AXIOMTEK®

DSP600-211

Digital Signage Player

User's Manual

RoHS

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Safety Precautions

Before getting started, please read the following important safety precautions.

1. The DSP600-211 does not come with an operating system which must be loaded first before installation of any software into the computer.
2. Be sure to ground yourself to prevent static charge when installing any internal components. Use a wrist grounding strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.
3. Disconnect the power cord from the DSP600-211 prior to making any installation. Be sure both the system and all external devices are turned OFF. Sudden surge of power could ruin sensitive components. Make sure the DSP600-211 is properly grounded.
4. Make sure the voltage of the power source is correct before connecting it to any power outlet.
5. Turn Off system power before cleaning. Clean the system using a cloth only. Do not spray any liquid cleaner directly onto the screen.
6. Do not leave equipment in an uncontrolled environment where the storage temperature is below -40°C or above 80°C as it may damage the equipment.
7. Do not open the system's back cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:
   - Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help discharge any static electricity on human body.
   - When handling boards and components, wear a wrist grounding strap available from most electronic component stores.

Classifications

1. Degree of production against electric shock: Not classified.
2. Degree of protection against the ingress of water: IP40.
3. Equipment not suitable for use in the presence of a flammable anesthetic mixture with air, oxygen or nitrous oxide.
4. Mode of operation: Continuous.

General Cleaning Tips

Please keep the following precautions in mind while understanding the details fully before and during any cleaning of the computer and any components within.

A piece of dry cloth is ideal to clean the device.

1. Be cautious of any tiny removable components when using a vacuum cleaner to absorb dirt on the floor.
2. Turn the system off before clean up the computer or any components within.
3. Avoid dropping any components inside the computer or getting circuit board damp or wet.
4. For cleaning, be cautious of all kinds of cleaning solvents or chemicals which may cause allergy to certain individuals.
5. Keep foods, drinks or cigarettes away from the computer.

Cleaning Tools:

Although many companies have created products to help improve the process of cleaning computer and peripherals, users can also use house hold items accordingly for cleaning. Listed below are items available for cleaning computer or computer peripherals.

Pay special attention to components requiring designated products for cleaning as mentioned below.

- Cloth: A piece of cloth is the best tool to use when rubbing up a component. Although paper towels or tissues can be used on most hardware as well, it is recommended to use a piece of cloth.
- Water or rubbing alcohol: A piece of cloth may be somewhat moistened with water or rubbing alcohol before being rubbed on the computer. Unknown solvents may be harmful to plastic parts.
- Absorb dust, dirt, hair, cigarette and other particles outside of a computer can be one of the best methods of cleaning a computer. Over time these items may restrict the airflow in a computer and cause circuitry to corrode.
- Cotton swabs: Cotton swaps moistened with rubbing alcohol or water are applicable to reach areas in keyboard, mouse and other areas.
- Foam swabs: If possible, it is better to use lint free swabs such as foam swabs.

【Note】: ***It is strongly recommended that customer should shut down the system before start to clean any single components.***

Please follow the steps below:

1. Close all application programs.
2. Close operating software.
3. Turn off power switch.
4. Remove all devices.
5. Pull out power cable.

Scrap Computer Recycling

Please inform the nearest Axiomtek distributor as soon as possible for suitable solutions in case computers require maintenance or repair; or for recycling in case computers are out of order.

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Section 1
Introduction

This section contains general information and detailed specifications of the DSP600-211. Section 1 consists of the following sub-sections:

- General Descriptions
- System Specifications
- Dimensions
- I/O Outlets
- Packing List

1.1 General Descriptions

The DSP600-211 has scalable CPU options with the AMD Ryzen Embedded quad-core V1807B and V1605B. This powerful digital signage player has two DDR4-2400 SO-DIMM slots for up to 32GB of system memory. It also comes with one M.2 Key M 2280 for SATA storage and one M.2 Key M 2280 for NVMe storage.

To meet the requirement of diverse applications, the DSP600-211 has rich I/O connectivity design. It offers two USB 3.1 ports, two USB 2.0 ports, two Gigabit Ethernet ports, one device management port, two RS-232, one line-out, one SIM card slot and four antenna openings. Other features include one power switch, one reset switch, one remote switch, one HDD LED, and one screw-type VDC power input connector. It also has one M.2 Key E 2230 slot and one M.2 Key B for WiFi, Bluetooth, or 4G LTE. The system supports 0˚C to 45˚C (V1605B CPU), 40 ˚C (V1807B CPU) temperature and offers 3 grms, 5~500Hz, random vibration. This compact system runs on Windows® 10 and Linux. It has been certified with CE and FCC Class A.

Features

- AMD Ryzen Embedded V1000 series
- 2 DDR4-2400 SO-DIMM for up to 32GB of memory
- 4 HDMI 2.0 with 4K resolution
- Built-in hardware EDID emulation function
- 4 USB, 2 GbE LAN
- 1 M.2 Key E 2230 for WiFi/BT
- 2 M.2 Key M 2280 for storage
- Suitable for digital signage and smart retail applications

1.2 System Specifications

1.2.1 CPU

- **CPU**
  - AMD Ryzen Embedded Quad Core V1807B/V1605B onboard.
- **Chipset**
  - SoC integrated.
- **BIOS**
  - American Megatrends Inc. UEFI (Unified Extensible Firmware Interface) BIOS.
- **System Memory**
  - Two 260-pin DDR4-2400 SO-DIMM sockets, up to 32GB at the maximum.

1.2.2 I/O System

- **Display**
  - 4 x HDMI (HDMI 1.4b up to 3840 x 2160@30Hz) with hardware EDID emulation.
- **Ethernet**
  - 2 x 10/100/1000 Ethernet ports (RTL8111G).
- **USB Ports**
  - 2 x USB 3.1.
  - 2 x USB 2.0.
- **Serial Ports**
  - 2 x RS-232 (internal wafer to 9-pin D-Sub male connectors).
- **Expansion Interface**
  - 1 x M.2 Key E 2230 socket for WiFi/Bluetooth options.
  - 1 x M.2 Key B 3042 socket for 4G/LTE options.
- **Storage**
  - 1 x M.2 Key M 2280 (SATA).
  - 1 x M.2 Key M 2280 (NVMe).
  - 1 x SIM slot.
- **Audio**
  - HD audio compliant with Realtek ALC662.
  - Support line-out through one audio jack.
- **Indicator**
  - 1 x Green LED as indicator for HDD active.
- **Switch**
  - 1 x ATX PWR switch.
  - 1 x Remote PWR switch.
  - 1 x Reset switch.
- **Antenna**
  - 4 x SMA type connector openings for antenna.

1.2.3 System Specifications

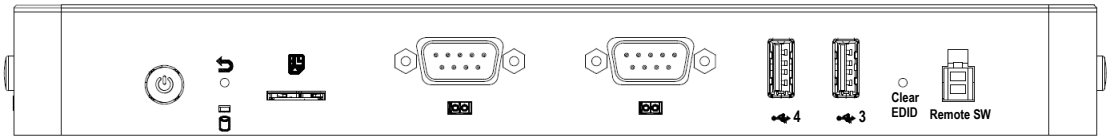
- **Watchdog Timer**
  - 1~255 seconds or minutes; up to 255 levels.
- **Power Supply**
  - 12VDC /84W AC to DC adapter.
- **Operation Temperature**
  - 0˚C ~ +45˚C/32˚F ~ 113˚F V1605B CPU.
  - 0˚C ~ +40˚C/32˚F ~ 104˚F V1805B CPU.
- **Humidity**
  - 10% ~ 90% (non-condensation).
- **Vibration Endurance**
  - 3Grm (5-500Hz, X, Y, Z directions).
- **Weight**
  - 1.9 kg (4.18 lb) without package.
  - 2.9 kg (6.39 lb) with package.
- **Dimension**
  - 250 mm (9.84")(W) x 182.8 mm (7.19")(D) x 30 mm (1.18")(H).

【Note】: *All specifications and images are subject to change without notice.*

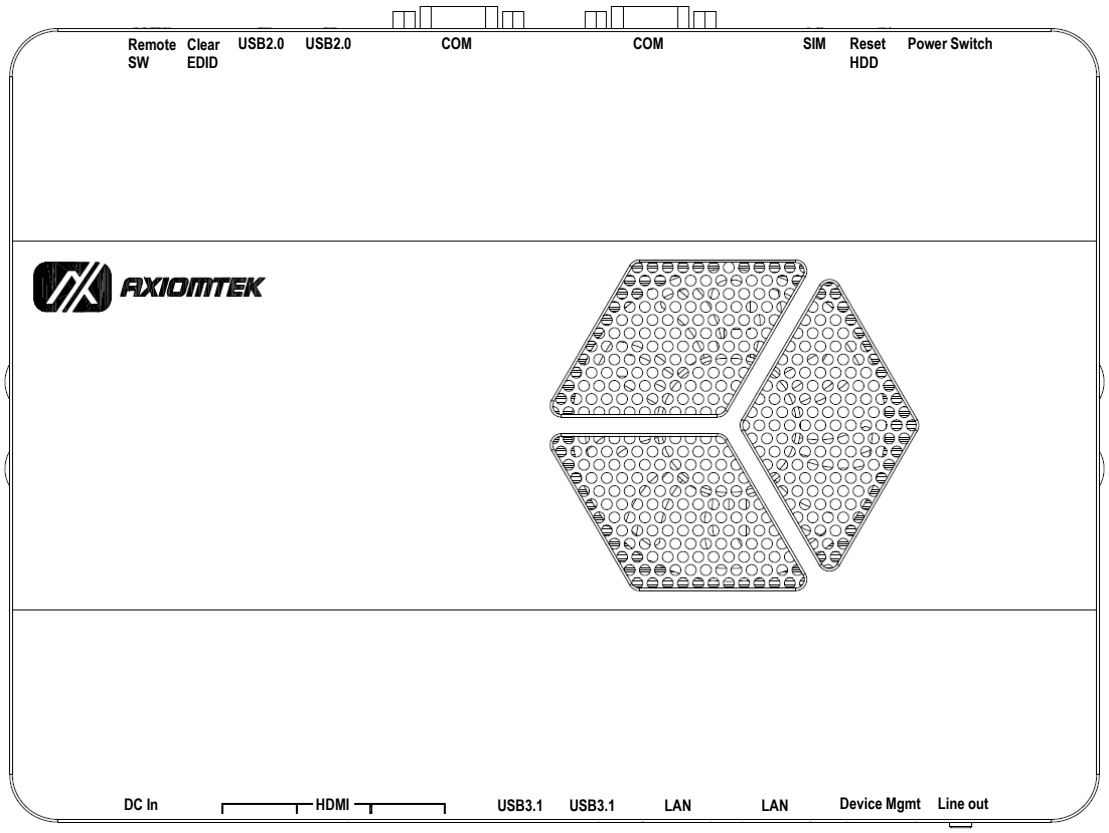
1.3 Dimensions

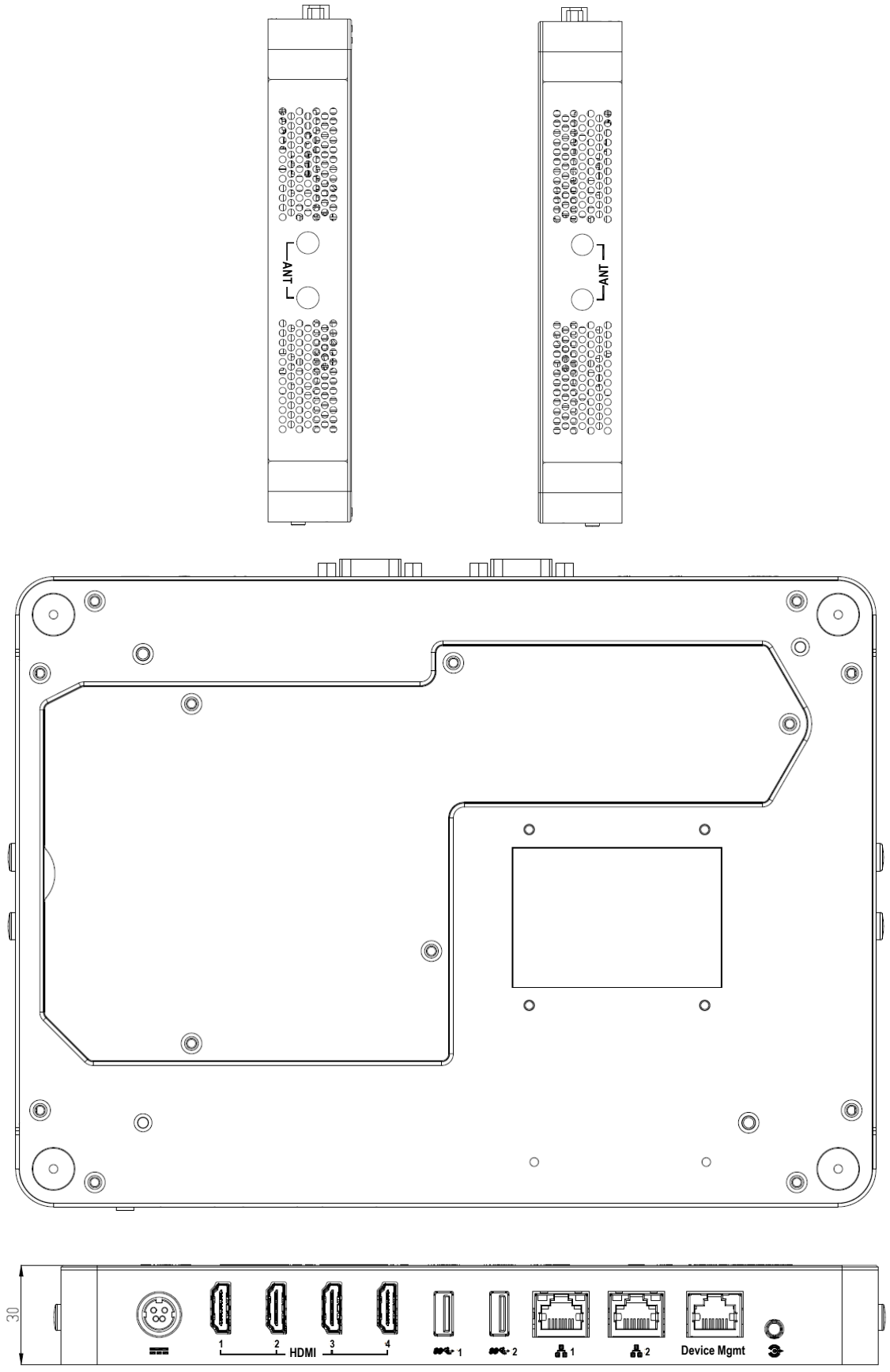
The following diagrams show dimensions and outlines of the DSP600-211.

1.3.1 System Dimensions



Rear Side I/O



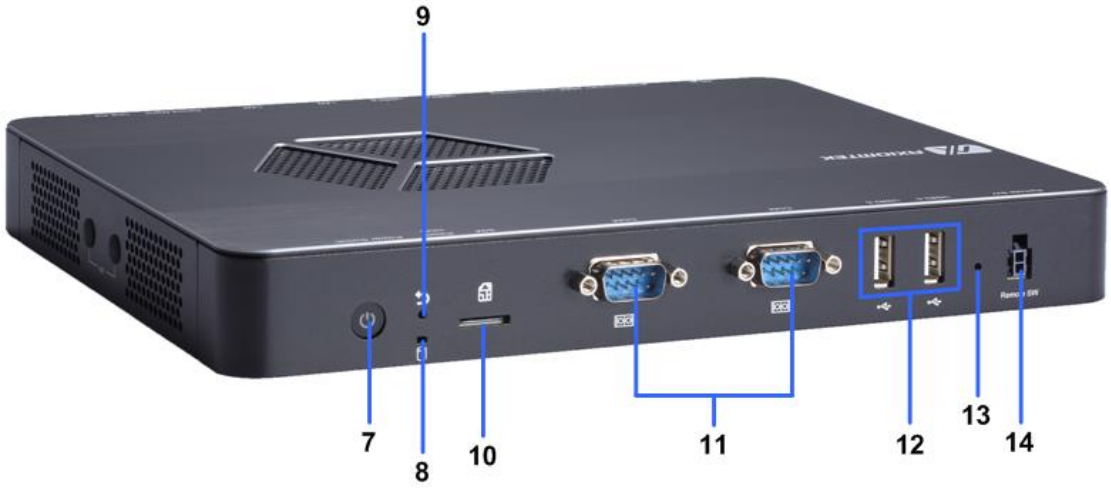


Front Side I/O

1.4 I/O Outlets

The following figures show I/O outlets on the DSP600-211.

Front View



Rear View

1	12VDC power input	8	HDD LED
2	4 x HDMI 2.0	9	Reset LED
3	2 x USB 3.1	10	SIM slot
4	2 x GbE LAN ports	11	2 x RS-232
5	Device management	12	2 x USB 2.0
6	Line-out	13	Clear EDID*
7	Power button	14	Remote power button

* Press the Clear EDID button for 2 seconds, the system will erase the data of EDID and refresh EDID data.

1.5 Packing List

The DSP600-211 comes with the following bundle package:

- **DSP600-211 System Unit x1**
- **Quick Installation Guide x1**
- **US Power cord x 1 or EU Power cord x1**
- **Foot Pad x4**
- **84W Adapter x1**
- **Wall Mount kits x1 (Optional)**
- **VESA Mount kits x1 (Optional)**
- **DDR4 SO-DIMM Memory (Optional)**
- **Antenna (Optional)**
- **M.2 2230 WiFi/BT module (Optional)**
- **M.2 3042 LTE module (Optional)**
- **M.2 2280 SSD (Optional)**
- **Remote Switch Cable (Optional)**

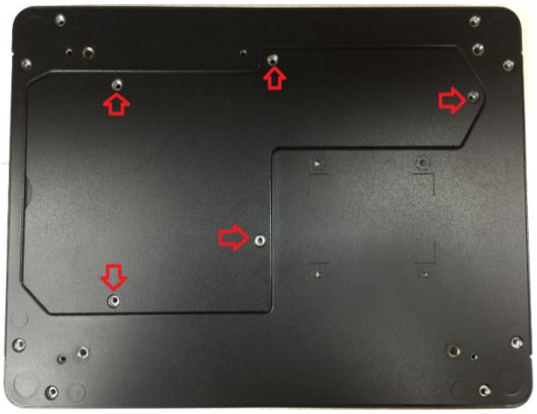
Section 2
Hardware Installation

The DSP600-211 is convenient for various hardware configurations such as SO-DIMM and M.2 modules. Section 2 contains guidelines for hardware installation.

2.1 Installing SDIMM2 memory module

Step 1 **Turn off the system and unplug the power cord.**

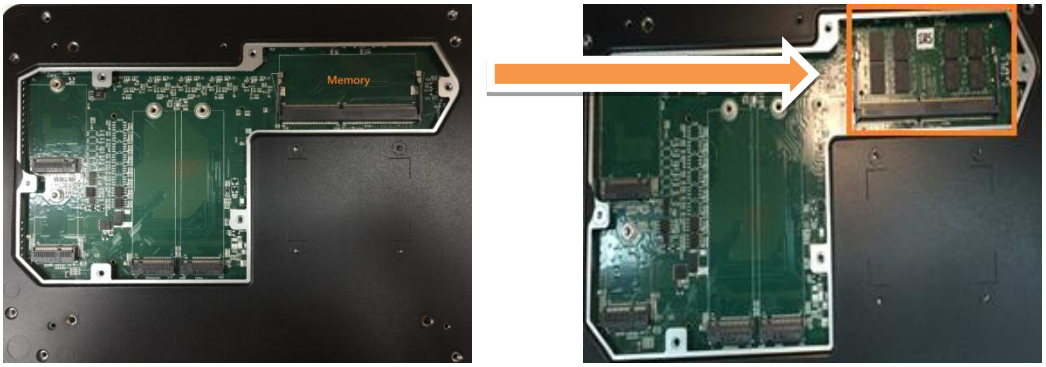
Step 2 **Turn the system upside down to locate screws at the bottom and then loosen five screws.**



Step 3 **Open the door at bottom.**

Step 4 **The DIMM2 socket is located on the bottom side of the mainboard.**

Step 5 **Insert the memory module by pushing its gold colored contact into the socket until the socket's two end latches locked.**

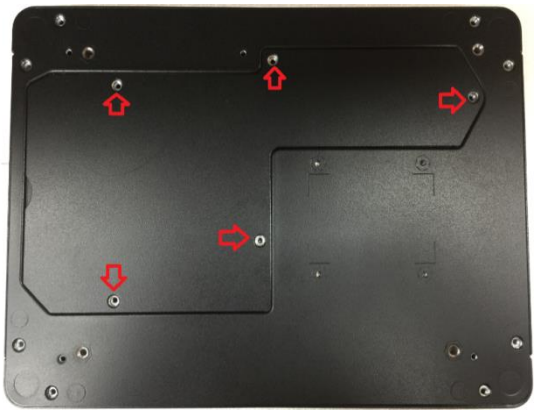


Step 6 **Put the bottom cover and fasten five screws back onto the system.**

2.2 Installing M.2 Key M 2280 device (SATA and PCIE)

Step 1 **Turn off the system and unplug the power cord.**

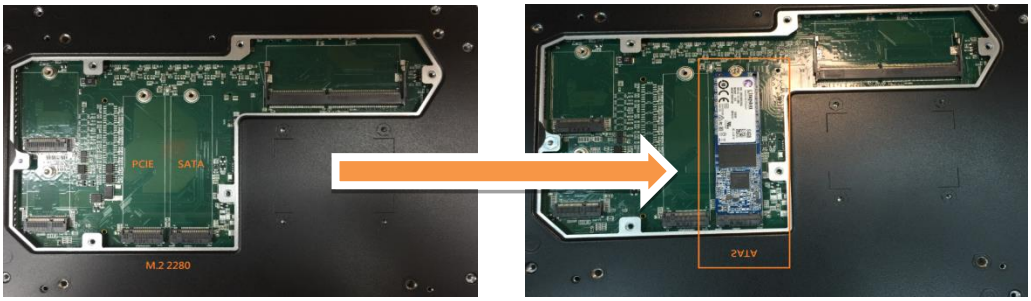
Step 2 **Turn the system upside down to locate screws at the bottom and then loosen five screws**



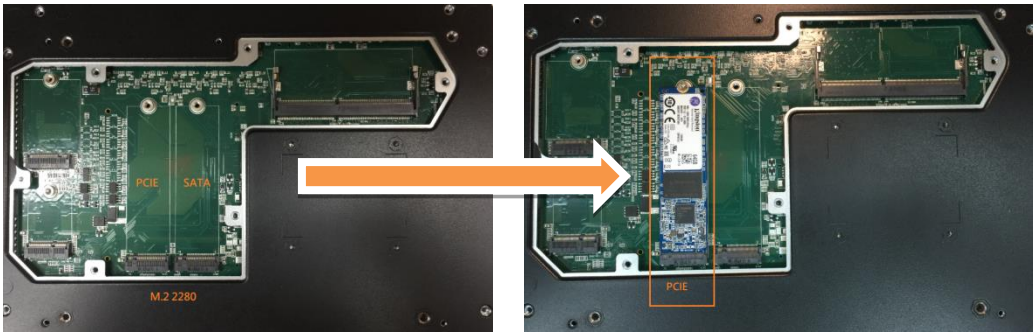
Step 3 **Open the bottom door cover.**

Step 4 **The M.2 2280 socket is located on the bottom side of the mainboard.**

Step 5 **Insert the M.2 storage module by pushing its gold colored contact into the socket then fasten the screw.**



SATA module



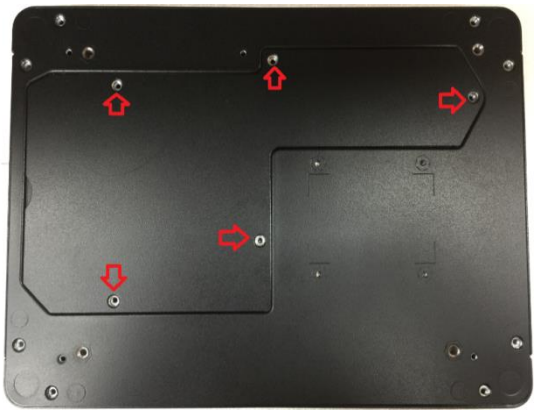
PCIE module

Step 6 **Put the top & side cover and fasten eight screws back onto the system.**

2.3 Installing M.2 Key E 2230 device (WiFi/BT)

Step 1 **Turn off the system and unplug the power cord.**

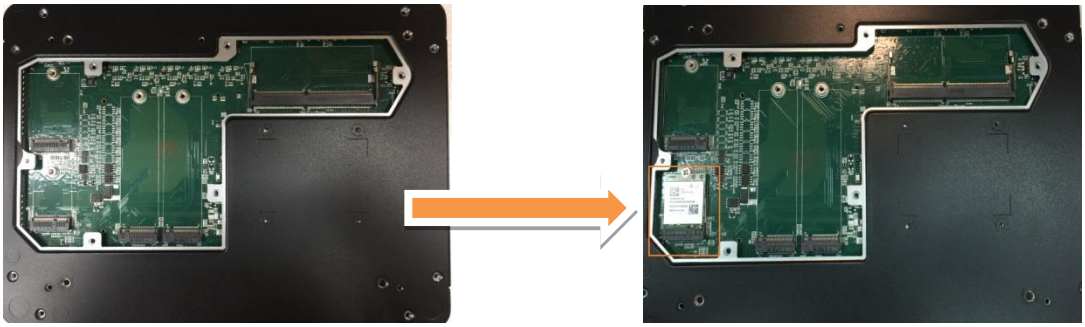
Step 2 **Turn the system upside down to locate screws at the bottom and then loosen five screws.**



Step 3 **Open the bottom door cover.**

Step 4 **The M.2 Key E 2230 for WiFi/BT socket is located on the bottom side of the mainboard.**

Step 5 **Identify the M.2 Key E 2230 for WiFi/BT socket, insert a M.2 WiFi module into the socket and then fasten the screw.**

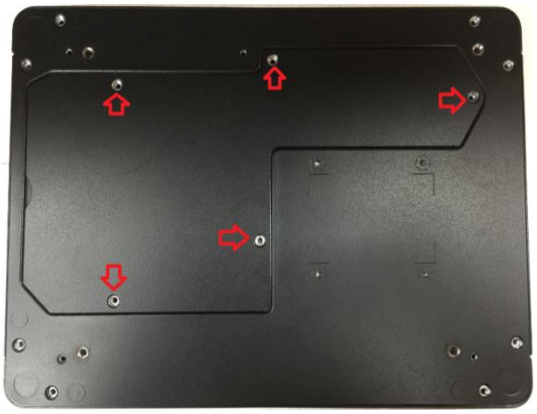


Step 6 **Put the bottom cover and fasten five screws back onto the system.**

2.4 Installing M.2 Key B for 4G/LTE device

Step 1 **Turn off the system and unplug the power cord.**

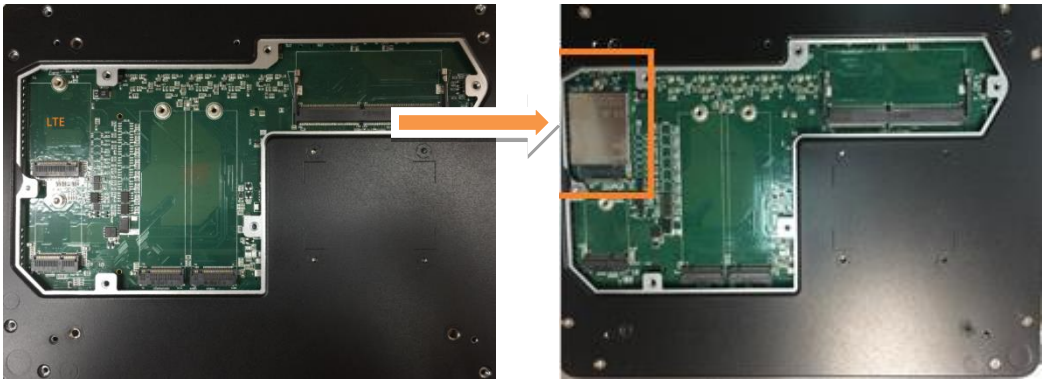
Step 2 **Turn the system upside down to locate screws at the bottom and then loosen five screws.**



Step 3 **Open the bottom cover.**

Step 4 **The M.2 Key B for 4G/LTE socket is located on the bottom side of the mainboard.**

Step 5 **Identify the M.2 Key B for 4G/LTE socket, insert a M.2 Key B for 4G/LTE module into the socket and then fasten a screw.**

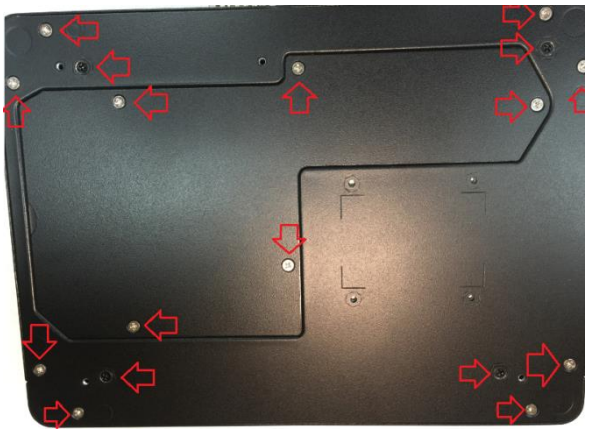


Step 6 **Put the bottom cover and fasten eight screws back onto the system.**

2.5 Installing SO-DIMM1 memory module

Step 1 **Turn off the system and unplug the power cord.**

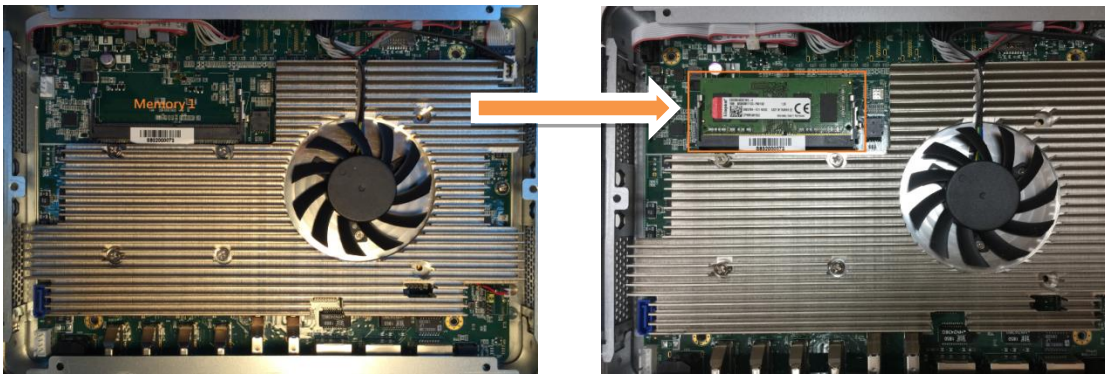
Step 2 **Turn the system upside down to locate screws at the bottom and then loosen all screws.**



Step 3 **Open the door at bottom and top cover.**

Step 4 **The DIMM1 socket is located on the top side of the mainboard.**

Step 5 **Insert the memory module by pushing its gold colored contact into the socket until the socket's two end latches locked.**



Step 6 **Put the bottom & top cover and fasten all screws back onto the system.**

2.6 Installing VESA mount kit (Optional)

Step 1 **Disconnect any connected cables.**

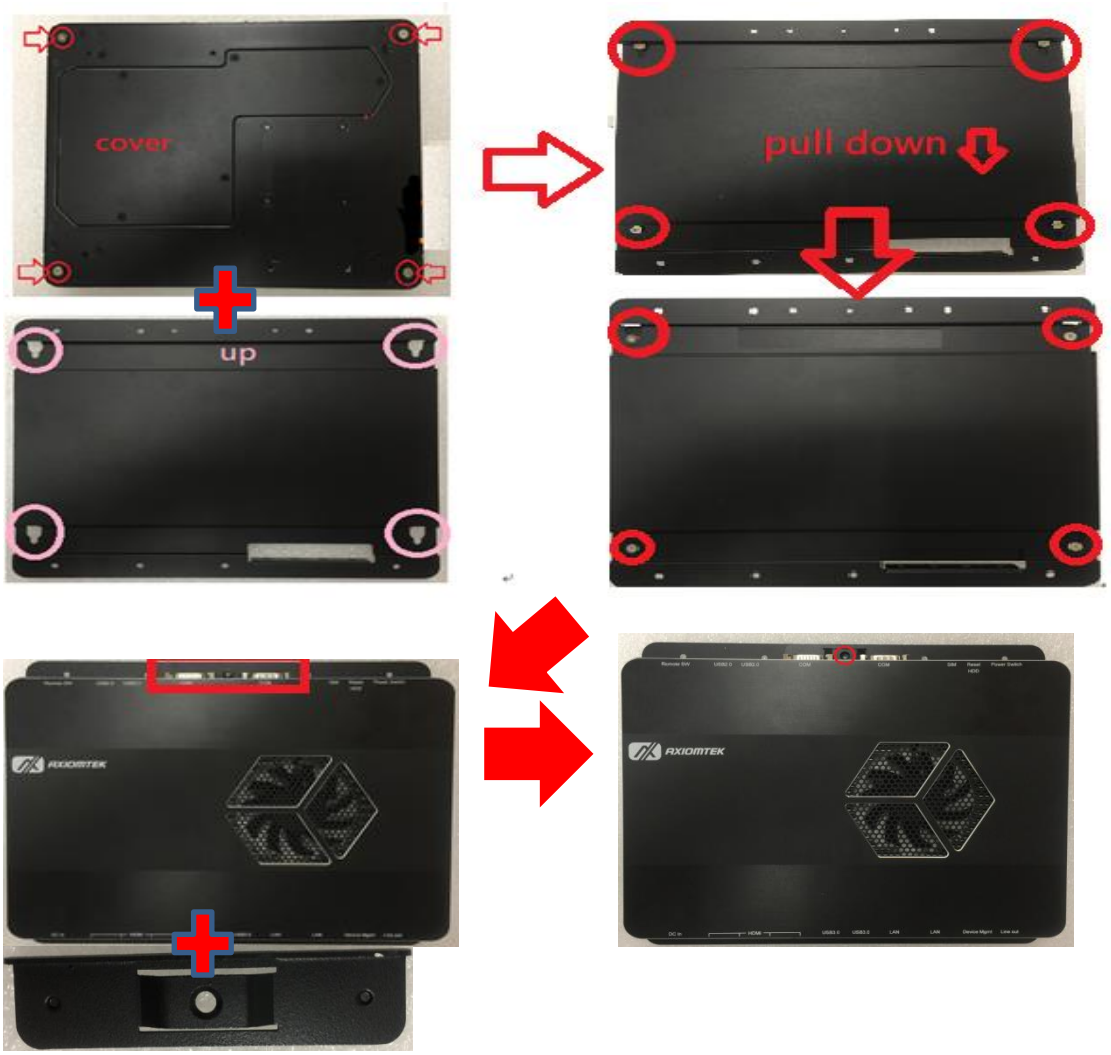
Step 2 **Turn the system upside down on a clean, flat, stable surface. Be sure the surface is clear of debris that can cause scratch or damage.**

Step 3 **Add VESA mount bracket and put on the system.**

Step 4 **Align the screw holes and install the 4 screws to fasten.**

Step 5 **Turn the system down side to up side. Add attach new bracket using 1 screw.**

Step 6 **Attach your VESA mount to the VESA holder, carefully follow the instructions that came with your mount.**



2.7 Install cable tie to fix HDMI cable in VESA mounting (Optional)

Step 1 Plug HDMI cable to DSP600.

Step 2 Install HDMI cable tie to the VESA mount kit.

Step 3 Fasten the tie on the HDMI cable.

2.8 Installing Wall mount kit (Optional)

Step 1 Prepare a pair of wall mount kits.

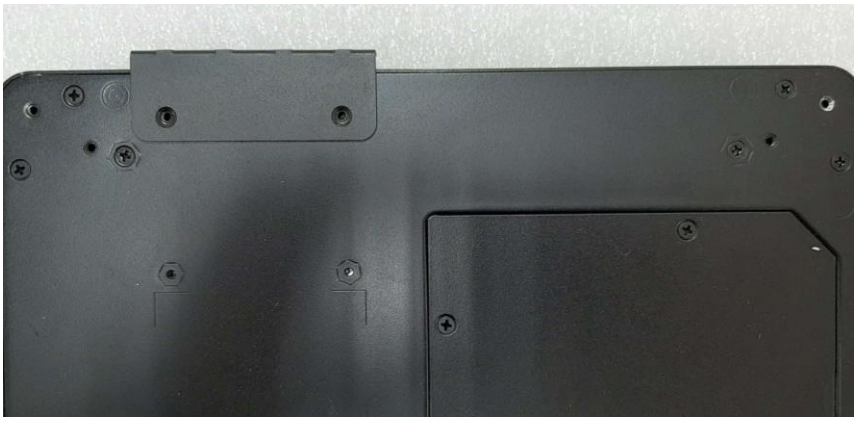
Step 2 Screw a pair of wall mount kits on the left and right sides of DSP600.

2.9 Install cable tie to fix HDMI cable in Wall mounting (Optional)

Step 1 Make sure your system is off.

Step 2 Install the tie and cable.

Step 2 Put the HDMI fixing bracket and screw it on the bottom of HDMI ports.



Step 3 Plug HDMI cable to DSP600 and fasten HDMI cable on the cable tie.

2.10 Installing SIM card

The instructions in this section are mainly to provide users with precautions for installing and uninstalling the SIM card, preventing the SIM card from being removed by mistake when it is already installed in the slot and in use. User may accidentally touch the SIM card that causes improper removal of SIM card. It is suggested to use a dummy SIM card to push the "real" SIM card during removal.

Step 1 Make sure your system is off.

Step 2 Put SIM card into the slot.

Step 3 Use dummy SIM card to push the "real" SIM card during installation.

Step 4 Complete the SIM card installation. Also use the dummy SIM card to uninstall the SIM card.

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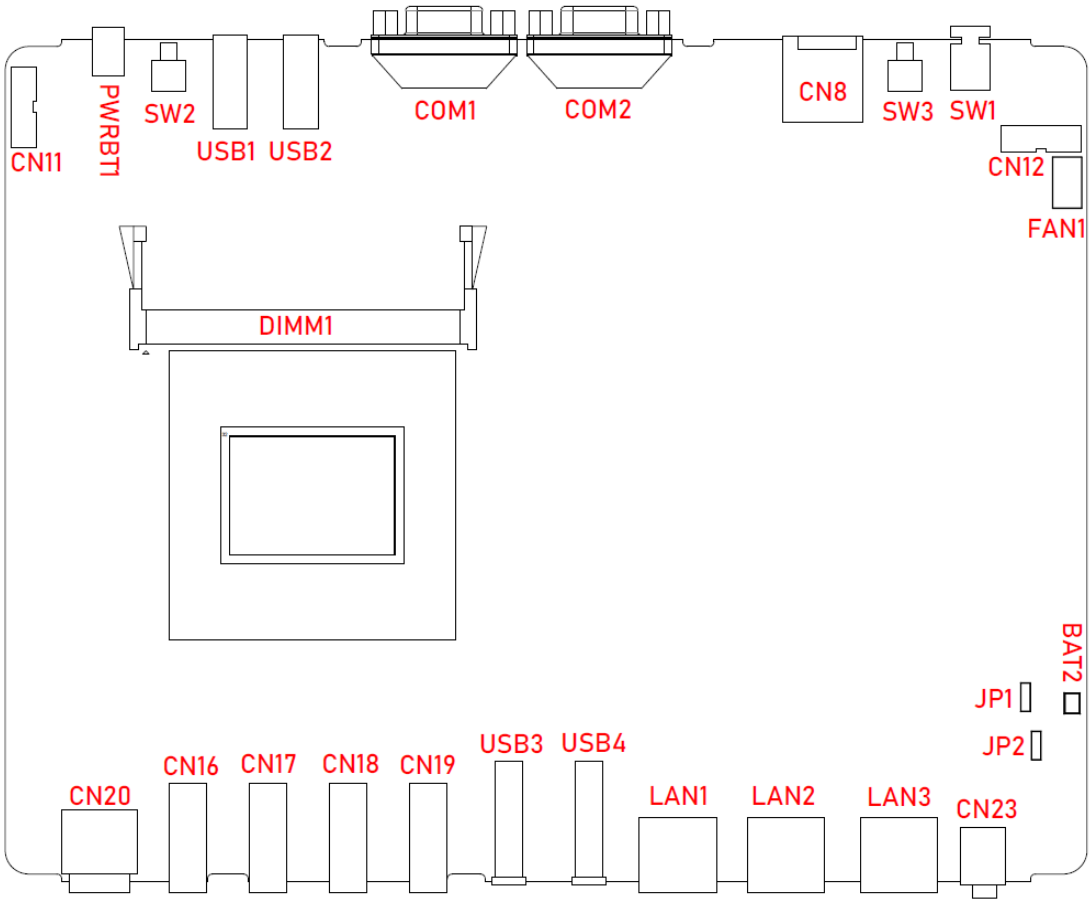
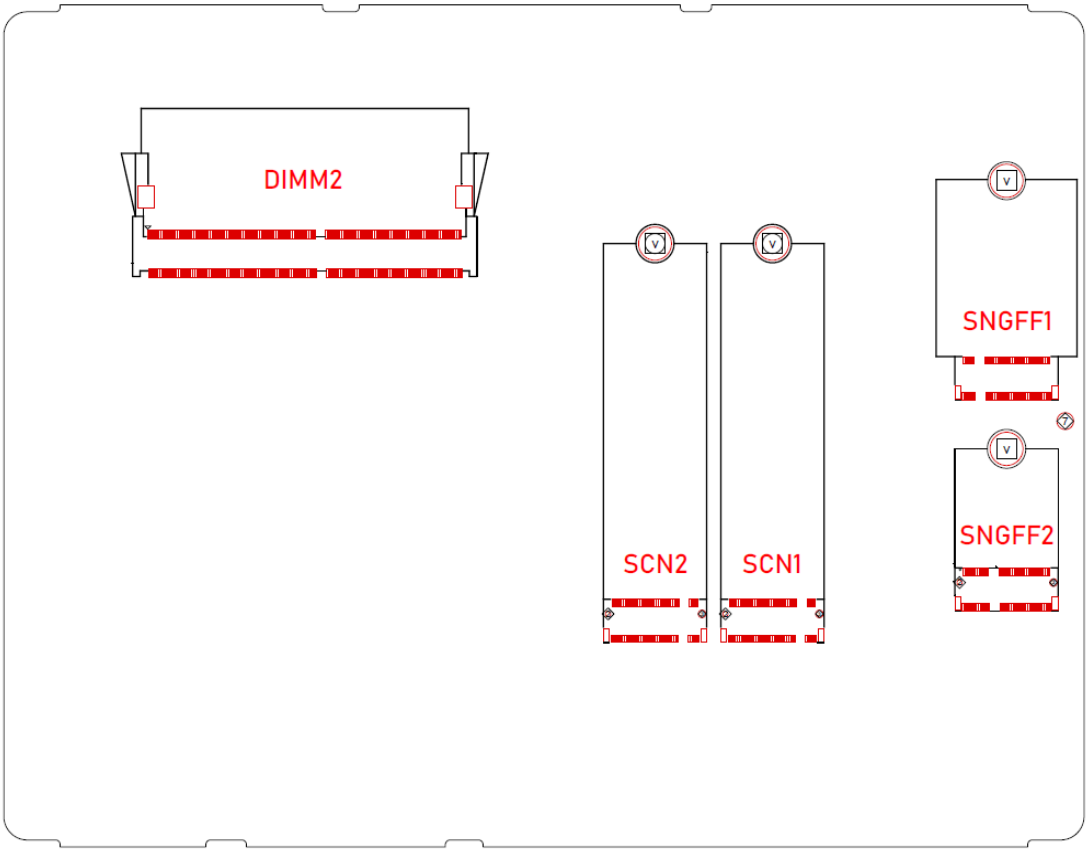
Section 3
Jumper and Connector Settings

Proper jumper settings configure the DSP300-318 to meet various application needs. Hereby all jumpers settings along with their default settings are listed for devices onboard.

3.1 Jumper and Connector Locations



SBC87211 Top View



SBC87211 Bottom View

【Note】: ***It is strongly recommended that any unmentioned jumper settings should not be modified without instructions by Axiomtek FAEs. Any modifications without instructions might cause system failure.***

3.2 Summary of Jumper Settings

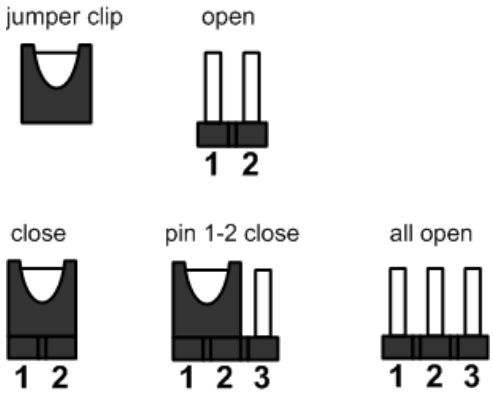
Proper jumper settings configure the DSP600-211 to meet various application purposes. A table of all jumpers and their default settings is listed below.

【Note】: ***Once the default jumper setting needs to be changed, please do it under power-off condition.***

Jumper	Description	Setting
JP1	Auto Power On Default: Enable	1-2 Close
JP2	Restore BIOS Optimal Defaults Default: Normal Operation	1-2 Close

【Note】: *How to setup jumpers.*

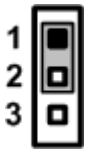
Jumper is a small component consisting of jumper clip and jumper pins. Install jumper clip on 2 jumper pins to close. And remove jumper clip from 2 jumper pins to open. The following illustration shows how to set up jumper.



3.2.1 Auto Power Selection (JP1)

If JP1 is enabled for power input, the system will be automatically power on without pressing power button. If JP1 is disabled for power input, it is necessary to manually press power button to power on the system.

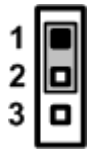
Function	Setting
Enable auto power on (Default)	1-2 close
Disable auto power on	2-3 close



3.2.2 Restore BIOS Optimal Defaults (JP2)

Put jumper clip to pin 2-3 for a few seconds then move it back to pin 1-2. Doing this procedure can restore BIOS optimal defaults.

Function	Setting
Normal operation (Default)	1-2 close
Restore BIOS optimal defaults	2-3 close



3.3 Connectors

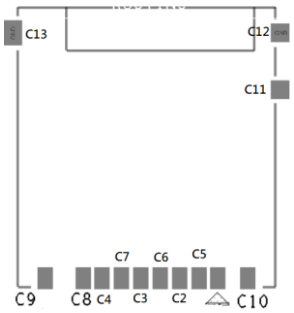
Signals go to other parts of the system through connectors. Loose or improper connection might cause problems, please make sure all connectors are properly and firmly connected. Here is a summary table of connectors on the hardware.

Connector	Description	Sections
CN8	SIM Card Slot	3.3.1
CN16~CN19	HDMI Connectors	3.3.2
CN20	DC Jack	3.3.3
CN23	Audio Jack	3.3.4
COM1~COM2	COM DB9 Connectors	3.3.5
BAT2	CMOS Battery Connector	3.3.6
FAN1	System Fan Connector	3.3.7
LAN1~LAN2	Ethernet Port 1 and 2	3.3.8
LAN3	RJ45 Connector for Remote Control Management	3.3.9
USB1~USB2	USB 2.0 Ports	3.3.10
USB3~USB4	USB 3.1 Ports	3.3.11
SCN1	M.2 NVMe Connector	3.3.12
SCN2	M.2 SATA Connector	3.3.13
SNGFF1	M.2 Key B LTE Connector	3.3.14
SNGFF2	M.2 Key E WLAN Connector	3.3.15
PWRBT1	Remote Power Button	3.3.16
SW1	Power Button	3.3.17

3.3.1 SIM Card Slot (CN8)

This system has CN8 socket for inserting SIM Card. In order to work properly, the SIM Card must be used together with 4G/LTE module which is inserted to SNGFF1. It is mainly used in 4G/LTE wireless network application.

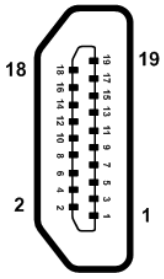
Pin	Signal
1	PWR
2	RST
3	CLK
4	NC
5	GND
6	VPP
7	DATA
8	NC
9	NC
10	NC
11	DETECT
12	GND
13	GND



3.3.2 HDMI Connectors (CN16~CN19)

The HDMI (High-Definition Multimedia Interface) is a compact digital interface which is capable of transmitting high-definition video and high-resolution audio over a single cable. The system comes with four HDMI ports.

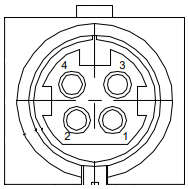
Pin	Signal	Pin	Signal
1	HDMI IN_DATA2+	2	GND
3	HDMI IN_DATA2-	4	HDMI IN_DATA1+
5	GND	6	HDMI IN_DATA1-
7	HDMI IN_DATA0+	8	GND
9	HDMI IN_DATA0-	10	HDMI IN Clock+
11	GND	12	HDMI IN Clock-
13	N.C.	14	N.C.
15	HDMI IN_SCL	16	HDMI IN_SDA
17	GND	18	+5V
19	HDMI_HTPLG		



3.3.3 DC Jack (CN20)

The system supports 12V DC-in connector for system power input. Firmly insert at least 84W adapter into this connector. Loose connection may cause system instability and make sure all components/devices are properly installed before connecting.

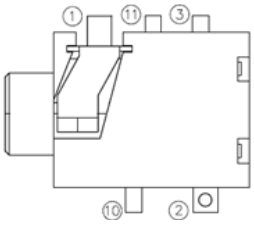
Pin	Signal
1	GND
2	GND
3	12V
4	12V



3.3.4 Audio Jack (CN23)

The system provides one HD audio jack line-out connector.

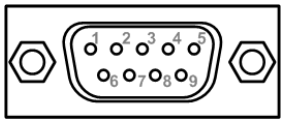
Pin	Signal
1	GND
2	LINEOUT_L
3	LINEOUT_R
10	NC
11	NC



3.3.5 COM DB9 Connectors (COM1~COM2)

The COM1 and COM2 are 9-pin D-Sub male connectors for RS-232 interface.

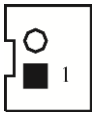
Pin	Signal
1	DCD1
2	RXD1
3	TXD1
4	DTR1
5	GND1
6	DSR1
7	RTS1
8	CTS1
9	RI1



3.3.6 CMOS Battery Connector (BAT2)

This connector is for CMOS battery interface.

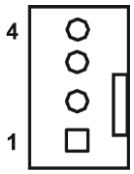
Pin	Signal
1	RTC_BATTERY
2	GND



3.3.7 System Fan Connector (FAN1)

Fan is needed for cooling down system temperature. The system has one fan connector. You can find fan speed within BIOS Setup Utility if fan is installed. For further information, see BIOS Setup Utility: Advanced\Hardware Monitor\PC Health Status (see section 4.4).

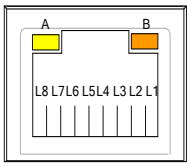
Pin	Signal
1	GND
2	FAN VOUT
3	+12V level
4	FAN PWMOUT



3.3.8 Ethernet Ports (LAN1~LAN2)

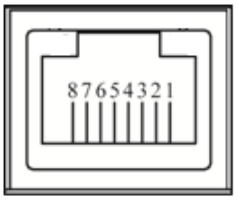
The system has two RJ-45 connectors: LAN1 and LAN2. Ethernet connection can be established by plugging one end of the Ethernet cable into this RJ-45 connector and the other end (phone jack) to a 1000/100/10-Base-T hub.

Pin	1000 Base-T	100/10 Base-T	Description
L1	BI_DA+	TX+	Bidirectional or Transmit Data+
L2	BI_DA-	TX-	Bidirectional or Transmit Data-
L3	BI_DB+	RX+	Bidirectional or Receive Data+
L4	BI_DC+	N.C.	Bidirectional or Not Connected
L5	BI_DC-	N.C.	Bidirectional or Not Connected
L6	BI_DB-	RX-	Bidirectional or Receive Data-
L7	BI_DD+	N.C.	Bidirectional or Not Connected
L8	BI_DD-	N.C.	Bidirectional or Not Connected
A	Active Link LED (Yellow) Off: No link Blinking: Data activity detected		
B	Speed LED 1000: Orange 100: Green 10: OFF		



3.3.9 RJ45 Connector for Remote Control Management (LAN3)

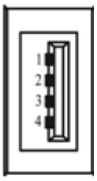
Pin	Signal
1	LTX+
2	LTX-
3	LRX+
4	GND
5	GND
6	LRX-
7	GND
8	GND



3.3.10 USB 2.0 Ports (USB1~USB2)

The USB1 and USB2 are Universal Serial Bus (compliant with USB 2.0 (480Mbps)) connectors on the rear I/O. They are commonly used for installing USB peripherals such as keyboard, mouse, scanner, etc.

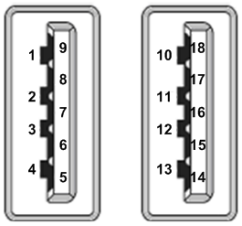
Pin	Signal
1	USB_VCC (+5V level)
2	USB _D-
3	USB _D+
4	GND



3.3.11 USB 3.1 Ports (USB3~USB4)

The USB3 and USB4 are Universal Serial Bus (compliant with USB 3.1 (10Gb/s)) connectors on the front I/O. They are commonly used for installing USB peripherals such as keyboard, mouse, scanner, etc.

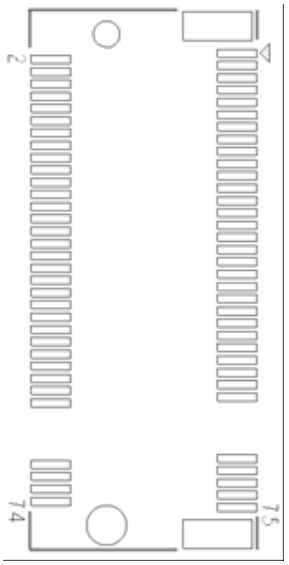
Pin	Signal	Pin	Signal
1	USB_VCC (+5V level standby power)	10	USB_VCC (+5V level standby power)
2	USB #1_D-	11	USB #2_D-
3	USB #1_D+	12	USB #2_D+
4	GND	13	GND
5	USB1_SSRXN	14	USB2_SSRXN
6	USB1_SSRXP	15	USB2_SSRXP
7	GND	16	GND
8	USB1_SSTXN	17	USB2_SSTXN
9	USB1_SSTXP	18	USB2_SSTXP



3.3.12 M.2 NVMe Connector (SCN1)

This system has one M.2 Key M socket on the bottom side for inserting M.2 2280 NVMe SSD module.

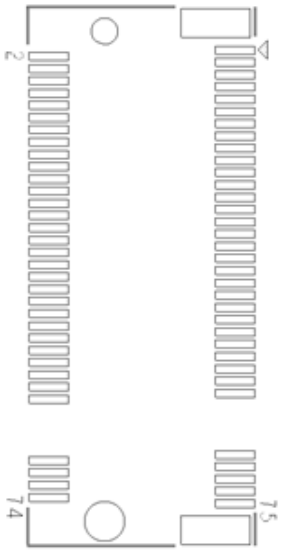
Pin	Signal	Pin	Signal
1	GND	2	+3.3V
3	GND	4	+3.3V
5	NC	6	NC
7	NC	8	NC
9	GND	10	LED1#
11	NC	12	+3.3V
13	NC	14	+3.3V
15	GND	16	+3.3V
17	NC	18	+3.3V
19	NC	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	PCIE_RXN1	30	NC
31	PCIE_RXP1	32	NC
33	GND	34	NC
35	PCIE_TXN1	36	NC
37	PCIE_TXP1	38	DEVSLP
39	GND	40	NC
41	PCIE_RXN0	42	NC
43	PCIE_RXP0	44	NC
45	GND	46	NC
47	PCIE_TXN0	48	NC
49	PCIE_TXP0	50	PERST#
51	GND	52	CLKREQ#
53	PCIE_CLKN	54	PEWARK#
55	PCIE_CLKP	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	NC	68	NC
69	PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		



3.3.13 M.2 SATA Connector (SCN2)

This system has one M.2 Key M socket on the bottom side for inserting M.2 2280 SATA SSD module.

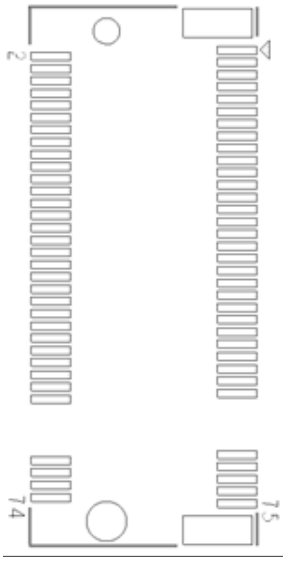
Pin	Signal	Pin	Signal
1	GND	2	+3.3V
3	GND	4	+3.3V
5	NC	6	NC
7	NC	8	NC
9	GND	10	LED1#
11	NC	12	+3.3V
13	NC	14	+3.3V
15	GND	16	+3.3V
17	NC	18	+3.3V
19	NC	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	NC	30	NC
31	NC	32	NC
33	GND	34	NC
35	NC	36	NC
37	NC	38	DEVSLP
39	GND	40	NC
41	SATARXP	42	NC
43	SATARXN	44	NC
45	GND	46	NC
47	SATATXN	48	NC
49	SATATXP	50	PERST#
51	GND	52	CLKREQ#
53	NC	54	PEWARK#
55	NC	56	NC
57	GND	58	NC
59	NC	60	NC
61	NC	62	NC
63	NC	64	NC
65	NC	66	NC
67	NC	68	NC
69	GND	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		



3.3.14 M.2 Key B LTE Connector (SNGFF1)

This system has one M.2 Key B socket on the bottom side for inserting M.2 3042 module.

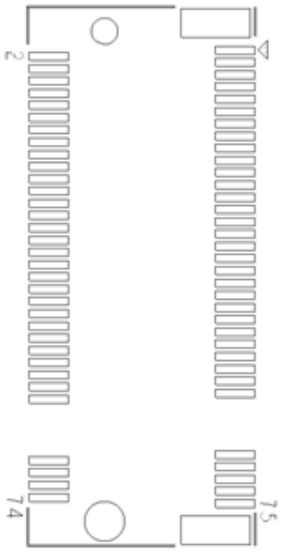
Pin	Signal	Pin	Signal
1	CONFIG3	2	+3.3V
3	GND	4	+3.3V
5	GND	6	FULL_CARD_POWER_OFF#
7	USB_D+	8	W_DISABLE1#
9	USB_D-	10	LED1#
11	GND	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	NC
19	NC	20	GPIO_5
21	CONFIG0	22	GPIO_6
23	GPIO_11	24	GPIO_7
25	DPR (O)	26	GPIO_10
27	GND	28	GPIO_8
29	USB3.0-Rx-	30	UIM-RESET (I)
31	USB3.0-Rx+	32	UIM-CLK (I)
33	GND	34	UIM-DATA (I)
35	USB3.0-Tx-	36	UIM-PWR (I)
37	USB3.0-Tx+	38	DEVSLP
39	GND	40	GPIO_0
41	PCIE_RXN0	42	GPIO_1
43	PCIE_RXP0	44	GPIO_2
45	GND	46	GPIO_3
47	PCIE_TXN0	48	GPIO_4
49	PCIE_TXP0	50	PERST#
51	GND	52	CLKREQ#
53	PCIE_CLKN	54	PEWARK#
55	PCIE_CLKP	56	NC
57	GND	58	NC
59	ANTCTL0 (I)	60	COEX3(I/O)
61	ANTCTL1 (I)	62	COEX2(I/O)
63	ANTCTL2 (I)	64	COEX1(I/O)
65	ANTCTL3 (I)	66	SIM DETECT (O)
67	RESET#(O)	68	SUSCLK
69	CONFIG1	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	CONFIG2		



3.3.15 M.2 Key E WLAN Connector (SNGFF2)

This system has one M.2 Key E 2230 socket on the bottom side supporting PCI-Express and USB 2.0.

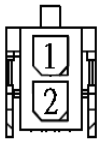
Pin	Signal	Pin	Signal
1	GND	2	+3.3V
3	USB_D+	4	+3.3V
5	USB_D-	6	LED1#
7	GND	8	I2S SCK (I/O)
9	SDIO CLK	10	I2S WS (I/O)
11	SDIO CMD	12	I2S SD OUT (O)
13	SDIO DATA0	14	I2S SD IN (I)
15	SDIO DATA1	16	LED2#
17	SDIO DATA2	18	GND
19	SDIO DATA3	20	UART WAKE# (O)
21	SDIO WAKE#	22	UART TXD (O)
23	SDIO RESET#	24	NC
25	NC	26	NC
27	NC	28	NC
29	NC	30	NC
31	NC	32	UART RXD (I)
33	GND	34	UART RTS (O)
35	PCIE_TXN0	36	UART CTS (I)
37	PCIE_TXP0	38	NC
39	GND	40	NC
41	PCIE_RXN0	42	NC
43	PCIE_RXP0	44	COEX3 (I/O)
45	GND	46	COEX2 (I/O)
47	PCIE_CLKN0	48	COEX1 (I/O)
49	PCIE_CLKP0	50	SUSCLK
51	GND	52	PERST#
53	CLKREQ#	54	W_DISABLE2#
55	PEWARK#	56	W_DISABLE1#
57	GND	58	I2C_DATA (I/O)
59	PCIE_TXN1	60	I2C_CLK (I)
61	PCIE_TXP1	62	ALERT# (O)
63	GND	64	NC
65	PCIE_RXN1	66	UIM_SWP/PERST1 #
67	PCIE_RXP1	68	UIM_POWER_SNK
69	GND	70	UIM_POWER_SRC
71	PCIE_TXN1	72	+3.3V
73	PCIE_TXP1	74	+3.3V
75	GND		



3.3.16 Remote Power Button (PWRBT1)

This is a 2-pin connector output for remote power on/off button. The matching connector housing is Molex 43025-0200 micro-fit 3.0 receptacle housing.

Function	Signal
Short (1-2)	Turn on/off system
Open	Keep system status



3.3.17 Power Button (SW1)

This ATX power button is on the rear I/O side. It allows users to control DSP600-211 power on/off.

Function	Signal
On	Turn on/off system
Off	Keep system status

Section 4
BIOS Setup Utility

This section provides users with detailed descriptions in terms of how to set up basic system configurations through the BIOS setup utility.

4.1 Starting

To enter the setup screens, follow the steps below:

1. Turn on the computer and press the <Del> key immediately.
2. After pressing the <Del> key, the main BIOS setup menu displays. Users can access to other setup screens, such as the Advanced and Chipset menus, from the main BIOS setup menu.

It is strongly recommended that users should avoid changing the chipset's defaults. Both BIOS and system manufacturer have carefully set up these defaults that provide the best performance and reliability.

4.2 Navigation Keys

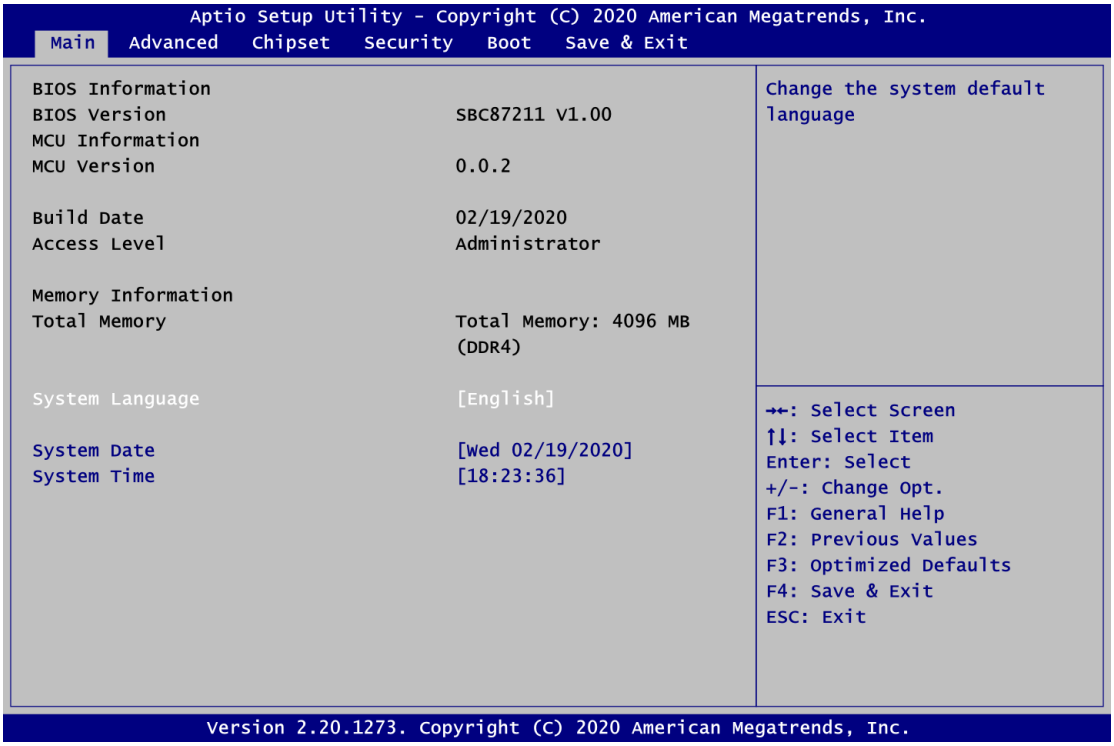
The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F2>, <Enter>, <ESC>, <Arrow> keys, and so on.

【Note】: ***Some of the navigation keys differ from one screen to another.***

Hot Keys	Description
→← Left/Right	The Left and Right <Arrow> keys allow users to select a setup screen.
↑↓ Up/Down	The Up and Down <Arrow> keys allow users to select a setup screen or sub-screen.
+– Plus/Minus	The Plus and Minus <Arrow> keys allow users to change the field value of a particular setup item.
Tab	The <Tab> key allows users to select setup fields.
F1	The <F1> key allows users to display the General Help screen.
F2	The <F2> key allows users to Load Previous Values.
F3	The <F3> key allows users to Load Optimized Defaults.
F4	The <F4> key allows users to save any changes they made and exit the Setup. Press the <F4> key to save your changes.
Esc	The <Esc> key allows users to discard any changes they made and exit the Setup. Press the <Esc> key to exit the setup without saving any changes.
Enter	The <Enter> key allows users to display or change the setup option listed for a particular setup item. The <Enter> key can also allow users to display the setup sub- screens.

4.3 Main Menu

The Main Menu screen is the first screen users see when entering the setup utility. Users can always return to the Main setup screen by selecting the Main tab. System Time/Date can be set up as described below. The Main BIOS setup screen is also shown below.



BIOS Information
Display the auto-detected BIOS information.

System Language
Use this option to choose the system default language.

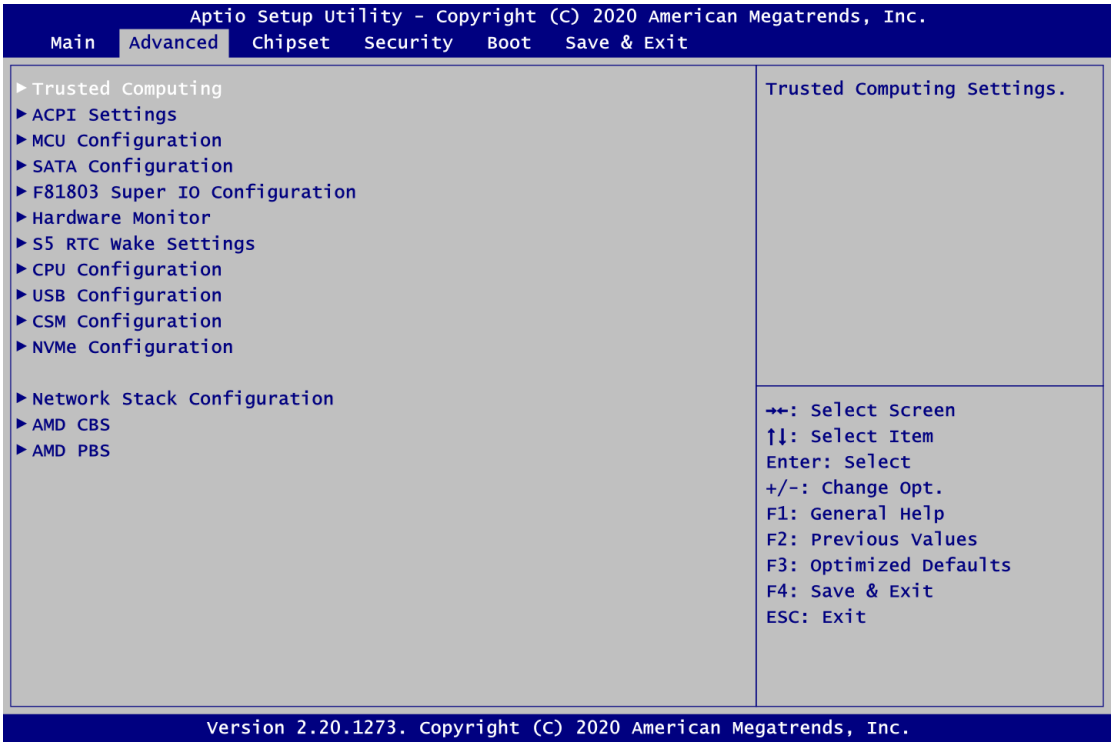
System Date/Time
Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

4.4 Advanced Menu

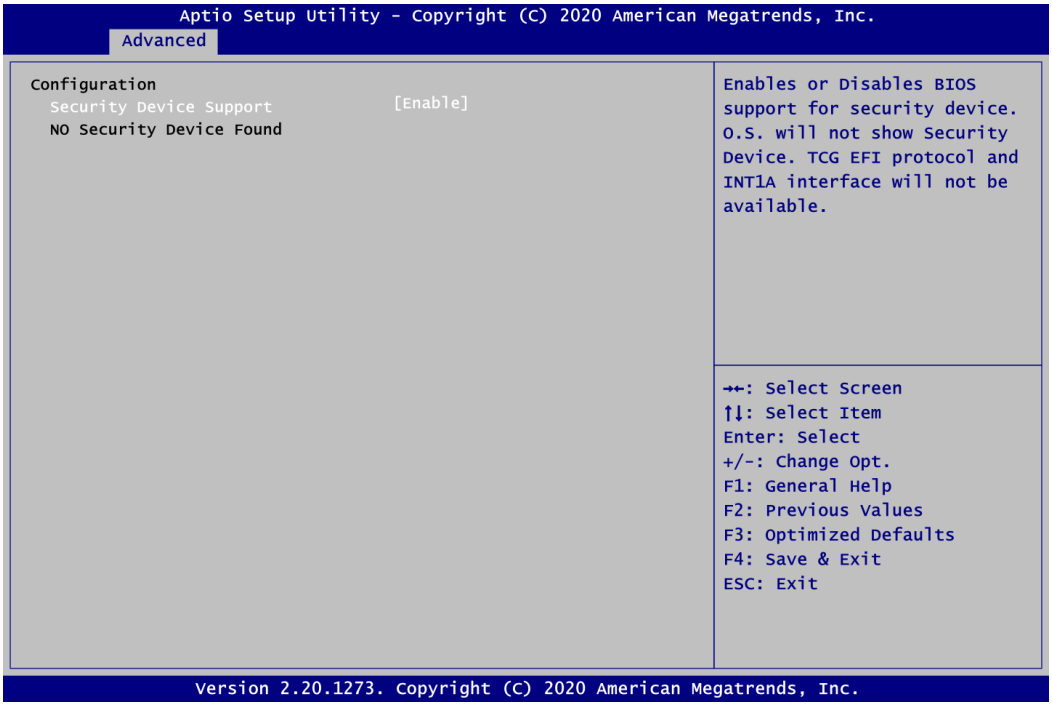
The Advanced menu also allows users to set configuration of the CPU and other system devices. Users can select any items in the left frame of the screen to go to the sub menus:

- ▶ Trusted Computing
- ▶ ACPI Settings
- ▶ MCU Configuration
- ▶ SATA Configuration
- ▶ F81803 Super IO Configuration
- ▶ Hardware Monitor
- ▶ S5 RTC Wake Settings
- ▶ CPU Configuration
- ▶ USB Configuration
- ▶ CSM Configuration
- ▶ NVMe Configuration
- ▶ Network Stack Configuration
- ▶ AMD CBS
- ▶ AMD PBS

For items marked with "▶", please press <Enter> for more options.

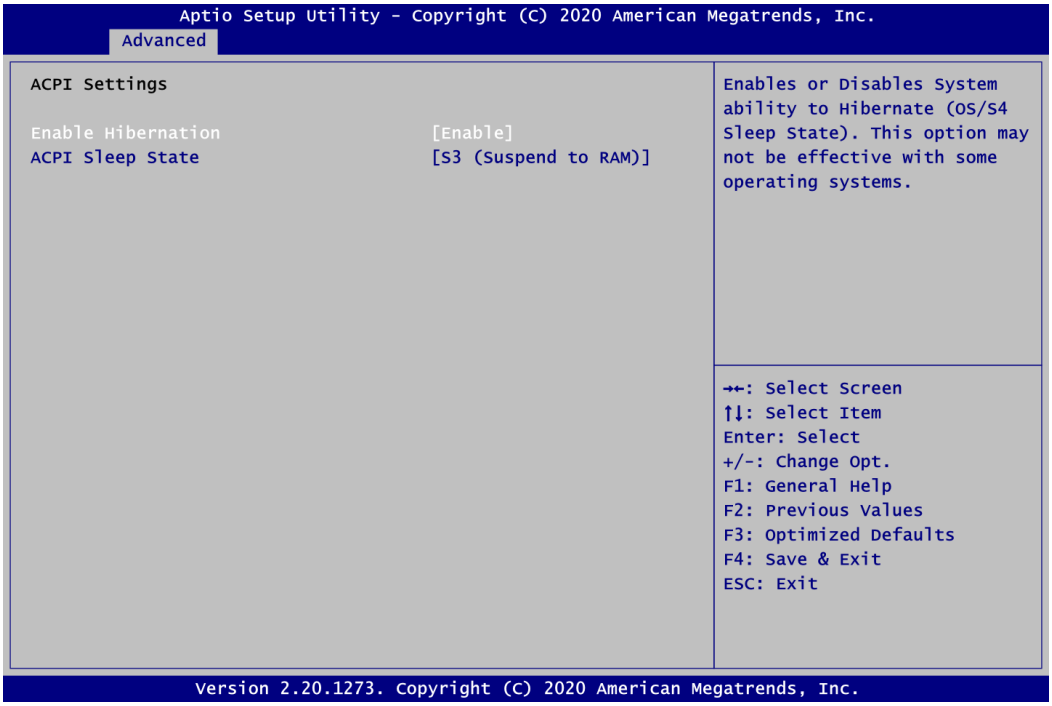


- **Trusted Computing**
  You can use this screen for TPM (Trusted Platform Module) configuration. It also shows current TPM status information.



Security Device Support
Enable or disable BIOS support for security device.

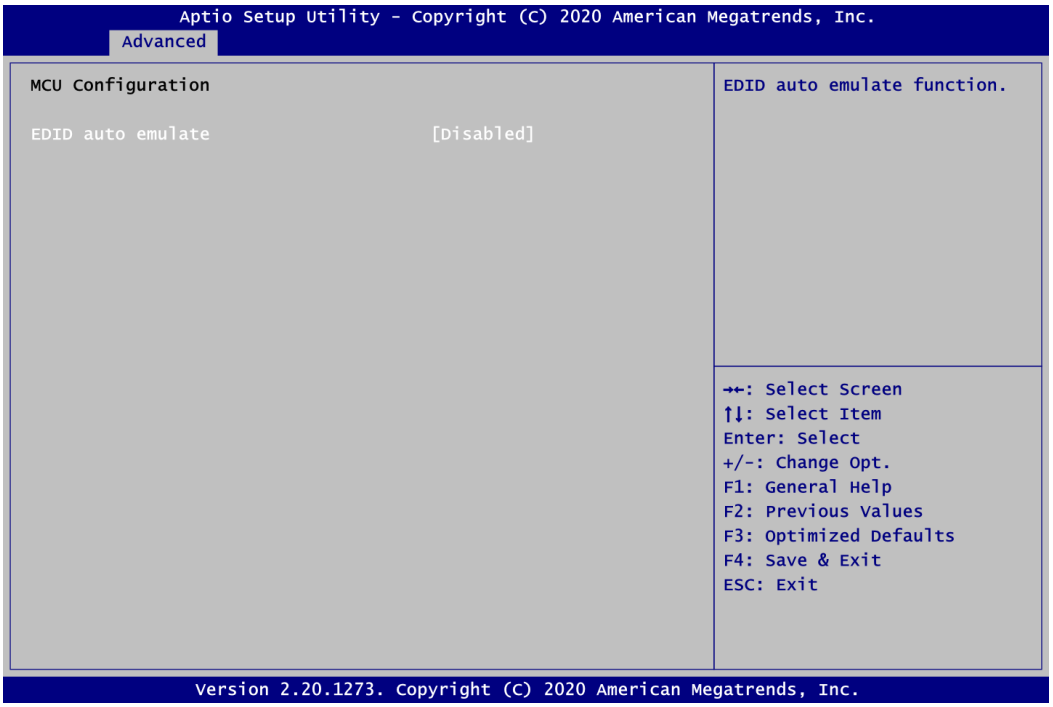
- **ACPI Settings**
  Use this screen to select options for the ACPI configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



Enable Hibernation
Enable or disable system ability to hibernate (OS/S4 sleep state).

ACPI Sleep State
When the sleep button is pressed, the system will be in the ACPI sleep state. The default is S3 (Suspend to RAM).

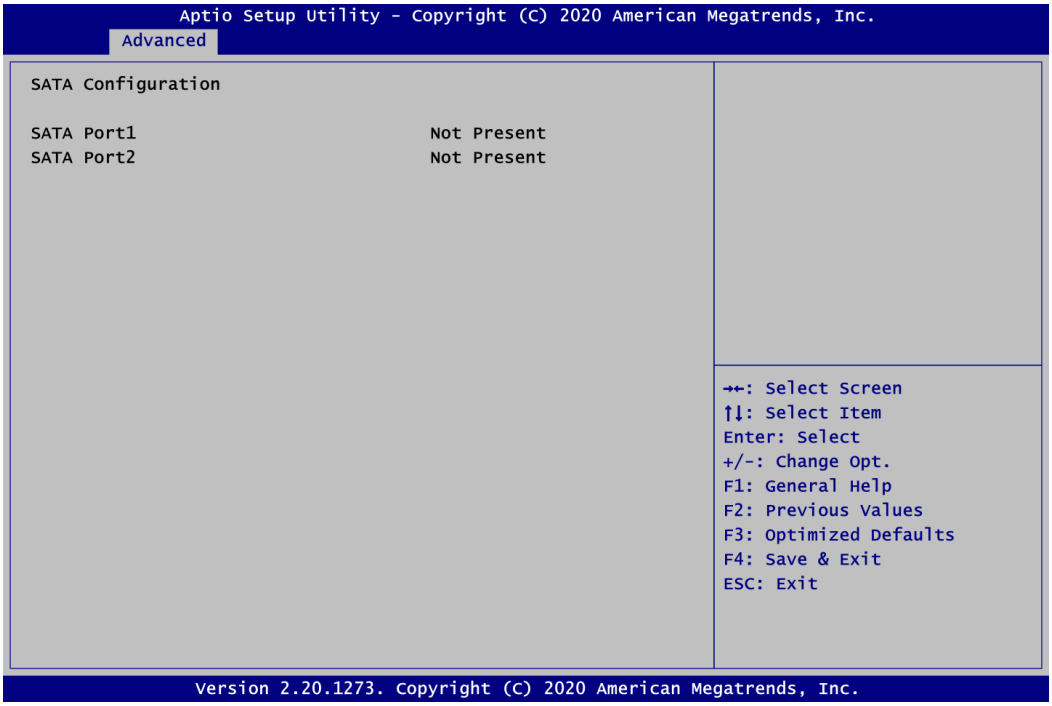
- **MCU Configuration**
  Use this screen to select options for the MCU configuration.



EDID auto emulate
EDID auto emulate function

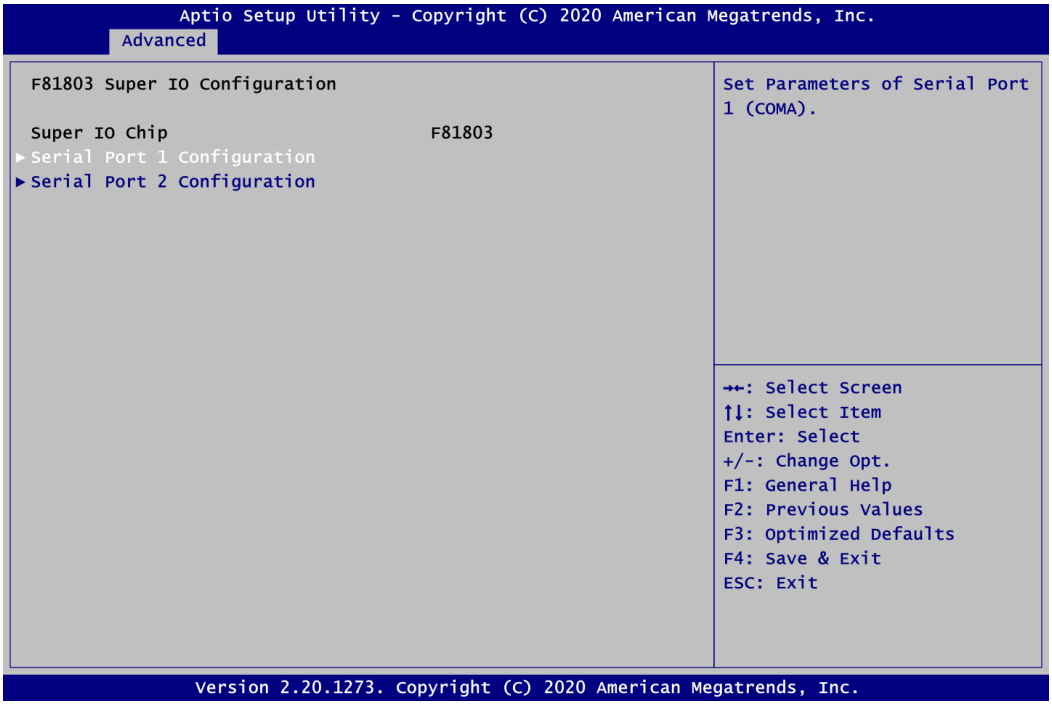
【Note】: ***The integrated four HDMI interfaces have built-in EDID emulation function (Default BIOS setting is "Disable"). To use the EDID function, choose Enable EDID emulation in BIOS. Then, connect the new display port. Also turn off the power first, then unplug the DC jack. After you turn on the power, DSP600-211 will detect new EDID data.***

- **SATA Configuration**
  In this Configuration menu, you can see the currently installed hardware in the SATA port. During system boot up, the BIOS automatically detects the presence of SATA device.



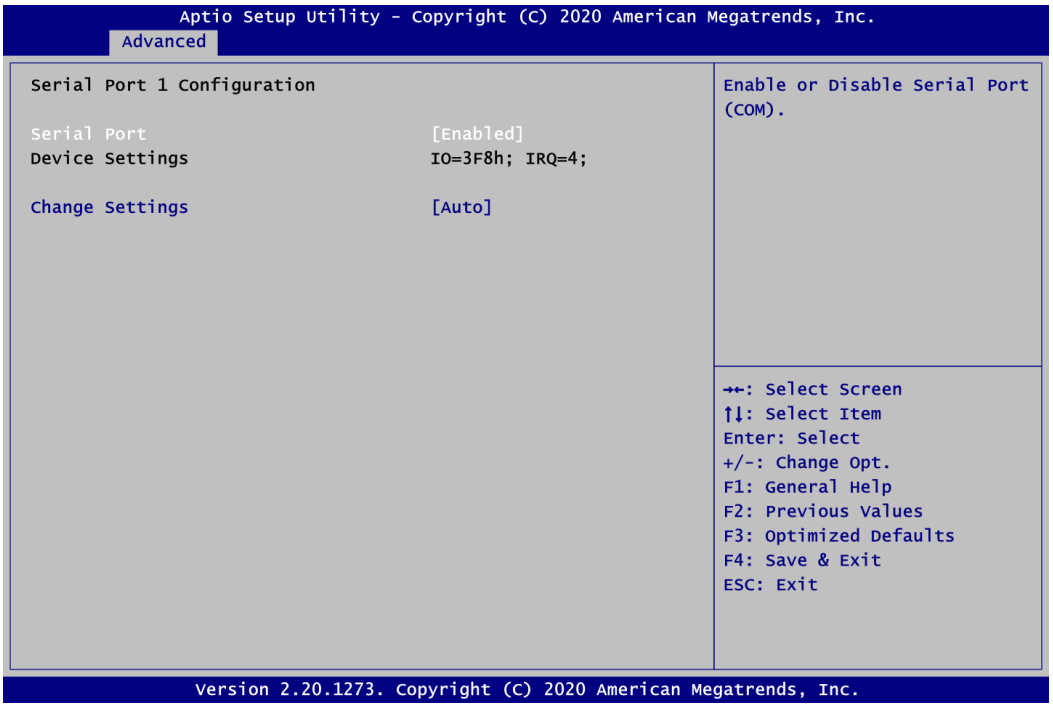
SATA Port1/2
It shows the device installed in connector SATA1/2.

- **F81803 Super IO Configuration**
  Use this screen to select options for the F81803 Super IO configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "►", please press <Enter> for more options.



Serial Port 1~2 Configuration
Use these items to set parameters related to serial port 1~2.

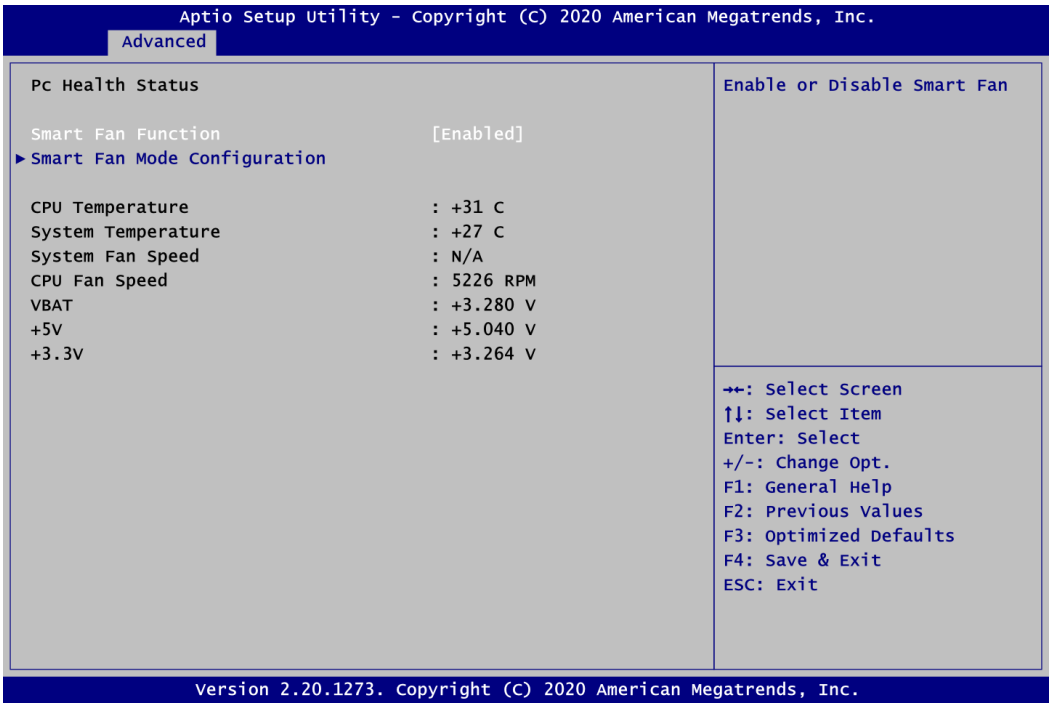
- **Serial Port 1 Configuration**



Serial Port
Enable or disable serial port 1. The optimal setting for base I/O address is 3F8h and for interrupt request address is IRQ4.

Change Settings
Select an optimal setting for Super IO device.

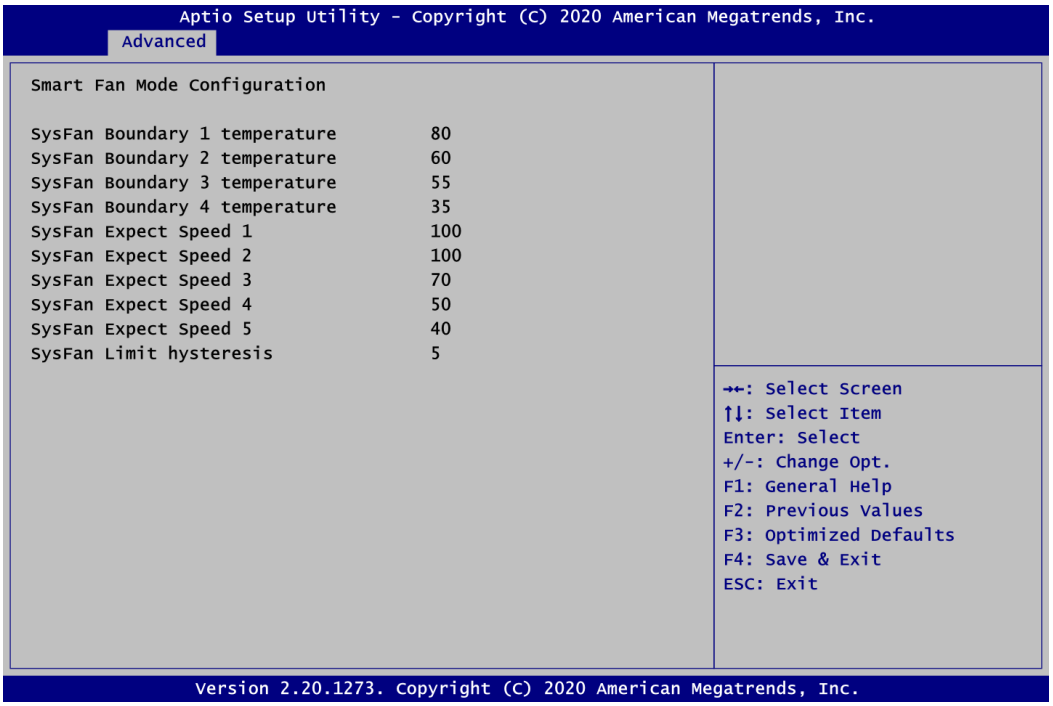
- **Hardware Monitor**
  This screen monitors hardware health status.



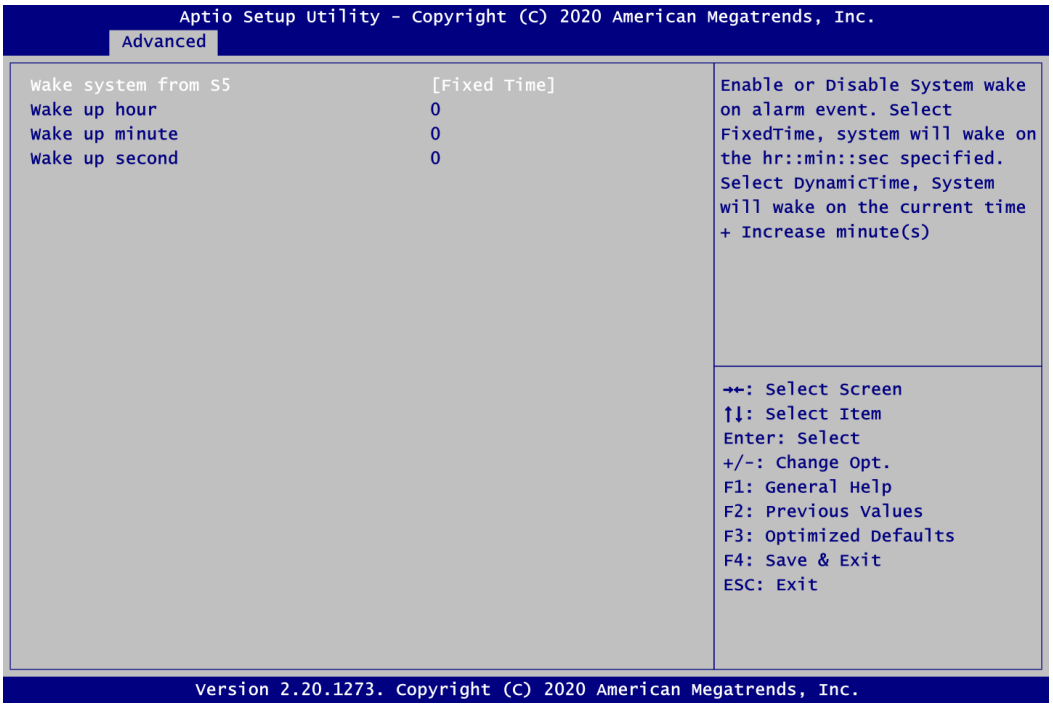
This screen displays the temperature of system and CPU, fan speed in RPM and system voltages (VBAT, +5V and +3.3V).

Smart Fan Function
Enable or disable Smart Fan function.

Smart Fan Mode Configuration
Use this item to show Smart Fan mode configuration.

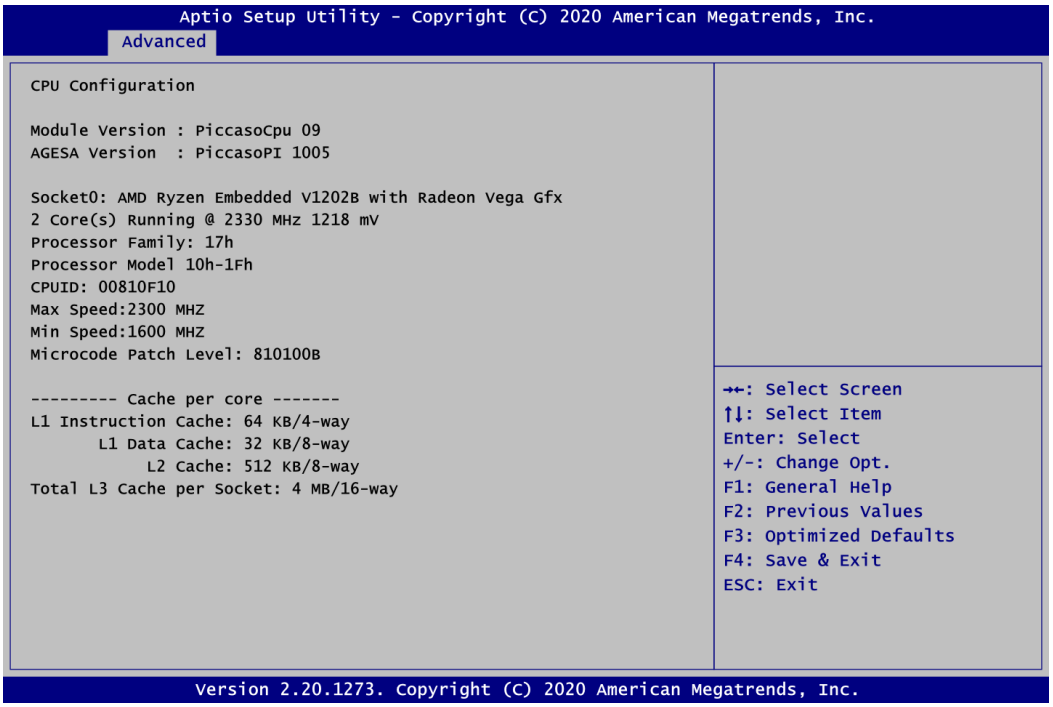


- **RTC Wake Settings**
  This screen allows user to enable system to wake from S5 using RTC alarm.

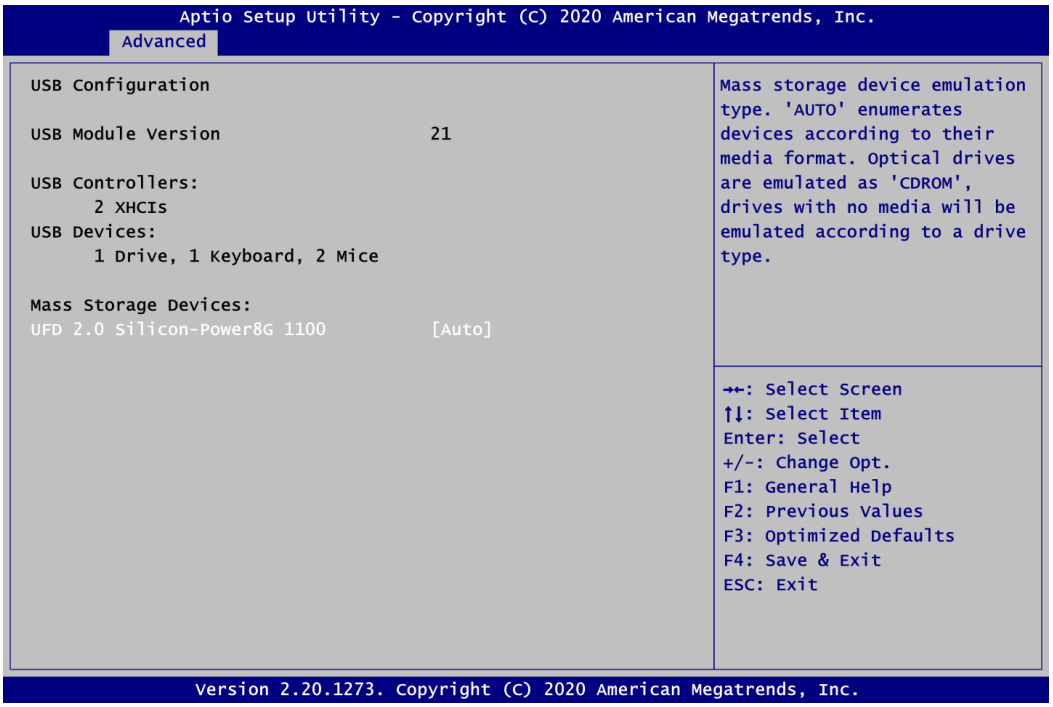


Wake system from S5
Enable or disable system wake on alarm event. It allows users to wake up the system in a certain time. Select Fixed Time to set the system to wake on the specified time. Switch among the items: Hour, Minute and Second, and type the value in the selected item as you wish. For example, if you want the system to boot up automatically at 14:25:26, then you should enter 14, 25, and 26 from top to bottom. Select Dynamic Time, system will wake on the current time + increase minute(s).

- **CPU Configuration**
  This screen shows the CPU version and its detailed information.



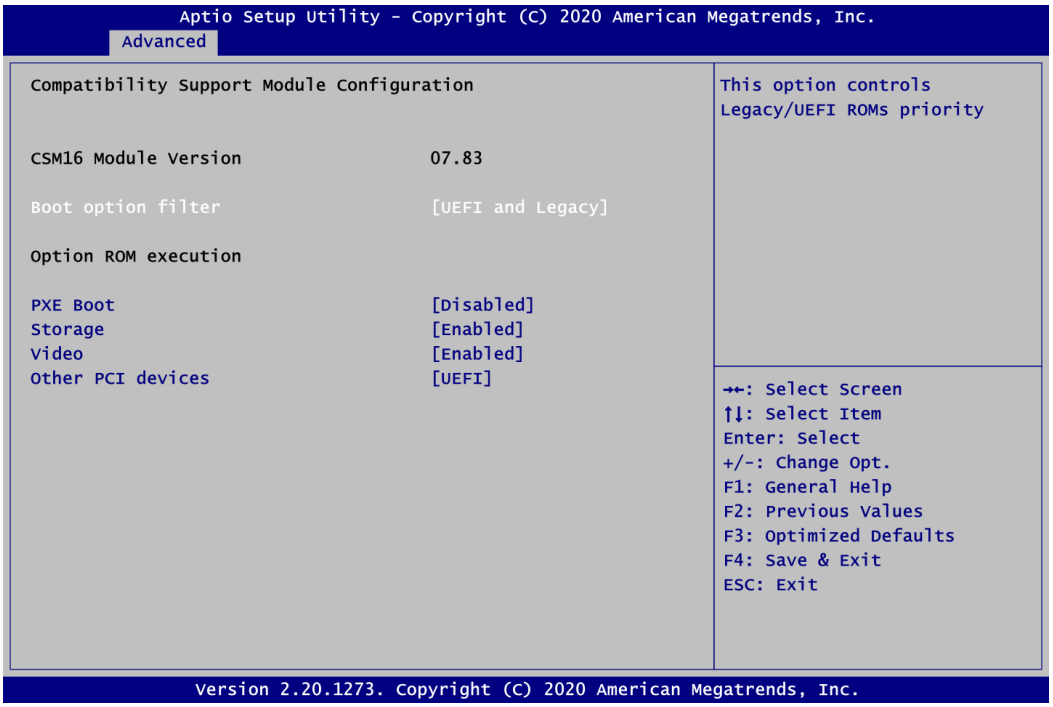
- **USB Configuration**
  This screen specifies USB settings.



USB Devices
Display all detected USB devices.

Mass Storage Devices
Mass storage device emulation type. Auto option enumerates devices according to their media format. Optical drives are emulated as CDROM, drives with no media will be emulated according to a drive type.

- **CSM (Compatibility Support Module) Configuration**



Boot optional filter
Controls the priority of Legacy and UEFI ROMs.

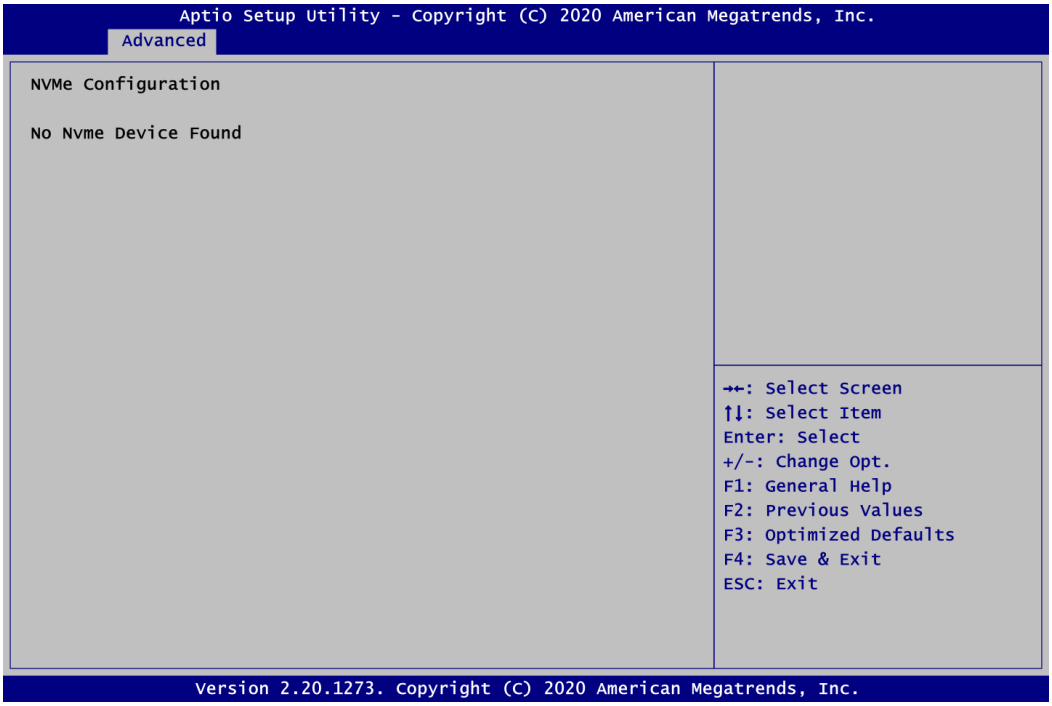
PXE Boot
Enable or disable PXE boot.

Storage
Enable or disable the execution storage option ROM.

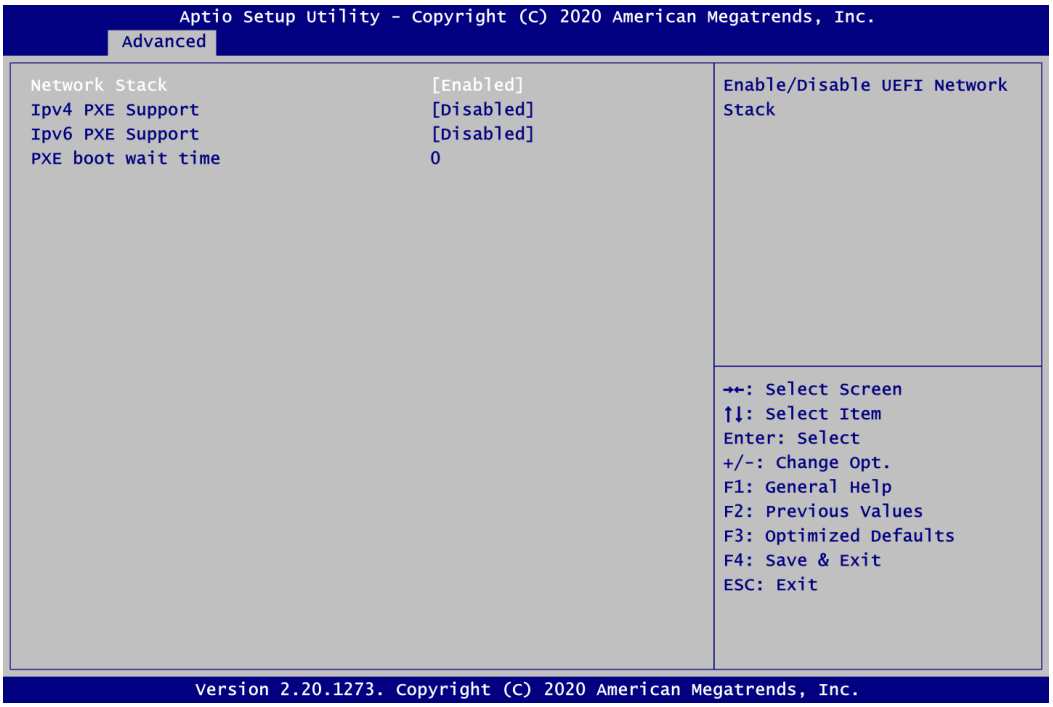
Video
Enable or disable the execution video option ROM.

Other PCI devices
Select the execution of UEFI or Legacy option ROM of other PCIe network, storage or video devices.

- **NVMe Configuration**
  This screen displays NVMe (Non-Volatile Memory Express) controller and drive information.



- **Network Stack Configuration**



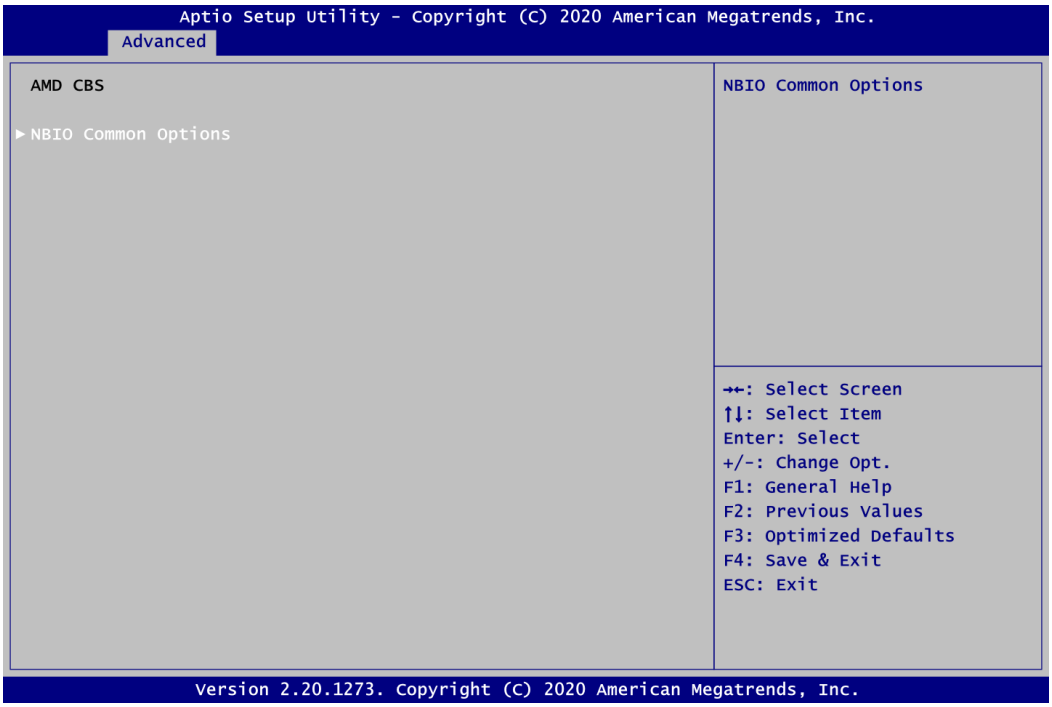
Network Stack
Enable or disable UEFI network stack.

Ipv4 PXE Support
Enable or disable Ipv4 PXE support.

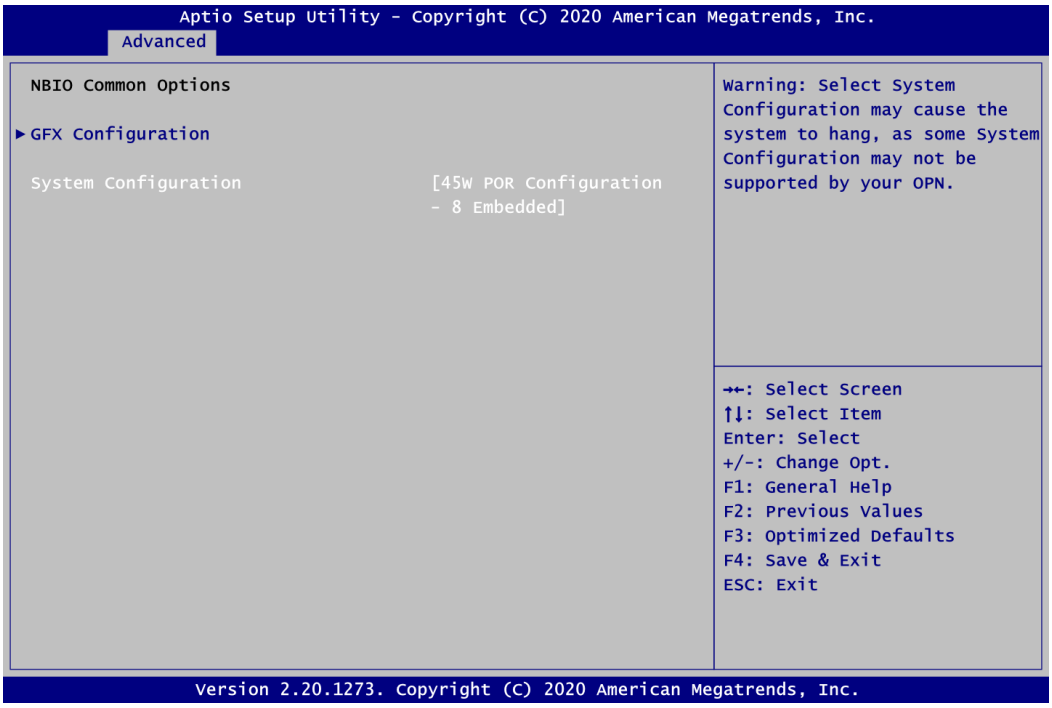
Ipv6 PXE Support
Enable or disable Ipv6 PXE support.

PXE boot wait time
PXE boot wait time.

- **AMD CBS**

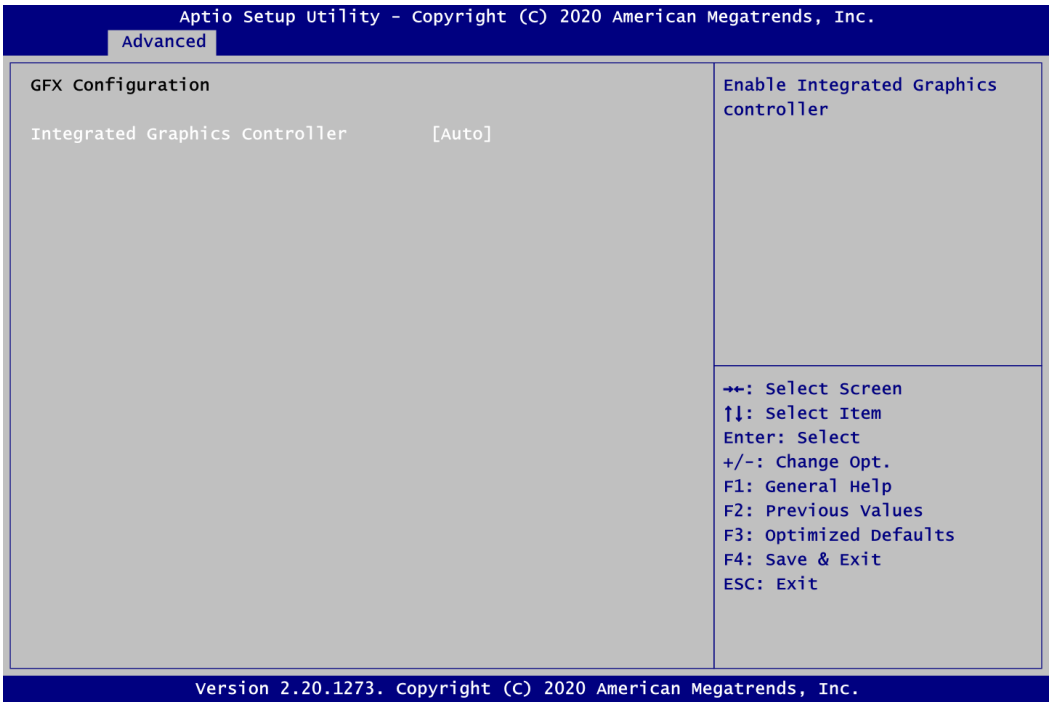


NBIO Common Options
Use this item to set parameters related to NBIO common options.



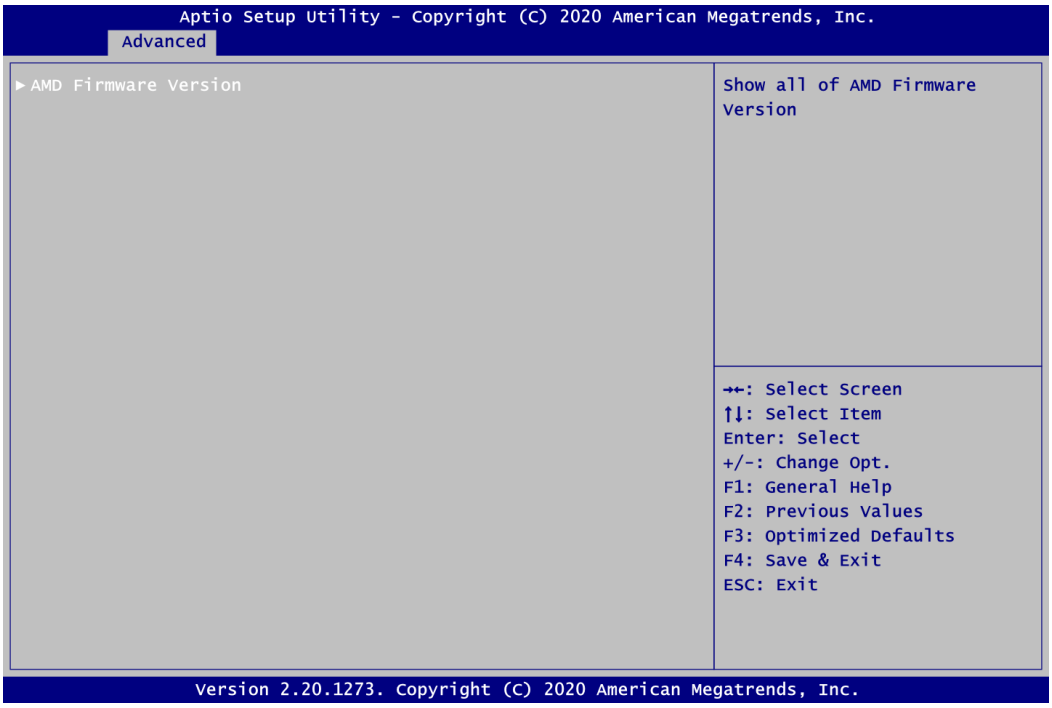
GFX Configuration
This item allows user to set GFX Configuration.

System Configuration
CPU power performance configuration.

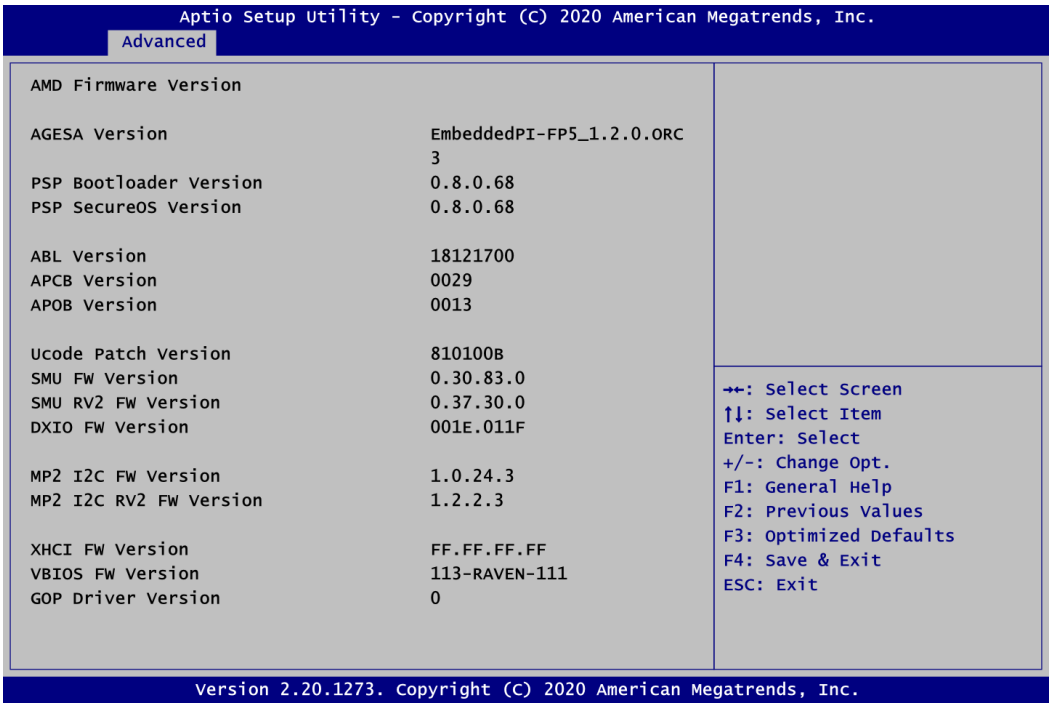


Integrated Graphics Controller
Use this item to configure Integrated Graphics Controller.

- **AMD PBS**



AMD Firmware Version
It shows all of AMD firmware version.

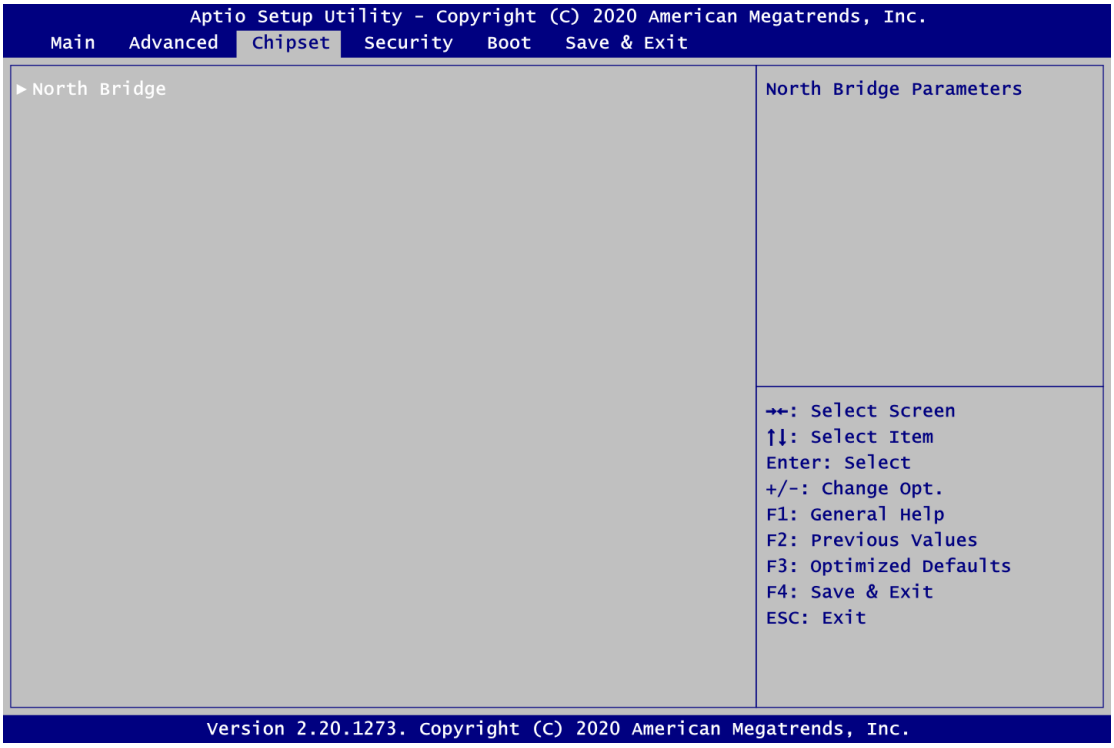


4.5 Chipset Menu

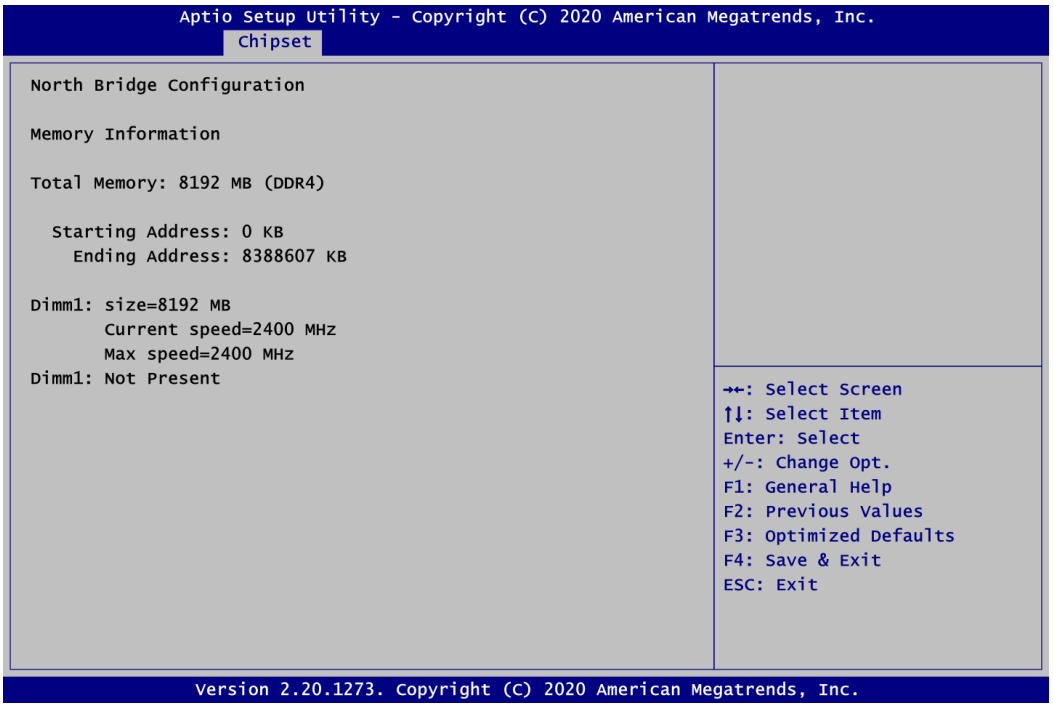
The Chipset menu allows users to change the advanced chipset settings. Users can select any of the items in the left frame of the screen to go to the sub menus:

► North Bridge

For items marked with "►", please press <Enter> for more options.

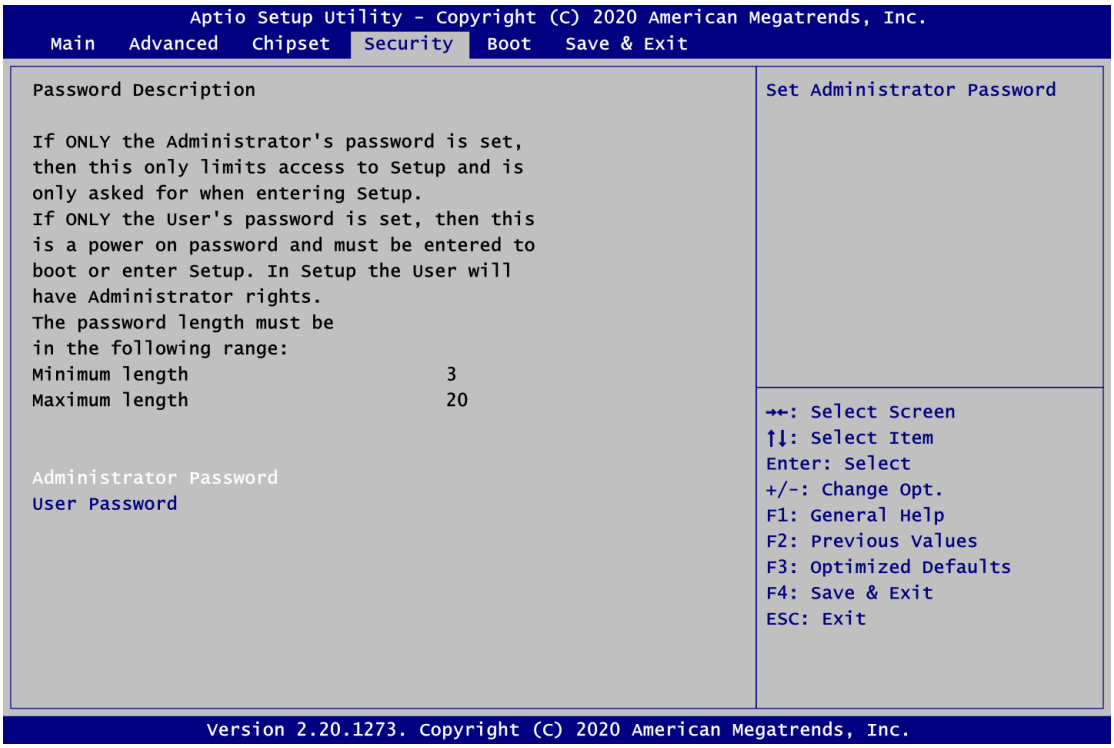


- **North Bridge**
  This screen shows North Bridge chipset information.



4.6 Security Menu

The Security menu allows users to change the security settings for the system.

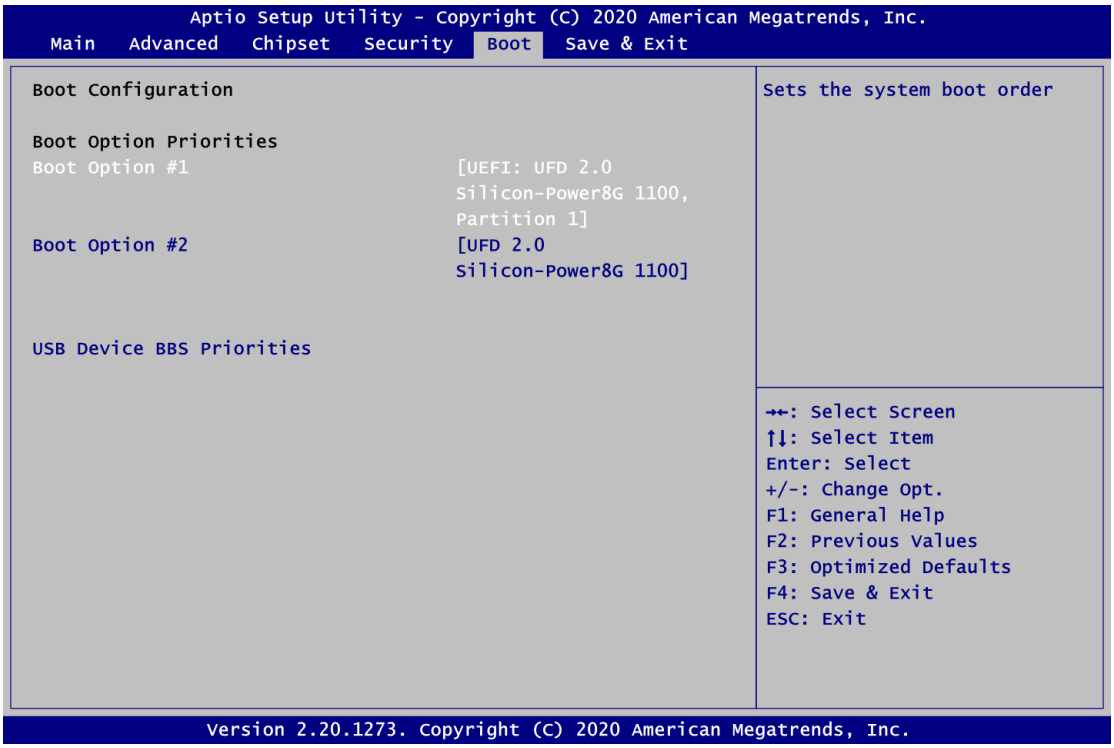


- **Administrator Password**.
  Set administrator password.

- **User Password**
  Set user password.

4.7 Boot Menu

The Boot menu allows users to change boot options of the system.

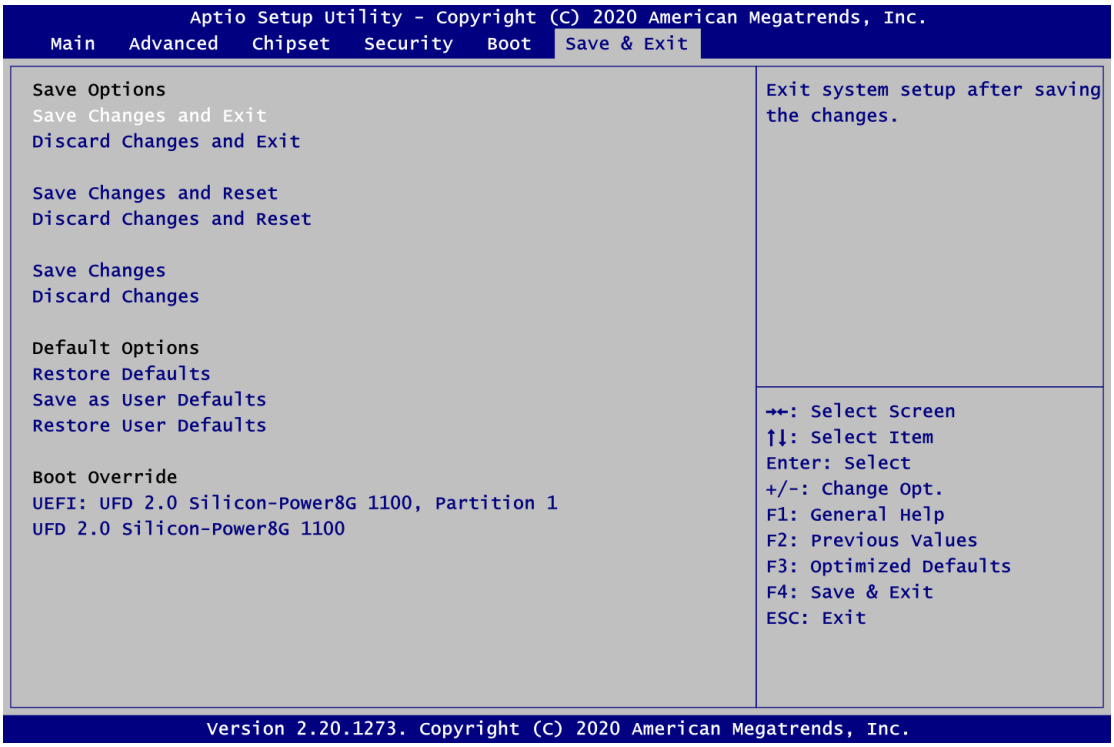


Boot Option Priorities [Boot Option #1, …]
These are settings for boot priority. Specify the boot device priority sequence from the available devices.

USB Device BBS Priorities
Set the boot order of the specific devices in this group. This option appears only if at least one device of this group is detected.

4.8 Save & Exit Menu

The Save & Exit menu allows users to load your system configuration with optimal or fail-safe default values.



Save Changes and Exit
When users have completed the system configuration changes, select this option to leave Setup and return to Main Menu. Select Save Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to save changes and exit.

Discard Changes and Exit
Select this option to quit Setup without making any permanent changes to the system configurations and return to Main Menu. Select Discard Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to discard changes and exit.

Save Changes and Reset
When completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configurations take effect. Select Save Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to save changes and reset.

Discard Changes and Reset
Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to discard changes and reset.

Save Changes
When completed the system configuration changes, select this option to save changes. Select Save Changes from the Save & Exit menu and press <Enter>. Select Yes to save changes.

Discard Changes
Select this option to quit Setup without making any permanent changes to the system configurations. Select Discard Changes from the Save & Exit menu and press <Enter>. Select Yes to discard changes.

Restore Defaults
It automatically sets all Setup options to a complete set of default settings when users select this option. Select Restore Defaults from the Save & Exit menu and press <Enter>.

Save as User Defaults
Select this option to save system configuration changes done so far as User Defaults. Select Save as User Defaults from the Save & Exit menu and press <Enter>.

Restore User Defaults
It automatically sets all Setup options to a complete set of User Defaults when users select this option. Select Restore User Defaults from the Save & Exit menu and press <Enter>.

Boot Override
Select a drive to immediately boot that device regardless of the current boot order.

Appendix A
Watchdog Timer

A.1 About Watchdog Timer

Software stability is major issue in most application. Some embedded systems are not watched by human for 24 hours. It is usually too slow to wait for someone to reboot when computer hangs. The systems need to be able to reset automatically when things go wrong. The watchdog timer gives us solutions in this regard.

The watchdog timer is a counter that triggers a system reset when it counts down to zero from a preset value. The software starts counter with an initial value and must reset it periodically. If the counter ever reaches zero, it means the software has crashed, the system will reboot.

A.2 Sample Program

The following example enables configurations using debug tool.

Enable WDT
↓
Enable configuration:
O 2E 87; Un-lock super I/O
O 2E 87
↓
Select logic device:
O 2E 07
O 2F 08
↓
WDT device enable:
O 2E 30
O 2F 01
↓
Set timer unit:
O 2E F0
O 2F 00; (00: Sec; 08:Minute)
↓
Set base timer:
O 2E F1
O 2F 0A; Set reset time (where 0A (hex) = 10sec)

Disable WDT
↓
Enable configuration:
O 2E 87; Un-lock super I/O
O 2E 87
↓
Select logic device:
O 2E 07
O 2F 08
↓
WDT device disable:
O 2E 30
O 2F 00