



MODEL:
TANK-6000-C226

Embedded system supports 22nm LGA1155 Intel® Xeon® E3 / Core™ i3 CPU, HDMI, VGA, GbE, Two USB 2.0, Four USB 3.0, Two COM and RoHS Compliant

User Manual

Revision

Date	Version	Changes
14 March 2014	1.00	Initial release

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Table of Contents

1 INTRODUCTION.....	1
1.1 OVERVIEW.....	2
1.2 MODEL VARIATIONS	2
1.3 FEATURES.....	3
1.4 TECHNICAL SPECIFICATIONS	3
1.5 FRONT PANEL.....	4
1.6 REAR PANEL.....	5
1.7 DIMENSIONS.....	7
2 UNPACKING	8
2.1 ANTI-STATIC PRECAUTIONS	9
2.2 UNPACKING PRECAUTIONS.....	9
2.3 UNPACKING CHECKLIST	10
3 INSTALLATION	12
3.1 INSTALLATION PRECAUTIONS	13
3.2 INSTALLATION AND CONFIGURATION STEPS	13
3.3 HARD DISK DRIVE (HDD) INSTALLATION.....	14
3.3.1 Serial ATA 2.0 Drive Installation.....	14
3.3.2 Serial ATA 3.0 Drive Installation.....	16
3.4 PCIe EXPANSION CARD INSTALLATION (OPTIONAL)	17
3.5 AT/ATX MODE SELECTION.....	19
3.5.1 AT Power Mode.....	19
3.5.2 ATX Power Mode	19
3.6 RESET THE SYSTEM	20
3.7 MOUNTING THE SYSTEM WITH MOUNTING BRACKETS	20
3.8 EXTERNAL PERIPHERAL INTERFACE CONNECTORS.....	21
3.8.1 Audio Connection.....	22
3.8.2 HDMI Device Connection.....	23
3.8.3 LAN Connection.....	23
3.8.4 DB-9 Serial Port Connection.....	24

TANK-6000-C226 Embedded System

3.8.5 USB Device Connection.....	25
3.8.6 VGA Monitor Connection	26
4 SYSTEM MOTHERBOARD	28
4.1 MOTHERBOARD LAYOUT.....	29
4.2 INTERNAL PERIPHERAL CONNECTORS	30
4.2.1 12 V Power Connector (CN1).....	30
4.2.2 Battery Connector (BAT1).....	31
4.2.3 BMC Debug Connector (J2_BMC).....	31
4.2.4 EC Debug Port Connector (CN2).....	31
4.2.5 Fan Connectors (CPU_FAN1, SYS_FAN2).....	32
4.2.6 Flash BIOS ROM Connector (JSP11).....	32
4.2.7 Flash EC ROM Connector (JSPI2).....	32
4.2.8 Flash BMC ROM Connector (SPI1).....	33
4.2.9 OLED Connector (OLED1).....	33
4.2.10 Power on Connector (CN3).....	33
4.2.11 Serial ATA 3.0 connectors (SATA1).....	34
4.3 EXTERNAL INTERFACE PANEL CONNECTORS	34
4.3.1 Audio Input & Output Connectors (MIC1, AUDIO1).....	35
4.3.2 DC-in Power Connector (U56).....	35
4.3.3 Ethernet Connectors (LAN1_2).....	35
4.3.4 Ethernet Connectors (LAN3, LAN4).....	36
4.3.5 External Fiber Connectors (SFPLAN1, SFPLAN 2).....	36
4.3.6 HDMI Connector (HDMI1).....	36
4.3.7 RS-232 Serial Port (COM1_2).....	37
4.3.8 USB 3.0 Connectors (USB_CON1, USB_CON2).....	37
4.3.9 USB 3.0 Connectors (USB_CON4).....	37
4.3.10 USB 2.0 Connectors (USB_CON3).....	38
4.3.11 VGA Connector (VGA1).....	38
5 BIOS.....	39
5.1 INTRODUCTION.....	40
5.1.1 Starting Setup.....	40
5.1.2 Using Setup	40
5.1.3 Getting Help.....	41

5.1.4	<i>Unable to Reboot after Configuration Changes</i>	41
5.1.5	<i>BIOS Menu Bar</i>	41
5.2	MAIN	42
5.3	ADVANCED	44
5.3.1	<i>ACPI Settings</i>	45
5.3.2	<i>RTC Wake Settings</i>	46
5.3.3	<i>CPU Information</i>	47
5.3.4	<i>SATA Configuration</i>	50
5.3.5	<i>Intel(R) Rapid Start Technology</i>	51
5.3.6	<i>AMT Configuration</i>	52
5.3.7	<i>USB Configuration</i>	53
5.3.8	<i>F81866 Super IO Configuration</i>	54
5.3.8.1	<i>Serial Port n Configuration</i>	55
5.3.9	<i>iWDD H/W Monitor</i>	57
5.3.9.1	<i>Smart Fan Mode Configuration</i>	58
5.3.10	<i>Serial Port Console Redirection</i>	59
5.3.11	<i>iEi Feature</i>	62
5.4	CHIPSET	63
5.4.1	<i>PCH-IO Configuration</i>	64
5.4.1.1	<i>PCH Azalia Configuration</i>	65
5.4.2	<i>System Agent (SA) Configuration</i>	66
5.4.2.1	<i>Graphics Configuration</i>	67
5.4.2.2	<i>NB PCIe Configuration</i>	70
5.4.2.3	<i>Memory Configuration</i>	71
5.5	BOOT	72
5.6	SECURITY	74
5.7	EXIT	74
A SAFETY PRECAUTIONS		76
A.1	SAFETY PRECAUTIONS	77
A.1.1	<i>General Safety Precautions</i>	77
A.1.2	<i>Anti-static Precautions</i>	78
A.1.3	<i>Product Disposal</i>	79
A.2	MAINTENANCE AND CLEANING PRECAUTIONS	79
A.2.1	<i>Maintenance and Cleaning</i>	79

TANK-6000-C226 Embedded System

A.2.2 <i>Cleaning Tools</i>	80
B BIOS MENU OPTIONS	81
C ONE KEY RECOVERY	84
C.1 ONE KEY RECOVERY INTRODUCTION	85
C.1.1 <i>System Requirement</i>	86
C.1.2 <i>Supported Operating System</i>	87
C.2 SETUP PROCEDURE FOR WINDOWS	88
C.2.1 <i>Hardware and BIOS Setup</i>	89
C.2.2 <i>Create Partitions</i>	89
C.2.3 <i>Install Operating System, Drivers and Applications</i>	93
C.2.4 <i>Building the Recovery Partition</i>	94
C.2.5 <i>Create Factory Default Image</i>	96
C.3 AUTO RECOVERY SETUP PROCEDURE.....	101
C.4 SETUP PROCEDURE FOR LINUX	105
C.5 RECOVERY TOOL FUNCTIONS	109
C.5.1 <i>Factory Restore</i>	110
C.5.2 <i>Backup System</i>	111
C.5.3 <i>Restore Your Last Backup</i>	112
C.5.4 <i>Manual</i>	113
C.6 RESTORE SYSTEMS FROM A LINUX SERVER THROUGH LAN	114
C.6.1 <i>Configure DHCP Server Settings</i>	115
C.6.2 <i>Configure TFTP Settings</i>	116
C.6.3 <i>Configure One Key Recovery Server Settings</i>	117
C.6.4 <i>Start the DHCP, TFTP and HTTP</i>	118
C.6.5 <i>Create Shared Directory</i>	118
C.6.6 <i>Setup a Client System for Auto Recovery</i>	119
C.7 OTHER INFORMATION	122
C.7.1 <i>Using AHCI Mode or ALi M5283 / VIA VT6421A Controller</i>	122
C.7.2 <i>System Memory Requirement</i>	124
D HAZARDOUS MATERIALS DISCLOSURE	125
D.1 HAZARDOUS MATERIALS DISCLOSURE TABLE FOR IPB PRODUCTS CERTIFIED AS ROHS COMPLIANT UNDER 2002/95/EC WITHOUT MERCURY	126

List of Figures

Figure 1-1: TANK-6000-C226	2
Figure 1-2: TANK-6000-C226 Front Panel	5
Figure 1-3: TANK-6000-C226 Rear Panel	6
Figure 1-4: Physical Dimensions (mm)	7
Figure 3-1: HDD Cover Retention Screws	14
Figure 3-2: HDD Bracket Retention Screws	15
Figure 3-3: Inserting the HDD	15
Figure 3-4: HDD Drive Bay	16
Figure 3-5: HDD Bracket Retention Screws	16
Figure 3-6: Installing the HDD	17
Figure 3-7: Unscrew the cover	17
Figure 3-8: Expansion Slot Retention Screw	18
Figure 3-9: Install PCIe Card	18
Figure 3-10: AT/ATX Switch Location	19
Figure 3-11: Reset Button Location	20
Figure 3-12: Mounting Bracket Retention Screws	21
Figure 3-13: Audio Connector	22
Figure 3-14: HDMI Connection	23
Figure 3-15: LAN Connection	24
Figure 3-16: DB-9 Serial Port Connector	25
Figure 3-18: USB Device Connection	26
Figure 3-19: VGA Connector	27
Figure 4-1: Motherboard Layout Diagram	29
Figure C-1: IEI One Key Recovery Tool Menu	85
Figure C-2: Launching the Recovery Tool	90
Figure C-3: Recovery Tool Setup Menu	90
Figure C-4: Command Prompt	91
Figure C-5: Partition Creation Commands	92
Figure C-6: Launching the Recovery Tool	94
Figure C-7: Manual Recovery Environment for Windows	94

Figure C-8: Building the Recovery Partition	95
Figure C-9: Press Any Key to Continue	95
Figure C-10: Press F3 to Boot into Recovery Mode	96
Figure C-11: Recovery Tool Menu	96
Figure C-12: About Symantec Ghost Window	97
Figure C-13: Symantec Ghost Path	97
Figure C-14: Select a Local Source Drive	98
Figure C-15: Select a Source Partition from Basic Drive	98
Figure C-16: File Name to Copy Image to	99
Figure C-17: Compress Image	99
Figure C-18: Image Creation Confirmation	100
Figure C-19: Image Creation Complete	100
Figure C-20: Image Creation Complete	100
Figure C-21: Press Any Key to Continue	101
Figure C-22: Auto Recovery Utility	102
Figure C-23: Launching the Recovery Tool	102
Figure C-24: Auto Recovery Environment for Windows	102
Figure C-25: Building the Auto Recovery Partition	103
Figure C-26: Factory Default Image Confirmation	103
Figure C-27: Image Creation Complete	104
Figure C-28: Press any key to continue	104
Figure C-29: Partitions for Linux	106
Figure C-30: Manual Recovery Environment for Linux	107
Figure C-31: Access menu.lst in Linux (Text Mode)	108
Figure C-32: Recovery Tool Menu	108
Figure C-33: Recovery Tool Main Menu	109
Figure C-34: Restore Factory Default	110
Figure C-35: Recovery Complete Window	111
Figure C-36: Backup System	111
Figure C-37: System Backup Complete Window	112
Figure C-38: Restore Backup	112
Figure C-39: Restore System Backup Complete Window	113
Figure C-40: Symantec Ghost Window	113

List of Tables

Table 1-1: Model Variations	2
Table 1-2: Technical Specifications	4
Table 2-1: Package List Contents	11
Table 4-1: Peripheral Interface Connectors	30
Table 4-2: 12 V Power Connector (CN1) Pinouts	30
Table 4-3: Battery Connector (BAT1) Pinouts	31
Table 4-4: BMC Debug Connector (J2_BMC) Pinouts	31
Table 4-5: EC Debug Port Connector (CN2) Pinouts	31
Table 4-6: Fan Connectors (CPU_FAN1, SYS_FAN2) Pinouts	32
Table 4-7: Flash BIOS ROM Connector (JSPI1) Pinouts	32
Table 4-8: Flash EC ROM Connector (JSPI2) Pinouts	32
Table 4-9: Flash BMC ROM Connector (SPI1) Pinouts	33
Table 4-10: OLED Connector (OLED1) Pinouts	33
Table 4-11: Power on Connector (CN3) Pinouts	33
Table 4-12: Serial ATA 3.0 connectors (SATA1) Pinouts	34
Table 4-13: Rear Panel Connectors	35
Table 4-14: Audio Input & Output Connectors (MIC1, AUDIO1) Pinouts	35
Table 4-15: DC-in Power Connector (U56) Pinouts	35
Table 4-16: Ethernet Connector (LAN1_2) Pinouts	35
Table 4-17: Ethernet Connector (LAN3, LAN4) Pinouts	36
Table 4-18: External Fiber Connectors (SFPLAN1, SFPLAN 2) Pinouts	36
Table 4-19: HDMI Connector (HDMI1) Pinouts	37
Table 4-20: RS-232 Serial Port (COM1_2) Pinouts	37
Table 4-21: USB 3.0 Connector (USB_CON1, USB_CON2) Pinouts	37
Table 4-22: USB 3.0 Connector (USB_CON4) Pinouts	38
Table 4-21: USB 3.0 Connector (USB_CON3) Pinouts	38
Table 4-23: VGA Connector (VGA1) Pinouts	38
Table 5-1: BIOS Navigation Keys	41

Chapter

1

Introduction

1.1 Overview



Figure 1-1: TANK-6000-C226

The TANK-6000-C226 embedded system is with one VGA port and one HDMI port for dual display. It accepts an Intel® Xeon® E3 / Core™ i3 CPU and supports four 240-pin DDR3 U-DIMM modules up to 64 GB. The TANK-6000-C226 supports one 2.5" SATA HDD with up to 3 Gb/s data transfer rate and two 2.5" SATA HDDs with up to 6 Gb/s data transfer rate. Two serial ports, two external USB 2.0 ports and four external USB 3.0 ports ensure simplified connectivity to a variety of external peripheral devices.

1.2 Model Variations

The model variations of the TANK-6000-C226 series are listed below.

Models	CPU
TANK-6000-C226i-E3/4G-R10	Intel® quad-core Xeon® E3-1225 v3 3.2GHz (TDP 84W)
TANK-6000-C226i-i3/4G-R10	Intel® dual-core Core™ i3- 4330 3.5GHz (TDP 54W)

Table 1-1: Model Variations

TANK-6000-C226 Embedded System

1.3 Features

The TANK-6000-C226 features are listed below:

- LGA1155 socket supports Intel® Xeon® E3 / Core™ i3 CPU (up to 95W CPU)
- 4 x 240-pin DDR3 U-DIMM (system max: 64GB)
- Extended temperature design supports -20°C to 55°C
- Easy to install Hard Disk Drive (HDD)
- USB 3.0 for high super speed data transfer
- Programmable OLED display
- RoHS compliant

1.4 Technical Specifications

The TANK-6000-C226 technical specifications are listed in **Table 1-2**.

Chassis	
Color	Black
Dimensions (WxHxD)	310 mm x 199.5 mm x 112 mm
System Fan	92 x 92 mm Fan
Chassis Construction	Extruded aluminum alloy Heavy duty steel sheet
Motherboard	
CPU	LGA1155 socket supports Intel® Xeon® E3 / Core™ i3 CPU (up to 95W CPU)
Chipset	Intel® C226
Memory	4 x 240-pin DDR3 U-DIMM (system max: 64GB)
Storage	
SATA	3 x 2.5" HDD/SSD storage (1 x SATA 3Gb/s, 2 x SATA 6Gb/s)

I/O interfaces	
USB	4 x USB 3.0 2 x USB 2.0
Ethernet	1 x RJ-45 for Intel® i217 PHY with AMT 8.0 supported 3 x RJ-45 for Intel® i210
RS-232	2 x RS-232 (DB-9 connector)
Display	1 x HDMI 1 x VGA
Audio	1 x Line out 1 x Mic
Other	SFP Fiber, COMBO with LAN1 & LAN2
Expansions	
PCIe	2 x PCIe by 8
Power	
Power Supply	19V/24V DC
Reliability	
Mounting	Wall mount
Operating Temperature	-20°C ~ 55°C with air flow (SSD)
Operating Humidity	10% ~ 90%, non-condensing
Operating Shock	Half-sine wave shock 5G, 11ms, 3 shocks per axis
Operating Vibration	MIL-STD-810F 514.5C-2 (with SSD)
Safety/EMC	CE/FCC
Supported OS	Microsoft® WES7E Microsoft® Windows® XP Embedded

Table 1-2: Technical Specifications

1.5 Front Panel

The front panel of the TANK-6000-C226 has the following features (**Figure 1-2**):

TANK-6000-C226 Embedded System

- 2 x HDD/SSD bay
- 1 x OLED display
- 1 x Power button
- 2 x USB 3.0 connectors

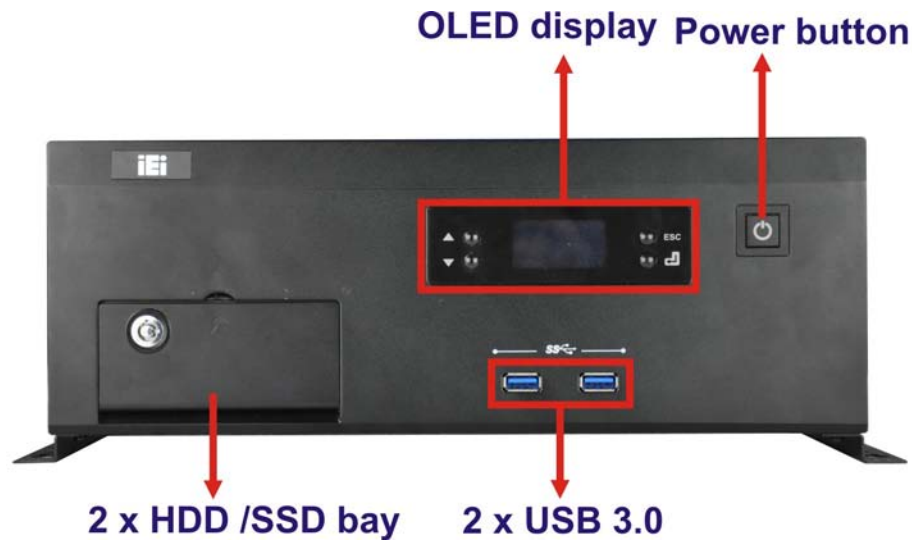


Figure 1-2: TANK-6000-C226 Front Panel

1.6 Rear Panel

The rear panel of the TANK-6000-C226 has the following features (**Figure 1-3**):

- 1 x 4-pin power jack for 19V/24V power input
- 1 x 4-pin terminal block for 19V/24V power input
- 1 x AT/ATX Switch
- 1 x HDMI port
- 1 x Line-out port (green)
- 1 x Mic-in port (pink)
- 1 x Reset button
- 2 x RJ-45 combo Gigabit LAN ports
- 2 x RJ-45 LAN connectors
- 2 x RS-232 (DB-9 connector)
- 2 x SFP Fiber combo Gigabit LAN ports
- 2 x USB 2.0 connectors
- 2 x USB 3.0 ports
- 1 x VGA port

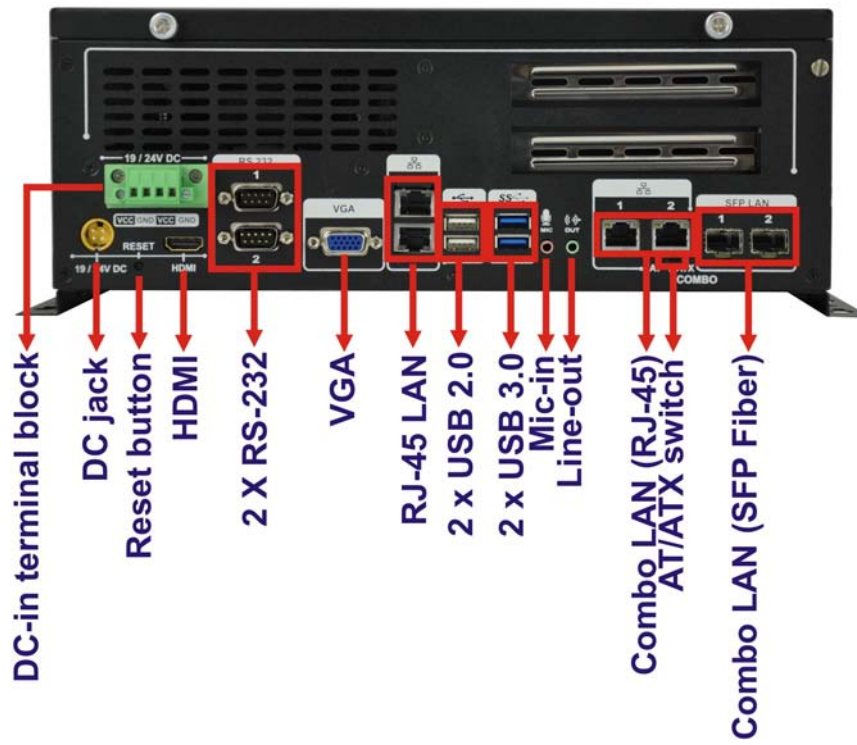


Figure 1-3: TANK-6000-C226 Rear Panel

TANK-6000-C226 Embedded System

1.7 Dimensions

The physical dimensions are shown below:

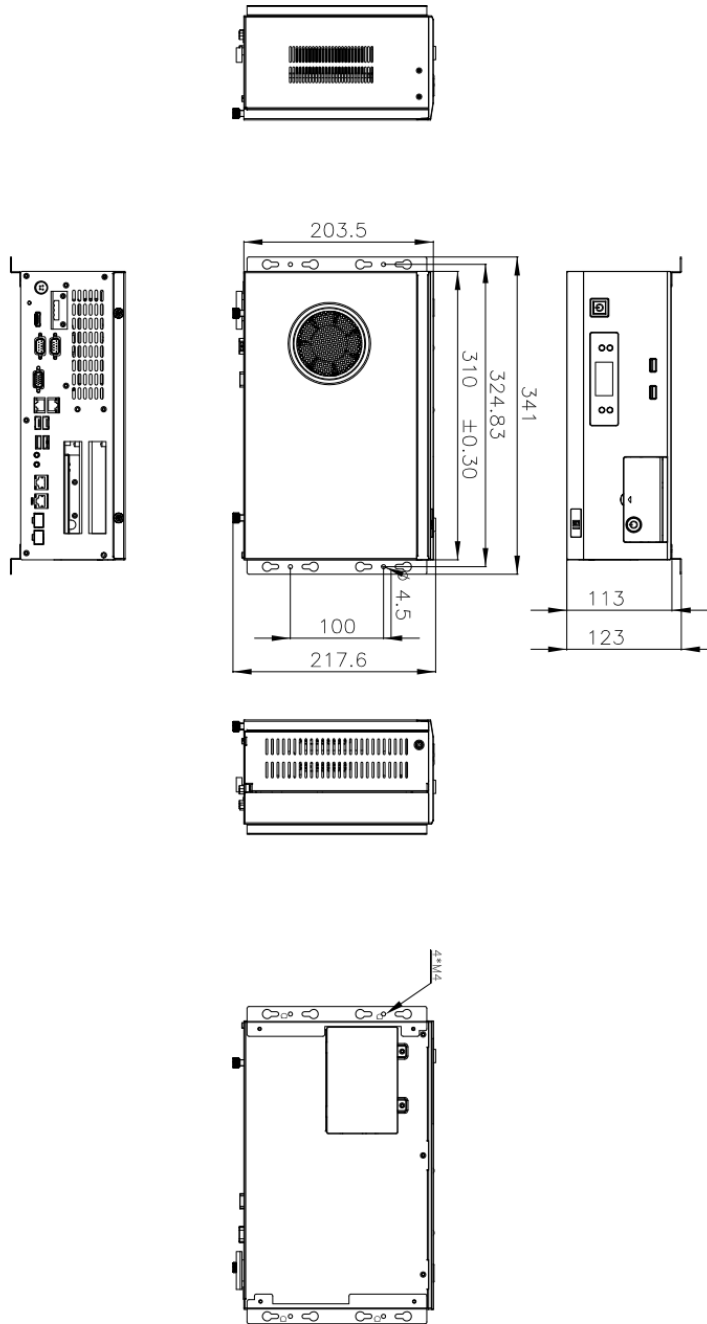


Figure 1-4: Physical Dimensions (mm)

Chapter

2

Unpacking

TANK-6000-C226 Embedded System

2.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during installation may result in permanent damage to the TANK-6000-C226 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the TANK-6000-C226. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the TANK-6000-C226 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-6000-C226, place it on an anti-static pad. This reduces the possibility of ESD damaging the TANK-6000-C226.

2.2 Unpacking Precautions

When the TANK-6000-C226 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-6000-C226 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-6000-C226 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-6000-C226 is shipped with the following components:

Quantity	Item and Part Number	Image
1	TANK-6000-C226 embedded system	
1	Power adapter (P/N: 63040-010220-000-RS)	
1	Power cord (P/N:32702-000200-100-RS)	
2	Mounting brackets (P/N: 41020-0378C2-00-RS)	
2	Keys	

TANK-6000-C226 Embedded System



Quantity	Item and Part Number	Image
1	Utility CD	
1	One Key Recovery CD	

Table 2-1: Package List Contents

Chapter

3

Installation

TANK-6000-C226 Embedded System

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-6000-C226, installation instructions and configuration options.
- **DANGER! Disconnect Power:** Power to the TANK-6000-C226 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-6000-C226 is opened while the power cord is still connected to an electrical outlet.
- **Qualified Personnel:** The TANK-6000-C226 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.
- **Grounding:** The TANK-6000-C226 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-6000-C226.

3.2 Installation and Configuration Steps

The following installation steps must be followed.

- Step 1:** Unpack the TANK-6000-C226.
- Step 2:** Install the HDD.
- Step 3:** Install the PCIe expansion card (Optional).
- Step 4:** Configure the system.
- Step 5:** Mount the TANK-6000-C226.
- Step 6:** Connect peripheral devices to the TANK-6000-C226.

3.3 Hard Disk Drive (HDD) Installation

3.3.1 Serial ATA 2.0 Drive Installation

To install the hard disk drive to the SATA 2.0 driver bay, please follow the steps below:

Step 1: Remove two retention screws from the HDD cover, as shown in **Figure 3-1**.



Figure 3-1: HDD Cover Retention Screws

Step 2: Remove the HDD cover from the device.

Step 3: Loosen two HDD bracket retention screws (**Figure 3-2**).

TANK-6000-C226 Embedded System



Figure 3-2: HDD Bracket Retention Screws

Step 4: Lift the HDD bracket out of the TANK-6000-C226 and slide the HDD to the HDD bracket (**Figure 3-3**).



Figure 3-3: Inserting the HDD

Step 5: Install the HDD bracket in the same position it was before and tighten the HDD bracket retention screws.

Step 6: Reinstall the HDD cover.

3.3.2 Serial ATA 3.0 Drive Installation

To install the hard disk drive to the SATA 3.0 driver bay, please follow the steps below:

Step 1: Unlock the HDD drive bay using the key. The keys can be found in the packing list.



Figure 3-4: HDD Drive Bay

Step 2: Loosen two HDD bracket retention screws and lift the HDD bracket out of the TANK-6000-C226.



Figure 3-5: HDD Bracket Retention Screws

Step 3: Slide the HDD to the HDD bracket and secure the HDD to the bracket using four retention screws.

TANK-6000-C226 Embedded System

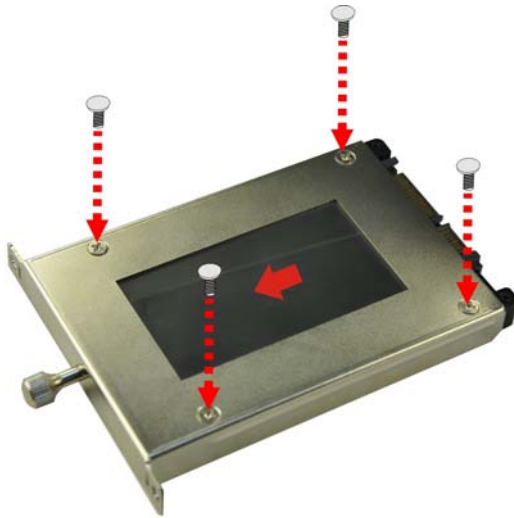


Figure 3-6: Installing the HDD

Step 4: Install the HDD bracket in the same position it was before and tighten the HDD bracket retention screws.

Step 5: Lock the HDD drive bay using the key

3.4 PCIe Expansion Card Installation (Optional)

To install a PCIe expansion card, please do the following.

Step 1: Loosen the two thumbscrews on the rear panel and remove the top cover. Then remove the two retention screws and open the side cover.



Figure 3-7: Unscrew the cover

- Step 2:** Remove the expansion slot cover. The expansion slot cover is secured to the system with a single retention screw. Remove the screw.



Figure 3-8: Expansion Slot Retention Screw

- Step 3:** Insert the expansion card. Align the PCIe expansion card edge connector with the PCIe expansion slot on the PCIe riser card. Gently insert the PCIe card into the PCIe expansion slot.
- Step 4:** Secure the expansion card. Once the PCIe card is correctly installed in the system, reinsert the previously removed retention screw to secure the card to the I/O interface panel.



Figure 3-9: Install PCIe Card

TANK-6000-C226 Embedded System

3.5 AT/ATX Mode Selection

AT or ATX power mode can be used on the TANK-6000-C226. The selection is made through an AT/ATX switch located on the rear panel. To select AT mode or ATX mode, follow the steps below.

Step 1: Locate the AT/ATX switch on the rear panel (**Figure 3-10**).



Figure 3-10: AT/ATX Switch Location

Step 2: Adjust the AT/ATX switch.

3.5.1 AT Power Mode

With the AT mode selected, the power is controlled by a central power unit rather than a power switch. The TANK-6000-C226 panel PC turns on automatically when the power is connected. The AT mode benefits a production line to control multiple panel PCs from a central management center and other applications including:

- ATM
- Self-service kiosk
- Plant environment monitoring system
- Factory automation platform
- Manufacturing shop flow

3.5.2 ATX Power Mode

With the ATX mode selected, the TANK-6000-C226 panel PC goes in a standby mode when it is turned off. The panel PC can be easily turned on via network or a power switch

in standby mode. Remote power control is perfect for advertising applications since the broadcasting time for each panel PC can be set individually and controlled remotely. Other possible application includes:

- Security surveillance
- Point-of-Sale (POS)
- Advertising terminal

3.6 Reset the System

The reset button enables user to reboot the system when the system is turned on. To reboot the system, follow the steps below.

Step 1: Locate the reset button on the rear panel (**Figure 3-11**).



Reset button

Figure 3-11: Reset Button Location

Step 2: Press the reset button.

3.7 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.

TANK-6000-C226 Embedded System

Step 3: Secure the brackets to the system by inserting two retention screws into each bracket as illustrated in **Figure 3-12**.



Figure 3-12: Mounting Bracket Retention Screws

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.

3.8 External Peripheral Interface Connectors

The following external peripheral devices can be connected to the external peripheral interface connectors.

- Audio devices
- HDMI devices
- RJ-45 Ethernet cable connector
- Serial devices
- USB devices
- VGA monitor

To install these devices, connect the corresponding cable connector from the actual device to the corresponding TANK-6000-C226 external peripheral interface connector making sure the pins are properly aligned.

3.8.1 Audio Connection

The audio jacks on the external audio connector enable the TANK-6000-C226 to be connected to a stereo sound setup. To install the audio devices, follow the steps below.

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

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

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

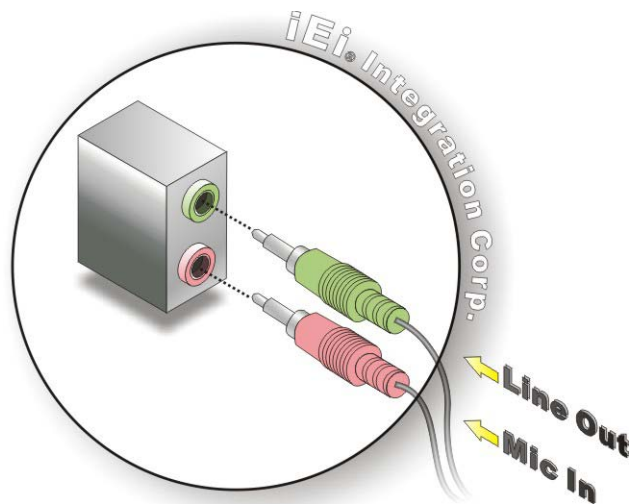


Figure 3-13: Audio Connector

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

TANK-6000-C226 Embedded System

3.8.2 HDMI Device Connection

The HDMI connector transmits a digital signal to compatible HDMI display devices such as a TV or computer screen. To connect the HDMI cable to the TANK-6000-C226, follow the steps below.

Step 1: Locate the HDMI connector. The location is shown in **Chapter 1**.

Step 2: Align the connector. Align the HDMI connector with the HDMI port. Make sure the orientation of the connector is correct.

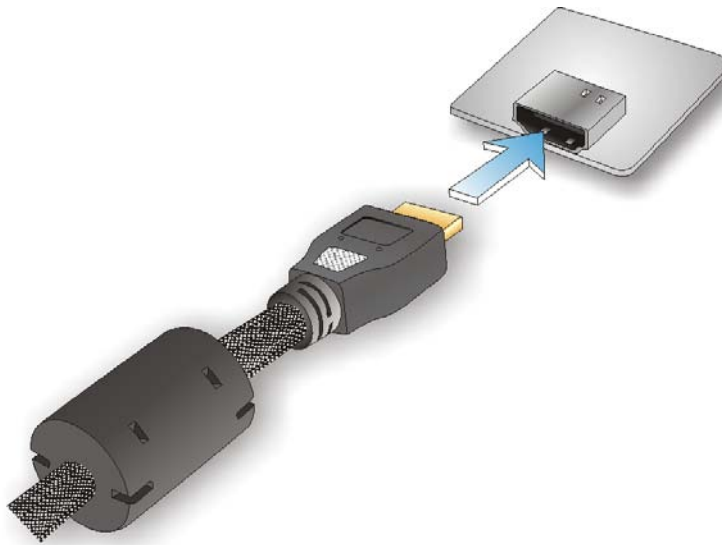


Figure 3-14: HDMI Connection

Step 3: Insert the HDMI connector. Gently insert the HDMI connector. The connector should engage with a gentle push. If the connector does not insert easily, check again that the connector is aligned correctly, and that the connector is being inserted with the right way up.

3.8.3 LAN Connection

There are four external RJ-45 LAN connectors on the TANK-6000-C226. The RJ-45 connector enables connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: **Locate the RJ-45 connectors.** The location of the LAN connector is shown in **Chapter 1**.

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the TANK-6000-C226. See **Figure 3-15**.

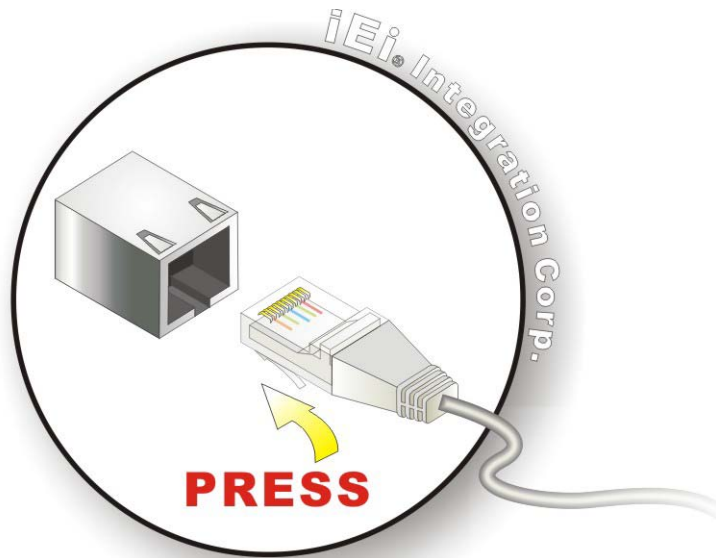


Figure 3-15: LAN Connection

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

3.8.4 DB-9 Serial Port Connection

There are two RS-232 DB-9 connectors on the TANK-6000-C226. Follow the steps below to connect a serial device to the DB-9 connector of the TANK-6000-C226.

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

Step 2: **Insert the serial connector.** Insert the DB-9 connector of a serial device into the DB-9 connector on the rear panel. See **Figure 3-16**.

TANK-6000-C226 Embedded System

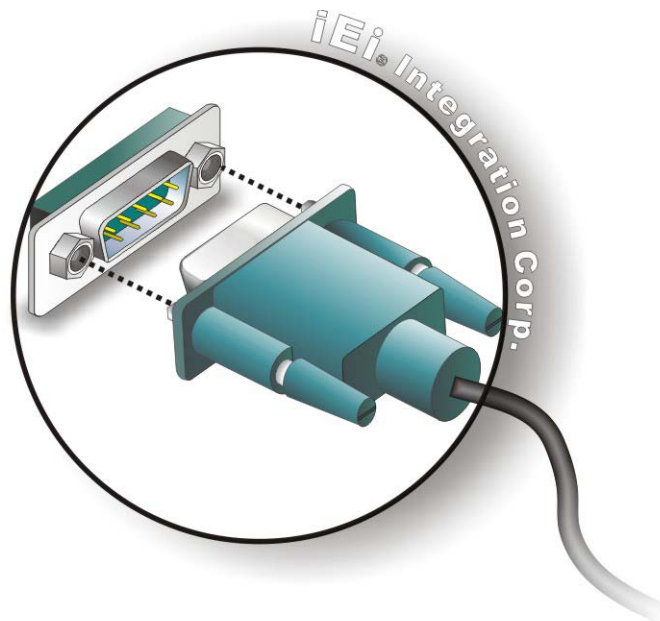


Figure 3-16: DB-9 Serial Port Connector

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

3.8.5 USB Device Connection



NOTE:

User must install the USB 3.0 driver before connecting a USB device to the system or else the system may not recognize the connected device.

There are four USB 3.0 connectors and two USB 2.0 connectors on the TANK-6000-C226. To connect a USB device, please follow the instructions below.

Step 1: Locate the USB connectors. The locations of the USB connectors are shown in **Chapter 1**.

Step 2: **Align the connectors.** Align the USB device connector with one of the connectors on the external peripheral interface. See **Figure 3-18**.

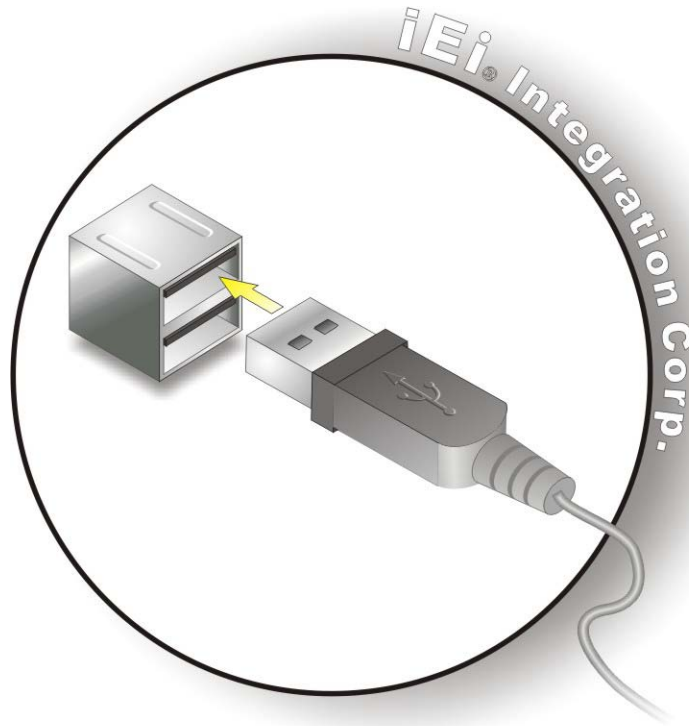


Figure 3-17: USB Device Connection

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

3.8.6 VGA Monitor Connection

The TANK-6000-C226 has one female DB-15 connectors on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the TANK-6000-C226, please follow the instructions below.

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

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.

TANK-6000-C226 Embedded System

Step 3: Insert the VGA connector. Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the TANK-6000-C226. See **Figure 3-19**.

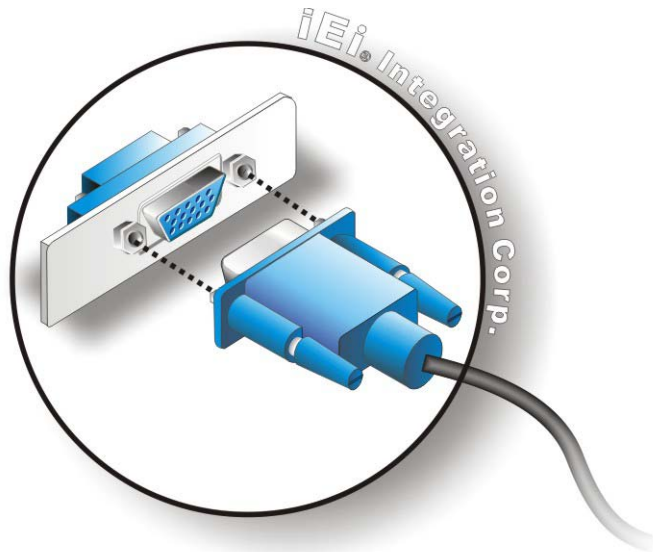


Figure 3-18: VGA Connector

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.

Chapter

4

System Motherboard

TANK-6000-C226 Embedded System

4.1 Motherboard Layout

The TANK-6000-C226 embedded system motherboard comes with a number of peripheral interface connectors and configuration jumpers. The connector locations are shown in **Figure 6-1**. The Pin 1 locations of the on-board connectors are also indicated in the diagrams. The connector pinouts for these connectors are listed in the following sections.

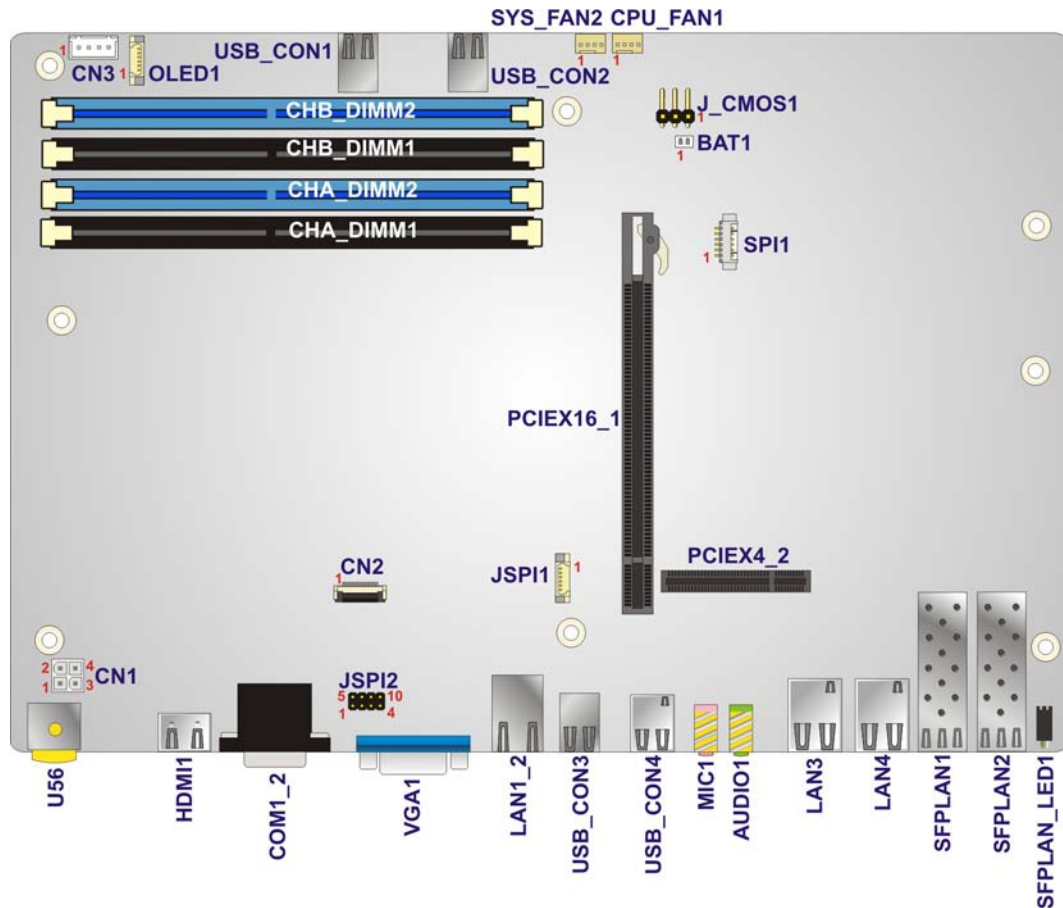


Figure 4-1: Motherboard Layout Diagram

4.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. The table below shows a list of the peripheral interface connectors on the TANK-6000-C226 motherboard. Pinouts of these connectors can be found in the following sections.

Connector	Type	Label
12 V power connector	4-pin Molex	CN1
Battery connector	2-pin wafer	BAT1
BMC debug connector	4-pin wafer	J2_BMC
EC debug port connector	20-pin FPC connector	CN2
Fan connectors	4-pin wafer	CPU_FAN1, SYS_FAN2
Flash BIOS ROM connector	6-pin wafer	JSPI1
Flash EC ROM connector	8-pin header	JSPI2
Flash BMC ROM connector	6-pin wafer	SPI1
OLED connector	6-pin wafer	OLED1
Power on connector	4-pin wafer	CN3
Serial ATA 3.0 connectors	Serial ATA 3.0 connector	SATA1

Table 4-1: Peripheral Interface Connectors

4.2.1 12 V Power Connector (CN1)

PIN NO.	DESCRIPTION
1	GND
2	GND
3	VIN
4	VIN

Table 4-2: 12 V Power Connector (CN1) Pinouts

4.2.2 Battery Connector (BAT1)

PIN NO.	DESCRIPTION
1	VBATT
2	GND

Table 4-3: Battery Connector (BAT1) Pinouts

4.2.3 BMC Debug Connector (J2_BMC)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	V_3P3_A	2	BMC_TXD5
3	BMC_RXD5	4	GND

Table 4-4: BMC Debug Connector (J2_BMC) Pinouts

4.2.4 EC Debug Port Connector (CN2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	EC_EPP_STB#	2	EC_EPP_PDO
3	EC_EPP_PD1	4	EC_EPP_PD2
5	EC_EPP_PD3	6	EC_EPP_PD4
7	EC_EPP_PD5	8	EC_EPP_PD6
9	EC_EPP_PD7	10	NC
11	EC_EPP_BUSY	12	EC_EPP_KSI5
13	EC_EPP_KSI4	14	EC_EPP_AFD#
15	NC	16	EC_EPP_INIT#
17	EC_EPP_SLIN#	18	GND
19	GND	20	GND

Table 4-5: EC Debug Port Connector (CN2) Pinouts

4.2.5 Fan Connectors (CPU_FAN1, SYS_FAN2)

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

Table 4-6: Fan Connectors (CPU_FAN1, SYS_FAN2) Pinouts

4.2.6 Flash BIOS ROM Connector (JSPI1)

PIN NO.	DESCRIPTION
1	+V3.3M_SPI_CON
2	SPI_CS#O_CN
3	SPI_SO_SW
3	SPI_CLK_SW
5	SPI_SI_SW
6	GND

Table 4-7: Flash BIOS ROM Connector (JSPI1) Pinouts

4.2.7 Flash EC ROM Connector (JSPI2)

PIN NO.	DESCRIPTION
1	+3.3V
2	SPI_CS#
3	SPI_SO
3	NC
5	GND
6	SPI_CLK
7	SPI_SI
8	NC

Table 4-8: Flash EC ROM Connector (JSPI2) Pinouts

TANK-6000-C226 Embedded System

4.2.8 Flash BMC ROM Connector (SPI1)

PIN NO.	DESCRIPTION
1	SPI_VCC
2	FLA_CS0_R
3	FLA_D2_R
3	FLA_D0_R
5	FLA_D1_R
6	GND

Table 4-9: Flash BMC ROM Connector (SPI1) Pinouts

4.2.9 OLED Connector (OLED1)

PIN NO.	DESCRIPTION
1	12VWidth
2	V_3P3_A
3	GND
3	OLED_RX
5	OLED_TX
6	GND

Table 4-10: OLED Connector (OLED1) Pinouts

4.2.10 Power on Connector (CN3)

PIN NO.	DESCRIPTION
1	PWRBTSW_BMC
2	GND
3	GND
4	V_3P3_STBY\G

Table 4-11: Power on Connector (CN3) Pinouts

4.2.11 Serial ATA 3.0 connectors (SATA1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
S1	GND	P5	GND
S2	SATA_TX2+_C	P6	GND
S3	SATA_TX2-_C	P7	+5V
S4	GND	P8	+5V
S5	SATA_RX2-_C	P9	+5V
S6	SATA_RX2+_C	P10	GND
S7	GND	P11	GND
P1	+3.3V	P12	GND
P2	+3.3V	P13	+12V
P3	+3.3V	P14	+12V
P4	GND	P15	+12V

Table 4-12: Serial ATA 3.0 connectors (SATA1) Pinouts

4.3 External Interface Panel Connectors

The table below lists the rear panel connectors on the TANK-6000-C226 motherboard. Pinouts of these connectors can be found in the following sections.

Connector	Type	Label
Audio input & output connectors	Audio jack	MIC1 , AUDIO1
DC-in power connector	4-pin Mini-DIN	U56
Ethernet connectors	RJ-45 (Combo)	LAN1_2
Ethernet connectors	RJ-45	LAN3, LAN4
External Fiber Connector	Fiber LAN port (Combo)	SFPLAN1 , SFPLAN 2
HDMI Connector	HDMI type A port	HDMI1
RS-232 serial port connector	Dual DB-9 Male	COM1_2
USB 3.0 connectors	USB 3.0 port	USB_CON1, USB_CON2, USB_CON4

TANK-6000-C226 Embedded System

Connector	Type	Label
USB 2.0 connector	Dual USB 2.0 port	USB_CON3
VGA connector	15-pin female	VGA1

Table 4-13: Rear Panel Connectors

4.3.1 Audio Input & Output Connectors (MIC1, AUDIO1)

PIN NO.	DESCRIPTION
MIC1 (Line_Out)	Connect this port to headphone or speaker
AUDIO1 (Microphone)	Connect this port to microphone

Table 4-14: Audio Input & Output Connectors (MIC1, AUDIO1) Pinouts

4.3.2 DC-in Power Connector (U56)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	Vin	2	Vin
3	GND	4	GND

Table 4-15: DC-in Power Connector (U56) Pinouts

4.3.3 Ethernet Connectors (LAN1_2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
A1	LAN1_MDI0P	B1	LAN2_MDI0P
A2	LAN1_MDI0N	B2	LAN2_MDI0N
A3	LAN1_MDI1P	B3	LAN2_MDI1P
A4	LAN1_MDI1N	B4	LAN2_MDI1N
A5	LAN1_MDI2P	B5	LAN2_MDI2P
A6	LAN1_MDI2N	B6	LAN2_MDI2N
A7	LAN1_MDI3P	B7	LAN2_MDI3P
A8	LAN1_MDI3N	B8	LAN2_MDI3N

Table 4-16: Ethernet Connector (LAN1_2) Pinouts

4.3.4 Ethernet Connectors (LAN3, LAN4)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
C1	LAN1_MDI0P	C5	LAN1_MDI2P
C2	LAN1_MDI0N	C6	LAN1_MDI2N
C3	LAN1_MDI1P	C7	LAN1_MDI3P
C4	LAN1_MDI1N	C8	LAN1_MDI3N

Table 4-17: Ethernet Connector (LAN3, LAN4) Pinouts

4.3.5 External Fiber Connectors (SFPLAN1, SFPLAN 2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	11	GND
2	SFP1_TXFAULT	12	PHY1_RX_N
3	SFP1_TXDIS	13	PHY1_RX_P
4	2_SPF0_I2C_DAT	14	GND
5	2_SPF0_I2C_CLK	15	V_3P3_FLAN
6	SFP1_MODDET#	16	V_3P3_FLAN
7	SFP1_RATESEL	17	GND
8	SFP1_LOS	18	PHY1_TX_P
9	GND	19	PHY1_TX_N
10	GND	20	GND

Table 4-18: External Fiber Connectors (SFPLAN1, SFPLAN 2) Pinouts

4.3.6 HDMI Connector (HDMI1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HDMI_DATA2	13	N/C
2	GND	14	N/C
3	HDMI_DATA2#	15	HDMI_SCL
4	HDMI_DATA1	16	HDMI_SDA
5	GND	17	GND
6	HDMI_DATA1#	18	+5V
7	HDMI_DATA0	19	HDMI_HPD

TANK-6000-C226 Embedded System

8	GND	20	HDMI_GND
9	HDMI_DATA0#	21	HDMI_GND
10	HDMI_CLK	22	HDMI_GND
11	GND	23	HDMI_GND
12	HDMI_CLK#		

Table 4-19: HDMI Connector (HDMI1) Pinouts

4.3.7 RS-232 Serial Port (COM1_2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	-NDCD1	10	-NDCD2
2	NSIN1	11	NSIN2
3	NSOUT1	12	NSOUT2
4	-NDTR1	13	-NDTR2
5	GND	14	GND
6	-NDSR1	15	-NDSR2
7	-NRTS1	16	-NRTS2
8	-NCTS1	17	-NCTS2
9	-XRI1	18	-XRI2

Table 4-20: RS-232 Serial Port (COM1_2) Pinouts

4.3.8 USB 3.0 Connectors (USB_CON1, USB_CON2)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	USB_DATA-
3	USB_DATA+	4	GND
5	USB3_RX-	6	USB3_RX+
7	GND	8	USB3_TX-
9	USB3_TX+		

Table 4-21: USB 3.0 Connector (USB_CON1, USB_CON2) Pinouts

4.3.9 USB 3.0 Connectors (USB_CON4)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION

1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

Table 4-22: USB 3.0 Connector (USB_CON4) Pinouts

4.3.10 USB 2.0 Connectors (USB_CON3)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	5	VCC
2	USB_DATA-	6	USB_DATA-
3	USB_DATA+	7	USB_DATA+
4	GND	8	GND

Table 4-23: USB 3.0 Connector (USB_CON3) Pinouts

4.3.11 VGA Connector (VGA1)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	NC	12	DDCDA
13	HSYNC	14	VSYNC
15	DDCCLK		

Table 4-24: VGA Connector (VGA1) Pinouts

Chapter

5

BIOS

5.1 Introduction

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



NOTE:

Some of the BIOS options may vary throughout the life cycle of the product and are subject to change without prior notice.

5.1.1 Starting Setup

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

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

If the message disappears before the **DEL** or **F2** key is pressed, restart the computer and try again.

5.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown in **Table 5-1**.

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

Key	Function
-	Decrease the numeric value or make changes
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 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Load previous values
F3 key	Load optimized defaults
F4 key	Save changes and Exit BIOS

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

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

5.1.4 Unable to Reboot after Configuration Changes

If the computer cannot boot after changes to the system configuration is made, CMOS defaults.

5.1.5 BIOS Menu Bar

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

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

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

5.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered.

The **Main** menu gives an overview of the basic system information.

TANK-6000-C226 Embedded System

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main  Advanced  Chipset  Boot  Security  Save & Exit

BIOS Information
BIOS Vendor          American Megatrends
Core Version         4.6.5.4
Compliancy           UEFI 2.3.1;PI 1.2
Project Version      SE71AR07.ROM
Build Date           12/20/2013 20:05:21

iWDD Vendor          iEi
iWDD Version         SE71ER16.bin

IPMI Module State    AST2400 is present

Processor Information
Name                 Haswell
Brand String         Intel(R) Core(TM) i7-477
Frequency            3100MHz
Processor ID         306c3
Stepping             C0
Number of Processors 4Core(s) / 8Thread(s)
Microcode Revision   16
GT Info              GT2 (700MHz)

IGFX VBIOS Version   2178
Memory RC Version    1.6.2.1
Total Memory         4096 MB (DDR3)
Memory Frequency     1600 Mhz

PCH Information
Name                 LynxPoint
PCH SKU              C226
Stepping             05/C2
LAN PHY Revision     A3

ME FW Version        9.0.22.1467
ME Firmware SKU      5MB

SPI Clock Frequency
DOFR Support         Supported
Read Status Clock Frequency 50MHz
Write Status Clock Frequency 50MHz
Fast Read Status Clock Frequency 50MHz

System Date          [Tue 01/14/2014]
System Time          [15:10:27]
Access Level         Administrator

Set the Date. Use Tab to
switch between Data
elements.

-----
<->: Select Screen
^ v: Select Item
EnterSelect
+ -: Change Opt.
F1:  General Help
F2:  Previous Values
F3:  Optimized Defaults
F4:  Save & Exit
ESC: Exit

Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
  
```

BIOS Menu 1: Main

The Main menu lists the following system details:

- BIOS Information
- Processor Information
- Memory Information
- PCH Information
- SPI Clock Frequency

The Main menu has two user configurable fields:

➔ System Date [xx/xx/xx]

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

➔ System Time [xx:xx:xx]

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

5.3 Advanced

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



WARNING!

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

TANK-6000-C226 Embedded System

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main  Advanced  Chipset  Boot  Security  Save & Exit

> ACPI Settings
> RTC Wake Settings
> CPU Configuration
> SATA Configuration
> Intel(R) Rapid Start Technology
> AMT Configuration
> USB Configuration
> F81866 Super IO Configuration
> iWDD H/W Monitor
> Serial Port Console Configuration
> iEi Feature

System ACPI Parameters
-----
<=>: Select Screen
↑↓: Select Item
EnterSelect
+ - Change Opt.
F1  General Help
F2  Previous Values
F3  Optimized Defaults
F4  Save & Exit
ESC Exit

Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
  
```

BIOS Menu 2: Advanced

5.3.1 ACPI Settings

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

```

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

ACPI Settings
ACPI Sleep State          [S1 only (CPU Stop C...)]

Select the highest ACPI
sleep state the system
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 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.
  
```

BIOS Menu 3: ACPI Configuration

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

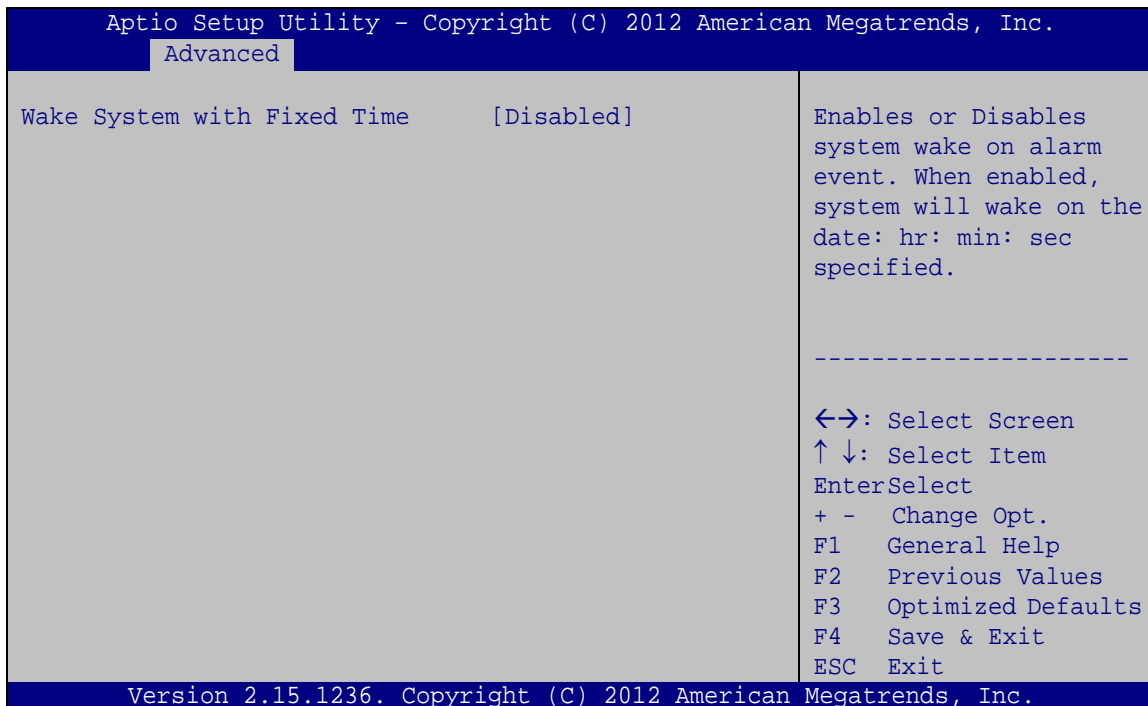
Use the **ACPI Sleep State** option to specify the sleep state the system enters when it is not being used.

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

5.3.2 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 4**) configures RTC wake event. The RTC wake function is supported in ACPI (S3/S4/S5) and APM soft off modes.



BIOS Menu 4: RTC Wake Settings

TANK-6000-C226 Embedded System

→ Wake System with Fixed Time [Disabled]

Use the **Wake System with Fixed Time** option to specify the time the system should be roused from a suspended state.

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

→ **Enabled** If selected, the following appears with values that can be selected:

*Wake up every day

*Wake up date

*Wake up hour

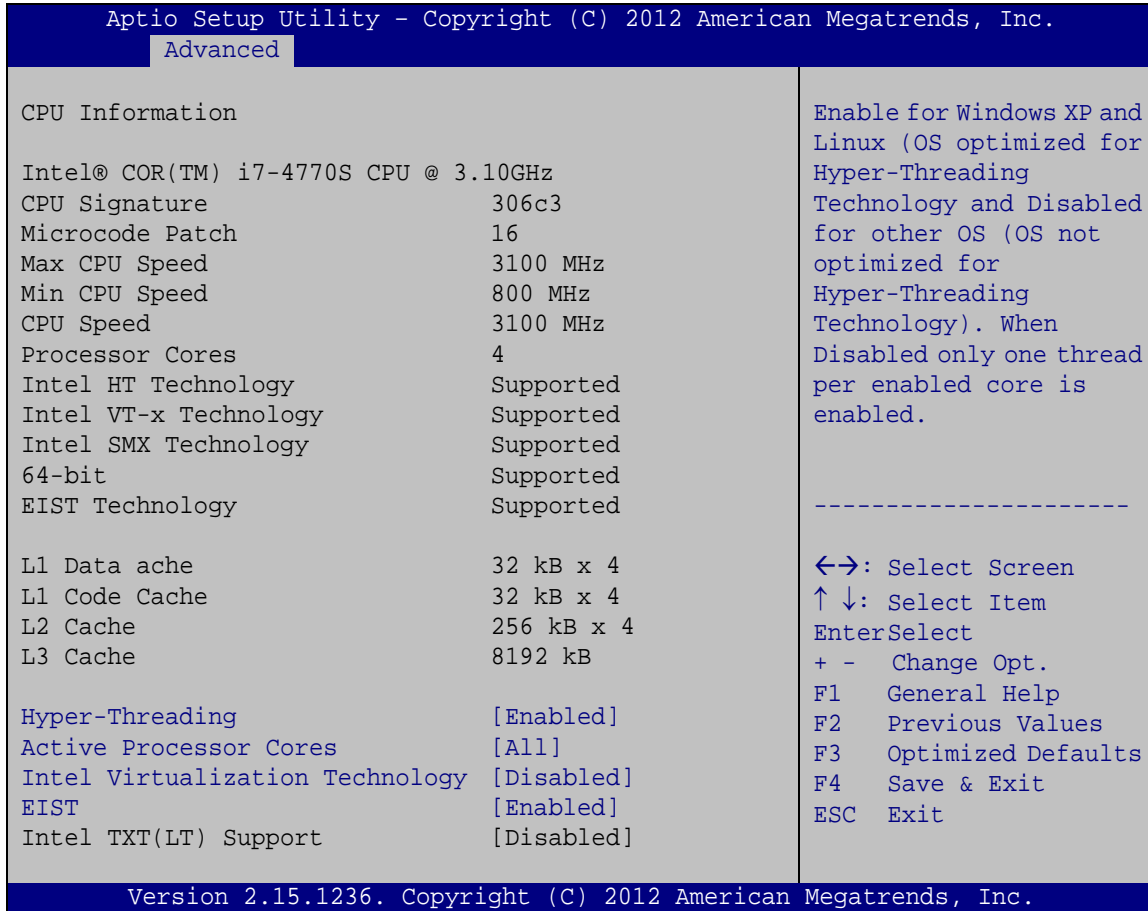
*Wake up minute

*Wake up second

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

5.3.3 CPU Information

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



BIOS Menu 5: CPU Information

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

- Processor Type: Lists the brand name of the CPU being used
- CPU Signature: Lists the CPU signature value.
- Microcode Patch: Lists the microcode patch being used.
- Max CPU Speed: Lists the maximum CPU processing speed.
- Min CPU Speed: Lists the minimum CPU processing speed.
- CPU Speed: Lists the CPU processing speed.
- Processor Cores: Lists the number of the processor core
- Intel HT Technology: Indicates if Intel HT Technology is supported by the CPU.
- Intel VT-x Technology: Indicates if Intel VT-x Technology is supported by the CPU.

TANK-6000-C226 Embedded System

- Intel SMX Technology: Indicates if Intel SMX Technology is supported by the CPU.
- EIST Technology: Indicates if Enhanced Intel SpeedStep® Technology is supported by the CPU.
- L1 Data Cache: Lists the amount of data storage space on the L1 cache.
- L1 Code Cache: Lists the amount of code storage space on the L1 cache.
- L2 Cache: Lists the amount of storage space on the L2 cache.
- L3 Cache: Lists the amount of storage space on the L3 cache.

→ Hyper-threading [Enabled]

Use the **Hyper-threading** BIOS option to enable or disable the Intel Hyper-Threading Technology.

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

→ Active Processor Cores [All]

Use the **Active Processor Cores** BIOS option to enable numbers of cores in the processor package.

- **All** **DEFAULT** Enable all cores in the processor package.
- **1** Enable one core in the processor package.
- **2** Enable two cores in the processor package.
- **3** Enable three cores in the processor package.

→ 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.

➔ EIST [Enabled]

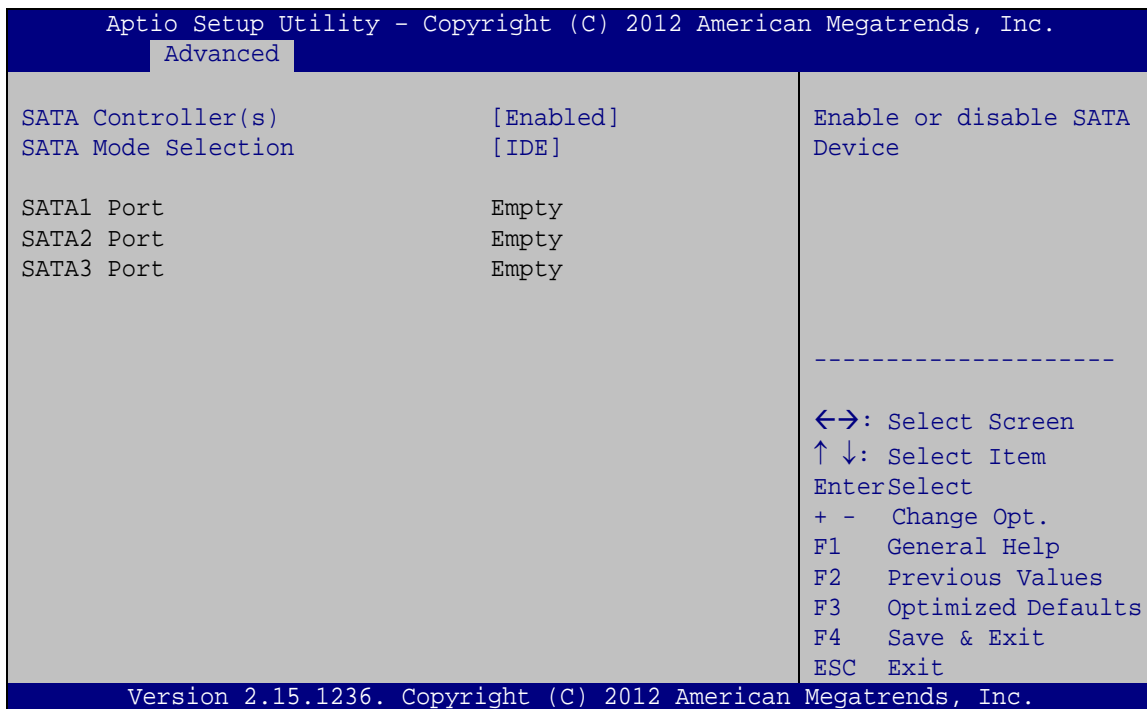
Use the **EIST** option to enable or disable Enhanced Intel SpeedStep® Techonology (EIST).

➔ **Disabled** Disables Enhanced Intel SpeedStep® Techonology.

➔ **Enabled** **DEFAULT** Enables Enhanced Intel SpeedStep® Techonology.

5.3.4 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.



BIOS Menu 6: SATA Configuration

➔ SATA Controller(s) [Enabled]

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

➔ **Enabled** **DEFAULT** Enables the on-board SATA controller.

TANK-6000-C226 Embedded System

➔ **Disabled** Disables the on-board SATA controller.

➔ SATA Mode Selection [IDE Mode]

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.

5.3.5 Intel(R) Rapid Start Technology

Use the **Intel(R) Rapid Start Technology** menu to configure Intel® Rapid Start Technology support.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Advanced
-----
Intel(R) Rapid Start Technology [Disabled]
Enable or disable
Intel(R) Rapid Start
Technology.

-----
<=>: Select Screen
↑↓: Select Item
Enter>Select
+ - Change Opt.
F1 General Help
F2 Previous Values
F3 Optimized Defaults
F4 Save & Exit
ESC Exit

Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
  
```

BIOS Menu 7: Intel(R) Rapid Start Technology

➔ Intel(R) Rapid Start Technology [Disabled]

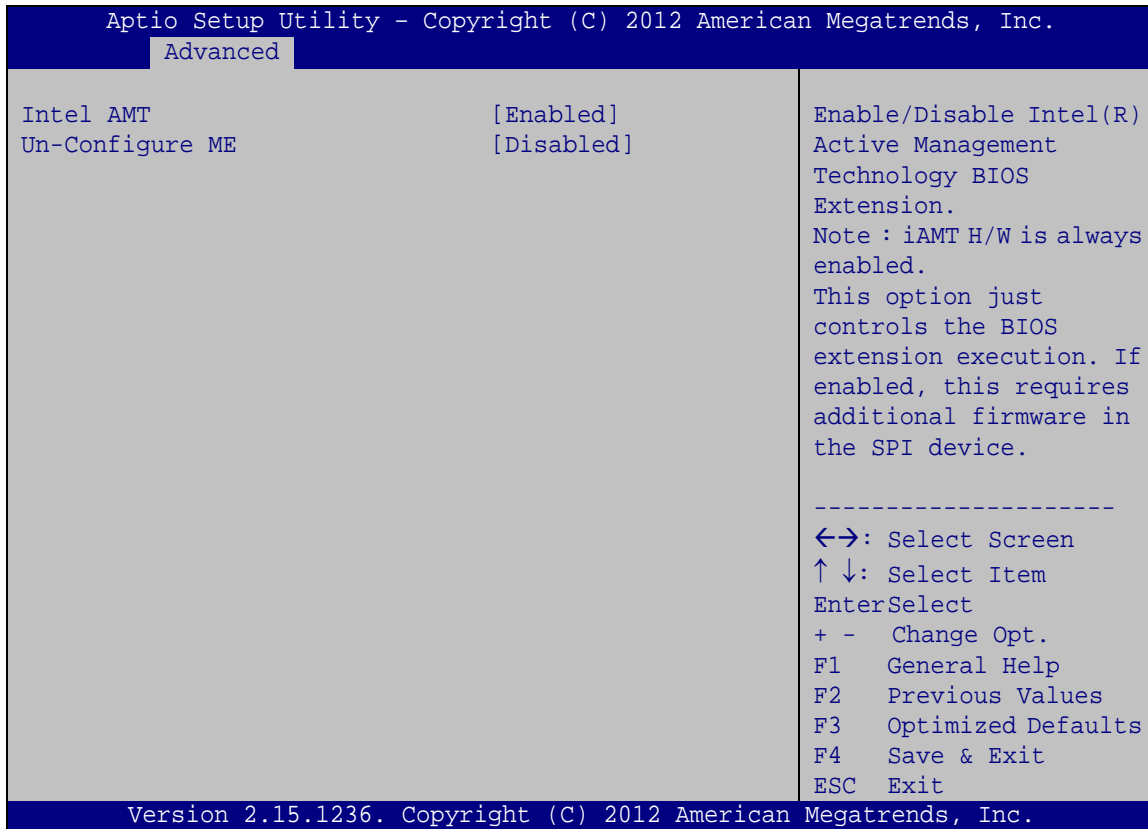
Use **Intel(R) Rapid Start Technology** option to enable or disable the Intel® Rapid Start Technology function.

➔ **Disabled** **DEFAULT** Intel® Rapid Start Technology is disabled

➔ **Enabled** Intel® Rapid Start Technology is enabled

5.3.6 AMT Configuration

The **AMT Configuration** submenu (**BIOS Menu 8**) allows Intel® Active Management Technology (AMT) options to be configured.



BIOS Menu 8: AMT Configuration

➔ Intel AMT [Enabled]

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

➔ **Disabled** Intel® AMT BIOS Extension is disabled

➔ **Enabled** **DEFAULT** Intel® AMT BIOS Extension is enabled

➔ Unconfigure ME [Disabled]

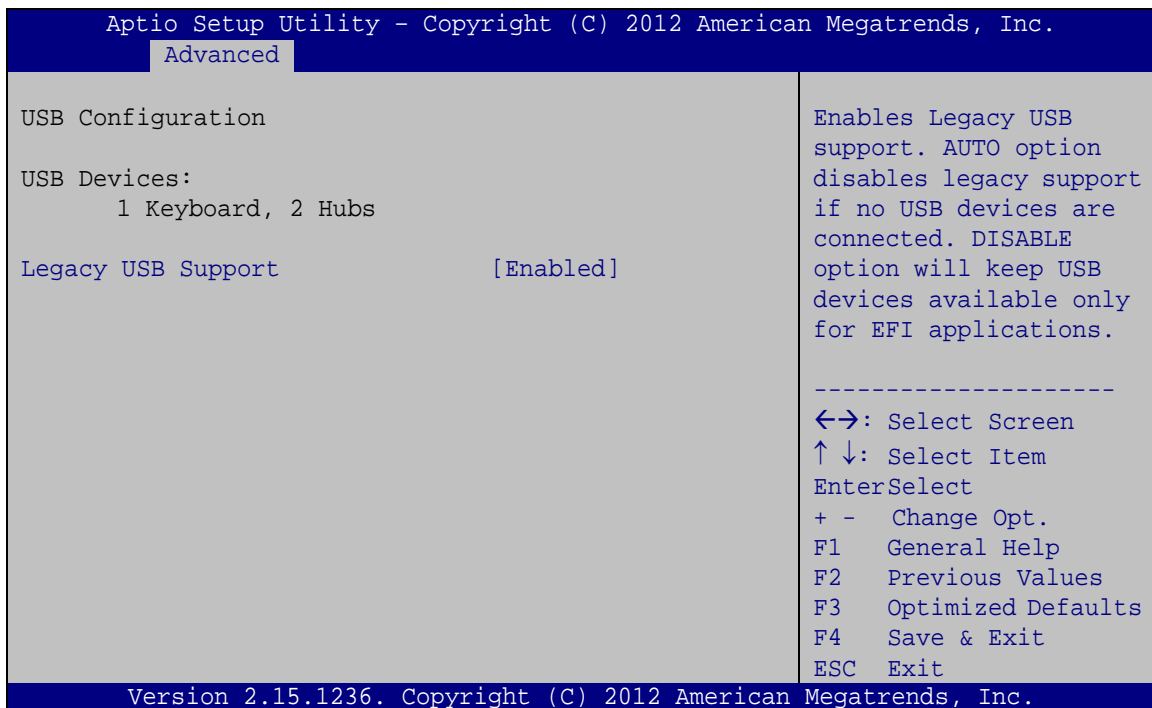
Use the **Unconfigure ME** option to perform ME unconfigure without password operation.

TANK-6000-C226 Embedded System

- ➔ **Disabled** **DEFAULT** Disable ME unconfigure
- ➔ **Enabled** Enable ME unconfigure

5.3.7 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 9**) to read USB configuration information and configure the USB settings.



BIOS Menu 9: USB Configuration

- ➔ USB Devices

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

- ➔ Legacy USB Support [Enabled]

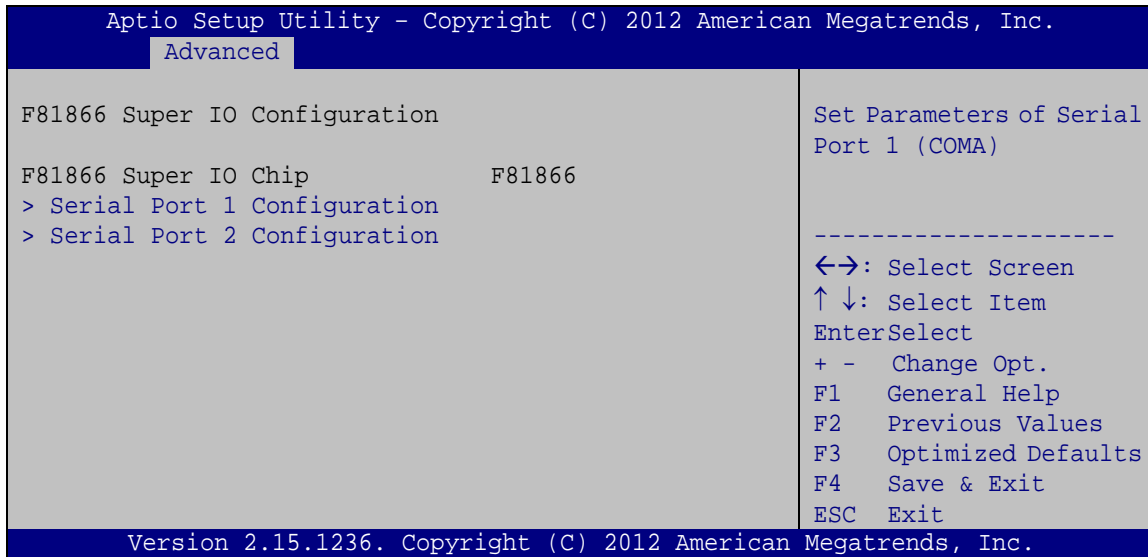
Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB

keyboard can control the system even when there is no USB driver loaded onto the system.

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

5.3.8 F81866 Super IO Configuration

Use the **F81866 Super IO Configuration** menu (**BIOS Menu 10**) to set or change the configurations for the FDD controllers, parallel ports and serial ports.

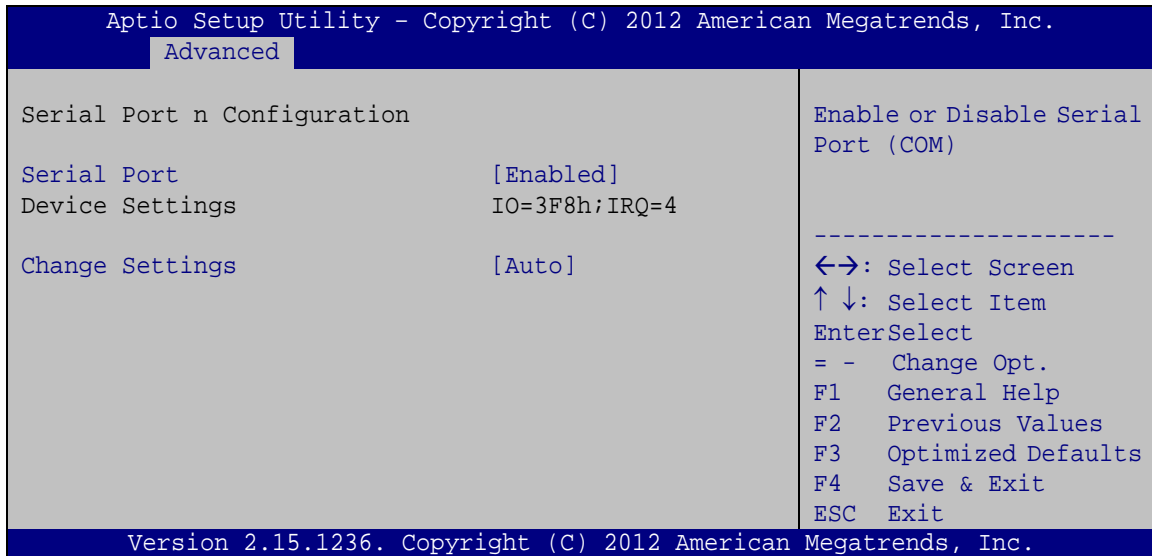


BIOS Menu 10: F81866 Super IO Configuration

TANK-6000-C226 Embedded System

5.3.8.1 Serial Port n Configuration

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



BIOS Menu 11: Serial Port n Configuration Menu

5.3.8.1.1 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=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

5.3.8.1.2 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

TANK-6000-C226 Embedded System

5.3.9 iWDD H/W Monitor

The **iWDD H/W Monitor** menu (**BIOS Menu 12**) contains the fan configuration submenus and displays operating temperature, fan speeds and system voltages.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
-----
Advanced
-----
PC Health Status
> Smart Fan Mode Configuration
CPU Temperature      :+49 C
SYS Temperature     :+27 C
CPU_FAN1 Speed      :709 RPM
SYS_FAN1 Speed      :N/A
CPU_CORE             :+1.743 V
+5V                  :+5.126 V
+12V                 :+12.175 V
DDR                  :+1.502 V
+5VSB                :+4.896 V
+3.3V                :+3.357 V
+3.3VSB              :+3.276 V

Smart Fan Mode Select
-----
<=>: Select Screen
↑ ↓: Select Item
EnterSelect
+ - Change Opt.
F1  General Help
F2  Previous Values
F3  Optimized Defaults
F4  Save & Exit
ESC Exit

Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

```

BIOS Menu 12: iWDD H/W Monitor

➔ PC Health Status

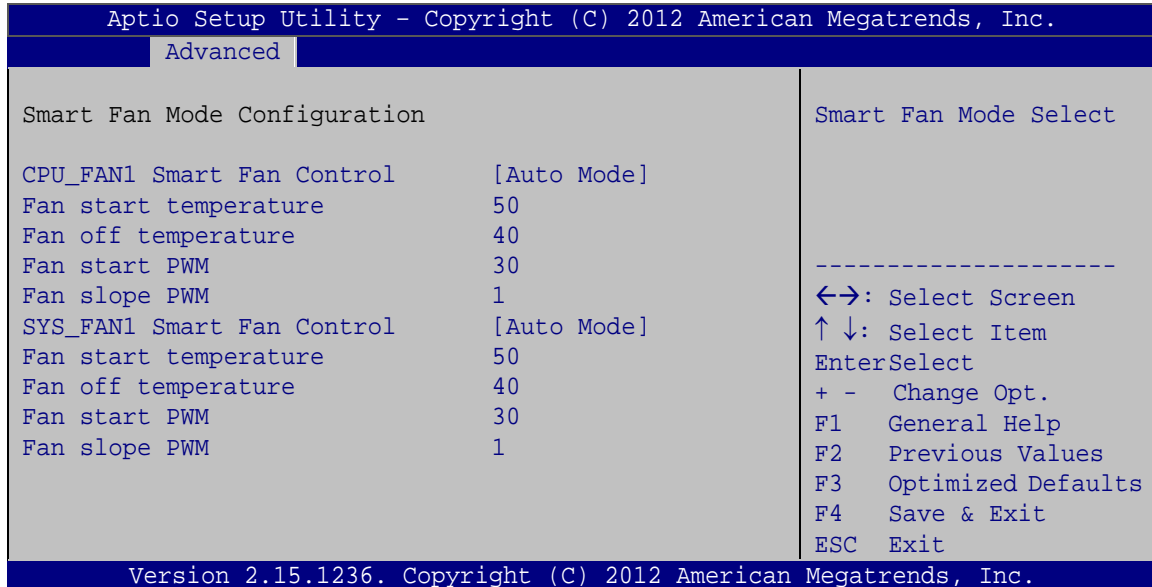
The following system parameters and values are shown. The system parameters that are monitored are:

- System Temperatures:
 - CPU Temperature
 - System Temperature
- Fan Speeds:
 - CPU Fan Speed
 - System Fan Speed
- Voltages:
 - CPU_CORE
 - +5V
 - +12V
 - DDR
 - +5VSB

- +3.3V
- +3.3VSB

5.3.9.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 13**) to configure smart fan temperature and speed settings.



BIOS Menu 13: Smart Fan Mode Configuration

➔ CPU_FAN1 Smart Fan Control/SYS_FAN1 Smart Fan Control [Auto Mode]

Use the **CPU_FAN1 Smart Fan Control/SYS_FAN1 Smart Fan Control** option to configure the CPU/System Smart Fan.

➔ **Auto Mode** **DEFAULT** The fan adjusts its speed using Auto Mode settings.

➔ **Manual Mode** The fan spins at the speed set in Manual Mode settings.

➔ Fan start/off temperature

Use the + or – key to change the **Fan start/off temperature** value. Enter a decimal number between 1 and 100.

TANK-6000-C226 Embedded System

➔ Fan start PWM

Use the + or – key to change the **Fan start PWM** value. Enter a decimal number between 1 and 128.

➔ Fan slope PWM

Use the + or – key to change the **Fan slope PWM** value. Enter a decimal number between 1 and 64.

5.3.10 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 14**) 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) 2012 American Megatrends, Inc.
  Advanced
COM1
  Console Redirection      [Disabled]
> Console Redirection Settings
  Console Redirection      [Disabled]
> Console Redirection Settings
COM2
  Console Redirection      [Disabled]
> Console Redirection Settings
COM3 (BMC)
  Console Redirection      [Disabled]
> Console Redirection Settings
iAMT SOL
COM8(Pci_Bus0,Dev22,Func3)
  Console Redirection      [Disabled]
> Console Redirection Settings
-----
<=>: Select Screen
↑ ↓: Select Item
Enter>Select
+/-: Change Opt.
F1  General Help
F2  Previous Values
F3  Optimized Defaults
F4  Save & Exit
ESC Exit
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```

BIOS Menu 14: 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

The following options are available in the **Console Redirection Settings** submenu when the Console Redirection option is enabled.

- Terminal Type [ANSI]

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

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

- Bits per second [115200]

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

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

- Data Bits [8]

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

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

- Parity [None]

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

TANK-6000-C226 Embedded System

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

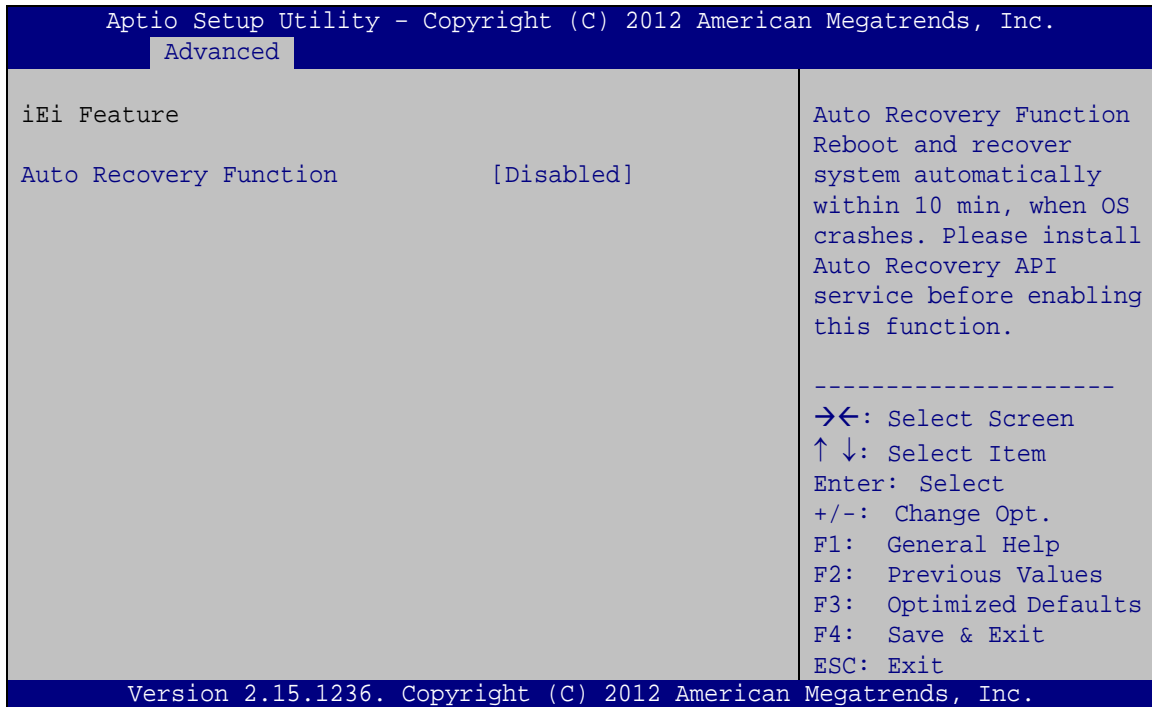
→ Stop Bits [1]

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

- | | | | |
|---|----------|----------------|------------------------------------|
| → | 1 | DEFAULT | Sets the number of stop bits at 1. |
| → | 2 | | Sets the number of stop bits at 2. |

5.3.11 iEi Feature

Use the **iEi Feature** menu (**BIOS Menu 15**) to configure IEI One Key Recovery function.



BIOS Menu 15: iEi Feature

→ Auto Recovery Function [Disabled]

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

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

TANK-6000-C226 Embedded System

5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 16**) to access the PCH-IO and System Agent (SA) Subsystem 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) 2012 American Megatrends, Inc.
Main   Advanced  Chipset  Boot   Security  Save & Exit
-----
> PCH-IO Configuration          PCH Parameters.
> System Agent (SA) Configuration

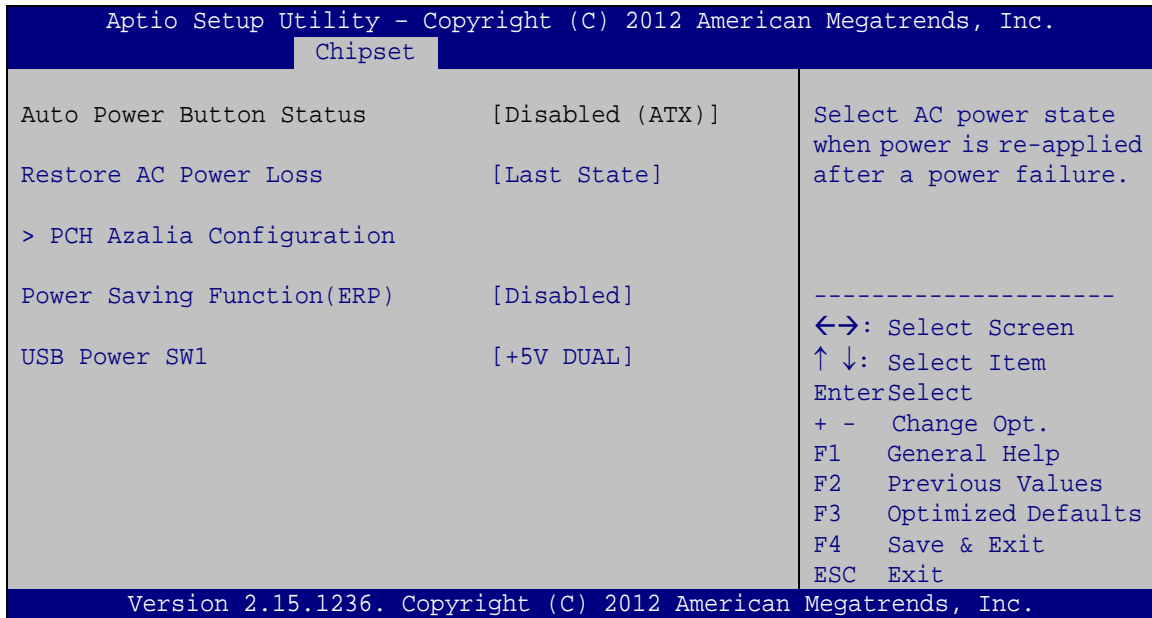
-----
<=>: Select Screen
↑ ↓: Select Item
EnterSelect
+ - Change Opt.
F1  General Help
F2  Previous Values
F3  Optimized Defaults
F4  Save & Exit
ESC Exit

Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
```

BIOS Menu 16: Chipset

5.4.1 PCH-IO Configuration

Use the **PCH-IO Configuration** menu (**BIOS Menu 17**) to configure the PCH chipset.



BIOS Menu 17: PCH-IO Configuration

→ Restore on AC Power Loss [Last State]

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

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

→ Power Saving Function [Disabled]

Use the **Power Saving Function** BIOS option to enable or reduce power consumption in the S5 state. When enabled, the system can only be powered-up using the power button.

- **Disabled** **DEFAULT** Power Saving Function support disabled

TANK-6000-C226 Embedded System

➔ **Enabled** Power Saving Function support enabled

➔ USB Power SW1 [+5V DUAL]

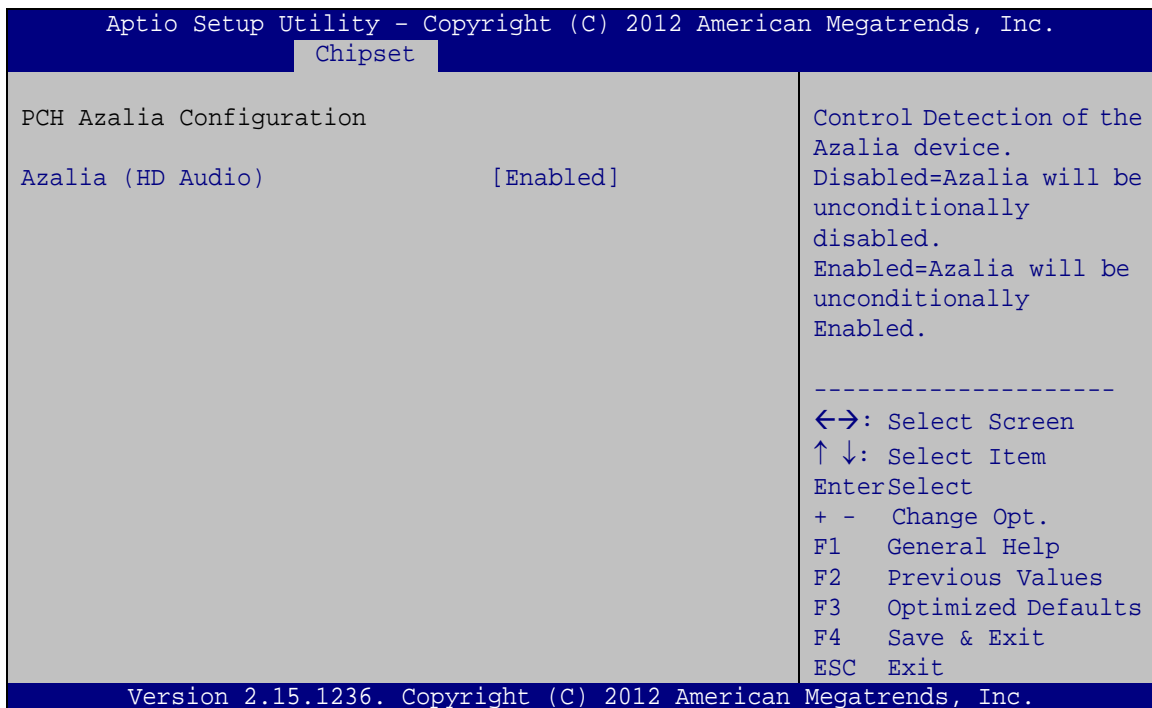
Use the **USB Power SW1** BIOS option to configure the USB power source for the corresponding USB connector.

➔ **+5V** Set the USB power source to +5V

➔ **+5V DUAL** **DEFAULT** Set the USB power source to +5V dual

5.4.1.1 PCH Azalia Configuration

Use the **PCH Azalia Configuration** submenu (**BIOS Menu 18**) to configure the PCH Azalia codec.



BIOS Menu 18: PCH Azalia Configuration

➔ Azalia [Enabled]

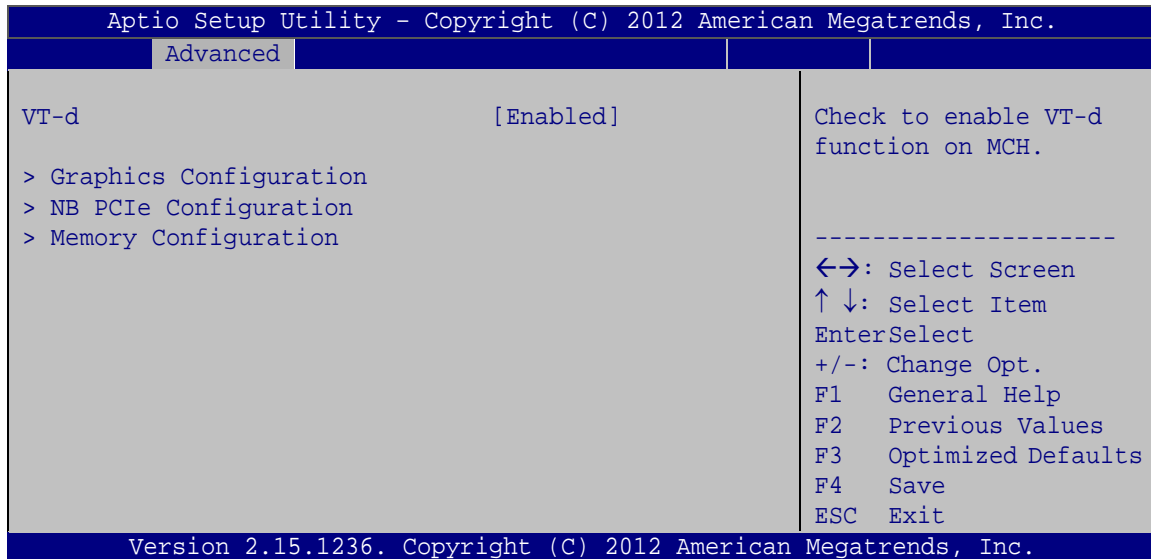
Use the **Azalia** option to enable or disable the High Definition Audio controller.

➔ **Disabled** The onboard High Definition Audio controller is disabled

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

5.4.2 System Agent (SA) Configuration

Use the **System Agent (SA) Configuration** menu (**BIOS Menu 19**) to configure the video device connected to the system.



BIOS Menu 19: System Agent (SA) Configuration

- ➔ VT-d [Enabled]

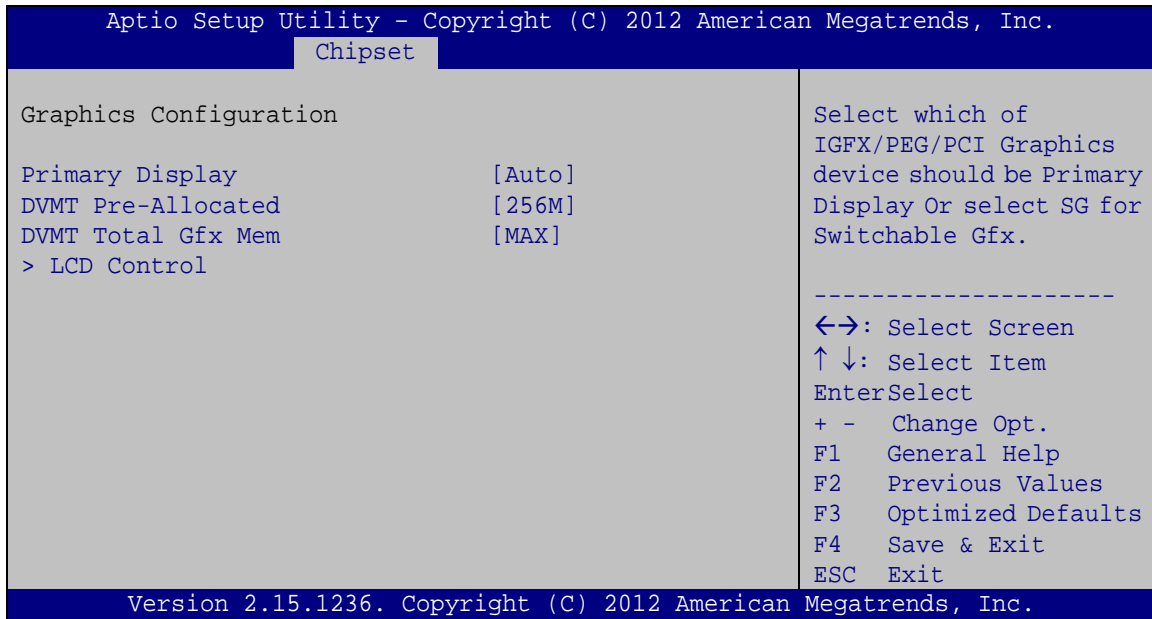
Use the **VT-d** option to enable or disable VT-d support.

- ➔ **Disabled** Disables VT-d support.
- ➔ **Enabled** **DEFAULT** Enables VT-d support.

TANK-6000-C226 Embedded System

5.4.2.1 Graphics Configuration

Use the **Graphics Configuration** submenu (**BIOS Menu 20**) to configure the graphics settings.



BIOS Menu 20: Graphics Configuration

→ Primary Display [Auto]

Use the **Primary Display** option to select the display device used by the system when it boots. Configuration options are listed below.

- Auto **DEFAULT**
- IGFX
- PEG
- PCIE/PCI

→ DVMT Pre-Allocated [256M]

Use the **DVMT Pre-Allocated** option to specify the amount of system memory that can be used by the internal graphics device.

- **32M** 32 MB of memory used by internal graphics device

TANK-6000-C226 Embedded System

- | | | | |
|---|-------------|----------------|---|
| → | 64M | | 64 MB of memory used by internal graphics device |
| → | 128M | | 128 MB of memory used by internal graphics device |
| → | 256M | DEFAULT | 256 MB of memory used by internal graphics device |
| → | 512M | | 512 MB of memory used by internal graphics device |
- DVMT Total Gfx Mem [Max]

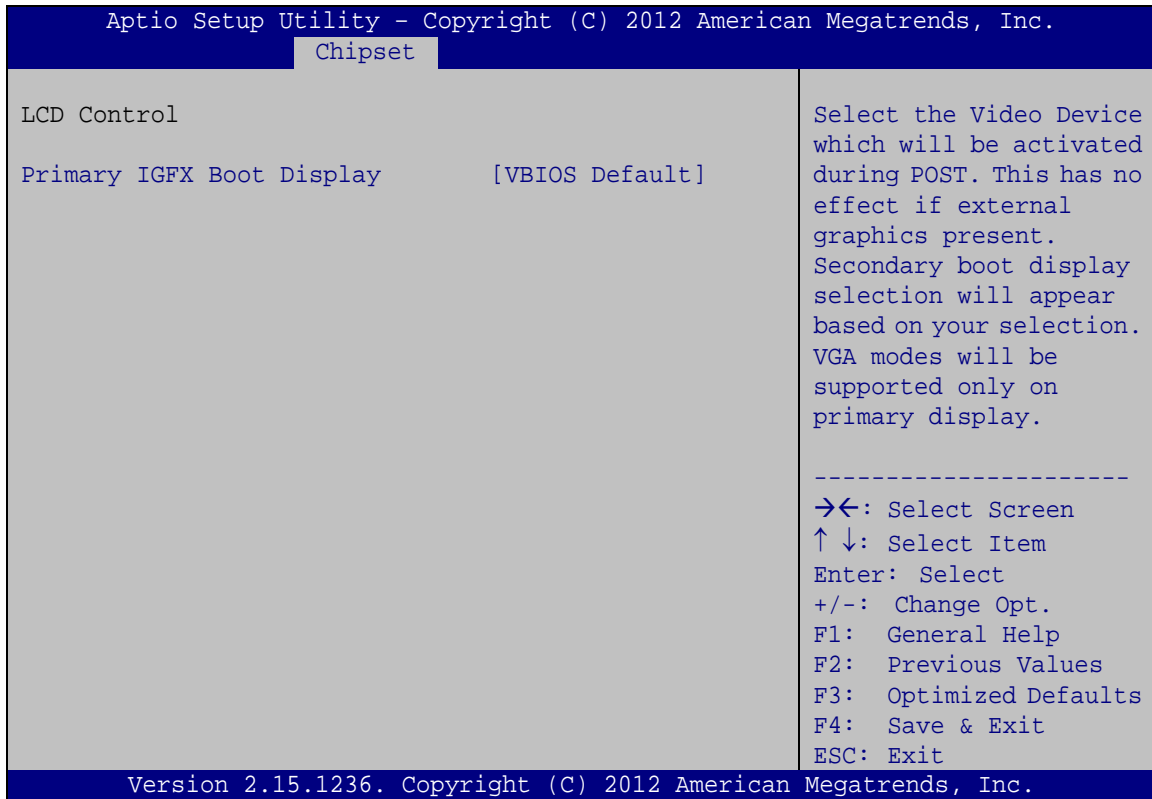
Use the **DVMT Total Gfx Mem** option to specify the maximum amount of memory that can be allocated as graphics memory. Configuration options are listed below.

- 128M
- 256M
- MAX **Default**

5.4.2.1.1 LCD Control

Use the **LCD Control** submenu (**BIOS Menu 21**) to select a display device which will be activated during POST.

TANK-6000-C226 Embedded System



BIOS Menu 21: LCD Control

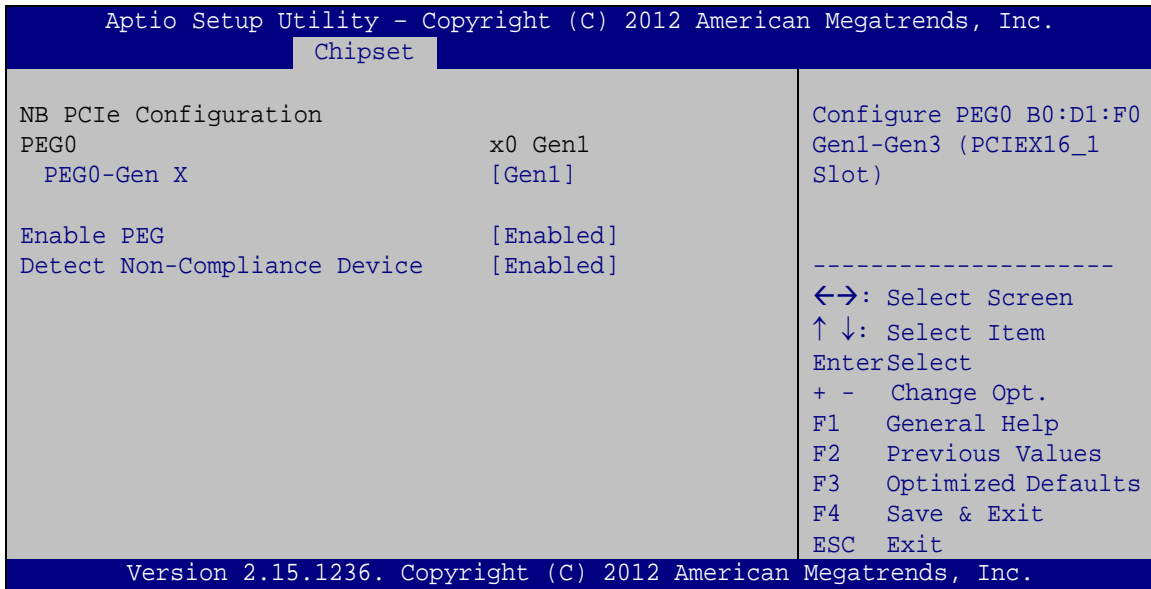
→ Primary IGFX Boot Display [VBIOS Default]

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

- VBIOS Default **DEFAULT**
- CRT
- HDMI

5.4.2.2 NB PCIe Configuration

Use the **NB PCIe Configuration** submenu (**BIOS Menu 22**) to configure the northbridge PCIe settings.



BIOS Menu 22: NB PCIe Configuration

→ PEG0-Gen X [Gen1]

Use the **PEG0-Gen X** option to configure PEG0 B0:D1:F0. Configuration options are listed below.

- Auto
- Gen1 **Default**
- Gen2
- Gen3

→ Enable PEG [Enabled]

Use the **Enable PEG** option to enable or disable PEG.

- **Disabled** Disables PEG.
- **Enabled** **DEFAULT** Enables PEG.
- **Auto** Automatically detect PEG

TANK-6000-C226 Embedded System

➔ Detect Non-Compliance [Enabled]

Use the **Detect Non-Compliance** option to detect non-compliance PCIe device in PEG.

- ➔ **Disabled** Do not detect non-compliance PCIe device in PEG
- ➔ **Enabled** **DEFAULT** Detect non-compliance PCIe device in PEG

5.4.2.3 Memory Configuration

Use the **Memory Configuration** submenu (**BIOS Menu 23**) to configure the Memory settings.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Chipset
Memory Information
Total Memory          4096 MB (DDR3)
CHA_DIMM1             Not Present
CHA_DIMM2             2048 MB (DDR3)
CHB_DIMM1             2048 MB (DDR3)
CHB_DIMM2             Not Present
-----
<->: Select Screen
↑ ↓: Select Item
EnterSelect
+ - Change Opt.
F1  General Help
F2  Previous Values
F3  Optimized Defaults
F4  Save & Exit
ESC Exit

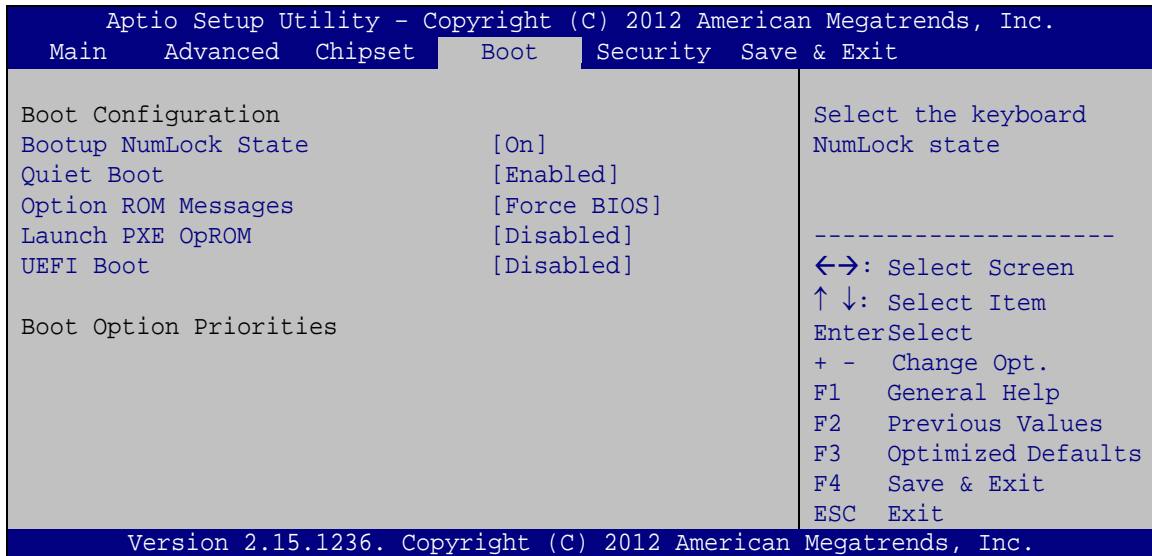
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

```

BIOS Menu 23: Memory Configuration

5.5 Boot

Use the **Boot** menu (**BIOS Menu 24**) to configure system boot options.



BIOS Menu 24: 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.

TANK-6000-C226 Embedded System

→ 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

→ Option ROM Messages [Force BIOS]

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

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

→ Launch PXE OpROM [Disabled]

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

- **Disabled** **DEFAULT** Ignore all PXE Option ROMs
- **Enabled** Load PXE Option ROMs

→ UEFI Boot [Disabled]

Use the **UEFI Boot** option to enable or disable to boot from a UEFI device.

- **Disabled** **DEFAULT** Disable to boot from a UEFI device.
- **Enabled** Enable to boot from a UEFI device.

→ Boot Option Priority

Use the **Boot Option Priority** function to set the system boot sequence from the available devices. The drive sequence also depends on the boot sequence in the individual device section.

5.6 Security

Use the **Security** menu (**BIOS Menu 25**) to set system and user passwords.

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main   Advanced  Chipset  Boot   Security  Save & Exit
-----
Password Description
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
is a power on password and must be entered to
boot or enter Setup. In Setup the User will
have Administrator rights.
The password must be
In the following range:
Maximum length           3
Minimum length           20

Administrator Password
User Password

Set Administrator
Password

-----
<->: Select Screen
↑ ↓: Select Item
EnterSelect
+ -  Change Opt.
F1   General Help
F2   Previous Values
F3   Optimized Defaults
F4   Save & Exit
ESC  Exit

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```

BIOS Menu 25: 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.

5.7 Exit

Use the **Exit** menu (**BIOS Menu 26**) to load default BIOS values, optimal failsafe values and to save configuration changes.

TANK-6000-C226 Embedded System

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main   Advanced  Chipset  Boot   Security  Save & Exit
-----
Save Changes and Reset
Discard Changes and Reset

Restore Defaults
Save as User Defaults
Restore User Defaults

-----
<->: Select Screen
↑ ↓: Select Item
Enter>Select
+ -  Change Opt.
F1   General Help
F2   Previous Values
F3   Optimized Defaults
F4   Save & Exit
ESC  Exit

Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.

```

BIOS Menu 26: Exit

→ Save Changes and Reset

Use the **Save Changes and Reset** option to save the changes made to the BIOS options and reset the system.

→ 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

Safety Precautions

**WARNING:**

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the TANK-6000-C226.

A.1 Safety Precautions

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

A.1.1 General Safety Precautions

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

- **Follow the electrostatic precautions** outlined below whenever the TANK-6000-C226 is opened.
- **Make sure the power is turned off and the power cord is disconnected** whenever the TANK-6000-C226 is being installed, moved or modified.
- **Do not apply voltage levels that exceed the specified voltage range.** Doing so may cause fire and/or an electrical shock.
- **Electric shocks can occur** if the TANK-6000-C226 chassis is opened when the TANK-6000-C226 is running.
- **Do not drop or insert any objects** into the ventilation openings of the TANK-6000-C226.
- **If considerable amounts of dust, water, or fluids enter the TANK-6000-C226**, turn off the power supply immediately, unplug the power cord, and contact the TANK-6000-C226 vendor.
- **DO NOT:**
 - Drop the TANK-6000-C226 against a hard surface.
 - Strike or exert excessive force onto the system.
 - Touch any of the system with a sharp object
 - In a site where the ambient temperature exceeds the rated temperature

A.1.2 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the TANK-6000-C226 may result in permanent damage to the TANK-6000-C226 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the TANK-6000-C226. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the TANK-6000-C226 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 anti-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.

TANK-6000-C226 Embedded System

A.1.3 Product Disposal

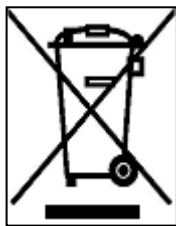


CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

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



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords.

When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

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

A.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the TANK-6000-C226, please follow the guidelines below.

A.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the TANK-6000-C226, please read the details below.

- The interior of the TANK-6000-C226X does not require cleaning. Keep fluids away from the TANK-6000-C226 interior.
- Be cautious of all small removable components when vacuuming the TANK-6000-C226.
- Turn the TANK-6000-C226 off before cleaning the TANK-6000-C226.
- Never drop any objects or liquids through the openings of the TANK-6000-C226.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the TANK-6000-C226.
- Avoid eating, drinking and smoking within vicinity of the TANK-6000-C226.

A.2.2 Cleaning Tools

Some components in the TANK-6000-C226 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-6000-C226.

- **Cloth** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the TANK-6000-C226.
- **Water or rubbing alcohol** – A cloth moistened with water or rubbing alcohol can be used to clean the TANK-6000-C226.
- **Using solvents** – The use of solvents is not recommended when cleaning the TANK-6000-C226 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-6000-C226. Dust and dirt can restrict the airflow in the TANK-6000-C226 and cause its circuitry to corrode.
- **Cotton swabs** - Cotton swabs moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- **Foam swabs** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

B

BIOS Menu Options

➔ System Date [xx/xx/xx]	44
➔ System Time [xx:xx:xx]	44
➔ ACPI Sleep State [S1 only (CPU Stop Clock)].....	46
➔ Wake System with Fixed Time [Disabled]	47
➔ Hyper-threading [Enabled].....	49
➔ Active Processor Cores [All]	49
➔ Intel Virtualization Technology [Disabled]	49
➔ EIST [Enabled].....	50
➔ SATA Controller(s) [Enabled]	50
➔ SATA Mode Selection [IDE Mode].....	51
➔ Intel(R) Rapid Start Technology [Disabled].....	51
➔ Intel AMT [Enabled]	52
➔ Unconfigure ME [Disabled]	52
➔ USB Devices	53
➔ Legacy USB Support [Enabled].....	53
➔ Serial Port [Enabled].....	55
➔ Change Settings [Auto]	55
➔ Serial Port [Enabled].....	56
➔ Change Settings [Auto]	56
➔ PC Health Status	57
➔ CPU_FAN1 Smart Fan Control/SYS_FAN1 Smart Fan Control [Auto Mode].....	58
➔ Fan start/off temperature	58
➔ Fan start PWM	59
➔ Fan slope PWM	59
➔ Console Redirection [Disabled].....	59
➔ Terminal Type [ANSI].....	60
➔ Bits per second [115200].....	60
➔ Data Bits [8]	60
➔ Parity [None].....	60
➔ Stop Bits [1].....	61
➔ Auto Recovery Function [Disabled].....	62
➔ Restore on AC Power Loss [Last State].....	64
➔ Power Saving Function [Disabled].....	64
➔ USB Power SW1 [+5V DUAL].....	65

TANK-6000-C226 Embedded System

➔ Azalia [Enabled]	65
➔ VT-d [Enabled].....	66
➔ Primary Display [Auto]	67
➔ DVMT Pre-Allocated [256M]	67
➔ DVMT Total Gfx Mem [Max].....	68
➔ Primary IGFX Boot Display [VBIOS Default]	69
➔ PEG0-Gen X [Gen1]	70
➔ Enable PEG [Enabled]	70
➔ Detect Non-Compliance [Enabled].....	71
➔ Bootup NumLock State [On].....	72
➔ Quiet Boot [Enabled]	73
➔ Option ROM Messages [Force BIOS].....	73
➔ Launch PXE OpROM [Disabled]	73
➔ UEFI Boot [Disabled]	73
➔ Boot Option Priority.....	73
➔ Administrator Password	74
➔ User Password	74
➔ Save Changes and Reset	75
➔ Discard Changes and Reset	75
➔ Restore Defaults	75
➔ Save as User Defaults	75
➔ Restore User Defaults	75

Appendix

C

One Key Recovery

C.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 C.3 for the detailed setup procedure.

The IEI One Key Recovery tool menu is shown below.

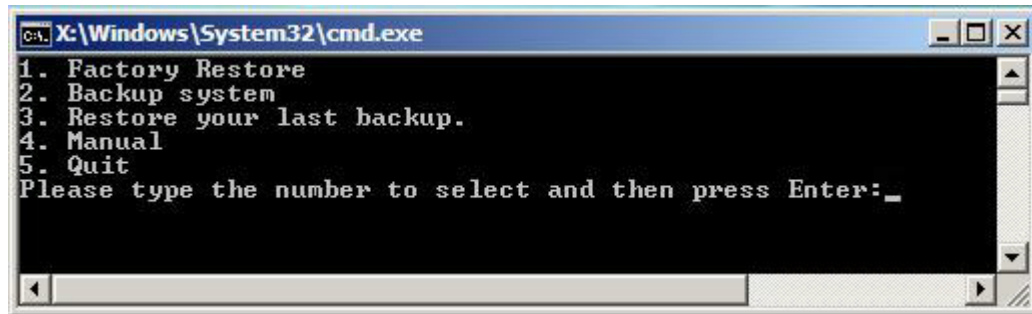


Figure C-1: IEI One Key Recovery Tool Menu

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

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

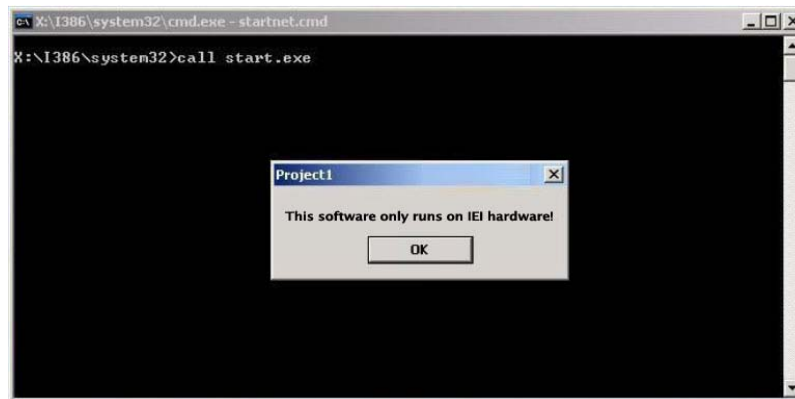
**NOTE:**

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

C.1.1 System Requirement

**NOTE:**

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



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

The partition created for recovery images must be big enough to contain both the factory default image and the user backup image. The size must be calculated before creating the

TANK-6000-C226 Embedded System

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.

C.1.2 Supported Operating System

The recovery CD is compatible with both Microsoft Windows and Linux operating systems (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.

C.2 Setup Procedure for Windows

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

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

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

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

Step 4: Build the recovery partition (see **Section C.2.4**) or build the auto recovery partition (see **Section C.3**)

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

TANK-6000-C226 Embedded System

C.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.

C.2.2 Create Partitions

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

- Step 1:** Put the recovery CD in the optical drive of the system.
- Step 2:** **Boot the system from recovery CD.** When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!

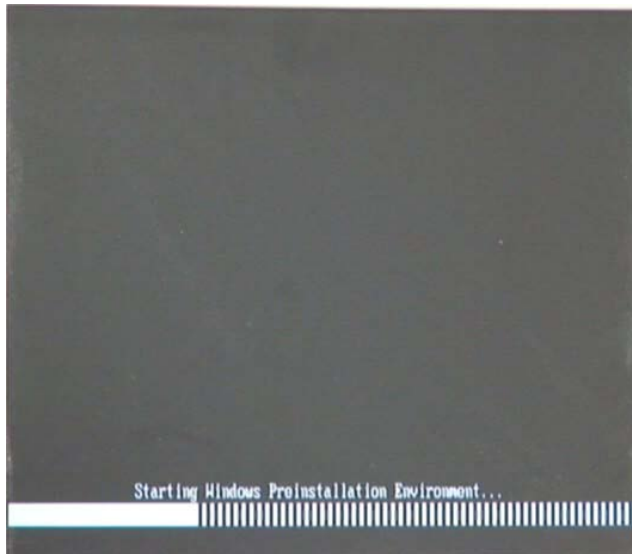


Figure C-2: Launching the Recovery Tool

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

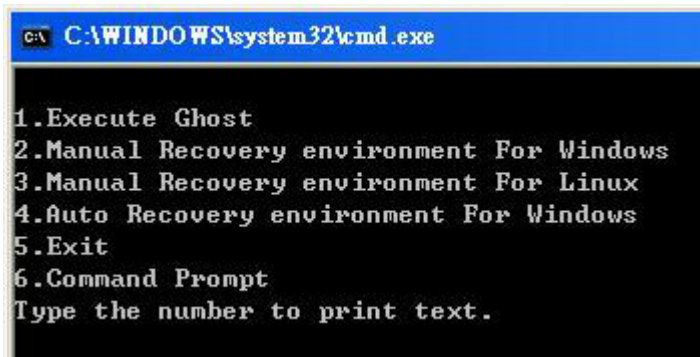
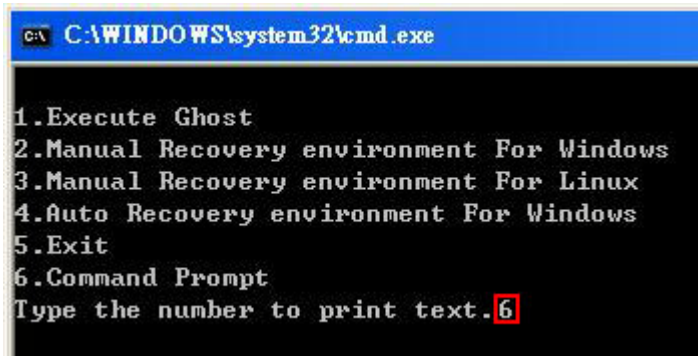


Figure C-3: Recovery Tool Setup Menu

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

TANK-6000-C226 Embedded 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. 6
```

Figure C-4: Command Prompt

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\CMD.EXE
X:\I386\SYSTEM32>diskpart → Starts the Microsoft disk partitioning tool.
Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-JUC

DISKPART> list vol → Show partition information

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

DISKPART> sel disk 0 → Select a disk
Disk 0 is now the selected disk.

DISKPART> create part pri size=2000 → Create partition 1 and assign a size.
This partition is for OS installation.
DiskPart succeeded in creating the specified partition.

DISKPART> assign letter=N → Assign partition 1 a code name (N).
DiskPart successfully assigned the drive letter or mount point.

DISKPART> create part pri size=1800 → Create partition 2 and assign a size.
This partition is for recovery images.
DiskPart succeeded in creating the specified partition.

DISKPART> assign letter=F → Assign partition 2 a code name (F).
DiskPart successfully assigned the drive letter or mount point.

DISKPART> exit → Exit diskpart
X:\I386\SYSTEM32>format n: /fs:ntfs /q /y → Format partition 1 (N) as NTFS format.
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 → Formate partition 2 (F) as NTFS formate and
name it as "Recovery".
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 → Exit Windows PE
  
```

Figure C-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-JUC

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 the Recovery Partition.

C.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.

C.2.4 Building the Recovery Partition

- Step 1:** Put the recover CD in the optical drive.
- Step 2:** Start the system.
- Step 3:** **Boot the system from the recovery CD.** When prompted, press any key to boot from the recovery CD. It will take a while to launch the recovery tool. Please be patient!



Figure C-6: Launching the Recovery Tool

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

```
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
```

Figure C-7: Manual Recovery Environment for Windows

TANK-6000-C226 Embedded System

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

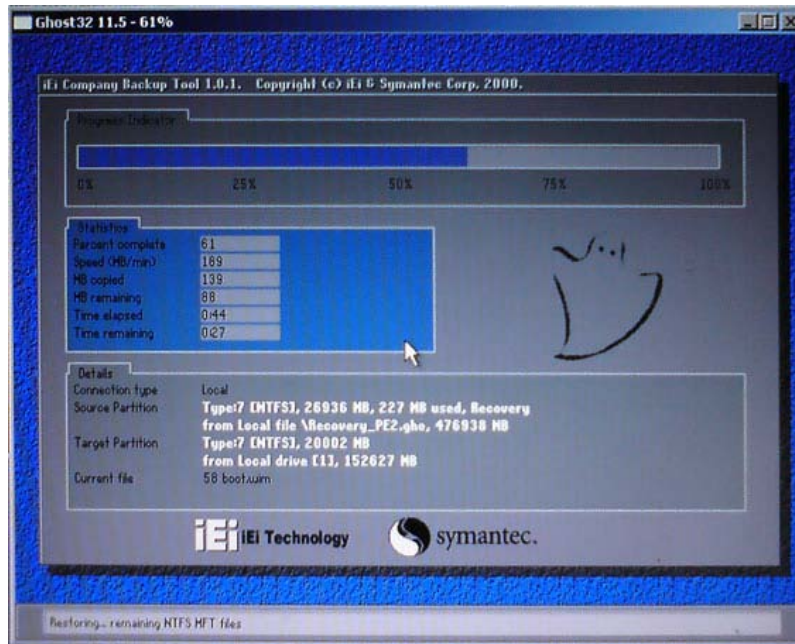


Figure C-8: Building the Recovery Partition

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

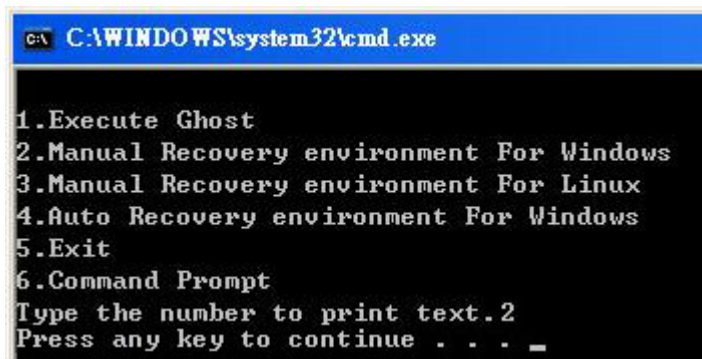


Figure C-9: Press Any Key to Continue

Step 7: Eject the recovery CD.

C.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 C-10**), press the <F3> key to access the recovery tool. The message will display for 10 seconds, please press F3 before the system boots into the operating system.

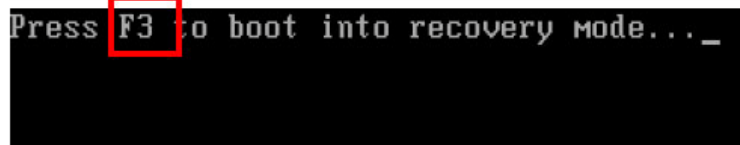


Figure C-10: Press F3 to Boot into Recovery Mode

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

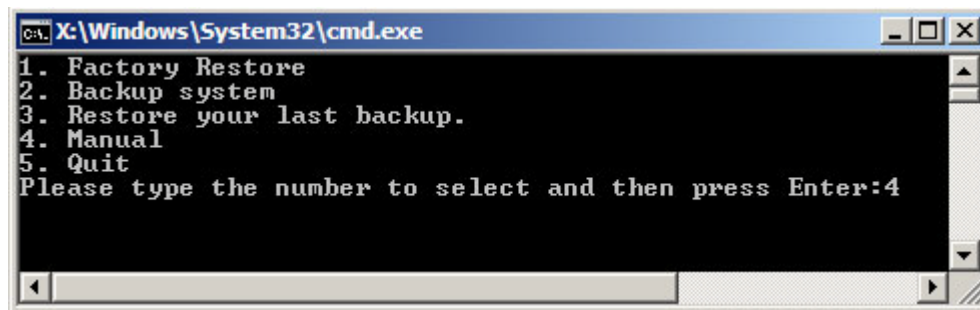


Figure C-11: Recovery Tool Menu

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

TANK-6000-C226 Embedded System

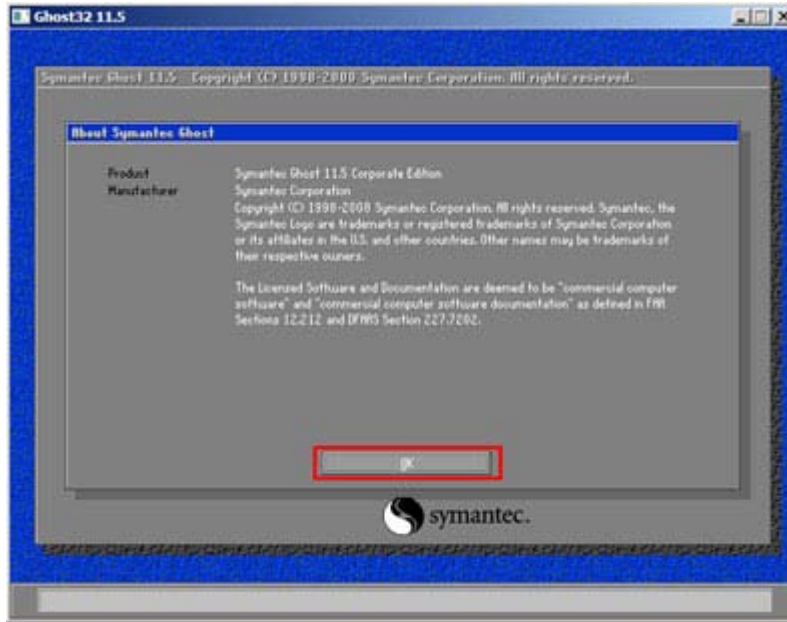


Figure C-12: About Symantec Ghost Window

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

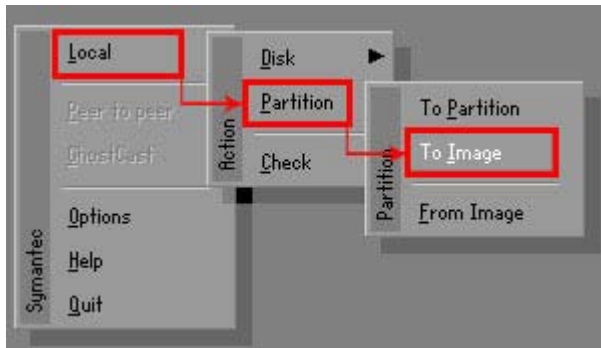


Figure C-13: Symantec Ghost Path

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

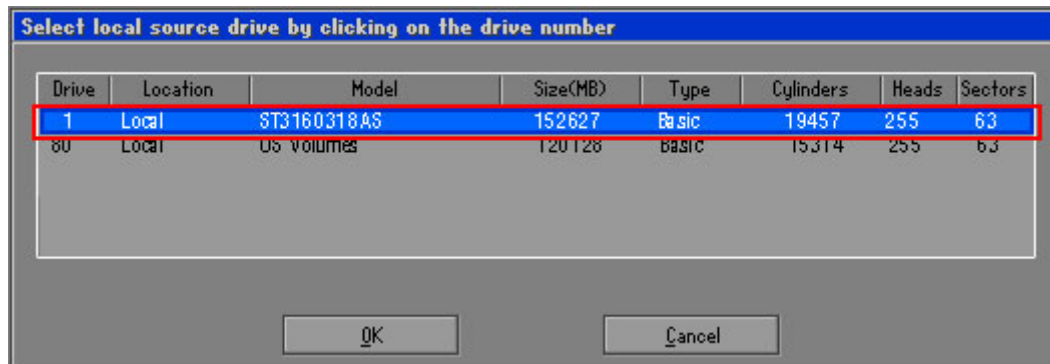


Figure C-14: Select a Local Source Drive

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

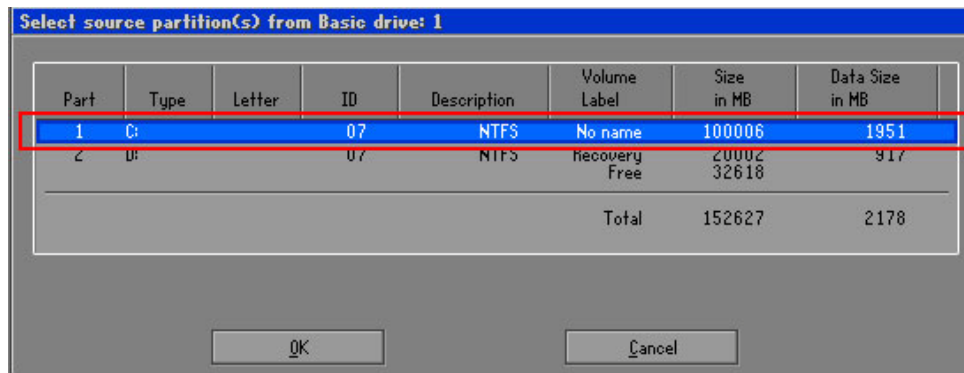


Figure C-15: Select a Source Partition from Basic Drive

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

TANK-6000-C226 Embedded System

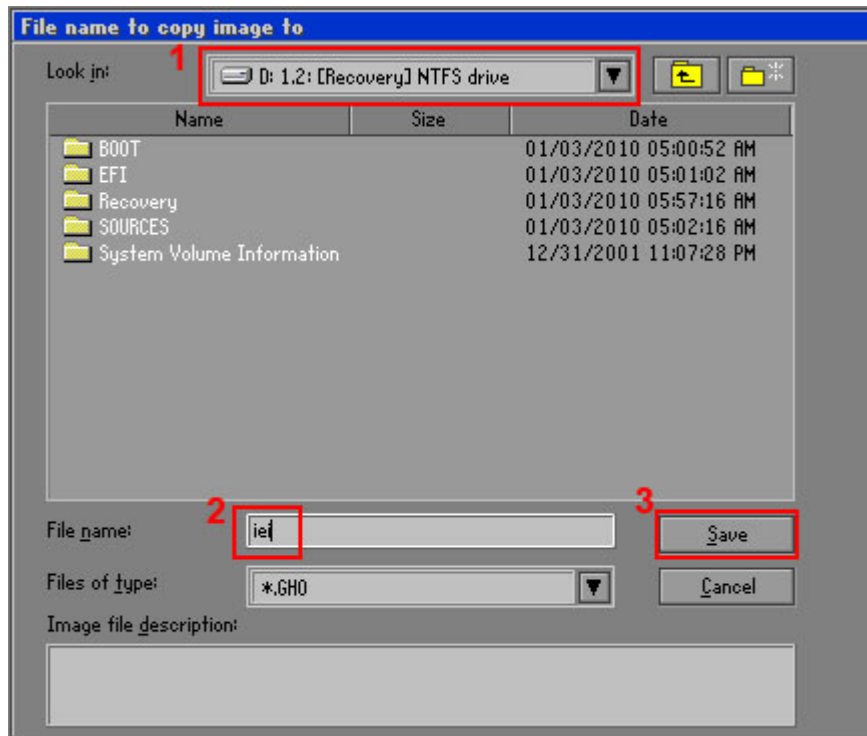


Figure C-16: File Name to Copy Image to

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

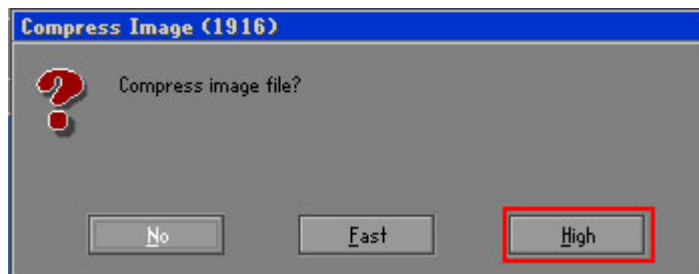


Figure C-17: Compress Image

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

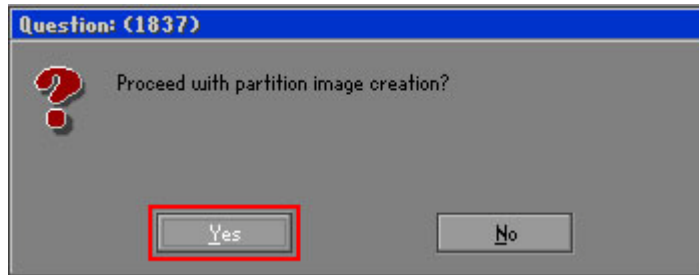


Figure C-18: Image Creation Confirmation

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

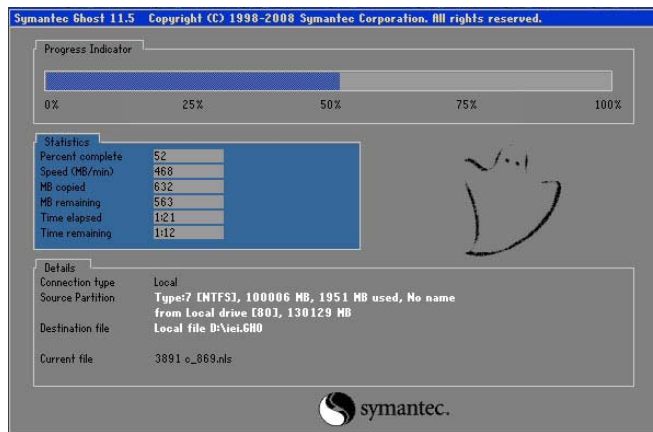


Figure C-19: Image Creation Complete

Step 11: When the image creation completes, a screen prompts as shown in **Figure C-20**.

Click **Continue** and close the Ghost window to exit the program.

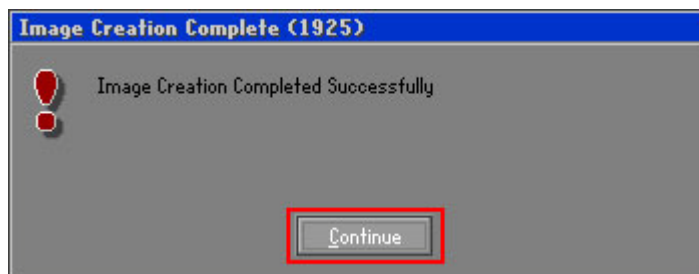
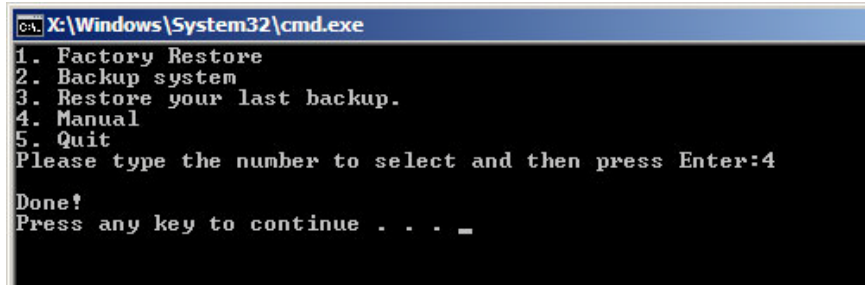


Figure C-20: Image Creation Complete

TANK-6000-C226 Embedded System

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



```
C:\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 C-21: Press Any Key to Continue

C.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 C.2.1 ~ Section C.2.3** to setup BIOS, create partitions and install operating system.

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



Figure C-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!



Figure C-23: Launching the Recovery Tool

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

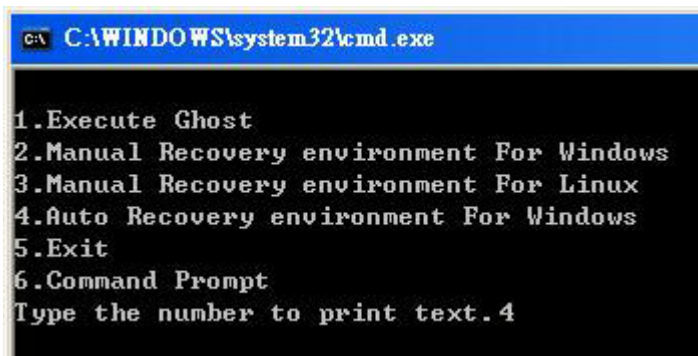


Figure C-24: Auto Recovery Environment for Windows

TANK-6000-C226 Embedded System

- 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 C.2.2** is hidden and the auto recovery tool is saved in this partition.

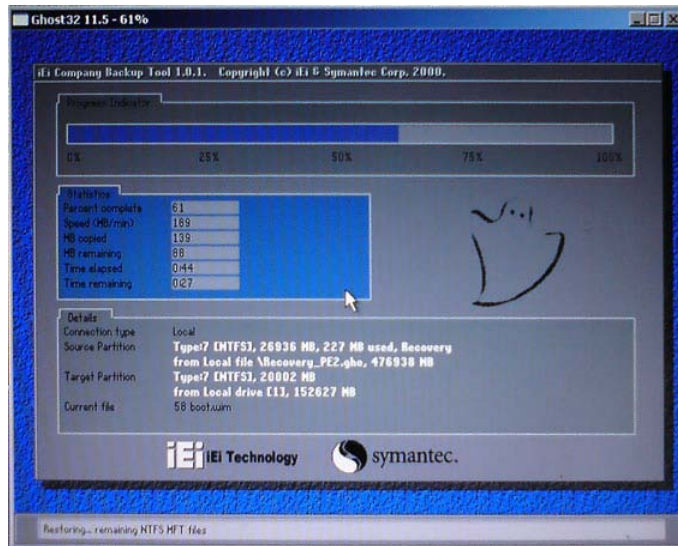


Figure C-25: Building the Auto Recovery Partition

- 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.



Figure C-26: Factory Default Image Confirmation

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

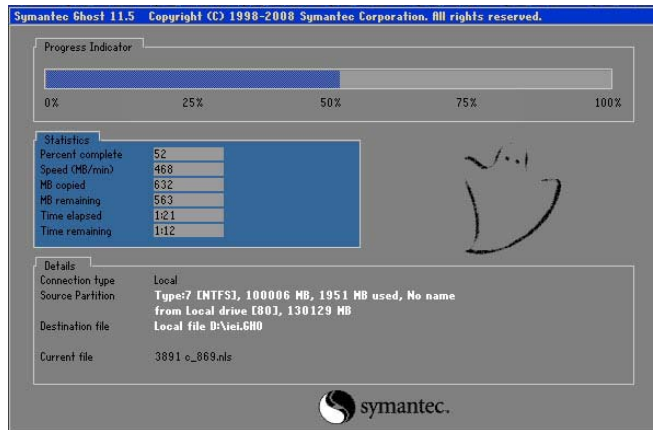


Figure C-27: Image Creation Complete

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

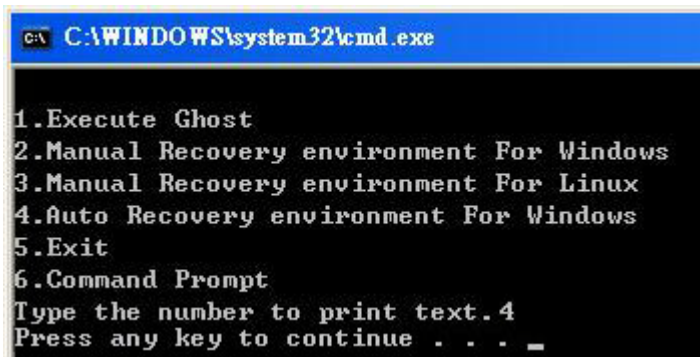


Figure C-28: Press any key to continue

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**).

TANK-6000-C226 Embedded System

```

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
  Advanced
-----
iEi Feature
Auto Recovery Function          [Disabled]
                                Auto Recovery Function
                                Reboot and recover
                                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 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

```

BIOS Menu 27: 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

C.4 Setup Procedure for Linux

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

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

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



NOTE:

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

While installing Linux OS, please create two partitions:

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



NOTE:

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

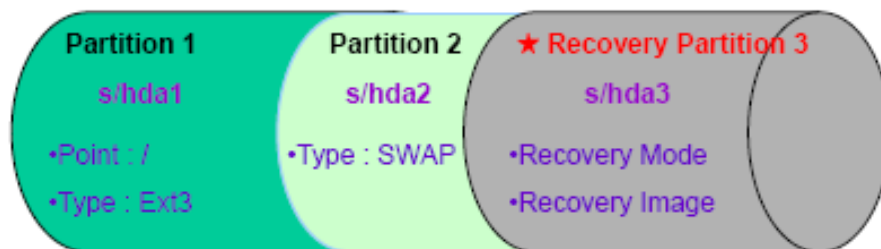


Figure C-29: Partitions for Linux

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

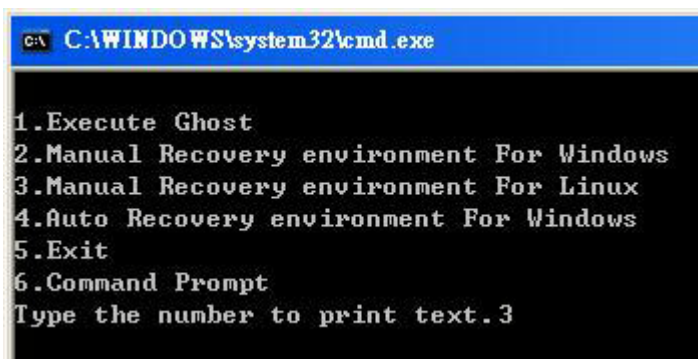
system32>diskpart

DISKPART>list vol

TANK-6000-C226 Embedded System

```
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 the 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 C-30**). The Symantec Ghost window appears and starts configuring the system to build a recovery partition. After completing the system configuration, press any key to reboot the system. Eject the recovery CD.

A screenshot of a Windows command prompt window. The title bar reads "C:\WINDOWS\system32\cmd.exe". The command prompt displays a menu with the following options:

```
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 C-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, 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 C-31: Access menu.lst in Linux (Text Mode)

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

```
#boot=/dev/sda
default=0
timeout=10 ← Modify 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=10f1acda
    ac38b5c78910 rhgb quiet
    initrd /initrd-2.6.25-14.fc9.i686.img

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

- Type command:
title Recovery Partition
root (hd0,2)
makeactive
chainloader +1

Step 7: The recovery tool menu appears. (Figure C-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 C-32: Recovery Tool Menu

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

C.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 C.3 has been completed and the auto recovery function is enabled, the system will automatically restore from the factory default image without pressing the F3 key. The recovery tool main menu is shown below.

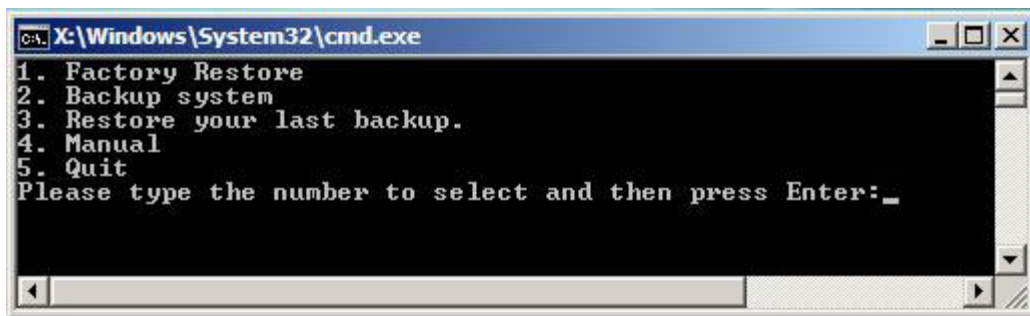


Figure C-33: Recovery Tool Main Menu

The recovery tool has several functions including:

1. **Factory Restore:** Restore the factory default image (iei.GHO) created in Section C.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).

C.5.1 Factory Restore

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

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

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

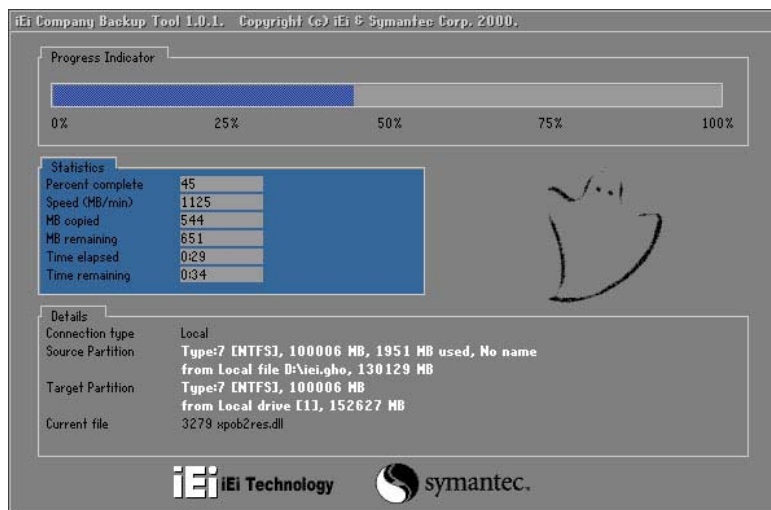
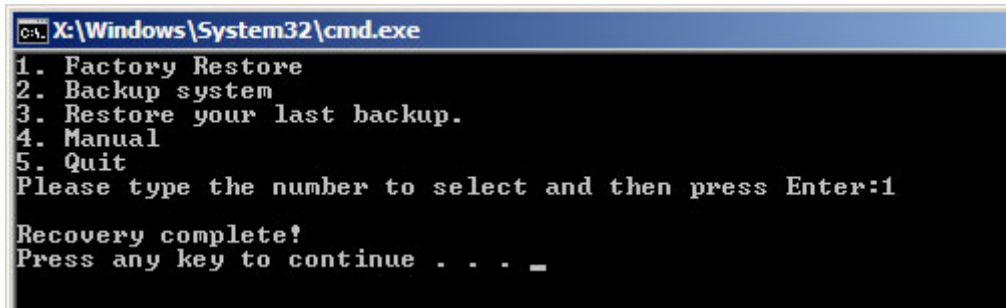


Figure C-34: Restore Factory Default

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

TANK-6000-C226 Embedded System



```

C:\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 C-35: Recovery Complete Window

C.5.2 Backup System

To backup the system, please follow the steps below.

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

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

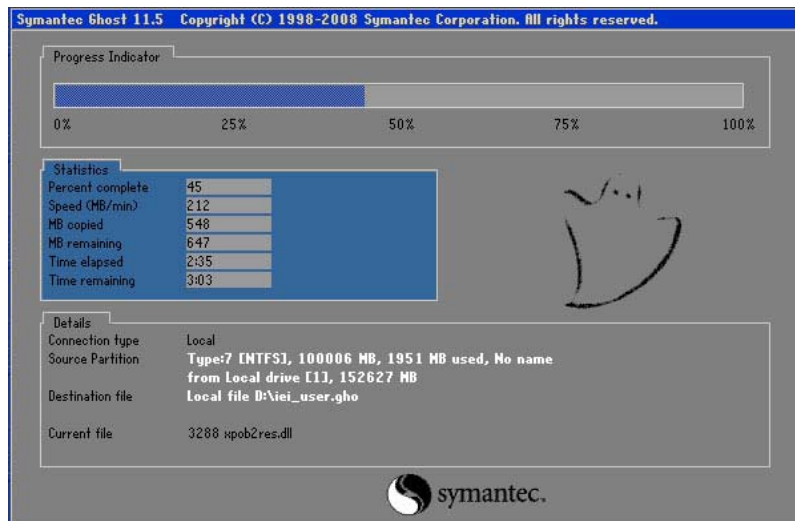


Figure C-36: Backup System

Step 3: The screen shown in **Figure C-37** appears when system backup is complete. Press any key to reboot the system.

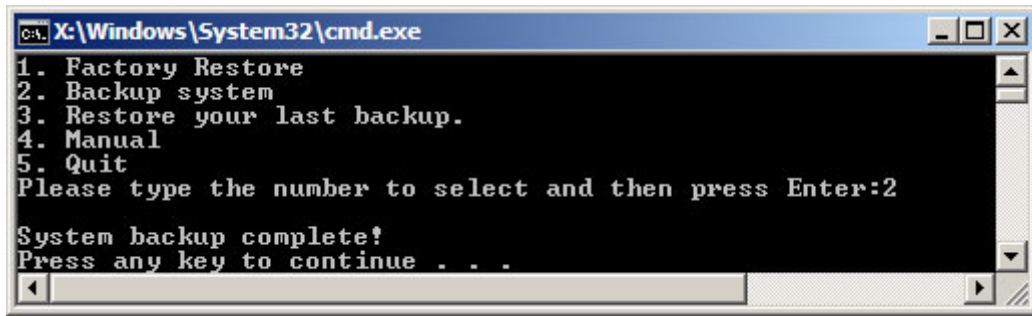


Figure C-37: System Backup Complete Window

C.5.3 Restore Your Last Backup

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

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

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

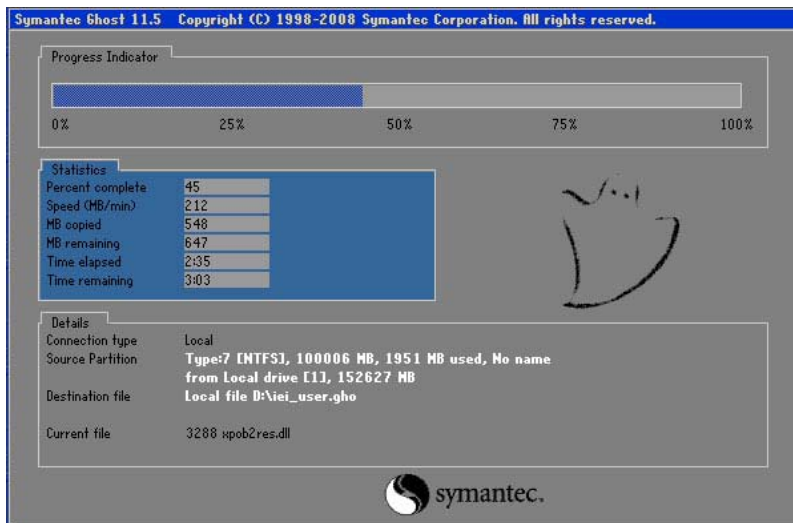
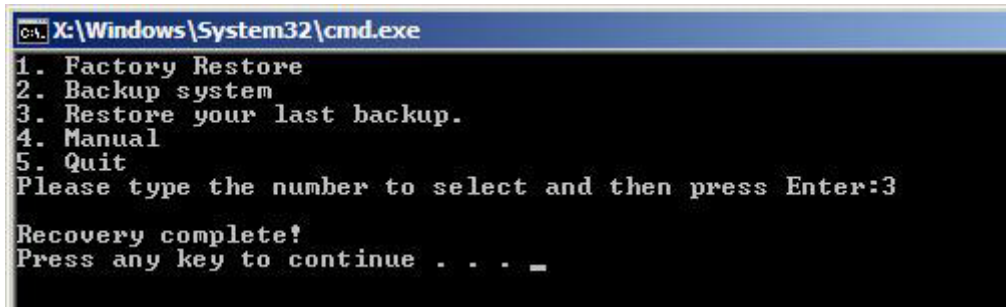


Figure C-38: Restore Backup

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

TANK-6000-C226 Embedded System



```
C:\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 C-39: Restore System Backup Complete Window

C.5.4 Manual

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

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

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

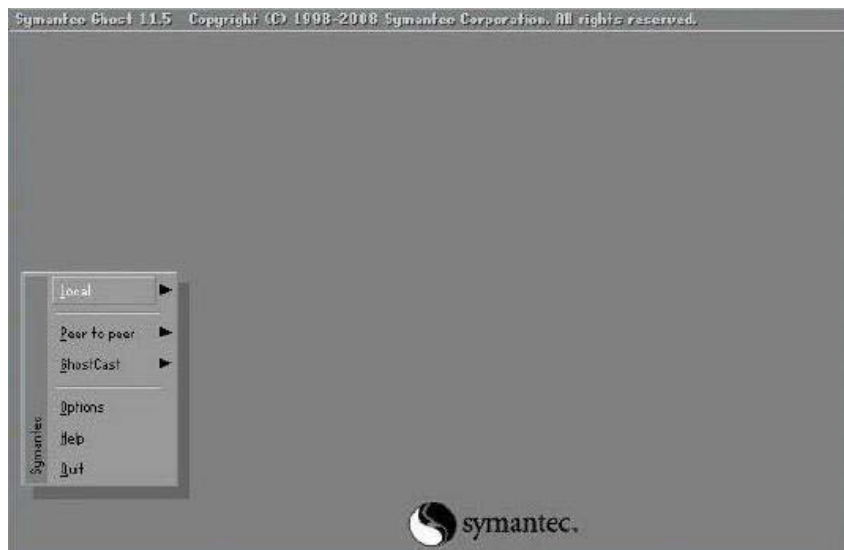
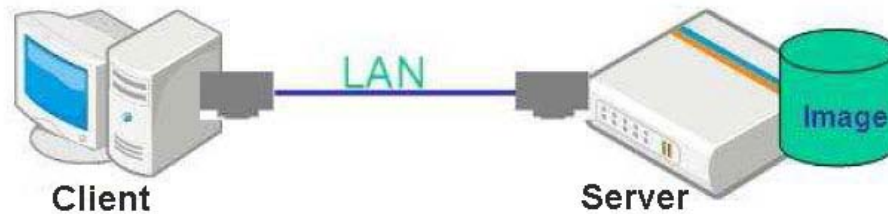


Figure C-40: Symantec Ghost Window

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

C.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).

TANK-6000-C226 Embedded System

C.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;
}
```

C.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
```

TANK-6000-C226 Embedded System

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
```

C.6.3 Configure One Key Recovery Server Settings

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



Step 2: Extract the recovery package to /.

```
#cp RecoveryR10.tar.bz2 /
#cd /
#tar -xvjf RecoveryR10.tar.bz2
```

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

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

C.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
```

C.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
```


TANK-6000-C226 Embedded System

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
```

C.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.



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: 00020003-0004-0005-0006-0007000000
DHCP . ./
```

TANK-6000-C226 Embedded System

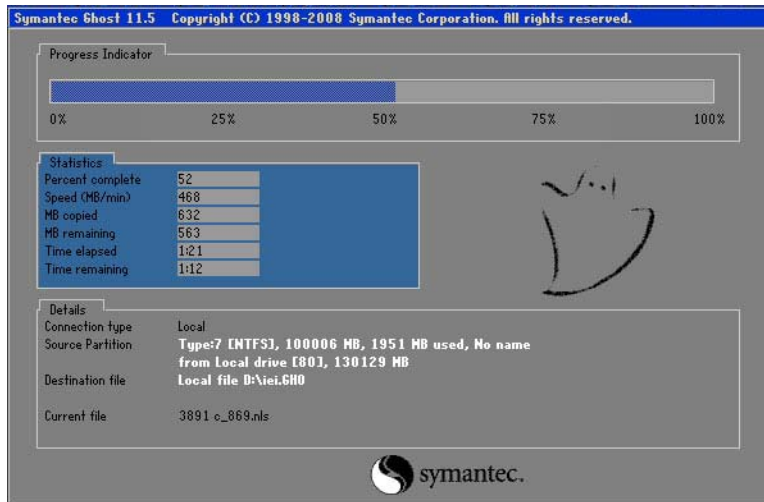
```

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
    
```



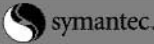
Symantec Ghost 11.5 Copyright (C) 1998-2008 Symantec Corporation. All rights reserved.

Progress Indicator: 50%

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 e_869.nls

 symantec.



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.

C.7 Other Information

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

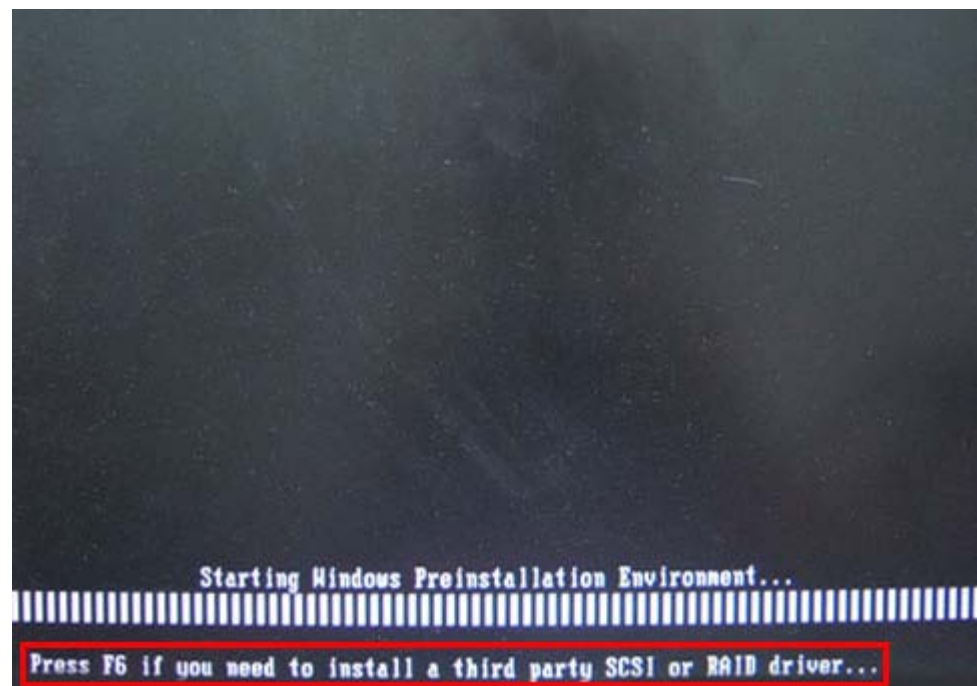
When the system uses AHCI mode or some specific SATA controllers such as ALi M5283 or VIA VT6421A, the SATA RAID/AHCI driver must be installed before using one key recovery. Please follow the steps below to install the SATA RAID/AHCI driver.

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.

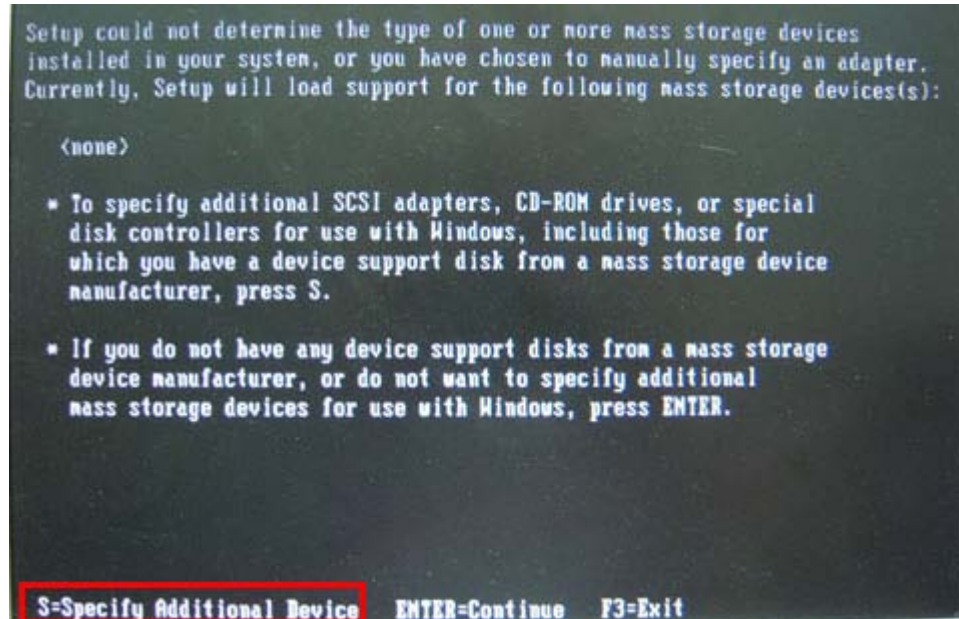
Step 3: Insert the One Key Recovery CD into the system and boot the system from the CD.

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

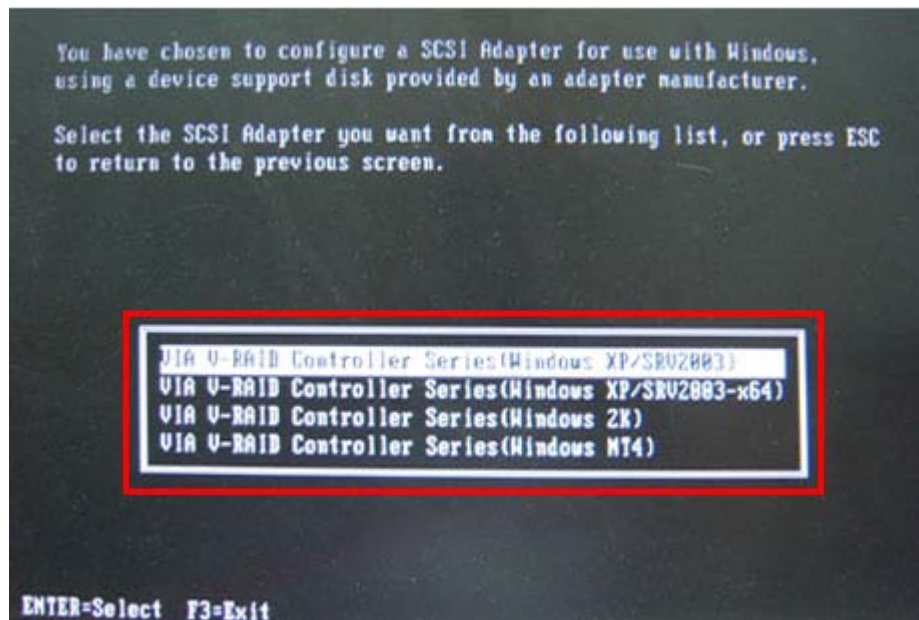


TANK-6000-C226 Embedded System

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



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



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

C.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

D

Hazardous Materials Disclosure

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

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

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

Please refer to the table on the next page.

TANK-6000-C226 Embedded System

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。