IEI Integration Corp.

MODEL:

TANK-800

Fanless Embedded System with Intel® Atom™ D525 Dual Core CPU, VGA, Two Gigabit Ethernet, Four USB, RS-232/422/485, RoHS Compliant

User Manual

Rev. 1.15 – September 10, 2015

RoHS Lead Free

Revision

Date	Version	Changes
September 10, 2015	1.15	Updated memory spec
September 2, 2013	1.14	Updated Section 3.4: System Fan Installation
April 2, 2013	1.13	Added the maximum dimensions of an expansion card in Section 1.7
February 5, 2013	1.12	Updated the optional system fan P/N
May 10, 2012	1.11	Updated Section 1.7: Backplane Options
December 5, 2011	1.10	Updated Section 2.3: Unpacking Checklist Updated Section 3.7.9: RJ-45 RS-422/485 Serial Ports Updated Appendix A: One Key Recovery
November 3, 2011	1.00	Initial release

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WARNING

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and(2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/ TV technician for help.

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

IMPORTANT NOTE:

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

Manual Conventions

WARNING

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.

CAUTION

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.

NOTE

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.

HOT SURFACE

This symbol indicates a hot surface that should not be touched without taking care.

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1

Introduction

1.1 Overview

Figure 1-1: TANK-800

The TANK-800 Series embedded system is a fanless system for wide range temperature environments. It is powered by the Intel® Atom™ D525 dual core processor, uses the Intel® ICH8M chipset and has 1.0 GB of DDR3 memory. The TANK-800 Series includes one VGA port, two PCIe GbE LAN, four USB 2.0 ports, and six COM ports.

1.2 Model Variations

The model variations of the TANK-800 Series are listed below.

Model No.	CPU	Expansion Slots
TANK-800-D525/1GB/2P1E-R10	Intel® Atom™ D525 1.8 GHz dual core	Two PCI slots One PCIe x16 slot
TANK-800-D525/1GB/1P2E-R10	Intel® Atom™ D525 1.8 GHz dual core	One PCI slot One PCIe x4 slot One PCIe x16 slot

Table 1-1: TANK-800 Model Variations

1.3 Features

The TANK-800 features are listed below:

- Intel® Atom™ D525 1.8 GHz dual core processor
- On-board 1.0 GB DDR3 memory
- Redundant dual DC input
- Flexible PCI/PCIe expansion slots
- Two Gigabit Ethernet ports
- Four USB 2.0 ports
- Four RS-232 serial ports
- Two RJ-45 RS-422/485 serial ports
- One VGA port
- One Line-out and one Mic-in audio jacks
- One CompactFlash® Type II socket
- AT/ATX power mode supported
- RoHS compliant

1.4 Technical Specifications

The TANK-800 technical specifications are listed in **Table 1-2**.

Specifications	
System	
CPU	1.8 GHz Intel® Atom™ D525 dual core CPU
Chipset	Intel® ICH8M
Memory	On-board 1.0 GB DDR3 memory 1 x 204-pin DDR3 SDRAM SO-DIMM slot (system max. 3.0 GB)
Ethernet Controller	Dual Realtek RTL8111E PCIe GbE controllers with ASF 2.0 support
I/O and Indicators	
Ethernet	2 x RJ-45 GbE ports
RS-232	4 x RS-232 serial ports (DB-9)
RS-422/RS-485	2 x RS-422/485 serial ports (RJ-45)
USB Interfaces	4 x USB 2.0 ports
VGA	1 x VGA port (2048x1536)
Audio Connector	1 x Line-out port 1 x Mic-in port
Digital I/O	1 x DIO port (8 bits)
LED Indicators	AT power mode LED ATX power mode LED CPU temperature alert LED HDD LED Power 1 LED Power 2 LED
Storage	
SATA	Support one 2.5” SATA HDD
CompactFlash®	One CompactFlash® Type II socket

Specifications	
Power	
Power Supply	Redundant dual DC input 9V~36V Power 1 (terminal block): 9 V (+/-0.3 V) ~ 36 V Power 2 (DC jack): 10.5 V (+/-0.3 V) ~ 36 V
Power Consumption	33 W (without add-on card)
Power Button	One power button
Power Mode	AT or ATX power mode (selectable by AT/ATX mode switch)
Environmental and Mechanical	
Operating Temperature	-20°C~70°C
Storage Temperature	-30°C~80°C
Mounting	Desktop, wall mount
Color	Black C + Silver
Physical Dimensions	136 mm x 219 mm x 188 mm (W x D x H)

Table 1-2: Technical Specifications

1.5 Connector Panel

All external peripheral interface connectors are located on the rear panel of the TANK-800. The peripheral interface connectors are shown in **Figure 1-2**.

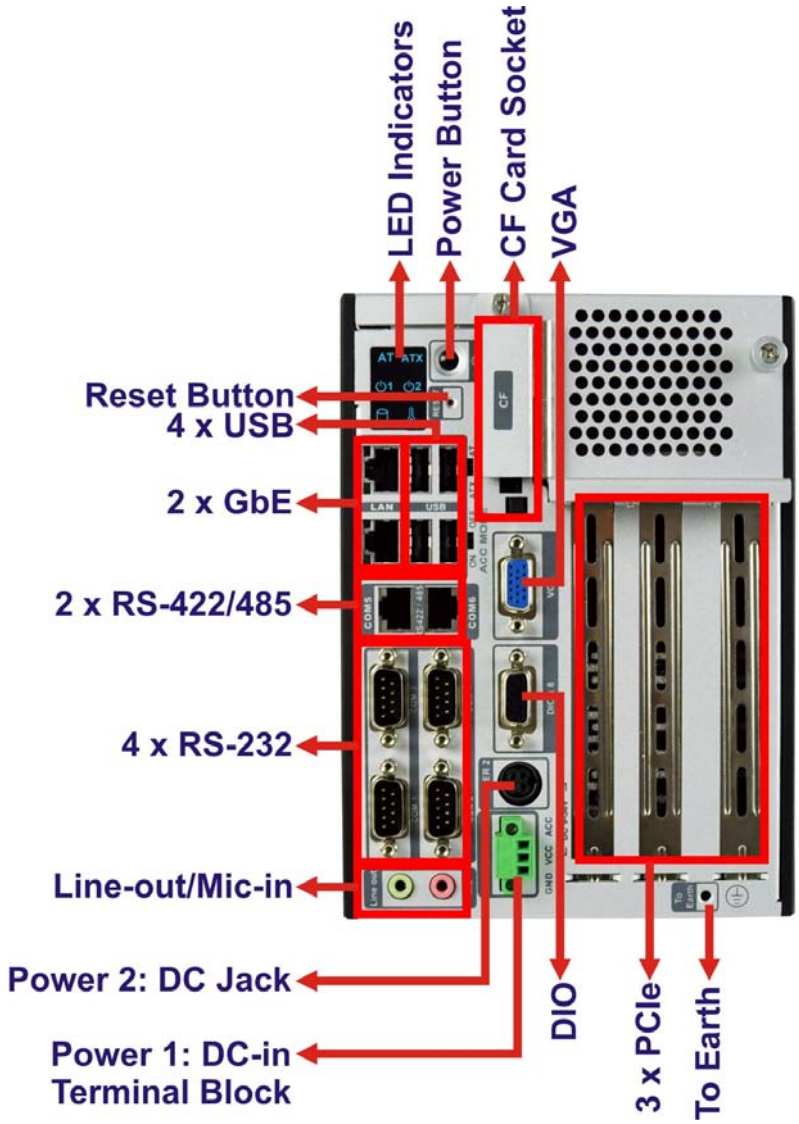


Figure 1-2: TANK-800 Peripheral Connectors

Connectors and buttons on the rear panel include the following.

- 1 x 4-pin power DC jack for 10.5V (+/-0.3V) ~ 36V power input
- 1 x Power terminal block for 9V (+/-0.3V) ~ 36V power input
- 1 x Mic-in port (pink)

- 1 x Line-out port (green)
- 4 x RS-232 serial ports
- 2 x RJ-45 RS-422/485 serial ports
- 2 x Gigabit Ethernet ports
- 4 x USB ports
- 1 x Reset button
- 6 x LED indicators (**Section 1.6**)
- 1 x Power button
- 1 x CompactFlash® Type II socket
- 1 x VGA output
- 1 x To earth
- 3 x Expansion slots
- 1 x DIO port
- 1 x ACC mode switch
- 1 x AT/ATX power mode switch

1.6 LED Indicators

There are several indicators on the rear panel of the TANK-800 as shown in **Figure 1-3**.

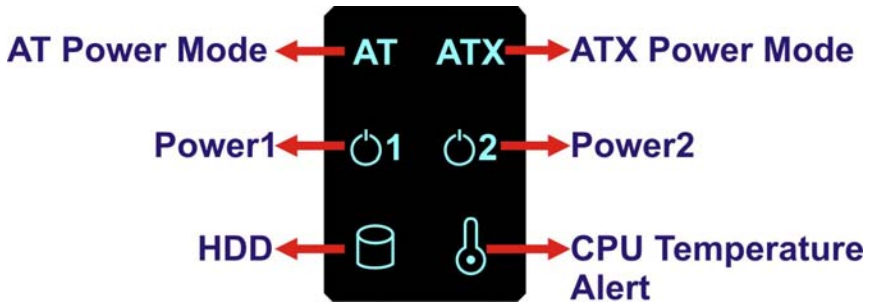


Figure 1-3: TANK-800 LED Indicators

WARNING:

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

1.7 Backplane Options

The backplane options of the TANK-800 are shown below.

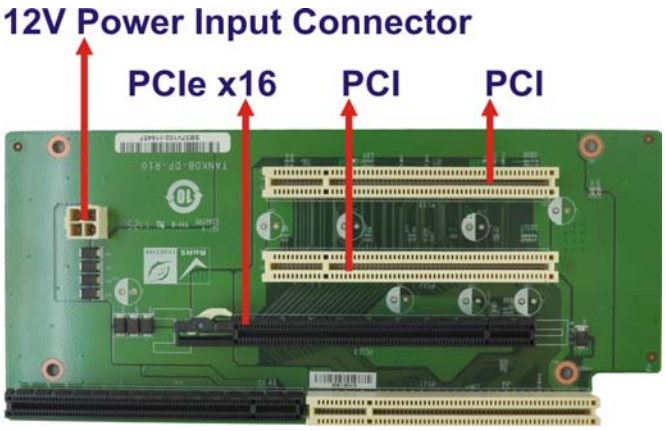


Figure 1-4: TANK-800-D525/1GB/2P1E-R10 Backplane (HPE-3S6)

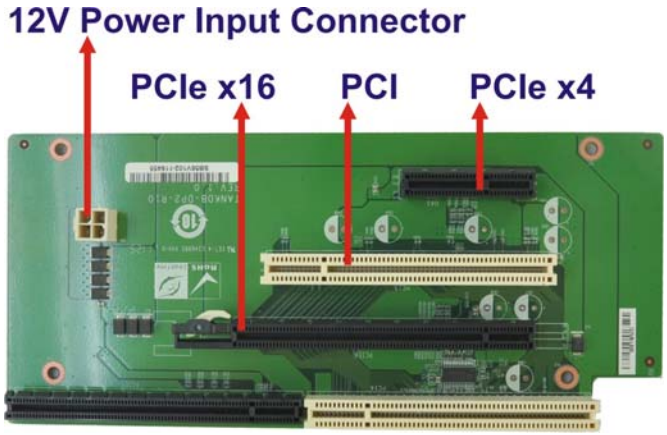


Figure 1-5: TANK-800-D525/1GB/1P2E-R10 Backplane (HPE-3S7)

The supported signals of the backplane slots are listed below.

Backplane	Slot	Signal
HPE-3S6 (2P1E)	PCI	PCI
	PCIe x16	PCIe x4
HPE-3S7 (1P2E)	PCI	PCI
	PCIe x4	PCIe x1
	PCIe x16	PCIe x2

Table 1-3: Supported Signals

The rated voltage and current of the backplanes are listed below.

Rated Voltage	Rated Current
+5 V	7 A
+12 V	3.75 A
-12 V	0.1 A
+3.3 V	8 A

Table 1-4: Rated Voltage and Current

WARNING:

The system default power is 96 W. The maximum total power of the backplane to support expansion cards is 45 W. The power of the selected expansion cards can not exceed the max. power (45 W), otherwise, the system may fail.

NOTE:

When using an expansion card with high power consumption, it is recommended to install an external power supply to the 12V power input connector on the backplane.

The maximum dimensions of the expansion card should be 190 mm in length and 111 mm in width.

1.8 Dimensions

The physical dimensions are shown below:

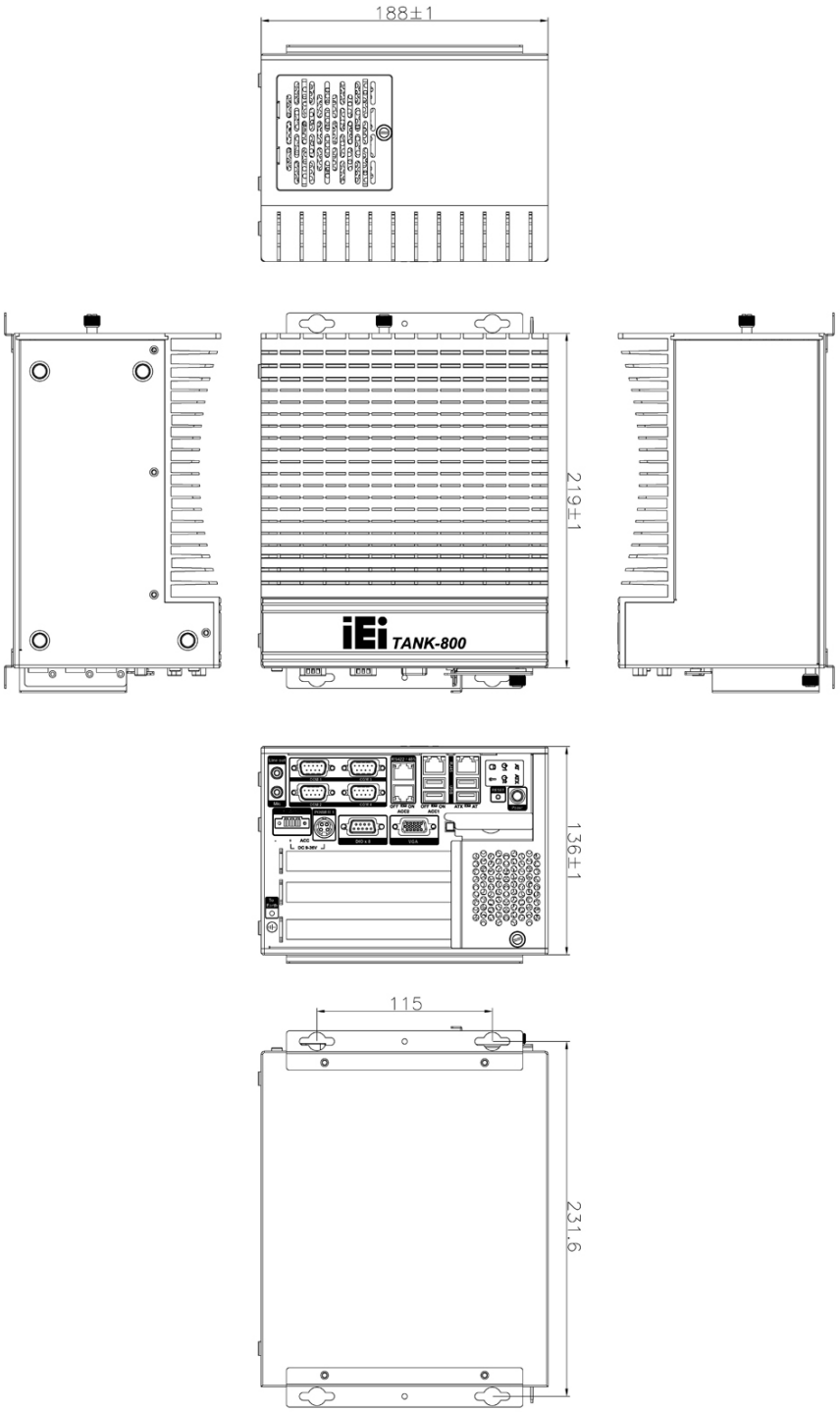


Figure 1-6: Physical Dimensions (millimeters)

Chapter

2

Unpacking

2.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during installation may result in permanent damage to the TANK-800 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the TANK-800. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the TANK-800 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-800, place it on an anti-static pad. This reduces the possibility of ESD damaging the TANK-800.

2.2 Unpacking Precautions

When the TANK-800 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-800 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-800 from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

The TANK-800 is shipped with the following components:

Quantity	Item and Part Number	Image
Standard		
1	TANK-800 Series	
1	Power adapter (**P/N**: 63040-010090-020-RS)	
1	Power cord (**P/N**: 32702-000401-100-RS)	
1	Power transfer cable (**P/N**: 32000-089400-RS)	

Quantity	Item and Part Number	Image
Standard		
2	Mounting bracket (**P/N**: 41020-0308C2-00-RS)	
4	Mounting bracket screw (**P/N**: 44033-040062-RS)	
4	HDD screw (**P/N**: 44043-030051-RS)	
8	Rubber foot pad screw (**P/N**: 44005-030061-RS)	
4	Rubber foot pad (**P/N**: 46007-001500-RS)	
2	RJ-45 to DB-9 COM port cable (**P/N**: 32005-000200-200-RS)	
1	Pluggable DC-in terminal block (**P/N**: 33502-000007-RS)	
1	One Key Recovery CD (**P/N**: 7B000-000724-RS)	
1	User manual and driver CD (**P/N**: 7B000-000731-RS)	

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

Optional	
System fan (**P/N**: 31100-000333-RS)	
OS: Win CE 6.0 (128MB CF Card) (**P/N**: TANKCF-800-D525-CE060-128M-R10)	
OS: Win XPE (2GB CF Card) (**P/N**: TANKCF-800-D525-XPE-2G-R10)	
OS: Win XPE (4GB CF Card) (**P/N**: TANKCF-800-D525-XPE-4G-R10)	
OS: Linux (2GB CF Card) (**P/N**: TANKCF-800-D525-LNX-2G-R10)	
OS: Win 7 Embedded (4GB CF Card) (**P/N**: TANKCF-800-D525-WES7E-4G-R10)	

Chapter

3

Installation

3.1 Installation Precautions

During installation, be aware of the precautions below:

- **Read the user manual**: The user manual provides a complete description of the TANK-800, installation instructions and configuration options.
- **DANGER! Disconnect Power**: Power to the TANK-800 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-800 is opened while the power cord is still connected to an electrical outlet.
- **Qualified Personnel**: The TANK-800 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-800. The TANK-800's cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the TANK-800. Leave at least 5 cm of clearance around the TANK-800 to prevent overheating.
- **Grounding**: The TANK-800 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-800.

3.2 CF Card Installation

To install the CF card, please follow the steps below:

Step 1: Locate the CF card slot, and then loosen the thumbscrew (**Figure 1-2**).

Figure 3-1: CF Card Slot

Step 2: Open the CF card slot cover (Figure 3-2).

Figure 3-2: CF Card Slot Cover

Step 3: Correctly align the CF card with the socket and insert the CF card into the socket (**Figure 3-3)**.

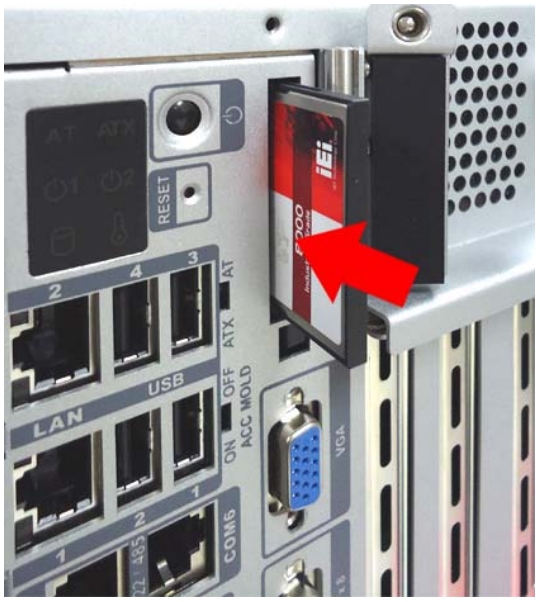


Figure 3-3: CF Card Installation

Step 4: Reinstall the cover.

3.3 Hard Disk Drive (HDD) Installation

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

Step 1: Loosen the thumbscrew, slide the cover inwards (**Figure 3-4**), and then lift the cover up gently.

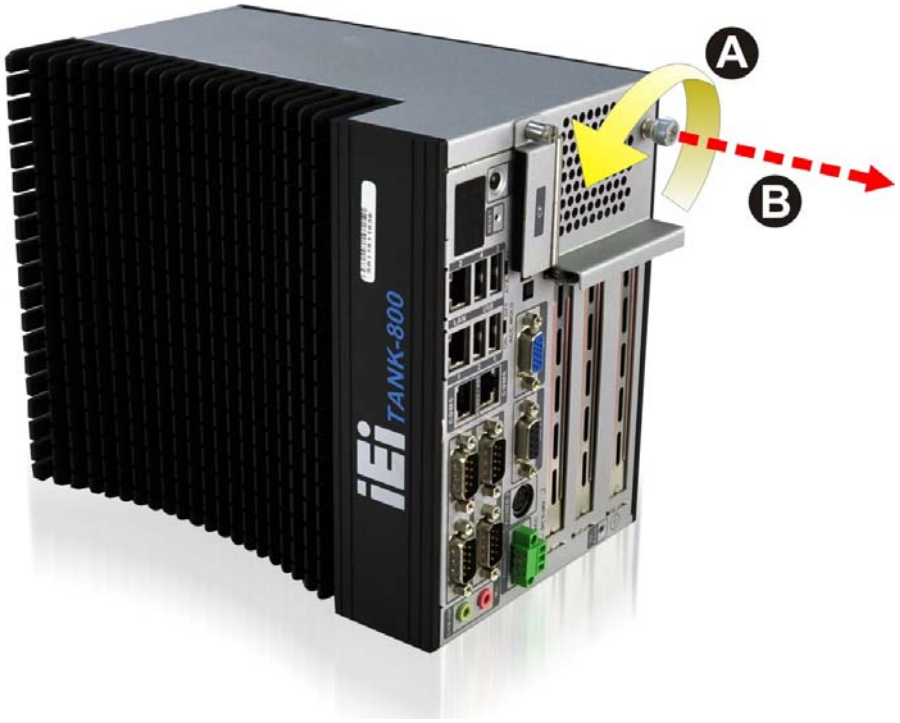


Figure 3-4: Unscrew the Cover

Step 2: Unplug the SATA signal and power cables connected to the TANK-800, and then put the cover on a flat surface (**Figure 3-5**).

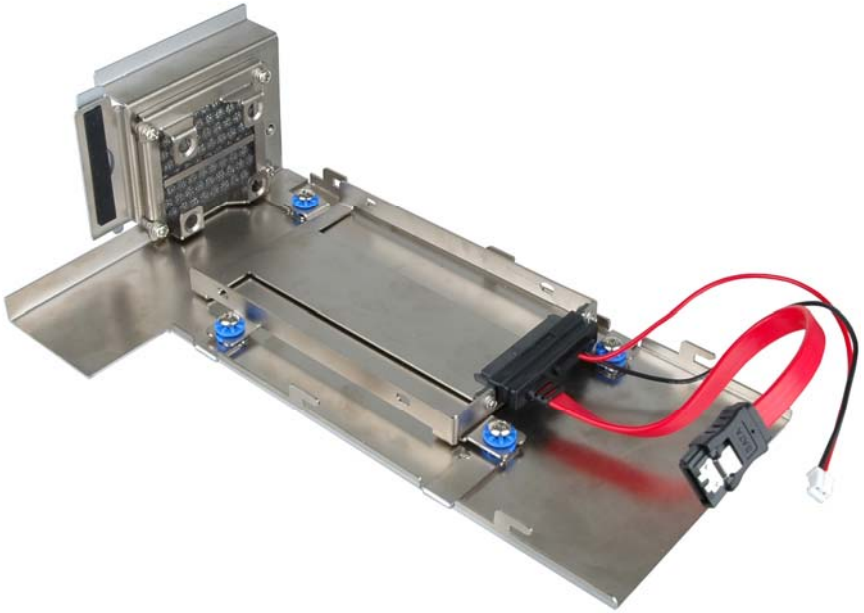


Figure 3-5: Remove the Cover from TANK-800

Step 3: Attach the HDD to the HDD bracket, and then slide the HDD to connect the HDD to the SATA connector (**Figure 3-6**).

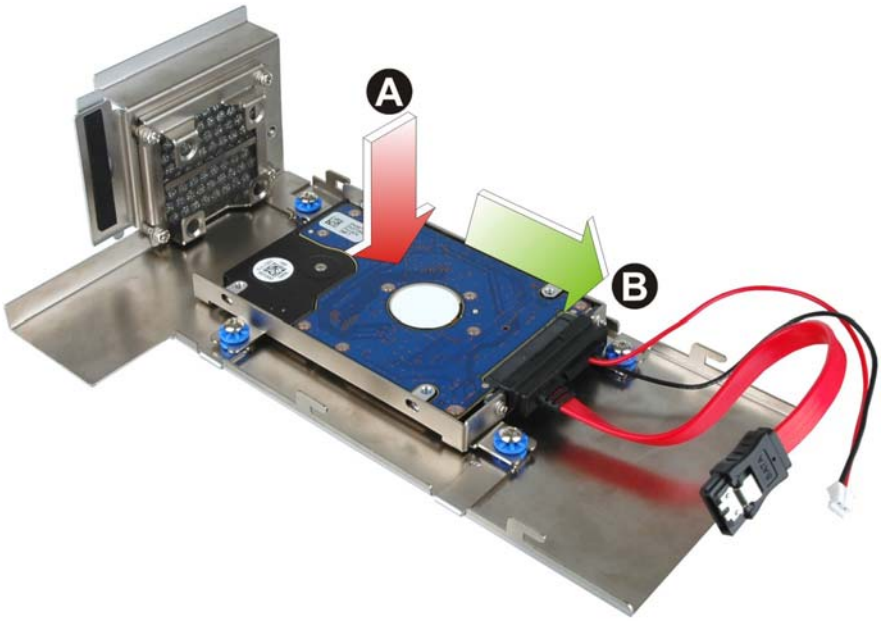


Figure 3-6: HDD Installation

Step 4: Secure the HDD with the HDD bracket by four retention screws (**Figure 3-7**).

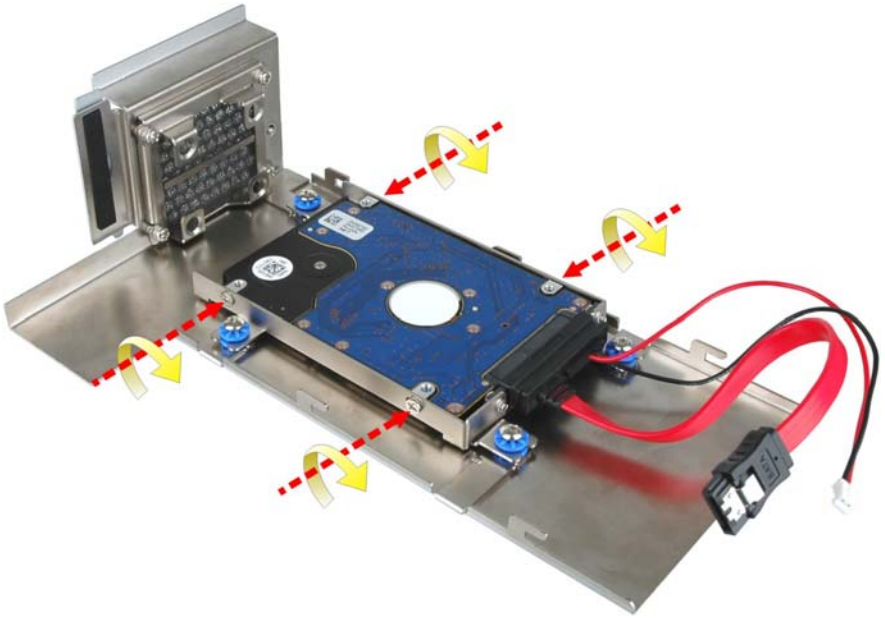


Figure 3-7: HDD Retention Screws

Step 5: Reconnect the SATA signal and power cables to the TANK-800.

Step 6: Reinstall the cover.

3.4 System Fan Installation

To install the optional system fan, please follow the steps below:

Step 1: Loosen the thumbscrew, slide the cover inwards (**Figure 3-4**), and then lift the cover up gently.

Step 2: Unplug the SATA signal and power cables connected to the TANK-800, and then place the cover on a flat surface (**Figure 3-5**).

Step 3: Unscrew the four retention screws that secure the HDD bracket to the cover. (**Figure 3-8**). Remove the HDD bracket from the cover.

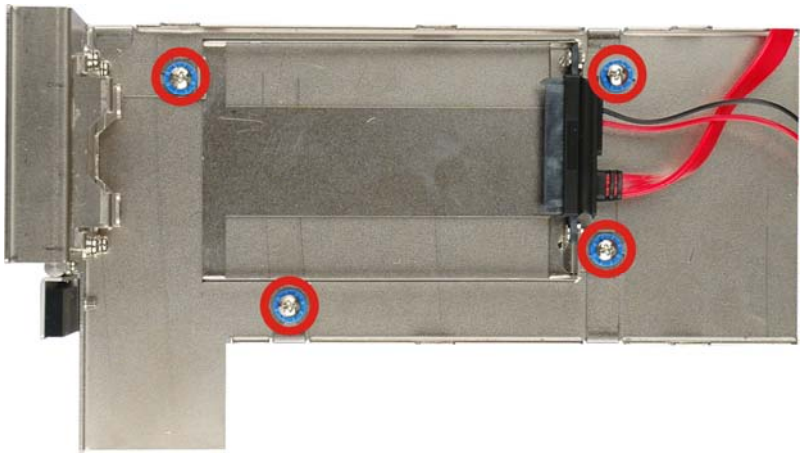


Figure 3-8: Remove the HDD Bracket from the Cover

Step 4: Unscrew the four retention screws that secure the fan bracket to the cover. (**Figure 3-9**). Remove the fan bracket from the cover.

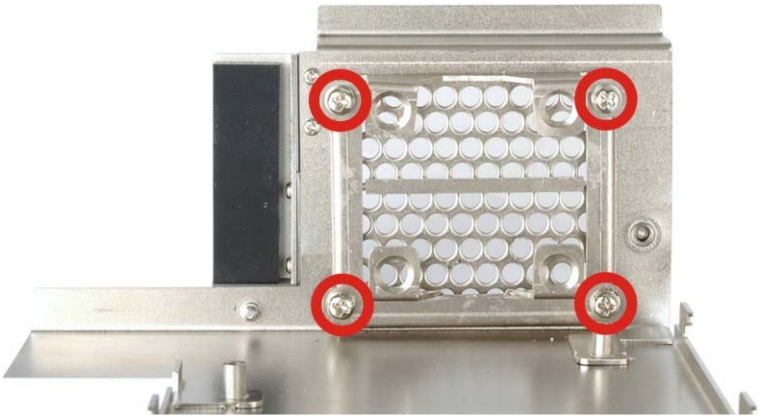


Figure 3-9: Remove the Fan Bracket from the Cover

Step 5: Remove the temporary retaining bracket (**Figure 3-10**).

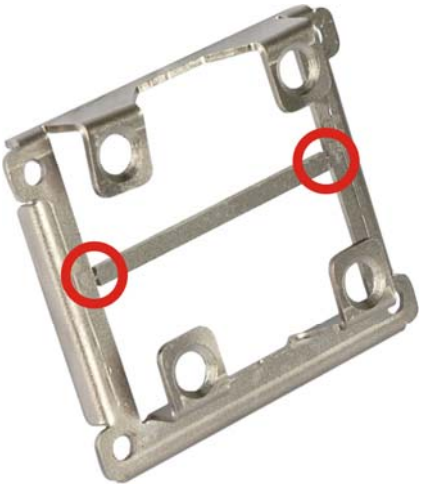


Figure 3-10: Remove the Temporary Retaining Bracket

Step 6: Attach the system fan to the fan bracket and secure it by four retention screws (**Figure 3-11**).

Figure 3-11: Secure the System Fan to the Fan Bracket

Step 7: Reinstall the fan bracket with the system fan installed (**Figure 3-12**).

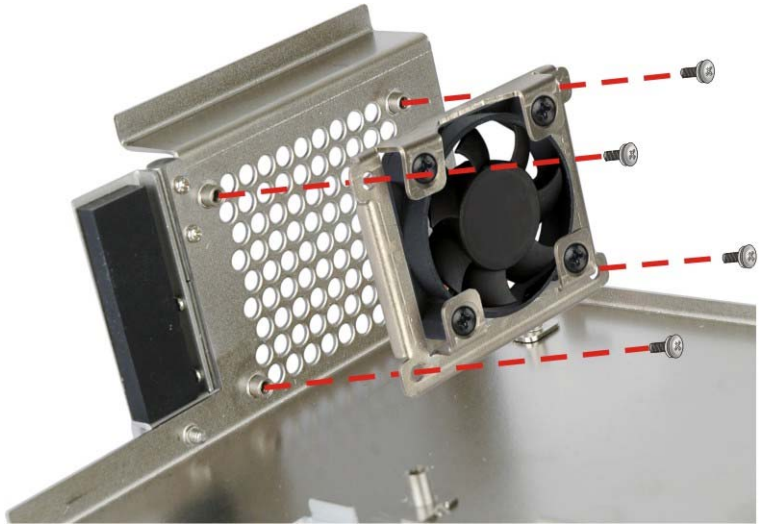


Figure 3-12: Reinstall the Fan Bracket

Step 8: Reinstall the HDD bracket to the cover.

Step 9: Connect the system fan cable to the **CPU_FAN1** connector on the motherboard of TANK-800.

Step 10: Reconnect the SATA signal and power cables to the TANK-800.

Step 11: Reinstall the cover.

3.5 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 1-2**.

Step 2: Align the pluggable DC-in terminal block with the DC-in terminal block connector on the TANK-800.

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 3-13**).

Figure 3-13: Pluggable DC-in Terminal Block Installation

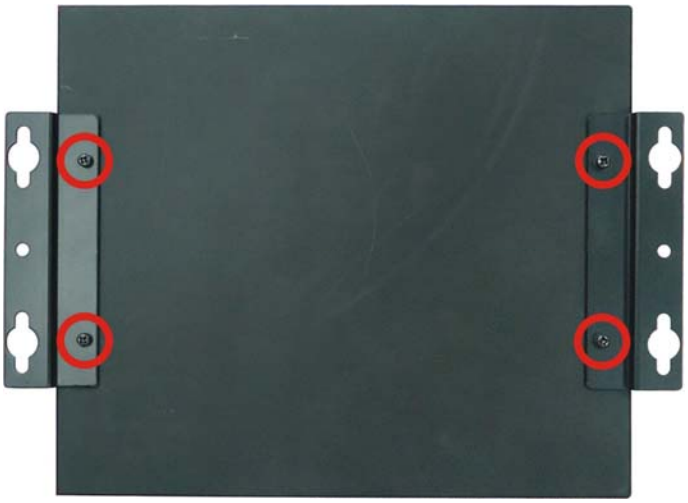
3.6 Mounting the System with Mounting Brackets

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 or to the left side panel.

Step 2: Align the two retention screw holes in each bracket with the corresponding retention screw holes on the bottom surface or the left side panel (**Figure 3-14**).

Bottom Surface



Left Side Panel

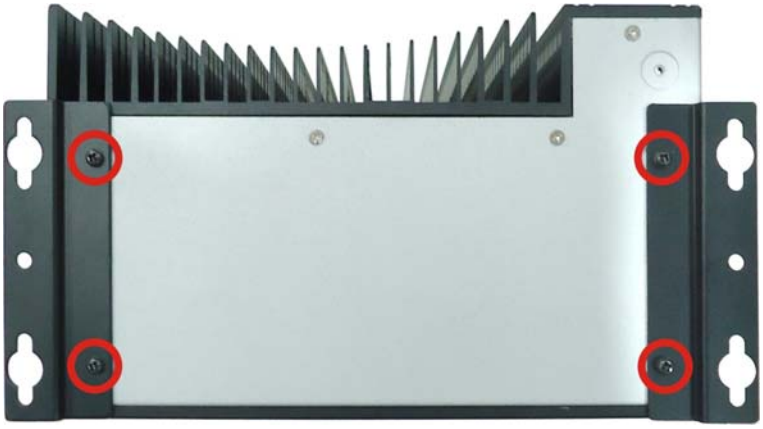


Figure 3-14: Mounting Bracket Retention Screws

Step 3: Secure the brackets to the system by inserting two retention screws into each bracket (**Figure 3-14**).

Step 4: Drill holes in the intended installation surface.

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

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

3.7 External Peripheral Interface Connectors

The TANK-800 has the following connectors. Detailed descriptions of the connectors can be found in the subsections below.

- Audio
- CompactFlash® Type II
- DIO
- Ethernet
- Power button
- Power input
- Reset button
- RS-232
- RS-422/485
- USB
- VGA

3.7.1 ACC Mode Selection

The TANK-800 allows turning the ACC mode on or off. The setting can be made through the ACC mode switch on the external peripheral interface panel as shown below.

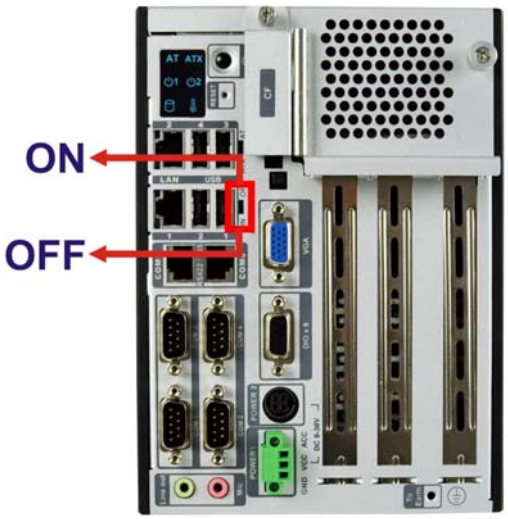


Figure 3-15: ACC Mode Switch

3.7.2 AT/ATX Power Mode Selection

The TANK-800 supports AT and ATX power modes. The setting can be made through the AT/ATX power mode switch on the external peripheral interface panel as shown below.

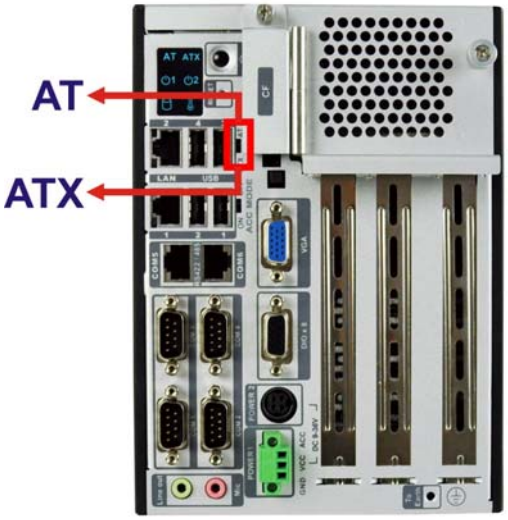


Figure 3-16: AT/ATX Power Mode Switch

3.7.3 Audio Connector

CN Label:	**Line out** and **Mic**
CN Type:	Audio jack
CN Location:	See **Figure 1-2**

The audio jacks connect to external audio devices.

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

Figure 3-17: Audio Connector

3.7.4 CompactFlash® Type II

The TANK-800 has one CF Type II socket. The location of the socket is shown in **Figure 1-2**. To install the CF card, refer to **Section 3.2**.

3.7.5 Digital Input/Output Connector

CN Label:	**DIO x 8**
CN Type:	DB-9 female connector
CN Location:	See **Figure 1-2**
CN Pinouts:	See **Table 3-1** and **Figure 3-18**

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

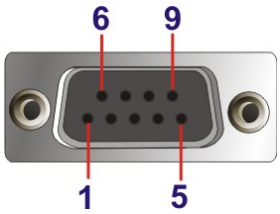


Figure 3-18: DIO Connector Pinout Location

3.7.6 LAN Connectors

CN Label: **RJ45**

CN Type: RJ-45

CN Location: See **Figure 1-2**

CN Pinouts: See **Table 3-2**

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 1-2**.

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the TANK-800. See **Figure 3-19**.

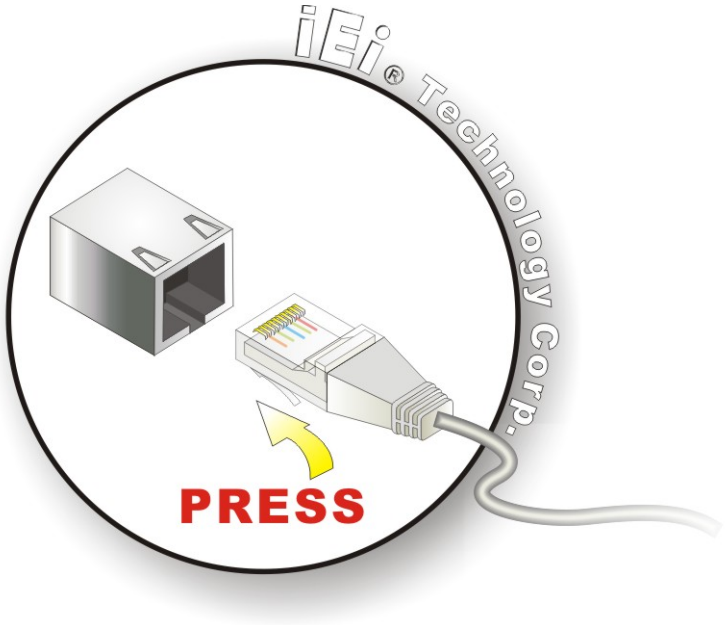


Figure 3-19: LAN Connection

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 3-2: LAN Pinouts

Figure 3-20: 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 3-3**.

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 3-3: RJ-45 Ethernet Connector LEDs

3.7.7 Power Input, 3-pin Terminal Block

CN Label: **POWER 1**

CN Type: 3-pin terminal block

CN Location: See **Figure 1-2**

CN Pinouts: See **Figure 3-21**

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.

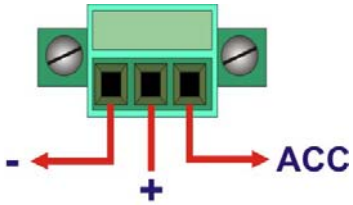


Figure 3-21: 3-pin Terminal Block Pinout Location

3.7.8 Power Input, 4-pin DIN Connector

CN Label: **POWER 2**

CN Type: 4-pin DIN connector

CN Location: See **Figure 1-2**

CN Pinouts: See **Table 3-4** and **Figure 3-22**

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

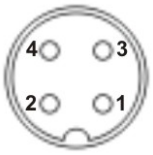


Figure 3-22: Power Input Connector

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

Table 3-4: Power Input Pinouts

3.7.9 RJ-45 RS-422/485 Serial Ports

CN Label: **RS422/485**

CN Type: RJ-45

CN Location: See **Figure 1-2**

CN Pinouts: See **Table 3-5 and Figure 3-24**

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

Step 1: **Locate the RJ-45 RS-422/RS485 connectors**. The locations of the RJ-45 RS-422/RS-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-800. See **Figure 3-23**.

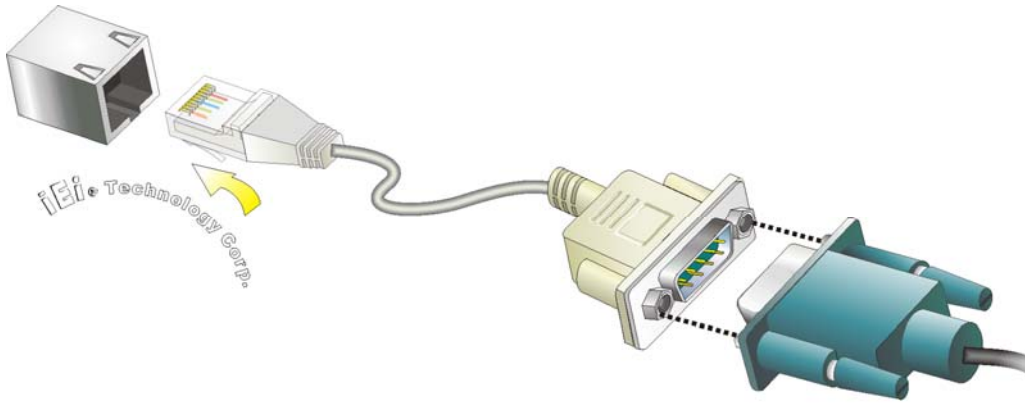


Figure 3-23: RJ-45 RS-422/485 Serial Device Connection

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.

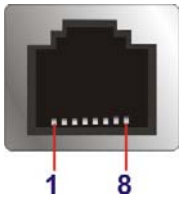


Figure 3-24: RJ-45 RS-422/485 Serial Port Pinout Location

Pin	Description (RS-422)	Description (RS-485)
1	N/A	N/A
2	ITXD422#	ITXD485#
3	N/A	N/A
4	ITXD422+	ITXD485#
5	GND	GND
6	IRXD422#	N/A
7	N/A	N/A
8	IRXD422+	N/A

Table 3-5: RJ-45 RS-422/485 Serial Port Pinouts

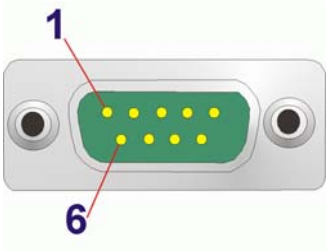


Figure 3-25: DB-9 Connector Pinout Location

Pin	Description (RS-422)	Description (RS-485)
1	IRXD422+	N/A
2	IRXD422#	N/A
3	ITXD422+	ITXD485+
4	ITXD422#	ITXD485#
5	GND	GND
6	N/A	N/A
7	N/A	N/A
8	N/A	N/A
9	N/A	N/A

Table 3-6: DB-9 Connector Pinouts

3.7.10 RS-232 Serial Port Connectors

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

CN Type: DB-9 connectors

CN Location: See **Figure 1-2**

CN Pinouts: See **Table 3-7** and **Figure 3-27**

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 1-2**.

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 3-26**.

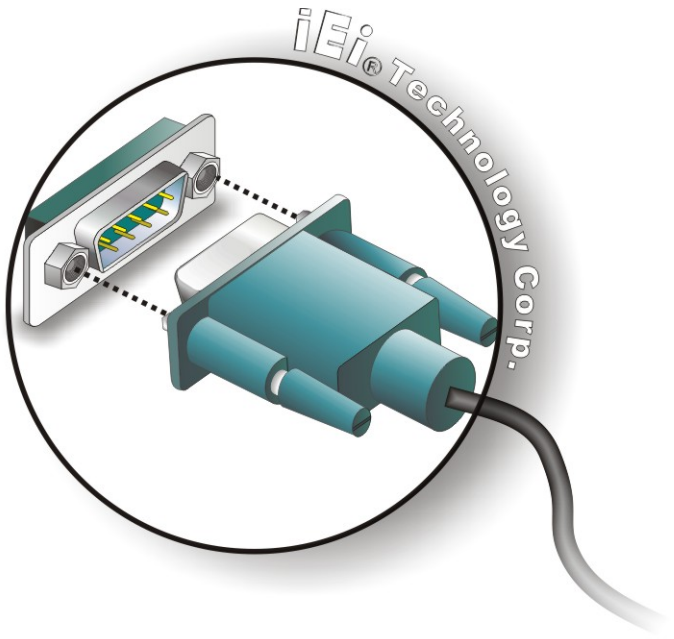


Figure 3-26: Serial Device Connector

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 3-7: Serial Port Pinouts

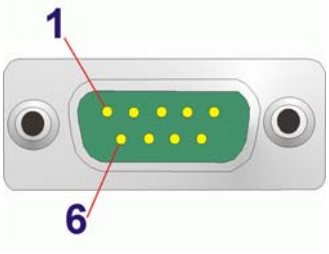


Figure 3-27: Serial Port Pinout Location

3.7.11 USB Connectors

CN Label:	**USB**
CN Type:	USB port
CN Location:	See **Figure 1-2**
CN Pinouts:	See **Table 3-8**

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 1-2**.

Step 2: **Align the connectors.** Align the USB device connector with one of the connectors. See **Figure 3-28**.

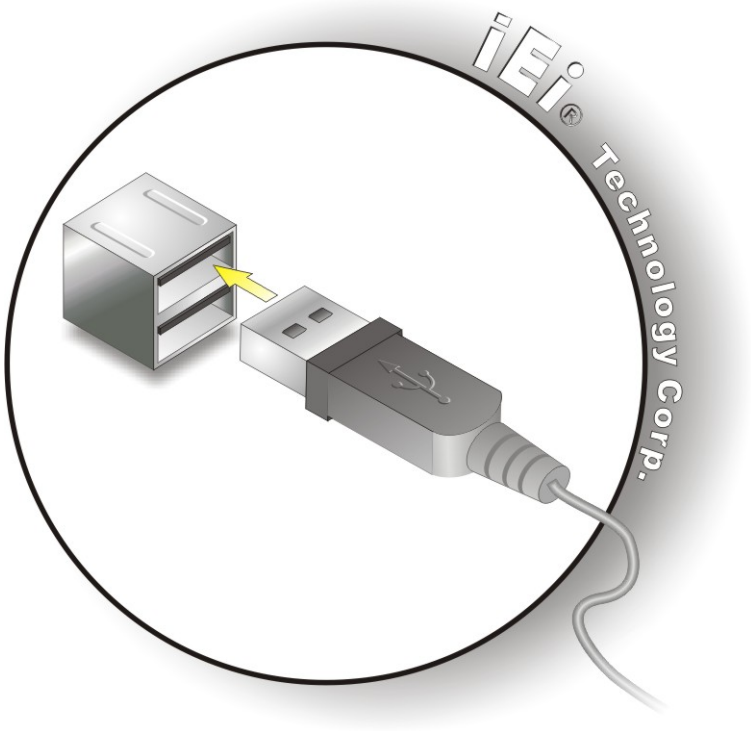


Figure 3-28: USB Device Connection

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 3-8: USB Port Pinouts

3.7.12 VGA Connector

CN Label: **VGA**

CN Type: 15-pin Female

CN Location: See **Figure 1-2**

CN Pinouts: See **Figure 3-30** and **Table 3-9**

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 1-2**.

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 into the female connector on the TANK-800. See **Figure 3-29**.

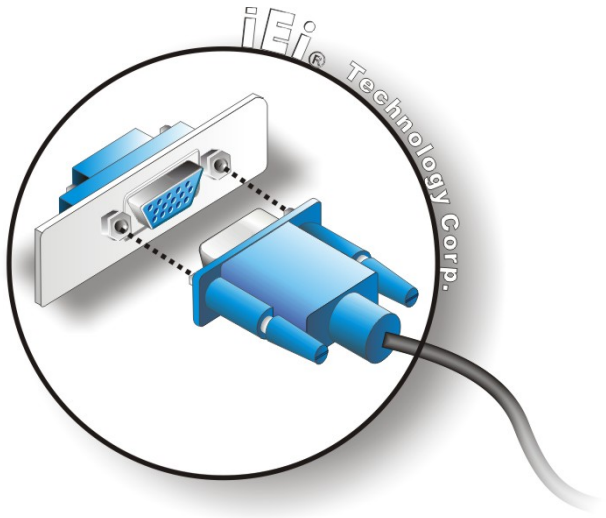


Figure 3-29: VGA Connector

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.

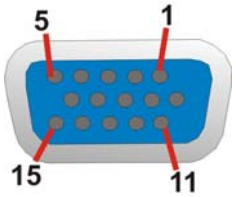


Figure 3-30: VGA Connector

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

Table 3-9: VGA Connector Pinouts

3.8 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 3-31: Power Button

3.9 Redundant Power

The TANK-800 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 3-pin terminal block that supports ACC On signal. Power 2 connector is a DIN connector that can directly connect to a power adapter. The supported power input voltages are:

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

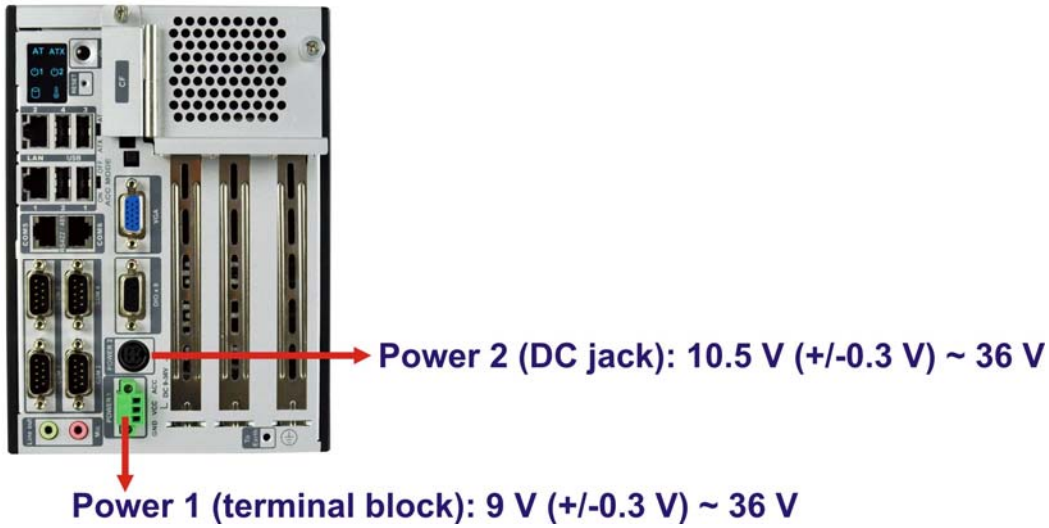


Figure 3-32: Power Connectors

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 3-15**).

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

3.9.1 ACC ON

NOTE:

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

The ACC On mode is designed for vehicle applications. When the TANK-800 is in ACC On mode, the main power input is Power 1 connector and the backup power is from Power 2 connector.

3.9.1.1 Boot-up

When both power connectors are connected to power source with over 9 V power input, the two power LEDs on the front panel remain off until **the ACC ON signal jump from low to high**. The user can choose to use 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.

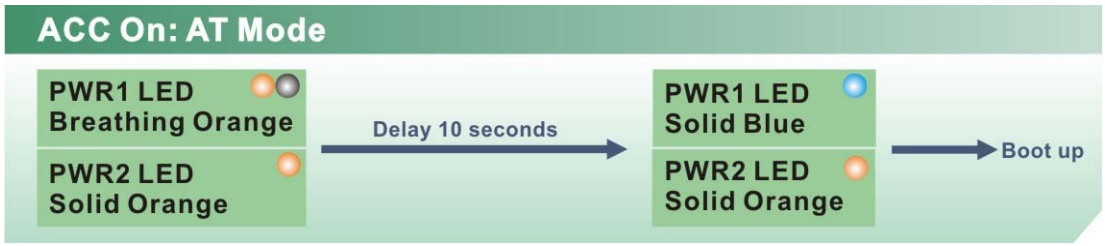


Figure 3-33: ACC On: AT Mode

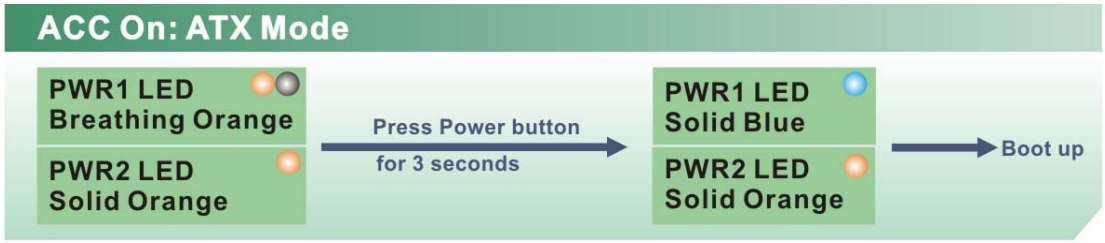


Figure 3-34: ACC On: ATX Mode

3.9.1.2 Switch to Backup Power

During the operation, the 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 jump 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.

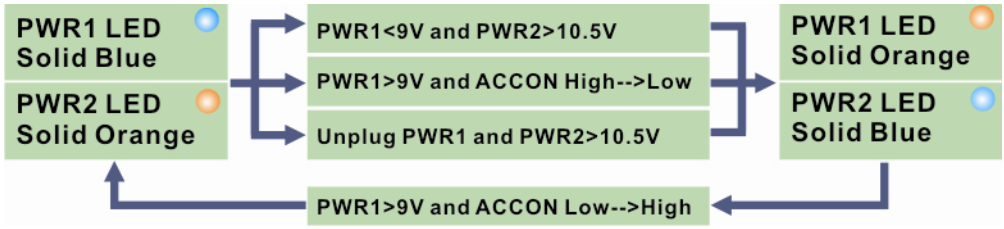


Figure 3-35: ACC On: Switch Between PWR1 and PWR2

3.9.1.3 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 jump from high to low
- Press Power button for 6 seconds

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

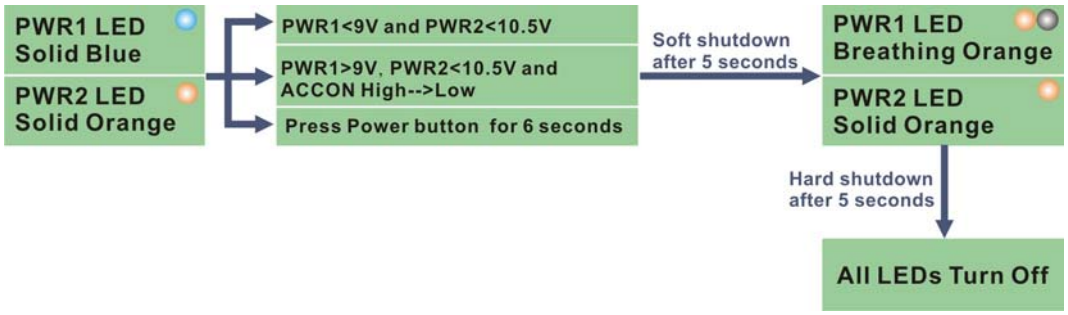


Figure 3-36: ACC On: Shutdown

NOTE:

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

3.9.2 ACC OFF

When the TANK-800 is in ACC Off mode, the main power input is Power 2 connector and the backup power is from Power 1 connector.

3.9.2.1 Boot-up

When both power connectors are connected to power source with over 9 V power input, the two power LEDs on the front panel turn on. The user can choose to use 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.

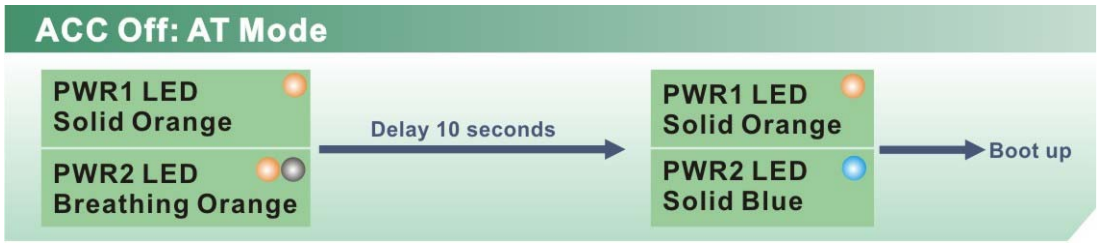


Figure 3-37: ACC Off: AT Mode

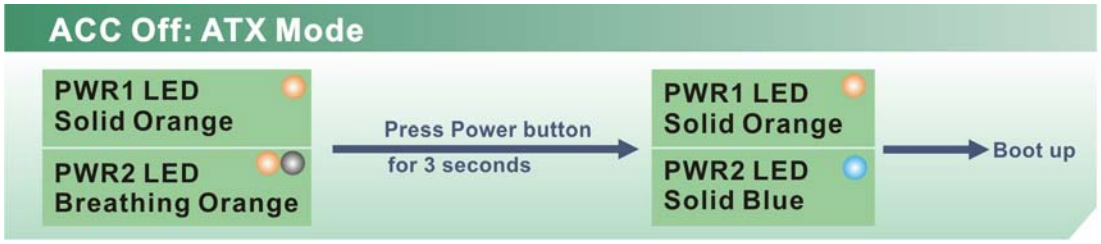


Figure 3-38: ACC Off: ATX Mode

3.9.2.2 Switch to Backup Power

During the operation, the system power will switch 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.

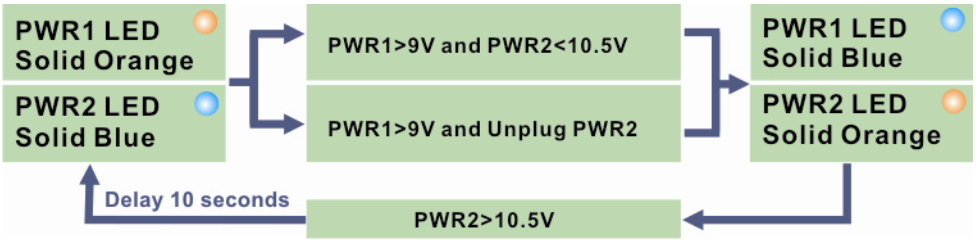


Figure 3-39: ACC Off: Switch Between PWR1 and PWR2

3.9.2.3 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.

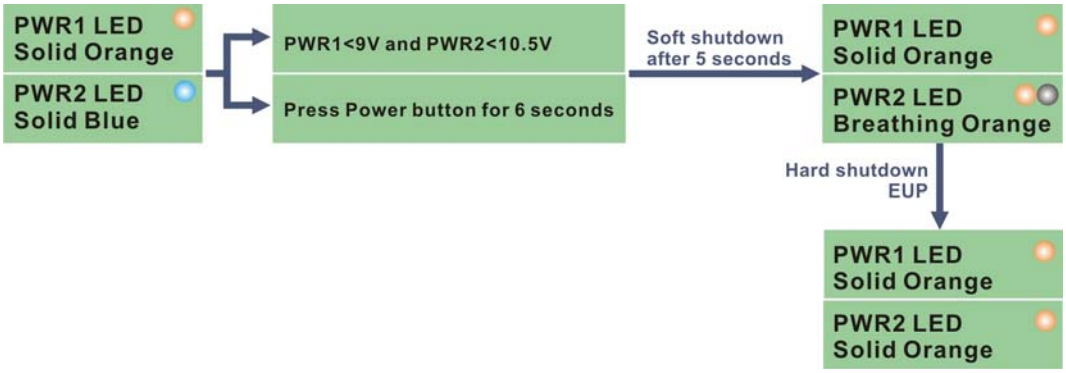


Figure 3-40: ACC Off: Shutdown

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 3.

4.1.5 BIOS Menu Bar

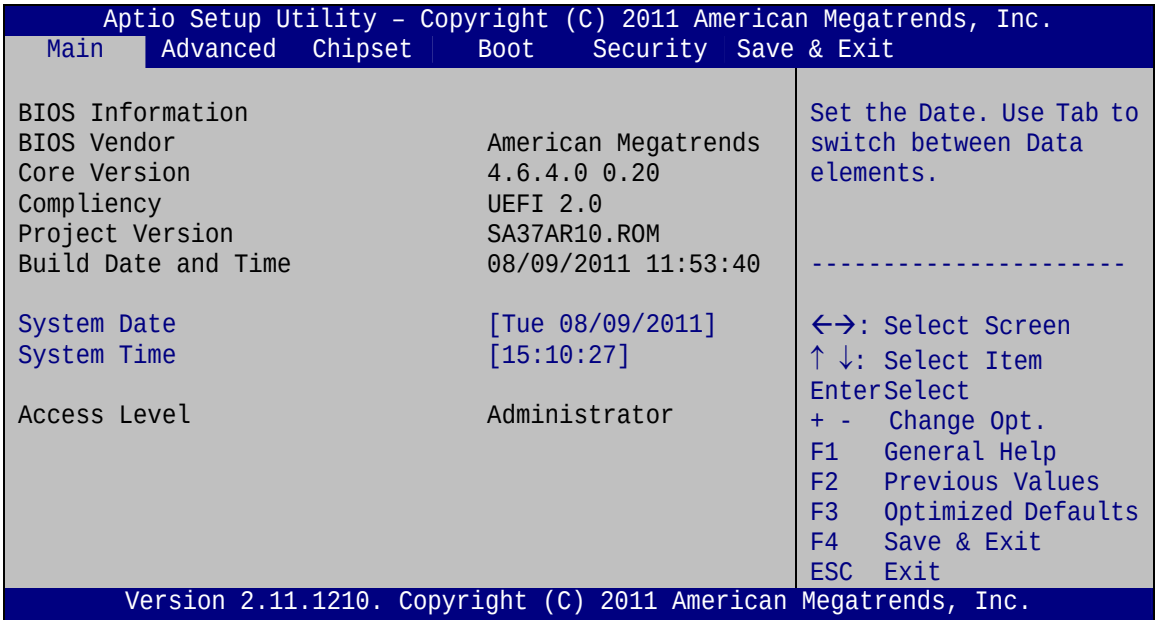
The **menu bar** on top of the BIOS screen has the following main items:

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

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

4.2 Main

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



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.

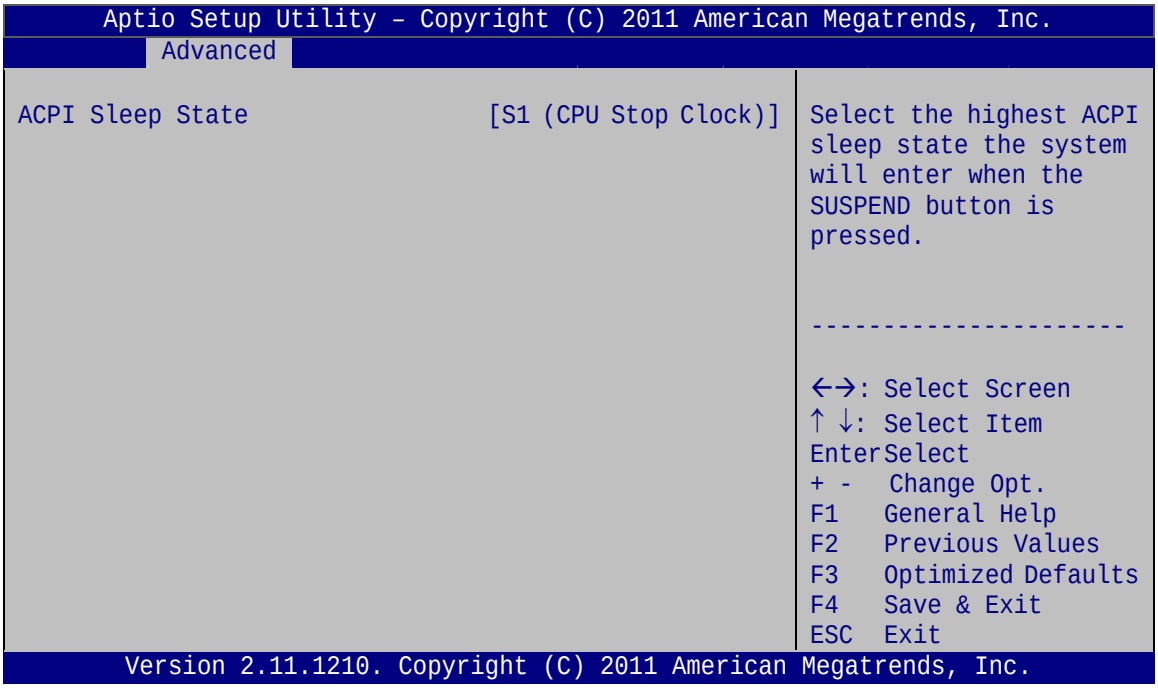
```
      Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
  Main   Advanced  Chipset    Boot    Security  Save & Exit

> ACPI Settings                                  System ACPI Parameters
> CPU Configuration
> IDE Configuration
> USB Configuration
> Super IO Configuration                         ----------------------
> H/M Monitor
> Serial Port Console Redirection                ←→: Select Screen
> iEi Feature                                    ↑ ↓: Select Item
                                                 EnterSelect
                                                 + -   Change Opt.
                                                 F1    General Help
                                                 F2    Previous Values
                                                 F3    Optimized Defaults
                                                 F4    Save & Exit
                                                 ESC   Exit
       Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Menu 2: Advanced

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.

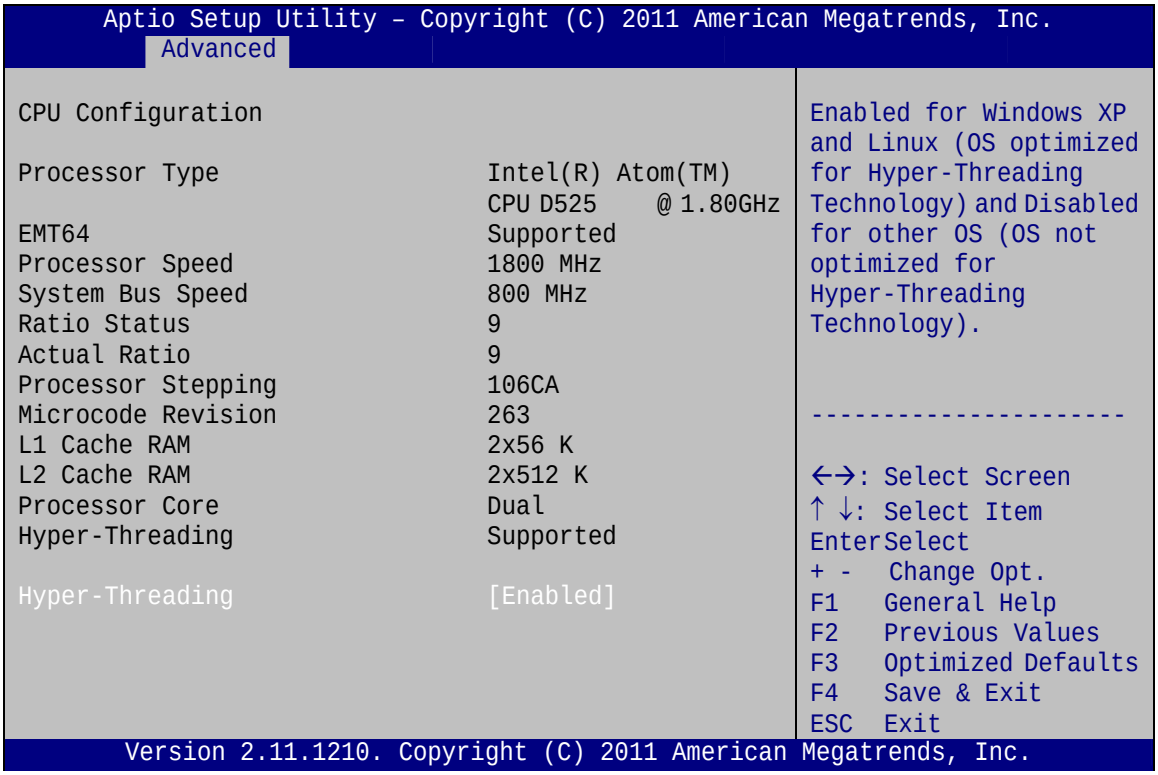
➔ **Suspend Disabled**

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

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

4.3.2 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 4**) to view detailed CPU specifications and configure the CPU.



BIOS Menu 4: CPU Configuration

The CPU Configuration menu (**BIOS Menu 4**) lists the following CPU details:

- Processor Type: Lists the brand name of the CPU being used
- EMT64: Indicates if the EM64T is supported by the CPU.
- Processor Speed: Lists the CPU processing speed
- System Bus Speed: Lists the system bus
- Ratio Status: List the maximum FSB divisor
- Actual Ratio: Lists current FSB divisor
- Processor Stepping: Lists the CPU processing stepping
- Microcode Revision: Lists the microcode revision
- L1 Cache RAM: Lists the CPU L1 cache size
- L2 Cache RAM: Lists the CPU L2 cache size
- Processor Core: Lists the number of the processor core

- Hyper-Threading: Indicates if the Intel Hyper-Threading Technology is supported by the CPU.

➔ **Hyper-Threading [Enabled]**

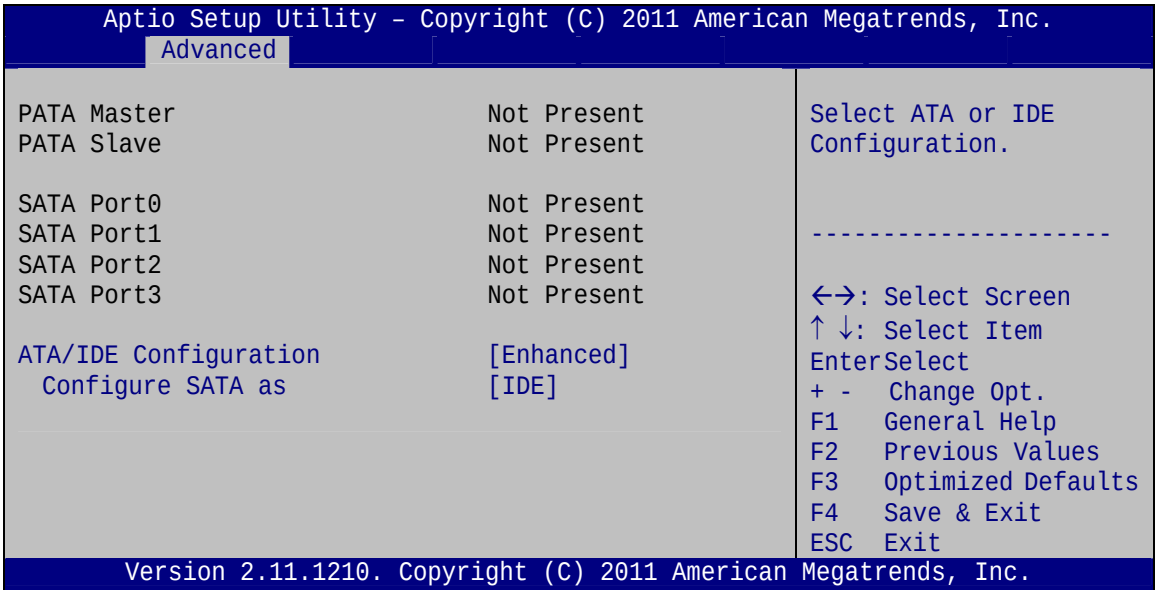
Use the **Hyper-Threading** BIOS option to enable or disable the Intel Hyper-Threading Technology.

➔ **Disabled** Disables the Intel Hyper-Threading Technology.

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

4.3.3 IDE Configuration

Use the **IDE Configuration** menu (**BIOS Menu 5**) to change and/or set the configuration of the SATA devices installed in the system.



BIOS Menu 5: IDE Configuration

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

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

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

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

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

➔ **Configure SATA as [IDE]**

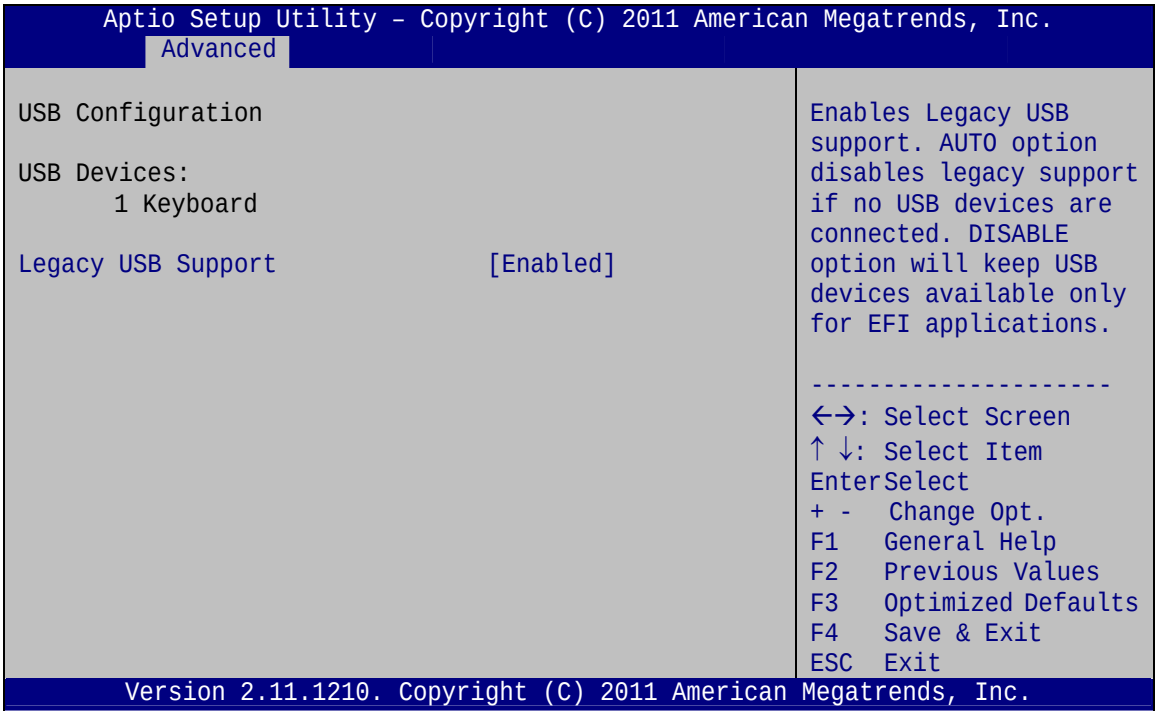
Use the **Configure SATA as** option to configure SATA devices as normal IDE devices.

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

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

4.3.4 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 6**) to read USB configuration information and configure the USB settings.



BIOS Menu 6: USB Configuration

➔ **USB Devices**

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

➔ **Legacy USB Support [Enabled]**

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

➔ **Enabled** **DEFAULT** Legacy USB support enabled

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

4.3.5 Super IO Configuration

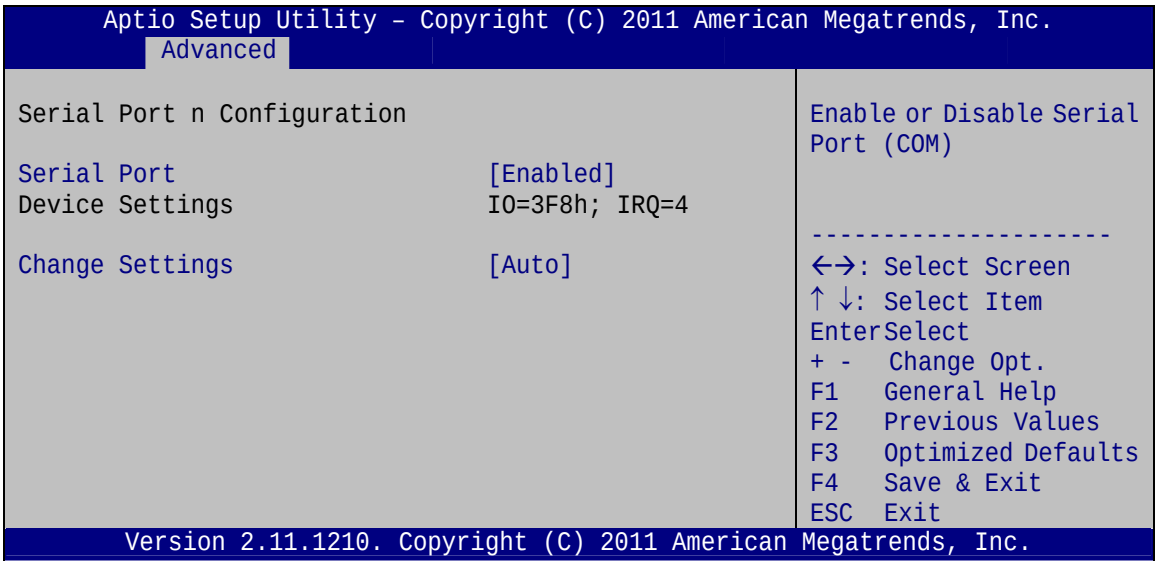
Use the **Super IO Configuration** menu (**BIOS Menu 7**) to set or change the configurations for the serial ports.

```
        Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
            Advanced
 Super IO Configuration                    | Set Parameters of Serial
                                           | Port 1 (COMA)
 > Serial Port 1 Configuration             |
 > Serial Port 2 Configuration             |
 > Serial Port 3 Configuration             | ---------------------
 > Serial Port 4 Configuration             | ←→: Select Screen
 > Serial Port 5 Configuration             | ↑ ↓: Select Item
 > Serial Port 6 Configuration             | EnterSelect
                                           | + -   Change Opt.
                                           | F1    General Help
                                           | F2    Previous Values
                                           | F3    Optimized Defaults
                                           | F4    Save & Exit
                                           | ESC   Exit
        Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Menu 7: Super IO Configuration

4.3.5.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 8**) to configure the serial port n.



BIOS Menu 8: Serial Port n Configuration Menu

4.3.5.1.1 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

4.3.5.1.2 Serial Port 2 Configuration

➔ **Serial Port [Enabled]**

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

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

➔ **Change Settings [Auto]**

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

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

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

4.3.5.1.3 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

4.3.5.1.4 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

➔ **Device Mode [RS422/485]**

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

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

4.3.5.1.5 Serial Port 5 Configuration

➔ **Serial Port [Enabled]**

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

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

➔ **Change Settings [Auto]**

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

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

4.3.5.1.6 Serial Port 6 Configuration

➔ **Serial Port [Enabled]**

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

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

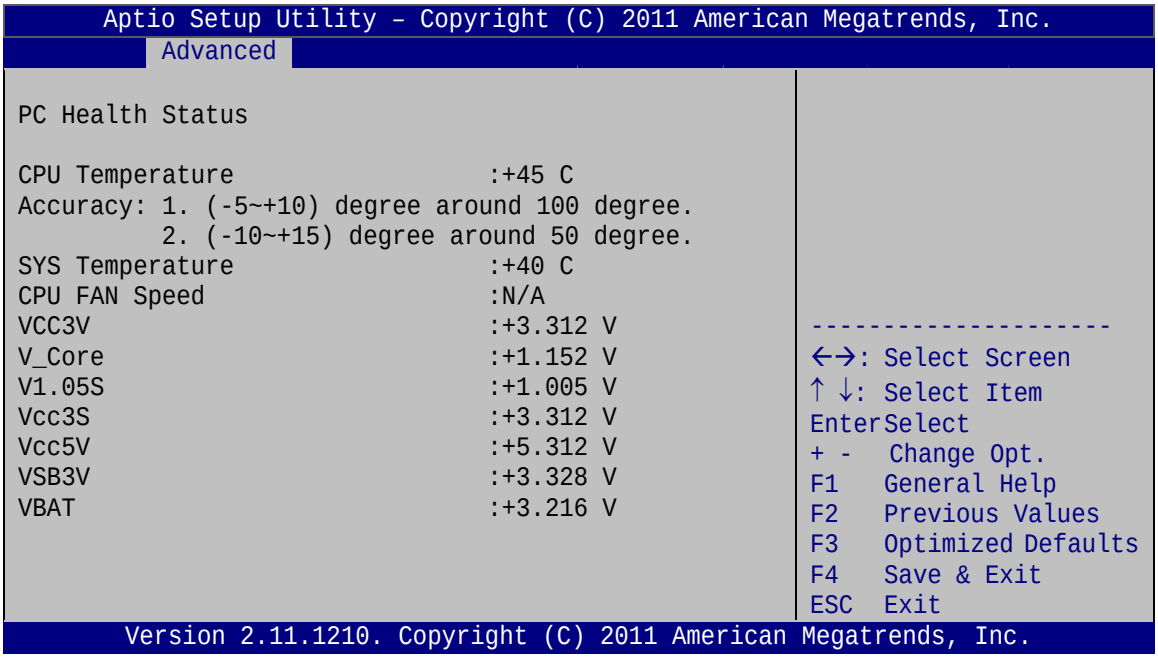
➔ **Change Settings [Auto]**

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

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

4.3.6 H/W Monitor

The **H/W Monitor** menu (**BIOS Menu 9**) shows the operating temperature, fan speeds and system voltages.



BIOS Menu 9: H/W Monitor

➔ **PC Health Status**

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

- System Temperatures:
  - CPU Temperature
  - System Temperature
- Fan Speeds:
  - CPU Fan Speed
- Voltages:
  - VCC3V
  - Vcore
  - Vcc
  - V1.05S

- Vcc3S
- Vcc5V
- VSB3V
- VBAT

4.3.7 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 10**) allows the console redirection options to be configured. Console redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.

```
Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
        Advanced
 COM1                                          Console Redirection
 Console Redirection            [Disabled]     Enable or Disable
> Console Redirection Settings

 COM2
 Console Redirection            [Disabled]
> Console Redirection Settings

 COM3
 Console Redirection            [Disabled]
> Console Redirection Settings                 ---------------------
                                               ←→: Select Screen
 COM4                                          ↑ ↓: Select Item
 Console Redirection            [Disabled]     EnterSelect
> Console Redirection Settings                 +/-: Change Opt.
                                               F1   General Help
 COM5                                          F2   Previous Values
 Console Redirection            [Disabled]     F3   Optimized Defaults
> Console Redirection Settings                 F4   Save & Exit
                                               ESC  Exit
 COM6
 Console Redirection            [Disabled]
> Console Redirection Settings

Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Menu 10: Serial Port Console Redirection

➔ **Console Redirection [Disabled]**

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

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

- **Enabled** — Enabled the console redirection function

➔ **Terminal Type [VT-100+]**

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

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

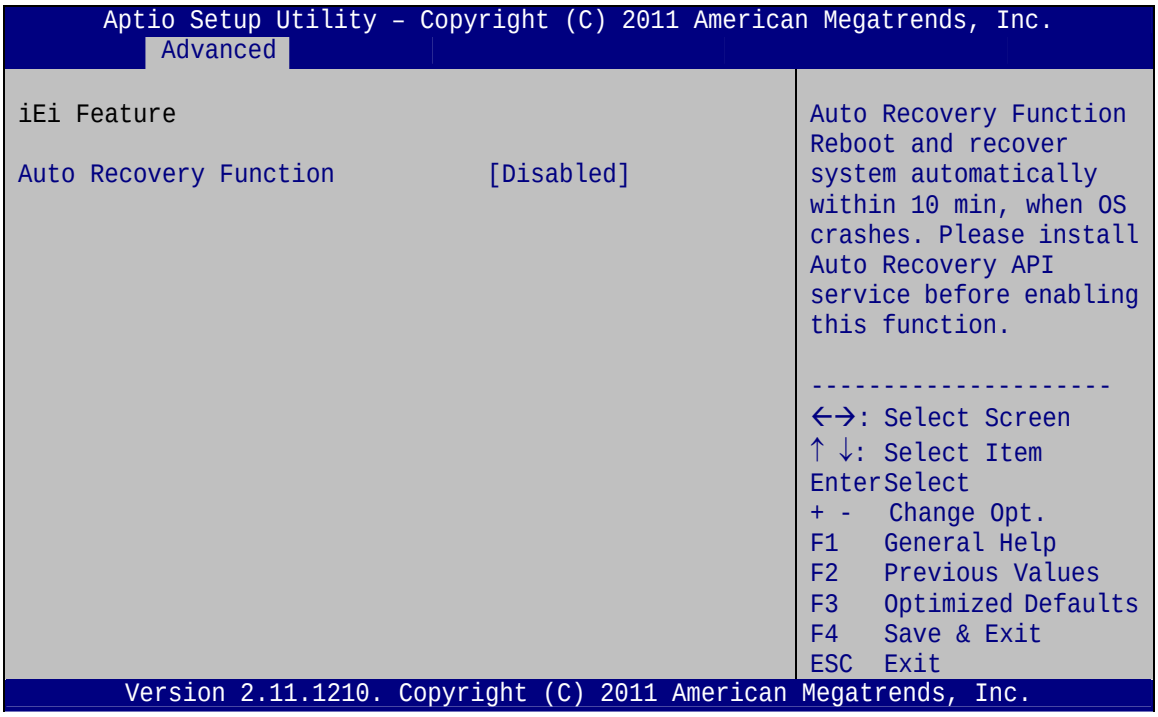
➔ **Bits per second [115200]**

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

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

4.3.8 iEi Feature

Use the **iEi Feature** menu (**BIOS Menu 11**) to configure the iEi features.



BIOS Menu 11: iEi Feature

➔ **Auto Recovery Function [Disabled]**

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

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

➔ **Enabled** Enabled the auto recovery function

4.4 Chipset

Use the **Chipset** menu (**BIOS Menu 12**) to access the Northbridge and Southbridge configuration menus.

WARNING!

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

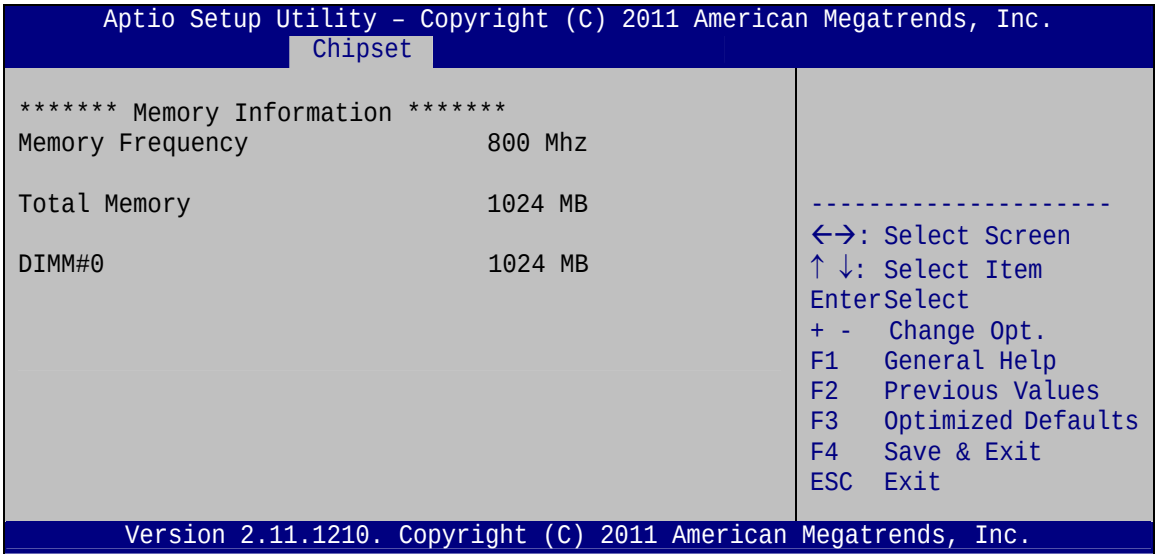
```
      Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
  Main    Advanced  Chipset    Boot    Security  Save & Exit

> Host Bridge                                   North Bridge Parameters
> South Bridge
> Intel IGD SWSCI OpRegion                     ---------------------
                                                ←→: Select Screen
                                                ↑ ↓: Select Item
                                                EnterSelect
                                                + -   Change Opt.
                                                F1    General Help
                                                F2    Previous Values
                                                F3    Optimized Defaults
                                                F4    Save & Exit
                                                ESC   Exit
        Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.
```

BIOS Menu 12: Chipset

4.4.1 Host Bridge Configuration

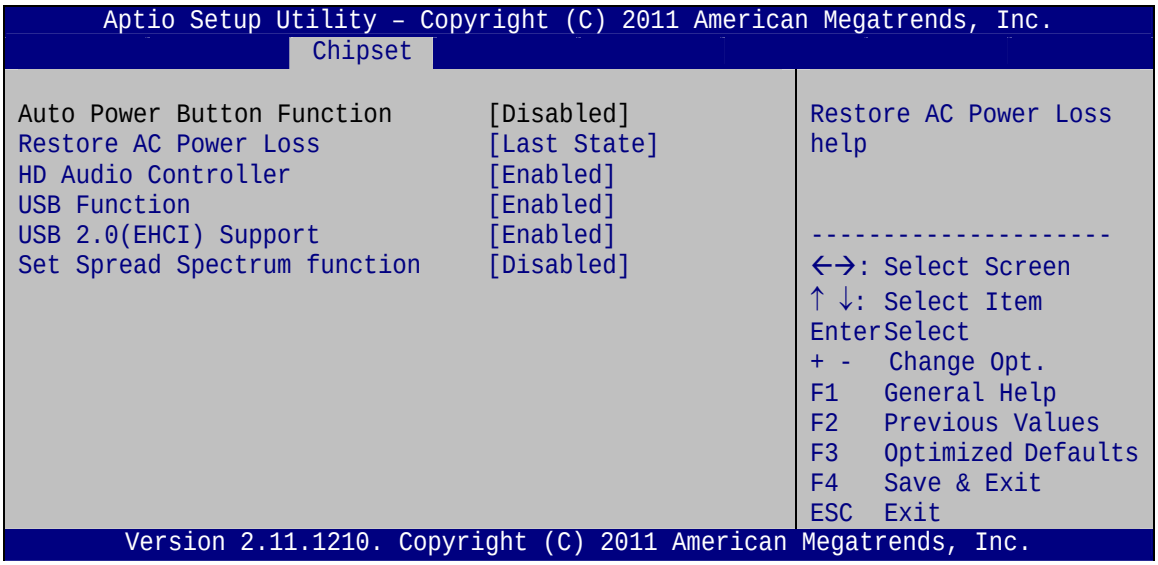
Tthe **Host Bridge Configuration** menu (**BIOS Menu 13**) shows the memory frequency and memory capacity.



BIOS Menu 13: Host Bridge Chipset Configuration

4.4.2 South Bridge Configuration

Use the **South Bridge Configuration** menu (**BIOS Menu 14**) to configure the Southbridge chipset.



BIOS Menu 14: South Bridge Chipset Configuration

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

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

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

➔ **HD Audio Controller [Enabled]**

Use the **HD Audio Controller** 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

➔ **USB Function [Enabled]**

Use the **USB Function** BIOS option to enable or disable USB function support.

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

➔ **USB 2.0 (EHCI) Support [Enabled]**

Use the **USB 2.0 (EHCI) Support** BIOS option to enable or disable USB 2.0 support.

➔ **Enabled**	**DEFAULT**	USB 2.0 (EHCI) support enabled
➔ **Disabled**		USB 2.0 (EHCI) support disabled

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

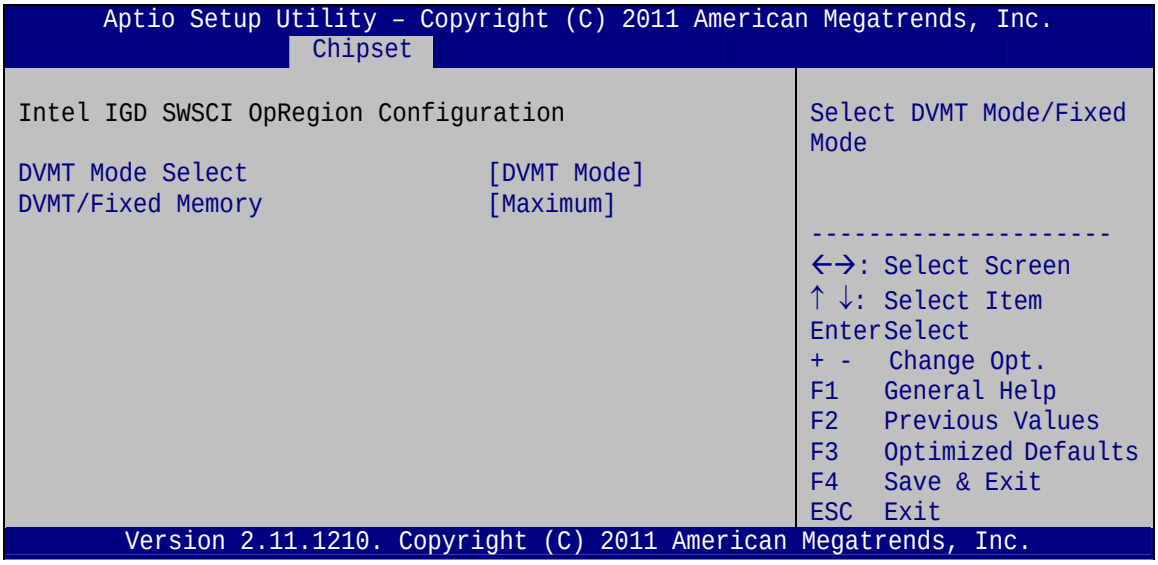
The **Set Spread Spectrum Function** option can help to improve CPU EMI issues.

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

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

4.4.3 Intel IGD SWSCI OpRegion

Use the **Intel IGD SWSCI OpRegion** menu (**BIOS Menu 15**) to configure the video device connected to the system.



BIOS Menu 15: Intel IGD SWSCI OpRegion Configuration

➔ **DVMT Mode Select [DVMT Mode]**

Use the **DVMT Mode Select** option to select the Intel Dynamic Video Memory Technology (DVMT) operating mode.

➔ **Fixed Mode** A fixed portion of graphics memory is reserved as graphics memory.

➔ **DVMT Mode** **DEFAULT** Graphics memory is dynamically allocated according to the system and graphics needs.

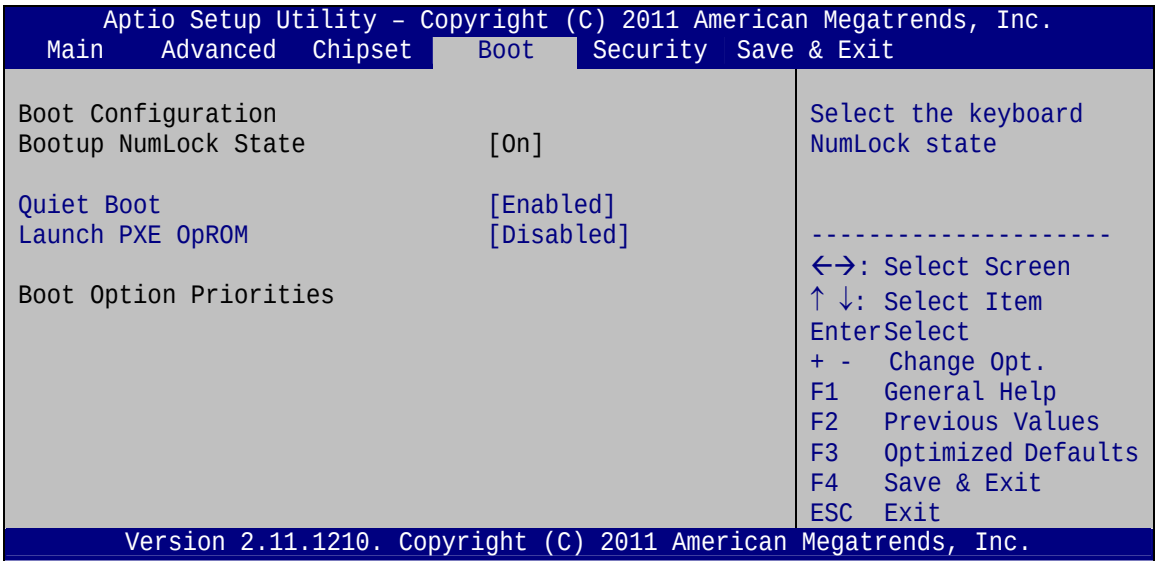
➔ **DVMT/FIXED Memory [Maximum]**

Use the **DVMT/FIXED Memory** option to specify the maximum amount of memory that can be allocated as graphics memory. Configuration options are listed below.

- 128 MB
- 256 MB
- Maximum **Default**

4.5 Boot

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



BIOS Menu 16: Boot

➔ **Bootup NumLock State [On]**

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

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

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

➔ **Quiet Boot [Enabled]**

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

➔ **Disabled**		Normal POST messages displayed
➔ **Enabled**	**DEFAULT**	OEM Logo displayed instead of POST messages

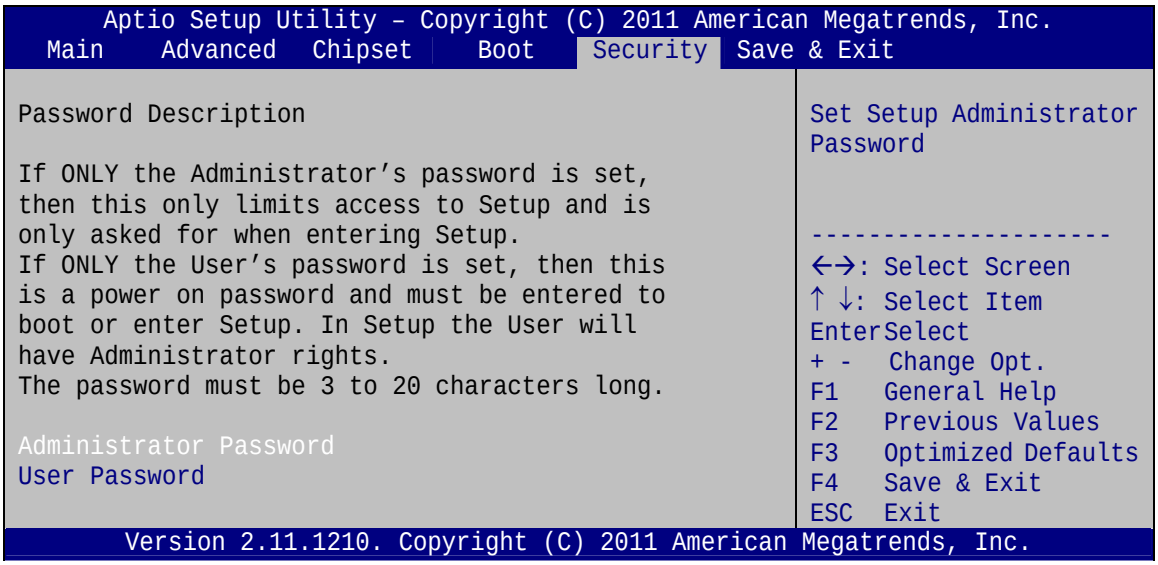
➔ **Launch PXE OpROM [Disabled]**

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

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

4.6 Security

Use the **Security** menu (**BIOS Menu 17**) to set system and user passwords.



BIOS Menu 17: Security

➔ **Administrator Password**

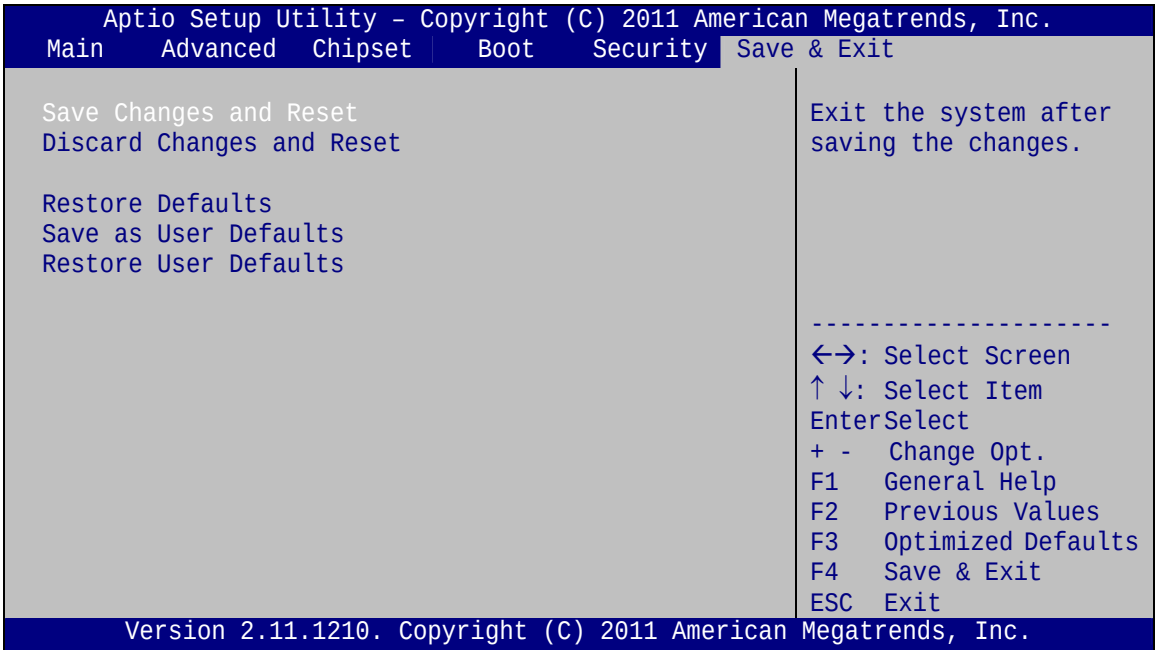
Use the **Administrator Password** to set or change an administrator password.

➔ **User Password**

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

4.7 Exit

Use the **Exit** menu (**BIOS Menu 18**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 18:Exit

➔ **Save Changes and Reset**

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

➔ **Discard Changes and Reset**

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

➔ **Restore Defaults**

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

➔ **Save as User Defaults**

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

➔ **Restore User Defaults**

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

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

CE

This equipment is in conformity with the following EU directives:

- EMC Directive 2004/108/EC
- Low-Voltage Directive 2006/95/EC
- RoHS II Directive 2011/65/EU
- Ecodesign Directive 2009/125/EC

If the user modifies and/or install other devices in the equipment, the CE conformity declaration may no longer apply.

If this equipment has telecommunications functionality, it also complies with the requirements of the R&TTE Directive 1999/5/EC.

English IEI Integration Corp declares that this equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Български [Bulgarian] IEI Integration Corp. декларира, че този оборудване е в съответствие със съществените изисквания и другите приложими правила на Директива 1999/5/EC.
Česky [Czech] IEI Integration Corp tímto prohlašuje, že tento zařízení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish] IEI Integration Corp erklærer herved, at følgende udstyr overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German] IEI Integration Corp, erklärt dieses Gerät entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 1999/5/EU.
Eesti [Estonian] IEI Integration Corp deklareerib seadme seadme vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.

Español [Spanish] IEI Integration Corp declara que el equipo cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνική [Greek] IEI Integration Corp ΔΗΛΩΝΕΙ ΟΤΙ ΕΞΟΠΛΙΣΜΟΣ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Français [French] IEI Integration Corp déclare que l'appareil est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian] IEI Integration Corp dichiara che questo apparecchio è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian] IEI Integration Corp deklarē, ka iekārta atbilst būtiskajām prasībām un citiem ar to saistītajiem noteikumiem Direktīvas 1999/5/EK.
Lietuvių [Lithuanian] IEI Integration Corp deklaruoja, kad šis įranga atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch] IEI Integration Corp dat het toestel toestel in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese] IEI Integration Corp jiddikjara li dan prodott jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian] IEI Integration Corp nyilatkozom, hogy a berendezés megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
Polski [Polish] IEI Integration Corp oświadcza, że wyrobu jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português [Portuguese] IEI Integration Corp declara que este equipamento está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.

Româna [Romanian] IEI Integration Corp declară că acest echipament este in conformitate cu cerințele esențiale şi cu celelalte prevederi relevante ale Directivei 1999/5/CE.
Slovensko [Slovenian] IEI Integration Corp izjavlja, da je ta opreme v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak] IEI Integration Corp týmto vyhlasuje, že zariadenia spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish] IEI Integration Corp vakuuttaa täten että laitteet on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska [Swedish] IEI Integration Corp förklarar att denna utrustningstyp står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

FCC WARNING

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

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Federal Communication Commission Interference Statement

This equipment has been assembled with components that comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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-800.

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

B.1.1 General Safety Precautions

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

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

B.1.2 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the TANK-800 may result in permanent damage to the TANK-800 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the TANK-800. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the TANK-800 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.

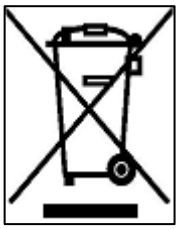
B.1.3 Product Disposal

CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

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



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

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

B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the TANK-800, please follow the guidelines below.

B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the TANK-800, please read the details below.

- The interior of the TANK-800 does not require cleaning. Keep fluids away from the TANK-800 interior.

- Be cautious of all small removable components when vacuuming the TANK-800.
- Turn the TANK-800 off before cleaning the TANK-800.
- Never drop any objects or liquids through the openings of the TANK-800.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the TANK-800.
- Avoid eating, drinking and smoking within vicinity of the TANK-800.

B.2.2 Cleaning Tools

Some components in the TANK-800 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-800.

- ***Cloth*** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the TANK-800.
- ***Water or rubbing alcohol*** – A cloth moistened with water or rubbing alcohol can be used to clean the TANK-800.
- ***Using solvents*** – The use of solvents is not recommended when cleaning the TANK-800 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-800. Dust and dirt can restrict the airflow in the TANK-800 and cause its circuitry to corrode.
- ***Cotton swabs*** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- ***Foam swabs*** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

C

Digital I/O Interface

C.1 Introduction

The DIO connector on the TANK-800 is interfaced to GPIO ports on the Super I/O chipset. The DIO has both 4-bit digital inputs and 4-bit digital outputs. The digital inputs and digital outputs are generally control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.

NOTE:

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

The BIOS interrupt call **INT 15H** controls the digital I/O.

INT 15H:

AH – 6FH	
Sub-function:	
AL – 8	:Set the digital port as INPUT
AL	:Digital I/O input value

C.2 Assembly Language Sample 1

```
MOV     AX, 6F08H       ;setting the digital port as input
INT     15H             ;
```

AL low byte = value

AH – 6FH	
Sub-function:	
AL – 9	:Set the digital port as OUTPUT
BL	:Digital I/O input value

C.3 Assembly Language Sample 2

```
MOV     AX, 6F09H       ;setting the digital port as output
MOV     BL, 09H         ;digital value is 09H
INT     15H             ;
```

Digital Output is 1001b

Appendix

D

Hazardous Materials Disclosure

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

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

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

Please refer to the table on the next page.

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

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

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

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

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

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	O	O	O	O	O	O
显示	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
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。						