USER MANUAL

VIA AMOS-3007

Ultra-compact fanless system for embedded industrial applications ideally suited for demanding environments

1.03-17102023

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FCC-A Radio Frequency Interference Statement

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

Notice 1

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Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

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Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

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- Only use the appropriate battery specified for this product.
- Do not re-use, recharge, or reheat an old battery.
- Do not attempt to force open the battery.
- Do not discard used batteries with regular trash.
- Discard used batteries according to local regulations.

Safety Precautions

- Always read the safety instructions carefully.
- Keep this User's Manual for future reference.
- All cautions and warnings on the equipment should be noted.
- Keep this equipment away from humidity.
- Put this equipment on a reliable flat surface before setting it up.
- Check the voltage of the power source and adjust to 110/220V before connecting the equipment to the power inlet.
- Do not place the power cord where people will step on it.
- Always unplug the power cord before inserting any add-on card or module.
- If any of the following situations arise, get the equipment checked by authorized service personnel:
  - The power cord or plug is damaged.
  - Liquid has entered into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment is faulty or you cannot get it work according to User's Manual.
  - The equipment has been dropped and damaged.
  - The equipment has an obvious sign of breakage.
- Do not leave this equipment in extreme temperatures or in a storage temperature above 65°C (149°F). The equipment may be damaged.
- Do not leave this equipment in direct sunlight.
- Never pour any liquid into the opening. Liquid can cause damage or electrical shock.
- Do not place anything over the power cord.
- Do not cover the ventilation holes. The openings on the enclosure protect the equipment from overheating.

Box Contents

- AMOS-3007 system
- Phoenix plug to DC jack
- Screw pack for mounting
- M.2 screw pack (1 screw + 1 standoff)
- Rubber feet pack
- Thermal pad pack for M.2 modules and DDR4 SODIMM (5 pads in total)

Ordering Information

Part Number	Description
AMOS-3007-1Q15A0	1.5GHz Intel® Atom® Quad Core CPU with fanless cooling system with 2 HDMI, 2 USB 3.0, 2 Lockable USB 2.0, 2 COM, DIO, 2 Gigabit Ethernet, 3 M.2 slots, SIM card slot, 9~36V DC-in power

Optional Accessories

Power Accessories

Part Number	Description
99G63-020776	AC-to-DC adapter, DC 12V/5A, 60W
99G33-02032C	Power cord, 180cm, USA type
99G33-02033C	Power cord, 180cm, Europe type
99G33-02034C	Power cord with PSE mark, 180cm for Japan market

Wireless Modules

Part Number	Description
EMIO-8530-00A0	Wi-Fi & Bluetooth M.2 module with two antennas and assembly kit
EMIO-8570-00A0	4G LTE mobile broadband M.2 module with antenna and assembly kit (Worldwide)
EMIO-8570-01A0	4G LTE mobile broadband & GPS M.2 module with two antennas and assembly kit (Worldwide)

SATA SSD/HDD Accessories

Part Number	Description
AMOS-3007-SS00A0	SATA SSD cable + screw pack

Revision History

Revision	Date	Description
1.03	17/10/2023	Updated the part numbers for the 180cm USA and PSE mark Japan type power cords.
1.02	18/04/2023	Added thermal pad part numbers for the following components: • Section 5.1 - DDR4 SODIMM modules • Section 5.2 - M.2 SATA SSD storage • Appendix Section A.1 - VIA EMIO-8530 M.2 Wi-Fi module • Appendix Section A.3 - VIA EMIO-8570 M.2 LTE module
1.01	18/10/2022	Updated shock and vibration specifications
1.00	21/09/2022	Initial release

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1. Product Overview

The VIA AMOS-3007 is an ultra-compact fanless system designed for various industrial and embedded applications such as automation, Human Machine Interface, transportation, and energy management.

The VIA AMOS-3007 is powered by a high-performance 1.5GHz Intel® Elkhart Lake Atom processor, and housed in a heavy-duty steel body chassis and a robust aluminum alloy top cover that provides high stability which can withstand high shock and vibration in the most demanding environments.

The VIA AMOS-3007 has multiple I/O and connectivity features such as dual HDMI ports that enable dual independent displays, two Gigabit Ethernet ports, two lockable USB 2.0 ports, two USB 3.0 ports, two configurable COM ports, and a DIO port. In addition, it supports one DDR4 3200 SODIMM slot, onboard SIM card slot, as well as M.2 expansion slots for storage and 4G/5G/Wi-Fi connectivity.

1.1 Key Features

1.1.1 High-Performance

The VIA AMOS-3007 system is powered by a 1.5GHz Intel® Elkhart Lake Atom® processor that provides a full range of rich features including superb multi-tasking performance and consistent performance in a host of connected device applications.

1.1.2 Fanless and Ruggedized Chassis

The VIA AMOS-3007 delivers fanless operation in a sealed aluminum alloy chassis that also acts as a thermal solution. The ruggedized chassis design makes it suitable for installations in space-critical environments, while also ensuring maximum reliability.

1.1.3 Optimized Integration with Multiple I/O Access

With front and back panel I/O access, the VIA AMOS-3007 can be easily configured to support a wide variety of applications with easy integration, and quick setup.

1.1.4 Networking Support

The VIA AMOS-3007 is equipped with two RJ-45 ports that support high-speed data Gigabit Ethernet. The onboard M.2 expansion slots provide wireless connectivity options for 5G/4G, GPS and Wi-Fi.

1.1.5 Storage Expansion

The VIA AMOS-3007 comes with an M.2 M key 2242 slot and a 2.5" SSD storage bay.

1.1.6 Support for a Wide Range of Power Sources

The VIA AMOS-3007 supports a wide range of input power from 9~36V DC. The flexible power input enables the VIA AMOS-3007 to be deployable in a broad variety of automation environments.

1.1.7 Wide Range of Operating Temperatures

The VIA AMOS-3007 carries a qualified thermal performance design which supports a wide operating temperature range from -20°C to 70°C, suitable for critical applications.

1.1.8 Shock and Vibration Resistant

The VIA AMOS-3007 is shock resistant for maximum reliability.

1.1.9 Mounting Solution

The VIA AMOS-3007 supports two methods for mounting the chassis securely. It can be mounted to any flat surface, or to VESA mountable surfaces with the VESA mounting kit.

1.1.10 Embedded Operating System Ready

The VIA AMOS-3007 is fully compatible with Microsoft® Windows® 11/10, and Linux.

1.2 Product Specifications

Processor

- 1.5GHz Intel Elkhart Lake Atom processor

BIOS

- AMI BIOS, 256Mbit Flash memory

System Memory

- 1 x DDR4 3200 SODIMM slot
- Supports up to 32GB memory size

Storage

- Supports one SATA slot and one M.2 M key 2242 slot

Graphics

- Integrated Intel Graphics Gen 11 - Low Power
- Supports OpenCL*1.2, OpenGL 4.5, OpenGL-ES 3.2, Vulkan v1.1, DirectX

Audio

- Realtek ALC888S-VD2-GR High Definition Audio Codec

Display I/O

- 2 x HDMI ports
- Dual independent displays

USB

- 2 x USB 3.0 ports
- 2 x USB 2.0 ports (lockable USB ports for secure connections)
  - +V5A (Standby +5V) or +V5S (Standard +5V) power selection by jumper VUSB_SEL1 for USB 2.0 ports and onboard USB pin header
- Reserved onboard USB pin header

LAN

- 2 x Realtek RTL8111H-CG Gigabit Ethernet controllers

COM

- Fintek Super I/O F81216ED controller
- Supports 4 COM ports
  - BIOS selectable to support adjust functionality of RS-232/422/485 mode of COM1 and COM2 ports
  - 5V/12V power selection by jumper JCOMV1 and JCOMV2 for COM1 and COM2 ports

Expansion I/O

- 1 x M.2 E-key 2230 slot for Wi-Fi
- 1 x M.2 B-key 3052 slot for 4G/5G (PCIe+USB2.0/3.0)
- 1 x SIM card slot

Front Panel I/O

- 1 x Power Button
- 2 x Lockable USB 2.0 ports
- 2 x COM ports for RS-232/422/485
  - (COM colay with CAN, 1*CAN as manufacturing option)
- 1 x Red LED for HDD activity
- 1 x Green LED for power status
- 4 x antenna holes for LTE & Wi-Fi

Back Panel I/O

- 2 x USB 3.0 ports
- 2 x HDMI ports
- 2 x Gigabit Ethernet ports
- 1 x DIO port for 8-bit GPIO
- 2 x Audio jacks: Line-out and Mic-in
- 1 x 2-pole Phoenix DC jack

Power Supply

- 9 ~ 36V DC (typical: 24W)

Operating System

- Windows® 11
- Windows® 10
- Linux

Operating Temperature

- -20°C ~ 70°C (with qualified industrial grade M.2 SSD)

Operating Humidity

- 0% ~ 95% (relative humidity; non-condensing)

Storage Temperature

- -20°C ~ 70°C

Vibration Loading During Operation

- With M.2 Flash Drive: 5Grms, IEC 60068-2-64, random, 5 ~ 500Hz, 1hr/axis

Shock During Operation

- With M.2 Flash Drive: 50G, IEC 60068-2-27, half sine, 11ms duration

Mechanical Construction

- Aluminum top chassis housing
- Metal chassis housing
- Removable front and rear metal face plates

Mounting

- Wall/VESA mountable

Dimensions (W x H x D)

- 170mm x 48.5mm x 126mm (6.69” x 1.91” x 4.96)

Weight

- 1kg (2.2lbs)

Compliance

- CE, FCC, UKCA (without 4G/5G and Wi-Fi), pre-scan for E-mark

Note:
As the operating temperature provided in the specifications is a result of testing performed in a testing chamber, a number of variables can influence this result. Please note that the working temperature may vary depending on the actual situation and environment. It is highly recommended to execute a solid testing program and take all variables into consideration when building the system. Please ensure that the system is stable at the required operating temperature in terms of application.

1.3 Layout Diagram

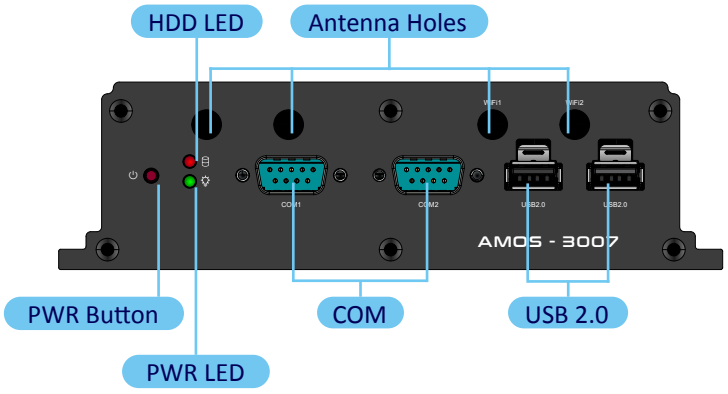

Figure 01: Front panel I/O layout

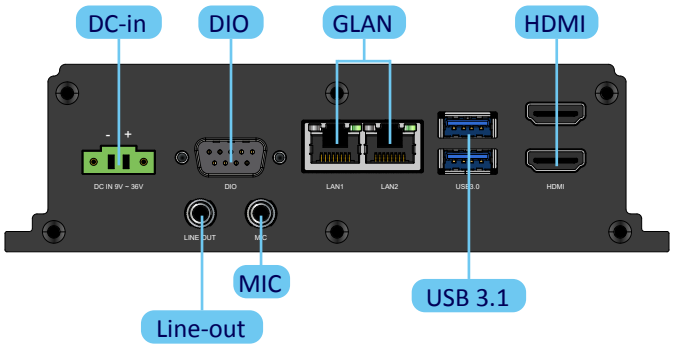

Figure 02: Back panel I/O layout

1.4 Product Dimensions

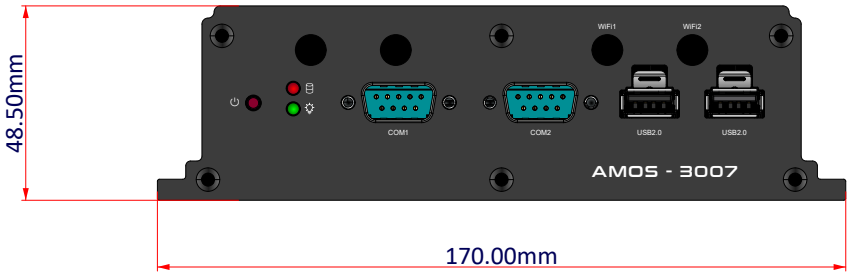

Figure 03: Dimensions of the VIA AMOS-3007 (front view)

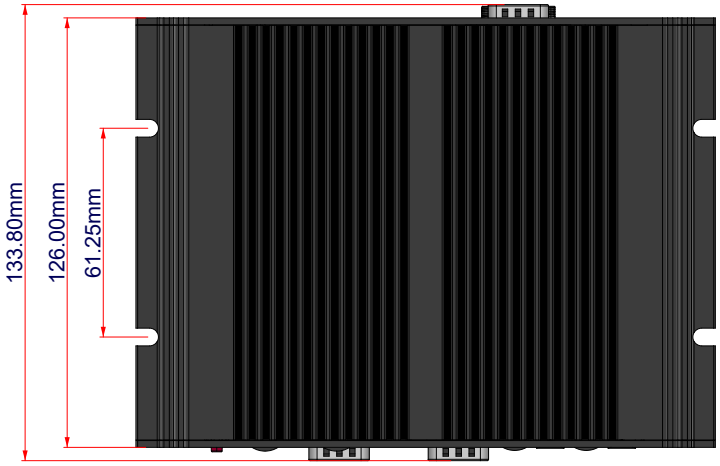

Figure 04: Dimensions of the VIA AMOS-3007 (top view)

2. External I/O Pin Descriptions & Functionality

The VIA AMOS-3007 has a wide selection of interfaces, and includes a selection of frequently-used ports as part of the external I/O coastline.

2.1 Power On/Off Button

The VIA AMOS-3007 comes with a power button that supports power On/Off.

Figure 05: Power ON/OFF button diagram

2.2 LED Indicators

There are two LEDs on the front panel of the VIA AMOS-3007 that indicates the status of the system:

- The green LED indicates the status of the system's power.
- The red LED indicates the HDD activity.

Figure 06: LEDs indicator diagram

2.3 COM Ports

The VIA AMOS-3007 is equipped with two COM ports located on the front panel. The COM ports can be configured in the BIOS settings in RS-232, RS-422, or RS-485 mode. The COM ports default setting is RS-232. The pinouts of the COM port are shown below.

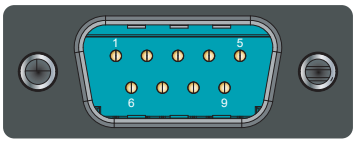

Figure 07: COM port diagram

	RS-232	RS-422	RS-485
Pin	Signal	Signal	Signal
1	DCD	Tx-	Tx-
2	RxD	Tx+	Tx+
3	TxD	Rx+	NC
4	DTR	Rx-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

Table 01: COM port pinouts

2.4 Lockable USB 2.0 Ports

The VIA AMOS-3007 is equipped with two lockable USB 2.0 ports on the front panel which gives complete Plug and Play and hot swap capability for external devices. The USB 2.0 interface complies with USB UHCI, Rev. 2.0. The pinouts of the lockable USB 2.0 ports are shown below.

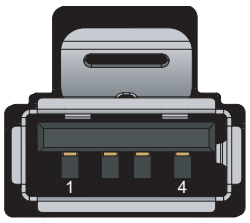

Figure 08: Lockable USB 2.0 port diagram

USB 2.0 Port 1			USB 2.0 Port 2	
Pin	Signal		Pin	Signal
1	VCC		1	VCC
2	USB1 data -		2	USB2 data -
3	USB1 data +		3	USB2 data +
4	GND		4	GND

Table 02: Lockable USB 2.0 ports pinouts

Reminder:
To unlock the USB device from the lockable USB 2.0 port, push the tab on the lockable port then pull the USB device. If necessary, use a tip of the screw driver tool or any thin rod to push the tab.

2.5 Gigabit Ethernet Ports

The VIA AMOS-3007 comes with two Gigabit Ethernet ports on the back panel which use an 8 Position and 8 Contact (8P8C) receptacle connector commonly known as RJ-45. Each port is fully compliant with the IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX), and 802.3ab (1000BASE-T) standards. The pinouts of the Gigabit Ethernet port are shown below.

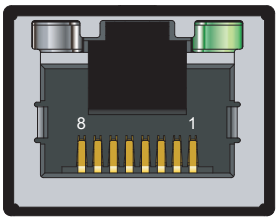

Figure 09: Gigabit Ethernet port diagram

Gigabit Ethernet Port 1		Gigabit Ethernet Port 2	
Pin	Signal	Pin	Signal
1	LAN1_TD0+	1	LAN2_TD0+
2	LAN1_TD0-	2	LAN2_TD0-
3	LAN1_TD1+	3	LAN2_TD1+
4	LAN1_TD2+	4	LAN2_TD2+
5	LAN1_TD2-	5	LAN2_TD2-
6	LAN1_TD1-	6	LAN2_TD1-
7	LAN1_TD3+	7	LAN2_TD3+
8	LAN1_TD3-	8	LAN2_TD3-

Table 03: Gigabit Ethernet ports pinouts

Each Gigabit Ethernet port has two LED indicators located on the front side to show its Active/Link and Speed status.

	Link LED (Left LED on RJ-45 port)	Active LED (Right LED on RJ-45 port)
Link Off	LED is off	LED is off
Speed_10Mbit	Yellow Flash	LED is off
Speed_100Mbit	Yellow Flash	The Green LED is on
Speed_1000Mbit	Yellow Flash	The Orange LED is on

Table 04: Gigabit Ethernet port LED color definition

2.6 USB 3.0 Ports

The VIA AMOS-3007 is equipped with two USB 3.0 ports. Each USB 3.0 port has a maximum data transfer rate of up to 5Gb/s and is backwards compatible with the USB 2.0 specification. The USB 3.0 ports provides complete Plug and Play and hot swap capabilities for external devices. The pinouts of the USB 3.0 port are shown below.

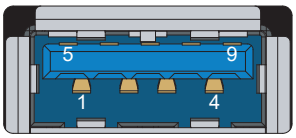

Figure 10: USB 3.0 port diagram

USB 3.0 Port 1		USB 3.0 Port 2	
Pin	Signal	Pin	Signal
1	+5V	1	+5V
2	Data1-	2	Data2-
3	Data1+	3	Data2+
4	GND	4	GND
5	RX1-	5	RX2-
6	RX1+	6	RX2+
7	GND	7	GND
8	TX1-	8	TX2-
9	TX1+	9	TX2+

Table 05: USB 3.0 ports pinouts

2.7 HDMI® Port

The VIA AMOS-3007 is equipped with 2 Type A receptacle HDMI ports on the back panel to provide connection to High Definition video and digital audio using a single cable. The pinouts of the HDMI ports are shown below.

Figure 11: HDMI® port diagram

Pin	Signal	Pin	Signal
1	TX2+	2	GND
3	TX2-	4	TX1+
5	GND	6	TX1-
7	TX0+	8	GND
9	TX0-	10	TXC+
11	GND	12	TXC-
13	NC	14	NC
15	DDCSCL	16	DDCSDA
17	GND	18	+5V
19	Hot Plug Detect		

Table 06: HDMI® port pinouts

2.8 Audio Jacks

The VIA AMOS-3007 offers High Definition audio through two 3.5mm TRS jacks on the back panel: Line- out and Mic-in. The Mic-in jack is used for connecting to a microphone. The Line-out jack is used for connecting to external speakers or headphones. The diagram of the audio jacks is shown below.

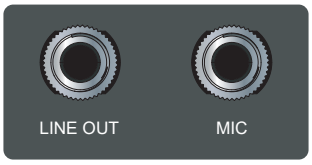

Figure 12: Audio jacks diagram

Pin	Description
Mic-in	TRS jack, 3.5mm Ø 5P, 90 Degree, Female, shielded
Line-out	TRS jack, 3.5mm Ø 5P, 90 Degree, Female, shielded

Table 07: Audio jacks receptacle description

2.9 DC-In Jack

The VIA AMOS-3007 comes with a 2-pole Phoenix DC-in jack on the back panel that carries 9~36V DC external power input. The pinouts of the 2-pole Phoenix DC-in jack are shown below.

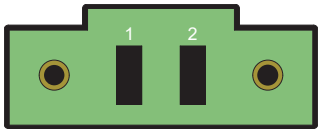

Figure 13: DC-in jack diagram

Pin	Signal
1	GND
2	9~36V DC

Table 08: DC-in jack pinouts

2.10 DIO Port

The VIA AMOS-3007 is equipped with a DIO port located on the back panel. The DIO port offers a Digital I/O communication interface to support 8-bit GPIO. The pinouts of the DIO port are shown below.

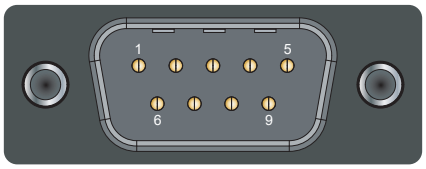

Figure 14: DIO port diagram

Pin	Signal
1	GPO_06
2	GPO_10
3	GPI_12
4	GPI_16
5	GND
6	GPO_07
7	GPO_11
8	GPI_14
9	GPI_17

Table 09: DIO port pinouts

3. Onboard I/O

This chapter provides information about the onboard pin headers and connectors on the VIA AMOS-3007.

3.1 M.2 Slots

The VIA AMOS-3007 is equipped with 3 M.2 slots for storage and wireless networking options such as a 5G/4G LTE and Wi-Fi modules. The M2_1 slot is an M key (2242) mSATA slot. The M2_2 slot is a B key (3052) LTE slot. The M2_3 slot is an E key (2230) Wi-Fi/BT slot. The location of the 3 M.2 slots are shown below.

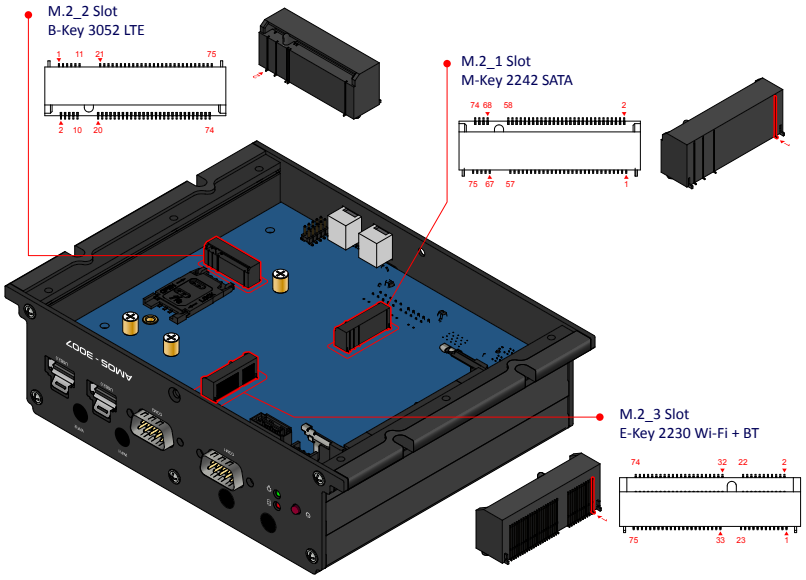

Figure 15: M.2 slots diagram

3.2 DDR4 SODIMM Slot

The AMOS-3007 comes with one DDR SODIMM slot labeled as “SODIMM” that supports non-ECC DDR4 3200 SODIMM memory module. The DDR34 SODIMM memory slot can accommodate up to 32GB memory size. The location of the DDR4 SODIMM slot is shown below.

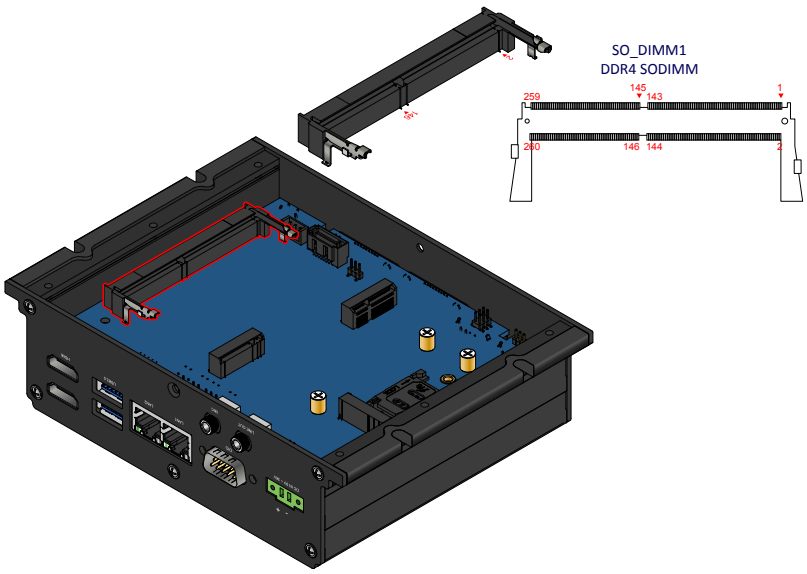

Figure 16: DDR4 SODIMM slot diagram

3.3 SATA Connector

The onboard SATA connector can support up to 3Gb/s transfer speed. The SATA connector is labeled as “SATA1”. The location of the SATA connector is shown below.

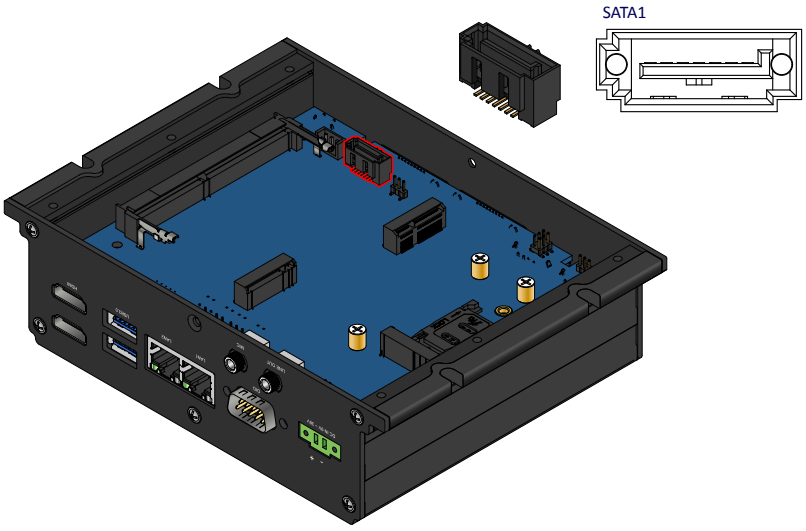

Figure 17: SATA connector diagram

Note:
In order to use the SATA port for a 2.5" HDD/SSD, the optional SATA + SATA power cable and SATA HDD/SSD screw pack are required.

3.4 SIM Card Slot

The VIA AMOS-3007 comes with an onboard SIM card slot that supports 5G/4G SIM cards. SIM card usage on the VIA AMOS-3007 requires that a 5G/4G module is installed in the M2_2 slot, enabling the 5G/4G functionality, otherwise the SIM card slot will be disabled. The SIM card slot is designed for use with 5G/4G modules that do not support built-in SIM card slots. The SIM card slot is labeled as “SIM1”. The location of the SIM card slot is shown below.

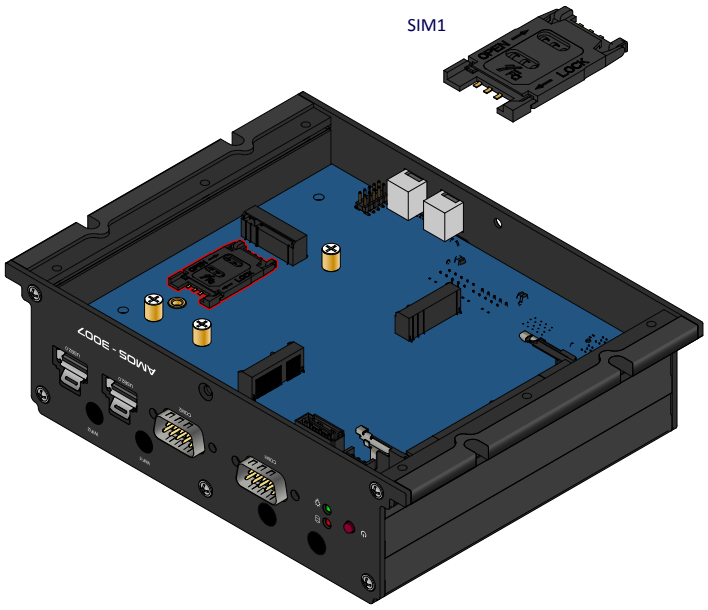

Figure 18: SIM card slot diagram

4. Onboard Jumper

Jumper Description

A jumper consists of a pair of conductive pins used to close in or bypass an electronic circuit to set up or configure a particular feature using a jumper cap. The jumper cap is a small metal clip covered by plastic. It performs like a connecting bridge to short (connect) the pair of pins. The usual colors of the jumper cap are black/red/blue/white/yellow.

Jumper Setting

There are two settings of the jumper pin: “Short and Open”. The pins are “Short” when a jumper cap is placed on the pair of pins. The pins are “Open” if the jumper cap is removed.

In addition, there are jumpers that have three or more pins, and some pins are arranged in series. In case of a jumper with three pins, place the jumper cap on pin 1 and pin 2 or pin 2 and 3 to Short it.

Some jumper sizes are small or mounted on a crowded location on the board that makes it difficult to access. Therefore, using a long-nose plier in installing and removing the jumper cap is very helpful.

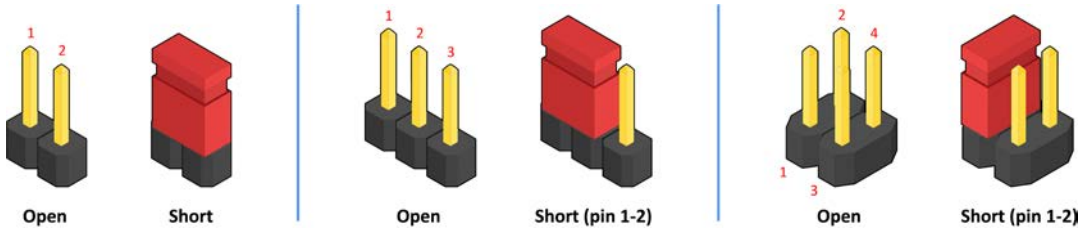

Figure 19: Jumper settings example

Caution:
Make sure to install the jumper cap on the correct pins. Installing it on the wrong pins might cause damage and malfunction.

4.1 COM Voltage Jumpers

The COM ports on the front panel can be configured to carry +5V or +12V power, or the Ring Indicator (RI) signal by setting the COM voltage jumpers (JCOMV1 ~ JCOMV2).

4.1.1 JCOMV1 Voltage Jumper

The voltage jumper “JCOMV1” is set to determine the input carry voltage or Ring Indicator (RI) signal of COM1 port on the front panel. The control signal Ring Indicator (RI) is the default setting. The jumper settings are shown below.

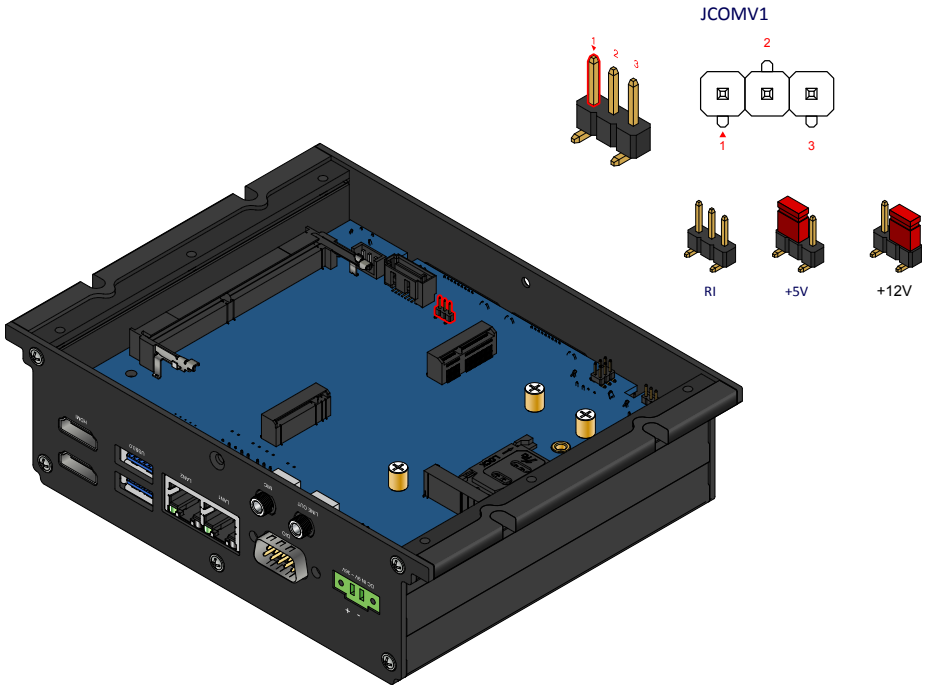

Figure 20: JCOMV1 voltage jumper diagram

Settings	Pin 1	Pin 2	Pin 3
RI (default)	Open	Open	Open
+5V	Short	Short	Open
+12V	Open	Short	Short

Table 10: JCOMV1 voltage jumper settings

4.1.2 JCOMV2 Voltage Jumper

The voltage jumper “JCOMV2” is set to determine the input carry voltage or Ring Indicator (RI) signal of COM2 port on the front panel. The control signal Ring Indicator (RI) is the default setting. The jumper settings are shown below.

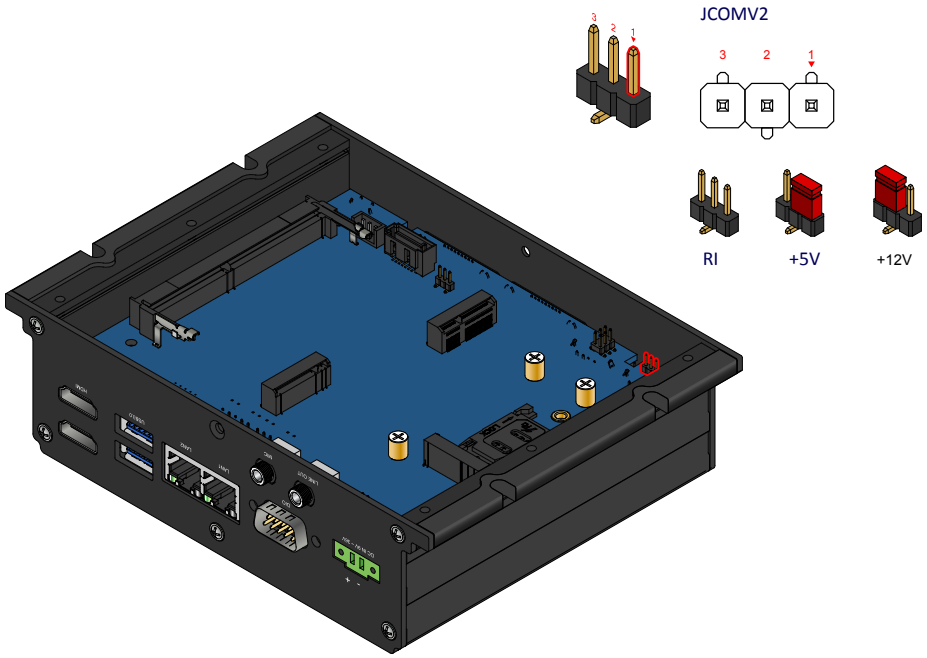

Figure 21: JCOMV2 voltage jumper diagram

Settings	Pin 1	Pin 2	Pin 3
RI (default)	Open	Open	Open
+5V	Short	Short	Open
+12V	Open	Short	Short

Table 11: JCOMV2 voltage jumper settings

4.2 USB 2.0 Power Type Jumper

The USB 2.0 power type jumper labeled as “VUSB_SEL1” controls the power type delivered to the lockable USB 2.0 ports (USB0 and USB1) on the front panel and to the onboard USB pin header (JUSB2_1). The power can be set either on +5VSUS (Standby power) or +5V. The +5V is the default setting. The jumper settings are shown below.

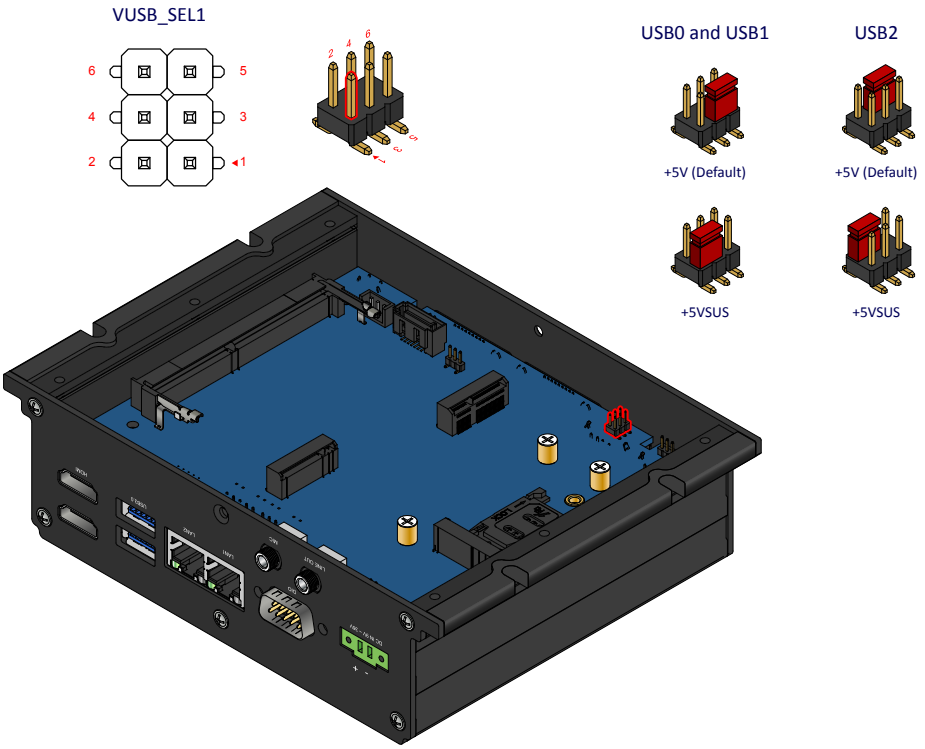

Figure 22: USB 2.0 power type jumper diagram

USB0 and USB1

Settings	Pin 1	Pin 3	Pin 5
+5VSUS	Short	Short	Open
+5V (default)	Open	Short	Short

JUSB2_1

Settings	Pin 2	Pin 4	Pin 6
+5VSUS	Short	Short	Open
+5V (default)	Open	Short	Short

Table 12: USB 2.0 power type jumper settings

5. Hardware Installation

This chapter provides information about the hardware installation procedures. It is recommended to use a grounded wrist strap before handling computer components. Electrostatic discharge (ESD) can damage some components.

5.1 Installing the DDR4 SODIMM Memory

Step 1

Remove the six screws of the bottom cover plate as well as the two middle screws on the bottom of the Front and Rear I/O covers, and then gently lift up the bottom plate as shown below.

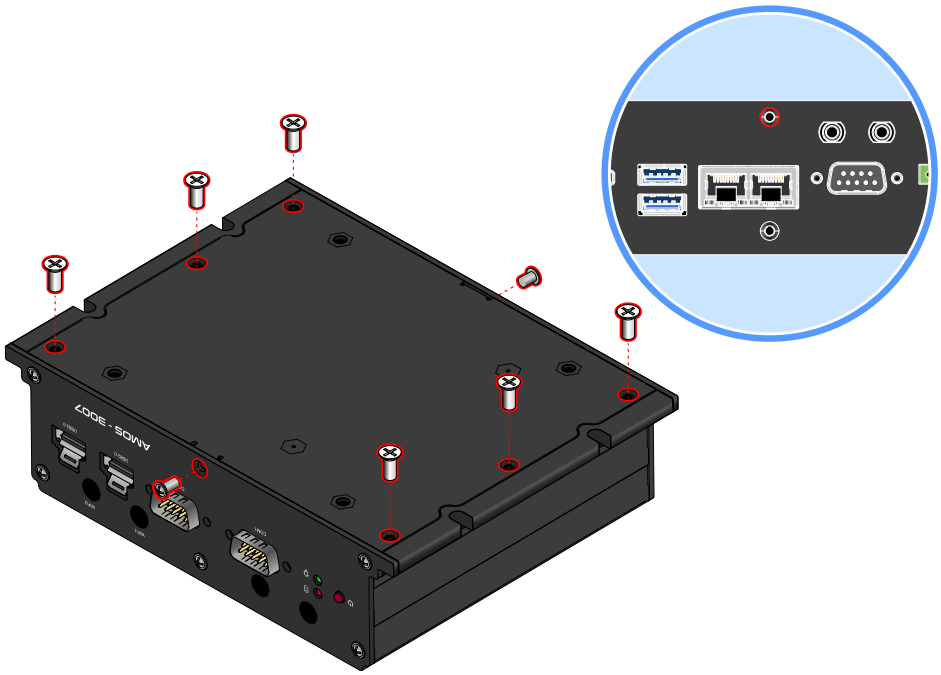

Figure 23: Removing the bottom cover plate

Step 2

Prepare the system side DDR4 SODIMM module thermal pad (Part Number: 99G43-143899) included in the package. Peel off the bottom protective (plastic) cover, then paste the thermal pad onto the area marked below near the DDR4 SODIMM memory slot. Ensure no onboard components are covered by the pad when installing it.

Step 3

Peel off the remaining protective (plastic) cover of the M.2 SATA SSD thermal pad.

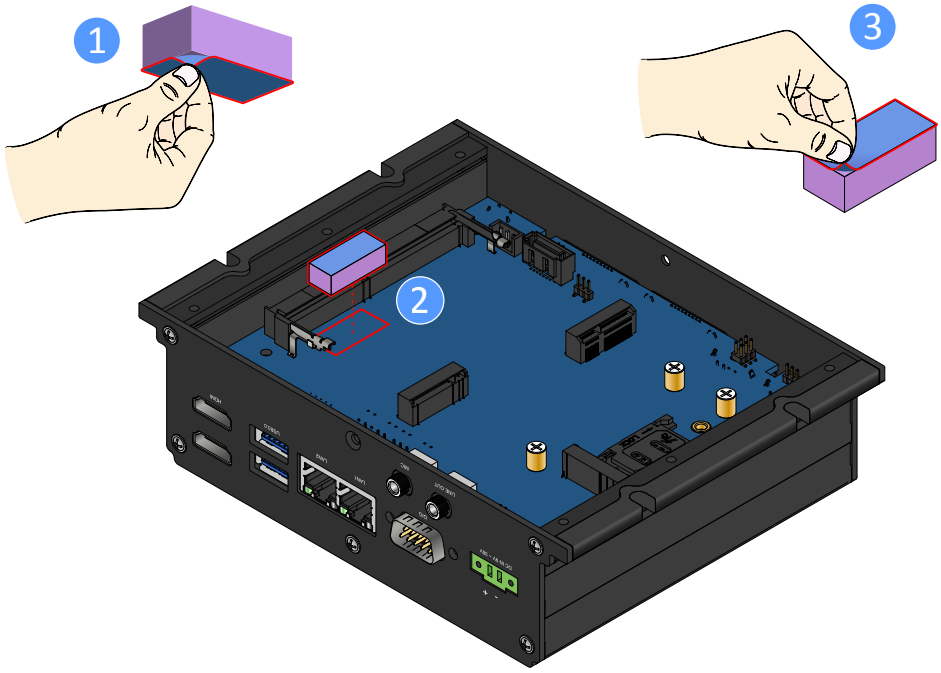

Figure 24: Installing the system side DDR4 SODIMM module thermal pad

Step 4

Align the notch on the DDR4 SODIMM memory module with the counterpart on the DDR4 SODIMM slot. Then insert the DDR4 SODIMM memory module at a 30° angle. Push the DDR4 SODIMM memory down until the locking clips lock the memory module into place.

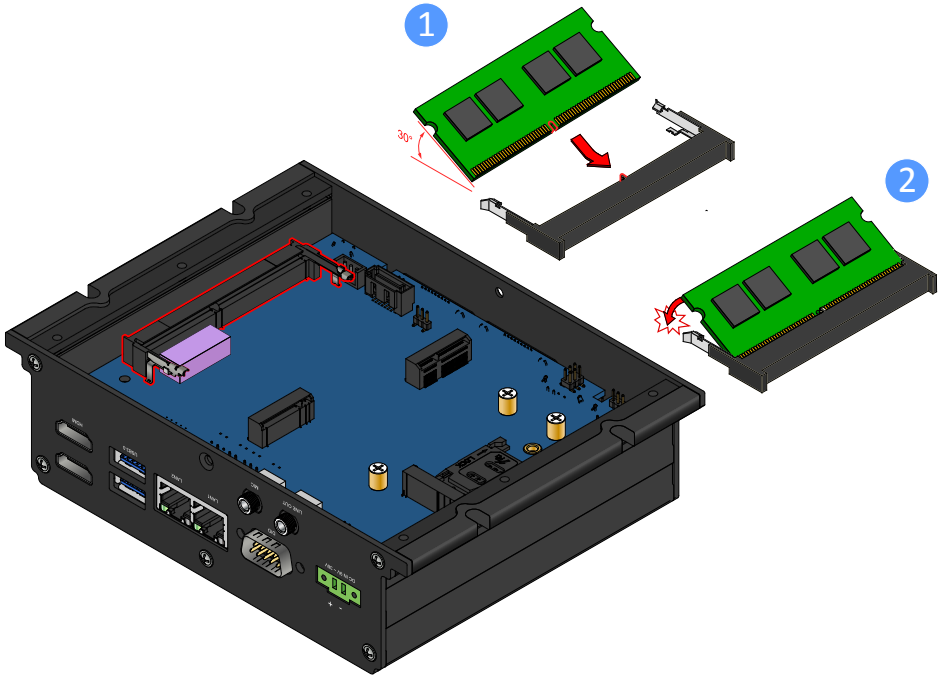

Figure 25: Installing the DDR4 SODIMM memory module

Step 5

Prepare the top side DDR4 SODIMM thermal pad (Part Number: 99G43-143909) included in the package. Paste the thermal pad onto the four memory chips on the DDR4 SODIMM memory module.

Step 6

Peel off the remaining protective (plastic) cover of the M.2 SATA SSD thermal pad.

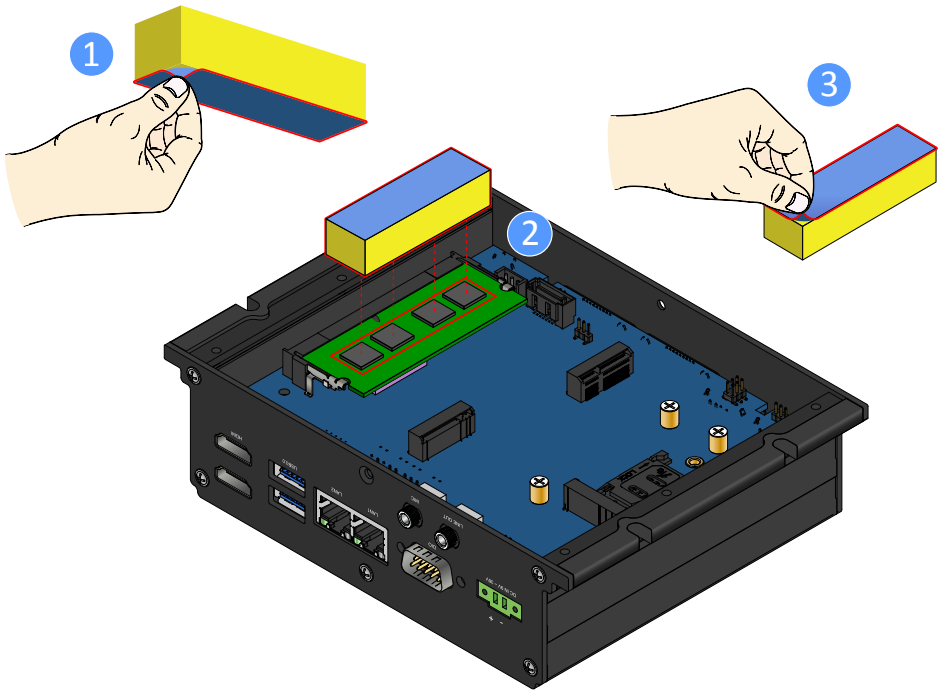

Figure 26: Installing the top side DDR4 SODIMM module thermal pad

Step 7

Reinstall the bottom plate.

5.2 Installing the M.2 SATA SSD Module

Step 1

Remove the bottom plate from the VIA AMOS-3007 as described in Step 1 of section 5.1.

Step 2

Align the notch on the M.2 SATA SSD module with the counterpart on the M2_1 slot., then insert the drive at a 30° angle. Once the M.2 SATA SSD module has been fully inserted, push the module down until the screw hole is aligned with the standoff hole. Then secure the module with the provided screw.

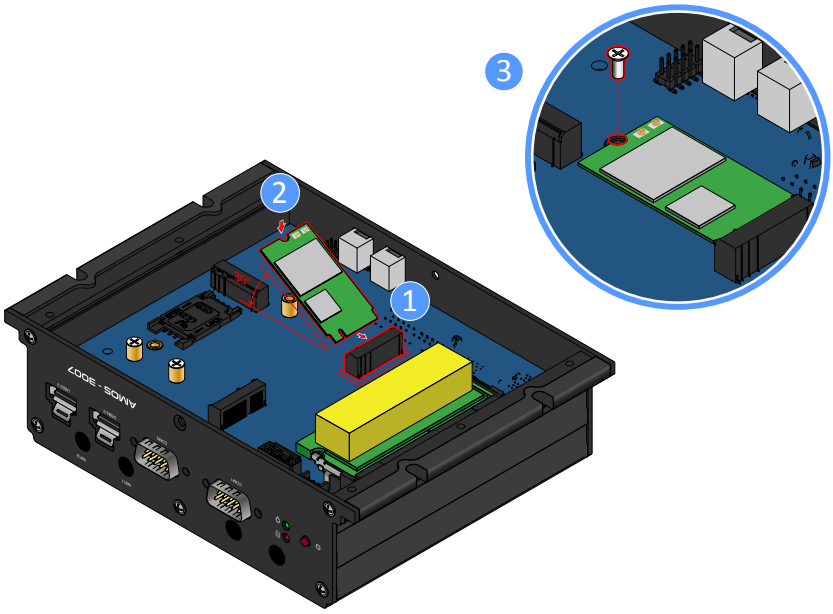

Figure 27: Inserting the M.2 SATA SSD module

Step 3

Prepare the M.2 SATA SSD thermal pad (Part Number: 99G43-14388X) included in the package. Paste the thermal pad onto the top of the controller chip on the M.2 SATA SSD module.

Step 4

Peel off the remaining protective (plastic) cover of the M.2 SATA SSD thermal pad.

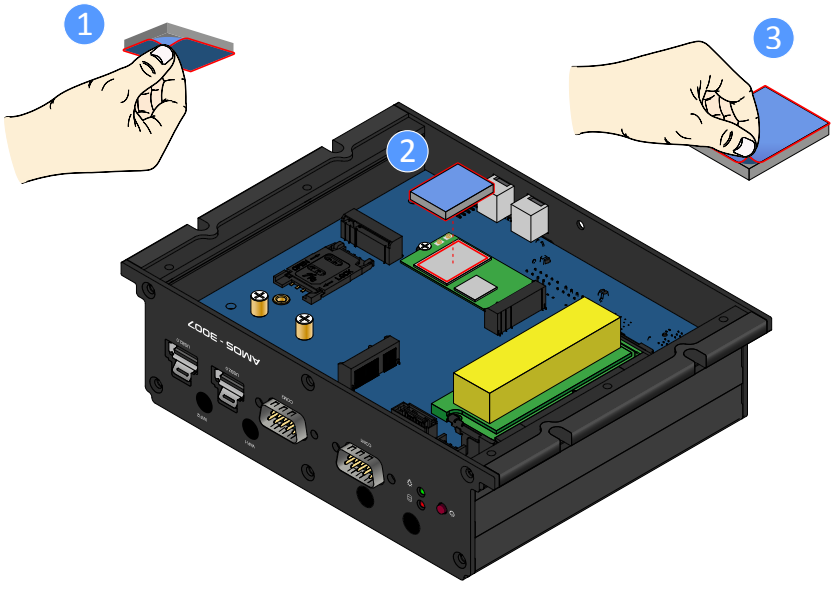

Figure 28: Installing the M.2 SATA SSD thermal pad

Step 5

Reinstall the bottom plate.

5.3 Installing the Rubber Feet

Step 1

On the bottom side of the VIA AMOS-3007, identify the area where to install the rubber feet.

Step 2

Attach each rubber foot and press down firmly to ensure the rubber foot is fixed properly in place.

Figure 29: Installing the rubber feet

5.4 Installing the VIA AMOS-3007

The VIA AMOS-3007 has multiple mounting options. Using the four mounting screws, the VIA AMOS- 3007 can be mounted on walls, tables or any suitable flat surface. In addition, the VIA AMOS-3007 can be installed behind a display monitor using the optional VESA mounting kit.

Reminders:
1. Make sure to remove the rubber feet before mounting the VIA AMOS-3007. The rubber feet are not required when securing the system onto walls or tables.
2. Do not use other types of screws when mounting the VIA AMOS-3007 aside from the provided screws to avoid any damage.

5.5 Mounting the VIA AMOS-3007 on Wall/Table

Step 1

Find a suitable surface to mount the VIA AMOS-3007. Drill four holes on a flat surface (wall/table). Ensure the diameter of the holes and the distance between the holes perfectly match with the mounting screws and holes of the VIA AMOS-3007.

Step 2

Install the VIA AMOS-3007 to the wall/table and secure it with the four screws.

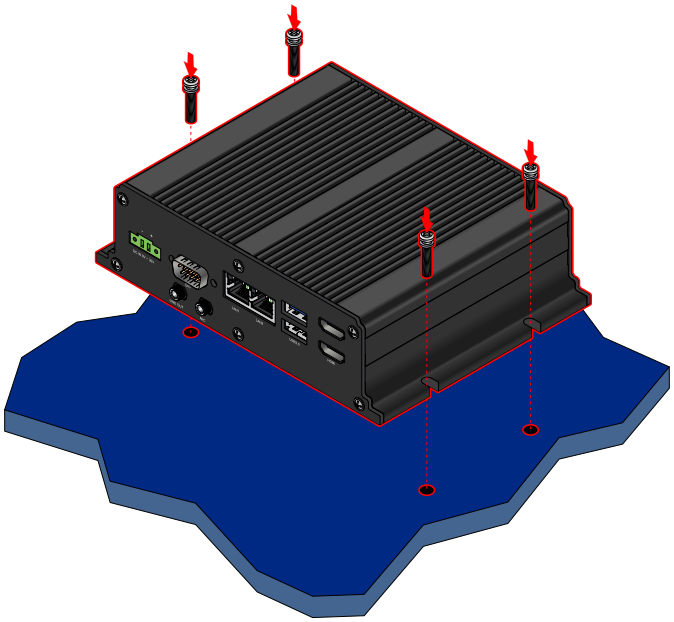

Figure 30: Mounting the VIA AMOS-3007

5.6 Mounting the VIA AMOS-3007 Behind the Monitor

Step 1

Align the mounting holes of the VESA mounting plate to the available VESA holes of a suitable display.

Step 2

Fasten the VESA mounting plate with four screws at the back of the display.

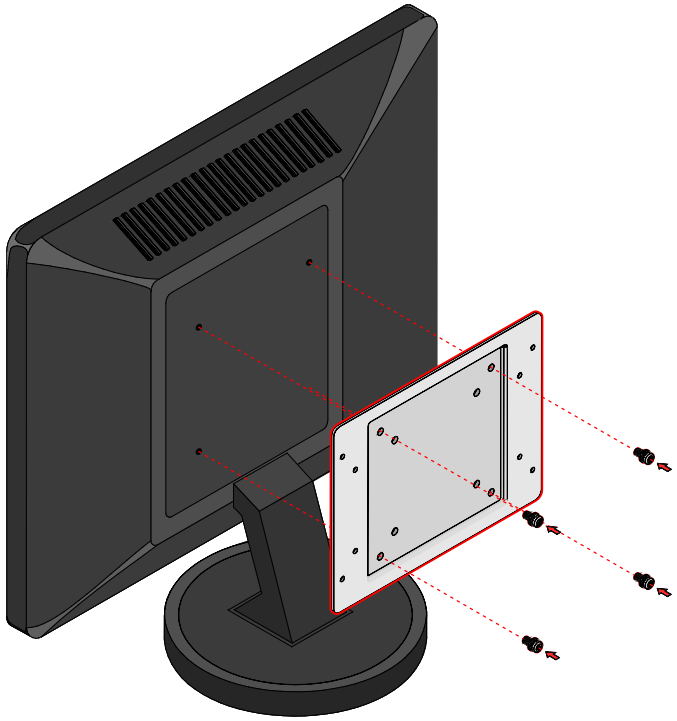

Figure 31: Installing the VESA mounting plate

Step 3

Install the VIA AMOS-3007 to the VESA mounting plate and connect all necessary cables.

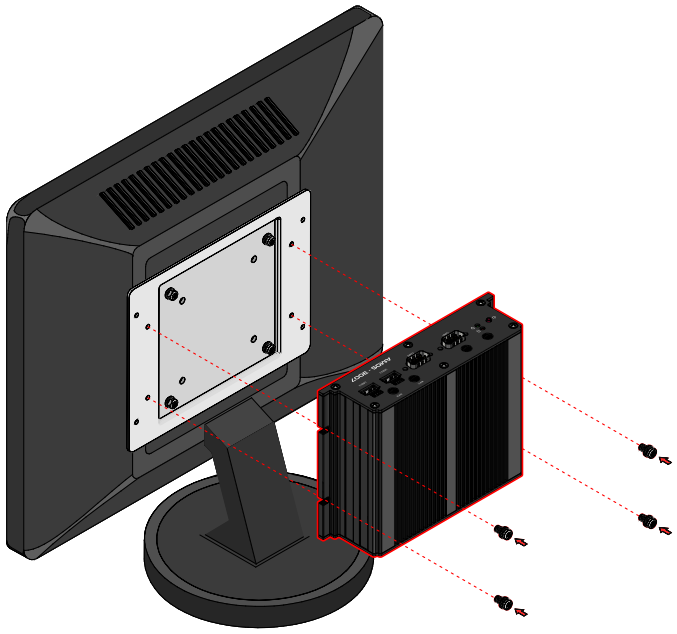

Figure 32: Installing VIA AMOS-3007 to the VESA mounting plate

6. BIOS Setup

This chapter gives a detailed explanation of the BIOS setup functions.

6.1 Entering the BIOS Setup Utility

Power on the computer and press Delete during the beginning of the boot sequence to enter the BIOS Setup Utility. If the entry point has passed, restart the system and try again.

6.2 Control Keys

Up	Move up one row
Down	Move down one row
Left	Move to the left in the navigation bar
Right	Move to the right in the navigation bar
Enter	Access the highlighted item / Select the item
Esc	Jumps to the Exit screen or returns to the previous screen
+	Increase the numeric value [1]
-	Decrease the numeric value[1]
F1	General help[2]
F2	Previous value
F3	Load optimized defaults
F4	Save all the changes and exit

Note:
1. Must be pressed using the 10-key pad.
2. The General help contents are only for the Status Page and Option Page setup menus.

6.3 Getting Help

The BIOS Setup Utility provides a “General Help” screen. This screen can be accessed at any time by pressing F1. The help screen displays the keys for using and navigating the BIOS Setup Utility. Press Esc to exit the help screen.

6.4 System Overview

The System Overview screen is the default screen that is shown when the BIOS Setup Utility is launched and contains pertinent system information. This screen can be accessed by traversing the navigation bar to the “Main” label.

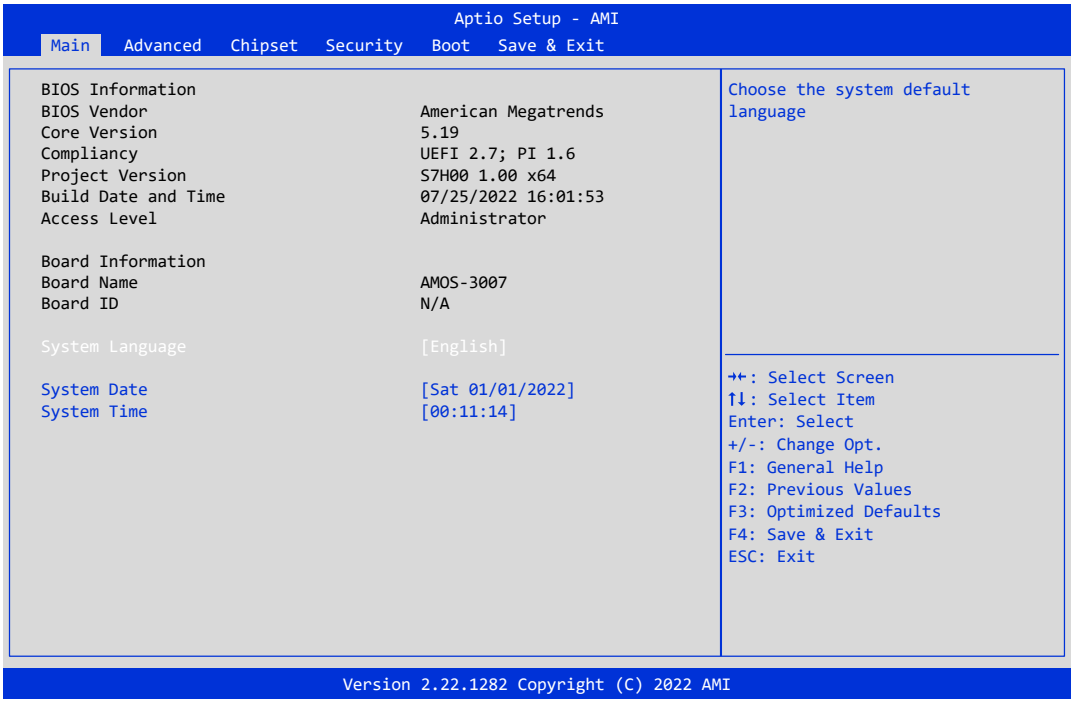

Figure 33: Illustration of the Main menu screen

- **BIOS Information**
  - The content in this section of the screen shows the information about the vendor, the Core version, UEFI specification version, the project version and date & time of the project build.
- **System Language**
  - This option allows the user to configure the language that the user wants to use.
- **System Date**
  - This section shows the current system date. Press Tab to traverse right and Shift+Tab to traverse left through the month, day, and year segments. The + and - keys on the number pad can be used to change the values. The weekday name is automatically updated when the date is altered. The date format is [Weekday, Month, Day, Year].
- **System Time**
  - This section shows the current system time. Press Tab to traverse right and Shift+Tab to traverse left through the hour, minute, and second segments. The + and - keys on the number pad can be used to change the values. The time format is [Hour : Minute : Second].

6.5 Advanced Settings

The Advanced Settings screen shows a list of categories that can provide access to sub-screens. Sub-screens can be selected by using the Up and Down arrows on the number pad.

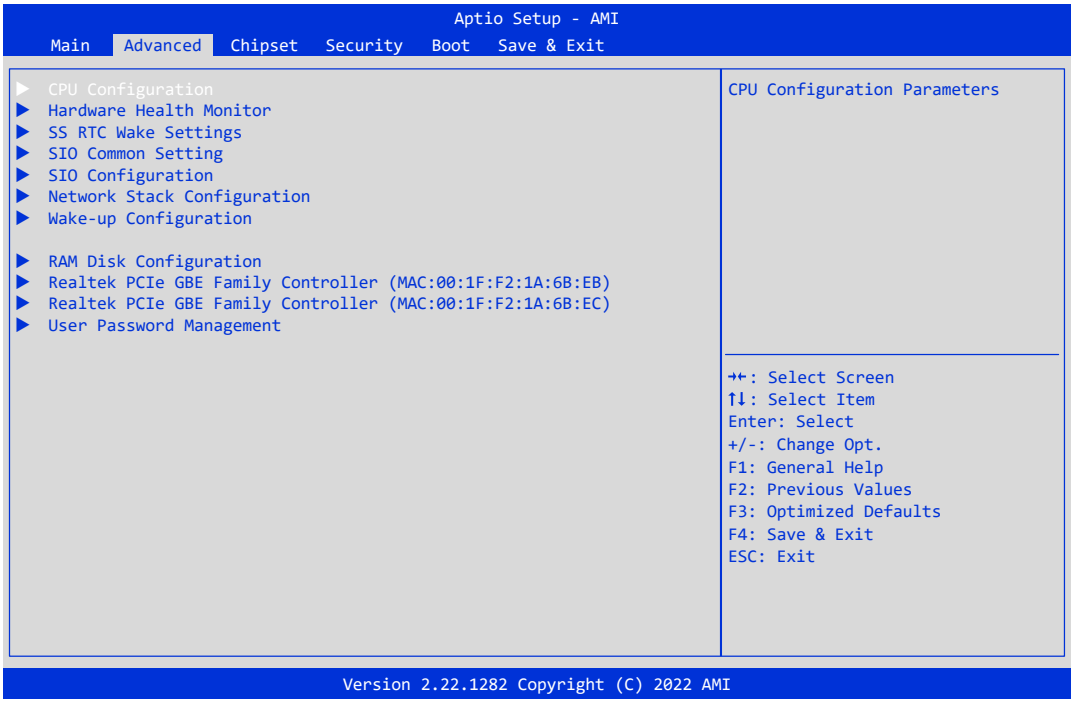

Figure 34: Illustration of the Advanced Settings screen

The Advanced Settings screen contains the following links:

- CPU Configuration
- Hardware Health Monitor
- S5 RTC Wake Settings
- SIO Common Setting
- SIO Configuration
- Network Stack Configuration
- Wake-up Configuration
- RAM Disk Configuration
- Realtek PCIe GBE Family Controller (MAC:00:1F:F2:1A:6B:EB)
- Realtek PCIe GBE Family Controller (MAC:00:1F:F2:1A:6B:EC)
- User Password Management

6.5.1 CPU Configuration

The CPU Configuration screen shows detailed information about the built-in processor.

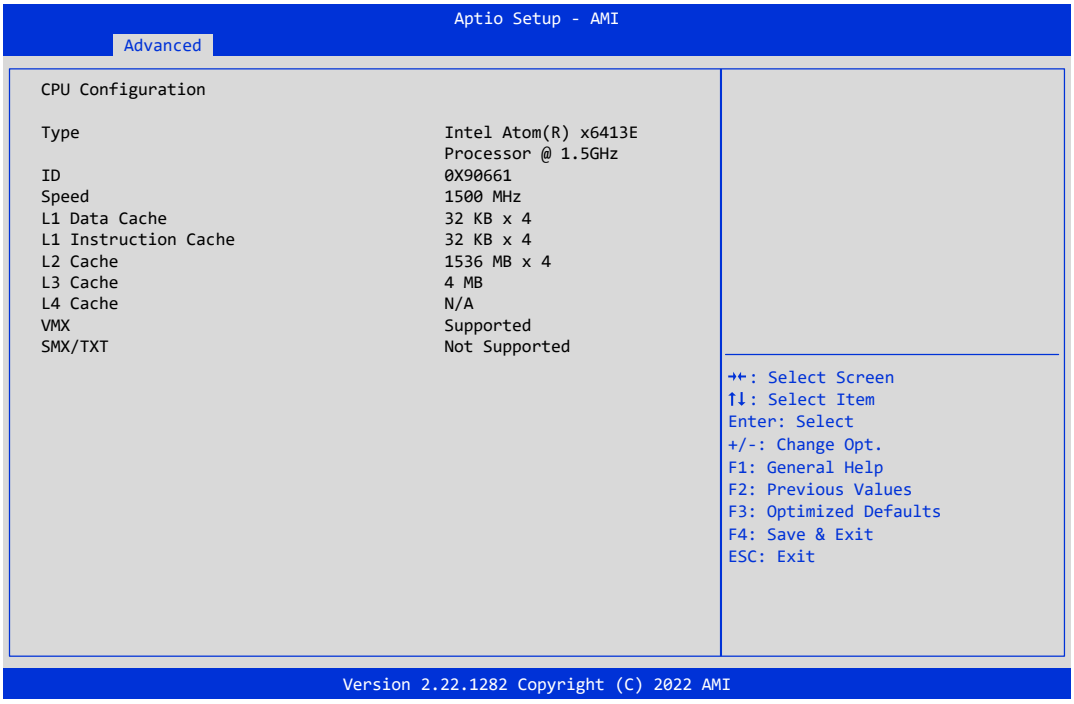

Figure 35: Illustration of the CPU Configuration screen

6.5.2 Hardware Health Monitor

The Hardware Health Monitor screen shows detailed information about the CPU cores and the GLAN chip temperatures.

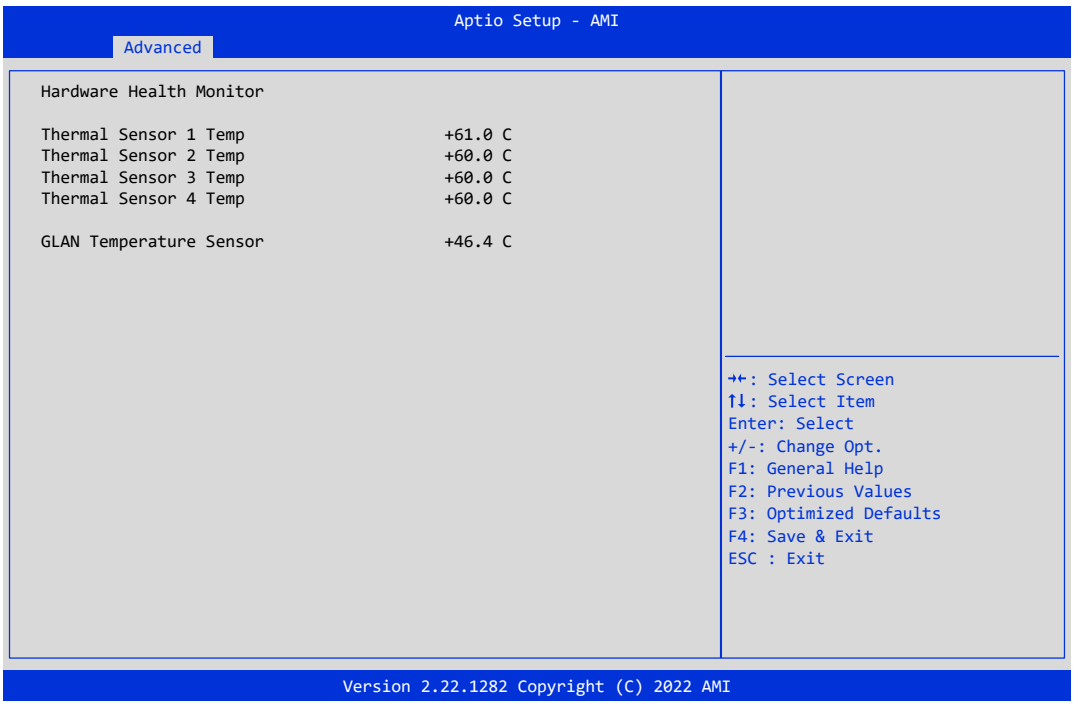

Figure 36: Illustration of the Hardware Health Monitor screen

6.5.3 S5 RTC Wake Settings

The S5 RTC Wake Settings screen provides settings to enable/disable the system to wake from S5 using the RTC alarm.

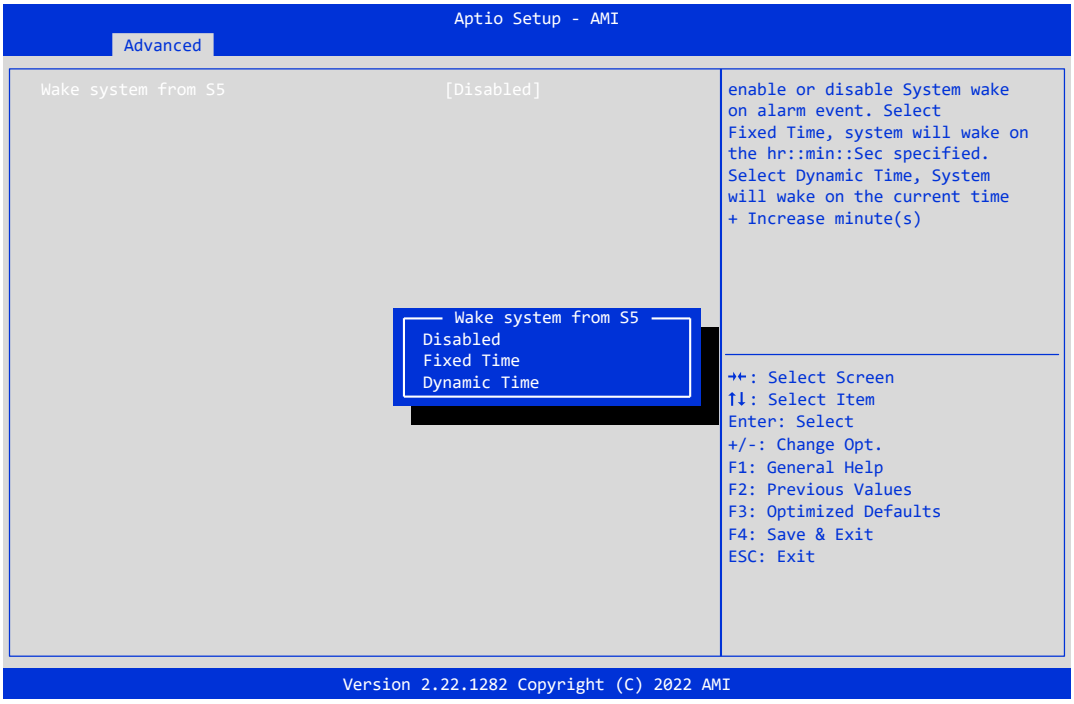

Figure 37: Illustration of the S5 RTC Wake Settings screen

6.5.4 SIO Common Setting

This SIO (Super IO) Common Setting screen shows options to enable/disable the locking of Legacy Resources.

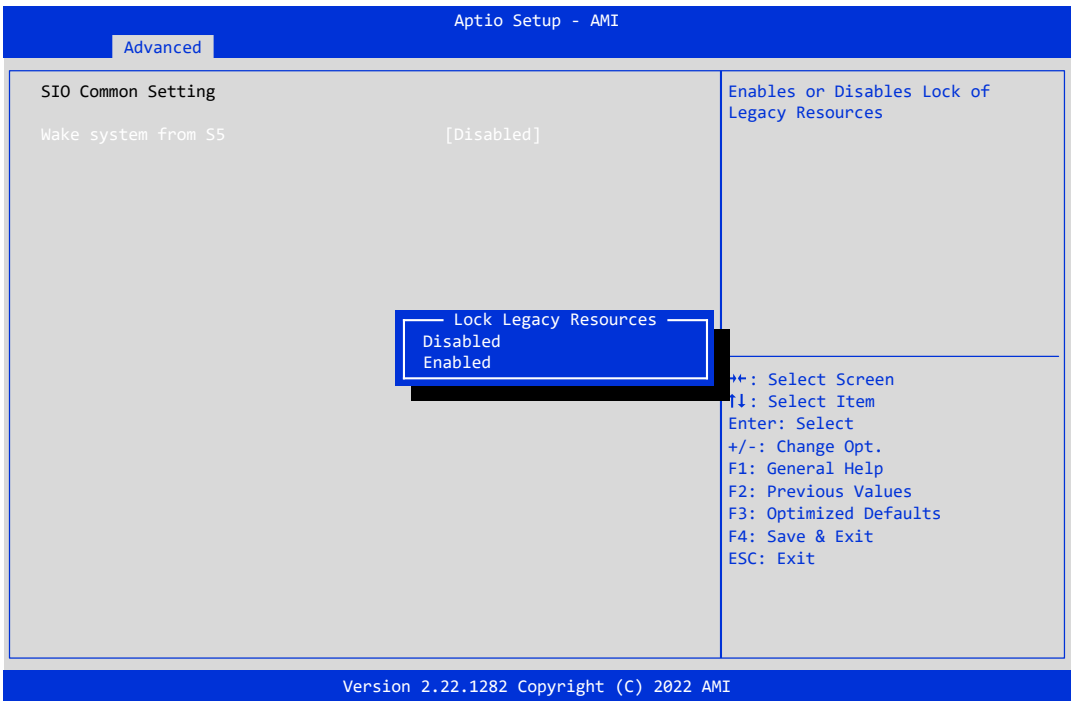

Figure 38: Illustration of the SIO Common Settings screen

6.5.5 SIO Configuration

The SIO (Super IO) Configuration screen shows a list of categories that can provide access to sub-screens. Sub-screens can be selected by using the Up and Down arrows on the number pad.

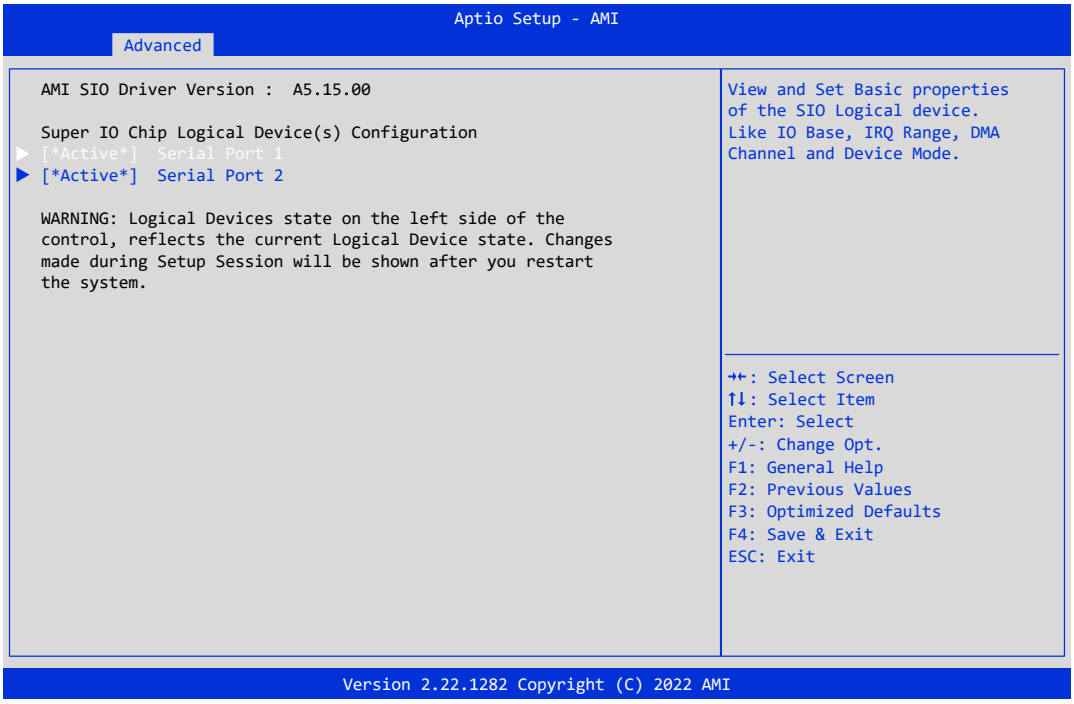

Figure 39: Illustration of the SIO Configuration screen

The Advanced Settings screen contains the following links:

- Serial Port 1
- Serial Port 2

6.5.5.1 Serial Port Configuration

The Serial Port Configuration screen allows for the configuration of individual serial ports.

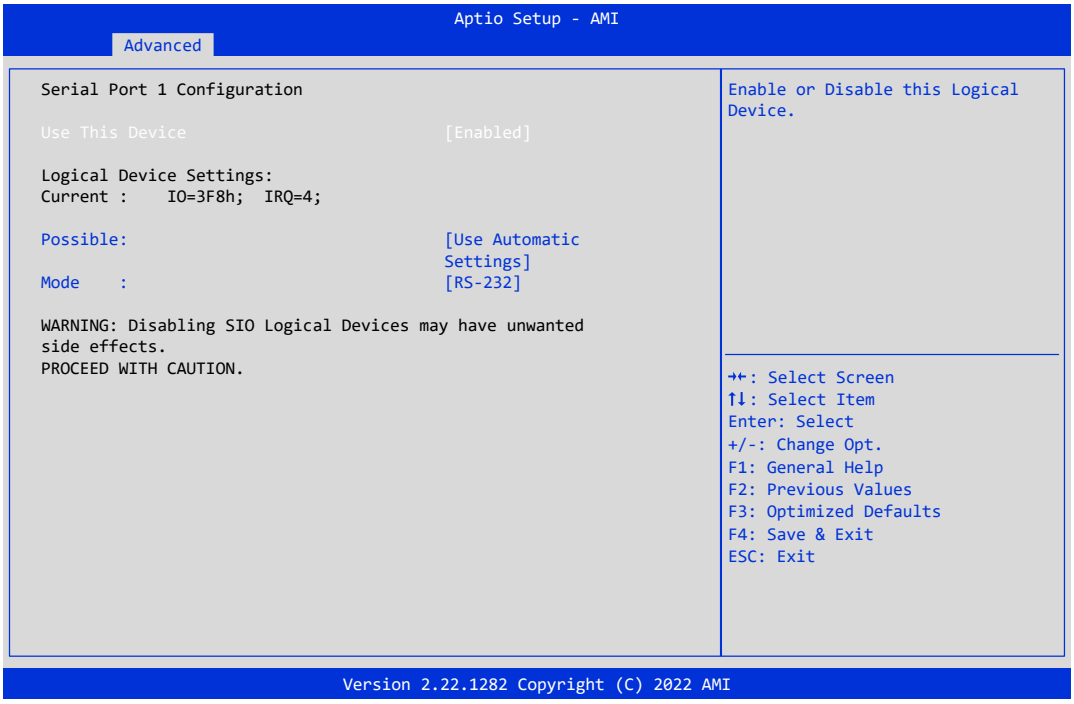

Figure 40: Illustration of the Serial Port Configuration screen

- **Possible**
  - Allows the user to change the device resource settings. New settings will be reflected on this setup page after the system restarts.
- **Mode**
  - Change the serial port mode to RS-232, RS-485, or RS-422.

6.5.6 Wake-up Configuration

The Wake-up Configuration screen provides options to wake the system.

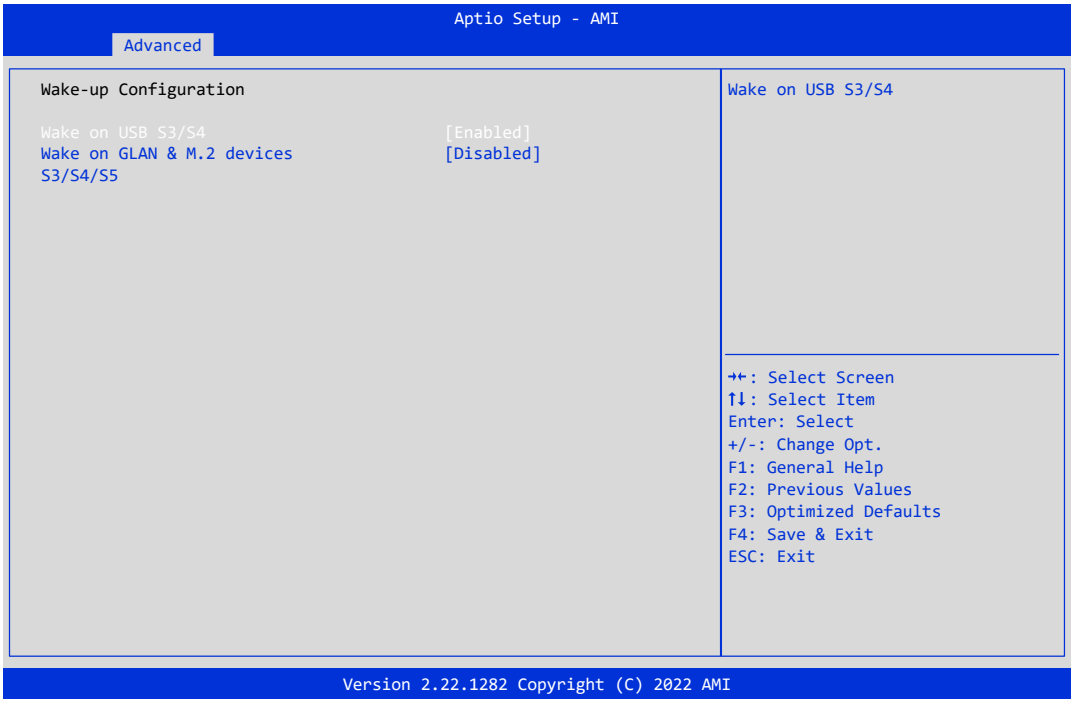

Figure 41: Illustration of the Wake-up Configuration screen

- **Wake on USB S3/S4**
  - Disabled or Enabled for wake on S3/S4 by USB keyboard or mouse.
- **Wake on GLAN & M.2 devices S3/S4/S5**
  - Disabled or Enabled for wake on S3/S4/S5 via GLAN or M.2 devices.

6.5.7 Realtek PCIe GBE Family Controller

The Realtek PCIe GBE Family Controller screen provides driver information and the Realtek Ethernet controller information.

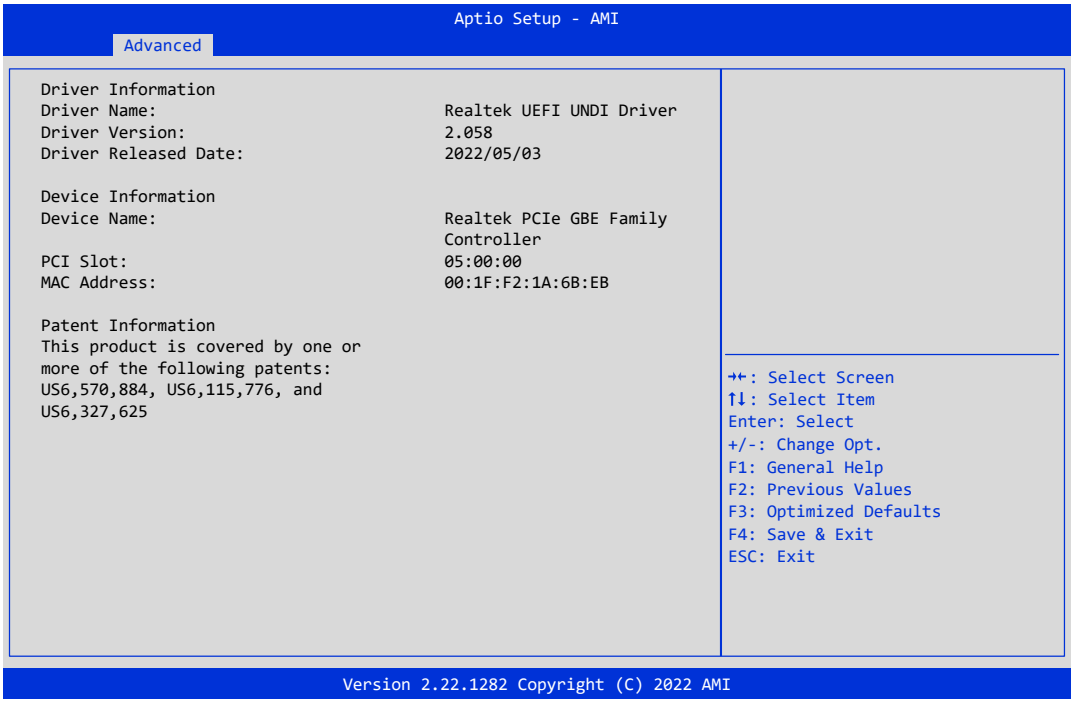

Figure 42: Illustration of the Realtek PCIe GBE Family Controller screen

6.5.8 User Password Management

The User Password Management screen allows for a user to change the administrator password.

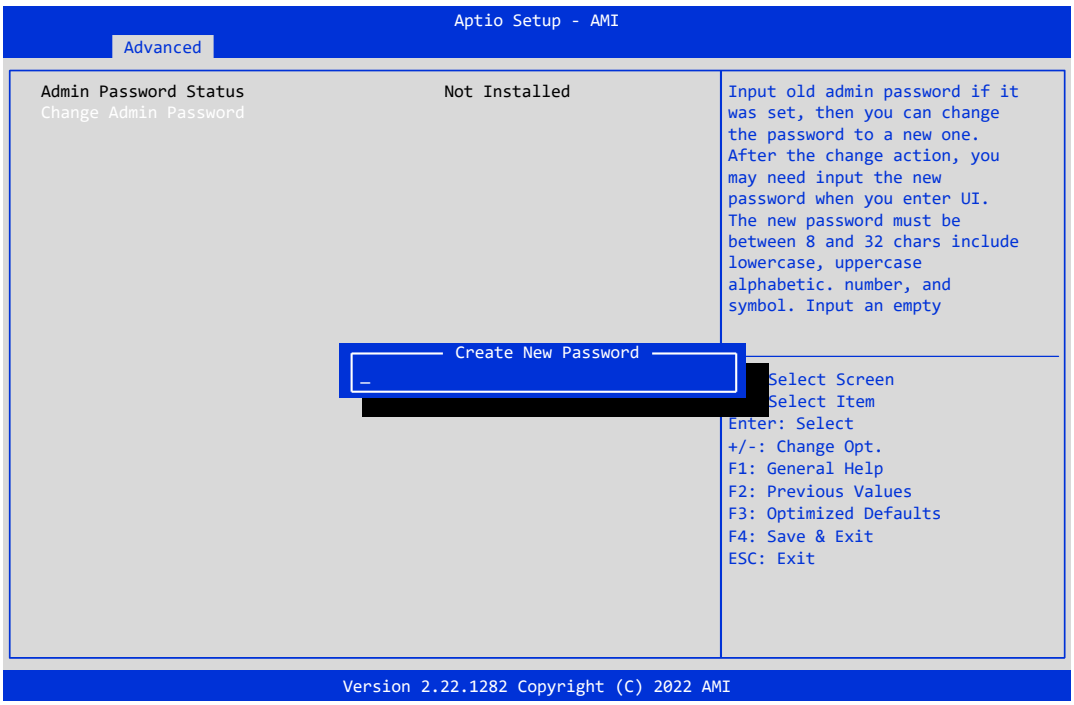

Figure 43: Illustration of the User Password Management screen

- **Change Admin Password**
  - Passwords must be between 8-32 characters in length and include at least one: lowercase letter, uppercase letter, a number, and a symbol.

6.6 Chipset Settings

The Chipset Settings screen shows a list of categories that can provide access to a sub-screen. Sub-screens can be selected by using the Up and Down arrows on the number pad.

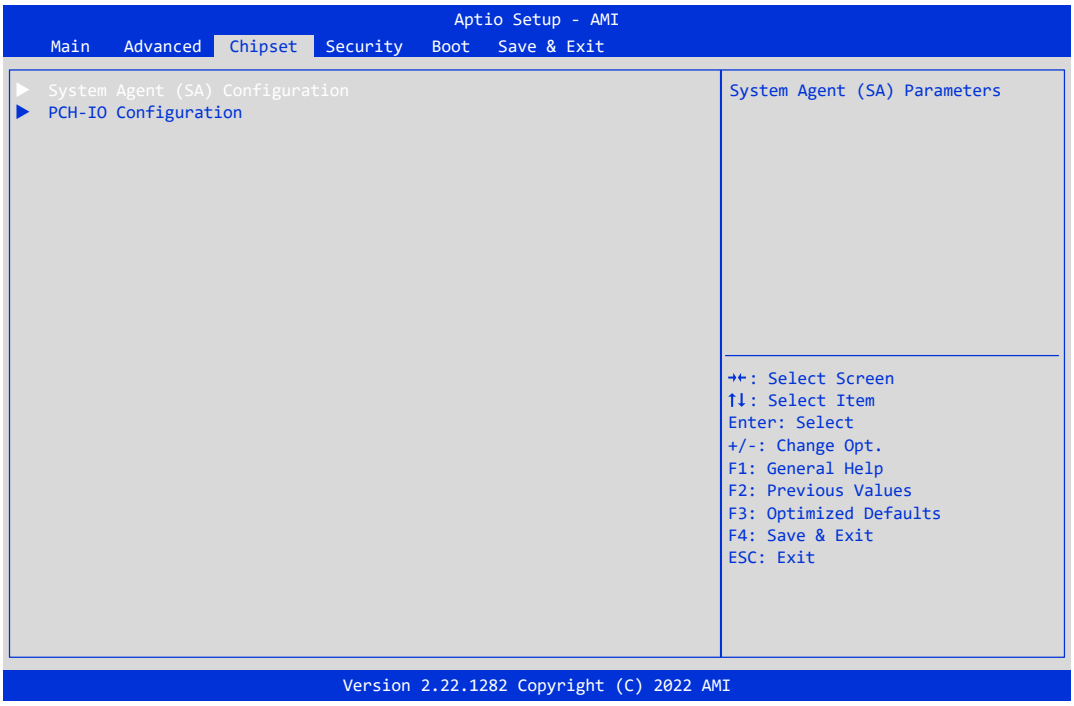

Figure 44: Illustration of the Chipset Settings screen

The Chipset Settings screen contains the following links:

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

6.6.1 System Agent (SA) Configuration

The System Agent (SA) Parameters screen shows support for VT-d (Virtualization for directed IO) as well as a link to the Memory Configuration settings.

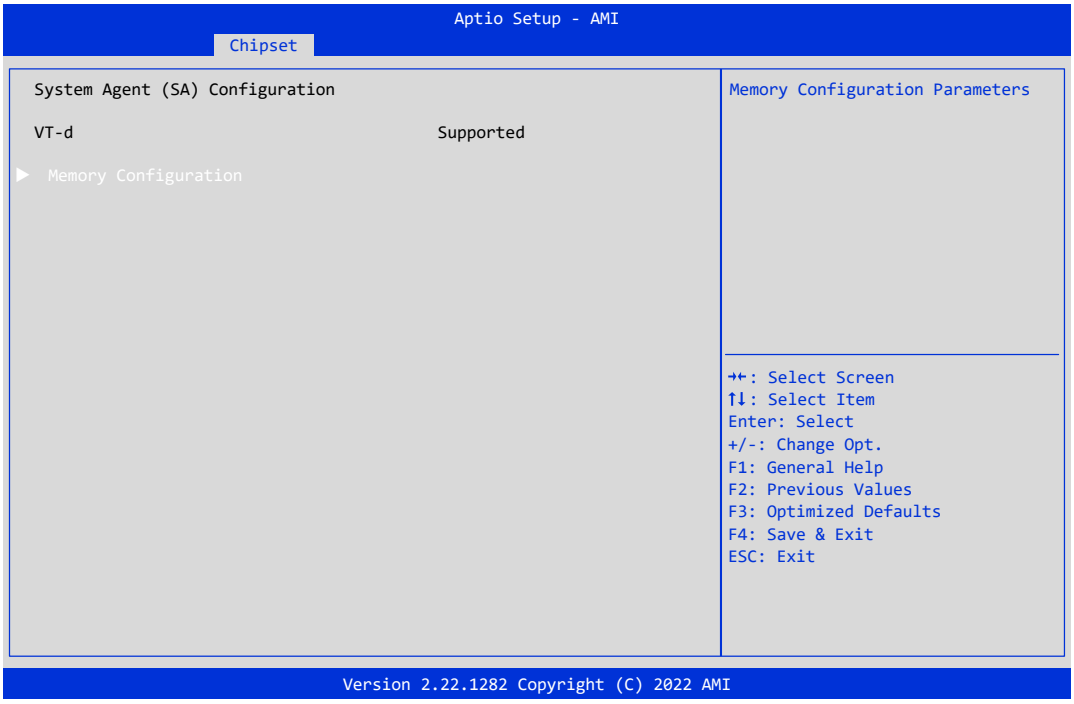

Figure 45: Illustration of the System Agent (SA) Configuration screen

6.6.1.1 Memory Configuration

The Memory Configuration screen provides detailed information for the installed system memory.

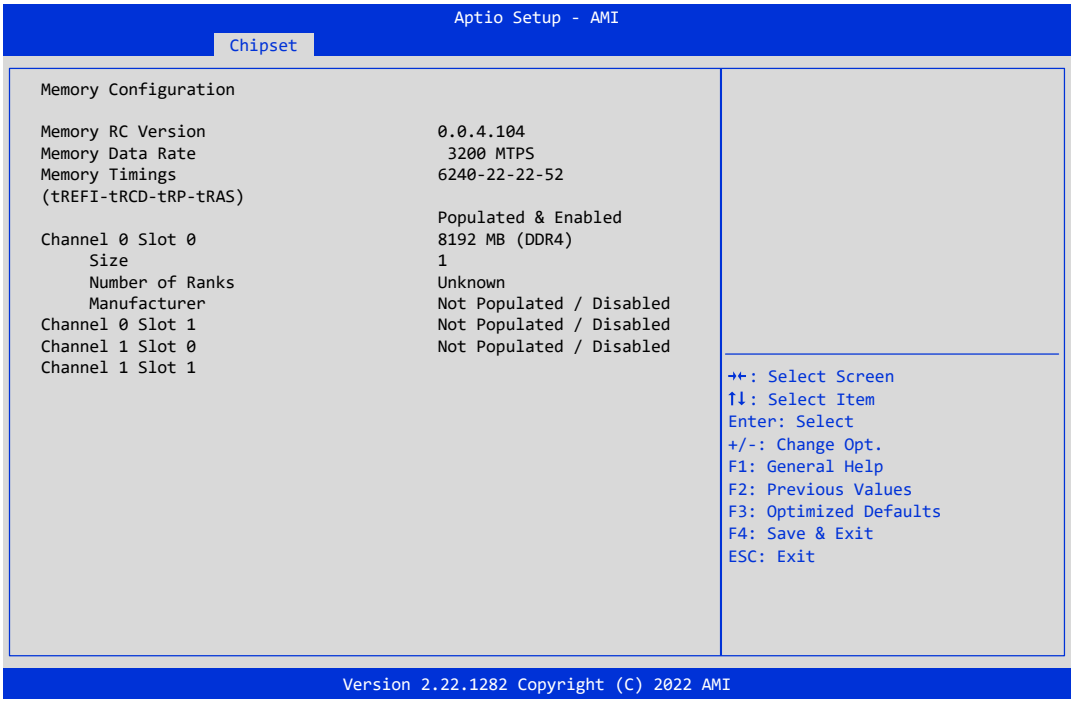

Figure 46: Illustration of the Memory Configuration screen

6.6.2 PCH-IO Configuration

The PCH-IO (Platform Control Hub IO) Configuration screen shows a list of categories that can provide access to sub-screens. Sub-screens can be selected by using the Up and Down arrows on the number pad.

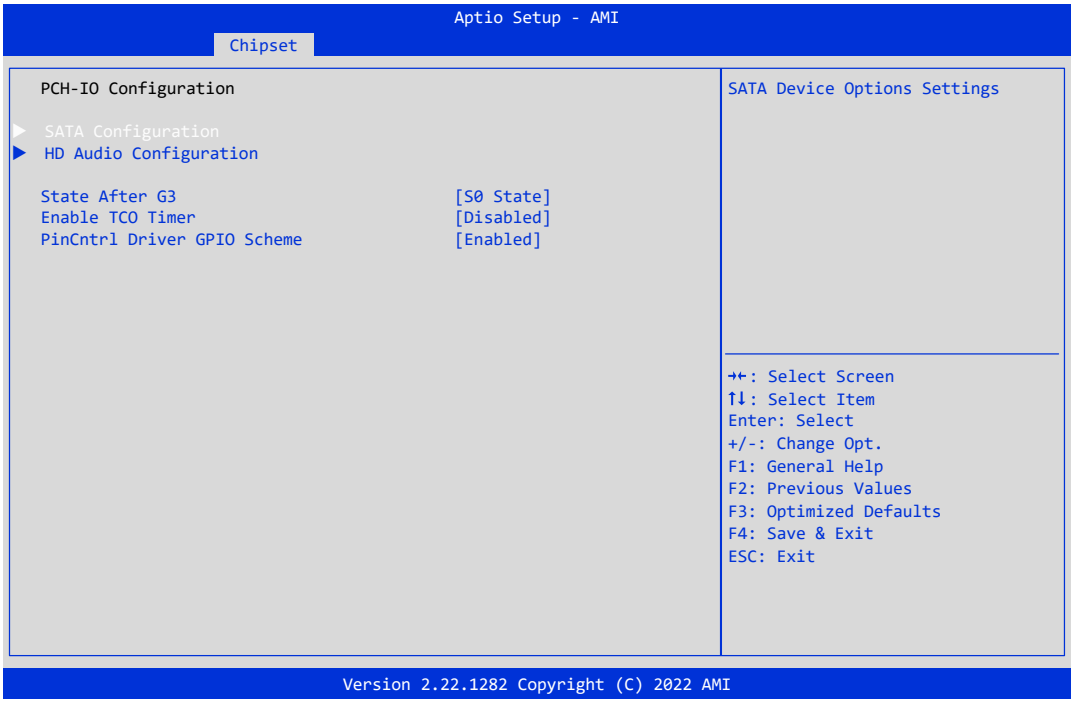

Figure 47: Illustration of the PCH-IO Configuration screen

The PCH-IO Configuration screen contains the following links and options:

- SATA Configuration
- HD Audio Configuration
- **State After G3**
  - Specify what state to go to when power is re-applied after a power failure (G3 state).
- **Enable TCO Timer**
  - Enable/Disable TCO timer. When disabled, it disables PCH ACPI timer, stops TCO timer, and ACPI WDAT table will not be published.
- **PinCntrl Driver GPIO Scheme**
  - Enable/Disable PinCntrl Driver GPIO Scheme

6.6.2.1 SATA Configuration

This SATA Configuration screen shows options for configuring the SATA devices.

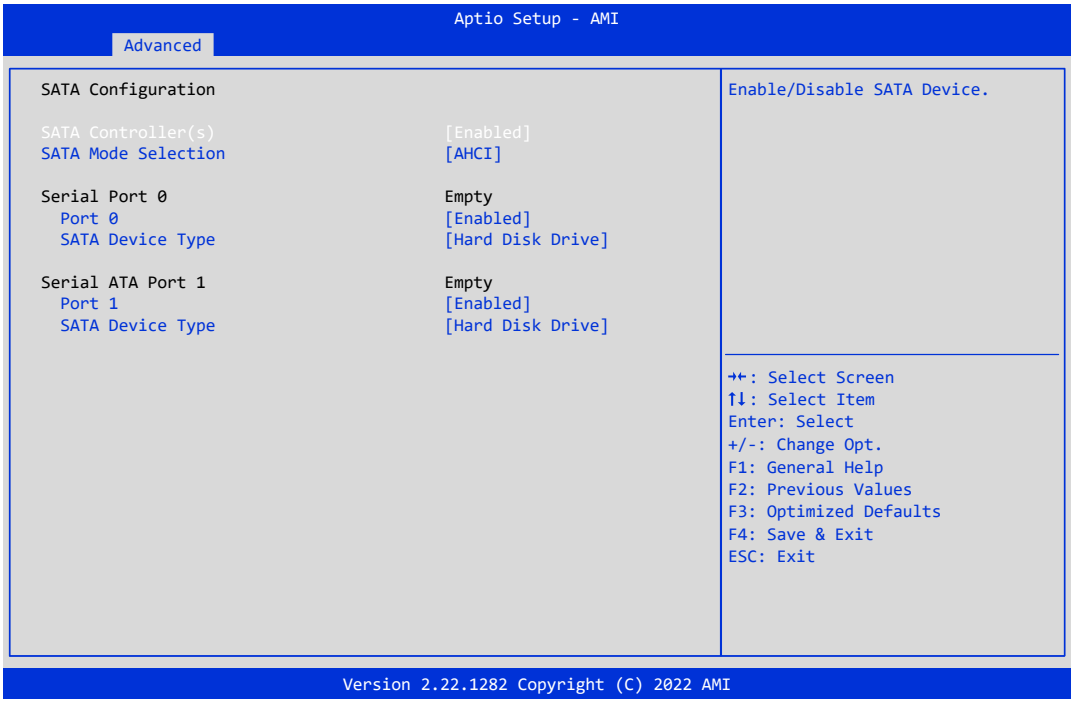

Figure 48: Illustration of the SATA Configuration screen

- **SATA Controllers**
  - Enabled or disable the SATA controllers.
- **SATA Mode**
  - Select the SATA Mode used.

Serial Port 0

This is the settings for the onboard M2_1 slot.

- **Serial Port 0**
  - Provides information if the port is occupied or not.
- **Port 0**
  - Enable or disable the mSATA drive.
- **SATA Device Type**
  - Select the type of storage installed.

Serial ATA Port 1

This is the settings for the onboard SATA1 connector.

- **Serial Port 1**
  - Provides information if the port is occupied or not.
- **Port 1**
  - Enable or disable the onboard SATA storage port.
- **SATA Device Type**
  - Select the type of storage installed.

6.6.2.2 HD Audio Configuration

This screen shows the HD Audio Configuration and allows for the HD Audio to be enabled or disabled.

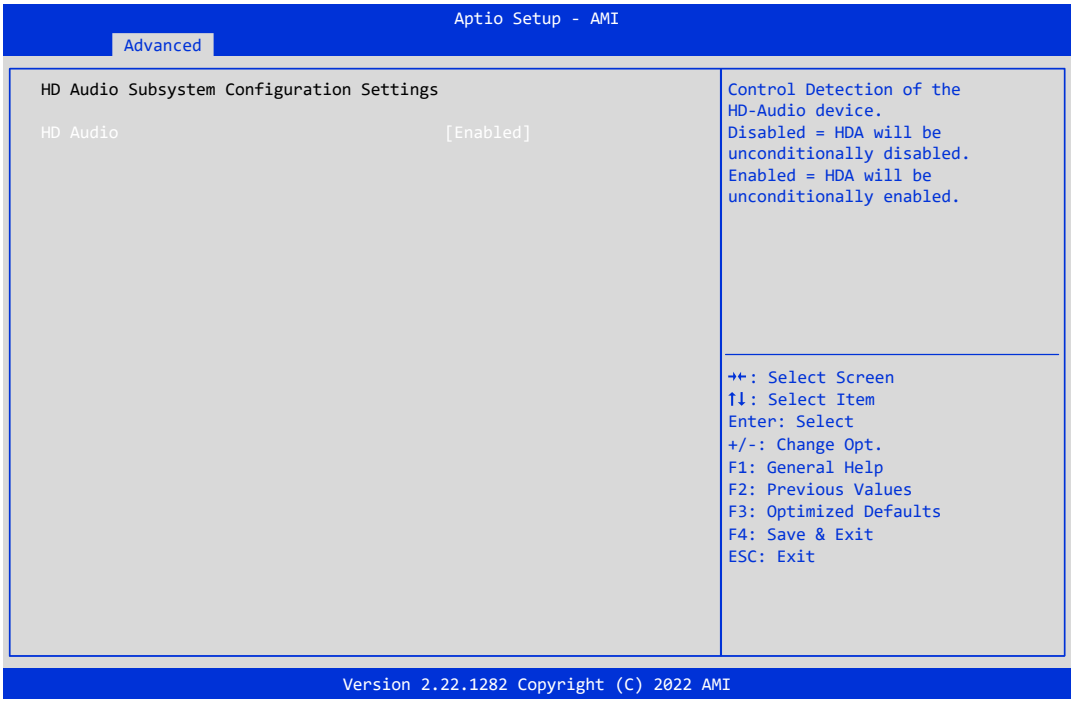

Figure 49: Illustration of the HD Audio Configuration screen

6.7 Security Settings

The Security Settings screen provides a way to restrict access to the BIOS or even the entire system.

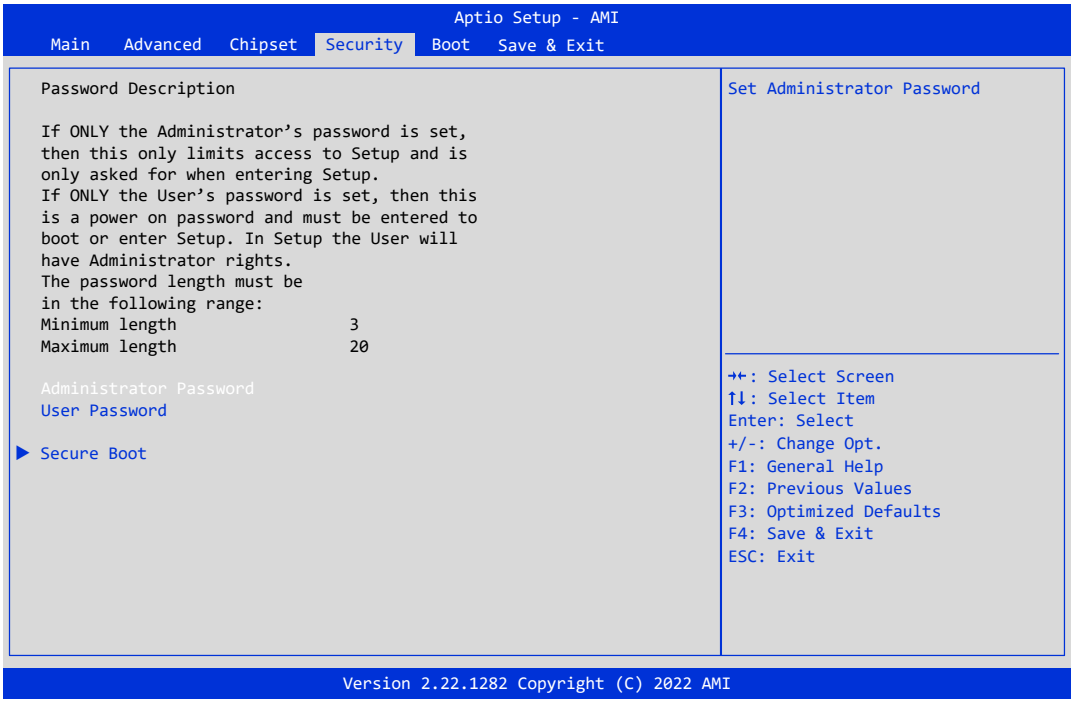

Figure 50: Illustration of the Security Settings screen

- **Administrator Password/User Password**
  - This option is for setting a password for accessing the BIOS setup utility. When a password has been set, a password prompt will be displayed whenever the BIOS setup utility is launched. This prevents an unauthorized person from changing any part of the system configuration.
  - When a supervisor password is set, the Password Check option will be unlocked.
- **Secure Boot**
  - Allows for user to configure and enable/disable the secure boot feature.

6.8 Boot Settings

The Boot Settings screen provides options for the Boot Configuration and Boot Option Priorities.

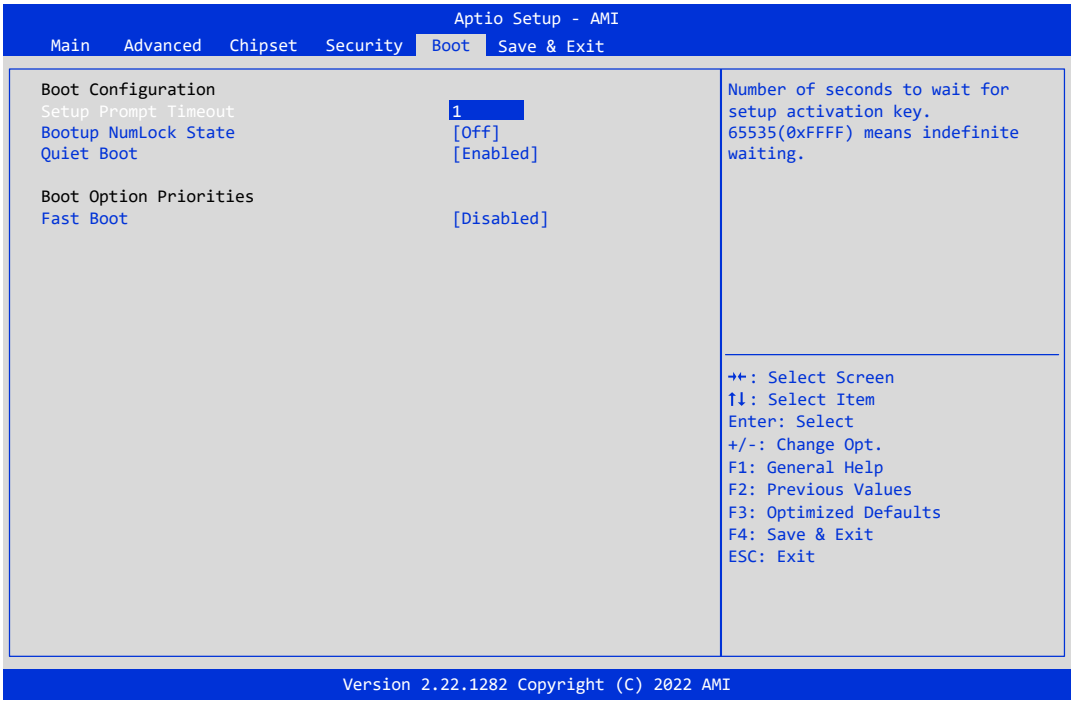

Figure 51: Illustration of the Boot Settings screen

Boot Configuration

Boot Settings Configuration has several features that can be run during the system boot sequence.

- **Setup Prompt Timeout**
  - Number of seconds to wait for the setup activation key. 65535(0xFFFF) means indefinite waiting.
- **Bootup NumLock State**
  - Select the keyboard NumLock state between On and Off.
- **Quiet Boot**
  - Enables or disables the Quiet Boot option.

Boot Option Priorities

Boot Option Priorities allows the system to enable/disable the Fast Boot setting.

- **Fast Boot**
  - Enables or disables boot with initialization of a minimal set of devices required to launch in the active boot option. (Has no effect for the BBS (BIOS Boot Specifications) boot options.)

6.9 Save & Exit

The Save & Exit Configuration screen has the following features:

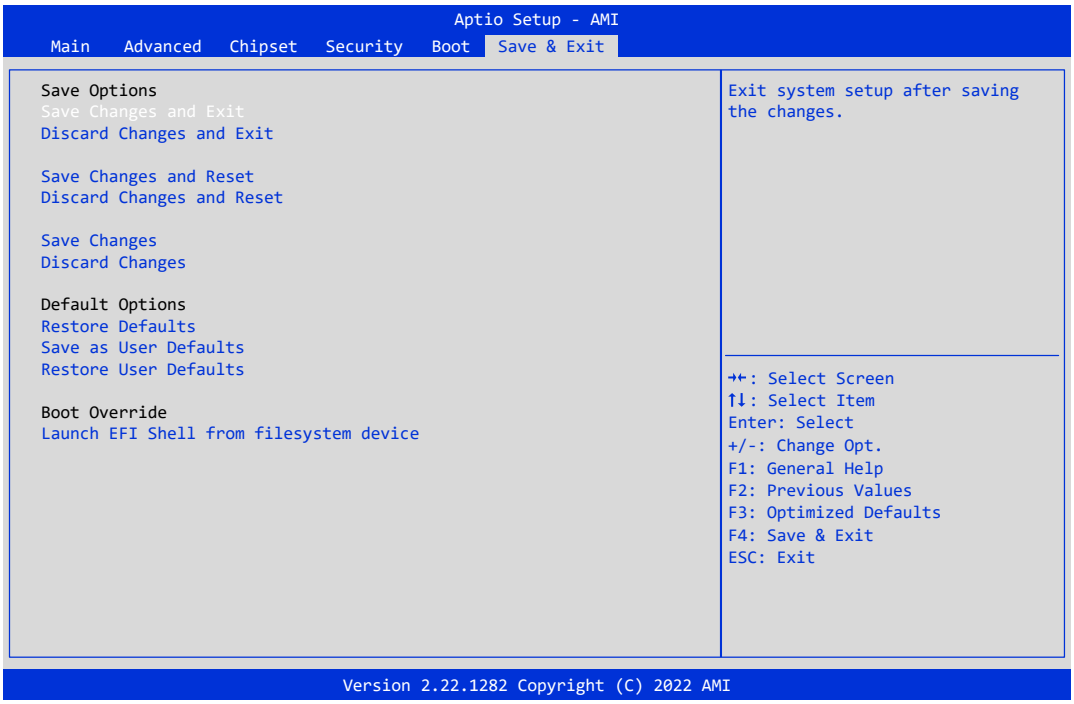

Figure 52: Illustration of the Save & Exit screen

Save Options

- **Save Changes and Exit**
  - Save all changes to the BIOS and exit the BIOS Setup Utility. The “F4” hotkey can also be used to trigger this command.
- **Discard Changes and Exit**
  - Exit the BIOS Setup Utility without saving any changes. The “Esc” hotkey can also be used to trigger this command.
- **Save Changes and Reset**
  - Save all changes to the BIOS and reboot the system. The new system configuration parameters will take effect.
- **Discard Changes and Reset**
  - This command reverts all changes to the settings that were in place when the BIOS Setup Utility was launched.
  - The “F2” hotkey can also be used to trigger this command.
- **Save Changes**
  - Save Changes done so far to any of the setup options.
- **Discard Changes**
  - This command reverts all changes to the settings that were in place when the BIOS Setup Utility was launched.

Default Options

- **Restore Defaults**
  - Restore/Load Default values for all the setup options.
- **Save as User Defaults**
  - Save the changes done so far as User Defaults.
- **Restore User Defaults**
  - Restore the User Defaults to all the setup options.

Boot Override

- **Launch EFI Shell from Filesystem Device**
  - Attempts to launch the EFI Shell application (Shellx64.efi) from one of the available file system devices.

7. Software and Technical Support

7.1 Windows and Linux Support

The VIA AMOS-3007 is fully compatible with Windows and Linux operating systems.

7.2 Technical Support and Assistance

- For utility downloads, latest documentation, drivers and new information about the VIA AMOS-3007, go to http://www.viatech.com/en/systems/amos/amos-3007
- For technical support and additional assistance, always contact your local sales representative or system distributor, or go to https://www.viatech.com/en/support/technical-support/ to fill up the form request.
- For OEM clients and system integrators developing a product for long term production, other code and resources may also be made available. Please visit our website at https://www.viatech.com/en/about/contact/ to submit a request.

Appendix A Installing Wireless Accessories

This chapter provides you with information on how to install the optional VIA wireless modules into the VIA AMOS-3007. It is recommended to use a grounded wrist strap before handling computer components. Electrostatic discharge (ESD) can damage some components.

A.1 Installing the VIA EMIO-8530 Wi-Fi & Bluetooth M.2 Module Kit

Step 1

Remove the bottom plate from the VIA AMOS-3007 as described in Step 1 of section 5.1.

Step 2

Remove the front panel I/O plate by removing the five screws around the outer edges and the four DB9 screws beside each COM port.

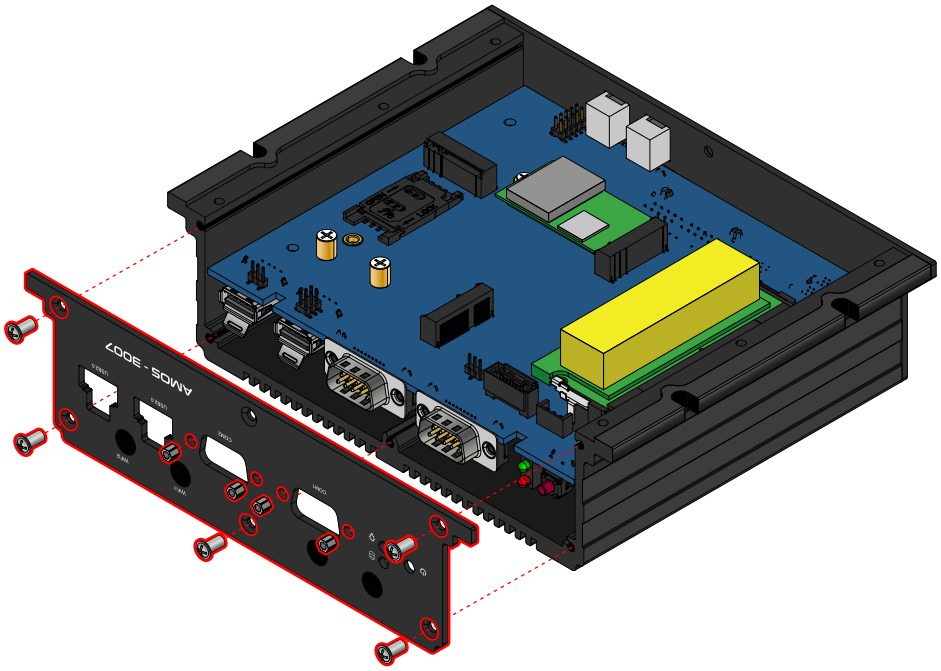

Figure 53: Removing the front panel I/O cover

Step 3

Remove the screw from the onboard standoff, then align the notch on the VIA EMIO-8530 module with its counterpart on the M.2_3 slot on the mainboard. Insert the module at a 30° angle and align the mounting hole on the VIA EMIO-8530 module with the mounting hole-on the standoff. Secure the VIA EMIO-8530 module by replacing the screw.

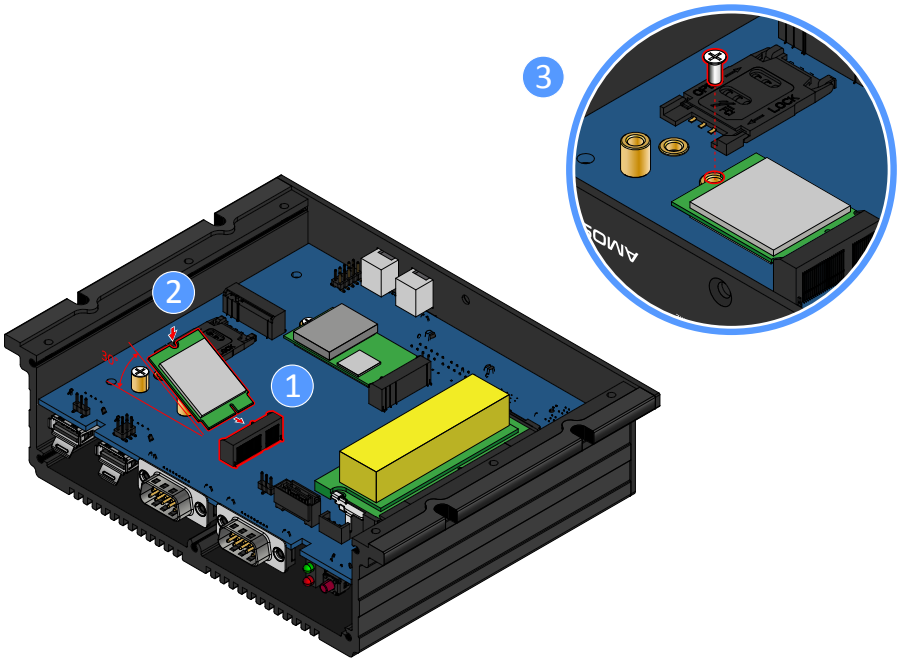

Figure 54: Installing and securing the VIA EMIO-8530 module

Step 4

Peel off the bottom protective (plastic) cover of VIA EMIO-8530 module thermal pad (Part Number: 99G43-14387X) included in the package. Paste the thermal pad onto the shielding on the VIA EMIO-8530 module.

Step 5

Peel off the remaining protective (plastic) cover of the VIA EMIO-8530 module thermal pad.

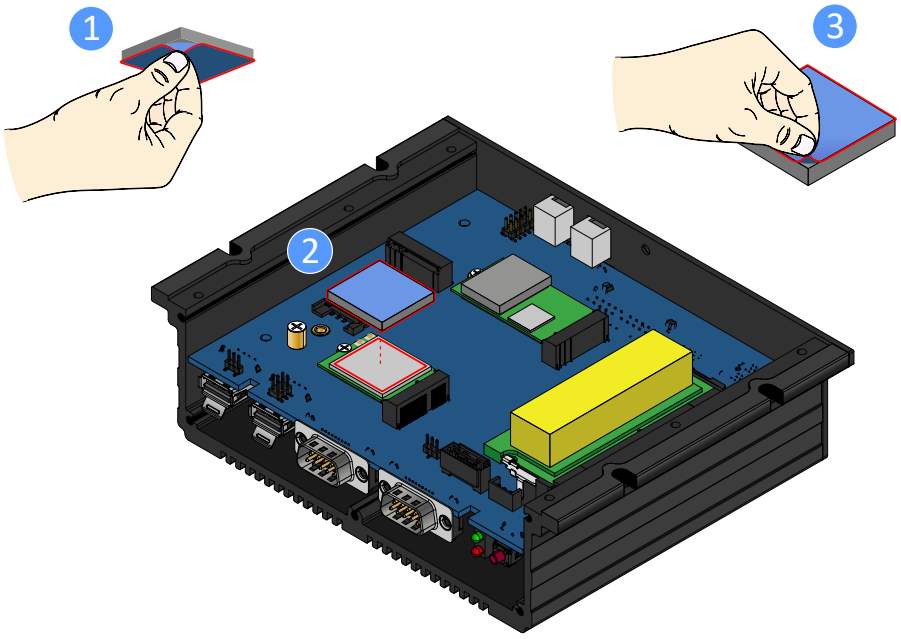

Figure 55: Installing the VIA EMIO-8530 module thermal pad

Step 6

Insert the Wi-Fi antenna cables into the antenna holes (labeled as WIFI1 and WIFI2) from the inside of the front panel I/O plate. Insert the washers, fasten them with the nuts, and install the external antennas. Connect the other ends of the corresponding Wi-Fi antenna cables to the micro-RF connectors (I-PEX), labeled “1” and “2” on the VIA EMIO- 8530 module.

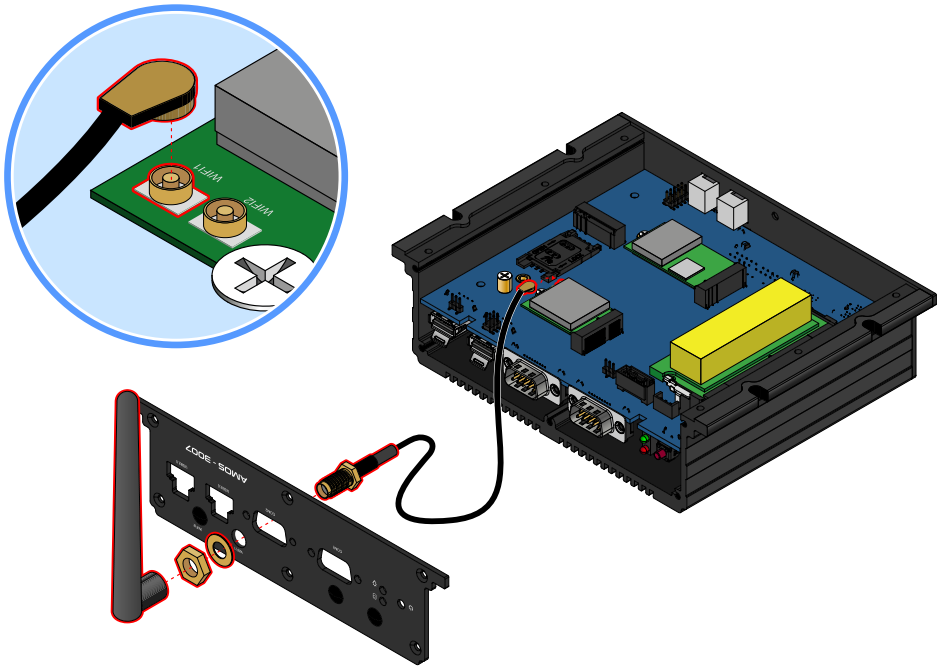

Figure 56: Installing the antennas and connecting the USB Wi-Fi cables (VIA EMIO-8530)

Step 7

Reinstall the front panel I/O cover and bottom plates.

A.2 Inserting the SIM Card

Step 1

Remove the bottom plate from the VIA AMOS-3007 as described in Step 1 of section 5.1.

Step 2

Firmly push back the SIM card slot to unlock the opening.

Step 3

Pull up the slot and place the SIM card inside. Close the SIM card slot and lock it by sliding it back.

Figure 57: Inserting the SIM card

Step 4

Reinstall the bottom plate.

A.3 Installing the VIA EMIO-8570 4G LTE & GPS M.2 Module Kit

Step 1

Remove the bottom plate from the VIA AMOS-3007 as described in Step 1 of section 5.1 and the front panel I/O plate as described in Step 2 of section A.1.

Step 2

Insert the standoff included in M.2 screw pack into the hole closest to the M.2 slot.

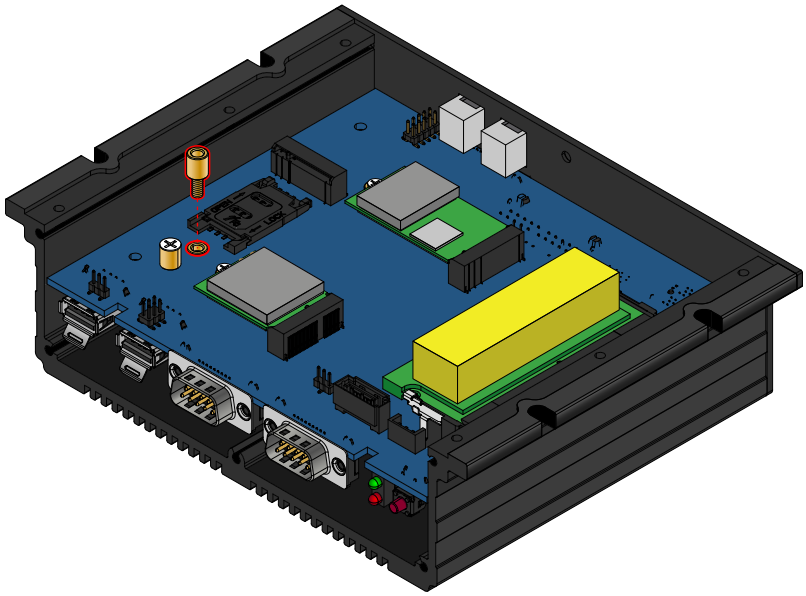

Figure 58: Inserting the standoff

Step 3

Align the notch on the VIA EMIO-8570 module with the counterpart on the M2_2 slot. Then insert the module at a 30° angle. Align the mounting hole on the VIA EMIO-8570 module with the mounting hole-on the standoff, and then secure the VIA EMIO-8570 module in place with the screw included in the M.2 screw pack.

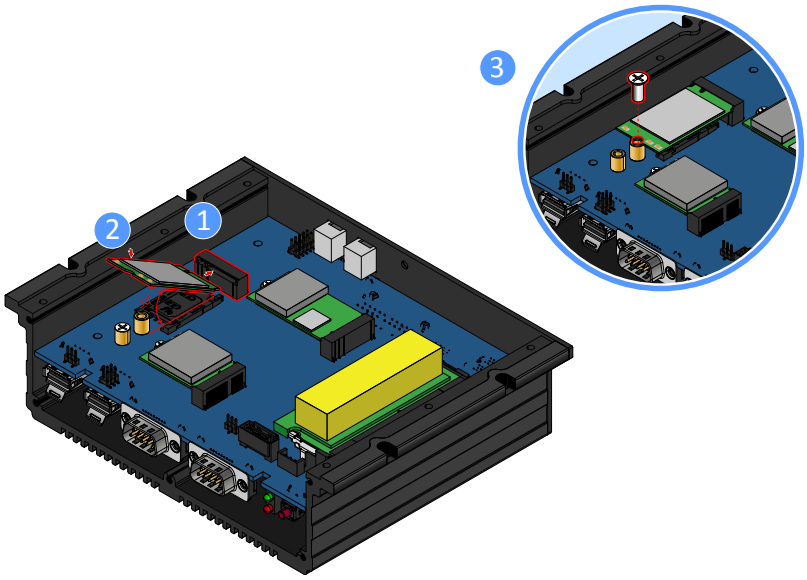

Figure 59: Installing VIA EMIO-8570 module

Step 4

Peel off the bottom protective (plastic) cover of VIA EMIO-8570 module thermal pad (Part Number: 99G43-14385X) included in the package. Paste the thermal pad onto the shielding on the VIA EMIO-8570 module.

Step 5

Peel off the remaining protective (plastic) cover of the VIA EMIO-8570 module thermal pad.

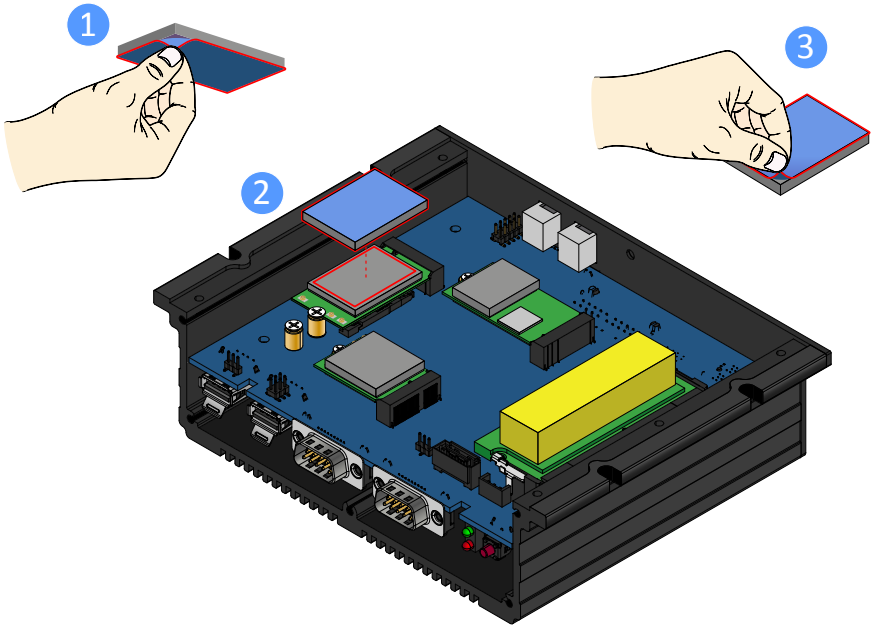

Figure 60: Installing the VIA EMIO-8570 module thermal pad

Step 6

Insert the 4G Main antenna cable into one of the unlabeled antenna holes from the inside of the front panel I/O plate. Insert the washer, fasten it with the nut, and install the external antenna. Connect the other end of the 4G Main antenna cable to the micro-RF connector (I-PEX), labeled “M” on the VIA EMIO- 8570 module.

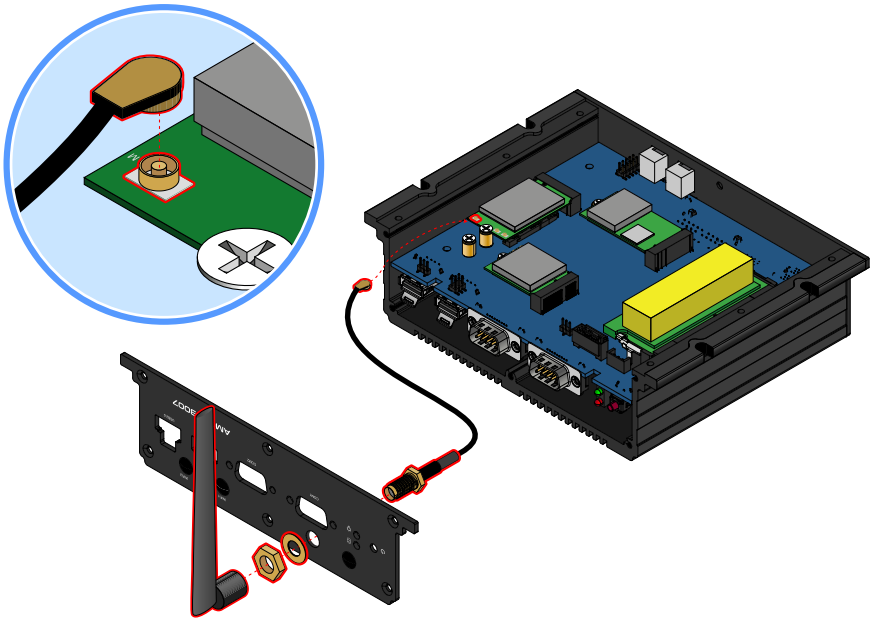

Figure 61: Installing the antennas and connecting the 4G Main antenna (VIA EMIO-8570)

Step 7

Insert the GPS antenna cable into the other unlabeled antenna hole from the inside of the front panel I/O plate. Insert the washer, fasten it with the nut, and install the external antenna. Connect the other end of the GPS antenna cable to the micro-RF connector (I-PEX), labeled “G” on the VIA EMIO-8570 module.

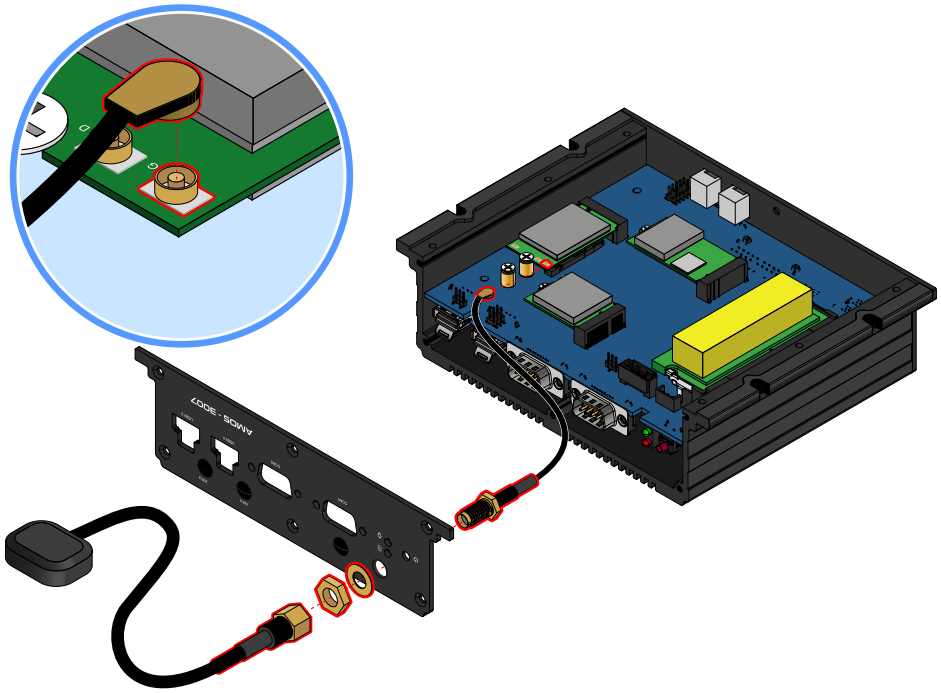

Figure 62: Installing the antennas and connecting the GPS antenna (VIA EMIO-8570)

Step 8

Reinstall the front panel I/O and bottom plates.

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