IEI Integration 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. 2.01 – 25 April, 2018

RoHS Lead Free

Revision

Date	Version	Changes
25 April, 2018	2.01	Updated COM5 and COM 6 to RS-422/RS-485
28 April, 2013	2.00	Updated Section 3.2: Hard Disk Drive (HDD) Installation
18 December, 2012	1.12	Updated Section 3.9.11: Remote Control Connector
15 October, 2012	1.11	Updated memory spec
5 December, 2011	1.10	Updated Section 2.3: Unpacking Checklist Updated Section 3.9.13: RJ-45 RS-422/485 Serial Ports Updated Appendix A: One Key Recovery
17 October, 2011	1.00	Initial release

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TRADEMARKS

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.

Table of Contents

List of Figures

List of Tables

Chapter

1

Introduction

1.1 Overview

Figure 1-1: TANK-700

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

1.2 Model Variations

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

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

Table 1-1: TANK-700 Model Variations

1.3 Features

The TANK-700 features are listed below:

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

1.4 Technical Specifications

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

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

Specifications	
I/O and Indicators	
Ethernet	2 x Combo (SFP Fiber/RJ-45) Gigabit LAN
RS-232	4 x DB-9 serial ports on rear panel 2 x RJ-45 serial ports with isolation on front panel
RS-422/RS-485 (COM5,6)	2 x RJ-45 serial ports with isolation on front panel
USB Interfaces	2 x USB 3.0 ports on front panel 4 x USB 2.0 ports on rear panel
Display	1 x VGA port (supports resolution up to 2048 x 1536 @ 75Hz) 1 x HDMI port (supports resolution up to 1920 x 1200 @ 60Hz)
Audio Connector	1 x Line-out port 1 x Mic-in port
CAN-bus	1 x Phoenix terminal block on front panel
Audio/Video Capture	Optional 4-channel audio/video input PCIe Mini card (up to two cards)
Digital I/O	1 x DIO port (8 bits)
LED Indicators	AT power mode LED ATX power mode LED CAN-bus LED CPU temperature alert LED HDD LED LAN 1 LED LAN 2 LED Power 1 LED Power 2 LED SFP Fiber 1 LED SFP Fiber 2 LED Wireless LED
Storage	
SATA	2 x SATA 6Gb/s with 2.5” HDD/SSD support

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

Table 1-2: Technical Specifications

1.5 Connector Panel

1.5.1 Front Panel

The TANK-700 front panel contains:

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

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

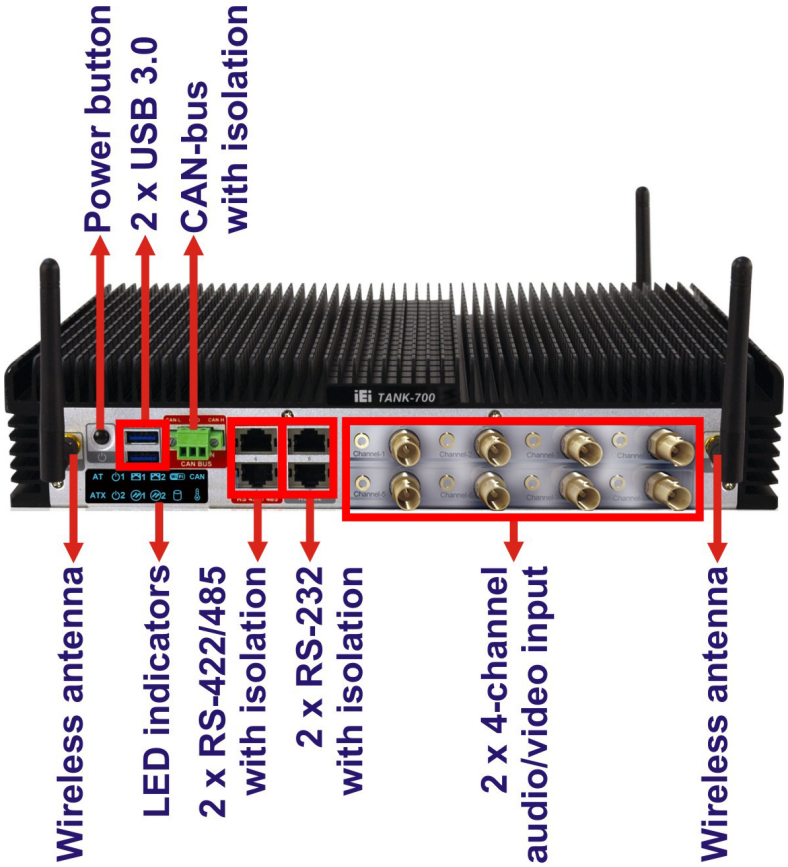


Figure 1-2: TANK-700 Front Panel

1.5.2 Rear Panel

The TANK-700 rear panel contains:

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

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

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

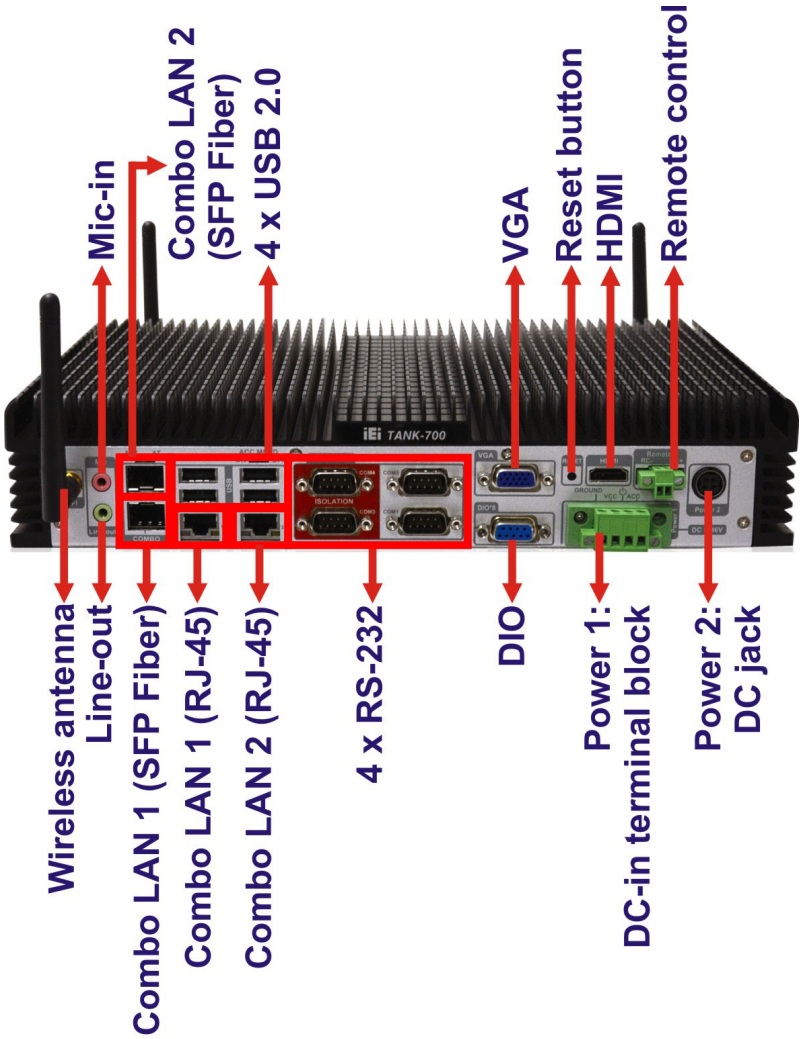


Figure 1-3: TANK-700 Rear Panel

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**.

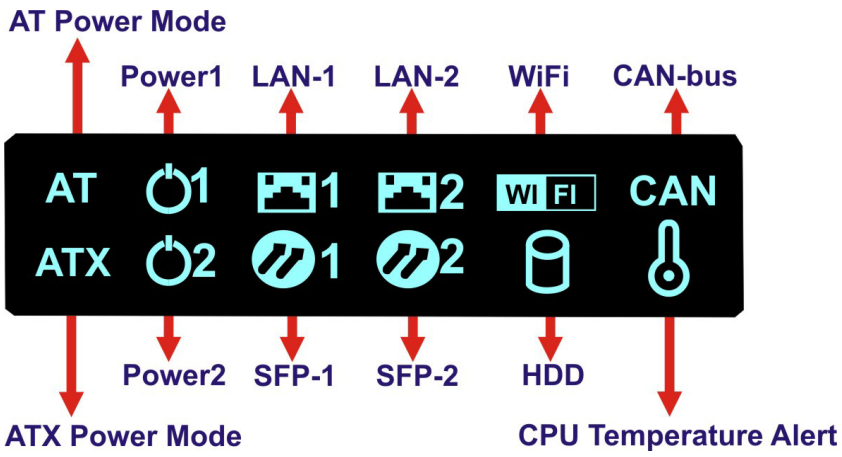


Figure 1-4: TANK-700 LED Indicators

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.

1.7 Dimensions

The physical dimensions are shown below:

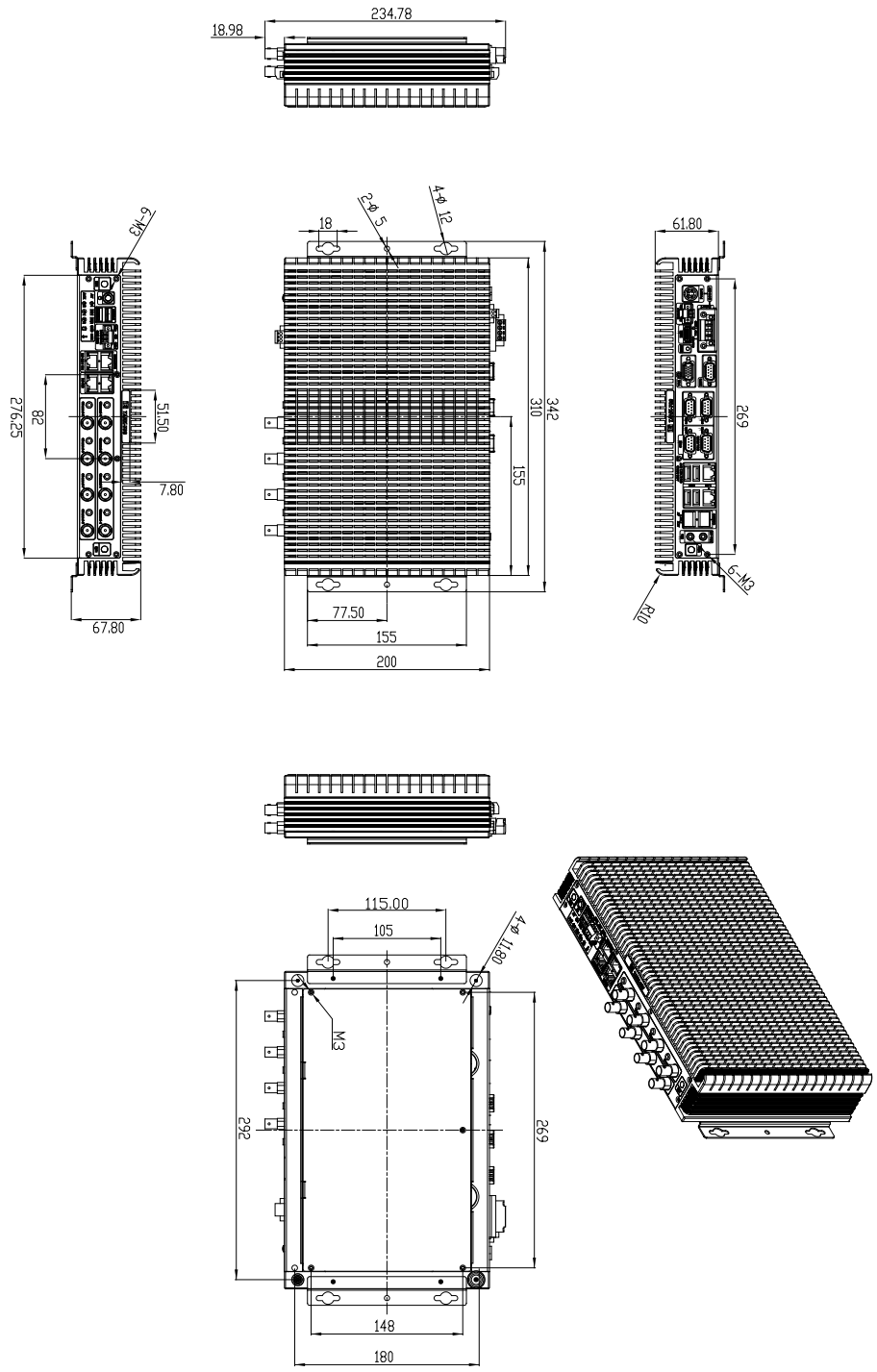


Figure 1-5: Physical Dimensions (millimeters)

Chapter

2

Unpacking

2.1 Anti-static Precautions

WARNING:

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

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

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

2.2 Unpacking Precautions

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

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

2.3 Unpacking Checklist

NOTE:

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

The TANK-700 is shipped with the following components:

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

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

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

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

Chapter

3

Installation

3.1 Installation Precautions

CAUTION:

The TANK-700 series has more than one power supply connection point.

To reduce the risk of electric shock, disconnect all power sources before installing or servicing the TANK-700 series.

During installation, be aware of the precautions below:

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

3.2 Hard Disk Drive (HDD) Installation

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

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

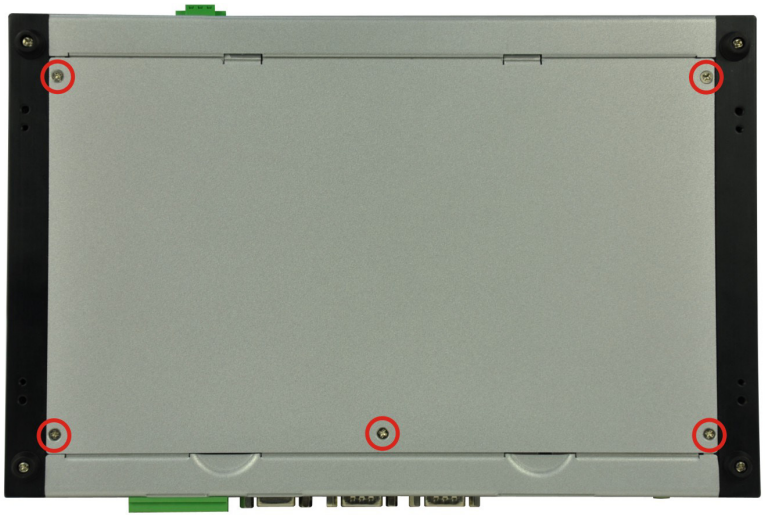


Figure 3-1: Bottom Panel Retention Screws

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

Figure 3-2: HDD Bracket Retention Screws

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

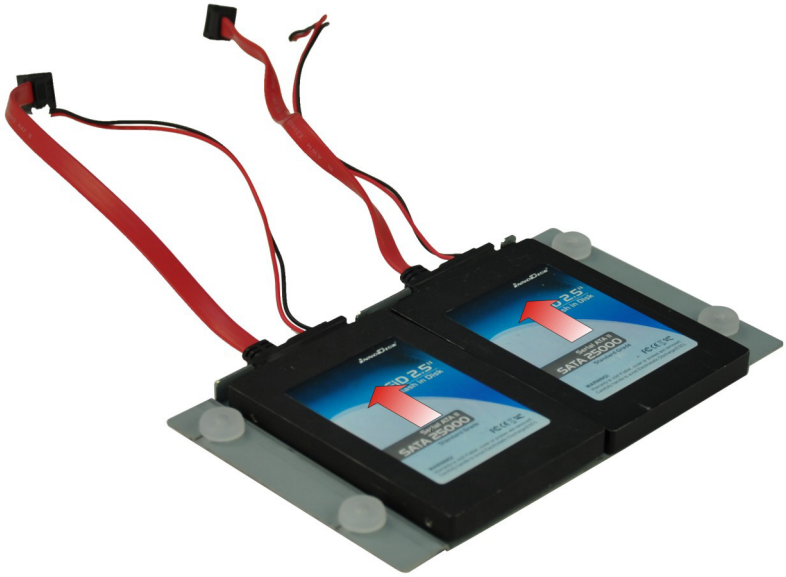


Figure 3-3: HDD Installation

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

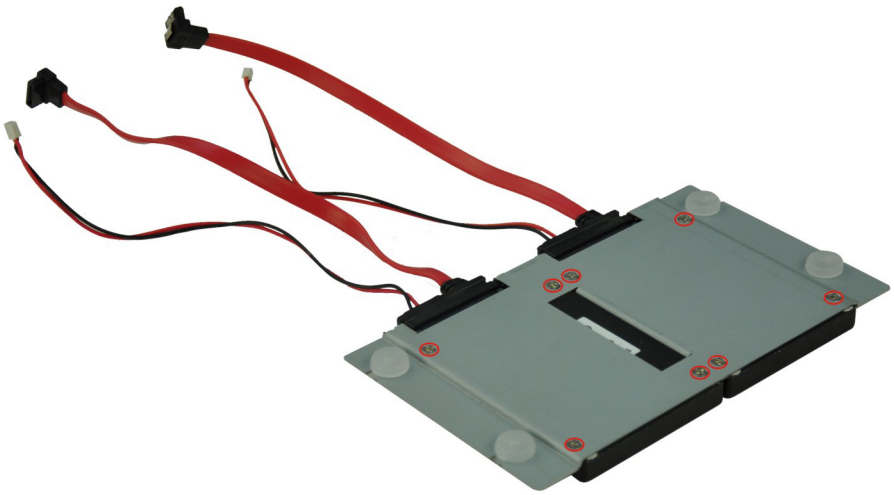


Figure 3-4: HDD Retention Screws

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

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

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

3.3 Pluggable CAN-bus Terminal Block Installation

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

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

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

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

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

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

3.4 Pluggable DC-In Terminal Block Installation

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

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

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

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

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

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

3.5 Pluggable Remote Control Terminal Block Installation

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

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

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

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

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

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 five retention screws from the bottom panel (**Figure 3-1**).

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

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

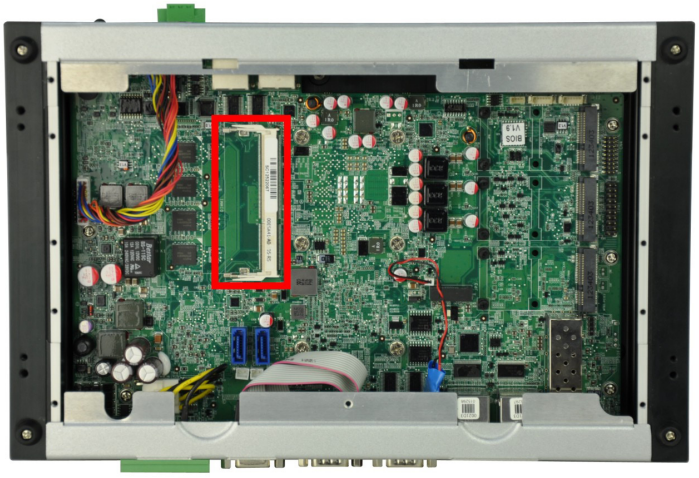


Figure 3-9: SO-DIMM Socket

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

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

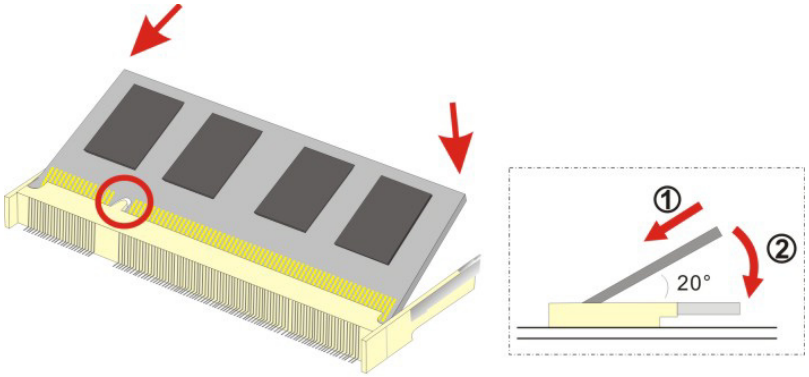


Figure 3-10: SO-DIMM Installation

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

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

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

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

3.8 Mounting the System with Mounting Brackets

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

Step 1: Turn the embedded system over.

Step 2: Align the two retention screw holes in each bracket with the corresponding retention screw holes on the sides of the bottom surface (**Figure 3-11**).

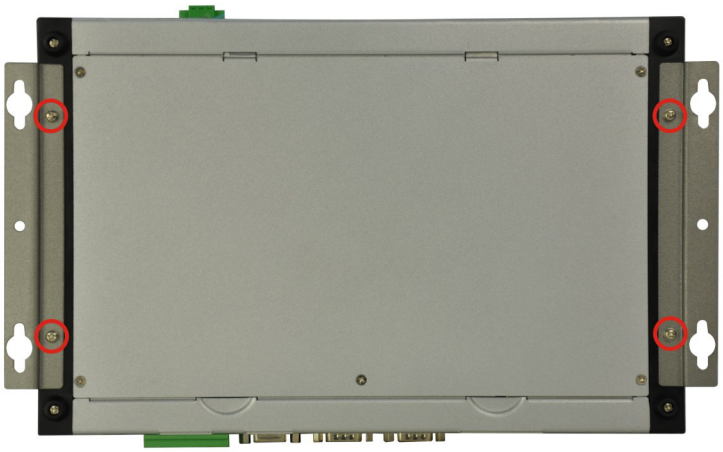


Figure 3-11: Mounting Bracket Retention Screws

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

Step 4: Drill holes in the intended installation surface.

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

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

3.9 External Peripheral Interface Connectors

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

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

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

3.9.1 ACC Mode Selection

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

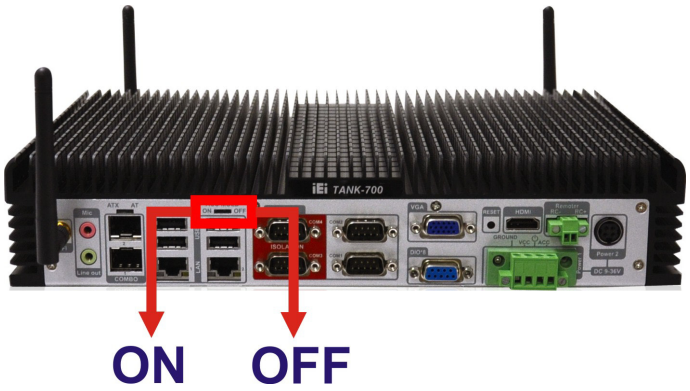


Figure 3-12: ACC Mode Switch

3.9.2 AT/ATX Power Mode Selection

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

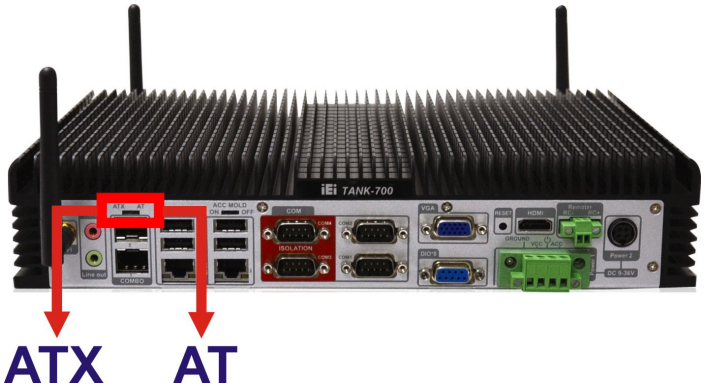


Figure 3-13: AT/ATX Power Mode Switch

3.9.3 Audio Connector

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

The audio jacks connect to external audio devices.

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

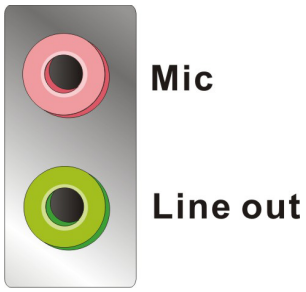


Figure 3-14: Audio Connector

3.9.4 Audio/Video Input Connectors

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

3.9.5 CAN-bus Terminal Block

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

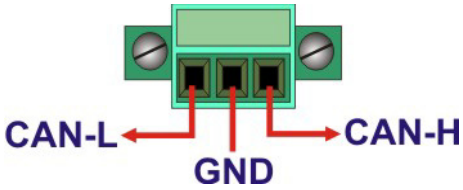


Figure 3-15: CAN-bus Terminal Block Pinouts

3.9.6 Digital Input/Output Connector

CN Label: **DIO x 8**

CN Type: DB-9 male connector

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

CN Pinouts: See **Table 3-1** and **Figure 3-16**

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

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

Table 3-1: DIO Connector Pinouts

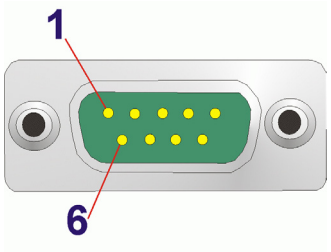


Figure 3-16: DIO Connector Pinout Location

3.9.7 HDMI Connector

CN Label: **HDMI**

CN Type: HDMI type A connector

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

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

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

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

Table 3-2: HDMI Connector Pinouts

3.9.8 LAN Connectors

CN Label: **LAN**

CN Type: RJ-45

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

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

The LAN connectors allow connection to an external network.

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

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the TANK-700. See **Figure 3-17**.

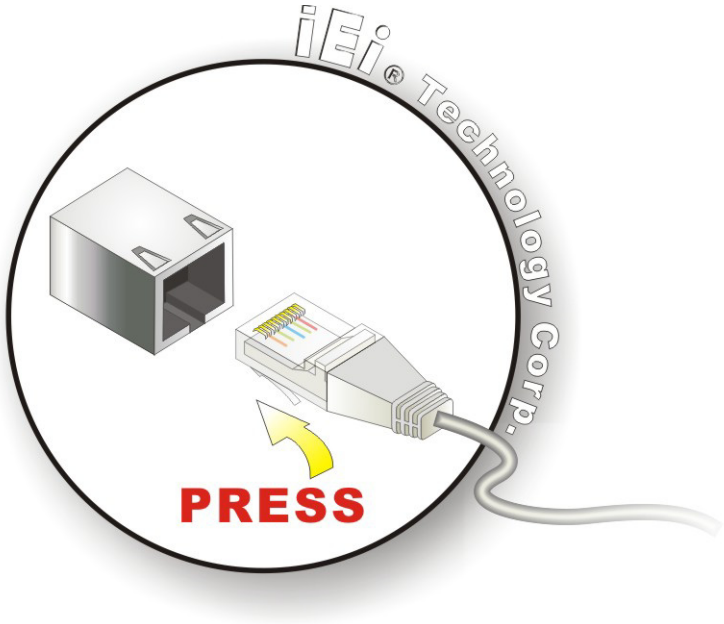


Figure 3-17: LAN Connection

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

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

Table 3-3: LAN Pinouts

Figure 3-18: RJ-45 Ethernet Connector

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

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

Table 3-4: RJ-45 Ethernet Connector LEDs

3.9.9 Power Input, 4-pin Terminal Block

CN Label: **POWER 1**

CN Type: 4-pin terminal block

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

CN Pinouts: See **Table 3-5** and **Figure 3-19**

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

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

Table 3-5: 4-pin Terminal Block Pinouts

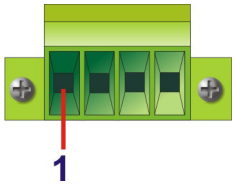


Figure 3-19: 4-pin Terminal Block Pinout Location

3.9.10 Power Input, 4-pin DIN Connector

CN Label: POWER 2

CN Type: 4-pin DIN connector

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

CN Pinouts: See **Table 3-6** and **Figure 3-20**

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

Figure 3-20: Power Input Connector

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

Table 3-6: Power Input Pinouts

3.9.11 Remote Control Connector (For AT Power Mode Only)

CN Label: **Remoter**

CN Type: 2-pin terminal block

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

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

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

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

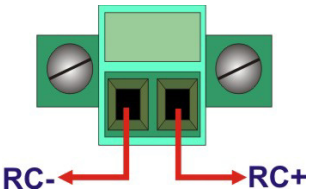


Figure 3-21: Remote Control Terminal Block Pinout Location

3.9.12 RJ-45 RS-232 Serial Ports

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

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

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

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

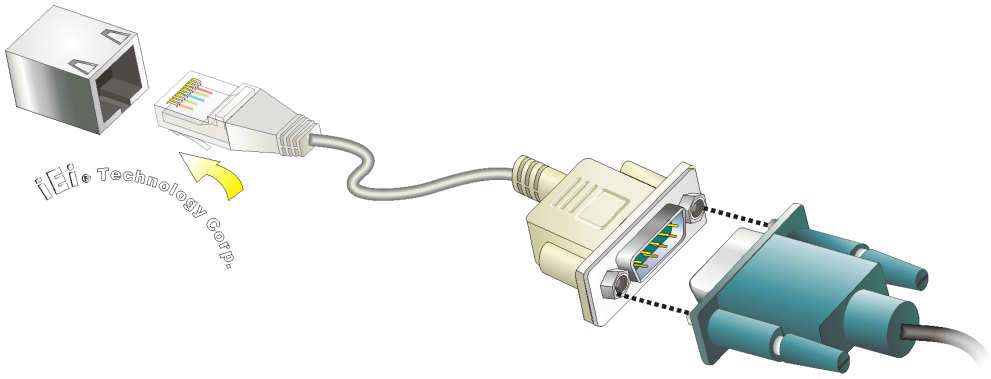


Figure 3-22: RJ-45 RS-232 Serial Device Connection

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

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

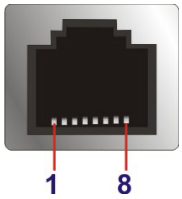


Figure 3-23: RJ-45 RS-232 Serial Port Pinout Location

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

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

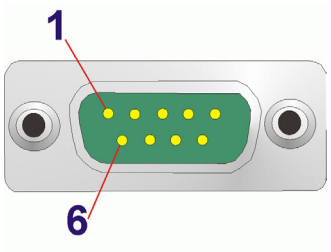


Figure 3-24: DB-9 Connector Pinout Location

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

Table 3-8: DB-9 Connector Pinouts

3.9.13 RJ-45 RS-422/485 Serial Ports

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

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

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

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

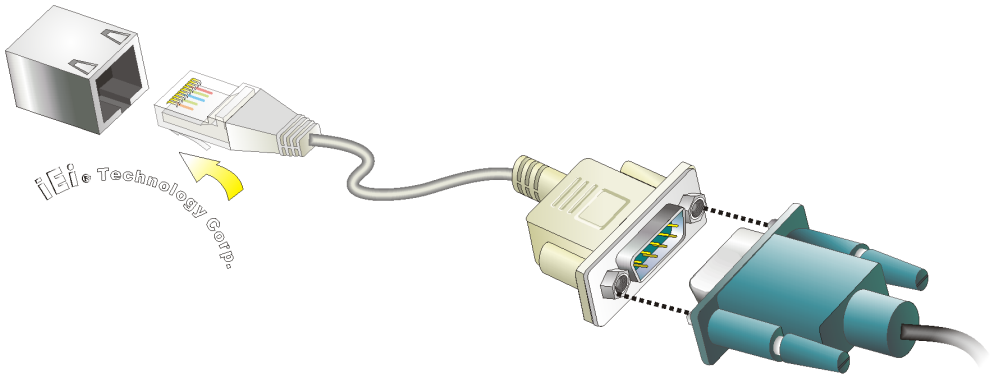


Figure 3-25: RJ-45 RS-422/485 Serial Device Connection

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

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

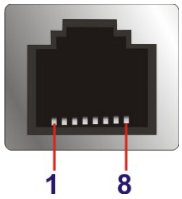


Figure 3-26: RJ-45 RS-422/485 Serial Port Pinout Location

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

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

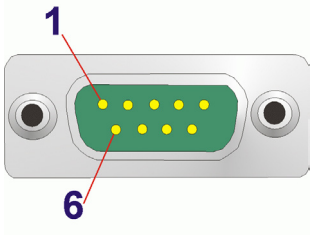


Figure 3-27: DB-9 Connector Pinout Location

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

Table 3-10: DB-9 Connector Pinouts

3.9.14 RS-232 Serial Port Connectors

CN Label:	**COM1**, **COM2**, **COM3** and **COM4**
CN Type:	DB-9 connectors
CN Location:	See **Figure 1-3**
CN Pinouts:	See **Table 3-11** and **Figure 3-29**

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

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

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

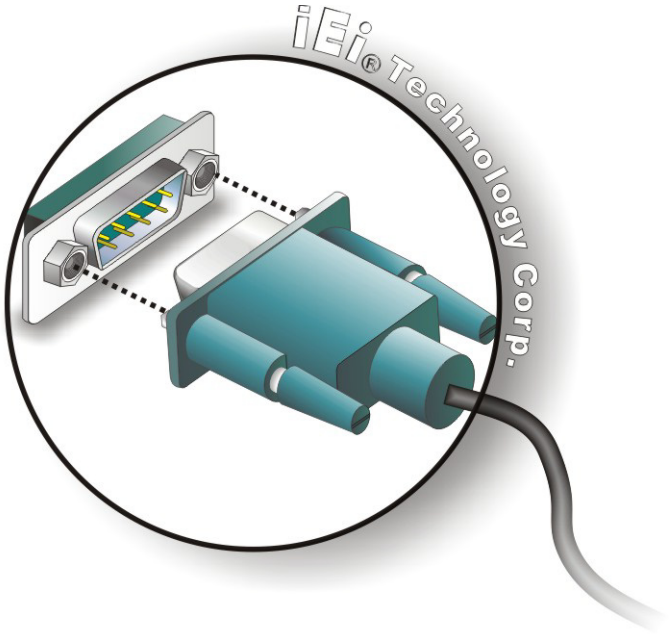


Figure 3-28: Serial Device Connector

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

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

Table 3-11: Serial Port Pinouts

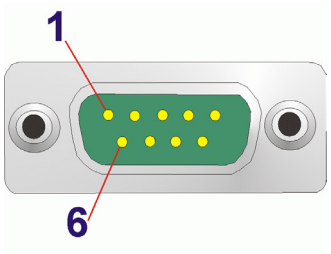


Figure 3-29: Serial Port Pinout Location

3.9.15 SFP Fiber Connectors

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

3.9.16 USB Connectors

CN Label: USB

CN Type: USB port

CN Location: See **Figure 1-2** and **Figure 1-3**

CN Pinouts: See **Table 3-12**

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

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

Step 2: **Align the connectors**. Align the USB device connector with one of the connectors. See **Figure 3-30**.

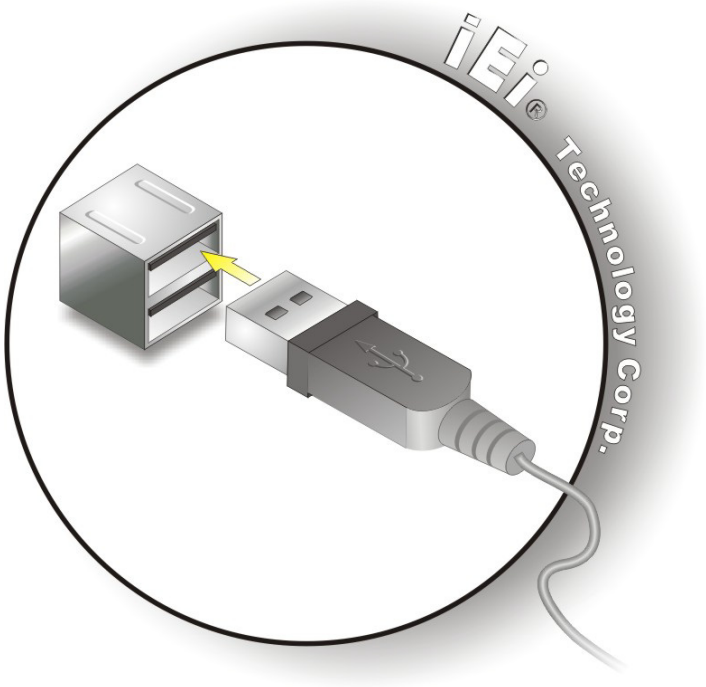


Figure 3-30: USB Device Connection

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

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

Table 3-12: USB Port Pinouts

3.9.17 VGA Connector

CN Label: VGA

CN Type: 15-pin Female

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

CN Pinouts: See **Figure 3-32** and **Table 3-13**

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

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

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

Step 3: **Insert the VGA connector**. Once the connectors are properly aligned with, insert the male connector from the VGA screen cable into the female connector on the TANK-700. See **Figure 3-31**.

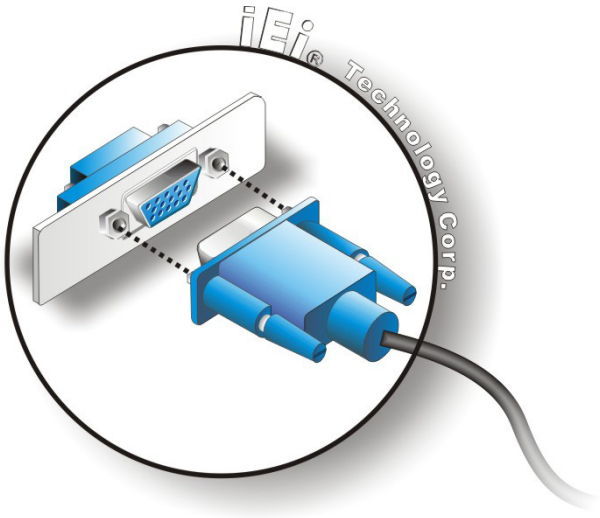


Figure 3-31: VGA Connector

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

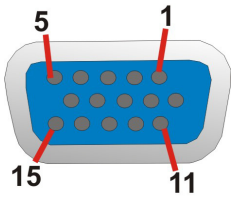


Figure 3-32: VGA Connector

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

Table 3-13: VGA Connector Pinouts

3.10 Powering On/Off the System

WARNING:

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

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

Figure 3-33: Power Button

3.11 Redundant Power

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

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

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

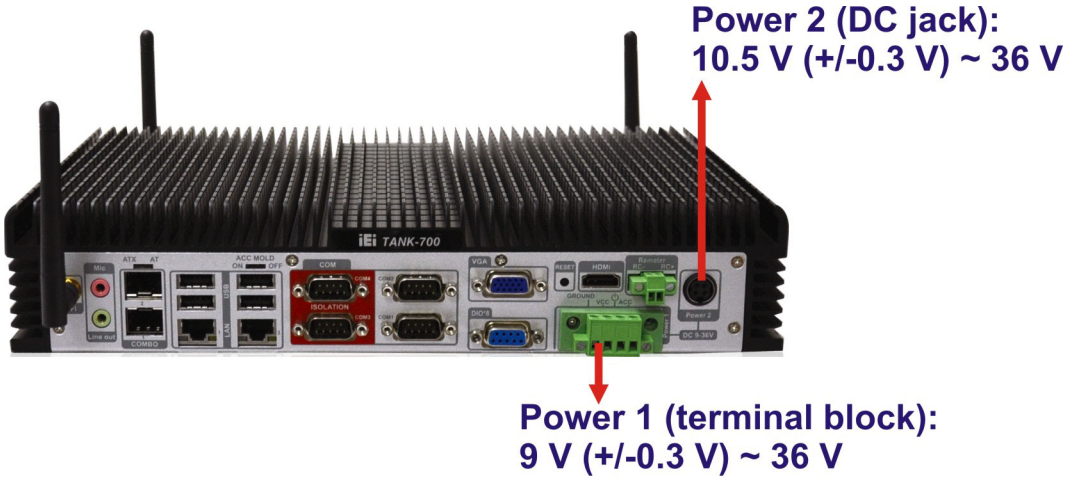


Figure 3-34: Power Connectors

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

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

3.11.1 ACC ON

NOTE:

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

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

3.11.1.1 Boot-up

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

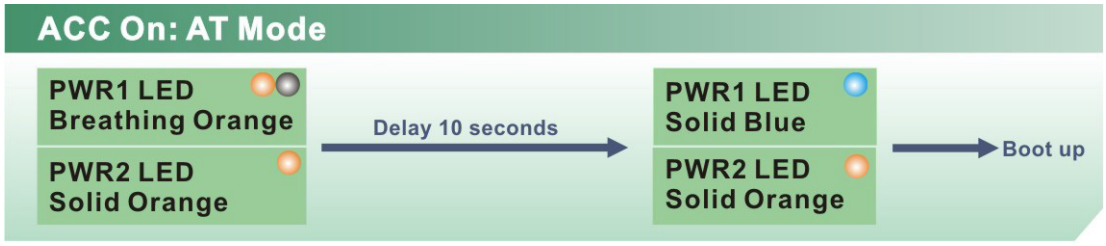


Figure 3-35: ACC On: AT Mode

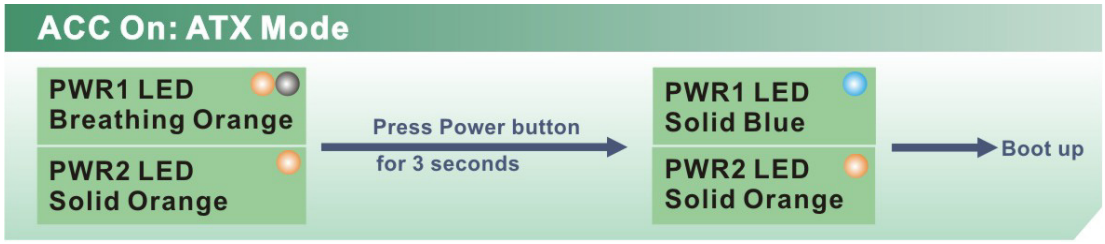


Figure 3-36: ACC On: ATX Mode

3.11.1.2 Switch to Backup Power

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

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

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

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

3.11.1.3 Shutdown

The system will shutdown in the following situations:

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

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

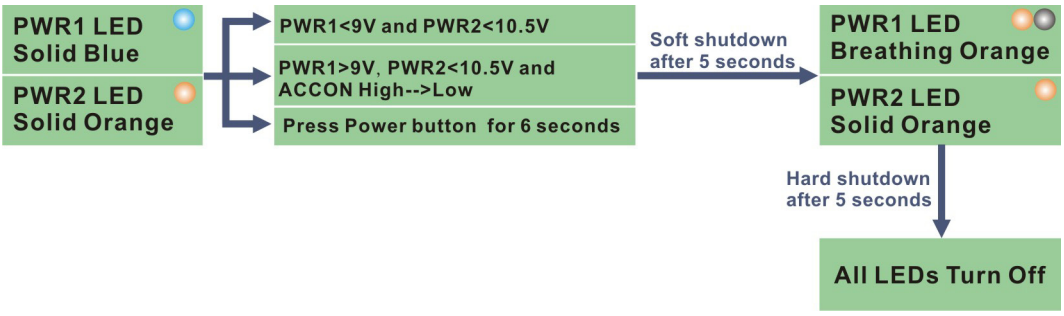


Figure 3-38: ACC On: Shutdown

NOTE:

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

3.11.2 ACC OFF

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

3.11.2.1 Boot-up

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

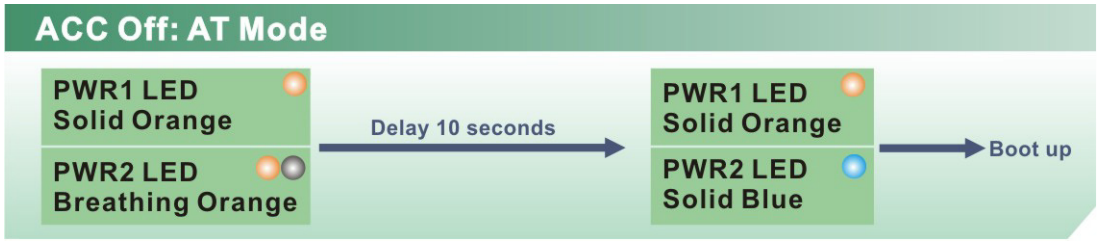


Figure 3-39: ACC Off: AT Mode

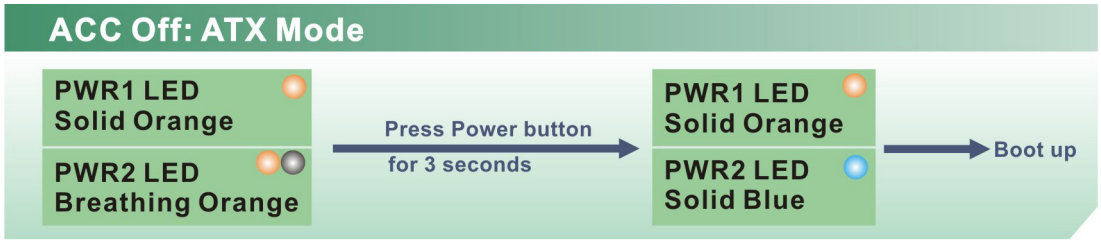


Figure 3-40: ACC Off: ATX Mode

3.11.2.2 Switch to Backup Power

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

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

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

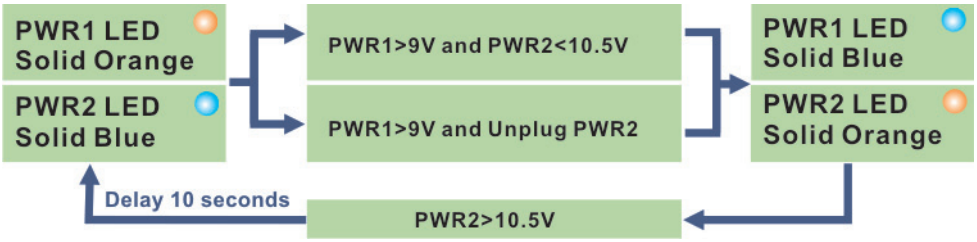


Figure 3-41: ACC Off: Switch Between PWR1 and PWR2

NOTE:

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

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

3.11.2.3 Shutdown

The system will shutdown in the following situations:

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

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

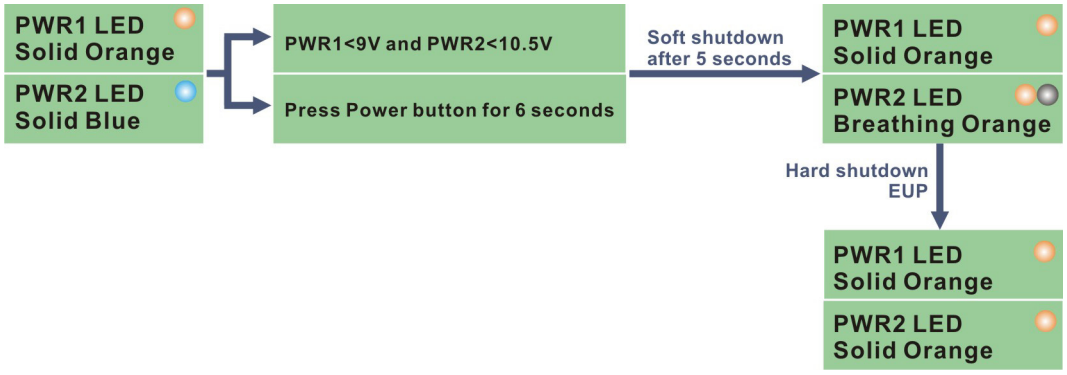


Figure 3-42: ACC Off: Shutdown

NOTE:

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

3.12 Software Installation

All the drivers for the TANK-700 are available on IEI Resource Download Center (https://download.ieiworld.com). Type TANK-700 and press Enter to find all the relevant software, utilities, and documentation.

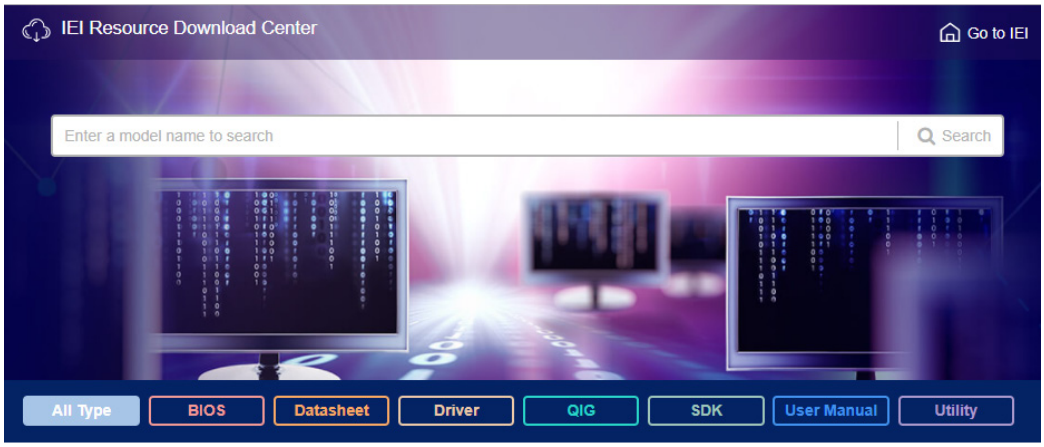


Figure 3-43: IEI Resource Download Center

IEI provides the following drivers for Windows 7, Windows 8 and Windows 10 operating systems.

- Chipset
- VGA
- LAN
- Audio
- ME (Intel® AMT)
- USB 3.0

NOTE:

To install software from the downloaded ISO image file in Windows 8, 8.1 or 10, double-click the ISO file to mount it as a virtual drive to view its content. On Windows 7 system, an additional tool (such as Virtual CD-ROM Control Panel from Microsoft) is needed to mount the file.

Chapter

4

BIOS

4.1 Introduction

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

4.1.1 Starting Setup

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

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

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

4.1.2 Using Setup

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

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

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

Table 4-1: BIOS Navigation Keys

4.1.3 Getting Help

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

4.1.4 Unable to Reboot After Configuration Changes

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

4.1.5 BIOS Menu Bar

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

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

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

4.2 Main

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

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

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

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

BIOS Menu 1: Main

➔ System Overview

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

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

The System Overview field also has two user configurable fields:

➔ System Date [xx/xx/xx]

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

➔ System Time [xx:xx:xx]

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

4.3 Advanced

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

WARNING!

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

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

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

BIOS Menu 2: Advanced

4.3.1 ACPI Settings

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

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

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

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

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

BIOS Menu 3: ACPI Configuration

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

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

➔ **Suspend Disabled**

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

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

4.3.2 Trusted Computing

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

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

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

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

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

BIOS Menu 4: TPM Configuration

➔ TPM Support [Disable]

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

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

➔ **Enable** TPM support is enabled.

4.3.3 CPU Configuration

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

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

CPU Configuration                                   Enabled for Windows XP
                                                    and Linux (OS optimized
Intel(R) Core(TM) i7-2710QE CPU @ 2.10GHz           for Hyper-Threading
Processor Stepping              206a7               Technology) and Disabled
Microcode Revision              17                  for other OS (OS not
Max Processor Speed             2100 MHz            optimized for
Min Processor Speed             800 MHz             Hyper-Threading
Processor Speed                 2100 MHz            Technology). When
Processor Cores                 4                   Disabled only one thread
Intel HT Technology             Supported           per enabled core is
EM64                            Supported           enabled.
Hyper-threading                 [Enabled]           ----------------------
Intel Virtualization Technology [Disabled]

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

BIOS Menu 5: CPU Configuration

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

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

➔ Hyper-threading [Enabled]

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

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

➔ Intel Virtualization Technology [Disabled]

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

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

4.3.4 SATA Configuration

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

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

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

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

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

BIOS Menu 6: SATA Configuration

➔ SATA Controller(s) [Enabled]

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

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

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

➔ SATA Mode Selection [IDE]

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

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

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

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

4.3.5 USB Configuration

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

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

USB Configuration                                  USB Support Parameters

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

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

BIOS Menu 7: USB Configuration

➔ USB Devices

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

➔ USB 2.0 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 USB 2.0 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 USB 3.0 Support [Enabled]

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

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

4.3.6 Second Super IO Configuration

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

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

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

BIOS Menu 8: F81216 Second Super IO Configuration

4.3.6.1 Serial Port n Configuration

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

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

Serial Port n Configuration                           Enable or Disable Serial
                                                      Port (COM)
Serial Port                     [Enabled]
Device Settings                 IO=2C0h; IRQ=11
                                                      ---------------------
Change Settings                 [Auto]                ←→: Select Screen
                                                      ↑↓: Select Item
                                                      EnterSelect
                                                      + -   Change Opt.
                                                      F1    General Help
                                                      F2    Previous Values
                                                      F3    Optimized Defaults
                                                      F4    Save & Exit
                                                      ESC   Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 9: Serial Port n Configuration Menu

4.3.6.1.1 Serial Port 7 Configuration

➔ Serial Port [Enabled]

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

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

➔ Change Settings [Auto]

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

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

4.3.6.1.2 Serial Port 8 Configuration

➔ Serial Port [Enabled]

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

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

➔ Change Settings [Auto]

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

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

4.3.7 Super IO Configuration

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

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

Super IO Configuration                          Set Parameters of Serial
                                                Port 1 (COMA)
Super IO Chip                   Finteck F81866
> Serial Port 1 Configuration
> Serial Port 2 Configuration                   ---------------------
> Serial Port 3 Configuration                   ←→: Select Screen
> Serial Port 4 Configuration                   ↑↓: Select Item
> Serial Port 5 Configuration                   EnterSelect
> Serial Port 6 Configuration                   + -   Change Opt.
                                                F1    General Help
                                                F2    Previous Values
                                                F3    Optimized Defaults
                                                F4    Save & Exit
                                                ESC   Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 10: Super IO Configuration

4.3.7.1 Serial Port n Configuration

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

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

Serial Port n Configuration                     Enable or Disable Serial
                                                Port (COM)
Serial Port                     [Enabled]
Device Settings                 IO=3F8h; IRQ=4
                                                ---------------------
Change Settings                 [Auto]          ←→: Select Screen
                                                ↑↓: Select Item
                                                EnterSelect
                                                + -   Change Opt.
                                                F1    General Help
                                                F2    Previous Values
                                                F3    Optimized Defaults
                                                F4    Save & Exit
                                                ESC   Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
```

BIOS Menu 11: Serial Port n Configuration Menu

4.3.7.1.1 Serial Port 1 Configuration

➔ Serial Port [Enabled]

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

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

➔ Change Settings [Auto]

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

➔ **Auto**	**DEFAULT**	The serial port IO port address and interrupt address are automatically detected.
➔ **IO=3F8h; IRQ=4**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ4
➔ **IO=3F8h; IRQ=3, 4**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
➔ **IO=2F8h; IRQ=3, 4**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4
➔ **IO=2C0h; IRQ=3, 4**		Serial Port I/O port address is 2C0h and the interrupt address is IRQ3, 4
➔ **IO=2C8h; IRQ=3, 4**		Serial Port I/O port address is 2C8h and the interrupt address is IRQ3, 4

4.3.7.1.2 Serial Port 2 Configuration

➔ Serial Port [Enabled]

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

➔ **Disabled**		Disable the serial port

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

- Change Settings [Auto]

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

- **Auto** **DEFAULT** The serial port IO port address and interrupt address are automatically detected.
- **IO=2F8h; IRQ=3** Serial Port I/O port address is 2F8h and the interrupt address is IRQ3
- **IO=3F8h; IRQ=3, 4** Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
- **IO=2F8h; IRQ=3, 4** Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4
- **IO=2C0h; IRQ=3, 4** Serial Port I/O port address is 2C0h and the interrupt address is IRQ3, 4
- **IO=2C8h; IRQ=3, 4** Serial Port I/O port address is 2C8h and the interrupt address is IRQ3, 4

4.3.7.1.3 Serial Port 3 Configuration

- Serial Port [Enabled]

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

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

- Change Settings [Auto]

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

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

4.3.7.1.4 Serial Port 4 Configuration

➔ Serial Port [Enabled]

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

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

➔ Change Settings [Auto]

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

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

- **IO=2E8h; IRQ=10, 11** — Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11
- **IO=2D0h; IRQ=10, 11** — Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
- **IO=2D8h; IRQ=10, 11** — Serial Port I/O port address is 2D8h and the interrupt address is IRQ10, 11

4.3.7.1.5 Serial Port 5 Configuration

- Serial Port [Enabled]

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

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

- Change Settings [Auto]

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

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

- **IO=2E0h; IRQ=10, 11** — Serial Port I/O port address is 2E0h and the interrupt address is IRQ10, 11

4.3.7.1.6 Serial Port 6 Configuration

- Serial Port [Enabled]

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

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

- Change Settings [Auto]

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

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

4.3.8 H/W Monitor

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

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

PC Health Status

CPU(Tj) Temperature              :+72 C
CPU(Tc) Temperature              :+45 C
System Temperature2              :+40 C
VCC3V                            :+3.312 V
+Vcc_core                        :+0.984 V
+V5S                             :+4.880 V
+12VS                            :+12.056 V
+1.5V                            :+1.624 V
VSB3V                            :+3.360 V
VBAT                             :+3.296 V
5VSB                             :+5.160 V

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

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

BIOS Menu 12: H/W Monitor

➔ PC Health Status

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

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

4.3.9 Serial Port Console Redirection

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

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

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

 COM2
 Console Redirection            [Disabled]
> Console Redirection Settings

 COM3
 Console Redirection            [Disabled]
> Console Redirection Settings

 COM4
 Console Redirection            [Disabled]
> Console Redirection Settings

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

 iAMT SOL

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

BIOS Menu 13: Serial Port Console Redirection

➔ Console Redirection [Disabled]

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

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

➔ Terminal Type [VT100+]

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

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

➔ Bits per second [115200]

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

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

4.3.10 iEi Feature

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

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

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

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

BIOS Menu 14: iEi Feature

➔ Auto Recovery Function [Disabled]

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

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

➔ **Enabled** Enabled the auto recovery function

4.4 Chipset

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

WARNING!

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

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

> NorthBridge Configuration                    NorthBridge Parameters
> SouthBridge Configuration
> ME Configuration

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

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

BIOS Menu 15: Chipset

4.4.1 NorthBridge Configuration

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

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

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

BIOS Menu 16: Northbridge Chipset Configuration

4.4.1.1 Graphics Configuration

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

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

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

BIOS Menu 17: Graphics Configuration

➔ DVMT Pre-Allocated [64 M]

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

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

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

➔ DVMT Total Gfx Mem [MAX]

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

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

➔ Boot Display Device [CRT]

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

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

4.4.2 SouthBridge Configuration

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

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

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

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

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

BIOS Menu 18: Southbridge Chipset Configuration

➔ USB Controller [Enabled]

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

➔ **Disabled** USB controller disabled

➔ **Enabled** **DEFAULT** USB controller enabled

➔ USB 3.0 Controller [Enabled]

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

➔ **Enabled** **DEFAULT** USB 3.0 controller enabled

➔ **Disabled** USB 3.0 controller disabled

➔ GbE PXE Boot [Disabled]

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

➔ **Disabled** **DEFAULT** Disables the GbE PXE Boot option

➔ **Enabled** Enables the GbE PXE Boot option

➔ Wake on GbE LAN [Disabled]

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

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

➔ PCIe LAN PXE Boot [Disabled]

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

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

➔ Azalia [Enabled]

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

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

➔ Azalia Internal HDMI Codec [Enabled]

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

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

➔ WIFI Function [Enabled]

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

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

➔ Power Saving Function [Disabled]

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

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

➔ **Enabled** The power saving function is enabled

4.4.3 ME Configuration

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

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

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

BIOS Menu 19: ME Configuration

➔ Intel AMT [Enabled]

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

➔ **Disabled** Intel® AMT is disabled

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

➔ Un-Configure ME [Disabled]

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

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

➔ **Enabled** Enable ME un-configure

4.5 Boot

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

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

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

Quiet Boot                      [Enabled]

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

BIOS Menu 20: Boot

➔ Bootup NumLock State [On]

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

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

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

➔ Quiet Boot [Enabled]

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

➔ **Disabled** Normal POST messages displayed

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

4.6 Security

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

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

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

BIOS Menu 21: Security

➔ Administrator Password

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

➔ User Password

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

4.7 Exit

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

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

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

  Restore Defaults
  Save as User Defaults
  Restore User Defaults

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

BIOS Menu 22:Exit

➔ Save Changes and Reset

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

➔ Discard Changes and Reset

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

➔ Restore Defaults

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

➔ Save as User Defaults

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

➔ Restore User Defaults

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

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

This equipment is in conformity with the following EU directives:

- EMC Directive (2004/108/EC, 2014/30/EU)
- Low-Voltage Directive (2006/95/EC, 2014/35/EU)
- RoHS II Directive (2011/65/EU, 2015/863/EU)

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 Radio Equipment Directive 2014/53/EU.

English IEI Integration Corp declares that this equipment is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.
Български [Bulgarian] IEI Integration Corp. декларира, че този оборудване е в съответствие със съществените изисквания и другите приложими правила на Директива 2014/53/EU.
Česky [Czech] IEI Integration Corp tímto prohlašuje, že tento zařízení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrn□ce 2014/53/EU.
Dansk [Danish] IEI Integration Corp erklærer herved, at følgende udstyr overholder de væsentlige krav c øvrige relevante krav i direktiv 2014/53/EU.
Deutsch [German] IEI Integration Corp, erklärt dieses Gerät entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 2014/53/EU.
Eesti [Estonian] IEI Integration Corp deklareerib seadme seadme vastavust direktiivi 2014/53/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 2014/53/EU.
Ελληνική [Greek] IEI Integration Corp ΔΗΛΩΝΕΙ ΟΤΙ ΕΞΟΠΛΙΣΜΟΣ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 2014/53/EU.
Français [French] IEI Integration Corp déclare que l'appareil est conforme aux □xigences essentielles et aux autres dispositions pertinentes de la directive 2014/53/EU.
Italiano [Italian] IEI Integration Corp dichiara che questo apparecchio è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 2014/53/EU.
Latviski [Latvian] IEI Integration Corp deklarē, ka iekārta atbilst būtiskajām prasībām un citiem ar to saistītajiem noteikumiem Direktīvas 2014/53/EU.
Lietuvių [Lithuanian] IEI Integration Corp deklaruoja, kad šis įranga atitinka esminius reikalavimus ir kitas 2014/53/EU 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 2014/53/EU.
Malti [Maltese] IEI Integration Corp jiddikjara li dan prodott jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 2014/53/EU.
Magyar [Hungarian] IEI Integration Corp nyilatkozom, hogy a berendezés megfelel a vonatkozó alapvetõ követelményeknek és az 2014/53/EU irányel□egyéb elõírásainak.
Polski [Polish] IEI Integration Corp oświadcza, że wyr□bu jest zgodny□z zasadniczymi wymogami oraz pozostałymi stosownymi postanowien□ami Dyrektywy 2014/53/EU.
Português [Portuguese] IEI Integration Corp declara que este equipamen□o está conforme com os requisitos essenciais e outras disposições□da Di□ectiva 2014/53/EU.

Româna [Romanian] IEI Integration Corp declară că acest echipament este in conformitate cu cerințele esențiale şi cu celelalte prevederi relevante ale Directivei 2014/53/EU.
Slovensko [Slovenian] IEI Integration Corp izjavlja, da je ta opreme v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 2014/53/EU.
Slovensky [Slovak] IEI Integration Corp týmto vyhlasuje, že zariadenia spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 2014/53/EU.
Suomi [Finnish] IEI Integratio□Corp vakuuttaa täten että laitteet on direktiivin 2014/53/EU 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 2014/53/EU.

Appendix

B

Safety Precautions

B.1 Safety Precautions

WARNING:

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

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

B.1.1 General Safety Precautions

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

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

B.1.2 Anti-static Precautions

WARNING:

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

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

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

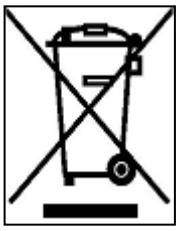
B.1.3 Product Disposal

CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

- Outside the European Union–If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union–The device that produces less waste and is easier to recycle is classified as electronic device in terms of the European Directive 2012/19/EU (WEEE), and must not be disposed of as domestic garbage.



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

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

B.2 Maintenance and Cleaning Precautions

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

B.2.1 Maintenance and Cleaning

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

- The interior of the TANK-700 does not require cleaning. Keep fluids away from the TANK-700 interior.
- Be cautious of all small removable components when vacuuming the TANK-700.
- Turn the TANK-700 off before cleaning the TANK-700.
- Never drop any objects or liquids through the openings of the TANK-700.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the TANK-700.
- Avoid eating, drinking and smoking within vicinity of the TANK-700.

B.2.2 Cleaning Tools

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

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

Appendix

C

BIOS Options

Below is a list of BIOS configuration options in the BIOS chapter.

Appendix

D

Watchdog Timer

NOTE:

The following discussion applies to DOS. Contact IEI support or visit the IEI website for drivers for other operating systems.

The Watchdog Timer is a hardware-based timer that attempts to restart the system when it stops working. The system may stop working because of external EMI or software bugs. The Watchdog Timer ensures that standalone systems like ATMs will automatically attempt to restart in the case of system problems.

A BIOS function call (INT 15H) is used to control the Watchdog Timer.

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table D-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. When the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

NOTE:

The Watchdog Timer is activated through software. The software application that activates the Watchdog Timer must also deactivate it when closed. If the Watchdog Timer is not deactivated, the system will automatically restart after the Timer has finished its countdown.

EXAMPLE PROGRAM:

```
; INITIAL TIMER PERIOD COUNTER

;
W_LOOP:
;

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30          ;time-out value is 48 seconds
        INT     15H

;
; ADD THE APPLICATION PROGRAM HERE
;

        CMP     EXIT_AP, 1      ;is the application over?
        JNE     W_LOOP          ;No, restart the application

        MOV     AX, 6F02H       ;disable Watchdog Timer
        MOV     BL, 0           ;
        INT     15H

;
; EXIT ;
```

Appendix

E

Hazardous Materials Disclosure

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 following table.

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 (now replaced by GB/T 26572-2011).

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 (now replaced by GB/T 26572-2011).

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/T 11363-2006 (现由 GB/T 26572-2011 取代) 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/T 11363-2006 (现由 GB/T 26572-2011 取代) 标准规定的限量要求。