Delta Embedded Industrial PC
Operation Manual
Core i3/i5 Series

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Delta Embedded Industrial PC Operation Manual - Core i3 / i5 Series

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- **Notes On Use:**

  This is as Class A product and may cause EMI (Electro Magnetic Interference) in the living environment which users are required to take appropriate measure.

- **Warning:**

Notice (Marked on operating instructions and its packaging):

(1) Operate the device for 30 minutes and take 10-minute break.

(2) Do not let young children less than 2 years old stare at the screen, nor let elder children stare at the screen for more than 1 hour.

(3) Overuse of devices can affect the eyes.

(4) Risk of explosion may occur when batteries are inaccurately changed. Please handle the batteries based on the instructions provided by the manufacturer.

- **Safety Instructions:**

We disclaim liability for inadequate installation or use of device that led to direct or indirect damages and with intent or not.

1. Carefully read the operation manual before using the product, and keep it for future reference.
2. Before connecting power supply to the product, please confirm the voltage is compliant with the requirement of the device.
3. To avoid electric shock or damage to the product, please unplug the power cord from the socket before cleaning the device with wet cloth.
4. Do not use liquid or stain remover spray aerosol cleaner to clean up the device.
5. To avoid short circuit or fire, please do not let any liquid get into or splash into the product.
6. For device that needs power cords, there must be an easy-to-reach power socket near the device.
7. Do not use the product in a damp environment.
8. Make sure the device is placed on a solid surface before installation; accidental drop or tipping may cause malfunction or damage to the device.
9. All power cords need to be unplugged first before connecting or unplugging any signal cables.
10. To avoid unnecessary damage caused by frequent power-on/off, wait at least 30 seconds after restarting the computer.
11. When product is not used for a long time, please disconnect the power cord to avoid damages caused by transient voltage.
12. Some precision devices are sensitive to ESD and needs to be installed or dismantled via its workstation for enhancement.
13. Provide excellent heat dissipation and system ventilation.
14. Do not open or dismantle the device by yourself. Please let professional maintenance person open the device due to safety concerns.

Delta Embedded Industrial PC Operation Manual- Core i3/i5 Series

Revision History

Version	Revision	Date
1st	The first version was published.	2019/03/04

Delta Embedded Industrial PC Operation Manual- Core i3/i5 Series

Contents

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Chapter 1 Product Specification

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1.1 Introduction

DIAVH-IPC and PPC series are embedded industrial PCs featuring low power, high-performance and with sealed fan-less design. In addition, the product adopts excellent high-strength aluminum-alloy material including heat sinks made from dense aluminum-alloy.

The product is equipped with Intel® chipset Haswell and advanced Intel® Core i3 / i5 processors, standard 4G RAM and extended up to 16GB in memory. It supports operating systems such as Windows 7/10 and Linux.

For IPC product series, the embedded device is applied in solutions such as in-vehicle computing systems, intelligent transportation and industrial automation control. As for PPC product series, the device is suitable for mechanical rubber, solar photovoltaic (PV), vehicle control and general industrial automation industries (e.g. paper, environmental related).

1.2 Host Controller Specification

The Core i3 / i5 series features three hardware specifications including fan-less IPC and 15/19-inch PPCs. Below are details regarding each specification.

1.2.1 DIAVH-IPC00x10x（A）Series

Applicable Models	DIAVH-IPC003100, DIAVH-IPC003100A, DIAVH-IPC003102, DIAVH-IPC003102A, DIAVH-IPC003103, DIAVH-IPC003103A, DIAVH-IPC003104, DIAVH-IPC003104A, DIAVH-IPC005100, DIAVH-IPC005100A, DIAVH-IPC005102, DIAVH-IPC005102A, DIAVH-IPC005103, DIAVH-IPC005103A, DIAVH-IPC005104, DIAVH-IPC005104A

Item	Specification
CPU	6th Generation Intel Core i3/i5 processors
RAM	4GB DDR4 2400MHz, max. up to 16GB
SSD	512GB mSata SSD, 256GB mSata SSD (last figure: A)
Network	2x Intel® I211 Gigabit Ethernet Controller
Audio	1x Standard frequency I/O
Expansion	Supports mini PCIE interface and Wi-Fi communication modules
External I/O	● Serial port: COM 1~2 & 5~6 (RS-232), COM 3~4 (RS-485) ● 2 x USB 2.0, 4 x USB 3.0（blue） ● 1 x VGA output ● 1 x HDMI output
Dimension	Rack NOT included: 211.5mm (L) × 200mm (W) × 67mm (H)； Rack included: 251.9mm (L) × 200mm(W) × 71.6mm (H)
Structure	● Case: High-strength aluminum alloy, sand blasting anodizing aluminum ● Color: Black ● Thermal conductivity: An integrated aluminum case with active heat conduction design ● Material: Aluminum alloy heat sink
Weight	Net weight: 2.8Kg; Gross weight: 3.5Kg

Item	Specification
Temperature	● Operation temperature: -20°C ~ 40°C ● Storage temperature: -40°C ~ 70°C
Humidity	95% @ 40°C (non-condensing)
EMC	● Level A, and GB9254-1998 ● GB/T 17618
Reliability	● Mean time between failures (MTBF): ≥ 5000h ● Mean time to recovery (MTTR): ≤ 0.5h
Certification	CE, FCC
Environment	● Anti-vibration: 5-19Hz/1.0mm amplitude；19-200Hz/1.0g acceleration ● Anti-shock: 10g acceleration, 11ms duration
Power	● Standard VT: Input voltage/ frequency: 100~240VAC/ 50~60Hz Input voltage/ current: 12VDC/5A ● Power consumption: 10 W (stand-by); 28 W (running max. power 100%)

1.2.2 DIAVH-PPCxxx10x（A）Series

Applicable Models	DIAVH-PPC153100, DIAVH-PPC153100A, DIAVH-PPC153102, DIAVH-PPC153102A, DIAVH-PPC153103, DIAVH-PPC153103A, DIAVH-PPC153104, DIAVH-PPC153104A, DIAVH-PPC155100, DIAVH-PPC155100A, DIAVH-PPC155102, DIAVH-PPC155102A, DIAVH-PPC155103, DIAVH-PPC155103A, DIAVH-PPC155104, DIAVH-PPC155104A, DIAVH-PPC193100, DIAVH-PPC193100A, DIAVH-PPC193102, DIAVH-PPC193102A, DIAVH-PPC193103, DIAVH-PPC193103A, DIAVH-PPC193104, DIAVH-PPC193104A, DIAVH-PPC195100, DIAVH-PPC195100A, DIAVH-PPC195102, DIAVH-PPC195102A, DIAVH-PPC195103, DIAVH-PPC195103A, DIAVH-PPC195104, DIAVH-PPC195104A

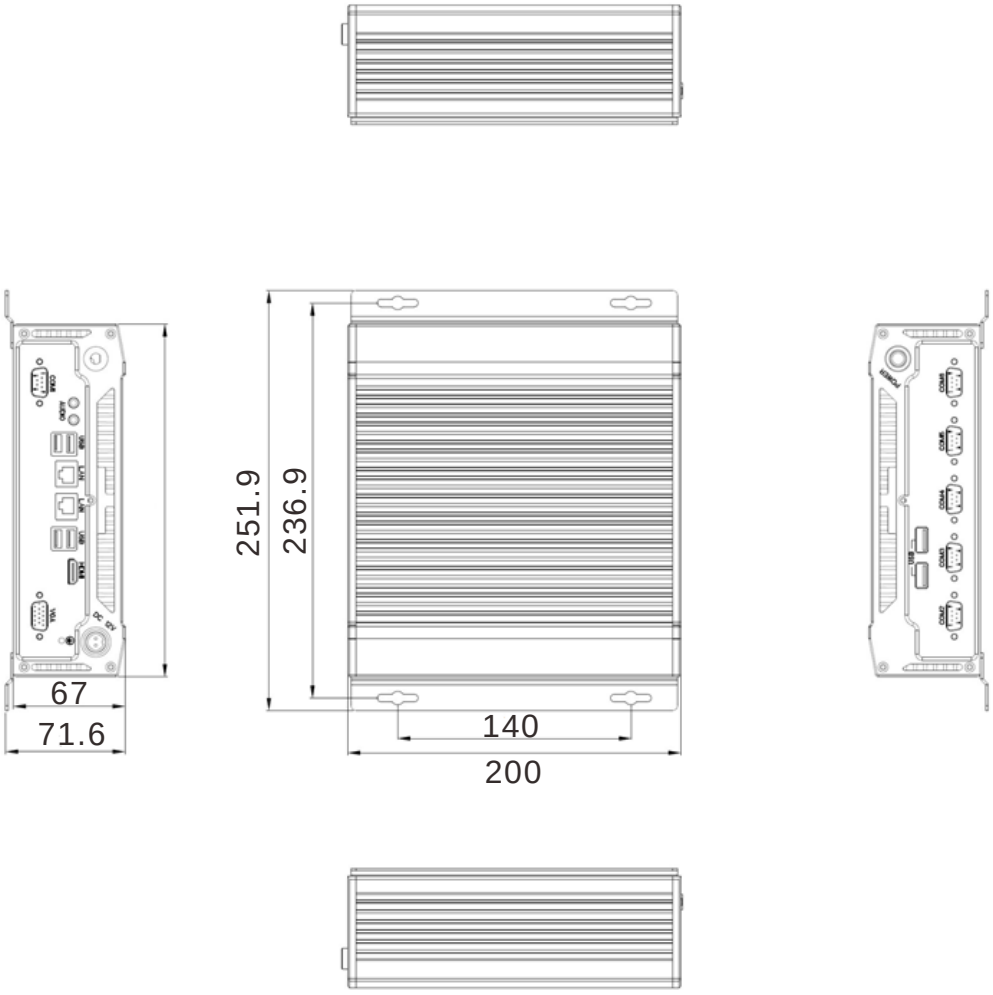
Item	Specification	
CPU	6th Generation Intel Core i3/i5 processors	
RAM	4GB DDR4 2400MHz, max. up to 16GB	
SSD	512GB mSata SSD, 256GB mSata SSD (last figure: A)	
Network	2 x Intel® I211 Gigabit Ethernet Controller	
Audio	1 x Standard frequency I/O	
Expansion	Supports mini PCIE interface and Wi-Fi communication modules	
External I/O	● Serial port: COM 1~3 (RS-232), COM 4 (RS-485) ● 4 x USB 3.0 (blue) ● 1 x VGA output ● 1 x HDMI output	
LED Screen	15” PPC	● Display: 15” TFT LED ● Resolution: 1024x768 ● Brightness: 300cd/m^2 ● Contrast: 1500：1 ● Viewing angle (CR≧10): 140° (V) / 140° (H)

Item	Specification	
	19” PPC	● Display: 19” TFT LED ● Resolution: 1440x900 ● Brightness: 250cd/m^2 ● Contrast: 1000：1 ● Viewing angle (CR≧10): 120° (V) / 125° (H)
Touch Screen	● Connection: USB ● Type: 5-wire resistive touch	
Dimensions	15” PPC：380mm (L) × 300mm (W) × 59mm (H)； 19” PPC：475mm (L) × 308mm (W) × 57mm (H)；	
Structure	● Case: High-strength aluminum alloy, sand blasting anodizing aluminum ● Color: Silver ● Thermal conductivity: An integrated aluminum case with active heat conduction design ● Material: Aluminum alloy heat sink	
Weights	15” PPC: Net weight: 5.2Kg; Gross weight: 6.8Kg 19” PPC: Net weight: 7.32Kg; Gross weight: 8.8Kg	
Temperature	● Operation temperature: -10°C ~ 50°C ● Storage temperature: -20°C ~ 60°C	
Humidity	95% @ 40°C (non-condensing)	
EMC	● Level A, and GB9254-1998 ● GB/T 17618	
Reliability	● Mean time between failures (MTBF): ≥ 5000h ● Mean time to recovery (MTTR): ≤ 0.5h	
Certification	CE, FCC	
Environment	● Anti-vibration: 5-19Hz/1.0mm amplitude；19-200Hz/1.0g acceleration ● Anti-shock:10g acceleration, 11ms duration	
Power	● Standard VT: Input voltage/ frequency: 100~240VAC/50~60Hz Input voltage/ current: 12VDC/5A	
	15” PPC	● Power consumption: 19 W (stand-by); 40 W (running max. power 100%)
	19” PPC	● Power consumption: 20 W (stand-by); 41 W (running max. power 100%)

1.3 Dimensions

1.3.1 DIAVH-IPC00x10x（A）Series

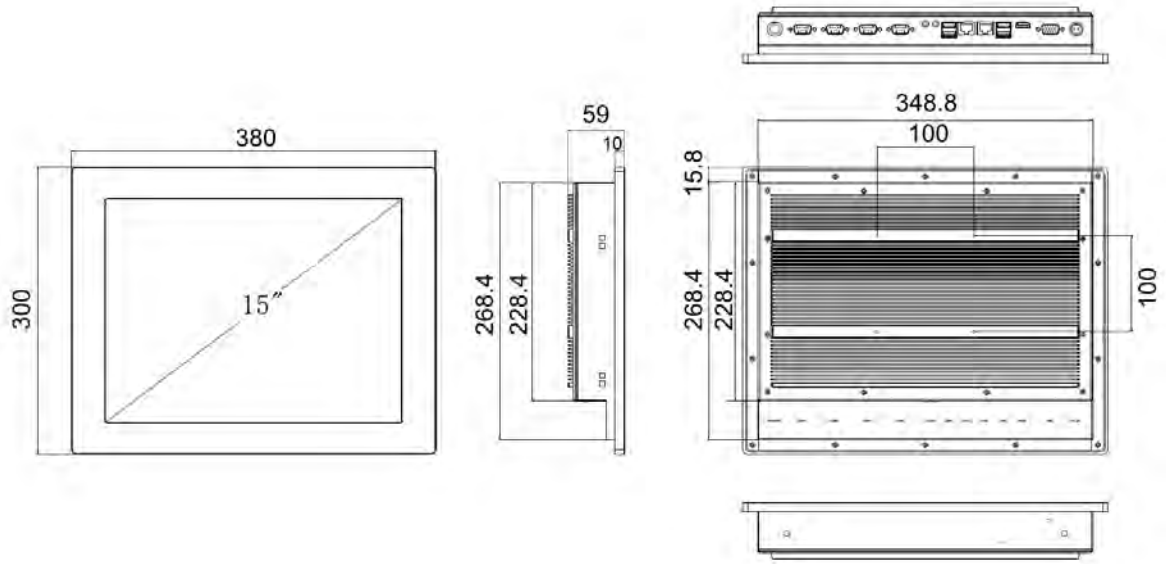
Applicable Models	DIAVH-IPC003100, DIAVH-IPC003100A, DIAVH-IPC003102, DIAVH-IPC003102A, DIAVH-IPC003103, DIAVH-IPC003103A, DIAVH-IPC003104, DIAVH-IPC003104A, DIAVH-IPC005100, DIAVH-IPC005100A, DIAVH-IPC005102, DIAVH-IPC005102A, DIAVH-IPC005103, DIAVH-IPC005103A, DIAVH-IPC005104, DIAVH-IPC005104A



Unit：mm

1.3.2 DIAVH-PPC15x10x（A） Series

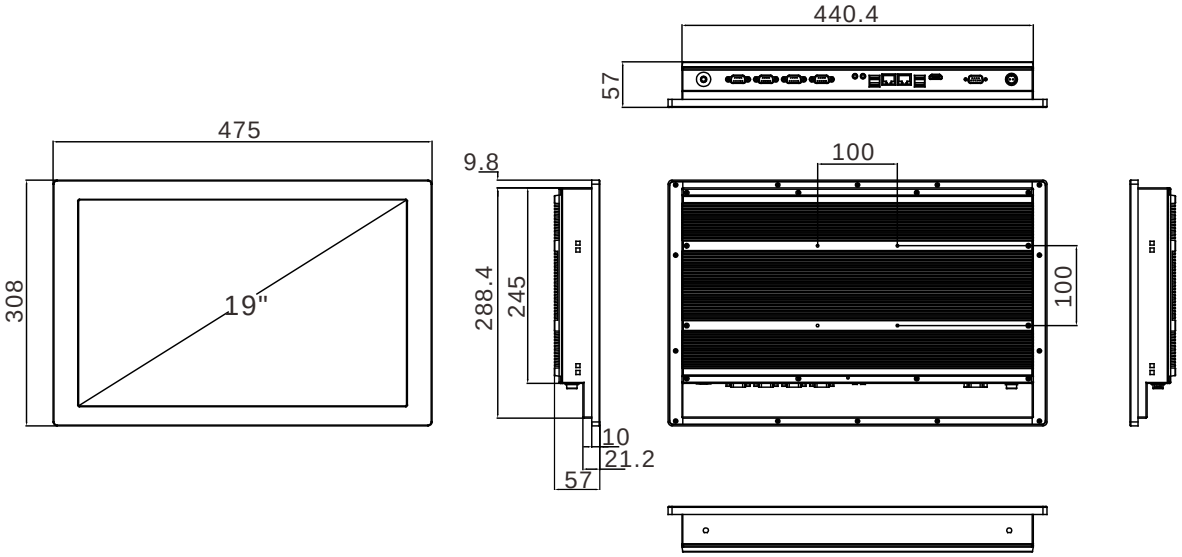
Applicable Models	DIAVH-PPC153100, DIAVH-PPC153100A, DIAVH-PPC153102, DIAVH-PPC153102A, DIAVH-PPC153103, DIAVH-PPC153103A, DIAVH-PPC153104, DIAVH-PPC153104A, DIAVH-PPC155100, DIAVH-PPC155100A, DIAVH-PPC155102, DIAVH-PPC155102A, DIAVH-PPC155103, DIAVH-PPC155103A, DIAVH-PPC155104, DIAVH-PPC155104A



Unit：mm

1.3.3 DIAVH-PPC19x10x（A）Series

Applicable Models	DIAVH-PPC193100, DIAVH-PPC193100A, DIAVH-PPC193102, DIAVH-PPC193102A, DIAVH-PPC193103, DIAVH-PPC193103A, DIAVH-PPC193104, DIAVH-PPC193104A, DIAVH-PPC195100, DIAVH-PPC195100A, DIAVH-PPC195102, DIAVH-PPC195102A, DIAVH-PPC195103, DIAVH-PPC195103A, DIAVH-PPC195104, DIAVH-PPC195104A



Unit：mm

MEMO

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Chapter 2 I/O Interface

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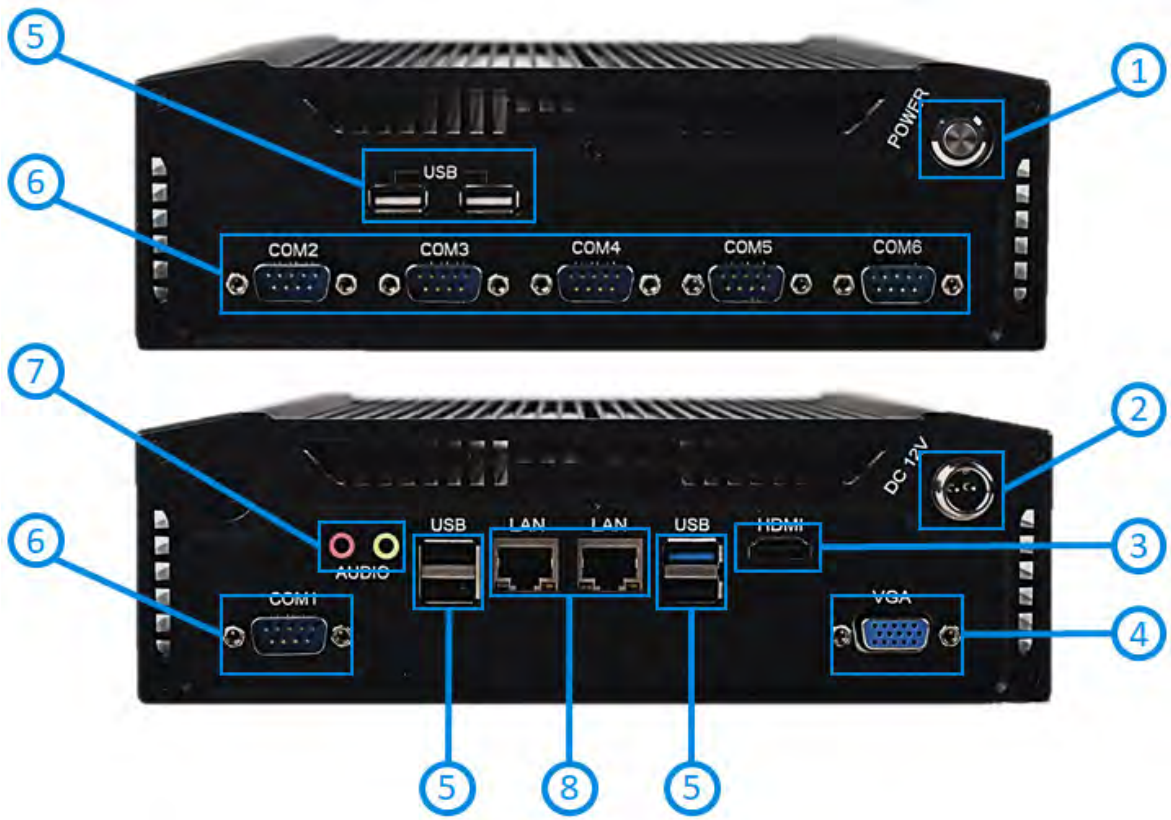
2.1 Diagrams of I/O Interface

2.1.1 DIAVH-IPC00x10x (A) Series

Applicable Models	DIAVH-IPC003100, DIAVH-IPC003100A, DIAVH-IPC003102, DIAVH-IPC003102A, DIAVH-IPC003103, DIAVH-IPC003103A, DIAVH-IPC003104, DIAVH-IPC003104A, DIAVH-IPC005100, DIAVH-IPC005100A, DIAVH-IPC005102, DIAVH-IPC005102A, DIAVH-IPC005103, DIAVH-IPC005103A, DIAVH-IPC005104, DIAVH-IPC005104A



No.	Item	No.	Item
1	Power Switch	5	USB2.0 / USB3.0
2	Power Connector	6	RS-232 / RS-422 / RS-485
3	HDMI	7	MIC-In / Line-Out
4	VGA	8	Ethernet

2.1.2 DIAVH-PPC15x10x (A) Series

Applicable Models	DIAVH-PPC153100, DIAVH-PPC153100A, DIAVH-PPC153102, DIAVH-PPC153102A, DIAVH-PPC153103, DIAVH-PPC153103A, DIAVH-PPC153104, DIAVH-PPC153104A, DIAVH-PPC155100, DIAVH-PPC155100A, DIAVH-PPC155102, DIAVH-PPC155102A, DIAVH-PPC155103, DIAVH-PPC155103A, DIAVH-PPC155104, DIAVH-PPC155104A

No.	Item	No.	Item
1	Power Switch	5	USB3.0
2	Power Connector	6	RS-232 / RS-422 / RS-485
3	HDMI	7	MIC-In / Line-Out
4	VGA	8	Ethernet

2.1.3 DIAVH-PPC19x10x (A) Series

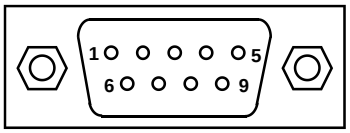
Applicable Models	DIAVH-PPC193100, DIAVH-PPC193100A, DIAVH-PPC193102, DIAVH-PPC193102A, DIAVH-PPC193103, DIAVH-PPC193103A, DIAVH-PPC193104, DIAVH-PPC193104A, DIAVH-PPC195100, DIAVH-PPC195100A, DIAVH-PPC195102, DIAVH-PPC195102A, DIAVH-PPC195103, DIAVH-PPC195103A, DIAVH-PPC195104, DIAVH-PPC195104A

No.	Item	No.	Item
1	Power Switch	5	USB3.0
2	Power Connector	6	RS-232 / RS-422 / RS-485
3	HDMI	7	MIC-In / Line-Out
4	VGA	8	Ethernet

2.2 I/O Port Pins

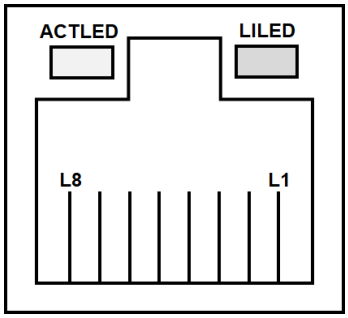
2.2.1 Standard DB9 Port

Applicable Models	DIAVH IPC/PPC series

Serial Port	Pin	Communication Interface		
		RS-232	RS-485	RS-422
	1	DCD	DATA+	T+/R+
	2	RXD	DATA-	T-/R-
	3	TXD	-	RXD+
	4	DTR	-	RXD-
	5	GND	GND	GND
	6	DSR	VCC +5V (Standby Input)	VCC +5V (Standby Input)
	7	RTS	-	-
	8	CTS	-	-
	9	RI	-	-

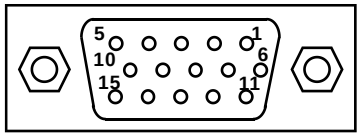
2.2.2 RJ-45 LAN Port

Applicable Models	DIAVH IPC/PPC series

RJ-45	Pin	1000 Base-T	100 Base-T
	L1	Red	Green
	L2	Blue	N.C.
	L3	GND	DETECT
	L4	GND	GND
	L5	+5V	GND
	L6	N.C.	DDC DATA
	L7	Horizontal Sync	Vertical Sync
	L8	DDC CLK	
	ACTLED	**Network Status Display** LED ON: Data transmitting LED OFF: No data transmission	
	LILED	**Network Transmission Rate** LED (Orange light): 1000Mbps LED (Green light): 100Mbps LED OFF: 10Mbps	

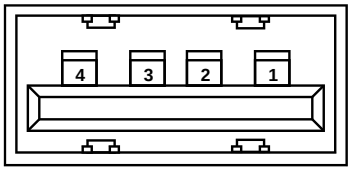
2.2.3 VGA Port

Applicable Models	DIAVH IPC/PPC series

VGA	Pin	Signal	Pin	Signal
	1	Red	2	Green
	3	Blue	4	N.C.
	5	GND	6	DETECT
	7	GND	8	GND
	9	+5V	10	GND
	11	N.C.	12	DDC DATA
	13	Horizontal Sync	14	Vertical Sync
	15	DDC CLK		

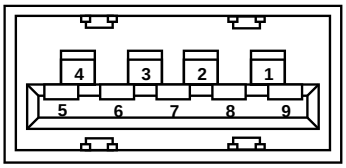
2.2.4 USB 2.0 Port

Applicable Models	DIAVH IPC/PPC series

USB 2.0	Pin	Signal
	1	USB VCC +5V
	2	USB Data-
	3	USB Data+
	4	GND

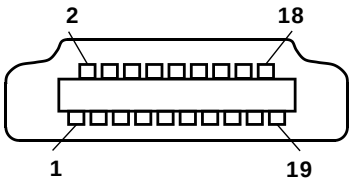
2.2.5 USB 3.0 Port

Applicable Models	DIAVH IPC/PPC series

USB 3.0	Pin	Signal
	1	USB VCC +5V
	2	USB Data-
	3	USB Data+
	4	GND
	5	StdA_SSRX-
	6	StdA_SSRX+
	7	GND
	8	StdA_SSTX-
	9	StdA_SSTX+

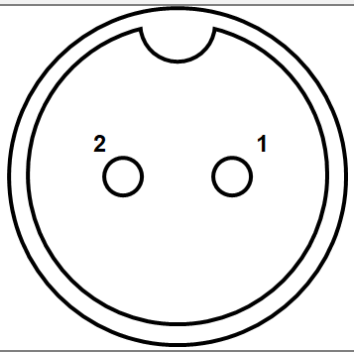
2.2.6 HDMI A Type Port

Applicable Models	DIAVH IPC/PPC series

HDMI	Pin	Signal	Pin	Signal
	1	TMDS Data2+	2	TMDS Data2 Shield
	3	TMDS Data2–	4	TMDS Data1+
	5	TMDS Data1 Shield	6	TMDS Data1–
	7	TMDS Data0+	8	TMDS Data0 Shield
	9	TMDS Data0–	10	TMDS Clock+
	11	TMDS Clock Shield	12	TMDS Clock–
	13	CEC	14	Reserved
	15	SCL	16	SDA
	17	DDC/CEC Ground	18	+5V Power
	19	Hot Plug Detect		

2.2.7 DC12V Power Port

Applicable Models	DIAVH IPC/PPC series

DC12V	Pin	Signal
	1	DC +12V
	2	GND

MEMO

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Chapter 3 AMI BIOS Utility

Table of Contents

3.1 Starting BIOS

The AMI UEFI BIOS provides users with a built-in setup program to modify basic system configuration. Start the BIOS setup via the following steps:

1. Turn on the computer and immediately press <F2>
2. After entering the BIOS selection menu, users can access other setups including Advanced and Chipset menus.

It is strongly recommended NOT to change the BIOS default setup parameters, since these defaults are carefully setup by both AMI and the system manufacturer to provide excellent performance and reliability.

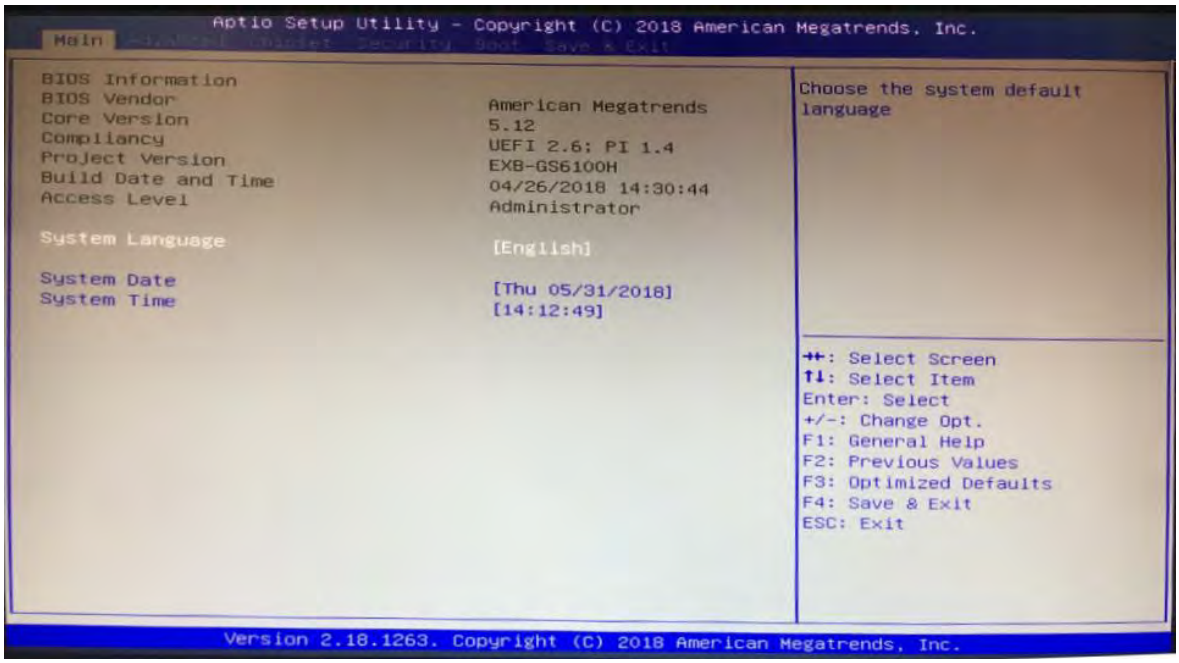
3.2 Hotkey Shortcuts

The BIOS setup/utility uses hotkeys from the keyboard to access the settings, these keys include <F1>, <F4>, <Enter>, <ESC>, <Arrow> keys and so on.

Hotkey	Description
←→ **Left/Right**	The left and right <Arrow> keys can switch to the BIOS setup page.
↑ ↓ **Up/Down**	The up and down <Arrow> keys can select sub-items from a BIOS setup page.
+ - Plus/Minus	The plus and minus <Arrow> keys can change the field value of a particular setup item.
Tab	<Tab> key can setup fields.
F1	< F1 > key can display the Help page.
F2	< F2 > key can load parameter values before the last modification.
F3	< F3 > key can load optimized defaults.
F4	< F4 > key can save any changes and exit the BIOS setup.
Esc	< Esc > key can discard any changes and exit the BIOS setup.
Enter	< Enter > key can display or change specific parameters.

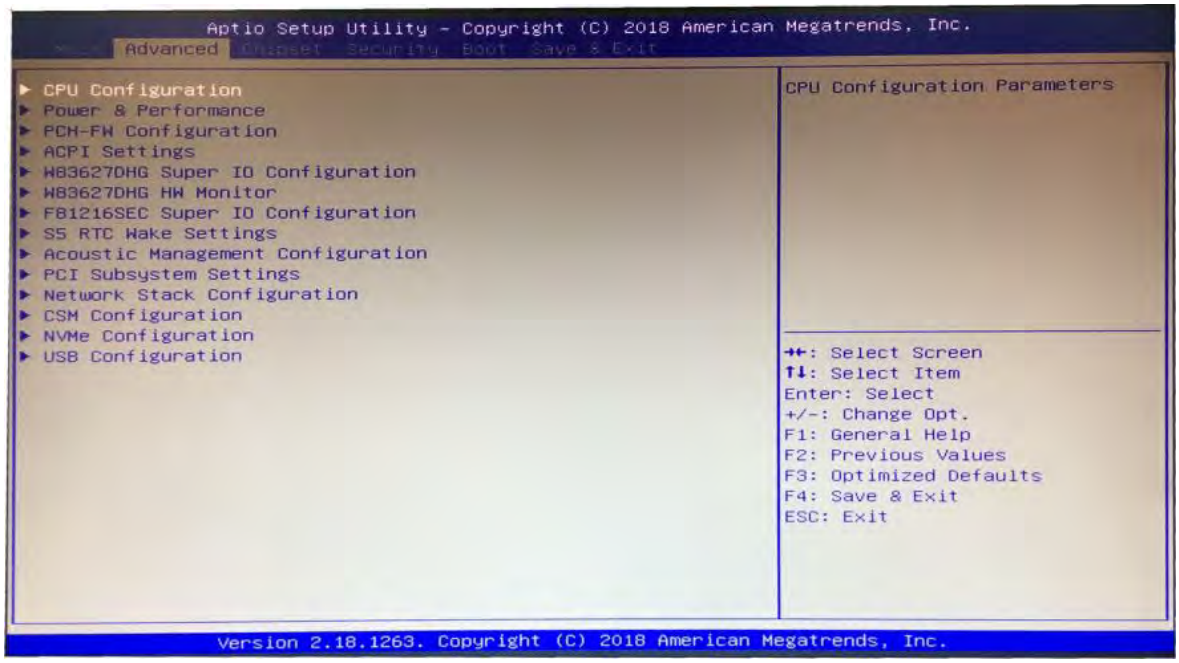
3.3 Main Menu

The Main menu displays data including BIOS information, CPU configuration, memory information/ total memory and system time.



3.4 Advanced Menu

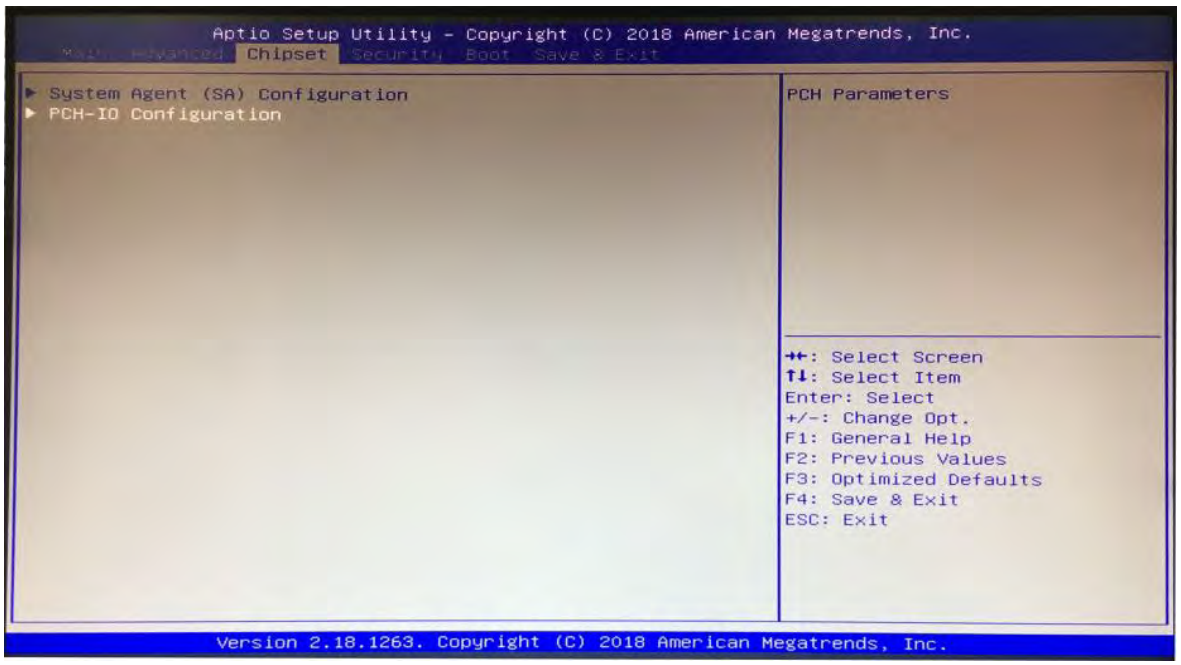
The menu provides the host hardware parameter settings for CPU, memory, USB, PCI, MPS configurations.



- CPU Configuration
- Power & Performance
- PCH - FW Configuration

- ACPI Settings
- Super IO Configuration
- Hardware Monitor
- S5 RTC Wake Settings
- Acoustic Management Configuration
- PCI Subsystem Settings
- Network Stack Configuration
- CSM Configuration
- NVMe Configuration
- USB Configuration

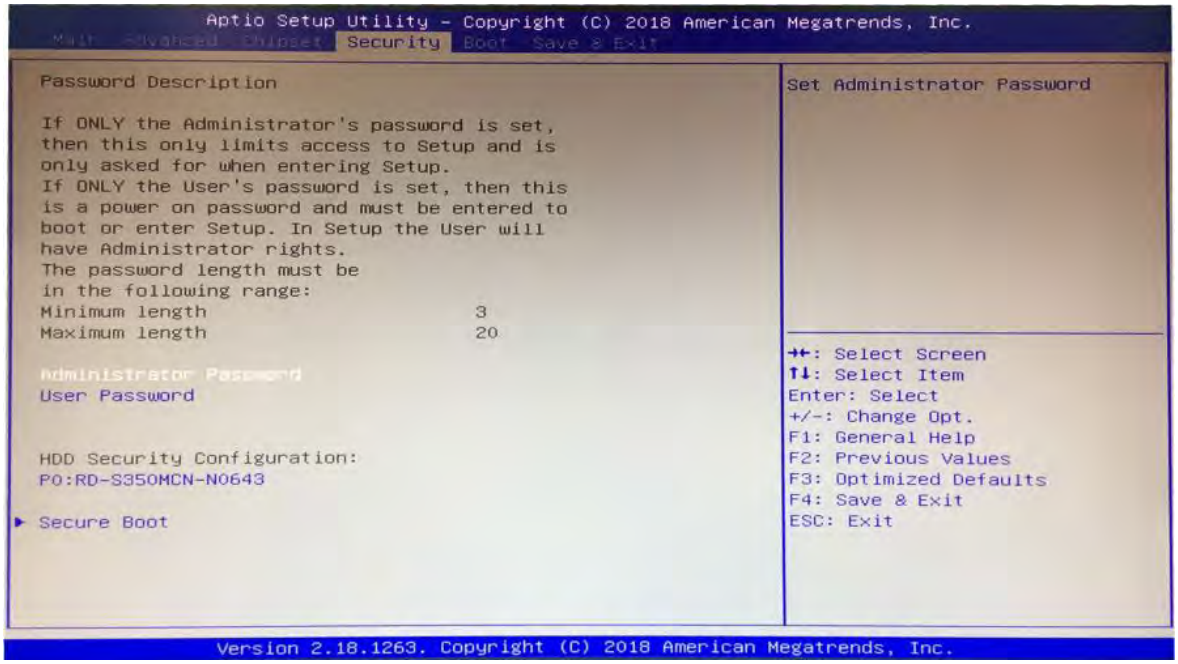
3.5 Chipset Menu



- System Agent (SA) Configuration
- PCH - IO Configuration

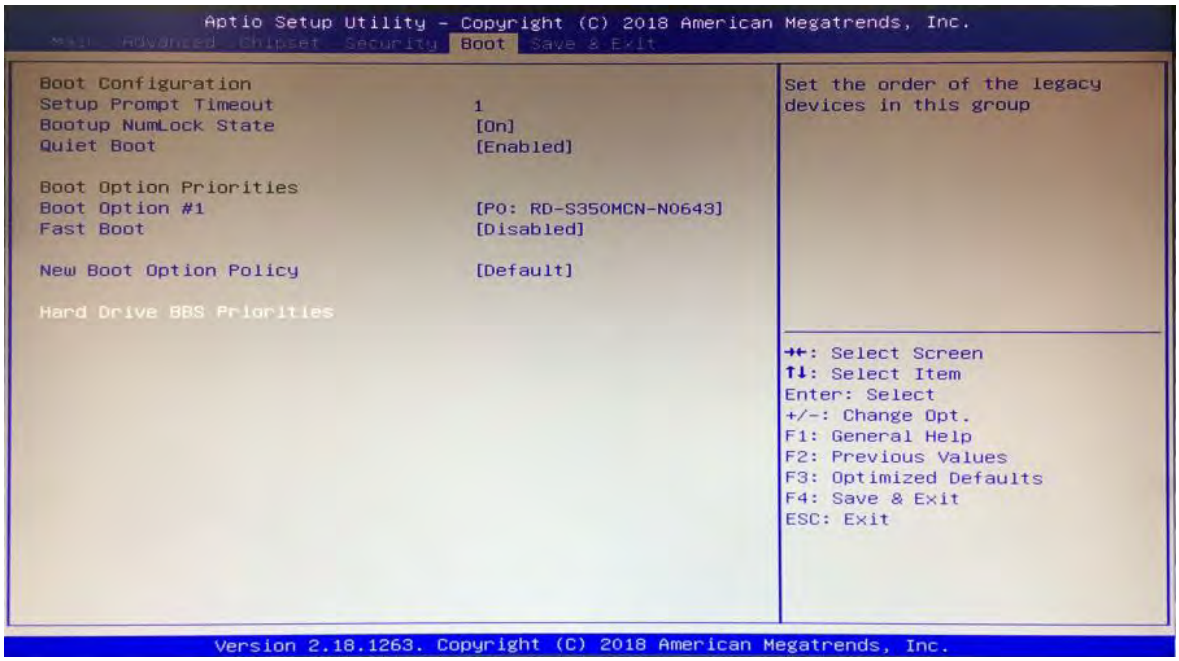
3.6 Security Menu

The menu provides passwords permitted to access BIOS Setup interface and are used to boot up the computer.



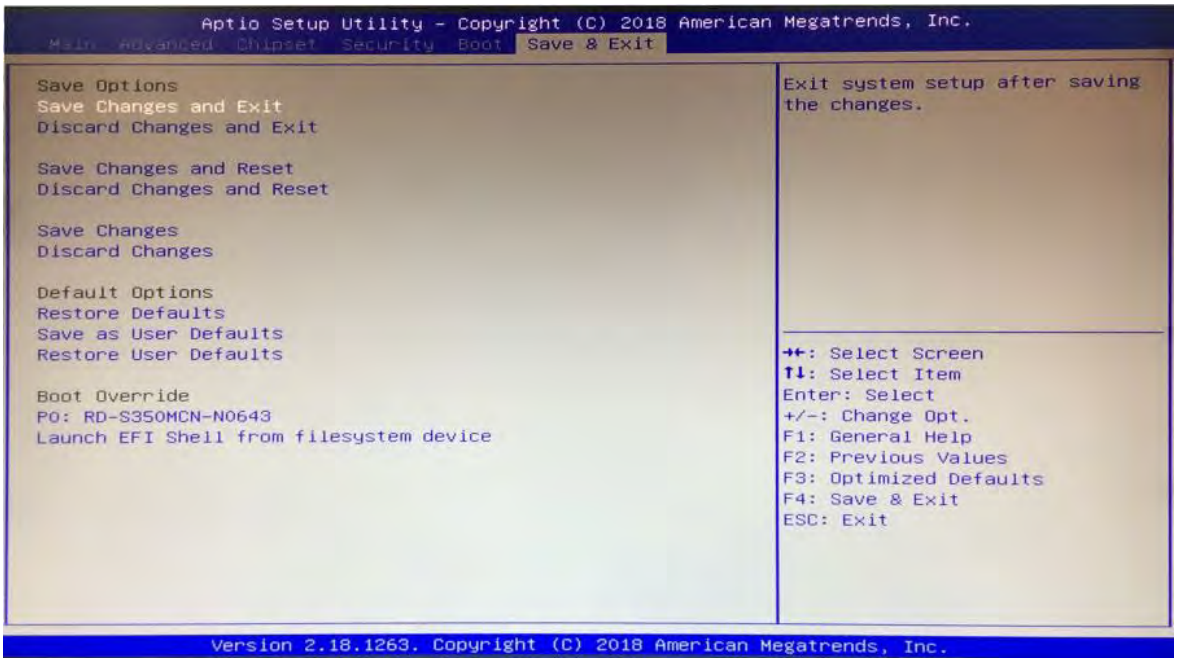
3.7 Boot Menu

The menu provides boot configuration and option priorities to setup SSD as the default boot drive; For any changes regarding boot option priorities, choose ‘Hard Drive BBS Priorities’ shown below.



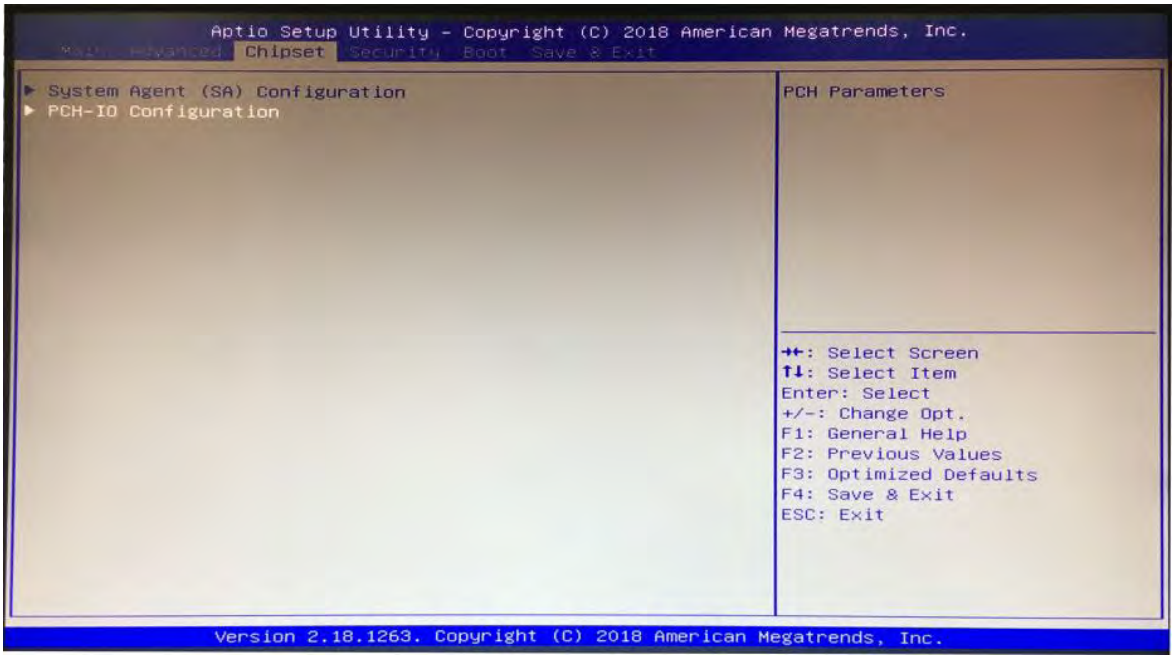
3.8 Save & Exit Menu

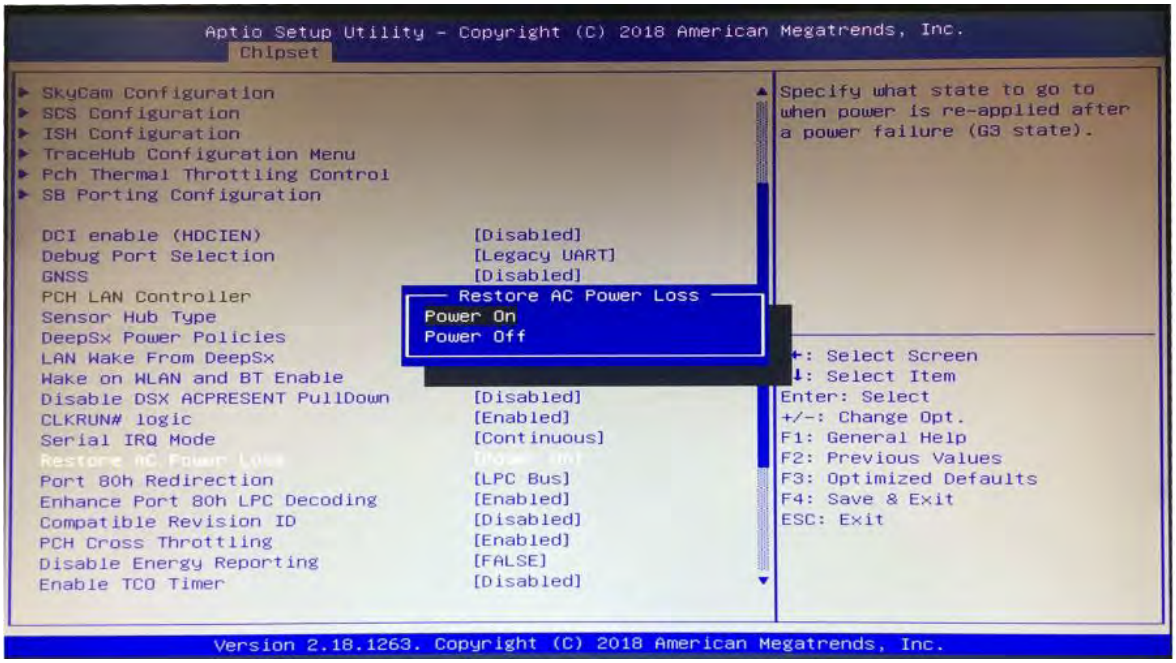
The menu includes reset BIOS parameters and changes that can be made only when needed.



3.9 Restore AC Power Loss

Enter the Chipset menu and select PCH - IO Configuration to setup the Restore AC Power Loss value.





- Power off：Press the host power button to start up the computer.
- Power on：Turns on the computer.
- Last State：Restores to the last state when power is on; if the computer is not properly shut down, it will be turned on when the power is on; if properly shut down, it will be turned off.

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Chapter 4 Transportation and Storage Requirements

Table of Contents

4.1 Unpack and Check the Delivery Package

Please take note of the following when accepting a delivery:

- Do not dispose the original packaging in case you have to reuse it to transport the device again.
- Please keep the enclosed disc drive containing the documentation in a safe place.
- Check the device for any transport damage at the time of delivery.
- Verify the packing list for the completeness of the packaging contents and any accessories.
- If the contents of the packaging are damaged or do not match your order, please contact our customer service.

4.2 Transportation

Well-packaged devices are suited for all kinds of transportation. During long-distance transport, pay attention to the following:

- Do not store the device in open cabin or carriage.
- No device is to keep in an outdoor storage during transit.
- Avoid transporting the products together with flammable, explosive and corrosive chemicals.
- Keep the device dry and do not expose to rain, snow or any liquid substances to avoid damage the device.

4.3 Storage Requirements

In order to store or keep the products, please take the following precautions:

- Store the product in its original packaging. Please refer to the spec sheet for storage temperature and relative humidity.
- Do not store any harmful gas, flammable, explosive products and corrosive chemicals.
- The device is stored without vibrations, shocks, and strong magnetic interference.
- Keep at least 10cm distance between the packing box and the ground and at least 50cm distance from the wall, heat source, cooling source, window or air inlet.

CAUTION！！

Risk of damage to the device！

When transporting the device in cold weather, please pay attention to the extreme changes in temperature. Make sure no water drop (condensation) is build up on the surface or inside the device. If condensation develops, please wait at least 12 hours before switching on the device.

Appendix A Touch Screen Usage and Calibration

Table of Contents

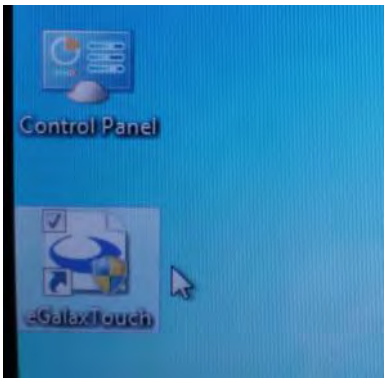
A.1 Using the Touch Screen

Before the device is delivered, all PPCs are equipped with installation of the touch screen driver so that users can use the function when the computer is switched on. For re-installation, please view the following steps:

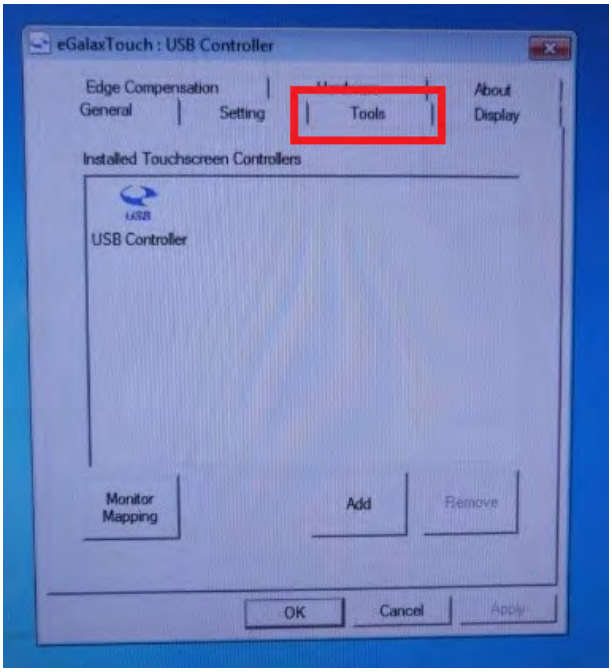
- Left-click the mouse: Touch the screen once.
- Double left-click the mouse: Touch the screen twice.
- Right-click the mouse: Touch the screen and wait 1 sec.

A.2 Four Points Calibration

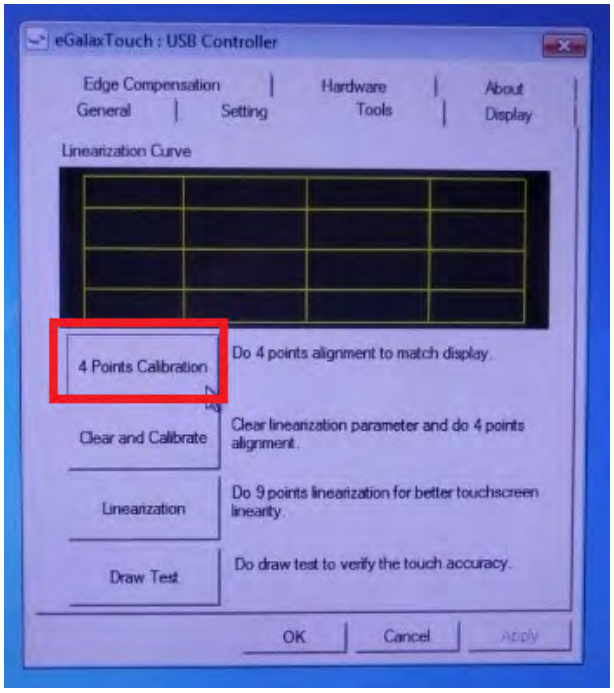
1. Click **'eGalaxTouch'** from the desktop and activate the touch screen software.



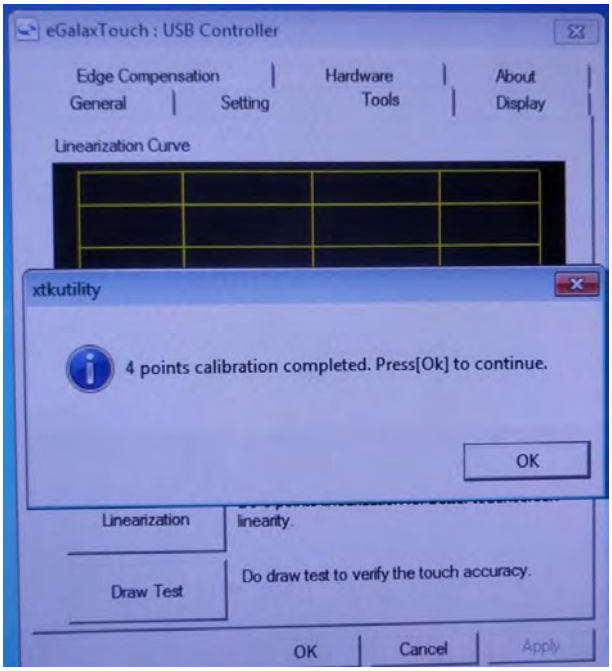
2. Select '**Tools**' page.



3. Select '**4 Points Calibration**' to enter the page.



4. Click the four corners on the screen (see below) to complete the 4 points calibration.


eGalaxTouch : USB Controller
Edge Compensation
Hardware
About
General
Setting
Tools
Display
Linearization Curve
xtkutility
4 points calibration completed. Press[Ok] to continue.
OK
Linearization
linearity.
Draw Test
Do draw test to verify the touch accuracy.
OK
Cancel
Apply