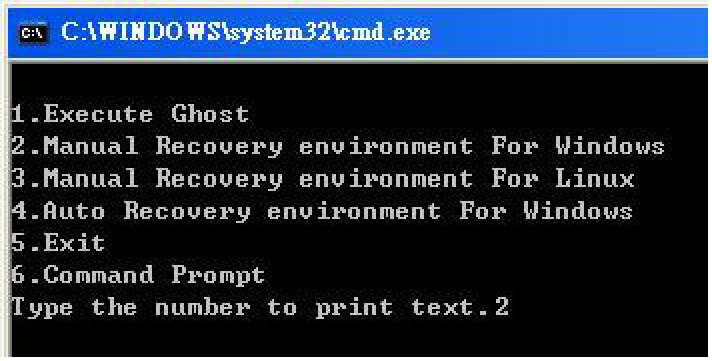
Step 3: **Boot the system from recovery CD**. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!



Starting Windows Preinstallation Environment...

Figure A-6: Launching the Recovery Tool

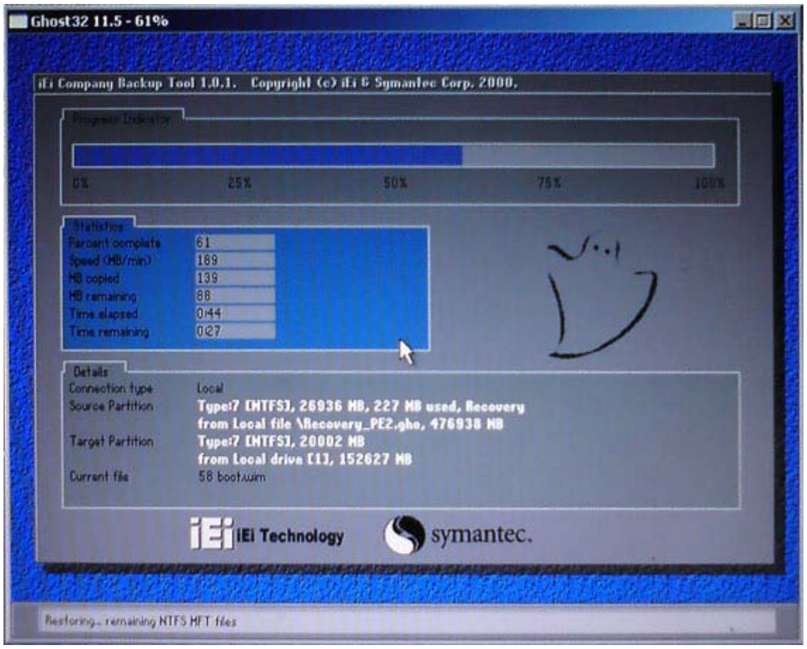
Step 4: When the recovery tool setup menu appears, press <**2**> then <Enter>.



```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.2
```

Figure A-7: System Configuration 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.


Ghost32 11.5 - 61%
iEi Company Backup Tool 1.0.1. Copyright (c) iEi & Symantec Corp. 2008.
Progress Indicator
0%
25%
50%
75%
100%
Statistics
Details
iEi Technology
symantec.

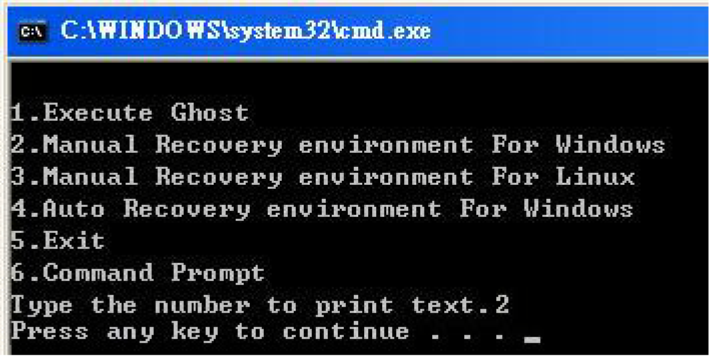
Percent complete 61
Speed (MB/min) 189
MB copied 139
MB remaining 88
Time elapsed 0:44
Time remaining 0:27

Connection type Local
Source Partition Type:7 [NTFS], 26936 MB, 227 MB used, Recovery
from Local file \Recovery_PE2.gho, 476938 MB
Target Partition Type:7 [NTFS], 20002 MB
from Local drive [1], 152627 MB
Current file 58 boot.wim

Restoring... remaining NTFS MFT files

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.


C:\WINDOWS\system32\cmd.exe

```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.2
Press any key to continue . . . _
```

Figure A-9: Press Any Key to Continue

Step 7: Eject the recovery CD.

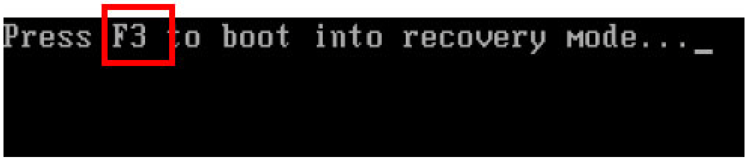
A.2.5 Create Factory Default Image

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.

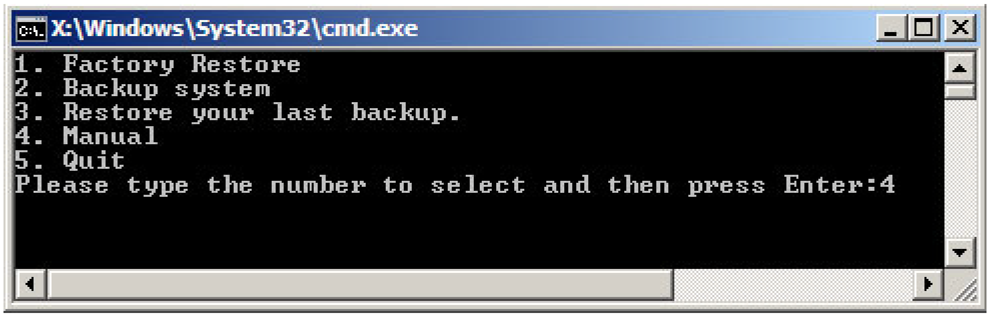
Step 1: Turn on the system. When the following screen displays (**Figure A-10**), press the <**F3**> key to access the recovery tool. The message will display for 10 seconds, please press F3 before the system boots into the operating system.



```
Press F3 to boot into recovery mode..._
```

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

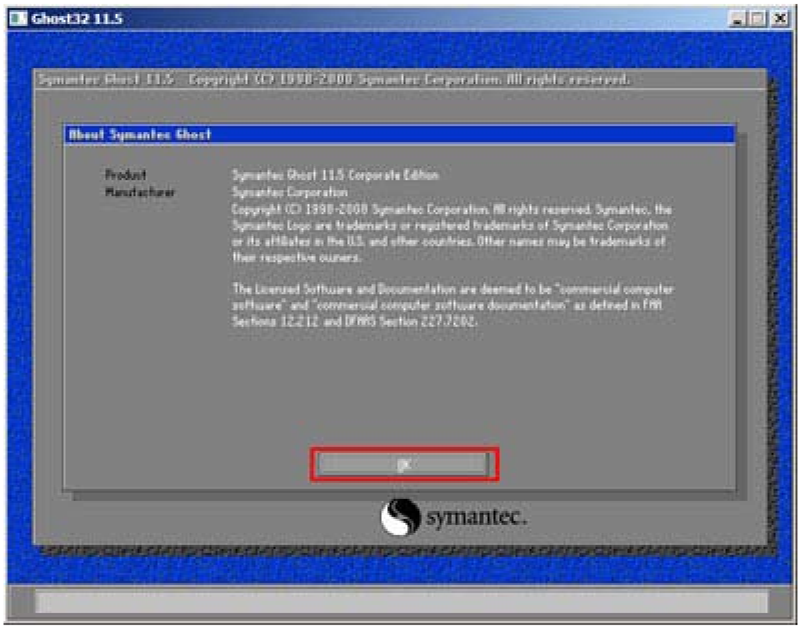
Step 2: The recovery tool menu appears. Type <**4**> and press <**Enter**>. (**Figure A-11**)



```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:4
```

Figure A-11: Recovery Tool Menu

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


Ghost32 11.5
About Symantec Ghost
OK
symantec.

Symantec Ghost 11.5 Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.

Product	Symantec Ghost 11.5 Corporate Edition
Manufacturer	Symantec Corporation

Copyright (C) 1998-2008 Symantec Corporation. All rights reserved. Symantec, the Symantec Logo are trademarks or registered trademarks of Symantec Corporation or its affiliates in the U.S. and other countries. Other names may be trademarks of their respective owners.

The Licensed Software and Documentation are deemed to be "commercial computer software" and "commercial computer software documentation" as defined in FAR Sections 12.212 and DFARS Section 227.7202.

Figure A-12: About Symantec Ghost Window

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

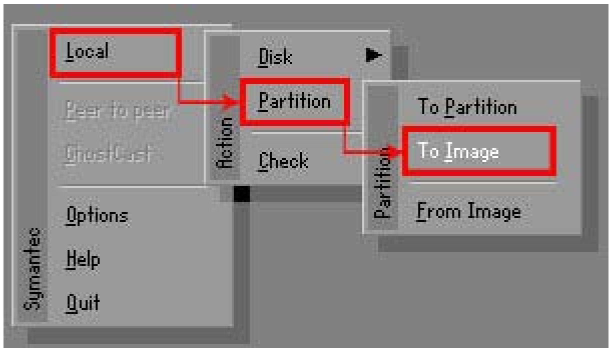
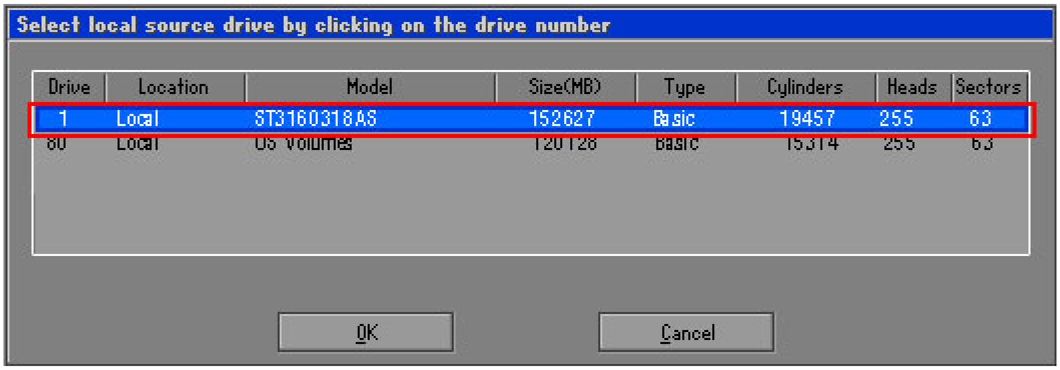

Symantec
Local
Peer to peer
GhostCast
Options
Help
Quit
Action
Disk
Partition
Check
Partition
To Partition
To Image
From Image

Figure A-13: Symantec Ghost Path

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

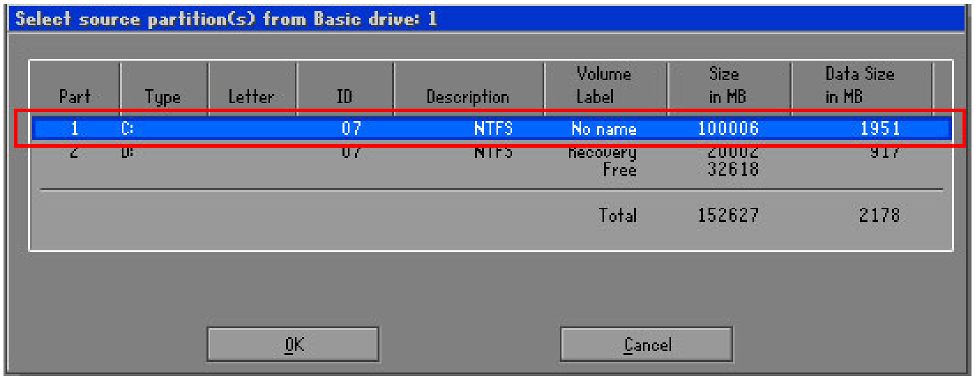


Select local source drive by clicking on the drive number

Drive	Location	Model	Size(MB)	Type	Cylinders	Heads	Sectors
1	Local	ST3160318AS	152627	Basic	19457	255	63
80	Local	OS Volumes	120128	Basic	15314	255	63

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.



Select source partition(s) from Basic drive: 1

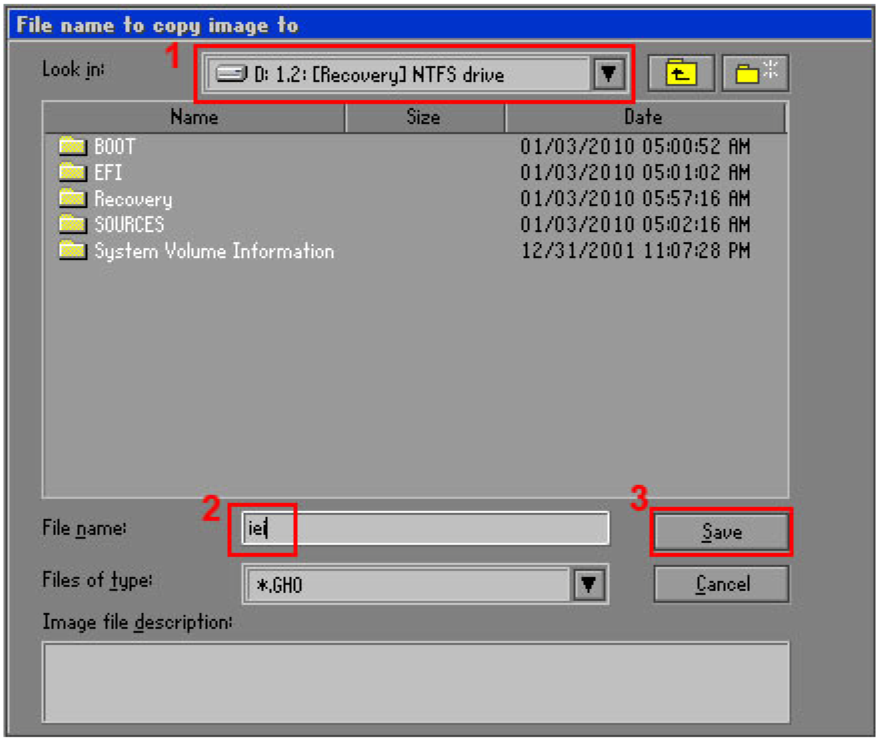
Part	Type	Letter	ID	Description	Volume Label	Size in MB	Data Size in MB
1	C:		07	NTFS	No name	100006	1951
2	D:		07	NTFS	Recovery	20002	917
					Free	32618	
					Total	152627	2178

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**.

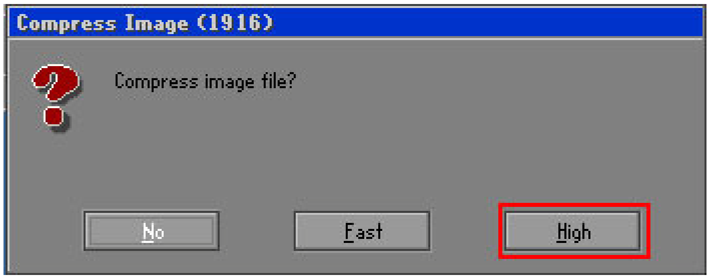

File name to copy image to
Look in:
1
D: 1.2: [Recovery] NTFS drive
Name
Size
Date
BOOT
EFI
Recovery
SOURCES
System Volume Information
01/03/2010 05:00:52 AM
01/03/2010 05:01:02 AM
01/03/2010 05:57:16 AM
01/03/2010 05:02:16 AM
12/31/2001 11:07:28 PM
2
File name:
3
Save
Files of type:
Cancel
Image file description:

File name: iei

Files of type: *.GHO

Figure A-16: File Name to Copy Image to

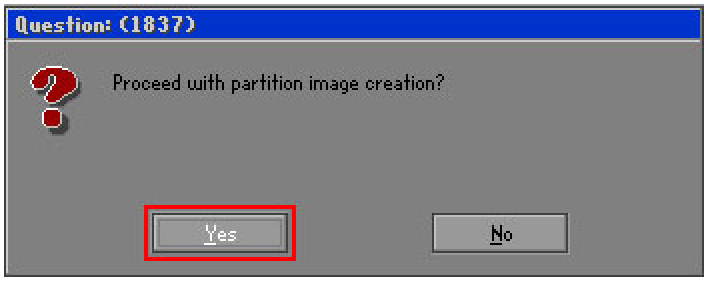
Step 8: When the Compress Image screen in **Figure A-17** prompts, click **High** to make the image file smaller.


Compress Image (1916)
No
Fast
High

Compress image file?

Figure A-17: Compress Image

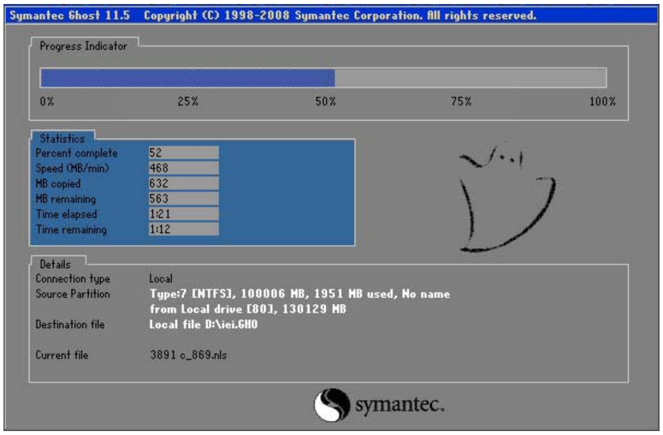
Step 9: The Proceed with partition image creation window appears, click **Yes** to continue.


Question: (1837)

Proceed with partition image creation?

Figure A-18: Image Creation Confirmation

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


Symantec Ghost 11.5 Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.

Statistics

Percent complete	52
Speed (MB/min)	468
MB copied	632
MB remaining	563
Time elapsed	1:21
Time remaining	1:12

Details

Connection type	Local
Source Partition	Type:7 [NTFS], 100006 MB, 1951 MB used, No name from Local drive [80], 130129 MB
Destination file	Local file D:\iei.GHO
Current file	3891 c_869.nls

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.

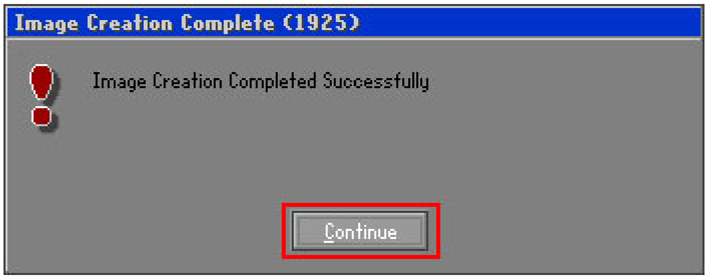
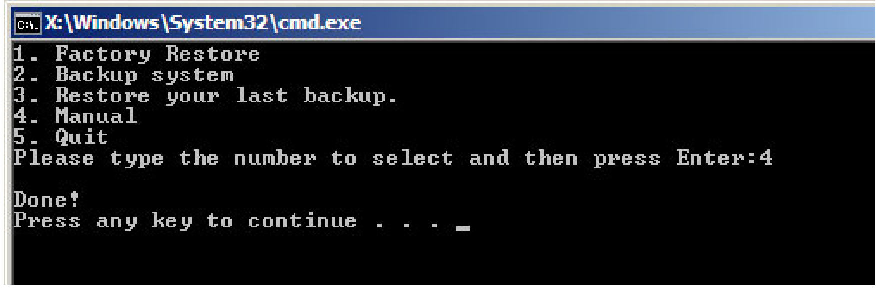


Image Creation Complete (1925)

Image Creation Completed Successfully

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.



X:\Windows\System32\cmd.exe

```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:4

Done!
Press any key to continue . . . _
```

Figure A-21: Press Any Key to Continue

A.3 Auto Recovery Setup Procedure

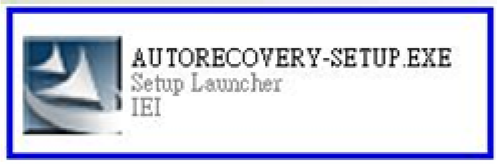
The auto recovery function allows a system to automatically restore from the factory default image after encountering a Blue Screen of Death (BSoD) or a hang for around 10 minutes. To use the auto recovery function, follow the steps described in the following sections.

CAUTION:

The 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.

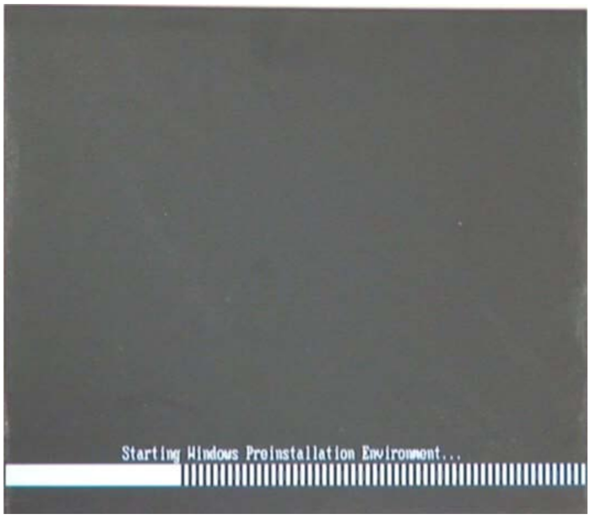
Step 2: Install the auto recovery utility into the system by double clicking the **Utility/AUTORECOVERY-SETUP.exe** in the One Key Recovery CD. This utility MUST be installed in the system, otherwise, the system will automatically restore from the factory default image every ten (10) minutes.



AUTORECOVERY-SETUP.EXE
Setup Launcher
IEI

Figure A-22: Auto Recovery Utility

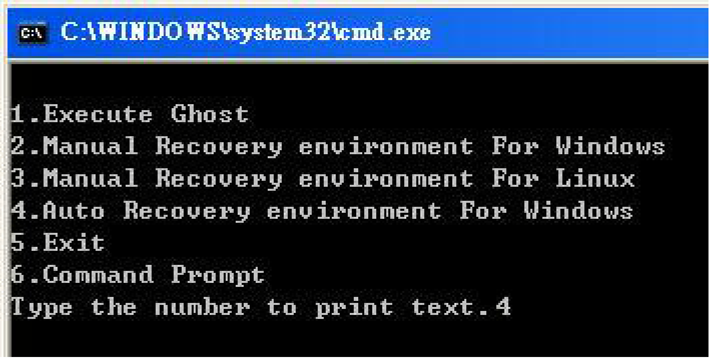
Step 3: Reboot the system from the recovery CD. When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!



Starting Windows Preinstallation Environment...

Figure A-23: Launching the Recovery Tool

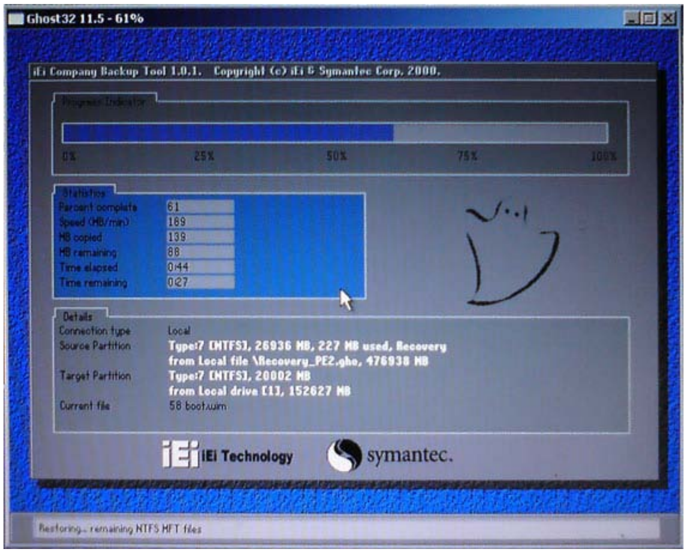
Step 4: When the recovery tool setup menu appears, press <**4**> then <Enter>.



```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.4
```

Figure A-24: Auto Recovery Environment for Windows

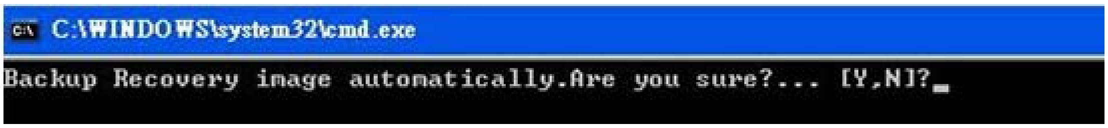
Step 5: The Symantec Ghost window appears and starts configuring the system to build an auto recovery partition. In this process the partition created for recovery files in **Section A.2.2** is hidden and the auto recovery tool is saved in this partition.



```
Ghost32 11.5 - 61%
iEi Company Backup Tool 1.0.1.   Copyright (c) iEi & Symantec Corp. 2000.

Statistics
Percent complete    61
Speed (MB/min)      169
MB copied           139
MB remaining        88
Time elapsed        0:44
Time remaining      0:27

Details
Connection type     Local
Source Partition    Type:7 [NTFS], 26936 MB, 227 MB used, Recovery
                    from Local file \Recovery_PE2.gho, 476938 MB
Target Partition    Type:7 [NTFS], 20002 MB
                    from Local drive [1], 152627 MB
Current file        58 boot.wim

Restoring... remaining NTFS MFT files
```

Figure A-25: Building the Auto Recovery Partition

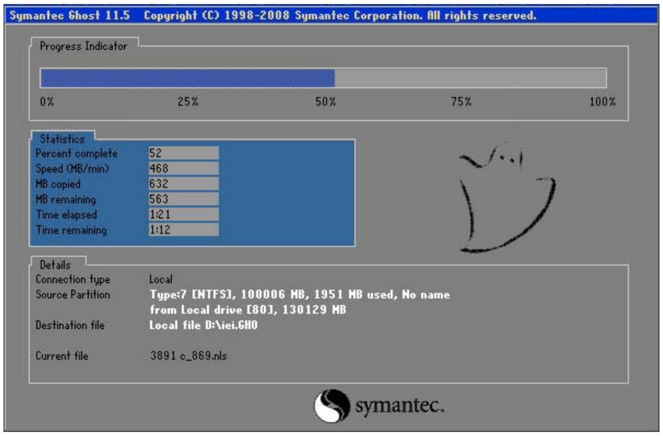
Step 6: After completing the system configuration, the following message prompts to confirm whether to create a factory default image. Type **Y** to have the system create a factory default image automatically. Type **N** within 6 seconds to skip this process (The default option is YES). It is suggested to choose YES for this option.



```
C:\WINDOWS\system32\cmd.exe
Backup Recovery image automatically.Are you sure?... [Y,N]?_
```

Figure A-26: Factory Default Image Confirmation

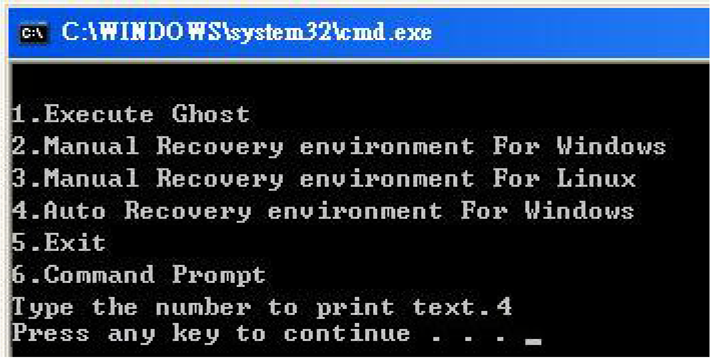
Step 7: The Symantec Ghost starts to create the factory default image (**Figure A-27**).


Symantec Ghost 11.5 Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.
Progress Indicator
0%
25%
50%
75%
100%
Statistics
Details
symantec.

```
Percent complete     52
Speed (MB/min)       468
MB copied            632
MB remaining         563
Time elapsed         1:21
Time remaining       1:12

Connection type      Local
Source Partition     Type:7 [NTFS], 100006 MB, 1951 MB used, No name
                     from Local drive [80], 130129 MB
Destination file     Local file D:\iei.GHO

Current file         3891 c_869.nls
```

Figure A-27: Image Creation Complete

Step 8: After completing the system configuration, press any key in the following window to restart the system.


C:\WINDOWS\system32\cmd.exe

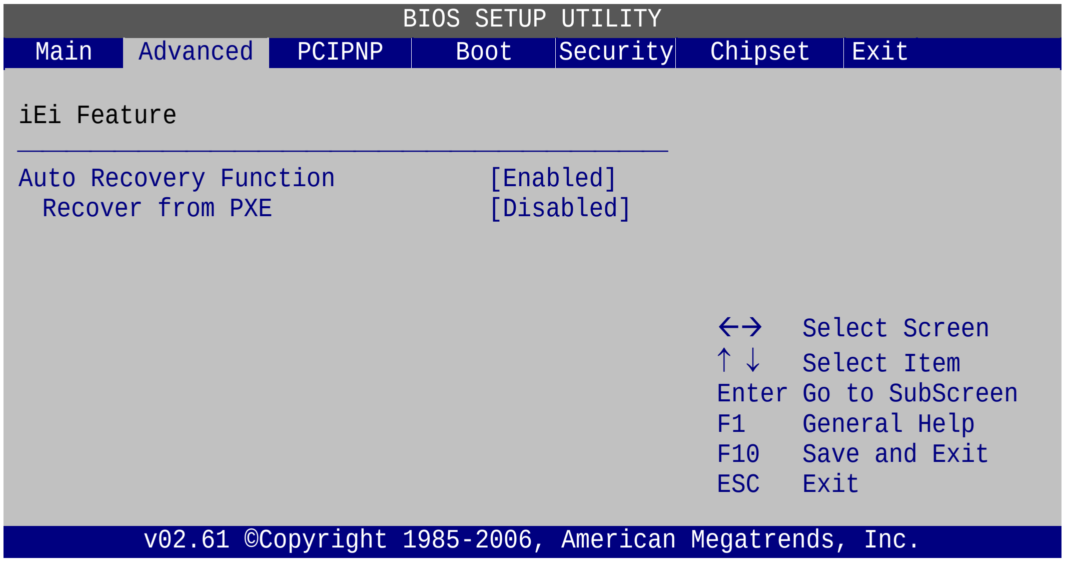
```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.4
Press any key to continue . . . _
```

Figure A-28: Press any key to continue

Step 9: Eject the One Key Recovery CD and restart the system.

Step 10: Press the <**DELETE**> key as soon as the system is turned on to enter the BIOS.

Step 11: Enable the Auto Recovery Function option (**Advanced → iEi Feature → Auto Recovery Function**).



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

iEi Feature
_____________________________________________
Auto Recovery Function             [Enabled]
  Recover from PXE                 [Disabled]



                                                ←→    Select Screen
                                                ↑ ↓   Select Item
                                                Enter Go to SubScreen
                                                F1    General Help
                                                F10   Save and Exit
                                                ESC   Exit
          v02.61 ©Copyright 1985-2006, American Megatrends, Inc.
```

BIOS Menu 23: IEI Feature

Step 12: 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.

CAUTION:

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

- Windows XP
- Windows Vista
- Windows 7

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.

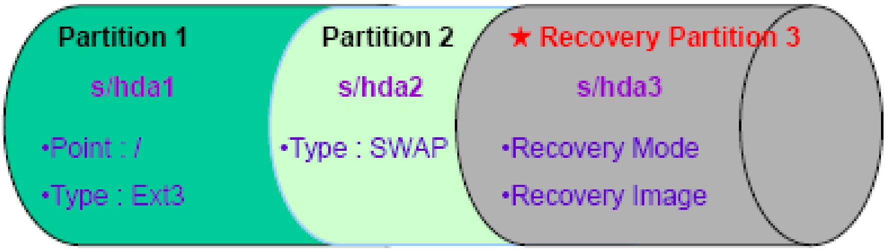

Partition 1
s/hda1
•Point : /
•Type : Ext3
Partition 2
s/hda2
•Type : SWAP
★ Recovery Partition 3
s/hda3
•Recovery Mode
•Recovery Image

Figure A-29: 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= ___

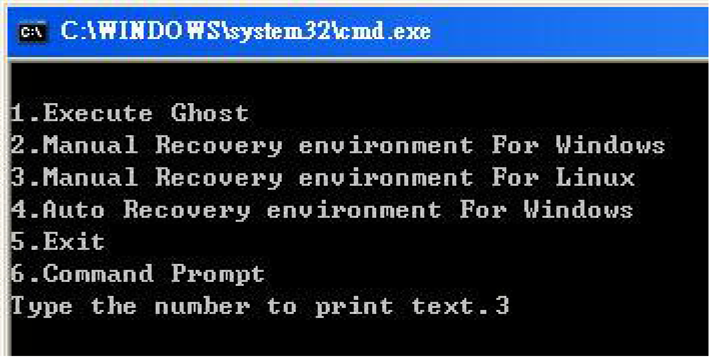
DISKPART>assign letter=N

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-30**). 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.



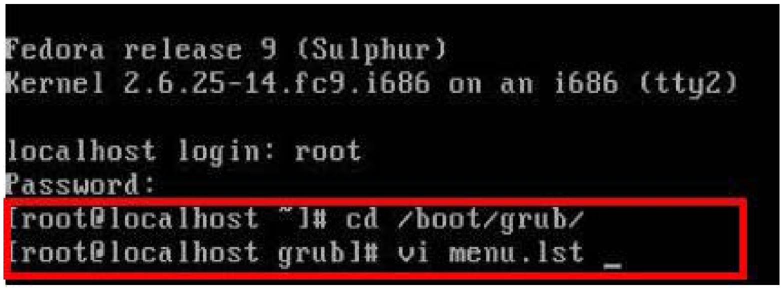
```
1.Execute Ghost
2.Manual Recovery environment For Windows
3.Manual Recovery environment For Linux
4.Auto Recovery environment For Windows
5.Exit
6.Command Prompt
Type the number to print text.3
```

Figure A-30: Manual Recovery Environment 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

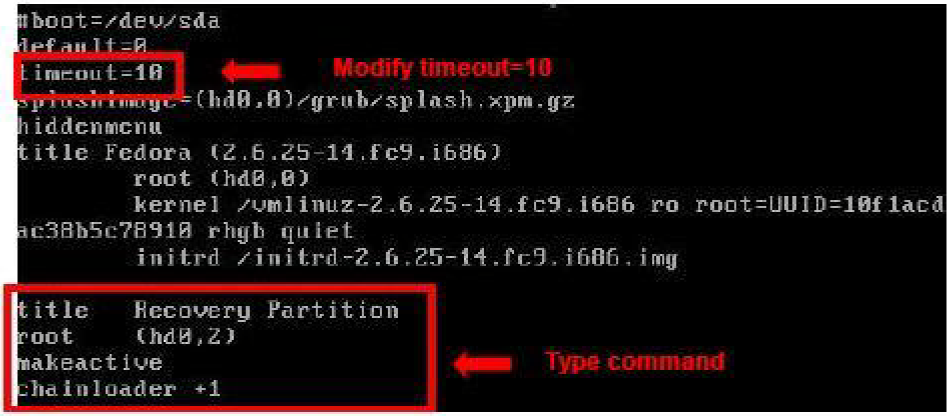
vi menu.lst



```
Fedora release 9 (Sulphur)
Kernel 2.6.25-14.fc9.i686 on an i686 (tty2)

localhost login: root
Password:
[root@localhost ~]# cd /boot/grub/
[root@localhost grub]# vi menu.lst _
```

Figure A-31: Access menu.lst in Linux (Text Mode)

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



```
#boot=/dev/sda
default=0
timeout=10
splashimage=(hd0,0)/grub/splash.xpm.gz
hiddenmenu
title Fedora (2.6.25-14.fc9.i686)
        root (hd0,0)
        kernel /vmlinuz-2.6.25-14.fc9.i686 ro root=UUID=10f1acd
ac38b5c78910 rhgb quiet
        initrd /initrd-2.6.25-14.fc9.i686.img

title   Recovery Partition
root    (hd0,2)
makeactive
chainloader +1
```

- **Type command:**

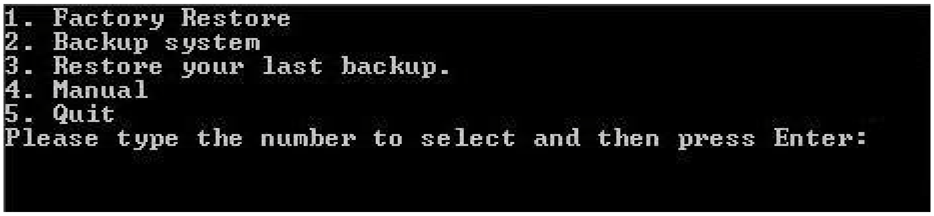
  title Recovery Partition

  root (hd0,2)

  makeactive

  chainloader +1

Step 7: The recovery tool menu appears. (**Figure A-32**)



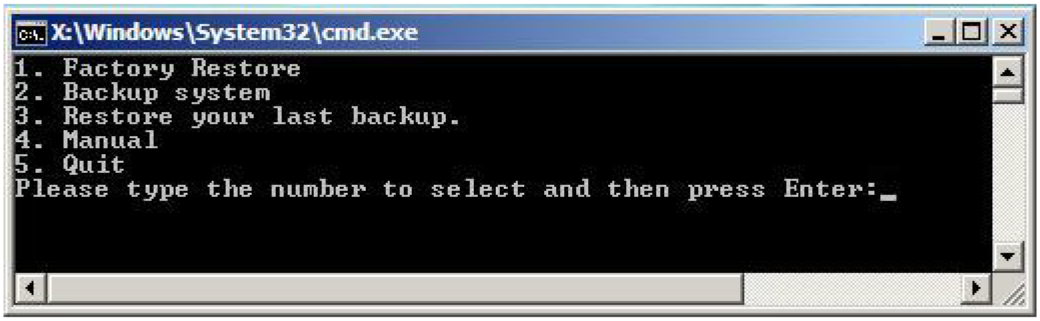
```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:
```

Figure A-32: 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.



```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:_
```

Figure A-33: 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:

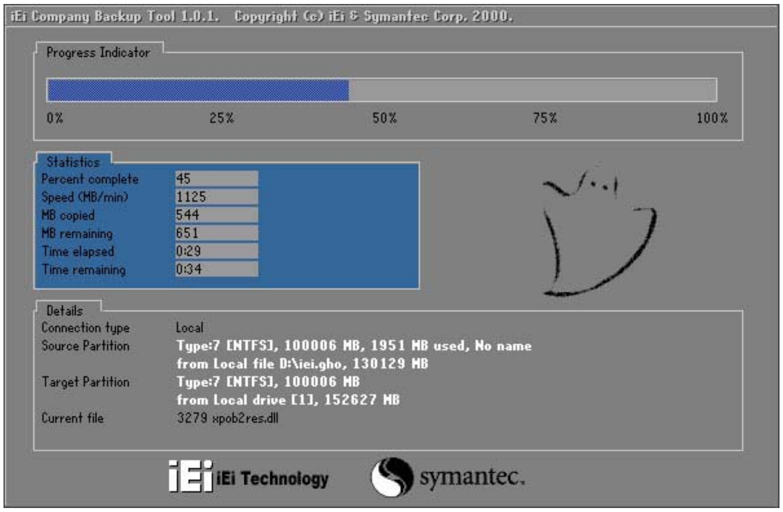
All data in the system will be deleted during the system recovery. Please backup the system files before restoring the system (either Factory Restore or Restore Backup).

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.

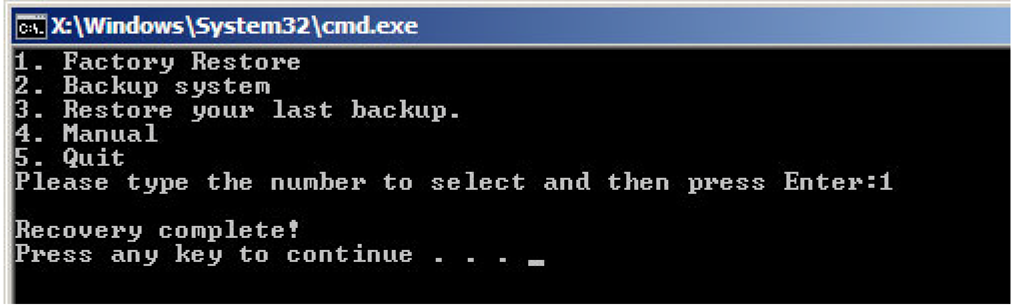
Step 2: The Symantec Ghost window appears and starts to restore the factory default. A factory default image called **iei.GHO** is created in the hidden Recovery partition.



```
iEi Company Backup Tool 1.0.1.   Copyright (c) iEi & Symantec Corp. 2000.

Statistics
Percent complete     45
Speed (MB/min)       1125
MB copied            544
MB remaining         651
Time elapsed         0:29
Time remaining       0:34

Details
Connection type      Local
Source Partition     Type:7 [NTFS], 100006 MB, 1951 MB used, No name
                     from Local file D:\iei.gho, 130129 MB
Target Partition     Type:7 [NTFS], 100006 MB
                     from Local drive [1], 152627 MB
Current file         3279 xpob2res.dll
```

Figure A-34: Restore Factory Default

Step 3: The screen is shown as in **Figure A-35** when completed. Press any key to reboot the system.



```
X:\Windows\System32\cmd.exe
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:1

Recovery complete!
Press any key to continue . . . _
```

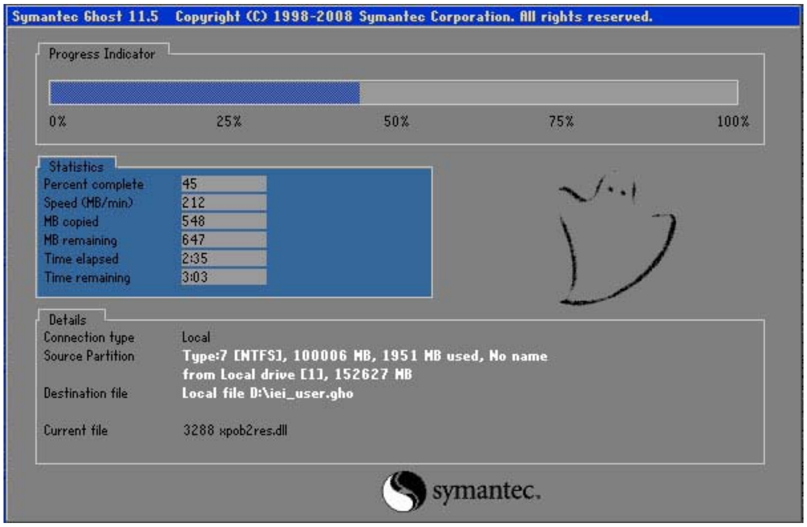
Figure A-35: Recovery Complete Window

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.

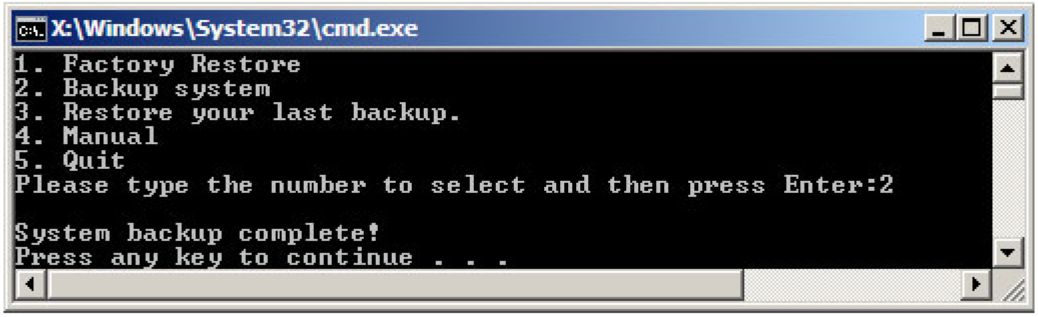
Step 2: The Symantec Ghost window appears and starts to backup the system. A backup image called **iei_user.GHO** is created in the hidden Recovery partition.



```
Symantec Ghost 11.5   Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.
Percent complete      45
Speed (MB/min)        212
MB copied             548
MB remaining          647
Time elapsed          2:35
Time remaining        3:03

Connection type       Local
Source Partition      Type:7 [NTFS], 100006 MB, 1951 MB used, No name
                      from Local drive [1], 152627 MB
Destination file      Local file D:\iei_user.gho

Current file          3288 xpob2res.dll
```

Figure A-36: Backup System

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


X:\Windows\System32\cmd.exe

```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:2

System backup complete!
Press any key to continue . . .
```

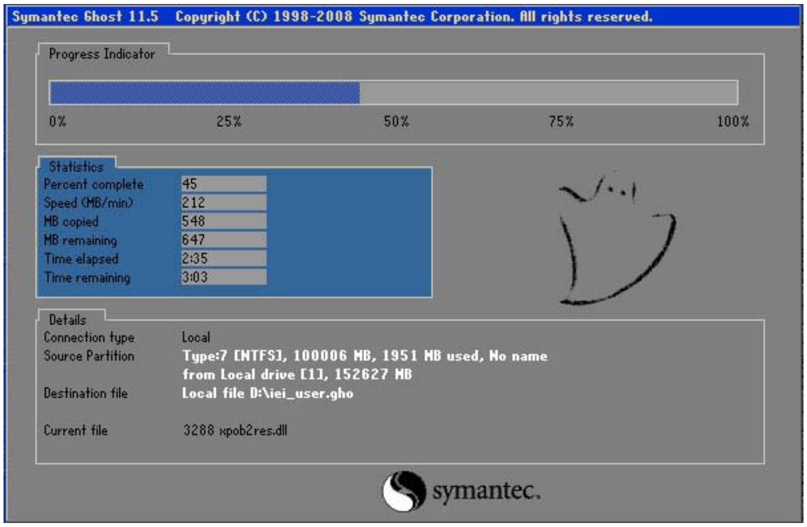
Figure A-37: System Backup Complete Window

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).

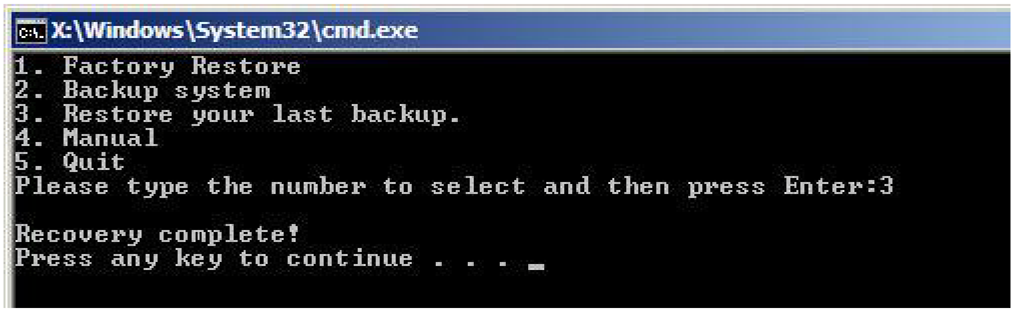

Symantec Ghost 11.5 Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.
Progress Indicator
0%
25%
50%
75%
100%
Statistics
Details
symantec.

Percent complete	45
Speed (MB/min)	212
MB copied	548
MB remaining	647
Time elapsed	2:35
Time remaining	3:03

Connection type	Local
Source Partition	Type:7 [NTFS], 100006 MB, 1951 MB used, No name from Local drive [1], 152627 MB
Destination file	Local file D:\iei_user.gho
Current file	3288 xpob2res.dll

Figure A-38: Restore Backup

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



```
X:\Windows\System32\cmd.exe
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:3

Recovery complete!
Press any key to continue . . . _
```

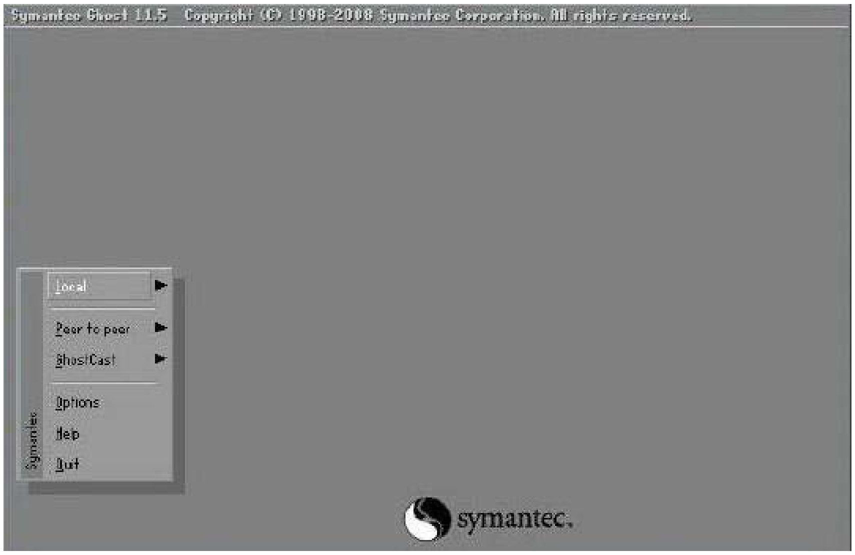
Figure A-39: Restore System Backup Complete Window

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.



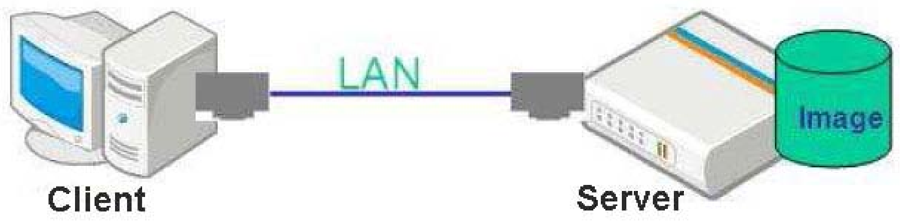
Symantec Ghost 11.5   Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.

Figure A-40: 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)

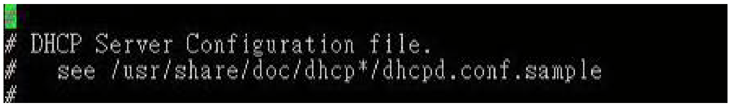
Step 2: Confirm the operating system default settings: dhcpd.conf.

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:

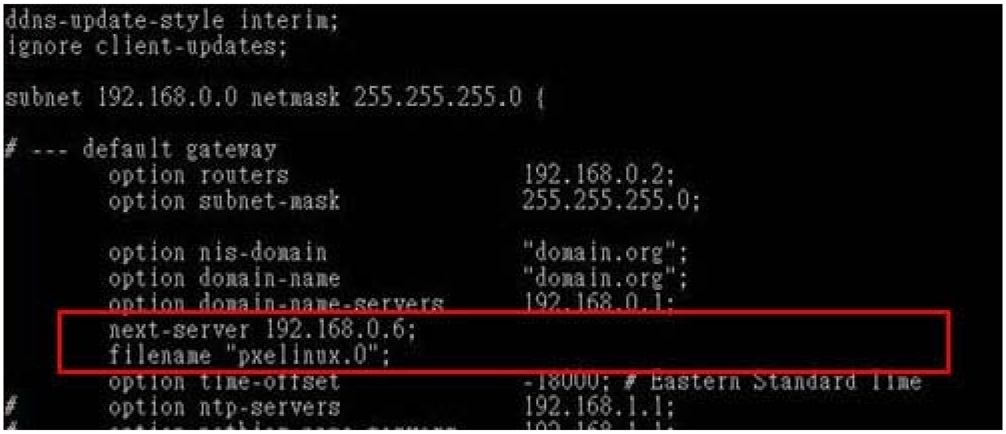


```
#
# DHCP Server Configuration file.
#   see /usr/share/doc/dhcp*/dhcpd.conf.sample
#
```

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



```
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;
```

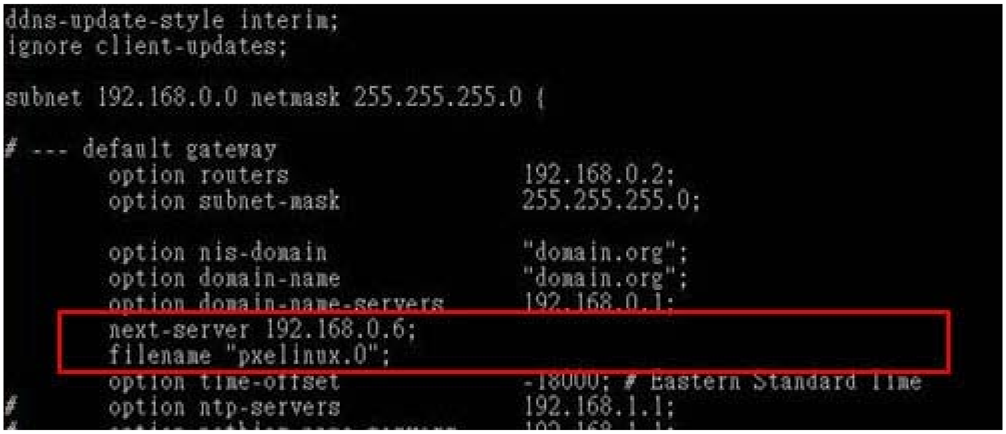
Debian

#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:

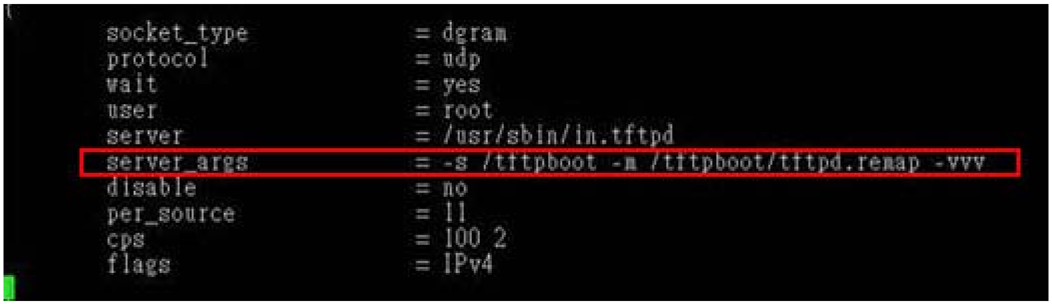
CentOS

#vi /etc/xinetd.d/tftp

Modify:

disable = no

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



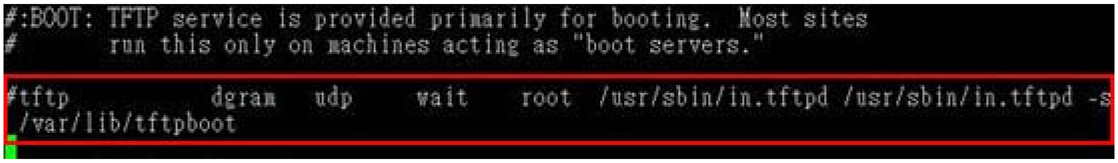
```
{
        socket_type             = dgram
        protocol                = udp
        wait                    = yes
        user                    = root
        server                  = /usr/sbin/in.tftpd
        server_args             = -s /tftpboot -m /tftpboot/tftpd.remap -vvv
        disable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

Debian

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

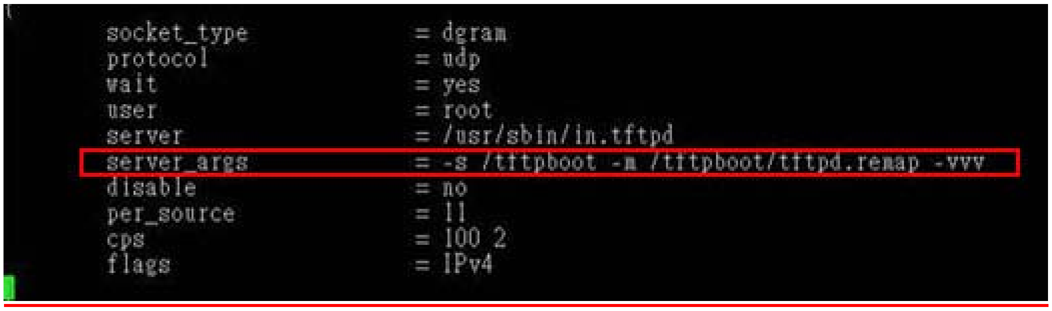
#vi /etc/inetd.conf

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



```
#:BOOT: TFTP service is provided primarily for booting.  Most sites
#       run this only on machines acting as "boot servers."

#tftp           dgram   udp     wait    root  /usr/sbin/in.tftpd /usr/sbin/in.tftpd -s
 /var/lib/tftpboot
```

#vi /etc/xinetd.d/tftp



```
{
        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
```

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).

RECOVERYR10.TAR.BZ2
bz2 Archive
197,416 KB

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

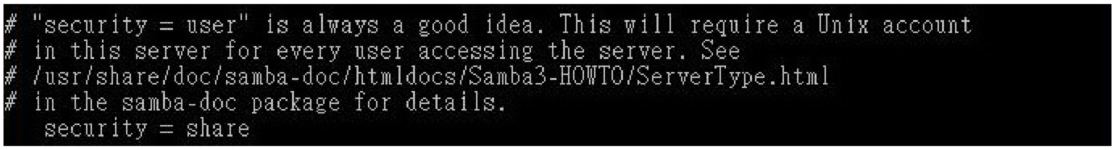
writable = yes

public = yes

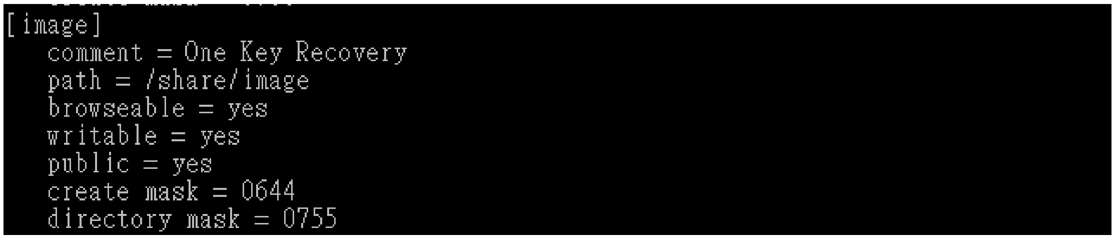
create mask = 0644

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: 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 2: 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.

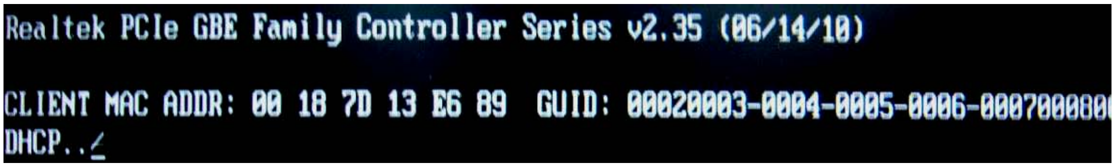
Step 3: Save changes and exit BIOS menu.

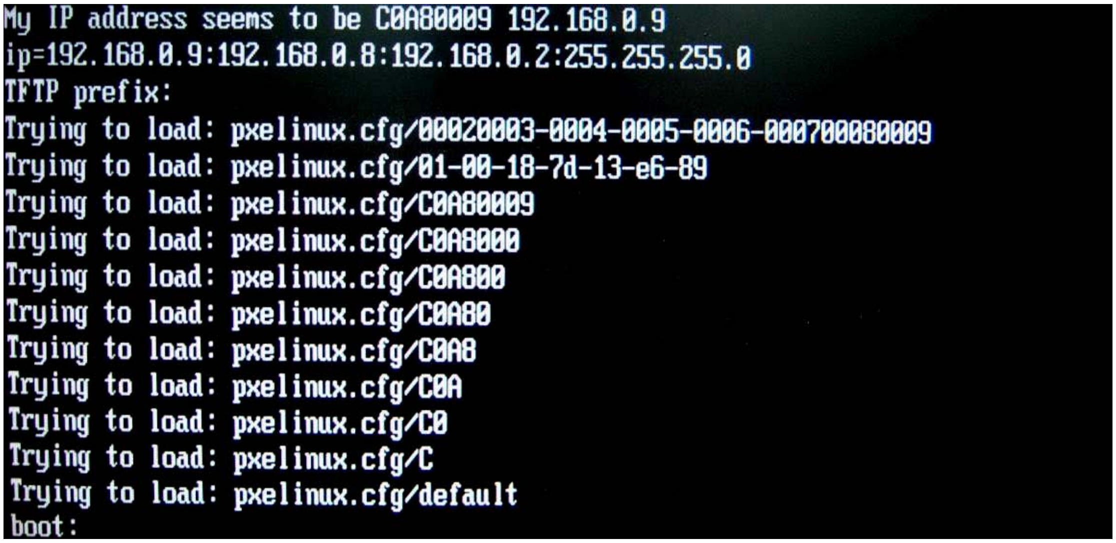
Exit → **Save Changes and Exit**

Step 4: 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.

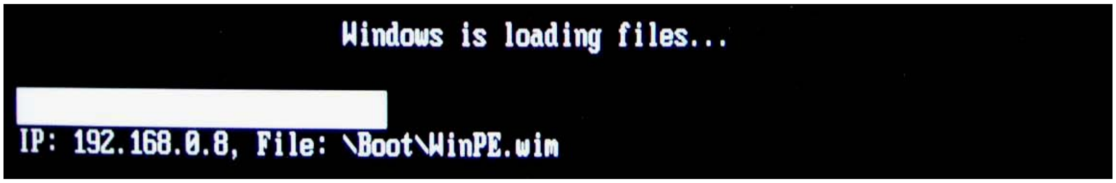
AUTORECOVERY-SETUP.EXE
Setup Launcher
IEI

Step 5: 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.

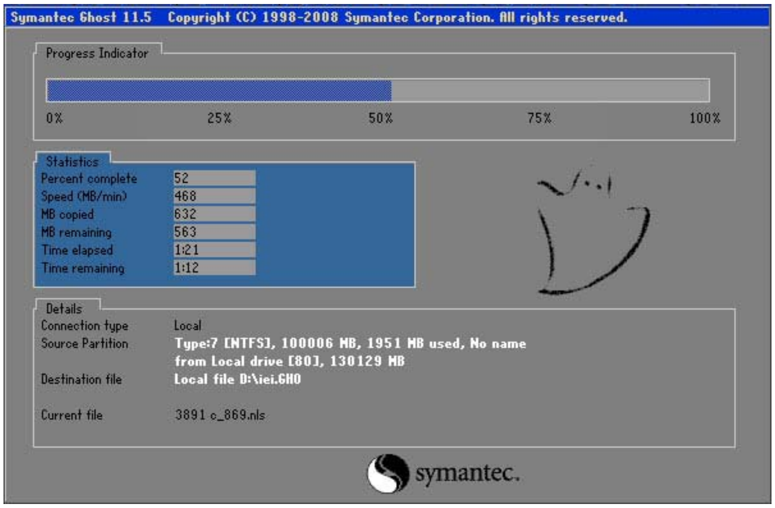

```
Realtek PCIe GBE Family Controller Series v2.35 (06/14/10)

CLIENT MAC ADDR: 00 18 7D 13 E6 89  GUID: 00020003-0004-0005-0006-000700080
DHCP..
```



```
My IP address seems to be C0A80009 192.168.0.9
ip=192.168.0.9:192.168.0.8:192.168.0.2:255.255.255.0
TFTP prefix:
Trying to load: pxelinux.cfg/00020003-0004-0005-0006-000700080009
Trying to load: pxelinux.cfg/01-00-18-7d-13-e6-89
Trying to load: pxelinux.cfg/C0A80009
Trying to load: pxelinux.cfg/C0A8000
Trying to load: pxelinux.cfg/C0A800
Trying to load: pxelinux.cfg/C0A80
Trying to load: pxelinux.cfg/C0A8
Trying to load: pxelinux.cfg/C0A
Trying to load: pxelinux.cfg/C0
Trying to load: pxelinux.cfg/C
Trying to load: pxelinux.cfg/default
boot:
```



```
                 Windows is loading files...

IP: 192.168.0.8, File: \Boot\WinPE.wim
```



Symantec Ghost 11.5   Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.

Percent complete	52
Speed (MB/min)	468
MB copied	632
MB remaining	563
Time elapsed	1:21
Time remaining	1:12

Connection type	Local
Source Partition	Type:7 [NTFS], 100006 MB, 1951 MB used, No name from Local drive [80], 130129 MB
Destination file	Local file D:\iei.GHO
Current file	3891 c_869.nls

NOTE:

A firewall or a SELinux is not in use in the whole setup process. 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

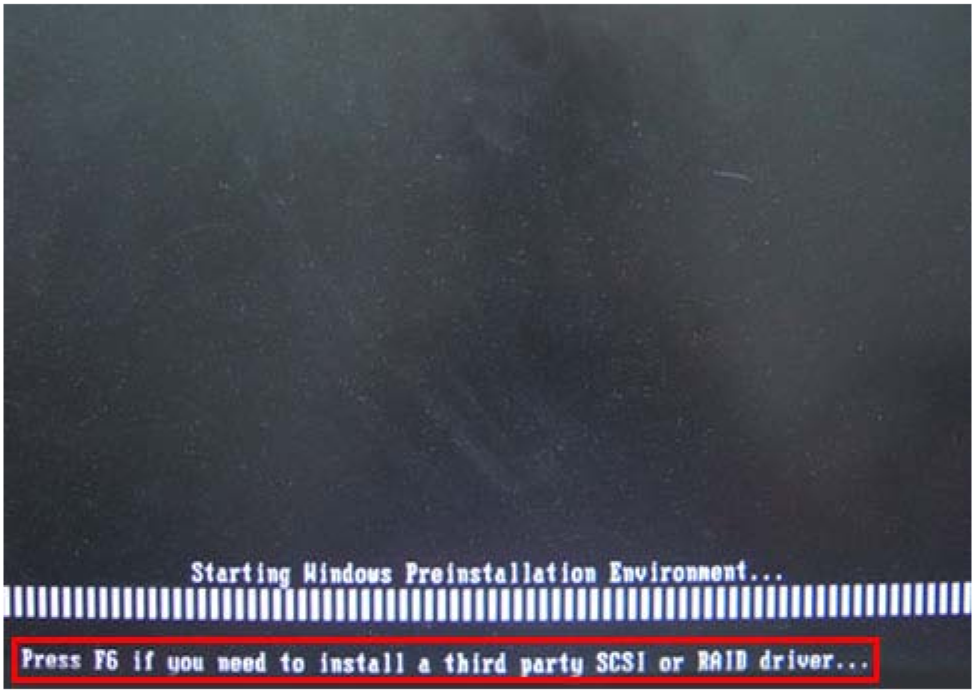
When the system uses AHCI mode or some specific SATA controllers such as ALi M5283 or VIA VT6421A, the SATA RAID/AHCI driver must be installed before using one key recovery. Please follow the steps below to install the SATA RAID/AHCI driver.

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.

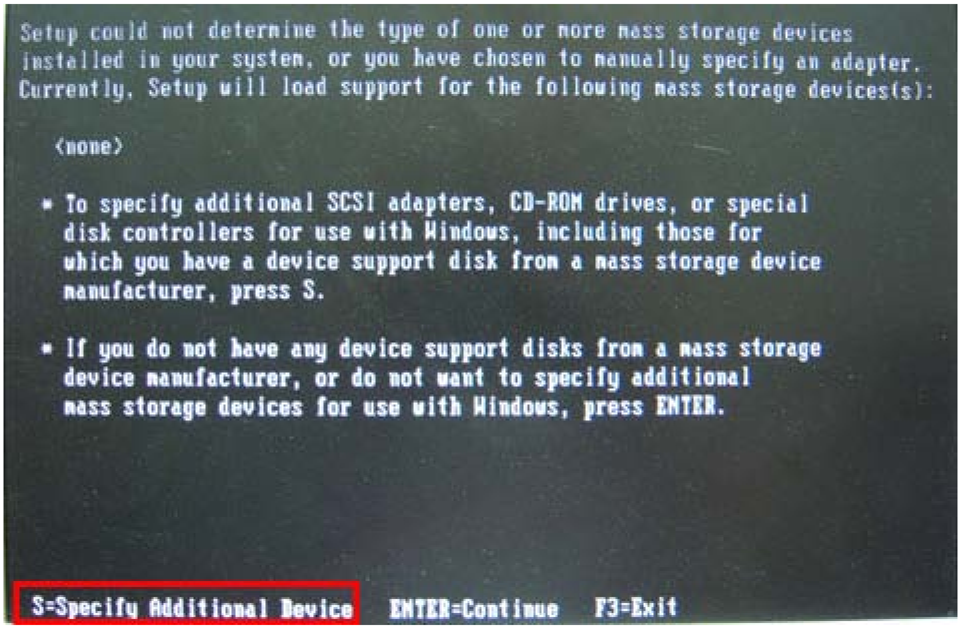
Step 4: When launching the recovery tool, press <**F6**>.



Starting Windows Preinstallation Environment...

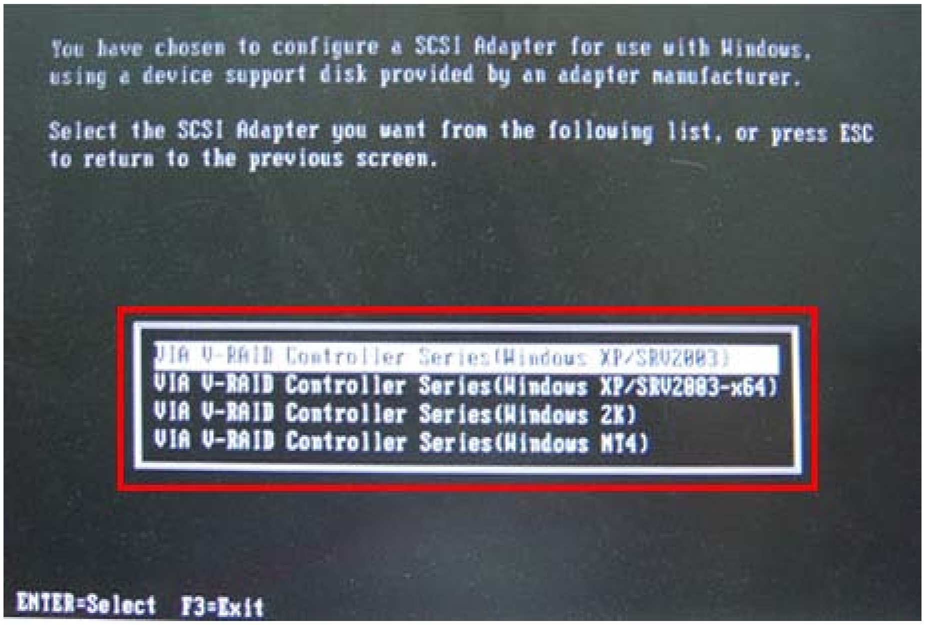
Press F6 if you need to install a third party SCSI or RAID driver...

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



```
Setup could not determine the type of one or more mass storage devices
installed in your system, or you have chosen to manually specify an adapter.
Currently, Setup will load support for the following mass storage devices(s):

   <none>

  * To specify additional SCSI adapters, CD-ROM drives, or special
    disk controllers for use with Windows, including those for
    which you have a device support disk from a mass storage device
    manufacturer, press S.

  * If you do not have any device support disks from a mass storage
    device manufacturer, or do not want to specify additional
    mass storage devices for use with Windows, press ENTER.

 S=Specify Additional Device   ENTER=Continue   F3=Exit
```

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.



```
  You have chosen to configure a SCSI Adapter for use with Windows,
  using a device support disk provided by an adapter manufacturer.

  Select the SCSI Adapter you want from the following list, or press ESC
  to return to the previous screen.

         VIA V-RAID Controller Series(Windows XP/SRV2003)
         VIA V-RAID Controller Series(Windows XP/SRV2003-x64)
         VIA V-RAID Controller Series(Windows 2K)
         VIA V-RAID Controller Series(Windows NT4)

 ENTER=Select  F3=Exit
```

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 TANK-700.

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 TANK-700 may result in permanent damage to the TANK-700 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the TANK-700. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the TANK-700 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.

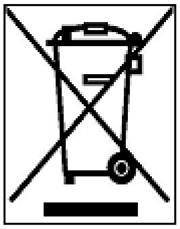
B.1.3 Product Disposal

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 TANK-700, please follow the guidelines below.

B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the TANK-700, please read the details below.

- The interior of the TANK-700 does not require cleaning. Keep fluids away from the TANK-700 interior.

- Be cautious of all small removable components when vacuuming the TANK-700.
- Turn the TANK-700 off before cleaning the TANK-700.
- Never drop any objects or liquids through the openings of the TANK-700.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the TANK-700.
- Avoid eating, drinking and smoking within vicinity of the TANK-700.

B.2.2 Cleaning Tools

Some components in the TANK-700 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 TANK-700.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the TANK-700.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol can be used to clean the TANK-700.
- ***Using solvents*** – The use of solvents is not recommended when cleaning the TANK-700 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 TANK-700. Dust and dirt can restrict the airflow in the TANK-700 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

Hazardous Materials Disclosure

C.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。