







Delta Embedded System Operation Manual

IPC-E200 Series



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DELTA

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Industrial Automation Headquarters

Delta Electronics, Inc.
Taoyuan Technology Center
No.18, Xinglong Rd., Taoyuan District,
Taoyuan City 33068, Taiwan
TEL: 886-3-362-6301 / FAX: 886-3-371-6301

Asia

Delta Electronics (Shanghai) Co., Ltd.
No.182 Minyu Rd., Pudong Shanghai, P.R.C.
Post code : 201209
TEL: 86-21-6872-3988 / FAX: 86-21-6872-3996
Customer Service: 400-820-9595

Delta Electronics (Japan), Inc.
Tokyo Office
Industrial Automation Sales Department
2-1-14 Shibadaimon, Minato-ku
Tokyo, Japan 105-0012
TEL: 81-3-5733-1155 / FAX: 81-3-5733-1255

Delta Electronics (Korea), Inc.
Seoul Office
1511, 219, Gasan Digital 1-Ro., Geumcheon-gu,
Seoul, 08501 South Korea
TEL: 82-2-515-5305 / FAX: 82-2-515-5302

Delta Energy Systems (Singapore) Pte Ltd.
4 Kaki Bukit Avenue 1, #05-04, Singapore 417939
TEL: 65-6747-5155 / FAX: 65-6744-9228

Delta Electronics (India) Pvt. Ltd.
Plot No.43, Sector 35, HSIIDC Gurgaon,
PIN 122001, Haryana, India
TEL: 91-124-4874900 / FAX : 91-124-4874945

Delta Electronics (Thailand) PCL.
909 Soi 9, Moo 4, Bangpoo Industrial Estate (E.P.Z),
Pattana 1 Rd., T.Phraksa, A.Muang,
Samutprakarn 10280, Thailand
TEL: 66-2709-2800 / FAX : 662-709-2827

Delta Energy Systems (Australia) Pty Ltd.
Unit 20-21/45 Normanby Rd., Notting Hill Vic 3168, Australia
TEL: 61-3-9543-3720

Americas

Delta Electronics (Americas) Ltd.
Raleigh Office
P.O. Box 12173, 5101 Davis Drive,
Research Triangle Park, NC 27709, U.S.A.
TEL: 1-919-767-3813 / FAX: 1-919-767-3969

Delta Greentech (Brasil) S/A
São Paulo Office
Rua Itapeva, 26 – 3˚ Andar - Bela Vista
CEP: 01332-000 – São Paulo – SP - Brasil
TEL: 55-11-3530-8642 / 55-11-3530-8640

Delta Electronics International Mexico S.A. de C.V.
Mexico Office
Vía Dr. Gustavo Baz No. 2160, Colonia La Loma,
54060 Tlalnepantla Estado de Mexico
TEL: 52-55-2628-3015 #3050/3052

EMEA

Headquarters: Delta Electronics (Netherlands) B.V.
Sales: Sales.IA.EMEA@deltaww.com
Marketing: Marketing.IA.EMEA@deltaww.com
Technical Support: iatechnicalsupport@deltaww.com
Customer Support: Customer-Support@deltaww.com
Service: Service.IA.emea@deltaww.com
TEL: +31(0)40 800 3800

BENELUX: Delta Electronics (Netherlands) B.V.
De Witbogt 20, 5652 AG Eindhoven, The Netherlands
Mail: Sales.IA.Benelux@deltaww.com
TEL: +31(0)40 800 3800

DACH: Delta Electronics (Netherlands) B.V.
Coesterweg 45, D-59494 Soest, Germany
Mail: Sales.IA.DACH@deltaww.com
TEL: +49(0)2921 987 0

France: Delta Electronics (France) S.A.
ZI du bois Challand 2, 15 rue des Pyrénées,
Lisses, 91090 Evry Cedex, France
Mail: Sales.IA.FR@deltaww.com
TEL: +33(0)1 69 77 82 60

Iberia: Delta Electronics Solutions (Spain) S.L.U
Ctra. De Villaverde a Vallecas, 265 1º Dcha Ed.
Hormigueras – P.I. de Vallecas 28031 Madrid
TEL: +34(0)91 223 74 20

Carrer Llacuna 166, 08018 Barcelona, Spain
Mail: Sales.IA.Iberia@deltaww.com

Italy: Delta Electronics (Italy) S.r.l.
Ufficio di Milano Via Senigallia 18/2 20161 Milano (MI)
Piazza Grazioli 18 00186 Roma Italy
Mail: Sales.IA.Italy@deltaww.com
TEL: +39 02 64672538

Russia: Delta Energy System LLC
Vereyskaya Plaza II, office 112 Vereyskaya str.
17 121357 Moscow Russia
Mail: Sales.IA.RU@deltaww.com
TEL: +7 495 644 3240

Turkey: Delta Greentech Elektronik San. Ltd. Sti. (Turkey)
Şerifali Mah. Hendem Cad. Kule Sok. No:16-A
34775 Ümraniye – İstanbul
Mail: Sales.IA.Turkey@deltaww.com
TEL: + 90 216 499 9910

GCC: Delta Energy Systems AG (Dubai BR)
P.O. Box 185668, Gate 7, 3rd Floor, Hamarain Centre
Dubai, United Arab Emirates
Mail: Sales.IA.MEA@deltaww.com
TEL: +971(0)4 2690148

Egypt + North Africa: Delta Electronics
511 Cairo Business Plaza, North 90 street,
New Cairo, Cairo, Egypt
Mail: Sales.IA.MEA@deltaww.com

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Delta Embedded System Operation Manual

IPC-E200 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 2 years old or younger children stare at the screen. Do not let 2 years old or 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 System Operation Manual
IPC-E200 Series

Revision History

Version	Revision	Date
1st	The first version was published.	2019/08/05
2ND	1.Change Chapter5 to Preface. 2.Add 4G RAM to the description in chapter 1.1. 3.Add illustration of model names and contents of 4G RAM to description table in chapter 1.2. 4.Add description of 4G RAM and DIO to hardware specification in chapter 1.3.	2022/2/10

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Preface

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P.1 Unpack and Check the Delivery Package

Please take note of the following when opening the 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.

P.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 items.
- Keep the device dry and do not expose to rain, snow or any liquid substances to avoid damage the device.

P.3 Storage Requirements

In order to store the products, please view the following points:

- 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.

Chapter 1 Product Specification

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1.1 Overview

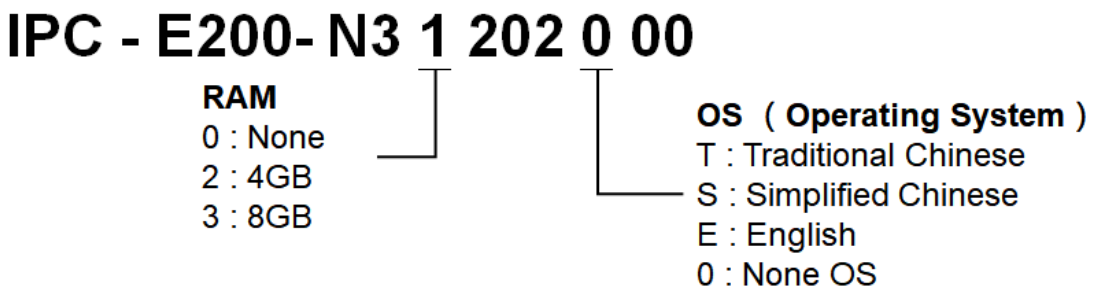
IPC-E200 is an embedded system featuring low consumption, high-performance and sealed fan-less design. In addition, the product is certified to IP40 with solid structure and anti-vibration function that can deliver excellent performance over wide temperature range. E200 also has wide DC voltage range and reverse voltage protection characteristics.

The product equipped with Intel® dual-core Celeron N3350 and standard 2GB/4GB RAM that can extend up to 8GB to support operating system (OS) including Windows10 IoT and Linux.

The main CPU board contains a full-size PCIe mini card slot that supports 3G, 4G or Wi-Fi wireless modules for expansion, as well as a half-size PCIe mini card slot that uses standard 64G mSata SSD for storage interface.

Besides E200 compact size and aluminum DIN-rail design, the product include one COM port via BIOS setting, two USBs, two Gigabit Ethernet for users to realize industrial IoT (IIoT) gateway solution.

1.2 Model Description

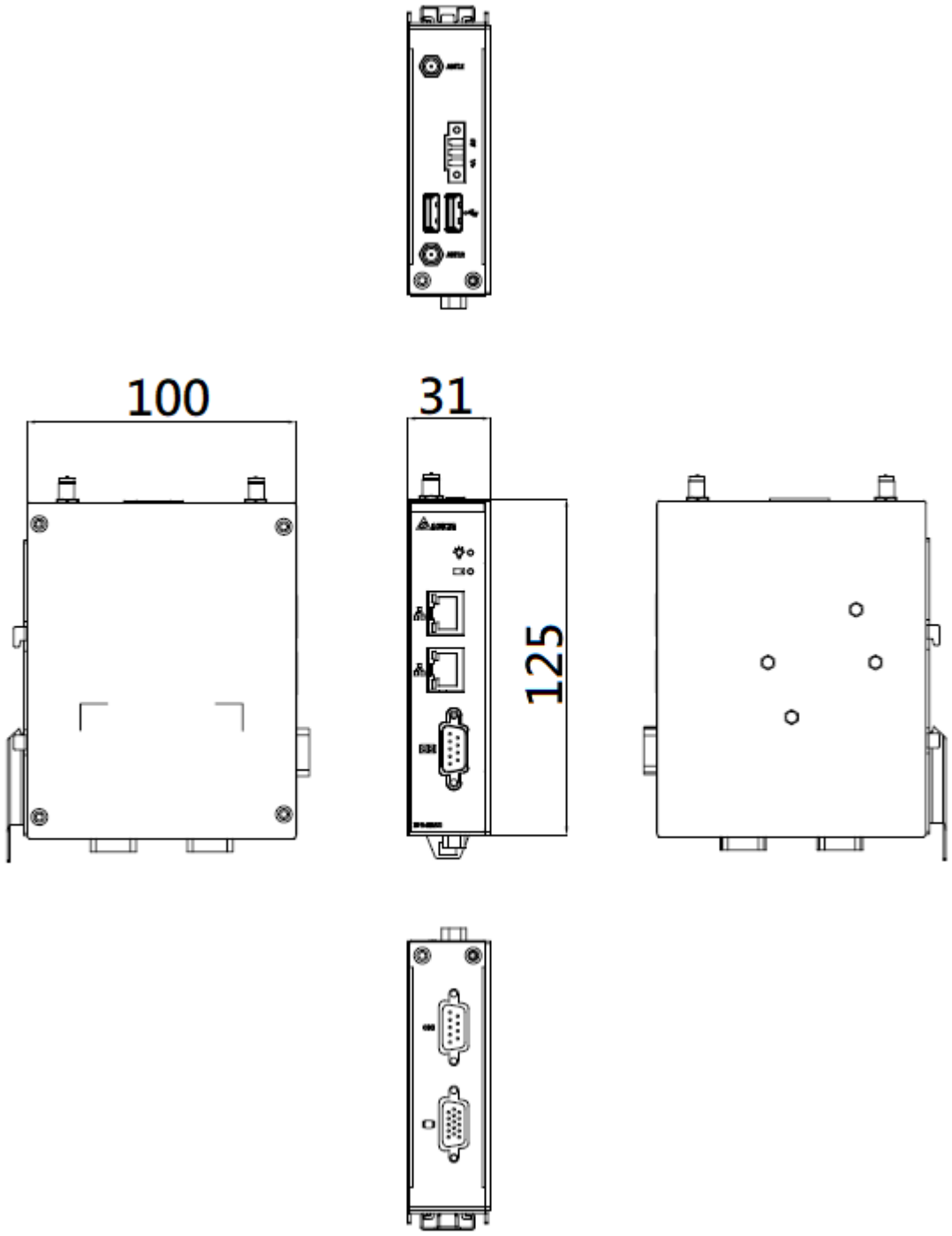


E200 series	Hardware specification			
	CPU	RAM	Storage capacity	OS
IPC- E200-N31202000	Intel Celeron N3350	2GB	64GB SSD	IPC without OS
IPC- E200-N31202C00				Win10 IoT Simplified Chinese
IPC- E200-N31202T00				Win10 IoT Traditional Chinese
IPC- E200-N31202E00				Win10 IoT English
IPC- E200-N32202000		4GB		IPC without OS
IPC- E200-N32202C00				Win10 IoT Simplified Chinese
IPC- E200-N32202T00				Win10 IoT Traditional Chinese
IPC- E200-N32202E00				Win10 IoT English

1.3 Hardware Specification

Item	Specification
CPU	Intel® Celeron N3350
RAM	2/4GB DDR3L 1600MHz, max. up to 8GB
SSD	64GB mSata SSD
Network	Intel® i211AT Gigabit Ethernet Controller x2
Expansion	Full-size mini PCIe for wireless module expansion
I/O system	● RS-232/ RS-422/ RS-485, default is RS-232 for BIOS setting, please refer to section 3.9 for more detail. ● USB 2.0 x 2 ● 8-bit TTL level programmable DIO ports. Default DO: Pin1~Pin4. Default DI: Pin5~Pin8. DIO parameters cab be configured in BIOS setting which is detailed in chapter 3.10.
Display interface	● VGA output x1
Dimension	100mm (L) × 31mm (W) ×125mm (H)
Weights	Net weight: 0.3Kg; Gross weight: 0.46Kg
Temperature	● Operation temperature: -20°C ~ 70°C (-4°F ~ +158°F) ● Storage temperature: -45°C ~ 85°C (-49°F ~ +185°F)
Humidity	10% ~ 90% , non-condensing
Reliability	● Mean time between failures (MTBF): ≥ 69,000h ● Mean time to recovery (MTTR): ≤ 0.5h
Certification	CE, FCC
Environment	● Anti-vibration: 2.0G, 5~500Hz
Power	● Input voltage range: 12~24VDC, 17W Embedded system is recommended to use along with power supply (UPS) in order to avoid abnormal power outage that leads to damaged files in OS.

1.4 Dimensions



Unit：mm

2

Chapter 2 I/O Interface

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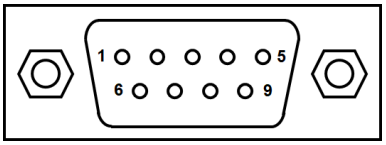
2.1 Diagram of I/O Interface



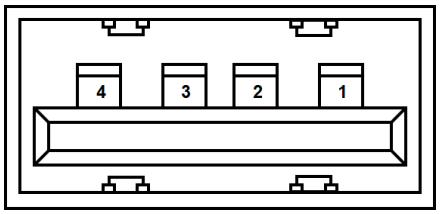
No.	Description	No.	Description
1	DC24V power supply	4	RS-232/ RS-422/ RS-485
2	VGA	5	RJ-45 connector
3	USB 2.0	6	DI/DO

2.2 Interface Description

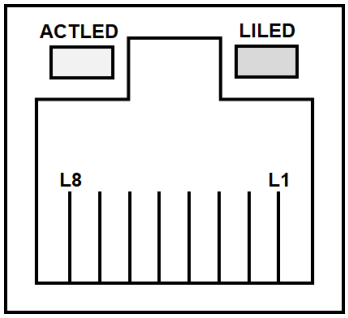
2.2.1 Serial Port

Serial port	Pin	Communication interface		
		RS-232	RS-422	RS-485
	1	DCD	TX-	Data-
	2	RXD	TX+	Data+
	3	TXD	RX+	-
	4	DTR	RX-	-
	5	GND	GND	GND
	6	DSR	-	-
	7	RTS	-	-
	8	CTS	-	-
	9	RI	-	-

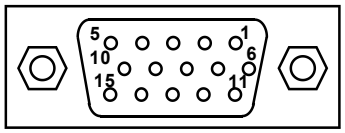
2.2.2 USB 2.0

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

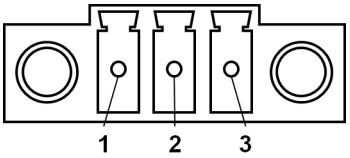
2.2.3 RJ-45 Connector

RJ-45	Pin	1000 Base-T	100 Base-T
	L1	BI_DA+	TX+
	L2	BI_DA-	TX-
	L3	BI_DB+	RX+
	L4	BI_DC+	N.C.
	L5	BI_DC-	N.C.
	L6	BI_DB-	RX-
	L7	BI_DD+	N.C.
	L8	BI_DD-	N.C.
	ACTLED	**Network acitivity LED indicator** Flashing: Data transmission Off: No data acitivity	
	LILED	**Speed indicator LEDs** Orange: 1000Mbps Green: 100Mbps Off: 10Mbps	

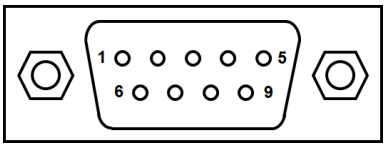
2.2.4 VGA

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		

2.2.5 DC24V Power Supply

DC24V	Pin	Signal
	1	V+
	2	N.C.
	3	0V

2.2.6 DI/DO

DI / DO	Pin	Signal
	1	DIO 0
	2	DIO 1
	3	DIO 2
	4	DIO 3
	5	DIO 4
	6	DIO 5
	7	DIO 6
	8	DIO 7
	9	GND

MEMO

3

Chapter 3 AMI BIOS Utility

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3.1 Starting BIOS

The AMI UEFI BIOS provides users with a built-in setup program to modify system configuration based on the following steps:

1. Turn on the power and press <DEL> key immediately.
2. When entering BIOS setup menu, you can access other settings including Advanced and Chipset menus.

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

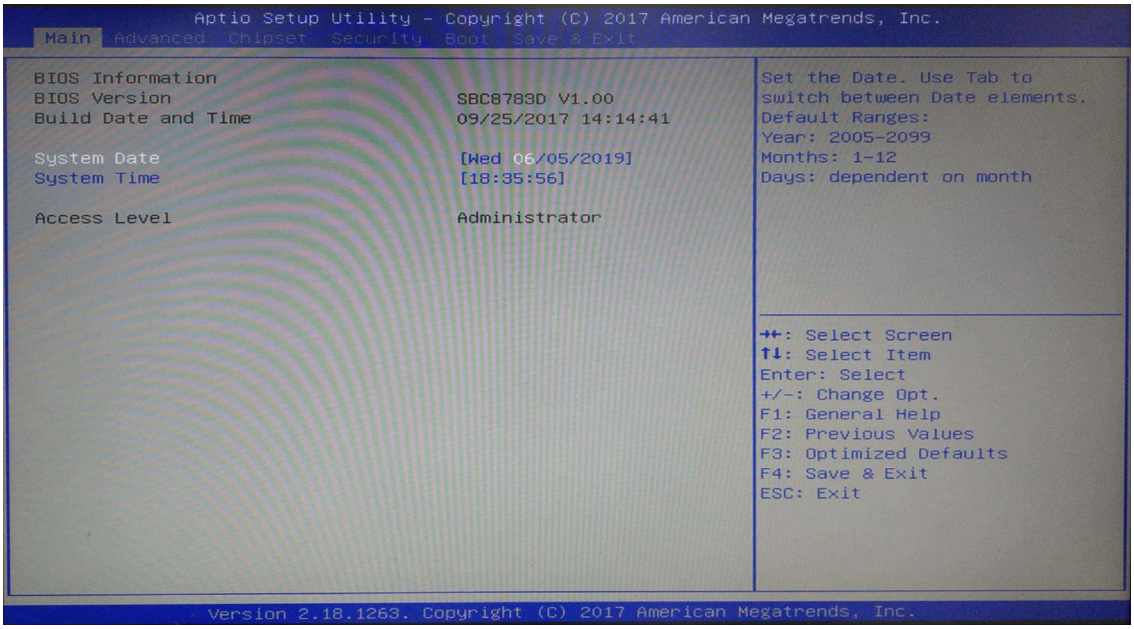
3.2 Hotkey Shortcuts

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**	Use left and right <Arrow> keys to select from the BIOS setup page.
↑ ↓ **Up/Down**	Use up and down <Arrow> keys to select a sub-item from the BIOS setup page.
+ - **Plus/Minus**	Use plus and minus keys to change particular field value setting.
Tab	Use <Tab> key to select fields.
F1	Use < F1 > key to display the Help menu.
F2	Use < F2 > key to load previous parameter settings.
F3	Use < F3 > key to load optimal default values.
F4	Use < F4 > key to saves any modifications and exit BIOS setting.
Esc	Use < Esc > key to discard any modifications and exit BIOS setting.
Enter	Use < Enter > key to display or modify the parameter of a particular item.

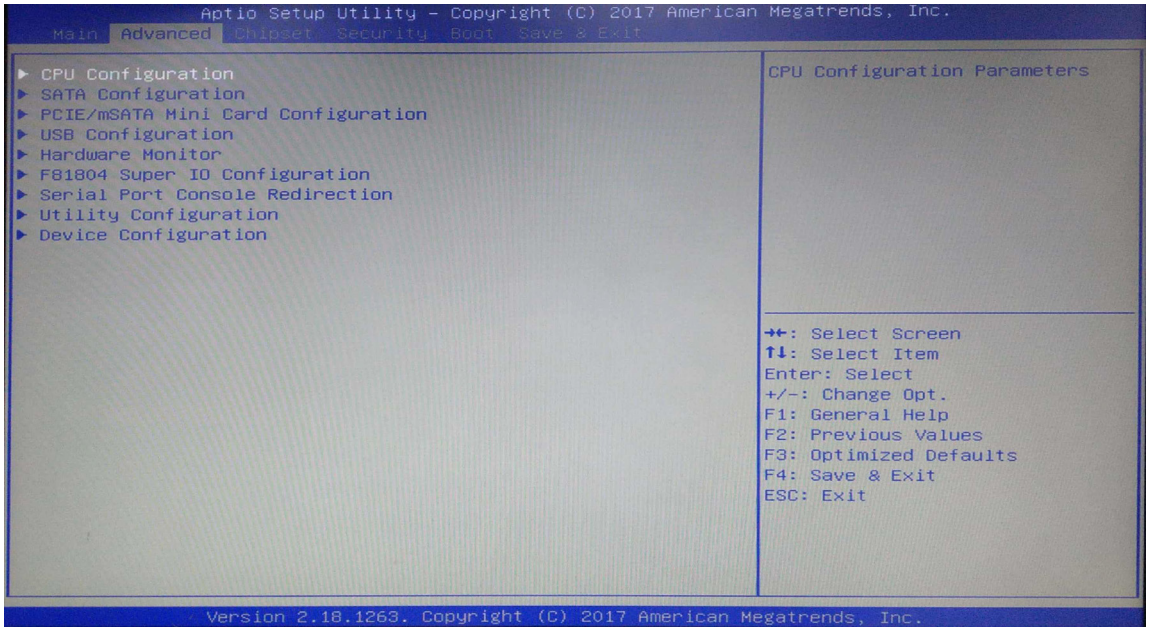
3.3 Main Menu

The Main menu displays general information including BIOS, processors, memory and system time.



3.4 Advanced Menu

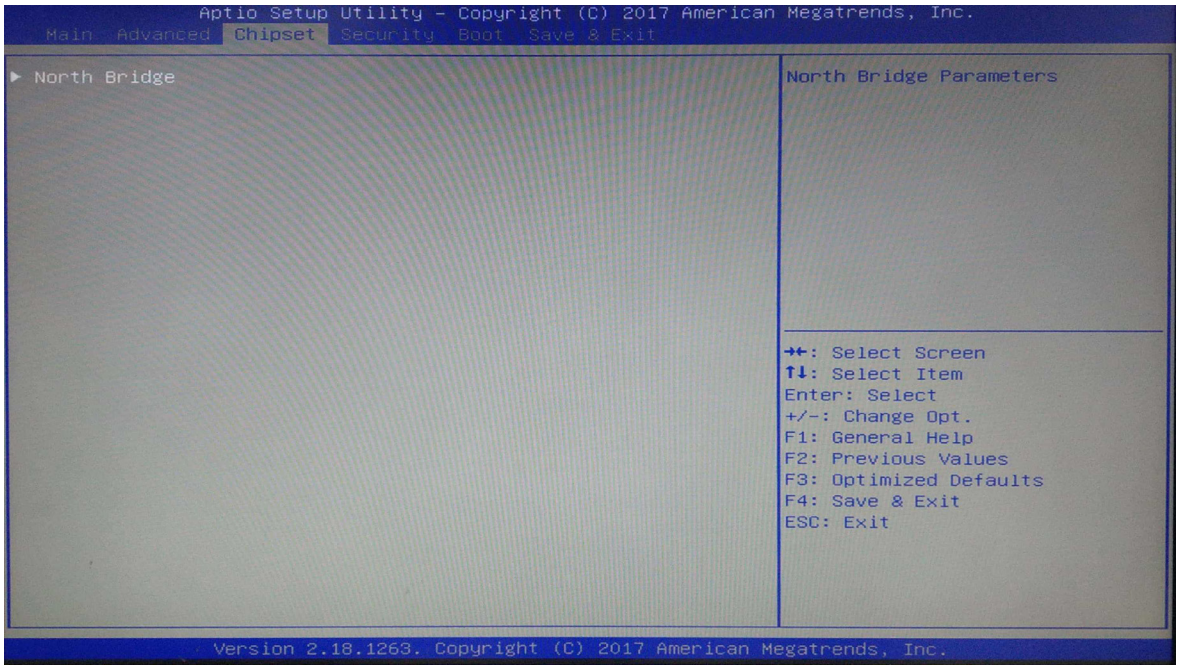
The menu contains monitoring of CPU temperature, output voltage of the board; displays hardware parameters which includes CPU, memory, USB and COM.



- CPU Configuration
- SATA Configuration
- PCIe/mSata Mini Card Configuration: mini PCIe card slot available
- USB Configuration
- Hardware Monitor
- F81804 Super IO Configuration: include COM port type setting
- Utility Configuration
- Device Configuration: include DIO pin type setting

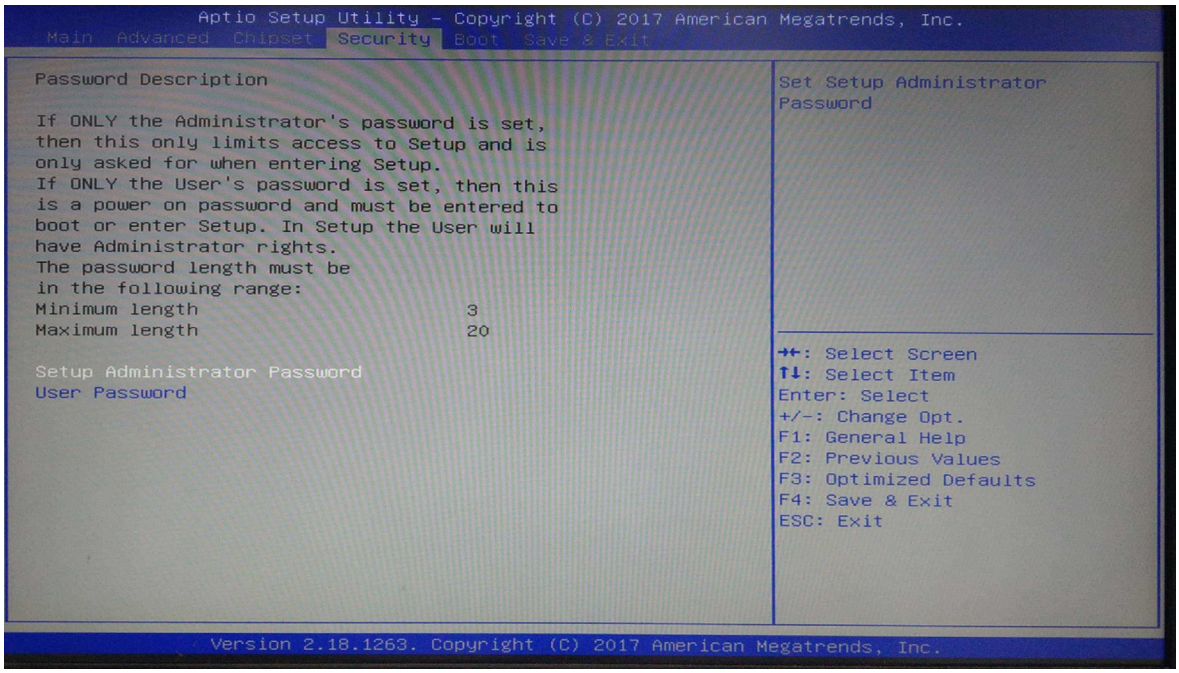
3.5 Chipset Menu

The menu provides advanced settings for chipset modifications.



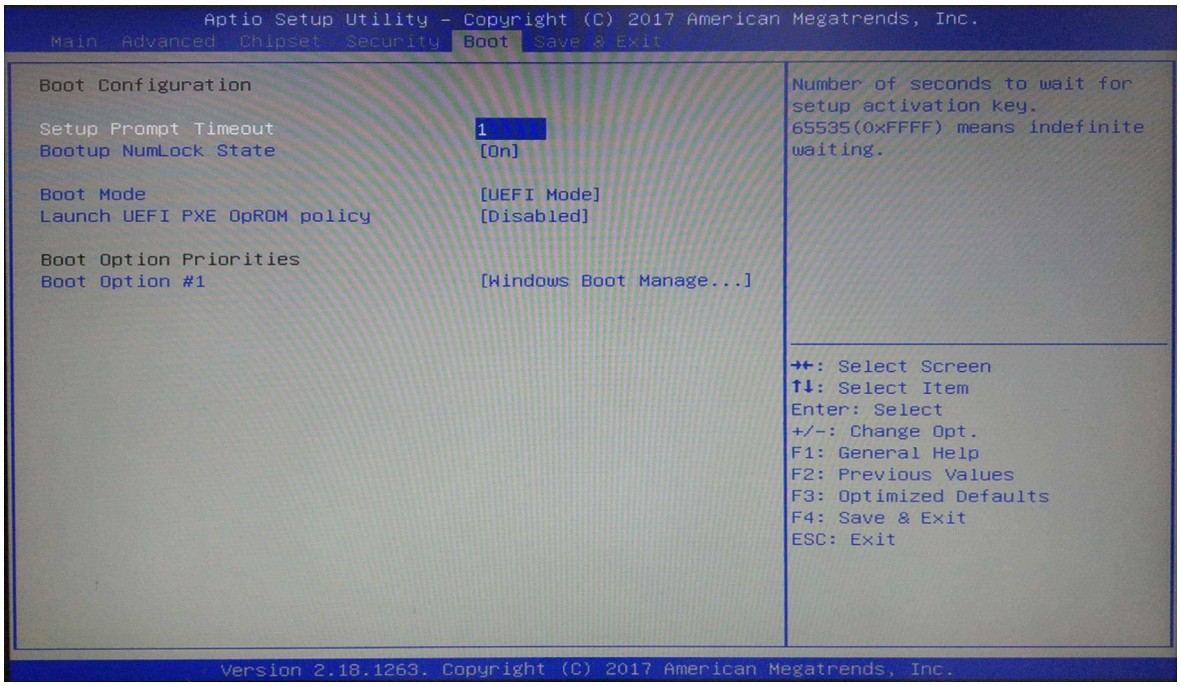
3.6 Security Menu

The menu contains setting up administrator password to access BIOS Setup interface and password to start the computer.



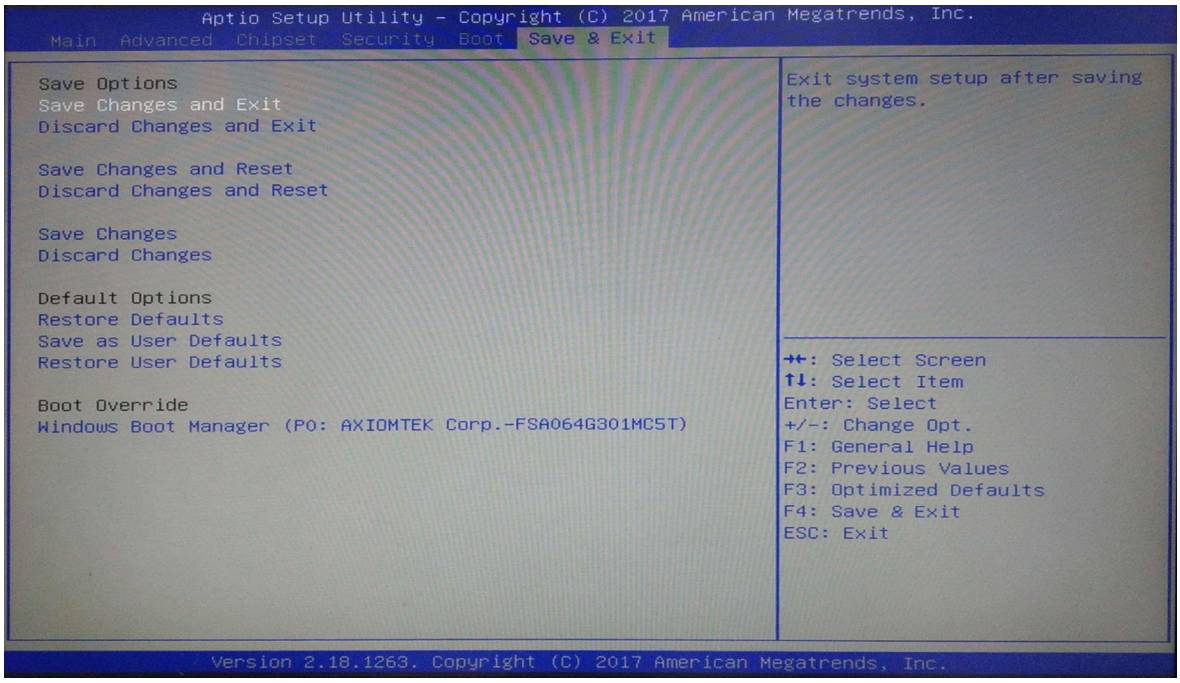
3.7 Boot Menu

The menu provides settings include boot configuration and boot option priorities for SSD as defaults in the OS.



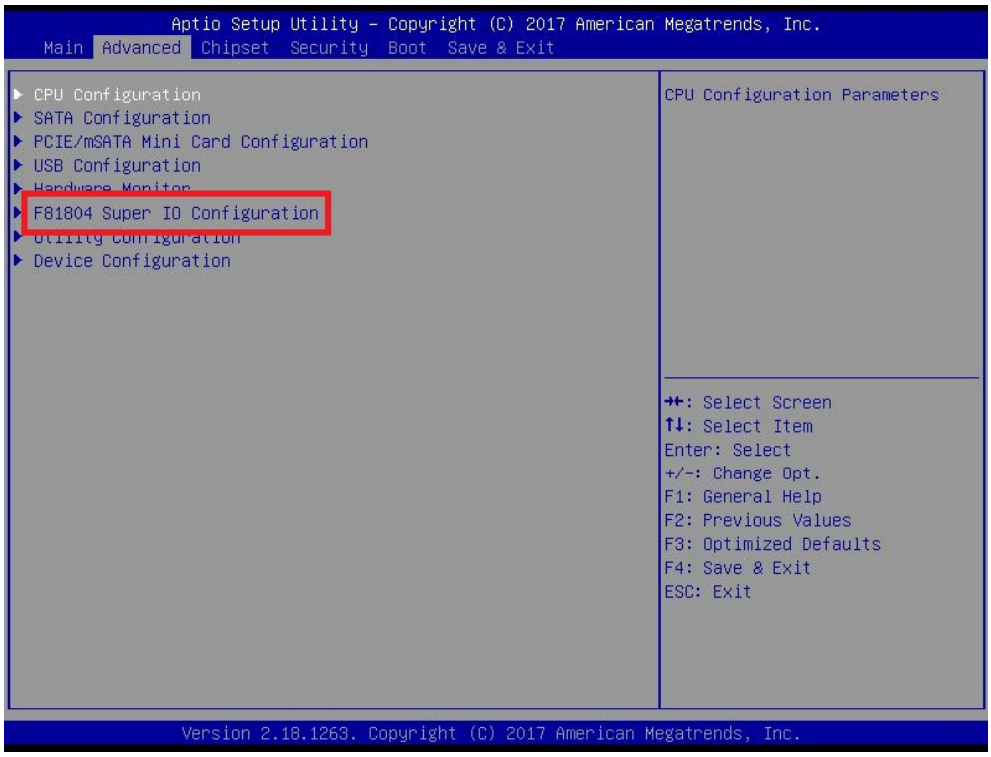
3.8 Save & Exit Menu

The menu contains resetting BIOS parameters but modification are NOT recommended unless necessary.

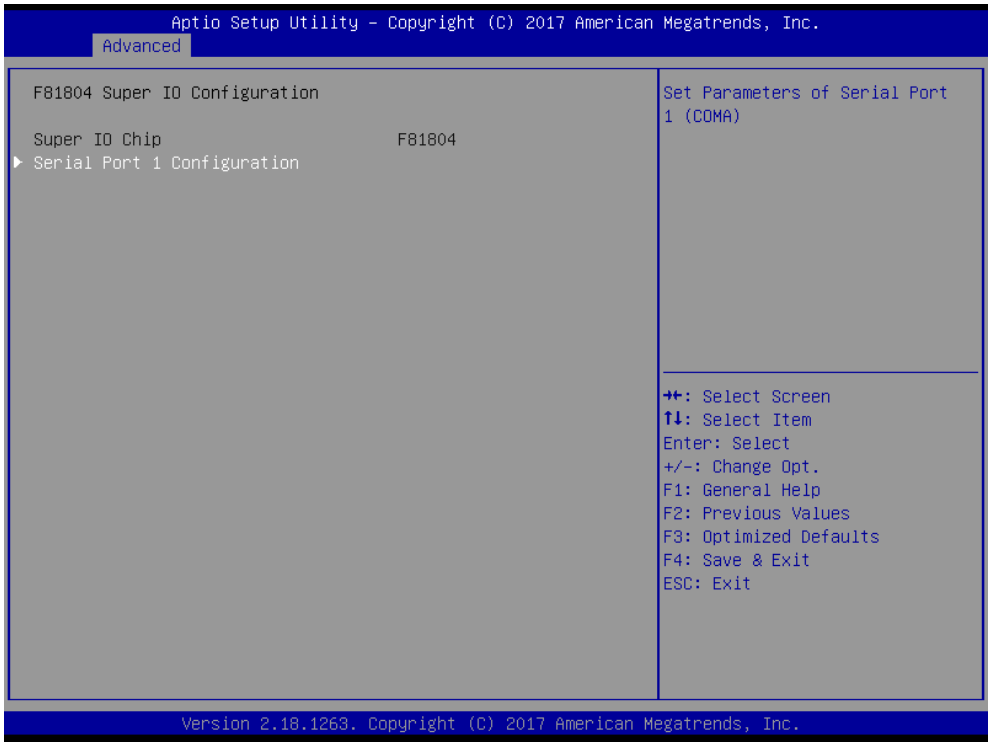


3.9 COM Port Setting

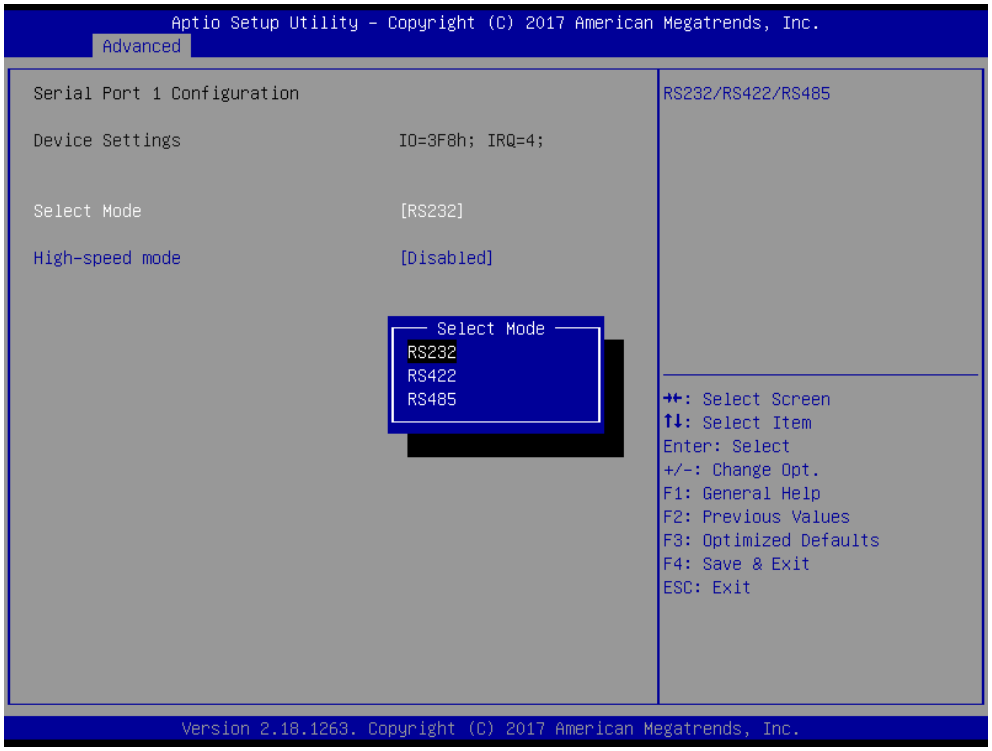
Enter Advanced menu and select F81804 Super IO Configuration.



For COM port type setting, select Serial Port 1.



Click Select Mode and choose RS232 or RS422 or RS485 for COM type. The default COM setting is RS232.

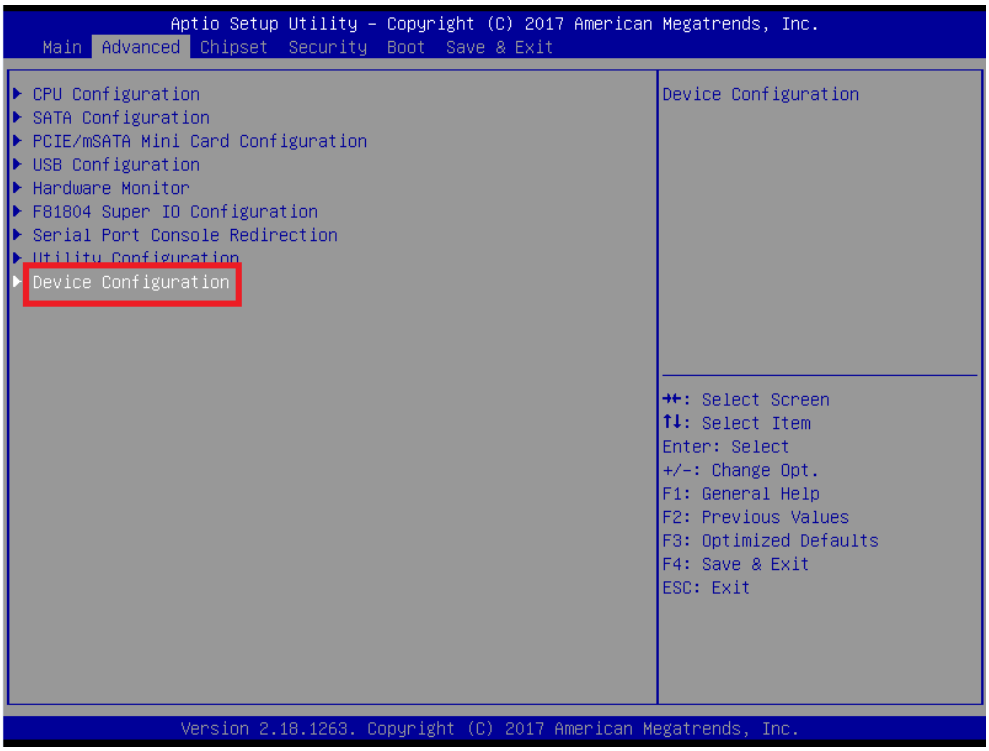


Complete the setup by clicking “F4” to save and exit.

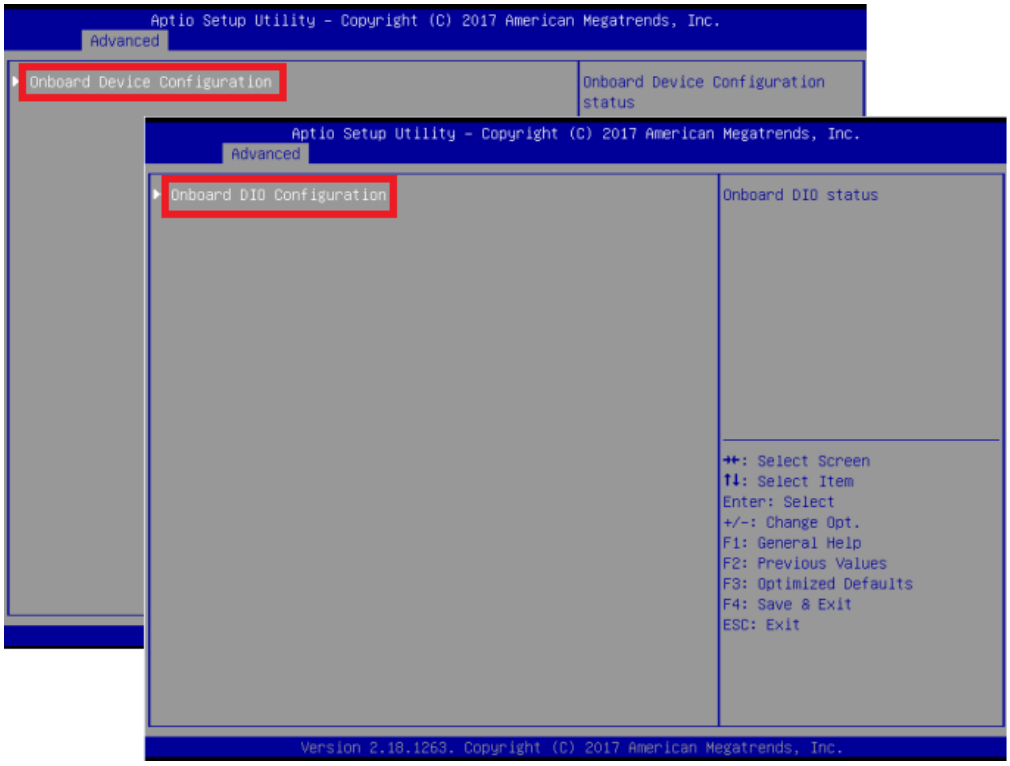
3.10 DIO Setting

The default setting of DIO is enabled (Enable) with pin 1 to 4 as Out and pin 5 to 8 as In. To modify DIO parameters, please refer to the following steps:

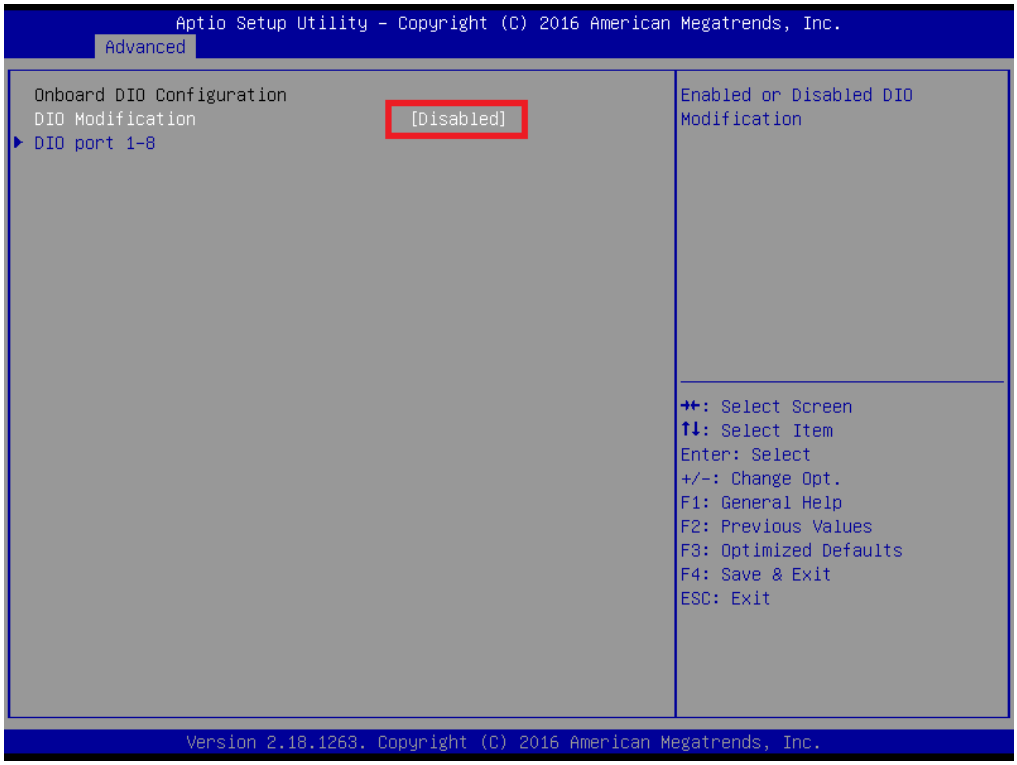
Enter Advanced menu, select Device Configuration.



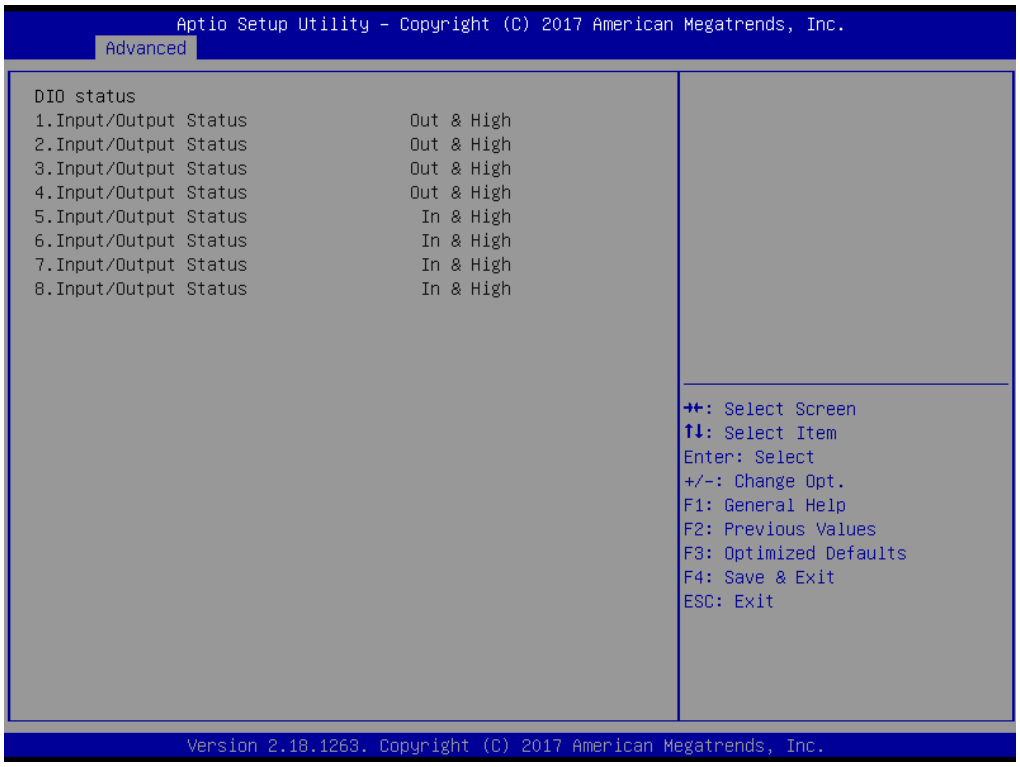
Continue to select Onboard Device Configuration, Onboard DIO Configuration.



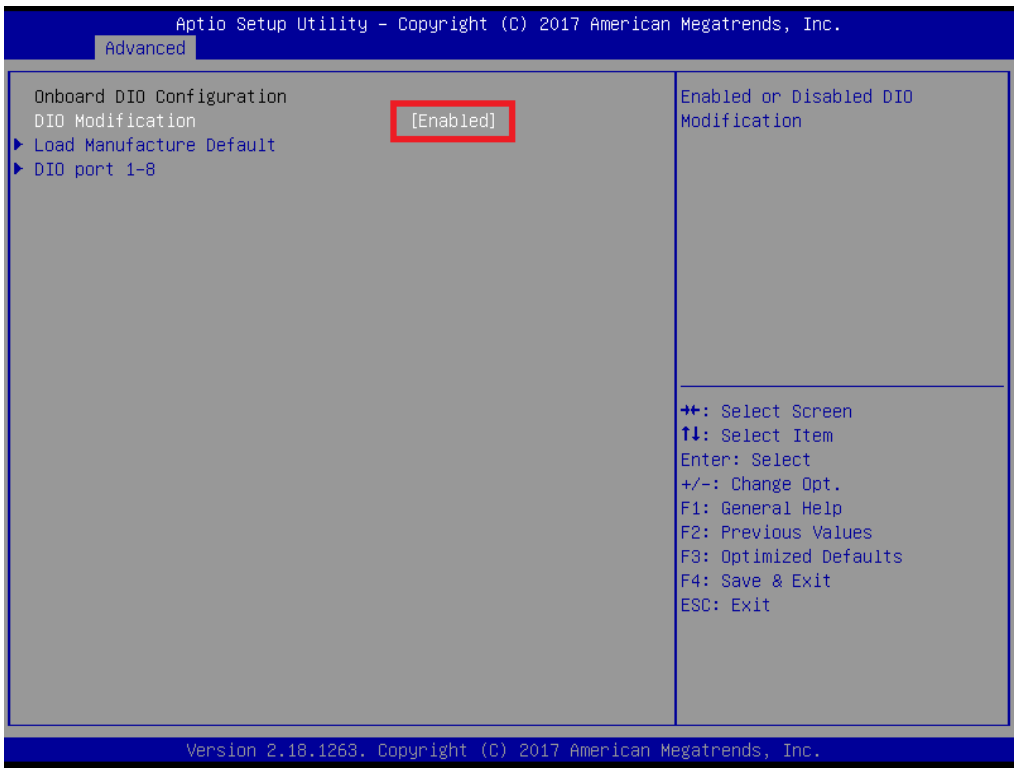
When turning on the computer and DIO Modification is Disabled, this does NOT mean that the function is closed.



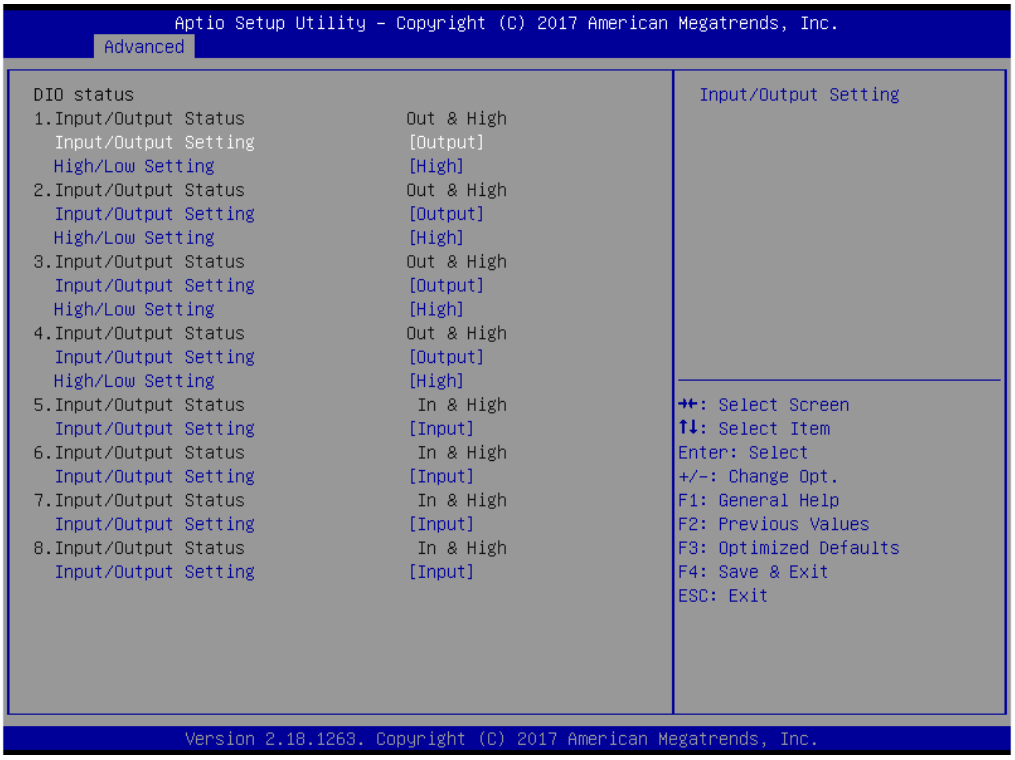
Select from DIO port 1 to 8 and view each pin status, with default status below.



To modify DIO configuration, first select Enable for DIO Modification.



Select from DIO port 1 to 8 for setting pin status.



Complete the setup by clicking “F4” to save and exit.

4

Chapter 4 Hardware Replacement

Table of Contents

4.1 Replace Memory (RAM) 4-2
4.2 Replace mSATA SSD 4-4

4.1 Replace Memory (RAM)

* **Any component replacement and repair of the host machine by users will lose the original product guarantees.**

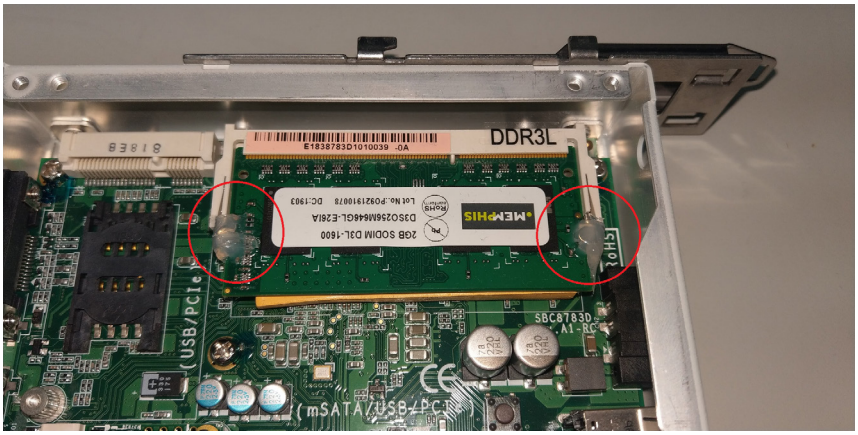
The IPC-A300 series offers only one memory slot to increase memory capacity. Please refer to the following steps to replace RAM:

Step 1 Turn off the system. When HDD  and Power  lights are OFF, disconnect from the DC power system.

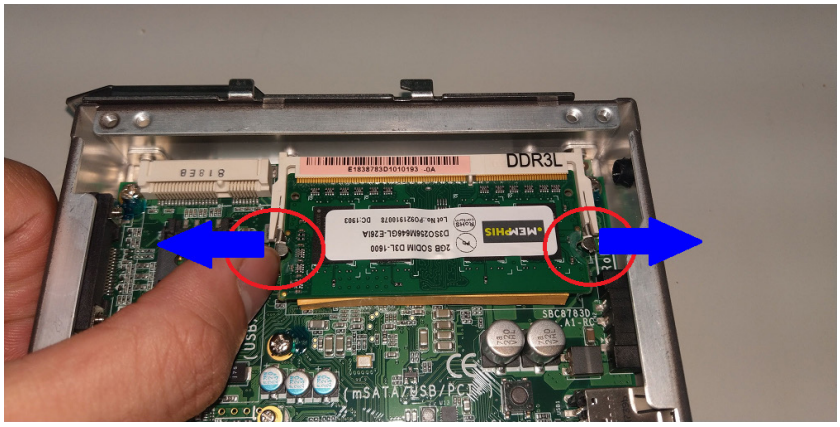
Step 2 Loosen all 4 screws to remove the side cover.



Step 3 Manually clear the fixing glue of the RAM clip. When using a blade, please do NOT scrape RAM and avoid pulling the fixing glue so that the metal reed on the clips do not come off.



Step 4 "In the meantime" , the metal part of the clip is to be pulled outward and the RAM flicks up in a slope angle to be pulled out.





Step 5 Insert and press the RAM firmly into the slot until it is seated. Then, check the clips are clasped to the RAM edge on both sides.





Step 6 When RAM installation is complete, please attach the side covers back to the chassis and fasten all screws.

4.2 Replace mSATA SSD

* **Any component replacement and repair of the host machine by users will lose the original product guarantees.**

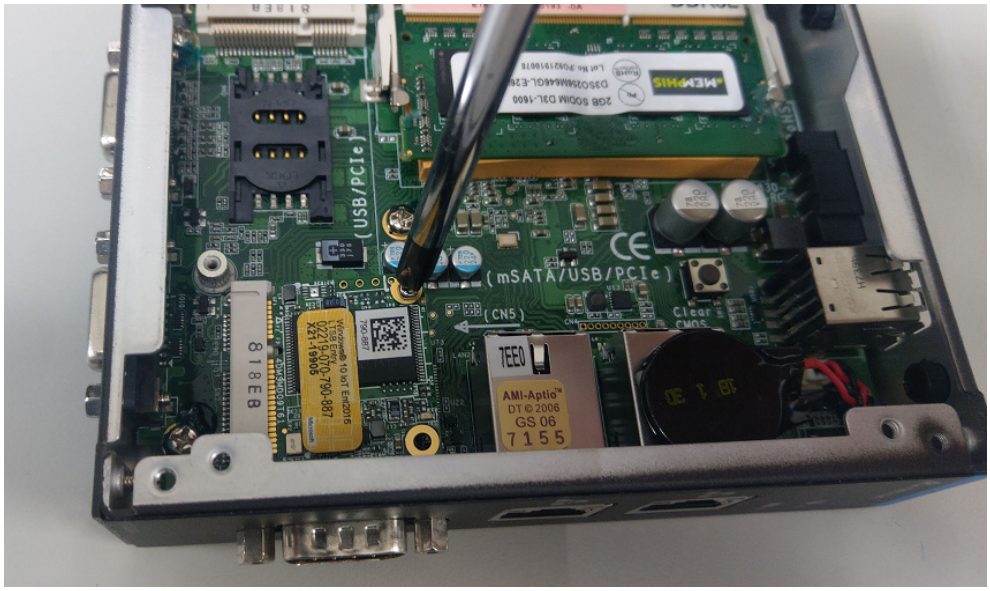
The series uses half size mSATA SSD. To increase SSD capacity, please prepare the original OS as backup and restore the settings once SSD is been replaced. Please refer to the following steps for replacing the SSD:

Step 1 Turn off the system. When HDD  and Power  lights are OFF, disconnect from the DC power system.

Step 2 Loosen all 4 screws to remove the side cover.

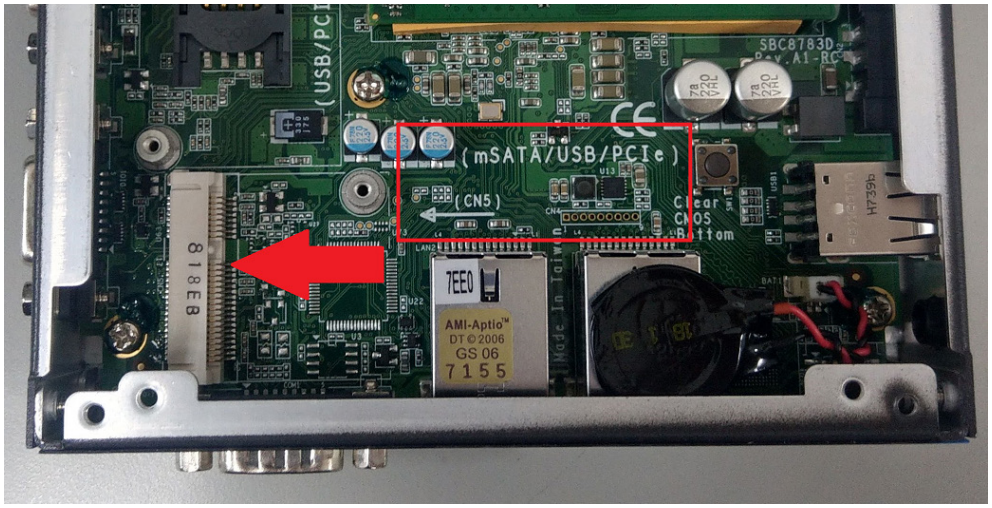


Step 3 Remove the fixed screws for mSATA SSD and pull out the SSD once it flicks up in a slope angle.

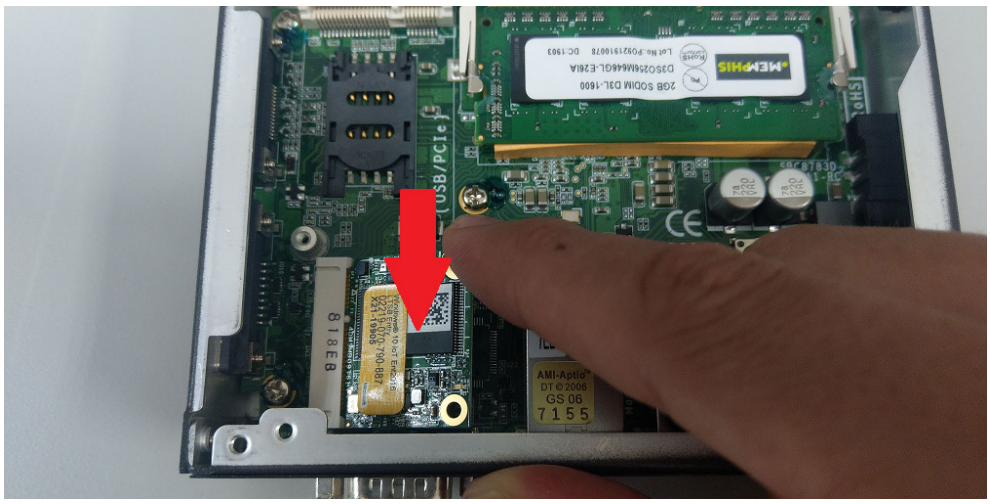


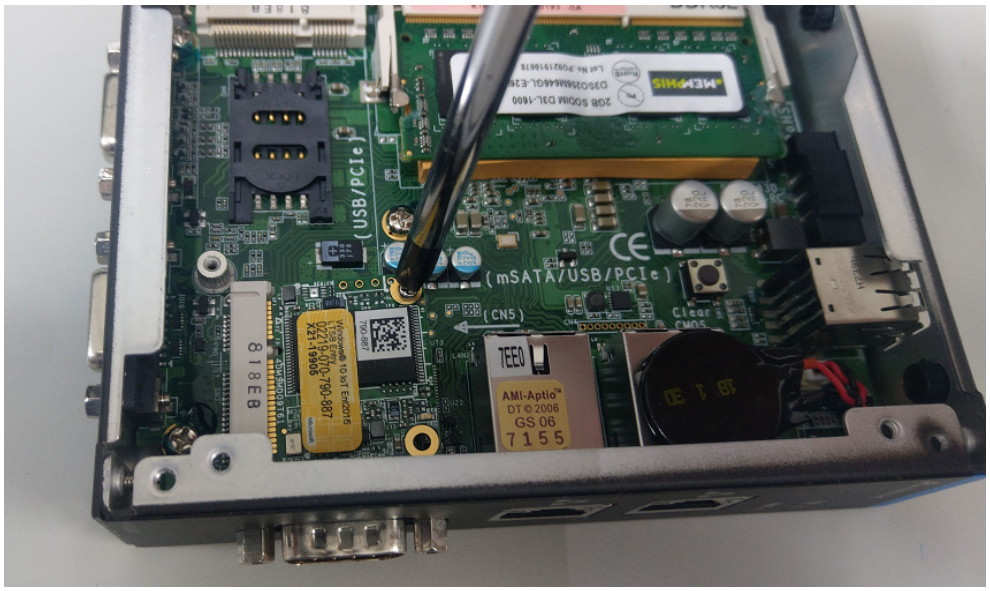


Step 4 mSATA SSD is installed in CN5, the board is marked mSata / USB / PCIe.



Step 5 Tilt the SSD and insert it into the slot. Then, press the SSD and fasten the screws.





Step 6 When SSD installation is complete, please attach the side cover back to the chassis and fasten all screws.