



IEI Technology Corp.



## MODEL: TANK-700

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

## User Manual

Rev. 1.00 – 17 October 2011



# Revision

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Date	Version	Changes
17 October 2011	1.00	Initial release

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Chapter

1

# Introduction

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## 1.1 Overview



**Figure 1-1: TANK-700**

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

## 1.2 Model Variations

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

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

**Table 1-1: TANK-700 Model Variations**



## TANK-700 Embedded System

### 1.3 Features

The TANK-700 features are listed below:

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

### 1.4 Technical Specifications

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

Specifications	
System	
<b>CPU</b>	Intel® 32nm mobile Core™ i7/i5/i3 or Celeron® processor
<b>Chipset</b>	Intel® QM67
<b>Memory</b>	1 x 204-pin 1066/1333 MHz dual-channel DDR3 SDRAM SO-DIMM slot (system max. 4.0 GB) 2.0 GB of DDR3 memory preinstalled
<b>Ethernet Controller</b>	Intel® 82579 PHY with Intel® AMT 7.0 support Intel® 82583V Ethernet controller

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

## TANK-700 Embedded System

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

**Table 1-2: Technical Specifications**

## 1.5 Connector Panel

### 1.5.1 Front Panel

The TANK-700 front panel contains:

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

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

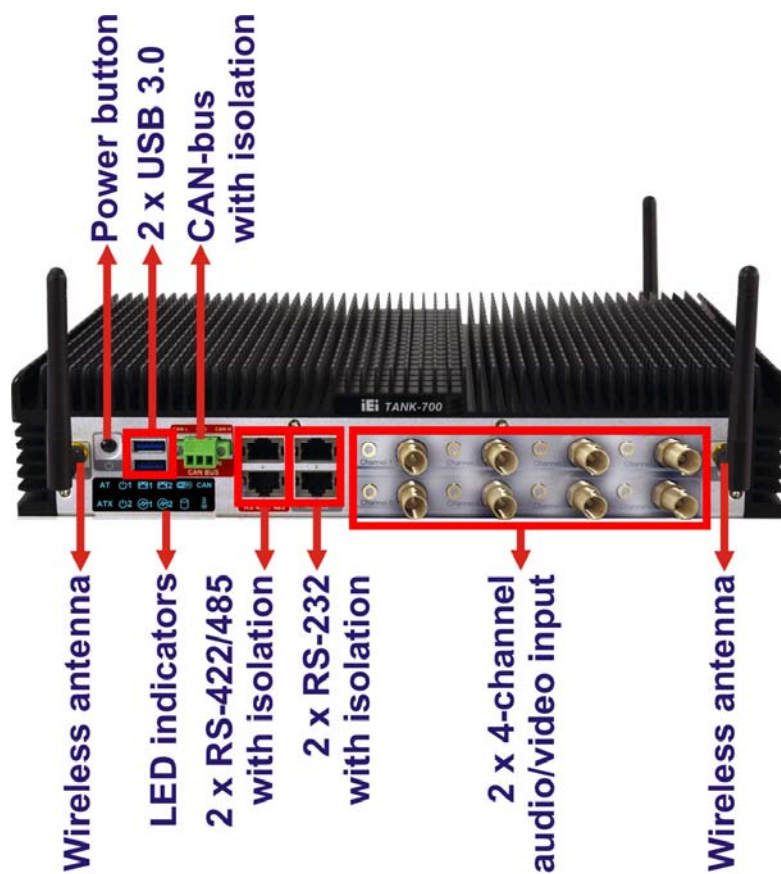


Figure 1-2: TANK-700 Front Panel

### 1.5.2 Rear Panel

The TANK-700 rear panel contains:

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



## TANK-700 Embedded System

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

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

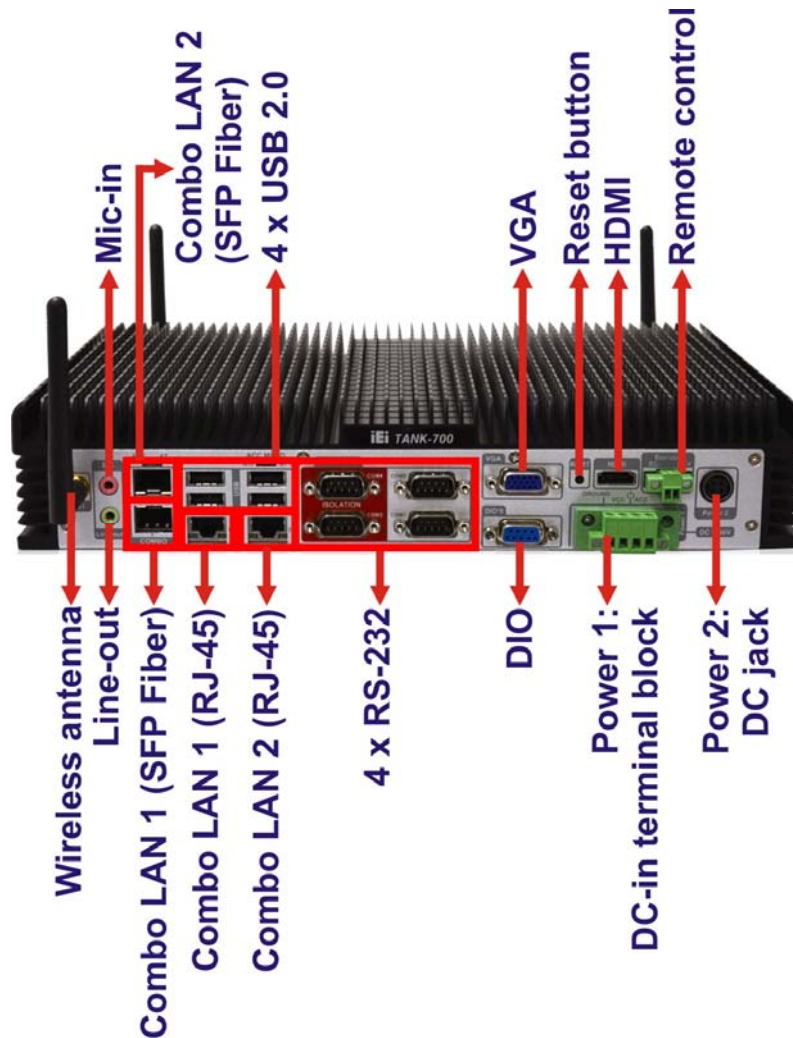


Figure 1-3: TANK-700 Rear Panel



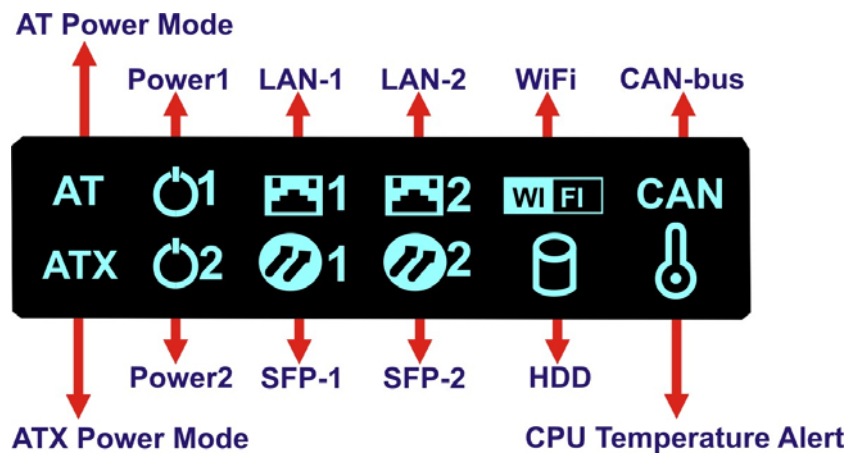


**NOTE:**

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

## 1.6 LED Indicators

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



**Figure 1-4: TANK-700 LED Indicators**



**WARNING:**

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

## TANK-700 Embedded System

### 1.7 Dimensions

The physical dimensions are shown below:

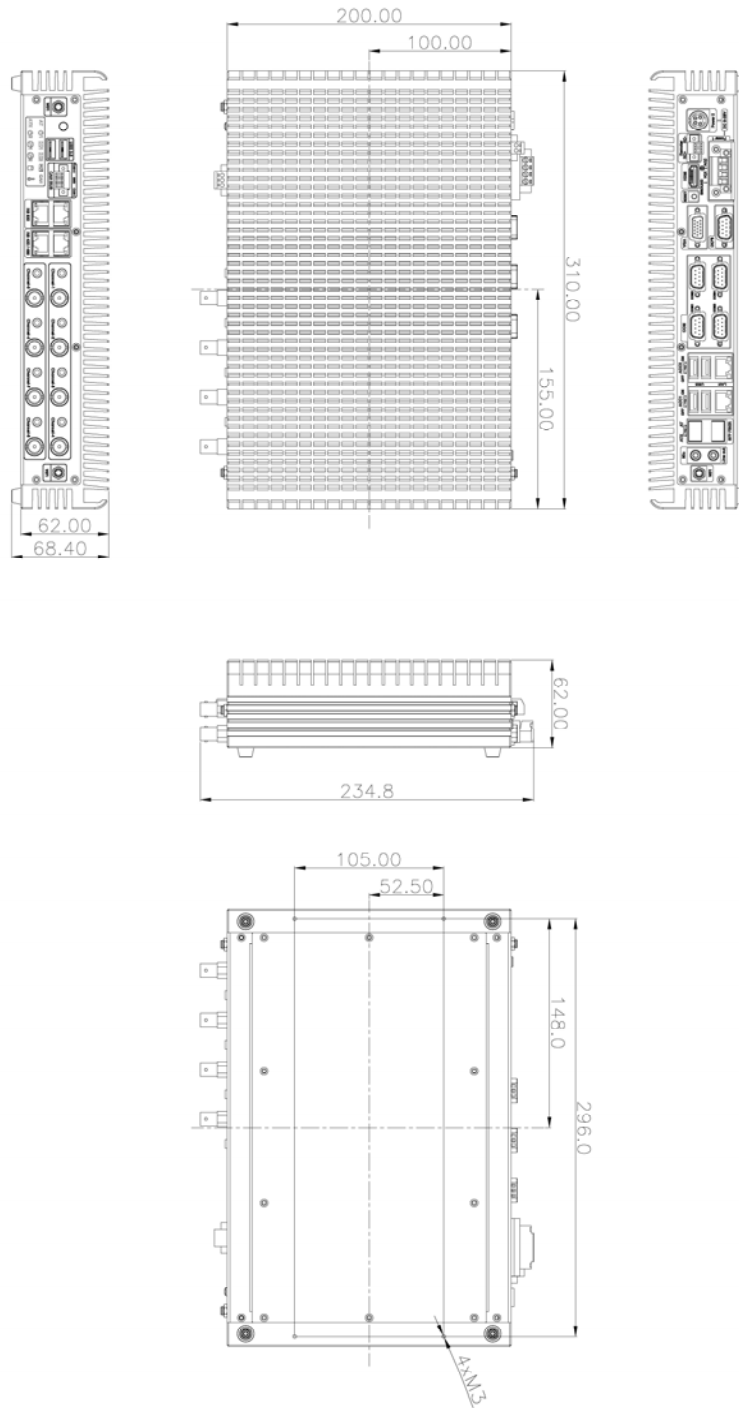


Figure 1-5: Physical Dimensions (millimeters)

Chapter

2

# Unpacking

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## TANK-700 Embedded System

### 2.1 Anti-static Precautions



#### WARNING:

Failure to take ESD precautions during installation may result in permanent damage to the TANK-700 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the TANK-700. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the TANK-700 or any other electrical component is handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding:*** Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring the TANK-700, place it on an anti-static pad. This reduces the possibility of ESD damaging the TANK-700.

### 2.2 Unpacking Precautions

When the TANK-700 is unpacked, please do the following:

- Follow the anti-static precautions outlined in **Section 2.1**.
- Make sure the packing box is facing upwards so the TANK-700 does not fall out of the box.
- Make sure all the components shown in **Section 2.3** are present.

## 2.3 Unpacking Checklist



### NOTE:









If some of the components listed in the checklist below are missing, please do not proceed with the installation. Contact the IEI reseller or vendor you purchased the TANK-700 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to [sales@iei.com.tw](mailto:sales@iei.com.tw).

The TANK-700 is shipped with the following components:

Quantity	Item and Part Number	Image
<b>Standard</b>		
1	TANK-700 Series	
1	Power adapter (P/N: 63040-010090-020-RS)	
1	Power cord (P/N: 32702-000401-100-RS)	
2	Mounting bracket (P/N: 41020-0163J4-00-RS)	
8	Mounting bracket screw (P/N: 44033-030062-RS)	



## TANK-700 Embedded System

Quantity	Item and Part Number	Image
<b>Standard</b>		
8	Chassis screw ( <b>P/N:</b> 44013-030041-RS)	
4	RJ-45 to DB-9 COM port cable ( <b>P/N:</b> 32005-000200-200-RS)	
3	Wireless antenna ( <b>P/N:</b> 32505-000900-100-RS)	
1	Pluggable DC-in terminal block ( <b>P/N:</b> 33502-000055-RS)	
1	Pluggable CAN-bus terminal block ( <b>P/N:</b> 33502-000007-RS)	
1	Pluggable remote control terminal block ( <b>P/N:</b> 33101-000422-RS)	
1	One Key Recovery CD ( <b>P/N:</b> IEI-7B000-000478-RS)	
1	User manual and driver CD	

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

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

Chapter

3

# Installation

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### 3.1 Installation Precautions

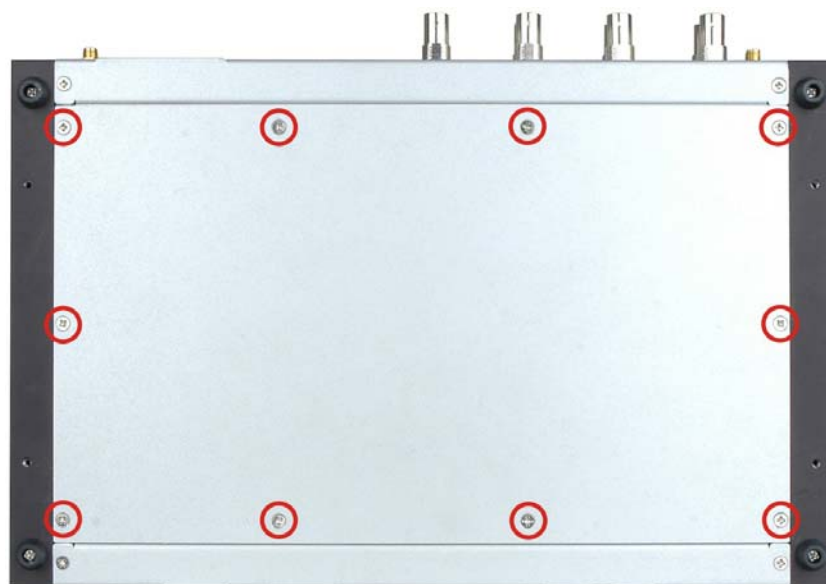
During installation, be aware of the precautions below:

- **Read the user manual:** The user manual provides a complete description of the TANK-700, installation instructions and configuration options.
- **DANGER! Disconnect Power:** Power to the TANK-700 must be disconnected during the installation process, or before any attempt is made to access the rear panel. Electric shock and personal injury might occur if the rear panel of the TANK-700 is opened while the power cord is still connected to an electrical outlet.
- **Qualified Personnel:** The TANK-700 must be installed and operated only by trained and qualified personnel. Maintenance, upgrades, or repairs may only be carried out by qualified personnel who are familiar with the associated dangers.
- **Air Circulation:** Make sure there is sufficient air circulation when installing the TANK-700. The TANK-700's cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the TANK-700. Leave at least 5 cm of clearance around the TANK-700 to prevent overheating.
- **Grounding:** The TANK-700 should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection per the electrical values indicated on the label attached to the back of the TANK-700.

### 3.2 Hard Disk Drive (HDD) Installation

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

- Step 1:** Remove the bottom panel by removing the 10 retention screws from the bottom panel (**Figure 3-1**).



**Figure 3-1: Bottom Panel Retention Screws**

**Step 2:** Remove the 2 HDD bracket retention screws (**Figure 3-2**).



**Figure 3-2: HDD Bracket Retention Screws**

**Step 3:** Lift the HDD bracket out of the TANK-700 and put it on a flat surface.

**Step 4:** Attach the HDD to the HDD bracket. Secure the HDD with the HDD bracket by four retention screws (**Figure 3-3**).



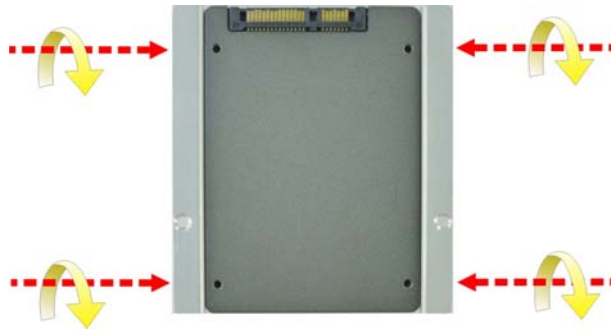


Figure 3-3: HDD Installation

**Step 5:** Slide the HDD bracket to connect the HDD to the SATA connector. Secure the HDD bracket with TANK-700 by the 2 retention screws that were previously removed (**Figure 3-4**).

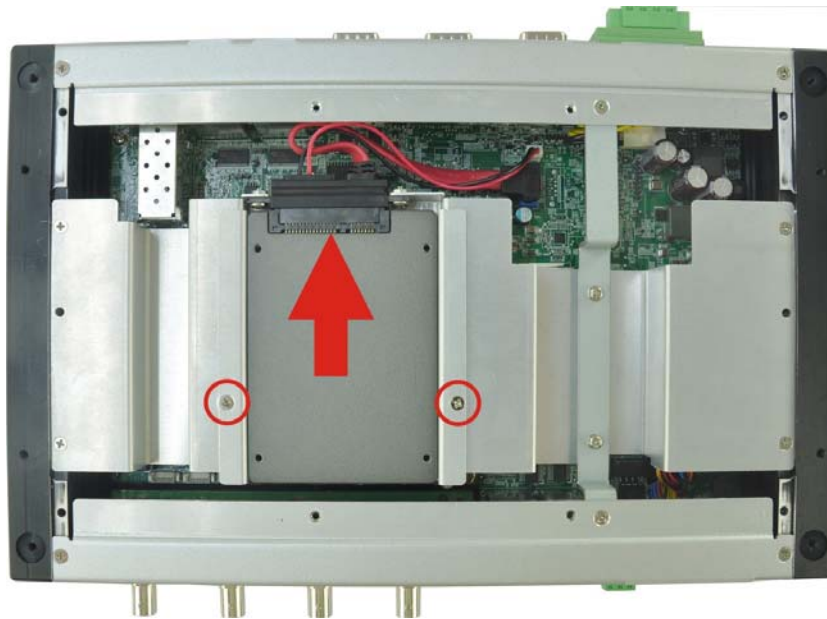


Figure 3-4: HDD Bracket Installation

**Step 6:** Reinstall the bottom panel to the TANK-700.

### 3.3 Pluggable CAN-bus Terminal Block Installation

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

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

## TANK-700 Embedded System

- Step 2:** Align the pluggable CAN-bus terminal block with the CAN-bus terminal block connector on the TANK-700.
- Step 3:** Once aligned, insert the pluggable CAN-bus terminal block into the CAN-bus terminal block connector.
- Step 4:** Secure the pluggable CAN-bus terminal block to the external interface by tightening the two retention screws on either side of the terminal block (Figure 3-5).



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

### 3.4 Pluggable DC-In Terminal Block Installation

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

- Step 1:** Locate the DC-in terminal block connector. The location of the connector is shown in Figure 1-3.
- Step 2:** Align the pluggable DC-in terminal block with the DC-in terminal block connector on the TANK-700.
- Step 3:** Once aligned, insert the pluggable DC-in terminal block into the DC-in terminal block connector.
- Step 4:** Secure the pluggable DC-in terminal block to the external interface by tightening the two retention screws on either side of the terminal block (Figure 3-6).



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

### 3.5 Pluggable Remote Control Terminal Block Installation

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

- Step 1:** Locate the remote control terminal block connector. The location of the connector is shown in **Figure 1-3**.
- Step 2:** Align the pluggable remote control terminal block with the remote control terminal block connector on the TANK-700.
- Step 3:** Once aligned, insert the pluggable remote control terminal block into the remote control terminal block connector.
- Step 4:** Secure the pluggable remote control terminal block to the external interface by tightening the two retention screws on either side of the terminal block (**Figure 3-7**).



## TANK-700 Embedded System



Figure 3-7: Pluggable Remote Control Terminal Block Installation

### 3.6 SFP Module Installation

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

- Step 1:** Locate the SFP fiber connectors. The locations of the connectors are shown in **Figure 1-3**.
- Step 2:** Align the SFP module with one of the SFP fiber connectors on the TANK-700 (**Figure 3-8**).
- Step 3:** Once aligned, slide the SFP module into place (**Figure 3-8**).



Figure 3-8: SFP Module Installation

### 3.7 SO-DIMM Installation

**WARNING:**

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

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

- Step 1:** Remove the bottom panel by removing the 10 retention screws from the bottom panel (**Figure 3-1**).
- Step 2:** Remove the 8 retention screws (**Figure 3-9**), unplug the SATA signal and power cables connected to the TANK-700, and then lift the bracket out of the TANK-700.

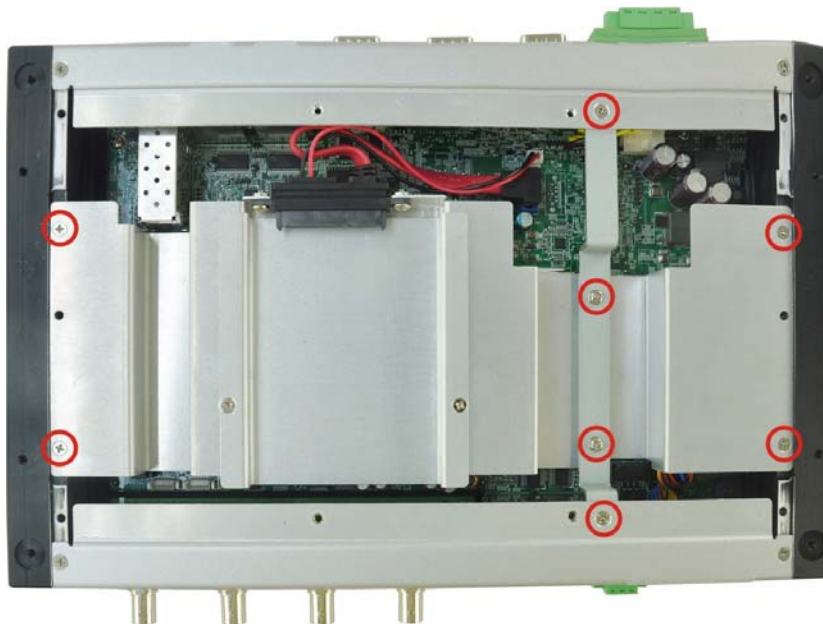
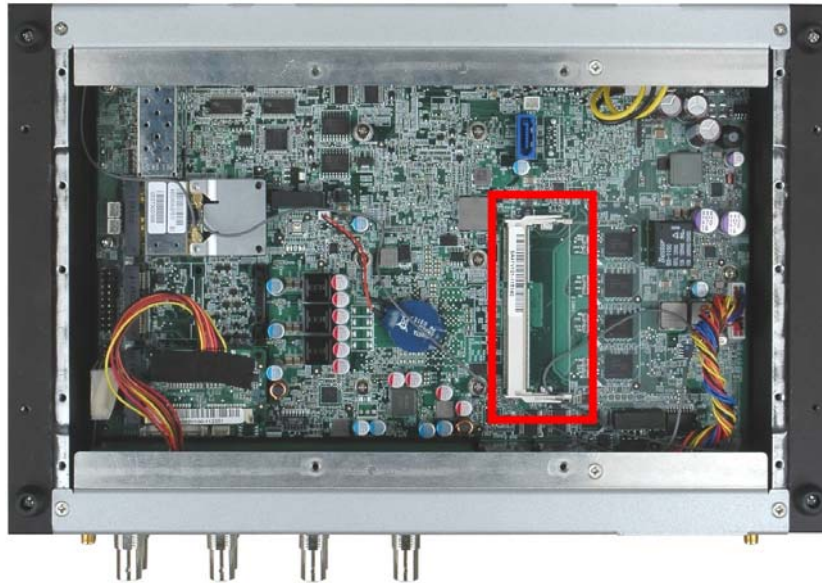


Figure 3-9: Retention Screws

- Step 3:** Locate the SO-DIMM socket on the motherboard (**Figure 3-10**).

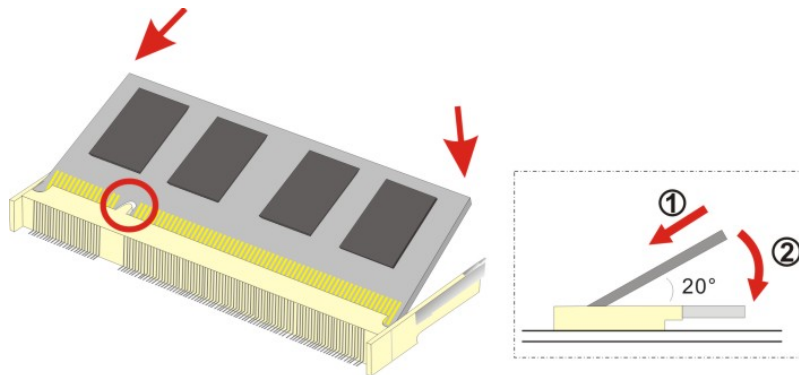




**Figure 3-10: SO-DIMM Socket**

**Step 4:** Align the SO-DIMM with the socket. The SO-DIMM must be oriented in such a way that the notch in the middle of the SO-DIMM must be aligned with the plastic bridge in the socket (**Figure 3-11**).

**Step 5:** Push the SO-DIMM into the socket at an angle (**Figure 3-11**).



**Figure 3-11: SO-DIMM Installation**

**Step 6:** Gently pull the arms of the SO-DIMM socket out and push the rear of the SO-DIMM down (**Figure 3-11**).

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

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

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

### 3.8 Mounting the System with Mounting Brackets

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

**Step 1:** Turn the embedded system over.

**Step 2:** Align the two retention screw holes in each bracket with the corresponding retention screw holes on the sides of the bottom surface (**Figure 3-12**).



**Figure 3-12: Mounting Bracket Retention Screws**

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

**Step 4:** Drill holes in the intended installation surface.

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

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

### 3.9 External Peripheral Interface Connectors

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

- Audio
- Audio/video input connectors
- CAN-bus
- DIO
- Ethernet
- GPIO for remote control
- HDMI
- Power button
- Power input
- Reset button
- RS-232
- RS-422/485
- USB
- VGA
- Wireless antenna

### 3.9.1 ACC Mode Selection

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

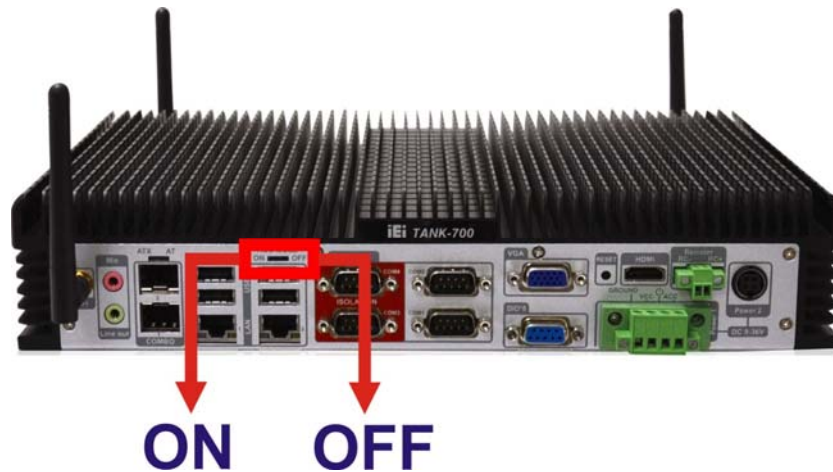


Figure 3-13: ACC Mode Switch

### 3.9.2 AT/ATX Power Mode Selection

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

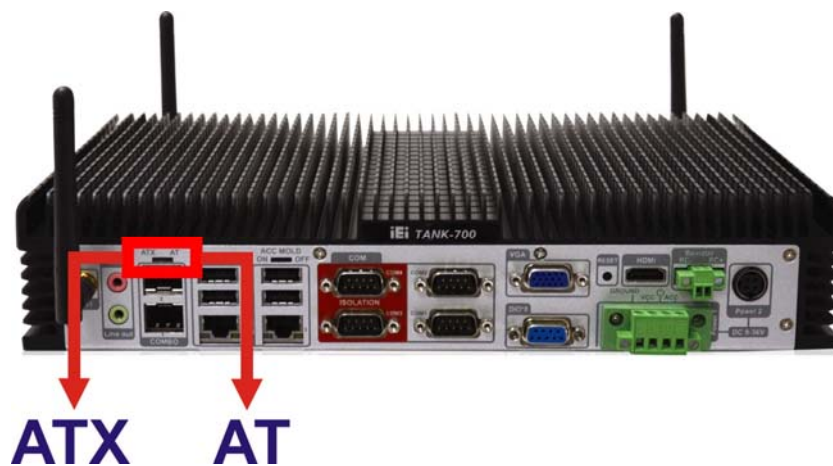


Figure 3-14: AT/ATX Power Mode Switch



## TANK-700 Embedded System

### 3.9.3 Audio Connector

**CN Label:** Line out and Mic

**CN Type:** Audio jack

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

The audio jacks connect to external audio devices.

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



Figure 3-15: Audio Connector

### 3.9.4 Audio/Video Input Connectors

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

### 3.9.5 CAN-bus Terminal Block

There is one 3-pin CAN-bus terminal block. The pinouts are shown in **Figure 3-16**

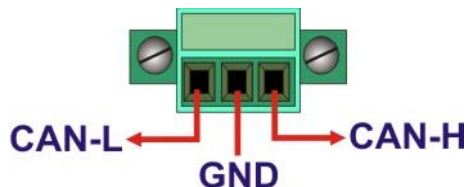


Figure 3-16: CAN-bus Terminal Block Pinouts



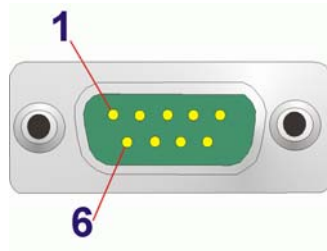
### 3.9.6 Digital Input/Output Connector

- CN Label:** DIO x 8
- CN Type:** DB-9 male connector
- CN Location:** See **Figure 1-3**
- CN Pinouts:** See **Table 3-1** and **Figure 3-17**

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

Pin	Description	Pin	Description
1	DIN0	6	DOUT2
2	DOUT0	7	DIN3
3	DIN1	8	DOUT3
4	DOUT1	9	VCC5
5	DIN2		

**Table 3-1: DIO Connector Pinouts**



**Figure 3-17: DIO Connector Pinout Location**

### 3.9.7 HDMI Connector

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

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

## TANK-700 Embedded System

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

**Table 3-2: HDMI Connector Pinouts**

### 3.9.8 LAN Connectors

**CN Label:** LAN

**CN Type:** RJ-45

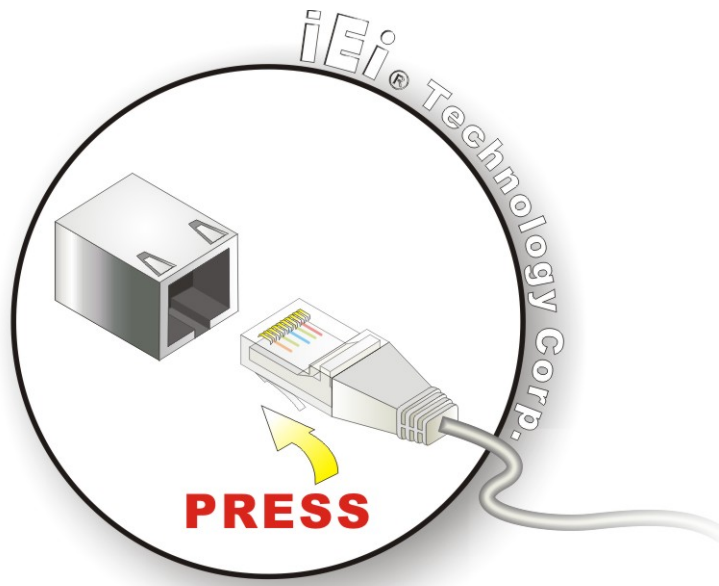
**CN Location:** See **Figure 1-3**

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

The LAN connectors allow connection to an external network.

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

**Step 2:** **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the TANK-700. See **Figure 3-18**.



**Figure 3-18: LAN Connection**

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

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

**Table 3-3: LAN Pinouts**



**Figure 3-19: RJ-45 Ethernet Connector**

The RJ-45 Ethernet connector has two status LEDs, one green and one yellow. The green LED indicates activity on the port and the yellow LED indicates the port is linked. See Table 3-4.

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

**Table 3-4: RJ-45 Ethernet Connector LEDs**

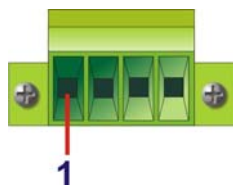
## 3.9.9 Power Input, 4-pin Terminal Block

- CN Label:** POWER 1
- CN Type:** 4-pin terminal block
- CN Location:** See Figure 1-3
- CN Pinouts:** See Table 3-5 and Figure 3-20

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

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

**Table 3-5: 4-pin Terminal Block Pinouts**



**Figure 3-20: 4-pin Terminal Block Pinout Location**

## 3.9.10 Power Input, 4-pin DIN Connector

- CN Label:** POWER 2
- CN Type:** 4-pin DIN connector
- CN Location:** See Figure 1-3
- CN Pinouts:** See Table 3-6 and Figure 3-21

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



**Figure 3-21: Power Input Connector**

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

**Table 3-6: Power Input Pinouts**

### 3.9.11 Remote Control Connector

**CN Label:** Remoter

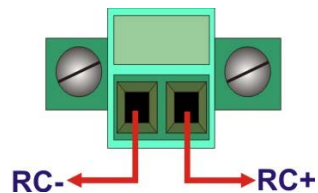
**CN Type:** 2-pin terminal block

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

**CN Pinouts:** See **Figure 3-22**

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

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



**Figure 3-22: Remote Control Terminal Block Pinout Location**



## TANK-700 Embedded System

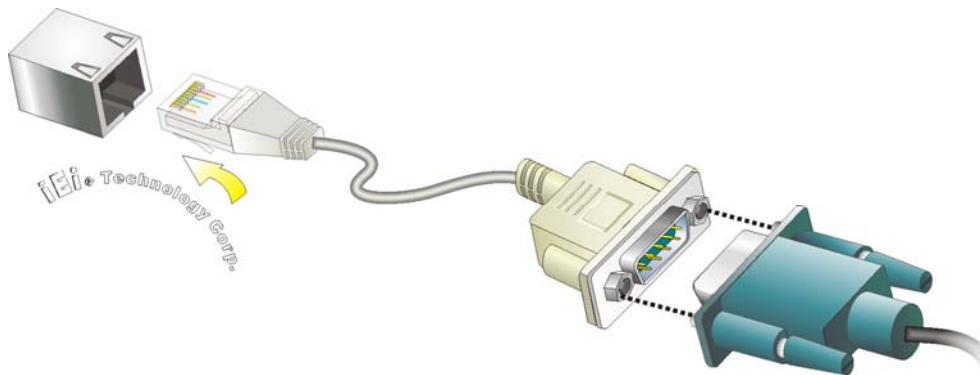
### 3.9.12 RJ-45 RS-232 Serial Ports

<b>CN Label:</b>	<b>RS 232</b>
<b>CN Type:</b>	<b>RJ-45</b>
<b>CN Location:</b>	See <b>Figure 1-2</b>
<b>CN Pinouts:</b>	See <b>Table 3-7</b> and <b>Figure 3-24</b>

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

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

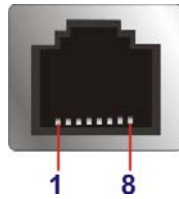
**Step 2: Insert the RJ-45 connector.** Insert the RJ-45 connector on the RJ-45 to DB-9 COM port cable to one of the RJ-45 RS-232 connectors on the TANK-700. See **Figure 3-23**.



**Figure 3-23: RJ-45 RS-232 Serial Device Connection**

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

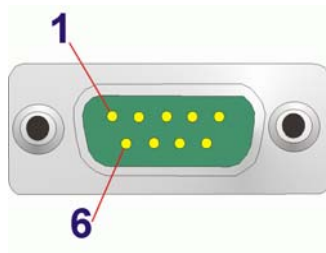
**Step 4: Secure the connector.** Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.



**Figure 3-24: RJ-45 RS-232 Serial Port Pinout Location**

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

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



**Figure 3-25: DB-9 Connector Pinout Location**

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

**Table 3-8: DB-9 Connector Pinouts**

## TANK-700 Embedded System

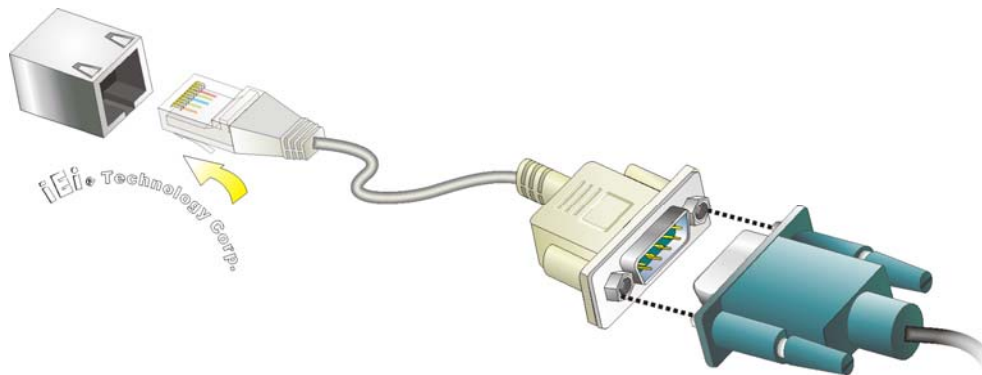
### 3.9.13 RJ-45 RS-422/485 Serial Ports

<b>CN Label:</b>	<b>RS 422/485</b>
<b>CN Type:</b>	<b>RJ-45</b>
<b>CN Location:</b>	See <b>Figure 1-2</b>
<b>CN Pinouts:</b>	See <b>Table 3-9</b> and <b>Figure 3-27</b>

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

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

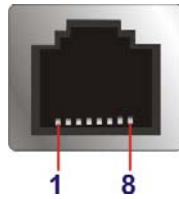
**Step 2: Insert the RJ-45 connector.** Insert the RJ-45 connector on the RJ-45 to DB-9 COM port cable to one of the RJ-45 RS-422/485 connectors on the TANK-700. See **Figure 3-26**.



**Figure 3-26: RJ-45 RS-422/485 Serial Device Connection**

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

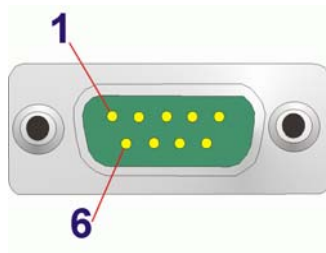
**Step 4: Secure the connector.** Secure the serial device connector to the external interface by tightening the two retention screws on either side of the connector.



**Figure 3-27: RJ-45 RS-422/485 Serial Port Pinout Location**

Pin	Description	Pin	Description
1	N/A	5	N/A
2	TXD485#	6	RXD485#
3.	N/A	7	N/A
4.	TXD485+	8	RXD485+

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



**Figure 3-28: DB-9 Connector Pinout Location**

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

**Table 3-10: DB-9 Connector Pinouts**

## TANK-700 Embedded System

### 3.9.14 RS-232 Serial Port Connectors

**CN Label:** COM1, COM2, COM3 and COM4

**CN Type:** DB-9 connectors

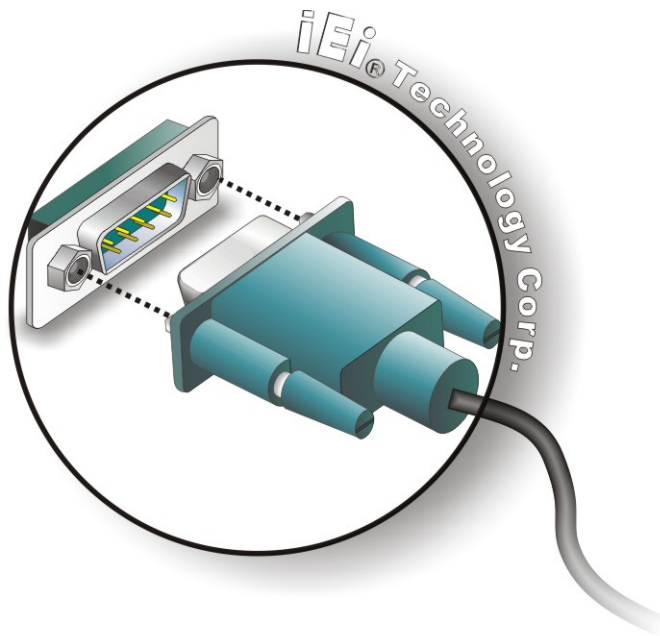
**CN Location:** See **Figure 1-3**

**CN Pinouts:** See **Table 3-11** and **Figure 3-30**

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

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

**Step 2:** **Insert the serial connector.** Insert the DB-9 connector of a serial device into the DB-9 connector on the external peripheral interface. See **Figure 3-29**.



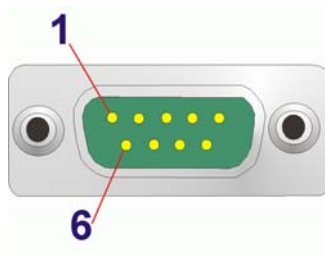
**Figure 3-29: Serial Device Connector**

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



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

**Table 3-11: Serial Port Pinouts**



**Figure 3-30: Serial Port Pinout Location**

### 3.9.15 SFP Fiber Connectors

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

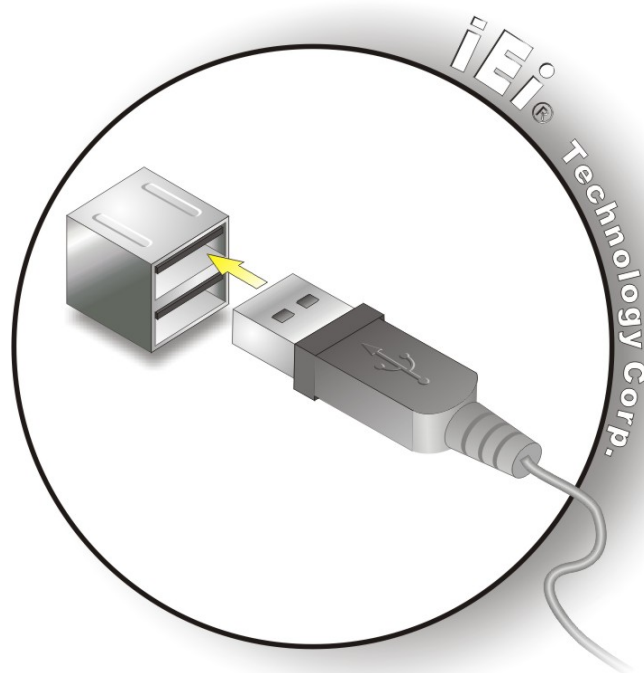
### 3.9.16 USB Connectors

<b>CN Label:</b>	<b>USB</b>
<b>CN Type:</b>	USB port
<b>CN Location:</b>	See <b>Figure 1-2</b> and <b>Figure 1-3</b>
<b>CN Pinouts:</b>	See <b>Table 3-12</b>

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

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

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

**Figure 3-31: USB Device Connection**

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

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

**Table 3-12: USB Port Pinouts**

### 3.9.17 VGA Connector

**CN Label:** VGA

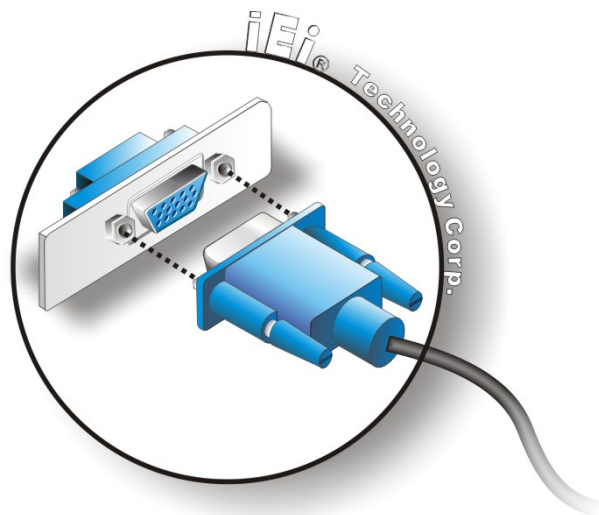
**CN Type:** 15-pin Female

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

**CN Pinouts:** See **Figure 3-33** and **Table 3-13**

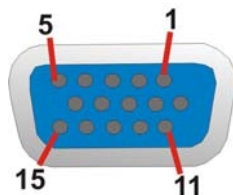
The VGA connector connects to a monitor that accepts VGA video input.

- Step 1:** **Locate the female DB-15 connector.** The location of the female DB-15 connector is shown in **Figure 1-3**.
- Step 2:** **Align the VGA connector.** Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.
- Step 3:** **Insert the VGA connector.** Once the connectors are properly aligned with, insert the male connector from the VGA screen cable into the female connector on the TANK-700. See **Figure 3-32**.



**Figure 3-32: VGA Connector**

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



**Figure 3-33: VGA Connector**

## TANK-700 Embedded System

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

Table 3-13: VGA Connector Pinouts

### 3.10 Powering On/Off the System



#### WARNING:

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

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



Figure 3-34: Power Button

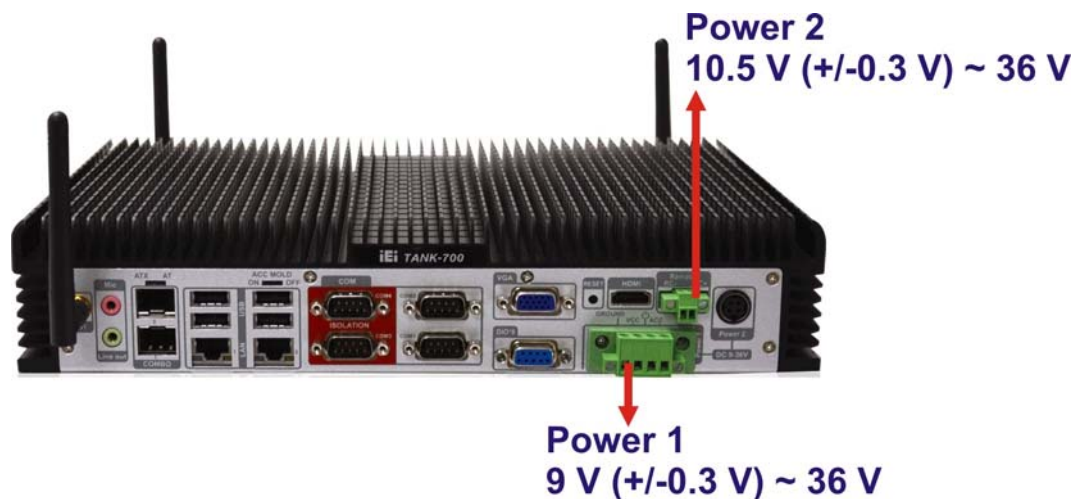


### 3.11 Redundant Power

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

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

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



**Figure 3-35: Power Connectors**

When the system is in ACC On mode, the main power input is from Power 1 connector; when the system is in ACC Off mode, the main power input is from Power 2 connector. The ACC on/off mode is selected by the ACC mode switch on the rear panel (**Figure 3-13**).

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

## TANK-700 Embedded System

### 3.11.1 ACC ON



#### NOTE:

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

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

#### 3.11.1.1 Boot-up

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

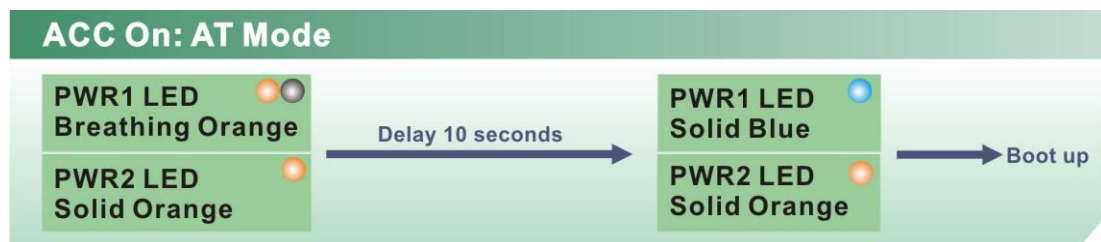


Figure 3-36: ACC On: AT Mode

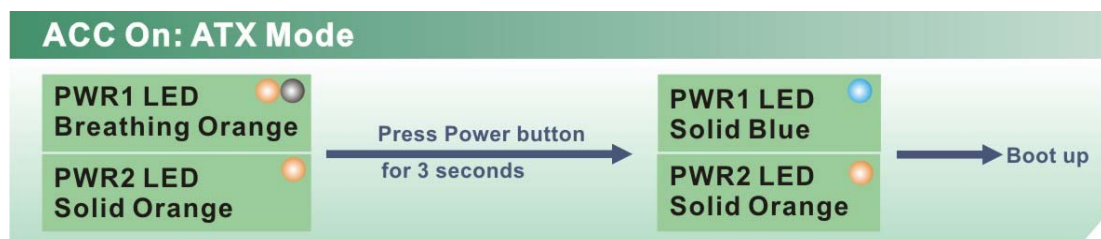


Figure 3-37: ACC On: ATX Mode

### 3.11.1.2 Switch to Backup Power

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

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

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



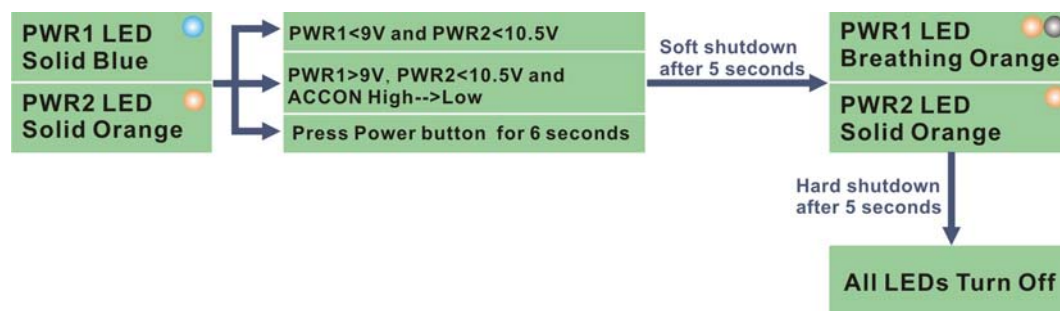
**Figure 3-38: ACC On: Switch Between PWR1 and PWR2**

### 3.11.1.3 Shutdown

The system will shutdown in the following situations:

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

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



**Figure 3-39: ACC On: Shutdown**



## NOTE:

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

### 3.11.2 ACC OFF

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

#### 3.11.2.1 Boot-up

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

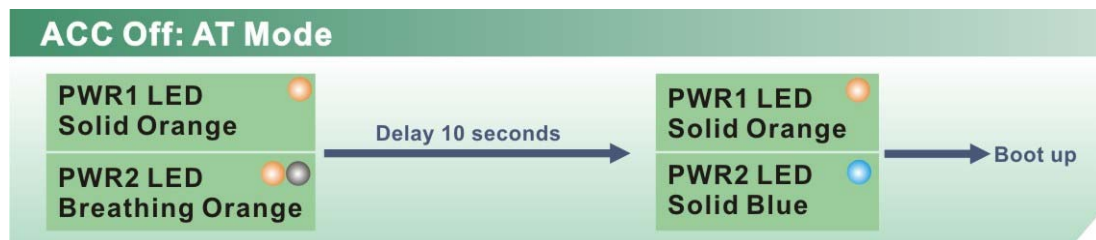


Figure 3-40: ACC Off: AT Mode

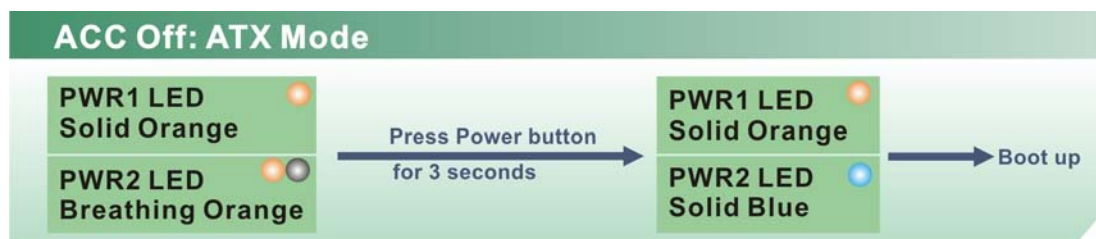


Figure 3-41: ACC Off: ATX Mode

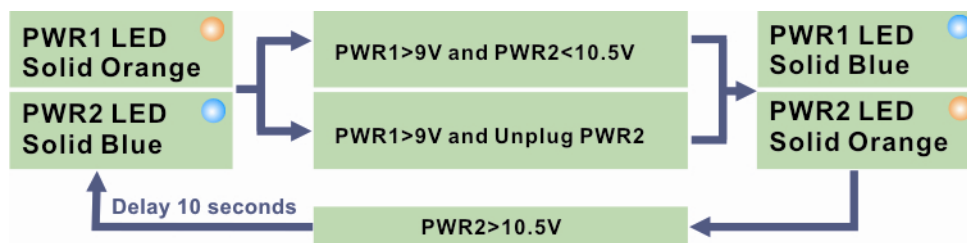


### 3.11.2.2 Switch to Backup Power

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

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

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



**Figure 3-42: ACC Off: Switch Between PWR1 and PWR2**



#### **NOTE:**

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

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

## TANK-700 Embedded System

### 3.11.2.3 Shutdown

The system will shutdown in the following situations:

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

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

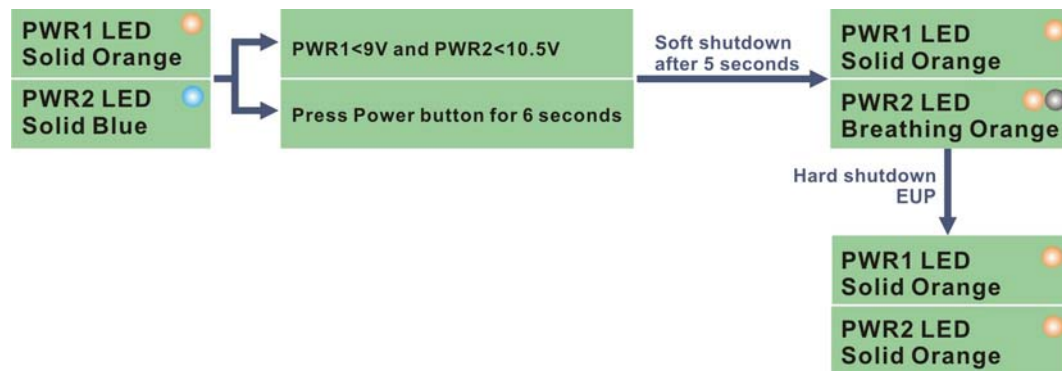


Figure 3-43: ACC Off: Shutdown



#### NOTE:

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

Chapter

4

# BIOS

---

## 4.1 Introduction

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

### 4.1.1 Starting Setup

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

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

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

### 4.1.2 Using Setup

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

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes
Page Up key	Increase the numeric value or make changes
Page Dn key	Decrease the numeric value or make changes



Key	Function
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Previous values
F3	Load optimized defaults
F4	Save changes and Exit BIOS

**Table 4-1: BIOS Navigation Keys**

### 4.1.3 Getting Help

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

### 4.1.4 Unable to Reboot After Configuration Changes

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

### 4.1.5 BIOS Menu Bar

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

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

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

## TANK-700 Embedded System

### 4.2 Main

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

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

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.		
Main	Advanced	Chipset
Boot Security Save & Exit		
BIOS Information		Set the Date. Use Tab to switch between Data elements.
BIOS Vendor	American Megatrends	
Core Version	4.6.4.0 0.15	
Compliancy	UEFI 2.1	
Project Version	SA41AR13.ROM	
Build Date and Time	08/09/2011 11:53:40	-----
iWDD Vendor	ICP	←→: Select Screen
iWDD Version	SA41ET12.bin	↑ ↓: Select Item
System Date	[Thu 08/11/2011]	EnterSelect
System Time	[15:10:27]	+ - Change Opt.
Access Level	Administrator	F1 General Help
		F2 Previous Values
		F3 Optimized Defaults
		F4 Save & Exit
		ESC Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.		

#### BIOS Menu 1: Main

#### → System Overview

The **BIOS Information** lists a brief summary of the BIOS. The fields in **BIOS Information** cannot be changed. The items shown in the system overview include:

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

The System Overview field also has two user configurable fields:

#### → System Date [xx/xx/xx]

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

➔ **System Time [xx:xx:xx]**

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

## 4.3 Advanced

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



### **WARNING!**

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

```

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

> ACPI Settings
> Trusted Computing
> CPU Configuration
> SATA Configuration
> USB Configuration
> F81216 Second Super IO Configuration
> Super IO Configuration
> H/M Monitor
> Serial Port Console Redirection
> iEi Feature

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

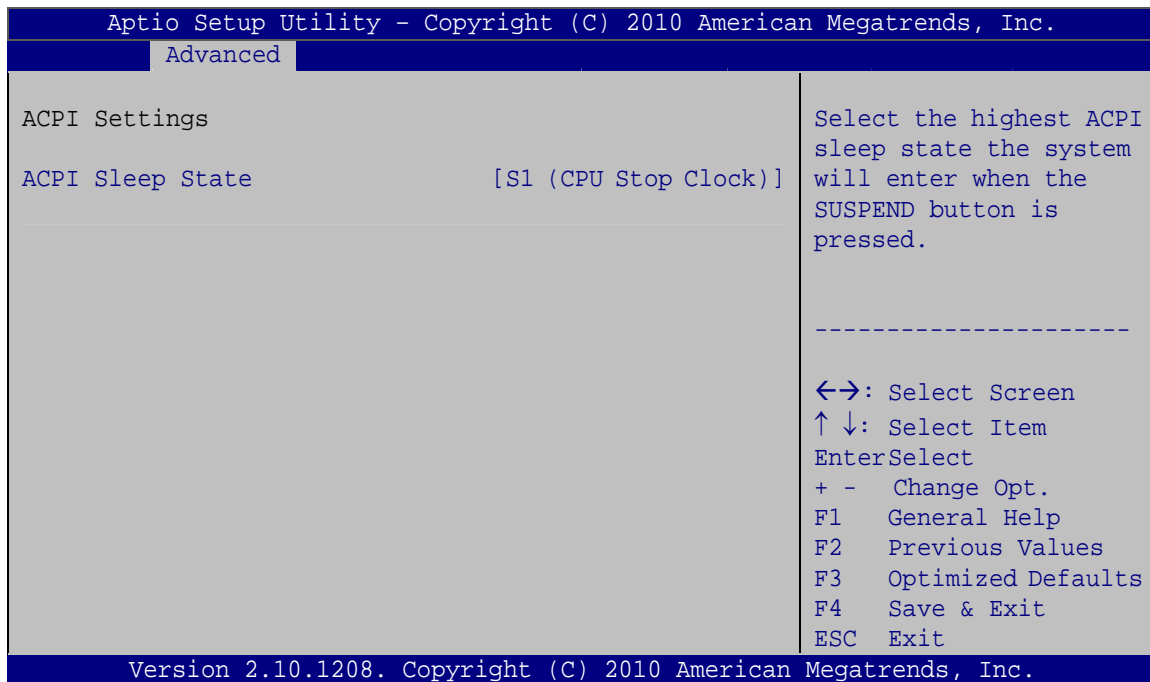
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
  
```

### **BIOS Menu 2: Advanced**

## TANK-700 Embedded System

### 4.3.1 ACPI Settings

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



#### BIOS Menu 3: ACPI Configuration

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

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

##### → **Suspend Disabled**

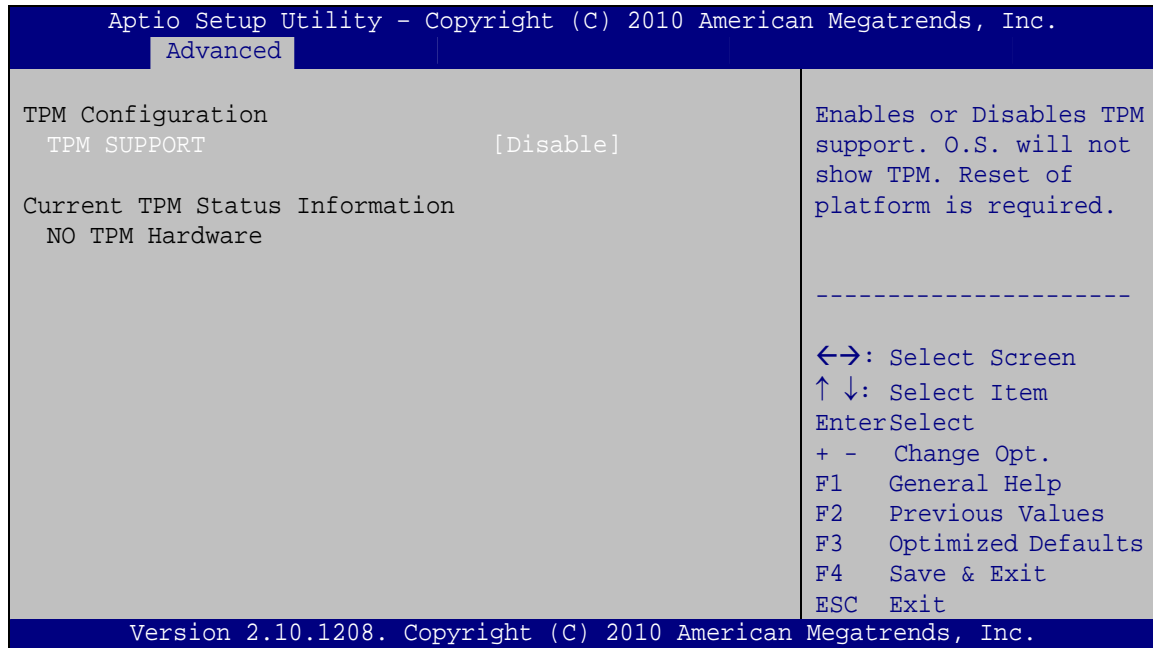
→ **S1 (CPU Stop DEFAULT Clock)** The system enters S1(POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.

→ **S3 (Suspend to RAM)** The caches are flushed and the CPU is powered off. Power to the RAM is maintained. The computer returns slower to a working state, but more power is saved.



### 4.3.2 Trusted Computing

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



#### BIOS Menu 4: TPM Configuration

##### → TPM Support [Disable]

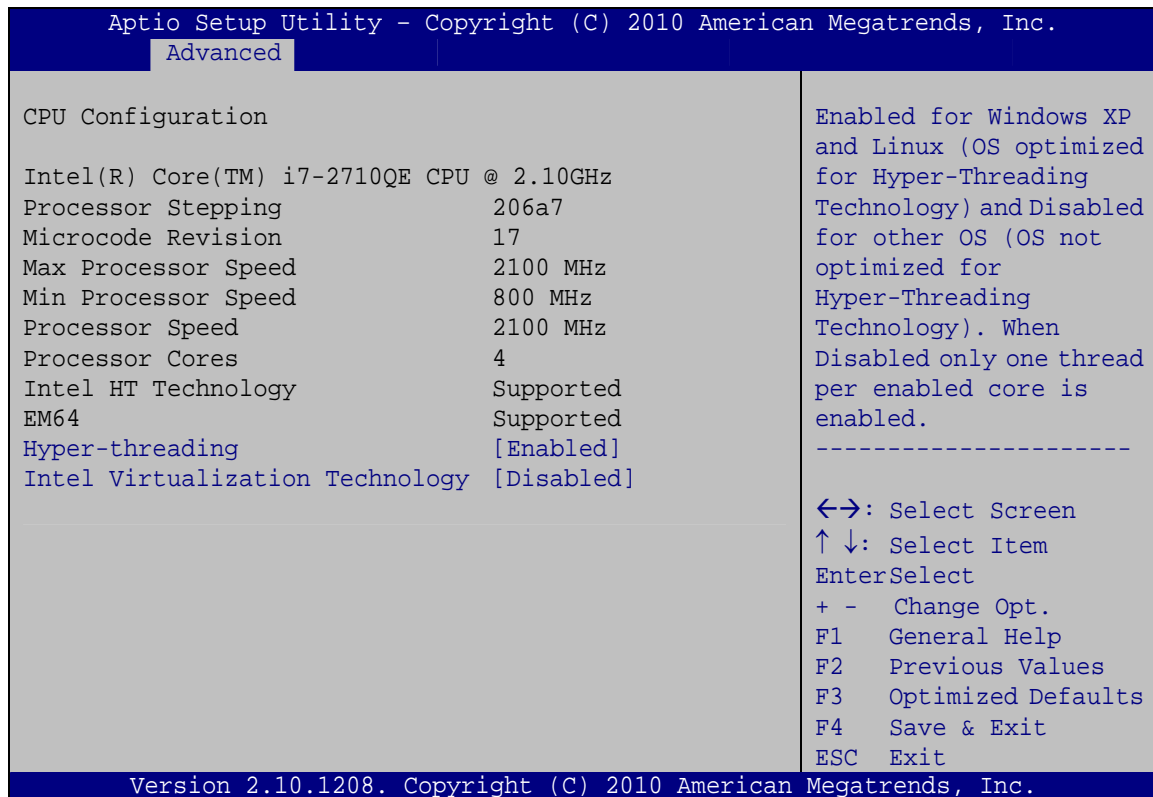
Use the **TPM Support** option to configure support for the TPM.

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

## TANK-700 Embedded System

### 4.3.3 CPU Configuration

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



#### BIOS Menu 5: CPU Configuration

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

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

➔ **Hyper-threading [Enabled]**

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

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

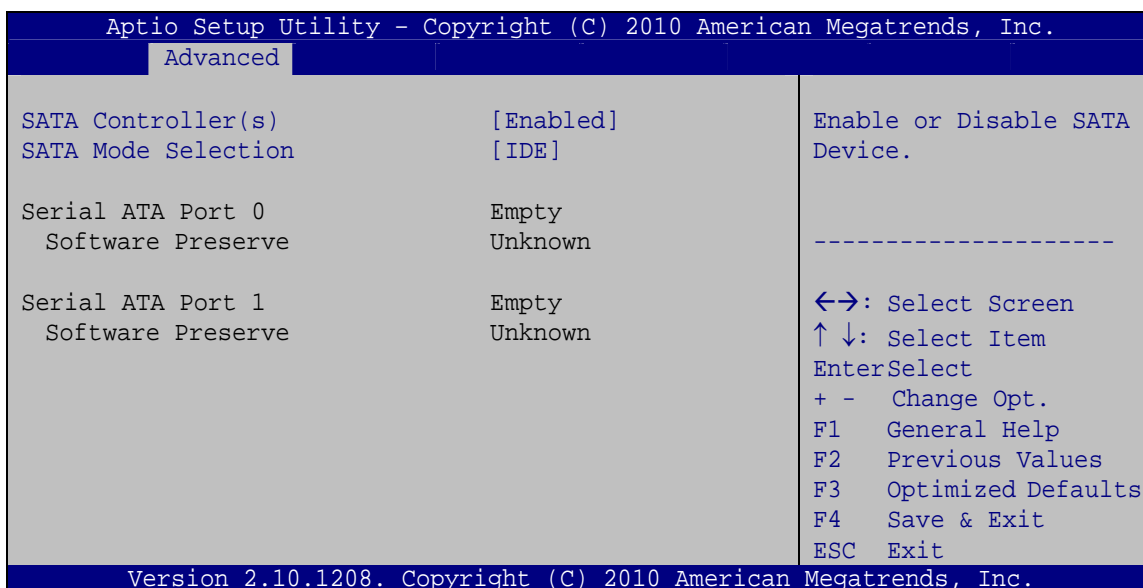
➔ **Intel Virtualization Technology [Disabled]**

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

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

#### 4.3.4 SATA Configuration

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



**BIOS Menu 6: SATA Configuration**

## TANK-700 Embedded System

### → SATA Controller(s) [Enabled]

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

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

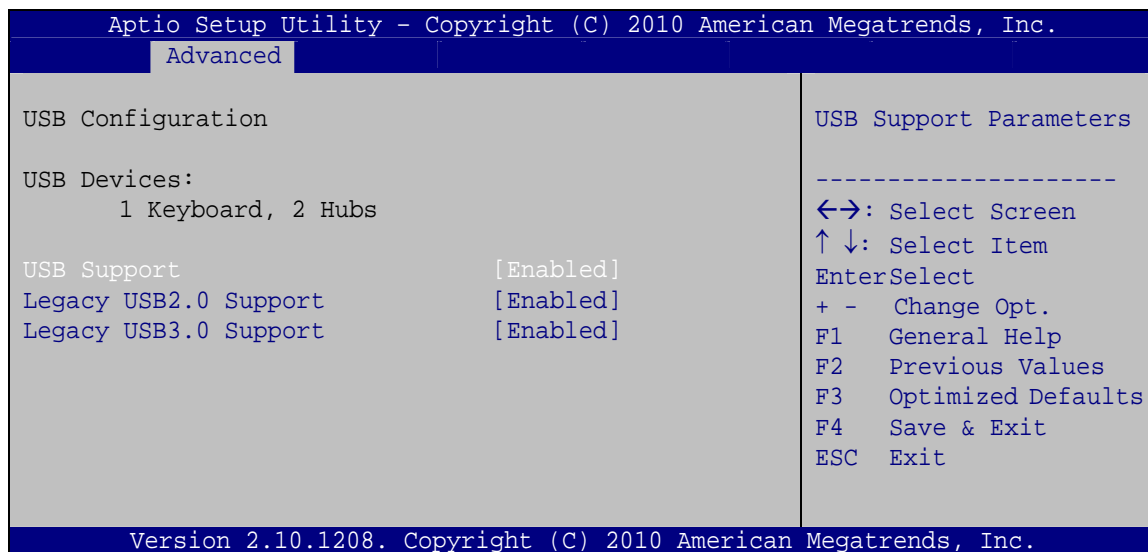
### → SATA Mode Selection [IDE]

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

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

## 4.3.5 USB Configuration

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



### BIOS Menu 7: USB Configuration

### → USB Devices

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

➔ **USB2.0 Support [Enabled]**

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

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

➔ **Legacy USB2.0 Support [Enabled]**

Use the **Legacy USB2.0 Support** BIOS option to enable USB mouse and USB keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

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

➔ **Legacy USB3.0 Support [Enabled]**

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

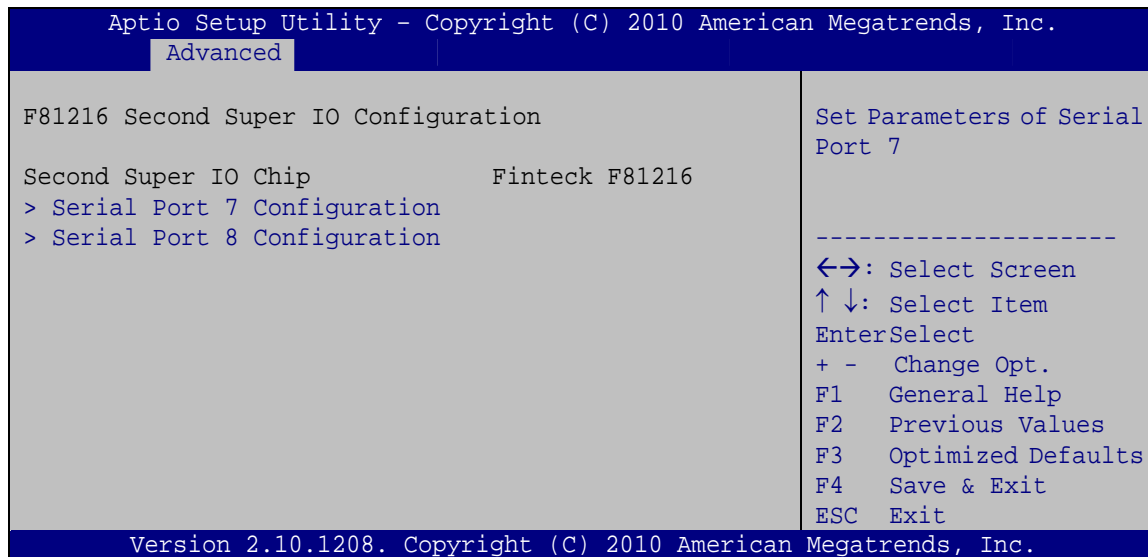
- ➔ **Enabled      DEFAULT**      USB 3.0 support enabled
- ➔ **Disabled**                      USB 3.0 support disabled



## TANK-700 Embedded System

### 4.3.6 Second Super IO Configuration

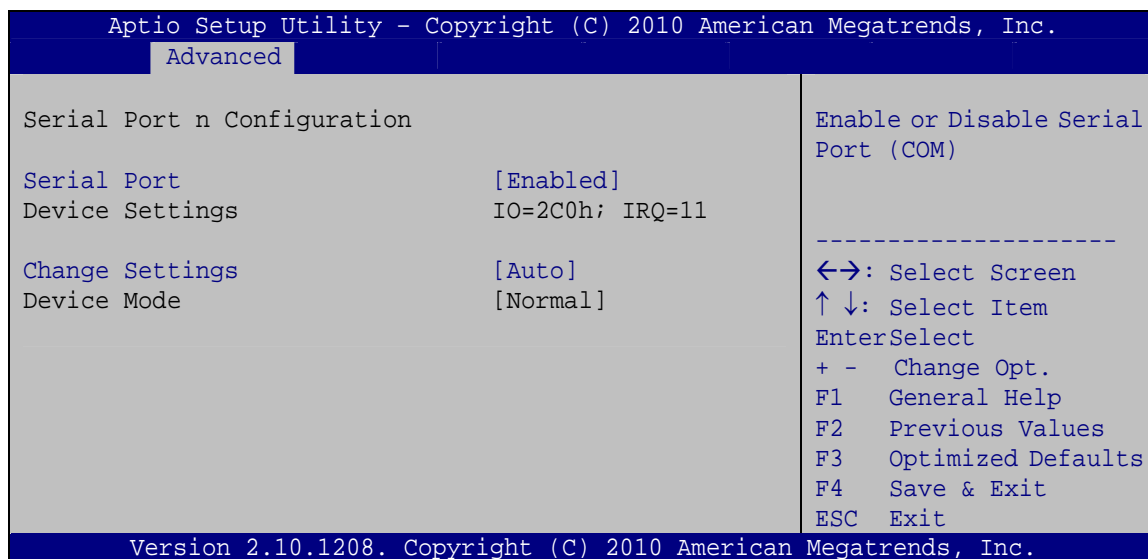
Use the **F81216 Second Super IO Configuration** menu (**BIOS Menu 8**) to set or change the configurations for the serial ports.



**BIOS Menu 8: F81216 Second Super IO Configuration**

#### 4.3.6.1 Serial Port n Configuration

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



**BIOS Menu 9: Serial Port n Configuration Menu**

#### 4.3.6.1.1 Serial Port 7 Configuration

##### → Serial Port [Enabled]

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

- |   |                 |                |                         |
|---|-----------------|----------------|-------------------------|
| → | <b>Disabled</b> |                | Disable the serial port |
| → | <b>Enabled</b>  | <b>DEFAULT</b> | Enable the serial port  |

##### → Change Settings [Auto]

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

- |   |  |                |   |
|---|--|----------------|---|
| → | <b>Auto</b>  | <b>DEFAULT</b> | The serial port IO port address and interrupt address are automatically detected.                 |
| → | <b>IO=3F8h;<br/>IRQ=3</b>                                    |                | Serial Port I/O port address is 3F8h and the interrupt address is IRQ3                            |
| → | <b>IO=3F8h;<br/>IRQ=3, 4, 5,<br/>6, 7, 9, 10,<br/>11, 12</b> |                | Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12 |
| → | <b>IO=2F8h;<br/>IRQ=3, 4, 5,<br/>6, 7, 9, 10,<br/>11, 12</b> |                | Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12 |
| → | <b>IO=3E8h;<br/>IRQ=3, 4, 5,<br/>6, 7, 9, 10,<br/>11, 12</b> |                | Serial Port I/O port address is 3E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12 |
| → | <b>IO=2E8h;<br/>IRQ=3, 4, 5,<br/>6, 7, 9, 10,<br/>11, 12</b> |                | Serial Port I/O port address is 2E8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12 |

## TANK-700 Embedded System

### → Device Mode [Normal]

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

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

### 4.3.6.1.2 Serial Port 8 Configuration

#### → Serial Port [Enabled]

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

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

#### → Change Settings [Auto]

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

- **Auto**      **DEFAULT**      The serial port IO port address and interrupt address are automatically detected.
- **IO=2F8h;  
IRQ=3**      Serial Port I/O port address is 2F8h and the interrupt address is IRQ3
- **IO=3F8h;  
IRQ=3, 4, 5,  
6, 7, 9, 10,  
11, 12**      Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12
- **IO=2F8h;  
IRQ=3, 4, 5,  
6, 7, 9, 10,  
11, 12**      Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4, 5, 6, 7, 9, 10, 11, 12

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

**IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**

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

**IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12**

➔ **Device Mode [Normal]**

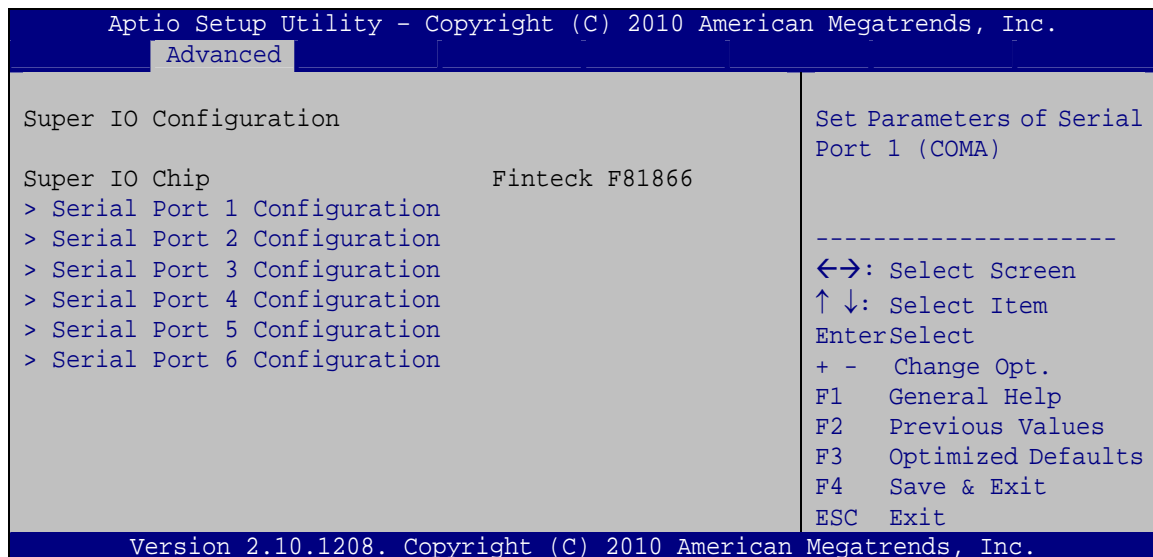
Use the **Device Mode** option to enable or disable the serial port.

➔ **Normal**      **DEFAULT**      Sets the serial port mode to normal.

➔ **RS422/485**      Enables serial port RS-422/485 support.

### 4.3.7 Super IO Configuration

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



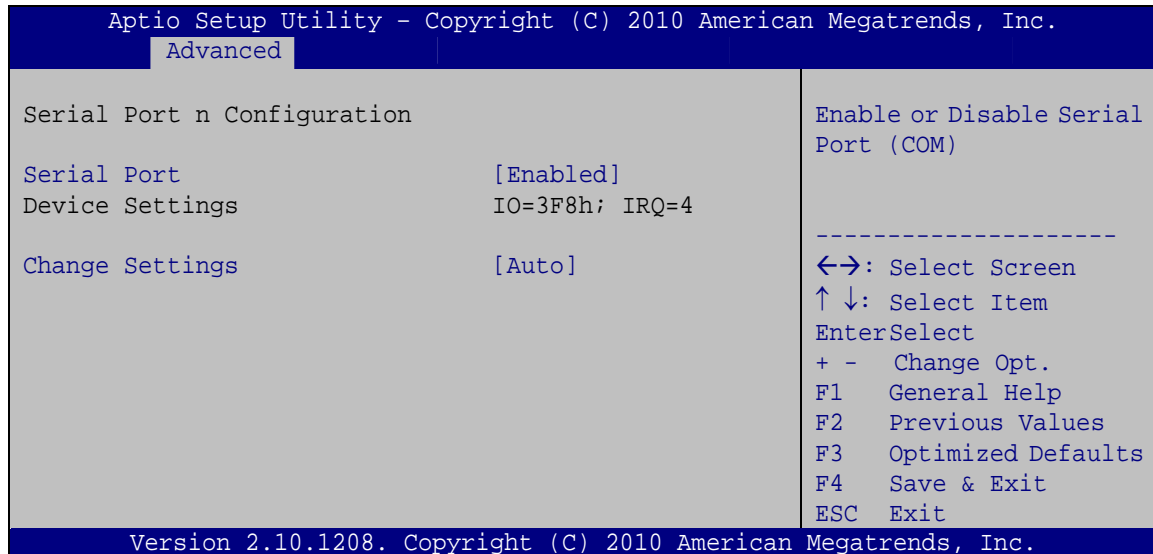
**BIOS Menu 10: Super IO Configuration**



## TANK-700 Embedded System

### 4.3.7.1 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**

#### 4.3.7.1.1 Serial Port 1 Configuration

##### ➔ Serial Port [Enabled]

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

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

##### ➔ Change Settings [Auto]

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

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

- ➔ **IO=3F8h;**  
**IRQ=3, 4**      Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
- ➔ **IO=2F8h;**  
**IRQ=3, 4**      Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4
- ➔ **IO=2C0h;**  
**IRQ=3, 4**      Serial Port I/O port address is 2C0h and the interrupt address is IRQ3, 4
- ➔ **IO=2C8h;**  
**IRQ=3, 4**      Serial Port I/O port address is 2C8h and the interrupt address is IRQ3, 4

#### 4.3.7.1.2 Serial Port 2 Configuration

##### ➔ Serial Port [Enabled]

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

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

##### ➔ Change Settings [Auto]

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

- ➔ **Auto**      **DEFAULT**      The serial port IO port address and interrupt address are automatically detected.
- ➔ **IO=2F8h;**  
**IRQ=3**      Serial Port I/O port address is 2F8h and the interrupt address is IRQ3
- ➔ **IO=3F8h;**  
**IRQ=3, 4**      Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
- ➔ **IO=2F8h;**  
**IRQ=3, 4**      Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4
- ➔ **IO=2C0h;**  
**IRQ=3, 4**      Serial Port I/O port address is 2C0h and the interrupt address is IRQ3, 4

## TANK-700 Embedded System

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

### 4.3.7.1.3 Serial Port 3 Configuration

#### ➔ Serial Port [Enabled]

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

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

#### ➔ Change Settings [Auto]

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

- ➔ **Auto**      **DEFAULT**      The serial port IO port address and interrupt address are automatically detected.
- ➔ **IO=3E8h;**  
**IRQ=10**      Serial Port I/O port address is 3E8h and the interrupt address is IRQ10
- ➔ **IO=3E8h;**  
**IRQ=10, 11**      Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11
- ➔ **IO=2E8h;**  
**IRQ=10, 11**      Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11
- ➔ **IO=2D0h;**  
**IRQ=10, 11**      Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
- ➔ **IO=2D8h;**  
**IRQ=10, 11**      Serial Port I/O port address is 2D8h and the interrupt address is IRQ10, 11

#### 4.3.7.1.4 Serial Port 4 Configuration

##### → Serial Port [Enabled]

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

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

##### → Change Settings [Auto]

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

- **Auto**            **DEFAULT**      The serial port IO port address and interrupt address are automatically detected.
- **IO=2E8h;**  
**IRQ=10**                      Serial Port I/O port address is 2E8h and the interrupt address is IRQ10
- **IO=3E8h;**  
**IRQ=10, 11**                      Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11
- **IO=2E8h;**  
**IRQ=10, 11**                      Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11
- **IO=2D0h;**  
**IRQ=10, 11**                      Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
- **IO=2D8h;**  
**IRQ=10, 11**                      Serial Port I/O port address is 2D8h and the interrupt address is IRQ10, 11

#### 4.3.7.1.5 Serial Port 5 Configuration

##### → Serial Port [Enabled]

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

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



## TANK-700 Embedded System

### → Change Settings [Auto]

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

→	<b>Auto</b>	<b>DEFAULT</b>	The serial port IO port address and interrupt address are automatically detected.
→	<b>IO=2C0h; IRQ=10</b>		Serial Port I/O port address is 2C0h and the interrupt address is IRQ10
→	<b>IO=2C0h; IRQ=10, 11</b>		Serial Port I/O port address is 2C0h and the interrupt address is IRQ10, 11
→	<b>IO=2C8h; IRQ=10, 11</b>		Serial Port I/O port address is 2C8h and the interrupt address is IRQ10, 11
→	<b>IO=2D0h; IRQ=10, 11</b>		Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
→	<b>IO=2D8h; IRQ=10, 11</b>		Serial Port I/O port address is 2D8h and the interrupt address is IRQ10, 11
→	<b>IO=2E0h; IRQ=10, 11</b>		Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11

### 4.3.7.1.6 Serial Port 6 Configuration

#### → Serial Port [Enabled]

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

→	<b>Disabled</b>		Disable the serial port
→	<b>Enabled</b>	<b>DEFAULT</b>	Enable the serial port

#### → Change Settings [Auto]

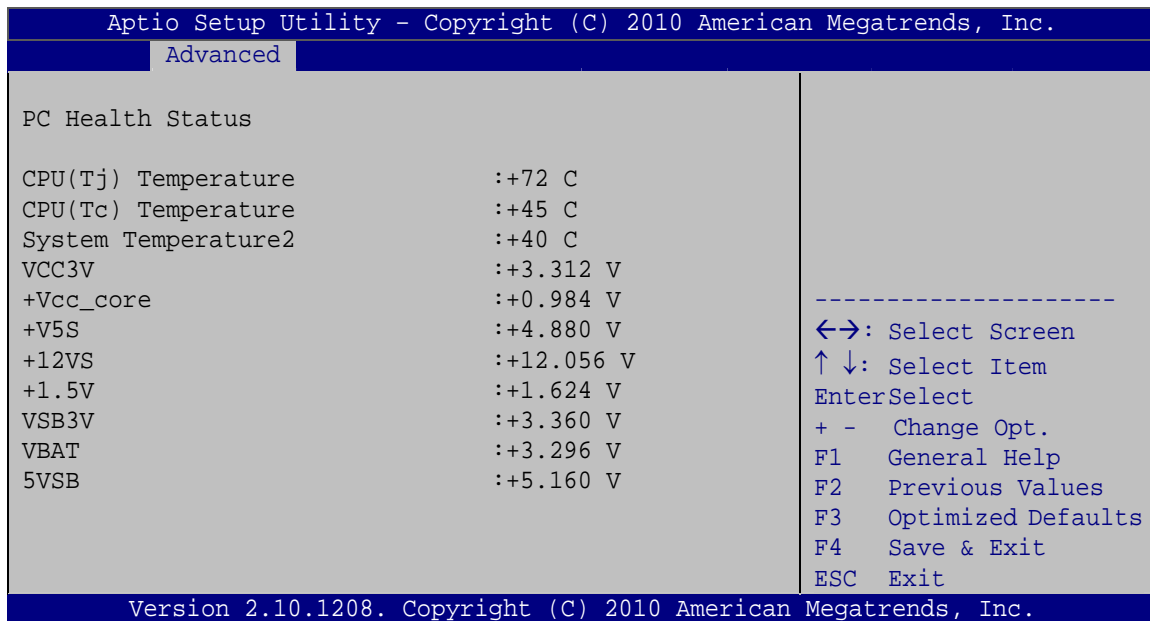
Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔	<b>Auto</b>	<b>DEFAULT</b>	The serial port IO port address and interrupt address are automatically detected.
➔	<b>IO=2E0h; IRQ=10</b>		Serial Port I/O port address is 2E0h and the interrupt address is IRQ10
➔	<b>IO=2C0h; IRQ=10, 11</b>		Serial Port I/O port address is 2C0h and the interrupt address is IRQ10, 11
➔	<b>IO=2C8h; IRQ=10, 11</b>		Serial Port I/O port address is 2C8h and the interrupt address is IRQ10, 11
➔	<b>IO=2D0h; IRQ=10, 11</b>		Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
➔	<b>IO=2D8h; IRQ=10, 11</b>		Serial Port I/O port address is 2D8h and the interrupt address is IRQ10, 11
➔	<b>IO=2E0h; IRQ=10, 11</b>		Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11

## TANK-700 Embedded System

### 4.3.8 H/W Monitor

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



#### BIOS Menu 12: H/W Monitor

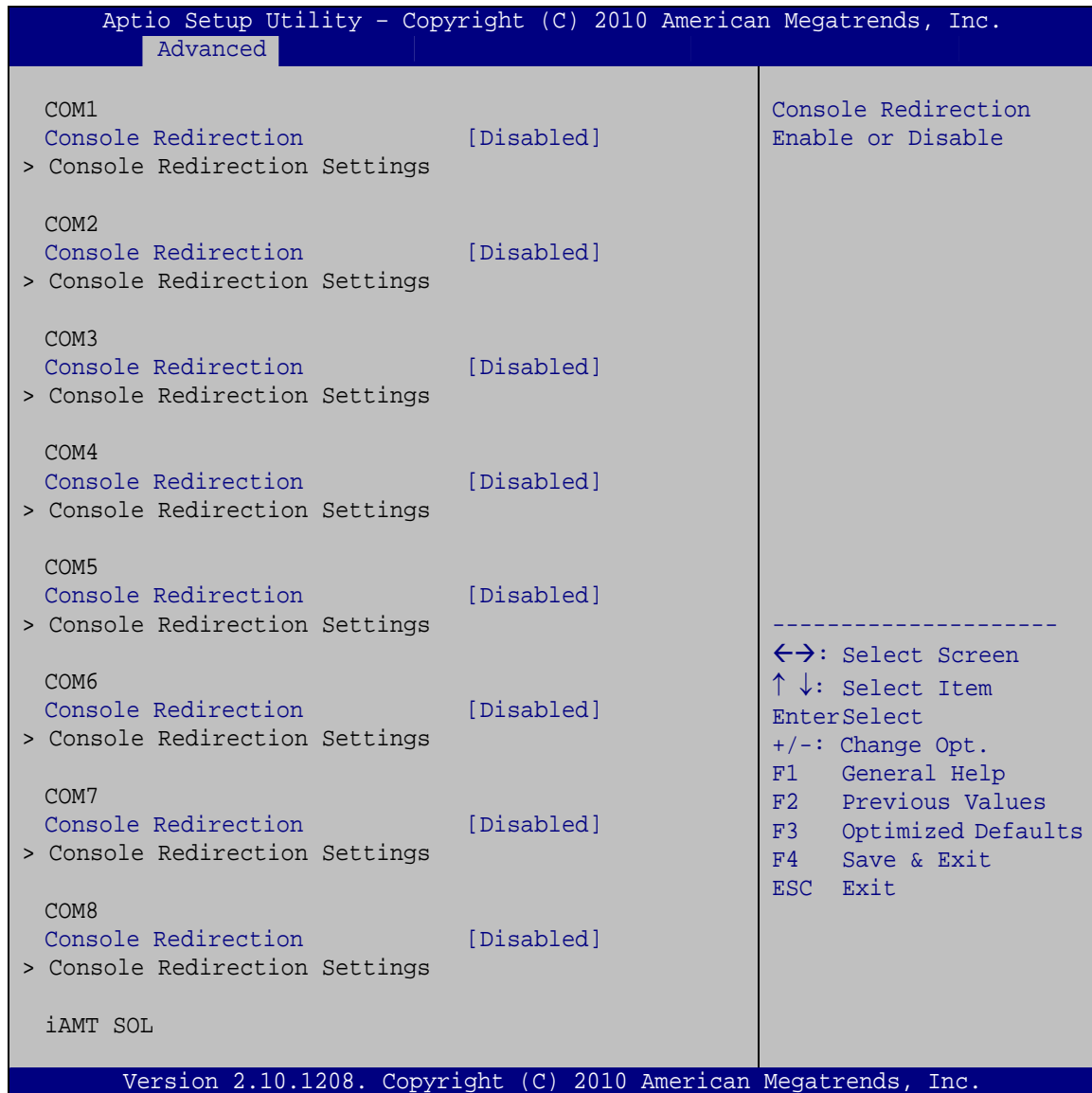
#### ➔ PC Health Status

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

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

### 4.3.9 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 13**) allows the console redirection options to be configured. Console redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.



#### BIOS Menu 13: Serial Port Console Redirection

##### → Console Redirection [Disabled]

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

## TANK-700 Embedded System

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

### ➔ **Terminal Type [VT100+]**

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

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

### ➔ **Bits per second [115200]**

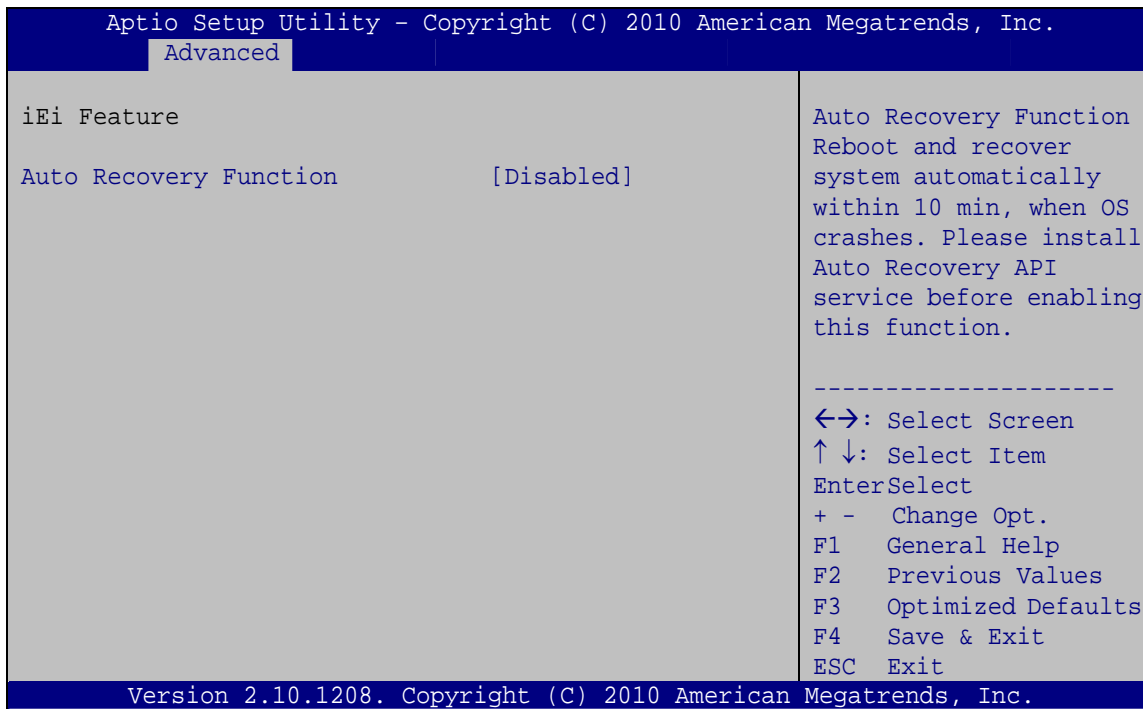
Use the **Bits per second** option to specify the serial port transmission speed. The speed must match the other side. Long or noisy lines may require lower speeds.

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



### 4.3.10 iEi Feature

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



#### BIOS Menu 14: iEi Feature

##### ➔ Auto Recovery Function [Disabled]

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

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

## TANK-700 Embedded System

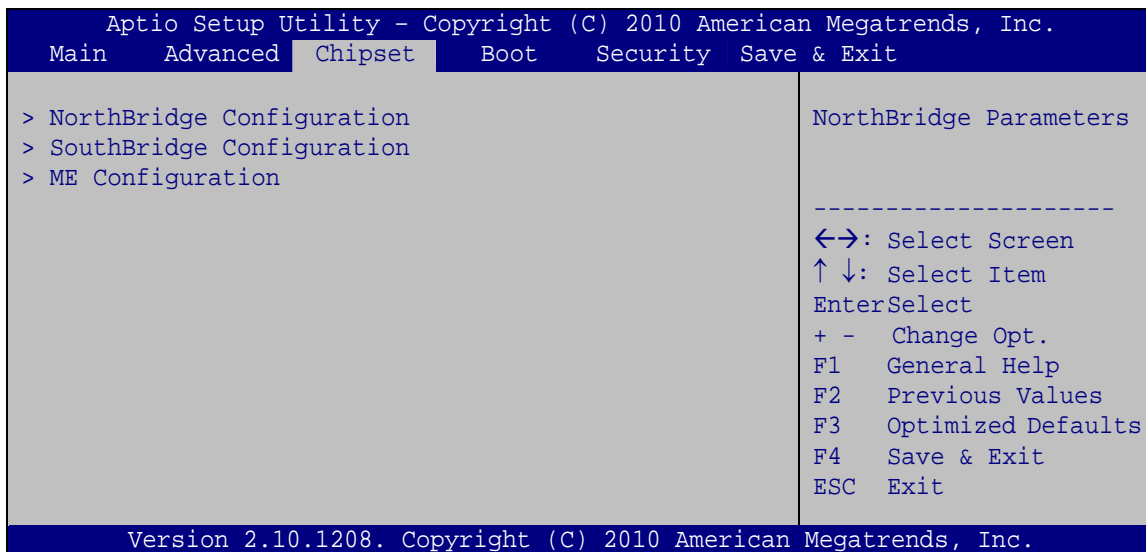
### 4.4 Chipset

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



#### **WARNING!**

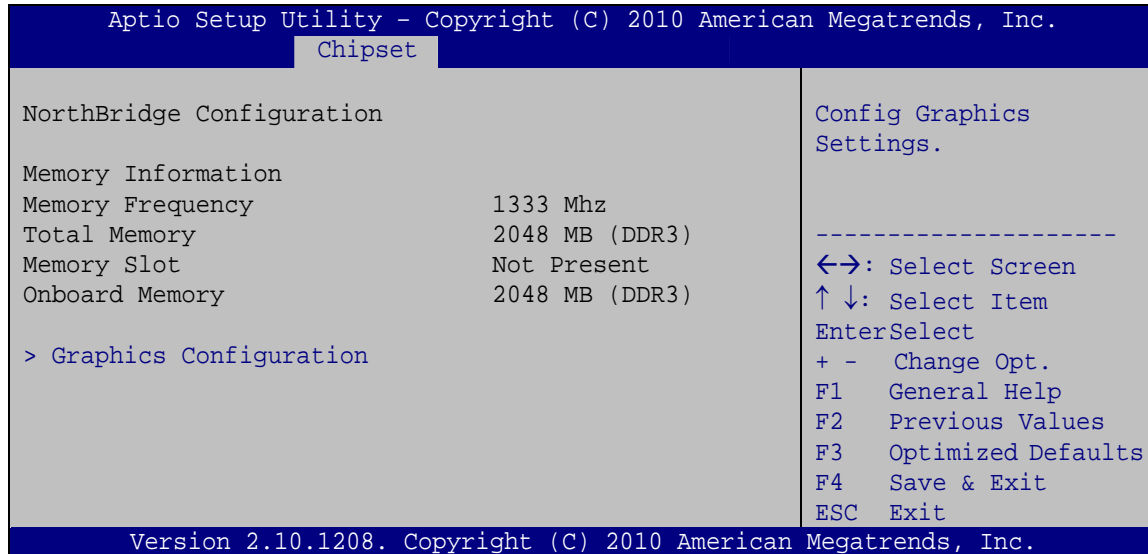
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



**BIOS Menu 15: Chipset**

#### 4.4.1 NorthBridge Configuration

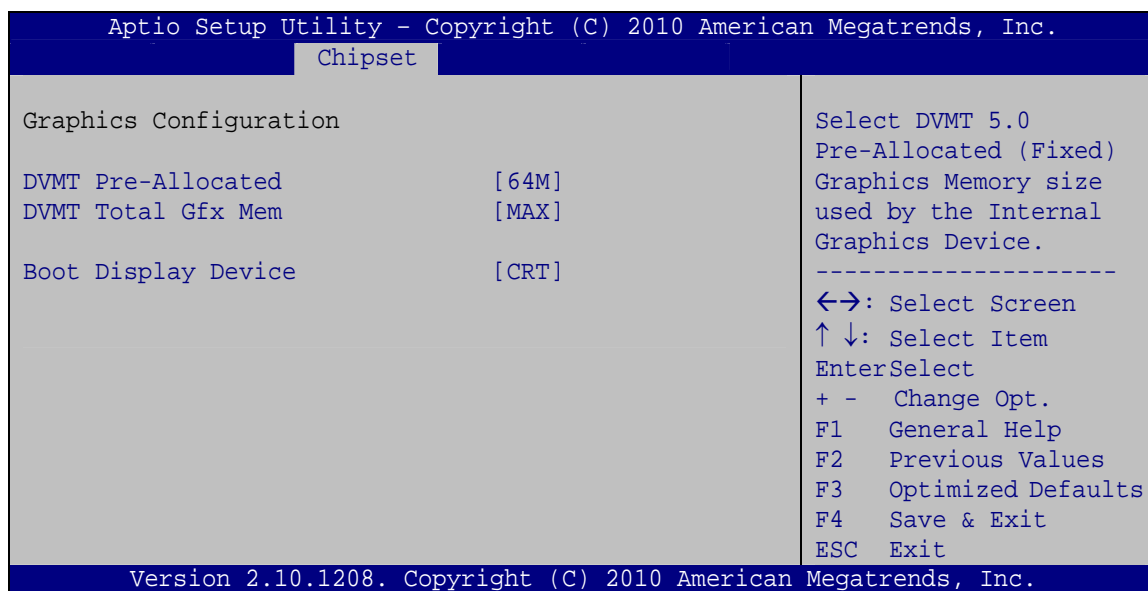
Use the **NorthBridge Configuration** menu (**BIOS Menu 16**) to configure the Northbridge chipset.



**BIOS Menu 16: Northbridge Chipset Configuration**

##### 4.4.1.1 Graphics Configuration

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



**BIOS Menu 17: Graphics Configuration**

## TANK-700 Embedded System

### → DVMT Pre-Allocated [64 M]

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

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

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

➔ **DVMT Total Gfx Mem [MAX]**

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

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

➔ **Boot Display Device [CRT]**

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

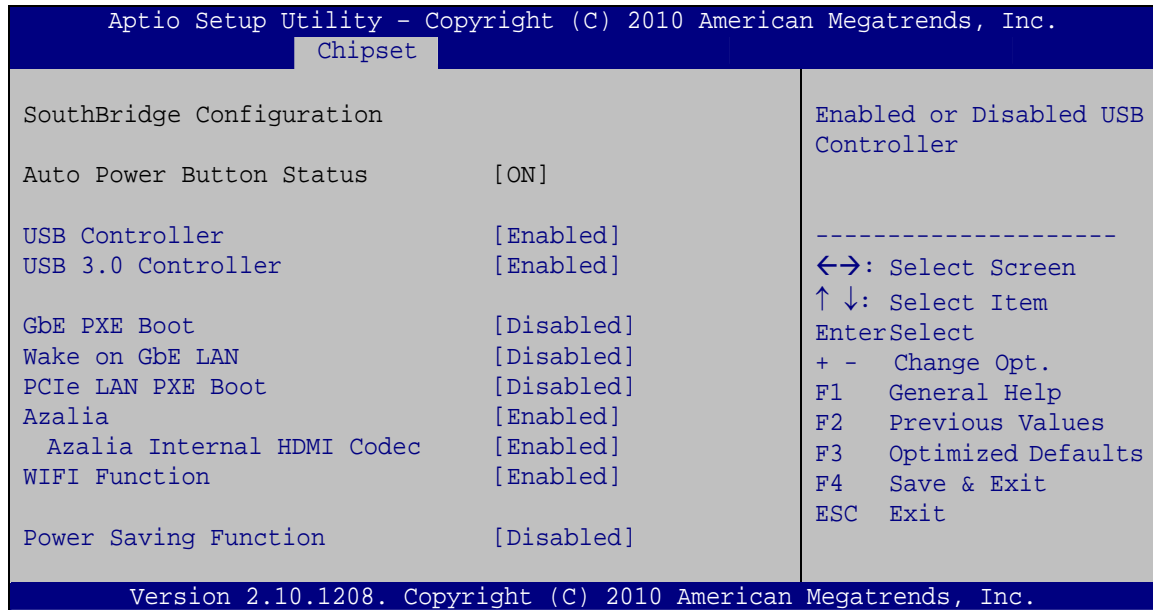
- ➔ **CRT**                      **DEFAULT**      Enables CRT as the boot display device.
- ➔ **HDMI**                      Enables HDMI as the boot display device.

#### 4.4.2 SouthBridge Configuration

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



## TANK-700 Embedded System



### BIOS Menu 18: Southbridge Chipset Configuration

#### → USB Controller [Enabled]

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

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

#### → USB 3.0 Controller [Enabled]

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

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

#### → GbE PXE Boot [Disabled]

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

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

### → Wake on GbE LAN [Disabled]

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

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

### → PCIe LAN PXE Boot [Disabled]

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

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

### → Azalia [Enabled]

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

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

### → Azalia Internal HDMI Codec [Enabled]

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

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

### → WIFI Function [Enabled]

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

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

## TANK-700 Embedded System

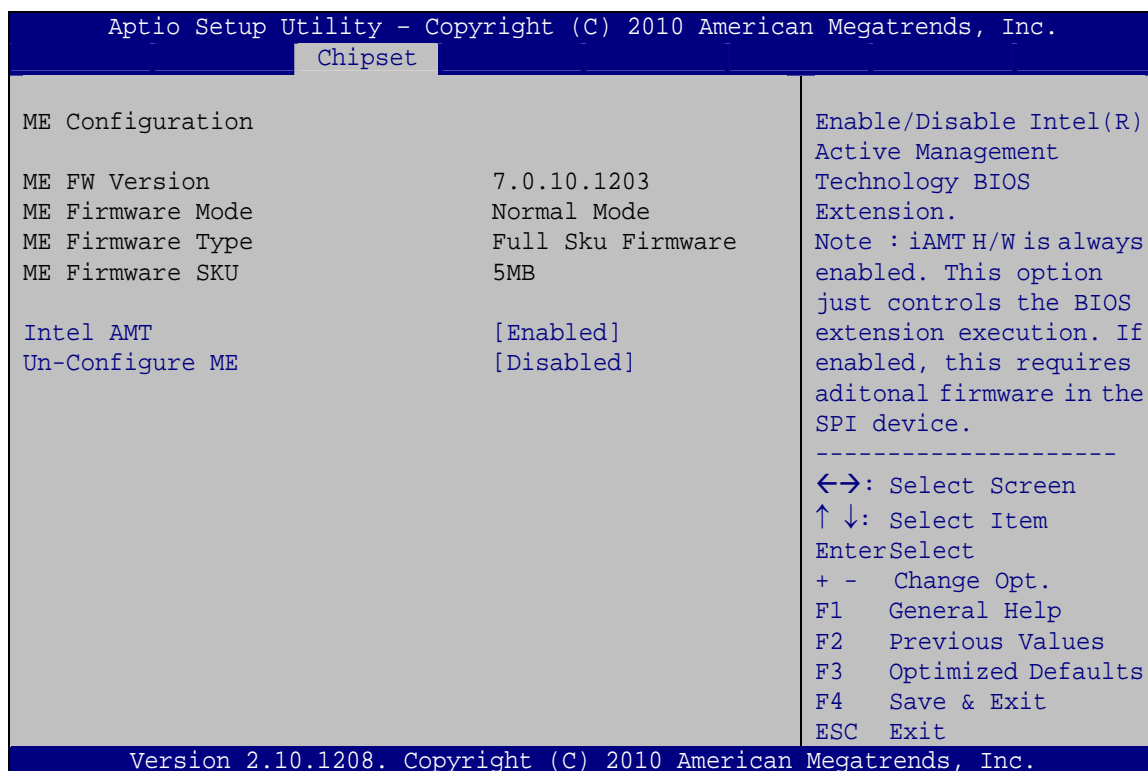
### → Power Saving Function [Disabled]

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

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

### 4.4.3 ME Configuration

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



**BIOS Menu 19: ME Configuration**

### → Intel AMT [Enabled]

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

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

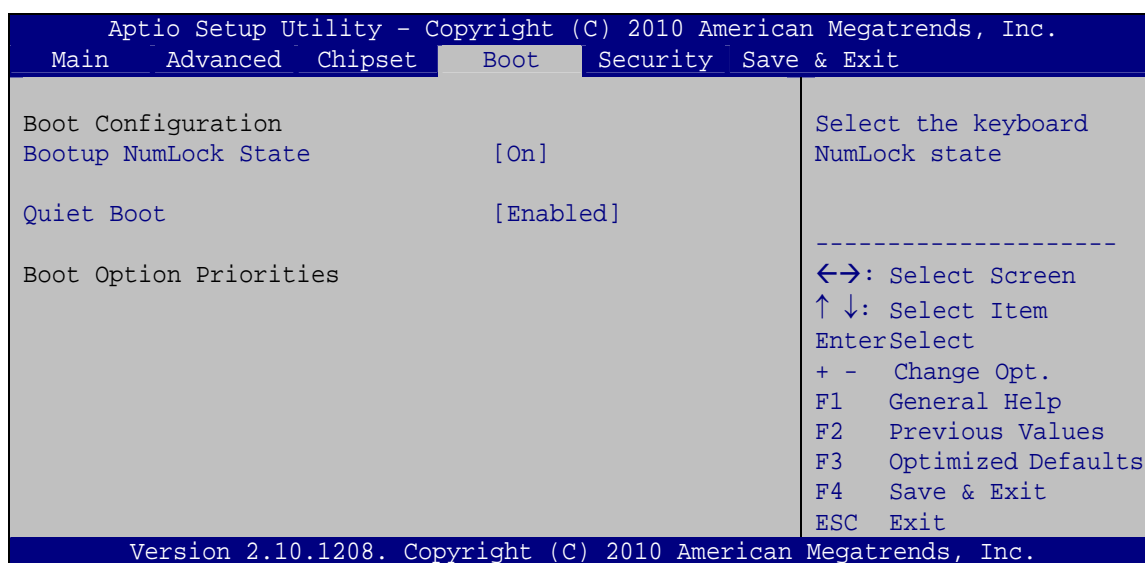
### → Un-Configure ME [Disabled]

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

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

## 4.5 Boot

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



### **BIOS Menu 20: Boot**

### → Bootup NumLock State [On]

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

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

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### ➔ Off

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

### ➔ Quiet Boot [Enabled]

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

### ➔ Disabled

Normal POST messages displayed

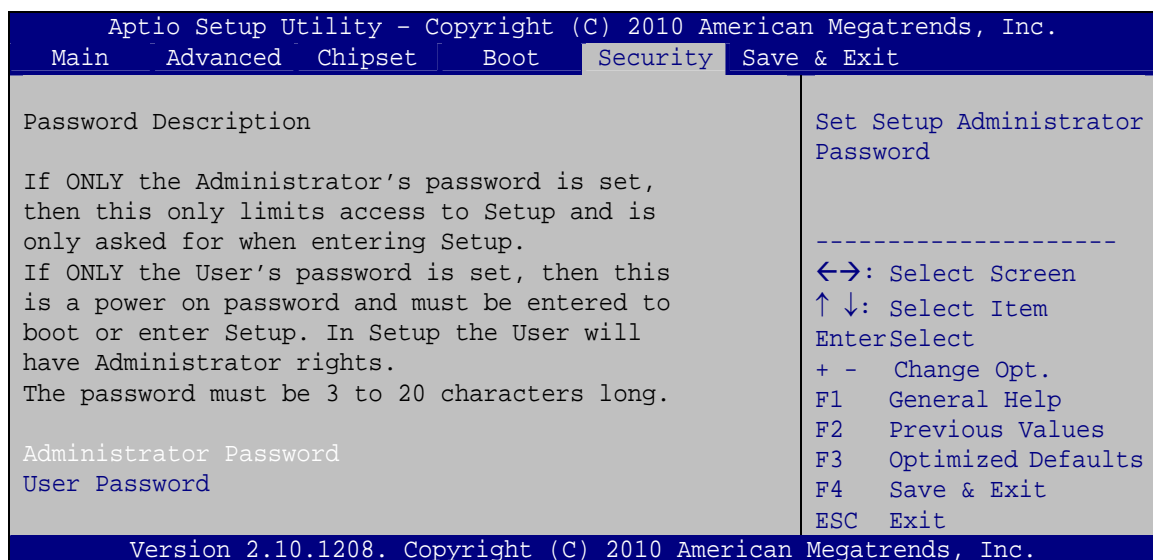
### ➔ Enabled

**DEFAULT**

OEM Logo displayed instead of POST messages

## 4.6 Security

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



### BIOS Menu 21: Security

### ➔ Administrator Password

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

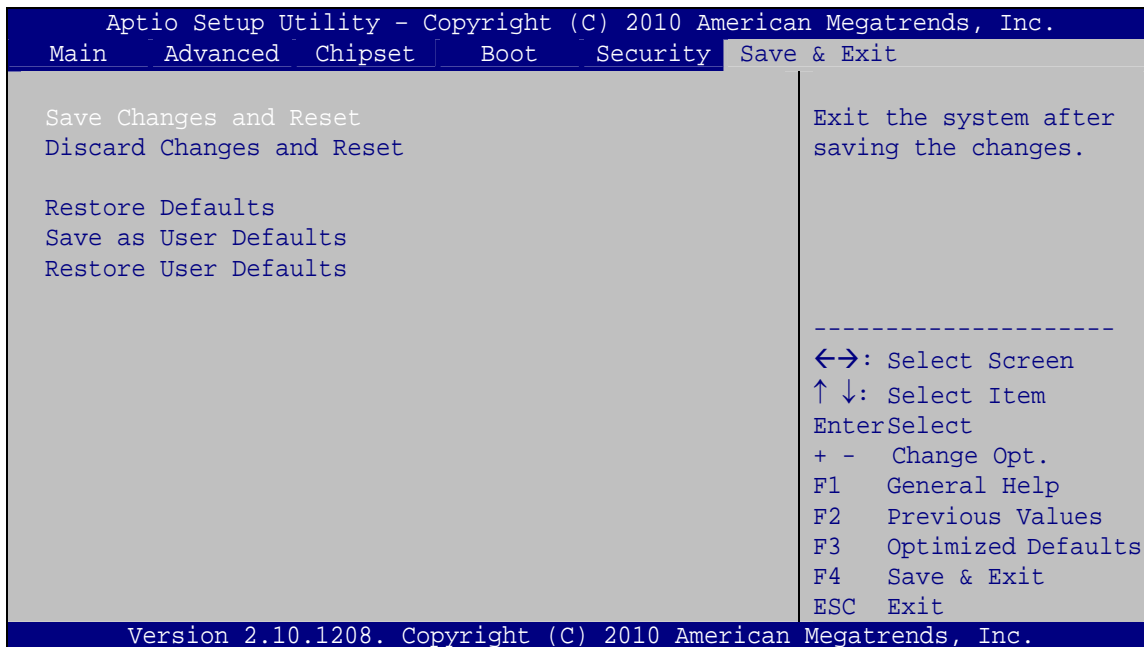


## → User Password

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

## 4.7 Exit

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



### BIOS Menu 22:Exit

## → Save Changes and Reset

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

## → Discard Changes and Reset

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

## → Restore Defaults

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

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### ➔ Save as User Defaults

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

### ➔ Restore User Defaults

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

Appendix

A

# One Key Recovery

---

## A.1 One Key Recovery Introduction

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

The IEI One Key Recovery tool menu is shown below.

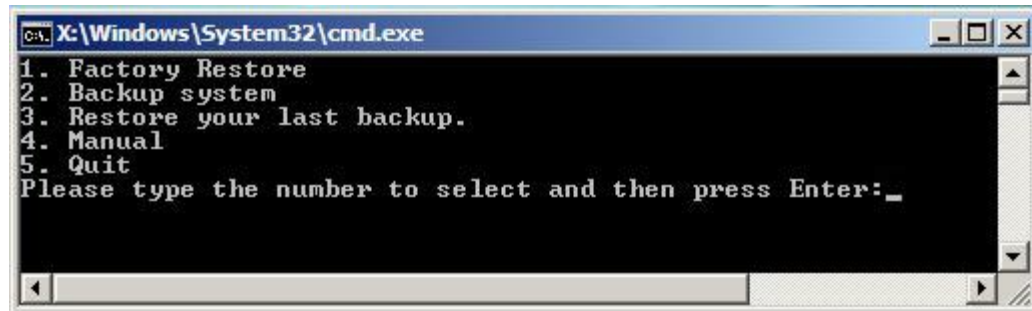


Figure A-1: IEI One Key Recovery Tool Menu

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

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

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



### NOTE:

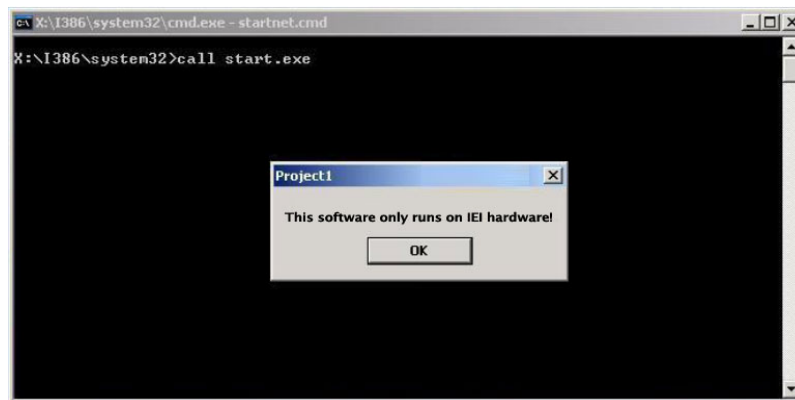
The initial setup procedures for Linux system are described in **Section A.3**.

### A.1.1 System Requirement



#### NOTE:

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



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

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

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



## TANK-700 Embedded System



### NOTE:

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

### A.1.2 Supported Operating System

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

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

**NOTE:**

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

## A.2 Setup Procedure for Windows

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

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

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

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

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

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

The detailed descriptions are described in the following sections.

**NOTE:**

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

### A.2.1 Hardware and BIOS Setup

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

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

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

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- 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 1<sup>st</sup> boot device. (**Boot → Boot Device Priority → 1<sup>st</sup> Boot Device**).
- Step 7:** Save changes and restart the computer. Continue to the next section for instructions on partitioning the internal storage.

### A.2.2 Create Partitions

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

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

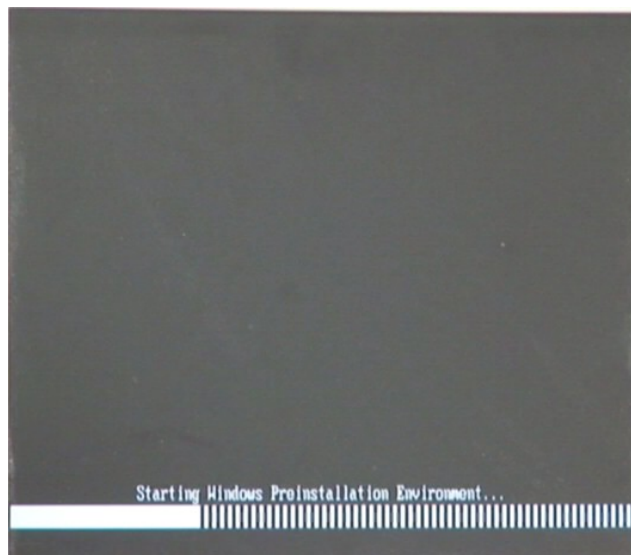
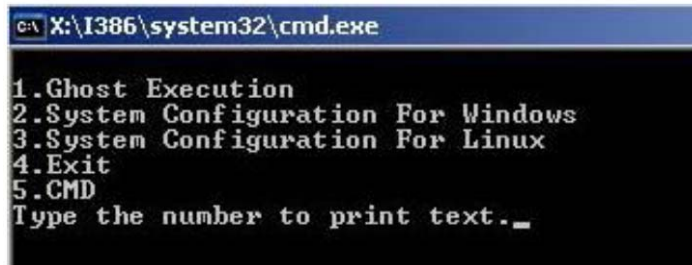


Figure A-2: Launching the Recovery Tool

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



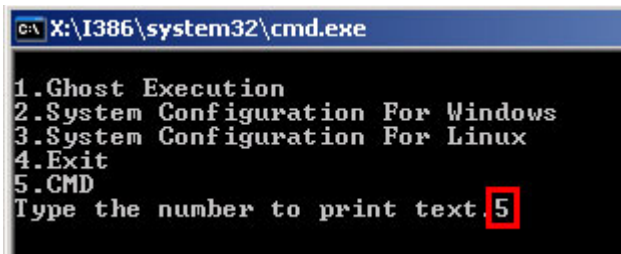
```

C:\X:\I386\system32\cmd.exe

1.Ghost Execution
2.System Configuration For Windows
3.System Configuration For Linux
4.Exit
5.CMD
Type the number to print text._
  
```

**Figure A-3: Recovery Tool Setup Menu**

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



```

C:\X:\I386\system32\cmd.exe

1.Ghost Execution
2.System Configuration For Windows
3.System Configuration For Linux
4.Exit
5.CMD
Type the number to print text.5
  
```

**Figure A-4: Command Mode**

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

(Press <Enter> after entering each line below)

```

system32>diskpart

DISKPART>list vol

DISKPART>sel disk 0

DISKPART>create part pri size= ____

DISKPART>assign letter=N

DISKPART>create part pri size= ____

DISKPART>assign letter=F

DISKPART>exit

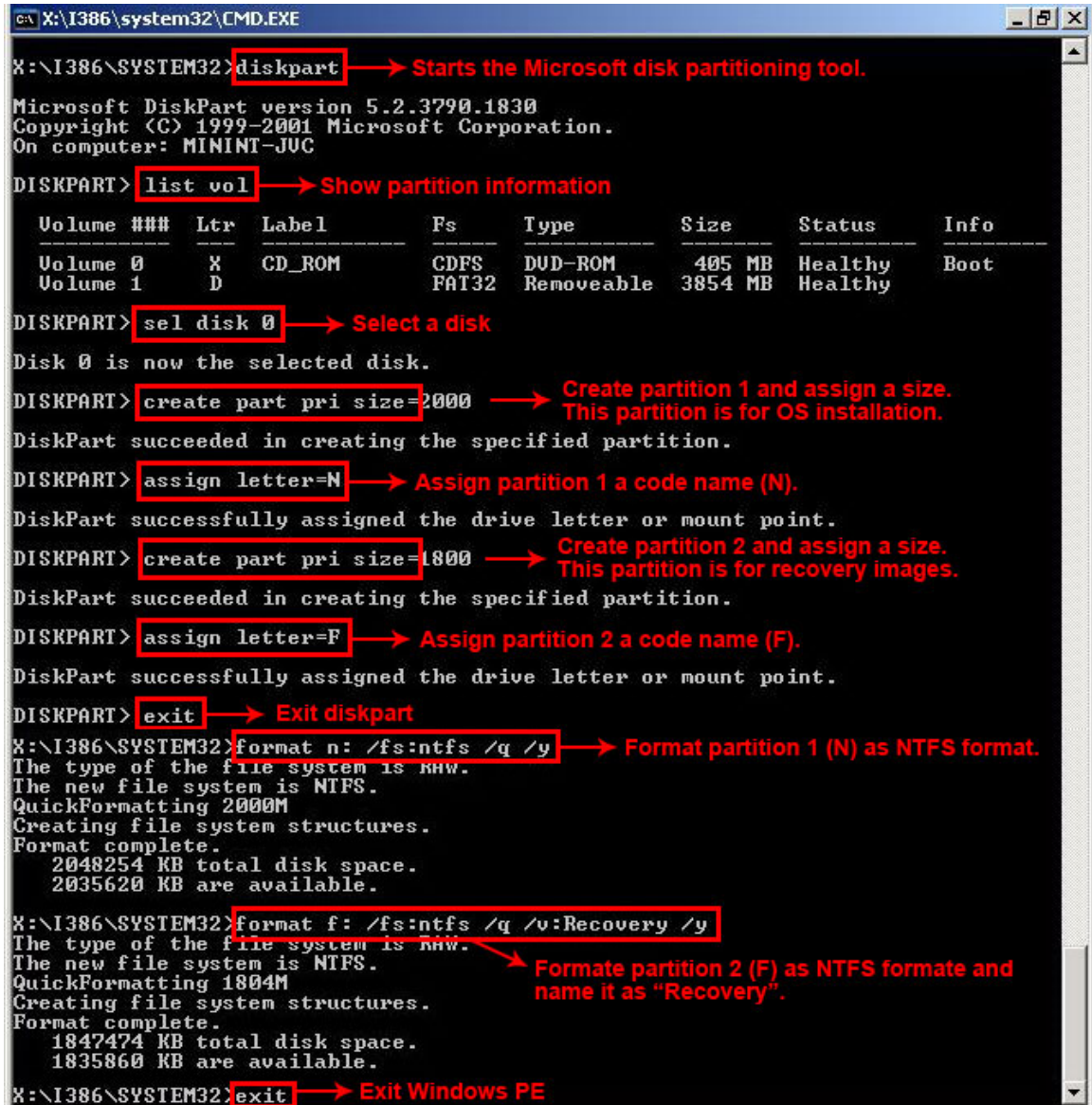
system32>format N: /fs:ntfs /q /y
  
```



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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     DVD-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
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 A-5: Partition Creation Commands



**NOTE:**

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

```
X:\I386\SYSTEM32>diskpart
Microsoft DiskPart version 5.2.3790.1830
Copyright (C) 1999-2001 Microsoft Corporation.
On computer: MININT-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-up Recovery Partition.

### A.2.3 Install Operating System, Drivers and Applications

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

**NOTE:**

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

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

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### A.2.4 Build-up Recovery Partition

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

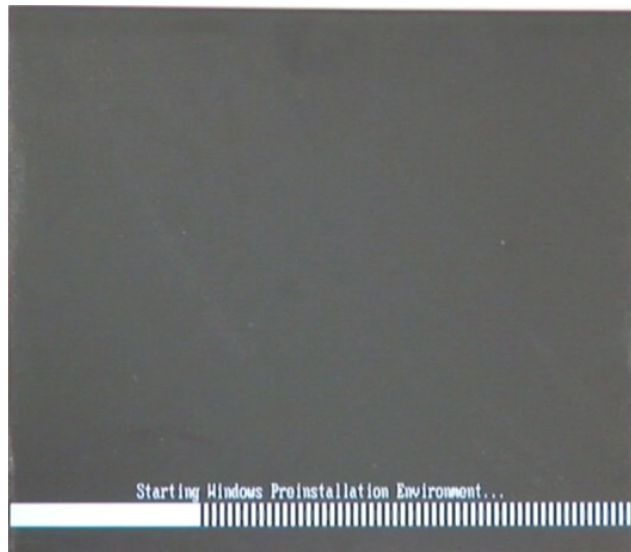


Figure A-6: Launching the Recovery Tool

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

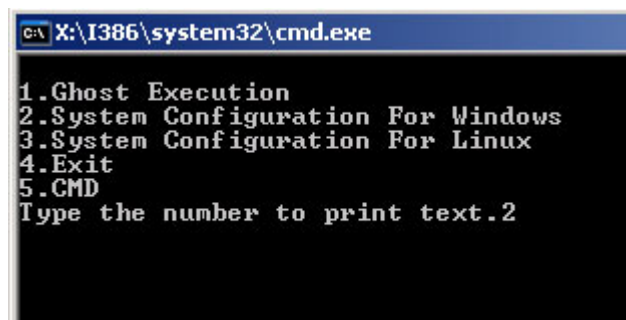
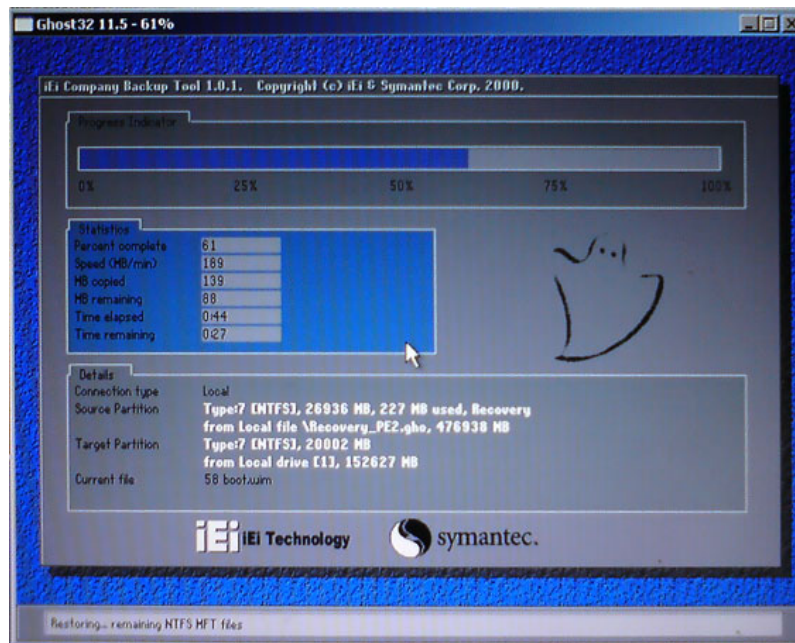


Figure A-7: System Configuration for Windows

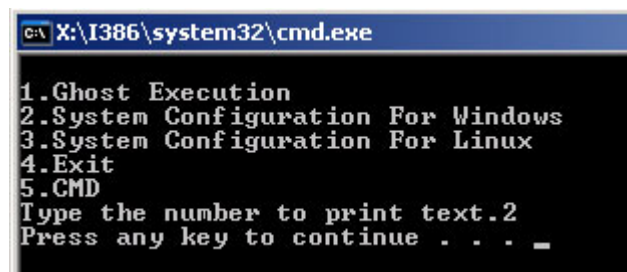
- Step 5:** The Symantec Ghost window appears and starts configuring the system to build-up a recovery partition. In this process, the partition which is created for

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



**Figure A-8: Build-up Recovery Partition**

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



**Figure A-9: Press any key to continue**

**Step 7:** Eject the recovery CD.

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### A.2.5 Create Factory Default Image



#### NOTE:

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

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

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

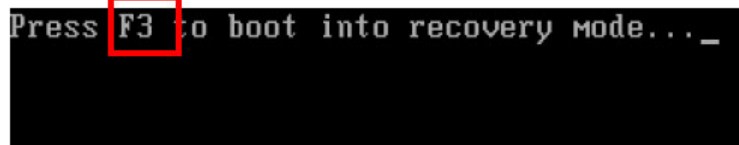


Figure A-10: Press F3 to Boot into Recovery Mode

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

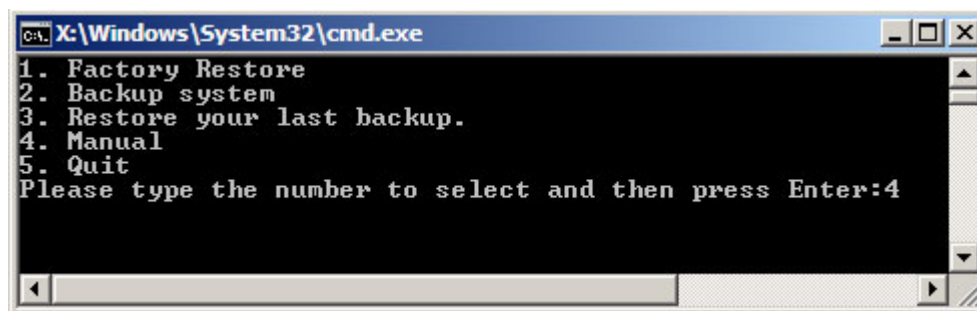
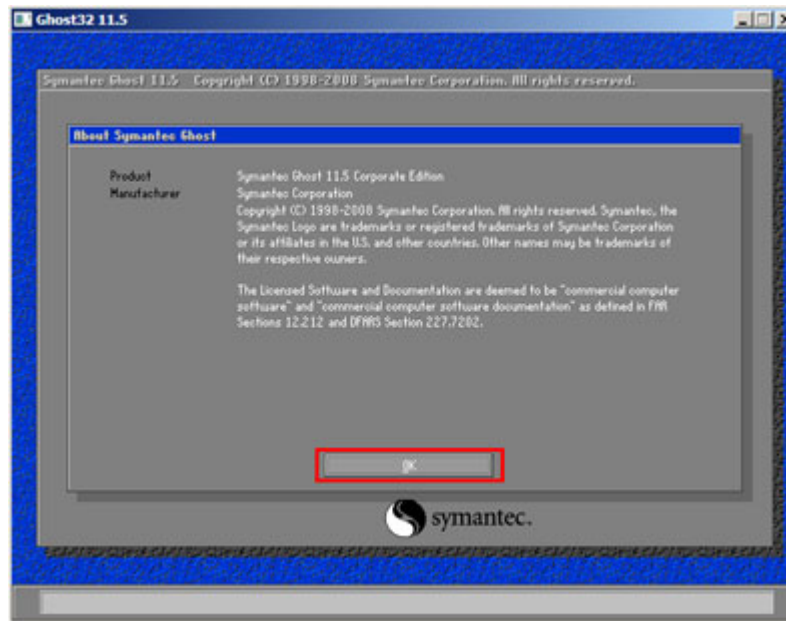


Figure A-11: Recovery Tool Menu

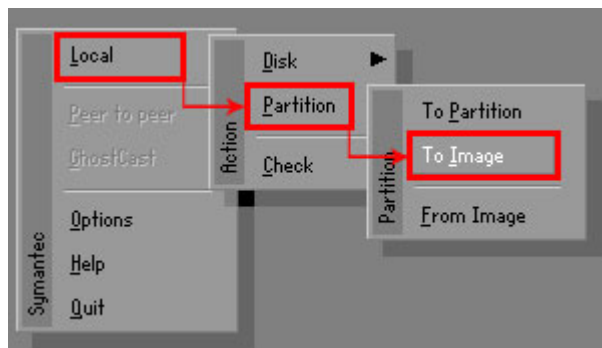
**Step 3:** The About Symantec Ghost window appears. Click **OK** button to continue.





**Figure A-12: About Symantec Ghost Window**

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

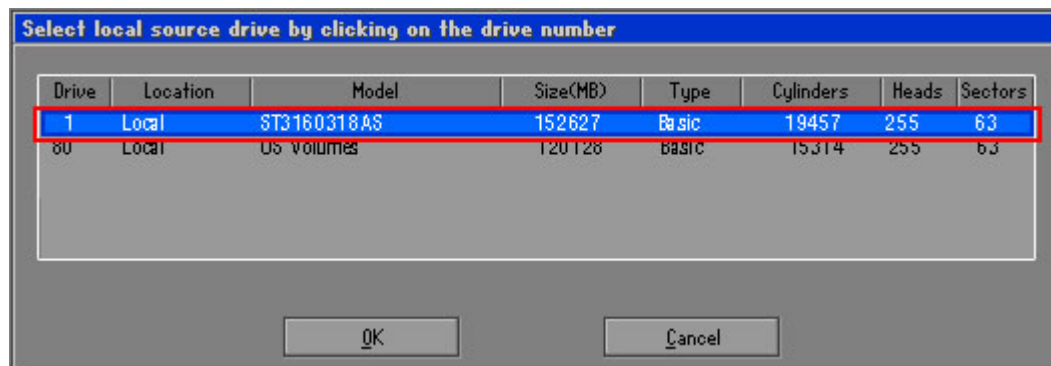


**Figure A-13: Symantec Ghost Path**

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

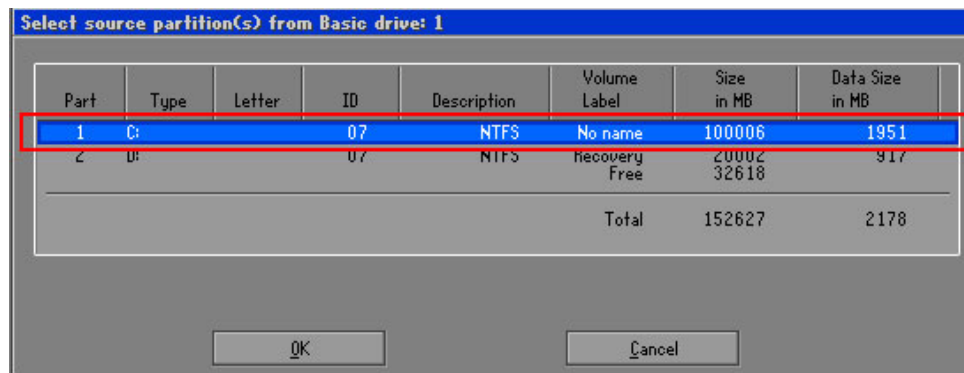


## TANK-700 Embedded System



**Figure A-14: Select a Local Source Drive**

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



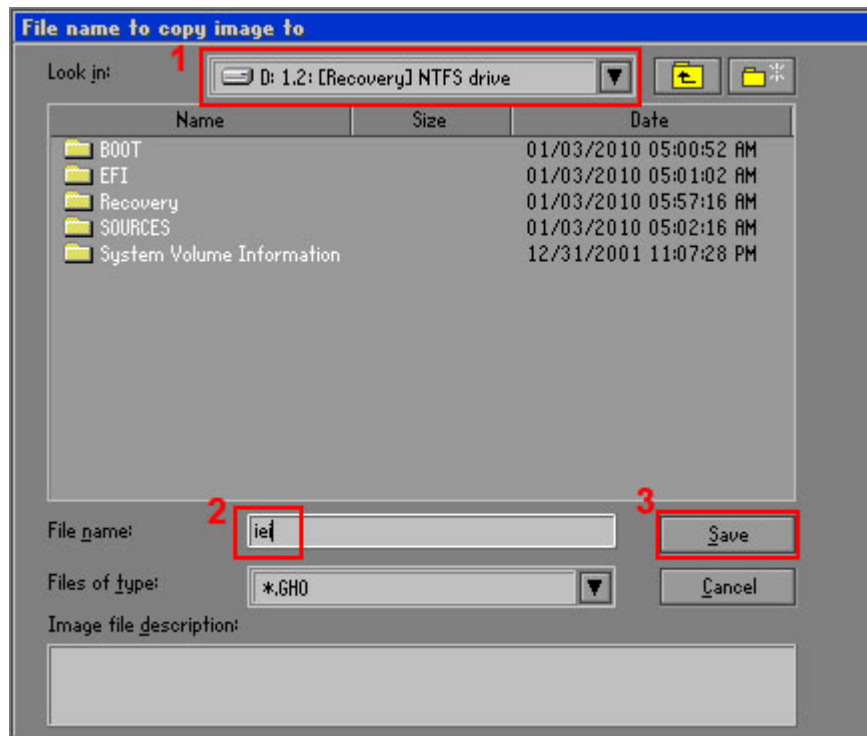
**Figure A-15: Select a Source Partition from Basic Drive**

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



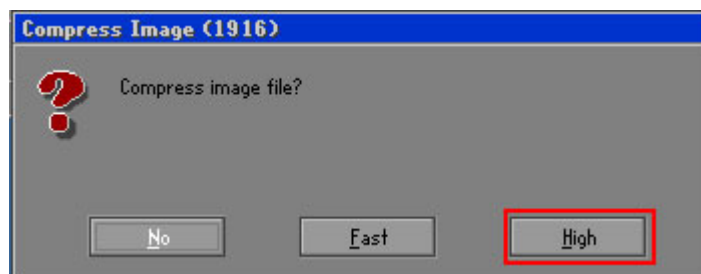
### **WARNING:**

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



**Figure A-16: File Name to Copy Image to**

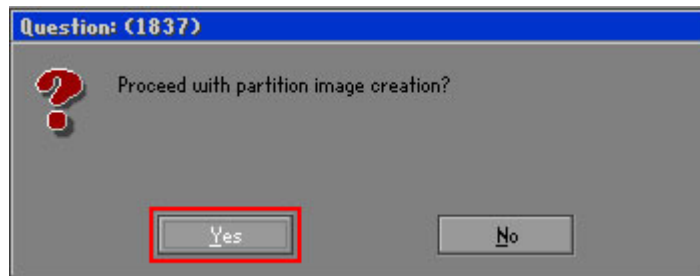
**Step 8:** When the Compress Image screen in **Figure A-17** prompts, click **High** to make the image file smaller.



**Figure A-17: Compress Image**

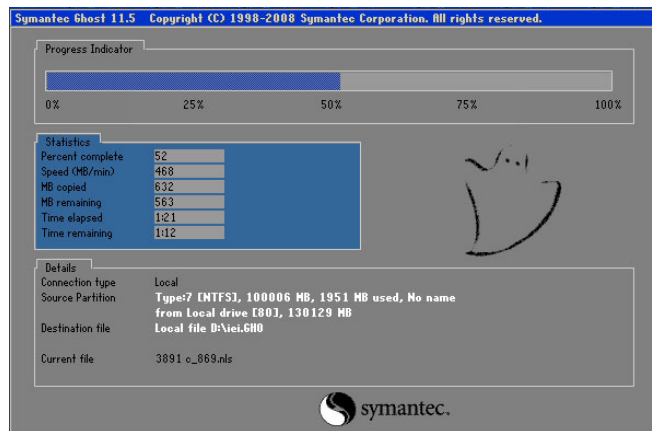
## TANK-700 Embedded System

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



**Figure A-18: Image Creation Confirmation**

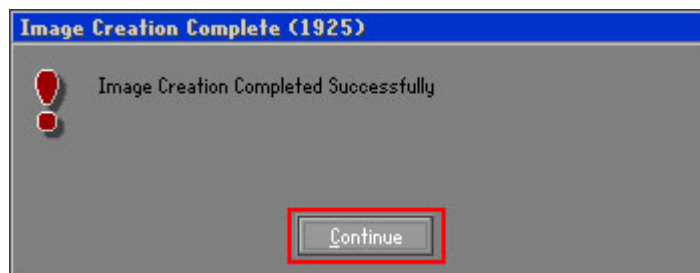
**Step 10:** The Symantec Ghost starts to create the factory default image (**Figure A-19**).



**Figure A-19: Image Creation Process**

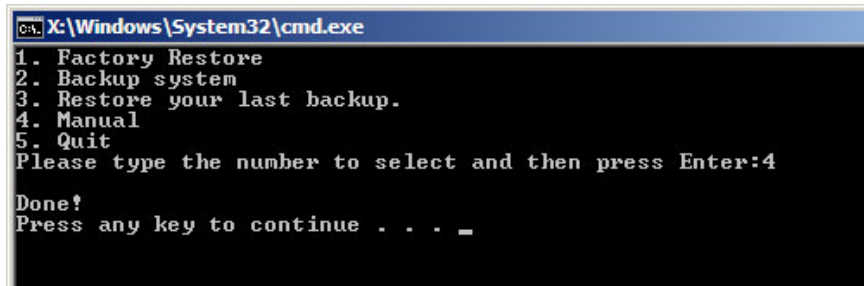
**Step 11:** When the image creation completes, a screen prompts as shown in **Figure A-20**.

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



**Figure A-20: Image Creation Complete**

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



```
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 A-21: Press Any Key to Continue

## A.3 Setup Procedure for Linux

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

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

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



### NOTE:

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

While installing Linux OS, please create two partitions:

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

**NOTE:**

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

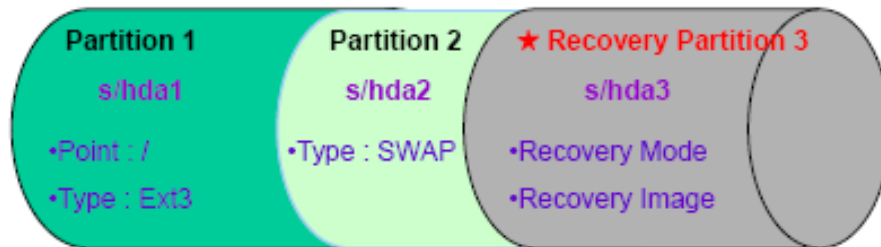


Figure A-22: Partitions for Linux

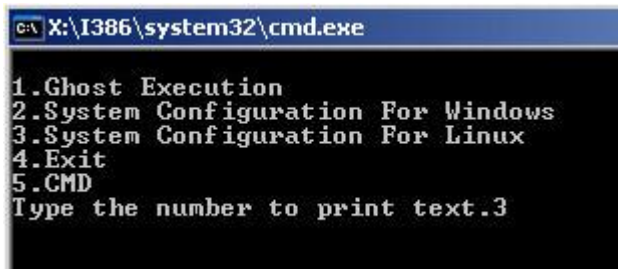
**Step 3:** Create a recovery partition. Insert the recovery CD into the optical disk drive.

Follow **Step 1 ~ Step 3** described in **Section A.2.2**. Then type the following commands (marked in red) to create a partition for recovery images.

```
system32>diskpart
DISKPART>list vol
DISKPART>sel disk 0
DISKPART>create part pri size= ____
DISKPART>assign letter=N
DISKPART>exit
system32>format N: /fs:ntfs /q /v:Recovery /y
system32>exit
```

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





```
C:\X:\I386\system32\cmd.exe

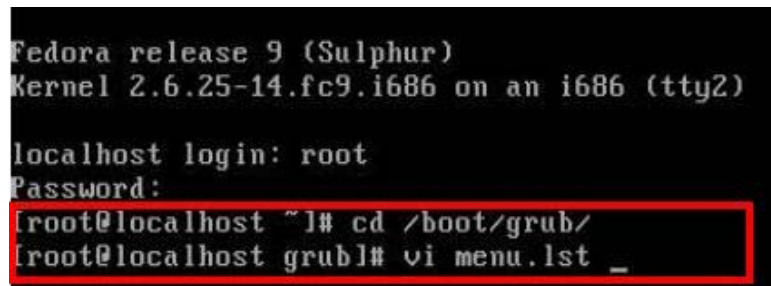
1. Ghost Execution
2. System Configuration For Windows
3. System Configuration For Linux
4. Exit
5. CMD
Type the number to print text.3
```

Figure A-23: System Configuration for Linux

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

**cd /boot/grub**

**vi menu.lst**



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

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

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

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

## TANK-700 Embedded System

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

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

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

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

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

Figure A-25: Recovery Tool Menu

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

## A.4 Recovery Tool Functions

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

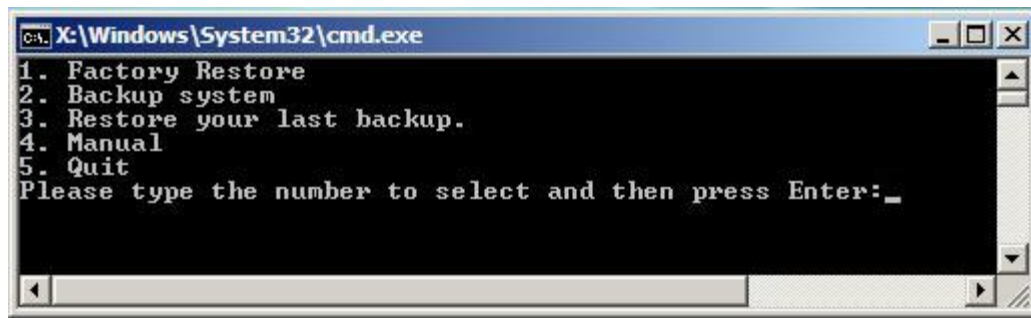


Figure A-26: Recovery Tool Main Menu

The recovery tool has several functions including:

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



**WARNING:**

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



**WARNING:**

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

## TANK-700 Embedded System

### A.4.1 Factory Restore

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

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

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

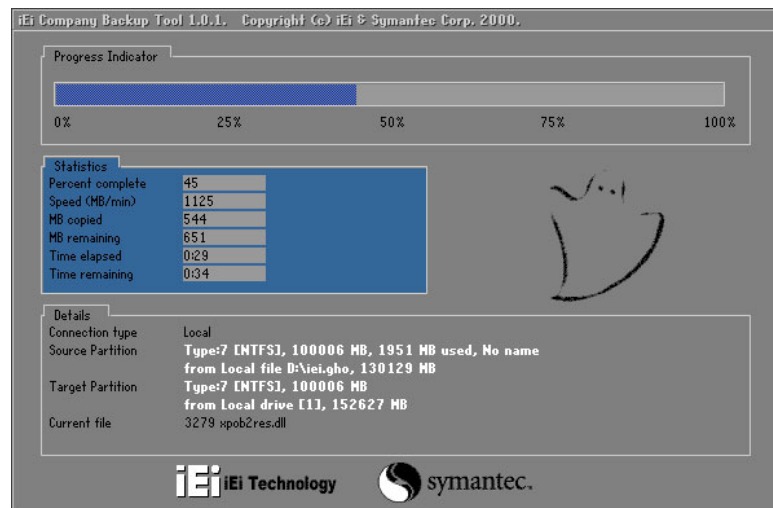


Figure A-27: Restore Factory Default

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

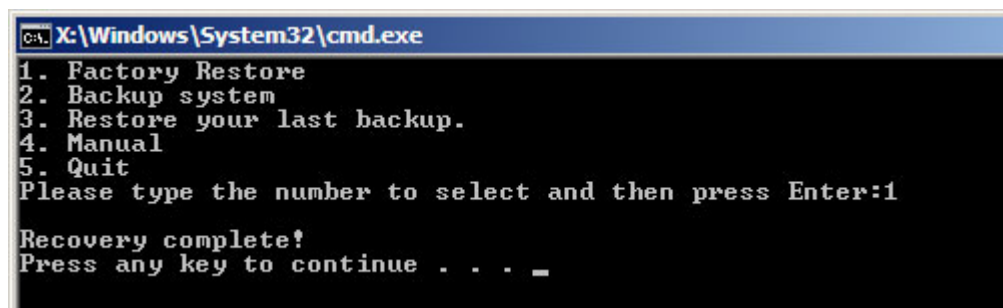


Figure A-28: Recovery Complete Window

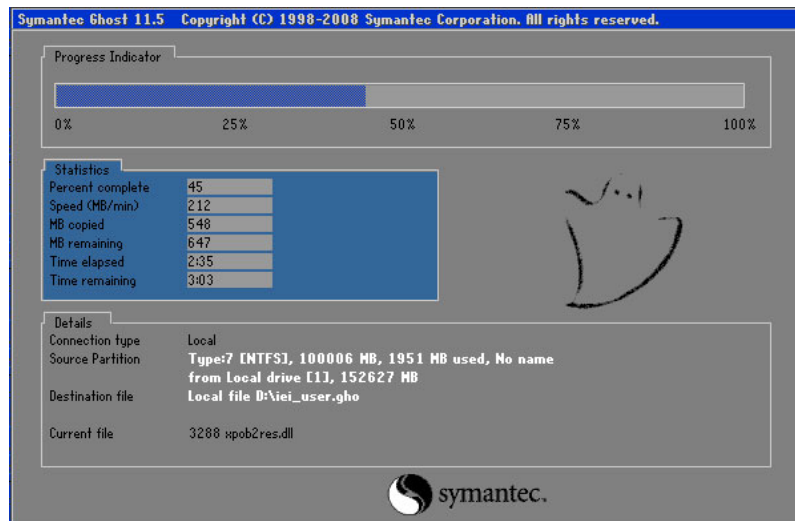


### A.4.2 Backup System

To backup the system, please follow the steps below.

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

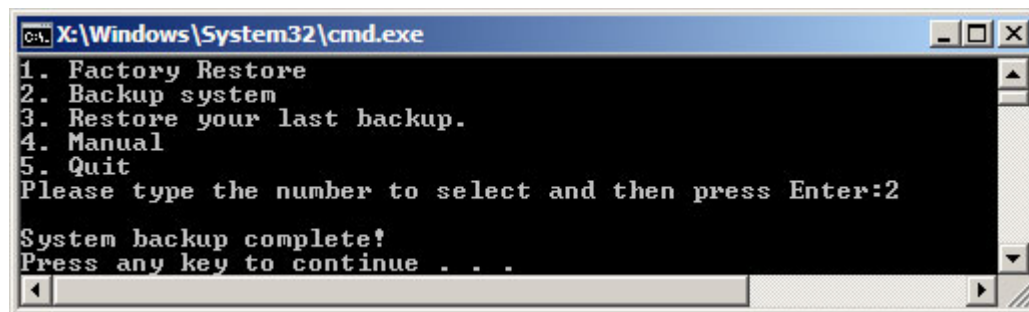
**Step 2:** The Symantec Ghost window appears and starts to backup the system. A backup image called **iei\_user.GHO** is created in the hidden Recovery partition.



**Figure A-29: Backup System**

**Step 3:** The screen is shown as in **Figure A-30** when system backup is completed.

Press any key to reboot the system.



**Figure A-30: System Backup Complete Window**



## TANK-700 Embedded System

### A.4.3 Restore Your Last Backup

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

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

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

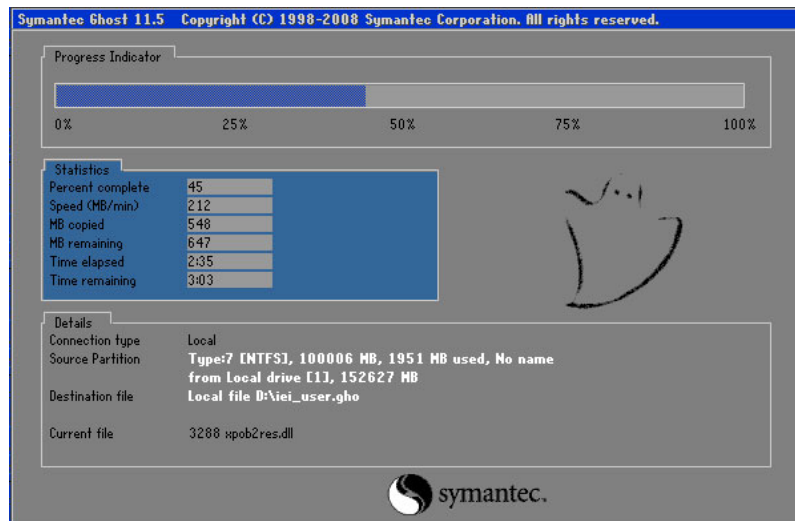


Figure A-31: Restore Backup

**Step 3:** The screen is shown as in **Figure A-32** when backup recovery is completed.

Press any key to reboot the system.

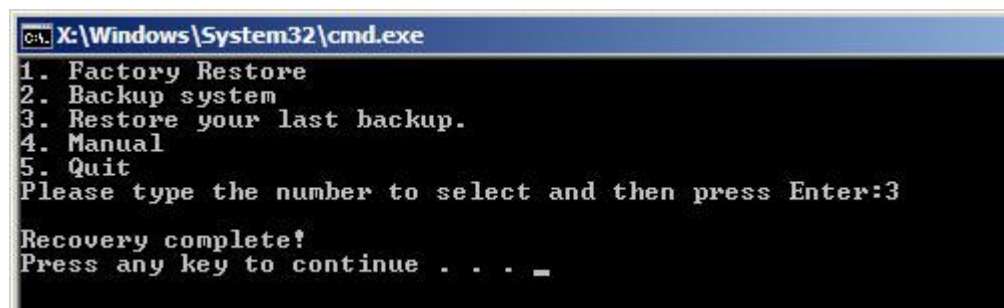


Figure A-32: Restore System Backup Complete Window

#### A.4.4 Manual

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

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

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

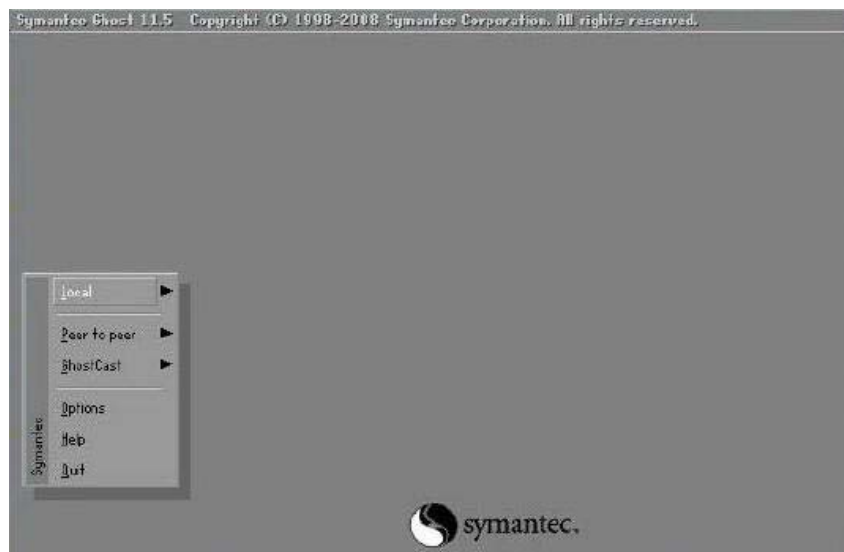


Figure A-33: Symantec Ghost Window

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

Appendix

**B**

# Safety Precautions

---

## B.1 Safety Precautions



### WARNING:

The precautions outlined in this appendix should be strictly followed. Failure to follow these precautions may result in permanent damage to the TANK-700.

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

### B.1.1 General Safety Precautions

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

- ***Make sure the power is turned off and the power cord is disconnected*** when moving, installing or modifying the system.
- ***Do not apply voltage levels that exceed the specified voltage range.*** Doing so may cause fire and/or an electrical shock.
- ***Electric shocks can occur*** if opened while still powered on.
- ***Do not drop or insert any objects*** into the ventilation openings.
- ***If considerable amounts of dust, water, or fluids enter the system***, turn off the power supply immediately, unplug the power cord, and contact the system vendor.
- **DO NOT:**
  - Drop the system against a hard surface.
  - Strike or exert excessive force onto the LCD panel.
  - Touch any of the LCD panels with a sharp object
  - In a site where the ambient temperature exceeds the rated temperature

## TANK-700 Embedded System

### B.1.2 Anti-static Precautions



#### WARNING:

Failure to take ESD precautions during the installation of the TANK-700 may result in permanent damage to the TANK-700 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the TANK-700. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the TANK-700 is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

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



### B.1.3 Product Disposal

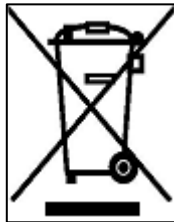


#### CAUTION:

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.

## B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the TANK-700, please follow the guidelines below.

### B.2.1 Maintenance and Cleaning

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

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

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

### B.2.2 Cleaning Tools

Some components in the TANK-700 may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the TANK-700.

- **Cloth** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the TANK-700.
- **Water or rubbing alcohol** – A cloth moistened with water or rubbing alcohol can be used to clean the TANK-700.
- **Using solvents** – The use of solvents is not recommended when cleaning the TANK-700 as they may damage the plastic parts.
- **Vacuum cleaner** – Using a vacuum specifically designed for computers is one of the best methods of cleaning the TANK-700. Dust and dirt can restrict the airflow in the TANK-700 and cause its circuitry to corrode.
- **Cotton swabs** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- **Foam swabs** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.



Appendix

C

# Hazardous Materials Disclosure

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

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

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

Please refer to the table on the next page.

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



## TANK-700 Embedded System

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。						