USER MANUAL

AMOS-3002

Compact Fanless Embedded System

1.06-05212018-104500

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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

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2

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

Notice 3

The product described in this document is designed for general use, VIA Technologies assumes no responsibility for the conflicts or damages arising from incompatibility of the product. Check compatibility issue with your local sales representatives before placing an order.

Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

Battery Recycling and Disposal

- ☐ 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.
- ☐ Lay this equipment on a reliable flat surface before setting it up.
- ☐ Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
- ☐ Place the power cord in such a way that people cannot step on it.
- ☐ Always unplug the power cord before inserting any add-on card or module.
- ☐ If any of the following situations arises, get the equipment checked by authorized service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment has not worked well or you cannot get it work according to User's Manual.
  - The equipment has dropped and damaged.
  - The equipment has obvious sign of breakage.
- ☐ Do not leave this equipment in an environment unconditioned or in a storage temperature above 70°C (158°F). The equipment may be damaged.
- ☐ 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

- ☐ 1 x AMOS-3002 system
- ☐ 1 x VESA mounting plate (with screws)
- ☐ 2 x Wall mounting brackets (with screws)
- ☐ 1 x Power Cable, 2-Pole Phoenix Plug to DC jack
- ☐ 1 x Thermal pad for memory
- ☐ 1 x Thermal pad for CFast
- ☐ 4 x Rubber feet pack
- ☐ 1 x HDMI® to DVI-D adapter cable

Ordering Information

Part Number	Description
AMOS-3002-1D10A2	1.0GHz Eden® X2 CPU based fanless embedded system, with 1 x CFast slot, 1 x SIM slot, 1 x VGA, 1 x HDMI®, 4 x USB 2.0, 2 x lockable USB 2.0, 2 x COM, 2 x Gigabit Ethernet ports, 1 x Line-out, 1 x Mic-in, 1 x GPIO, and DC-in 12V
AMOS-3002-2D10A2	1.0GHz Eden® X2 CPU Based Fanless Embedded System, with 1 x Hard Disk Drive Bay, 1 x CFast slot, 1 x SIM slot, 1 x VGA, 1 x HDMI®, 4 x USB 2.0, 2 x lockable USB 2.0, 2 x COM, 2 x Gigabit Ethernet ports, 1 x Line-out, 1 x Mic-in, 1 x GPIO, and DC-in 12V

Optional Accessories

External AC-to-DC Adapter and Power Cord

Part Number	Description
99G63-020316	AC-to-DC adapter, 2-pole Phoenix connector, 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-2531-00A1	VAB-820-W-M IEEE 802.11b/g/n miniPCIe Wi-Fi & Bluetooth module with assembly kit and antenna
EMIO-2550-00A1	3.75G HSPA/UMTS mobile broadband full size miniPCIe module with GPS combo, SIM slot, and antenna
EMIO-2550-01A1	3.75G HSPA/UMTS mobile broadband full size miniPCIe module

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1. Product Overview

The AMOS-3002 is a fanless and ultra-compact embedded system, which supports intensive I/O functions for diversified embedded applications. Based on the VIA Pico-ITX form factor, its innovative design helps to simplify the efforts of embedded system integration. The AMOS-3002 carries a qualified thermal performance design that allows a wide range of operating temperatures making it suitable for various industrial or embedded applications.

The AMOS-3002 is composed of a few main mechanical parts such as top cover, bottom plate, and front and rear I/O access plates, which brings optimization to the system integration. AMOS-3002 offers two SKUs: AMOS-3002-1D10A2 and AMOS-3002-2D10A2. AMOS-3002-1D10A2 supports CFast slot for CFast flash card storage while the AMOS-3002-2D10A2 supports CFast slot and 2.5" SATA hard disk drive bay. The AMOS-3002 comes with support for wireless communication modules including GPS, 3G, Bluetooth and Wi-Fi.

1.1. Key Features

- ☐ **A fanless and ultra compact chassis**
  The AMOS-3002 houses the EPIA-P900 Pico-ITX form factor embedded board. With a maximum height of 49mm for AMOS-3002-1D10A2 and 67mm for AMOS-3002-2D10A2, this embedded system can be used in space critical installation environments.
- ☐ **Stylish, fully sealed metal alloy design**
  The chassis is composed of four main parts. The stylishly ridged aluminum top cover does double duty and acts as the heatsink.
- ☐ **Optimized integration with front and rear I/O access**
  Front and rear I/O access enables the AMOS-3002 to easily support various applications.
- ☐ **Wide Range of Operating Temperatures**
  The AMOS-3002 carries a qualified thermal performance design which allows a wide range of operating temperatures from -20°C up to 60°C, suitable for space and environment critical applications.
- ☐ **Shock Resistant**
  The AMOS-3002 is shock resistant to 50G (with CFast flash card) for maximum reliability.
- ☐ **Display Acceleration**
  The AMOS-3002 supports hardware acceleration of MPEG-2, WMV9, VC1 and H.264 for full HD 1080P display.
- ☐ **Networking options**
  The AMOS-3002 provides Gigabit Ethernet support for high speed data transmission. The optional wireless networking module can provide the AMOS-3002 with the freedom of GPS, 3G, Bluetooth and Wi-Fi access.
- ☐ **Multiple mounting solutions**
  The AMOS-3002 support multiple methods for mounting the chassis securely. The rugged industrial PC can be mounted to a table or wall using the mounting brackets, or even to VESA mountable surfaces with the VESA mounting kit.

☐ **Embedded OS ready**

The AMOS-3002 is 100% compatible with several operating systems including Microsoft Windows XP, Microsoft Windows 7, Microsoft Windows Embedded Standard 7 and Linux.

1.2. Product Specifications

1.2.1. Computing System

- **Processor**
  - 1.0GHz VIA Eden® X2
    - 800MHz Front Side Bus
    - 2MB L2 Cache
- **Chipset**
  - VIA VX900H advanced all-in-one system processor
- **BIOS**
  - AMI BIOS, 8Mbit Flash memory
- **System Power Management**
  - Wake-on LAN, Keyboard Power-on, Timer Power-on, System power management, AC power failure recovery, Watchdog Timer control

1.2.2. Memory

- **Technology**
  - 1 x DDR3 800/1066 SODIMM slot
- **Maximum Capacity**
  - Up to 4GB memory size

1.2.3. Graphics

- **Controller**
  - Integrated VIA C-9 HD DX9 3D/2D graphics with MPEG-2, WMV9, VC1 and H.264 decoding acceleration
- **Display Memory**
  - Optimized Unified Memory Architecture (UMA) Supports up to 512MB frame buffer using system memory
- **CRT Interface**
  - Support 1 x External VGA port by a DB-9 connector Pixel Resolution support up to 2560 x 1600
- **HDMI® Interface**
  - Onboard 1 of HDMI® port
- **Dual View**
  - Support dual independent display of VGA + HDMI at different resolutions, pixel depths, and refresh rates

1.2.4. Gigabit Ethernet

- **Controller**

  Built-in two VIA VT6130 Gigabit Ethernet controllers
- **Interface**
  - Support two Gigabit Ethernet ports

1.2.5. HD Audio

- **Controller**
  - VIA VT2021 High Definition Audio Codec
- **Interface**
  - Support 2 x Audio jacks: Line-out and Mic-in

1.2.6. Serial

- **USB Ports**
  - Support 6 x USB ports, USB 2.0 compliant.
    - In the six USB ports, of which the two used Lockable USB interface connector for secure connection
- **Serial Ports**
  - 2 x COM ports of 1 x RS-232 and 1 x RS-232/RS-422/RS-485 (jumper selectable)

1.2.7. GPIO

- **General Purpose I/O**
  - Support 1 x DIO (D-Sub 9-pin) port of 8-bit GPIO + 5V power source (4GPI+4GPO)

1.2.8. Storage

- **Flash Interface**
  - Support 1 x CFast flash card slot as default
- **HDD**
  - Support 1 x 2.5" SATA HDD bay by extended chassis (AMOS-3002-2D10A2)

1.2.9. System Indicator

- **Power Status LED**
  - 1 x Green color LED
- **HDD Activity LED**
  - 1 x Red color LED

1.2.10. Watchdog Timer

- **Output**
  - System reset
- **Interval**
  - Programmable 1 ~ 255 sec

1.2.11. Expansion

- **MiniPCIe**
  - 1 x MiniPCIe slot
- **SIM**
  - 1 x SIM card slot

1.2.12. Front Panel I/O

- 2 x COM ports (1 x RS-232 and 1 x RS-232/RS-422/RS-485)
- 2 x USB 2.0 ports
- 2 x Lockable USB 2.0 ports for secure connection
- 2 x Audio jacks: Line-in and Mic-out
- 1 x DIO port for 8-bit GPIO
- 1 x CFast flash slot
- 1 x SIM card slot
- 1 x Power (on/off) button
- 1 x HDD LED indicator (for HDD activity)
- 1 x Power LED indicator (for power status)
- 1 x 2-pole Phoenix DC jack

1.2.13. Rear Panel I/O

- 1 x VGA port
- 2 x USB 2.0 ports
- 2 x Gigabit Ethernet ports
- 1 x HDMI® port
- 3 x Antenna holes for 3G, GPS and Wi-Fi

1.2.14. Power Supply

- **Input Voltage**
  - Accept Power Input of DC 12V
  - Typical Power Input 12V DC @1.8A
- **Power Input Connector**
  - DC Power Input connector by 2-pole Phoenix DC jack
- **Power Consumption**
  - Typical 23W

1.2.15. Mechanical

- **Construction**
  - Aluminum top chassis cover
  - Removable front and rear metal face plate
  - Removable storage expansion bars and bottom plate (AMOS-3002-2D10A2)
- **Mounting**
  - Wall/table/VESA mountable
- **Dimensions (W x H x D)**
  - 197mm x 49mm x 104mm (AMOS-3002-1D10A2)
  - 197mm x 66mm x 104mm (AMOS-3002-2D10A2)
- **Weight**
  - 1.4kg. (AMOS-3002-1D10A2)
  - 1.8kg. (AMOS-3002-2D10A2)

1.2.16. Environmental Specification

- Operation Temperature
  - -20°C ~ 60°C
  - 0°C ~ 45°C when equipped with 2.5" SATA HDD (AMOS-3002-2D10A2)
- Storage Temperature
  - -20°C ~ 70°C
- Relative Humidity
  - 0 ~ 90% @ 45 °C, non-condensing
- Vibration Loading During Operation
  - With CFast flash card: 5Grms, IEC 60068-2-64, random, 5 ~ 500Hz, 1hr/axis
- Shock During Operation
  - With CFast flash card: 50G, IEC 60068-2-27, half size, 11ms duration
- EMC Approved
  - CE, FCC

1.2.17. Software Compatibility

- Operating System
  - Microsoft Windows 7
  - Microsoft Windows XP
  - Microsoft Windows Embedded Standard 7
  - Linux

1.3. Product Dimensions

1.3.1. AMOS-3002-1D10A2

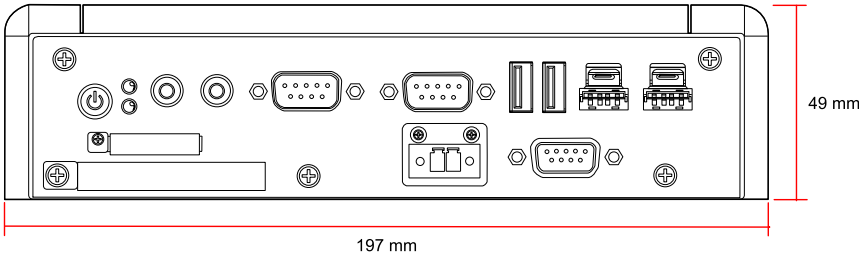


Figure 1: AMOS-3002-1D10A2 Dimensions - Front view

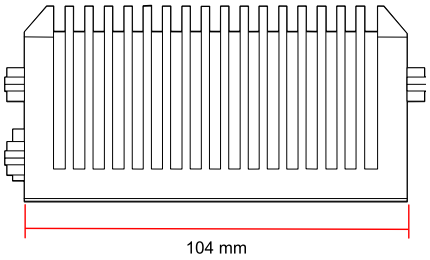


Figure 2: AMOS-3002-1D10A2 Dimensions - Side view

1.3.2. AMOS-3002-2D10A2

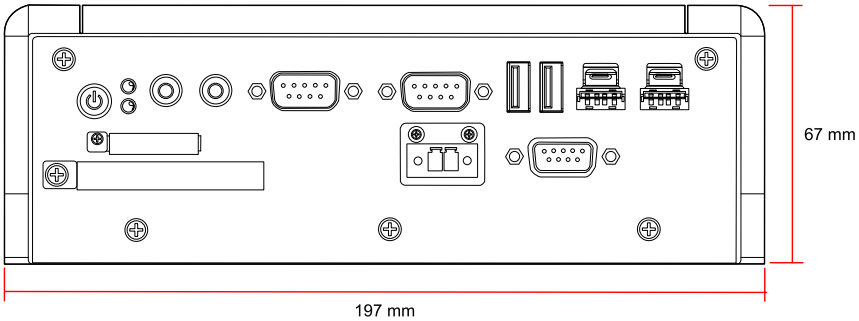


Figure 3: AMOS-3002-2D10A2 Dimensions - Front view

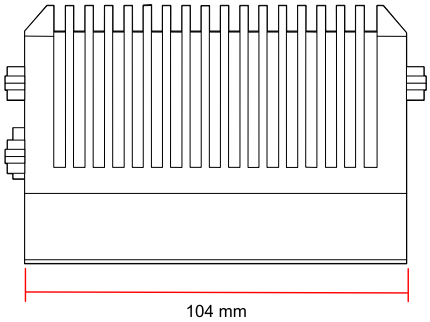


Figure 4: AMOS-3002-2D10A2 Dimensions - Side view

2. I/O Interface

The AMOS-3002 has a wide selection of interfaces integrated into the board. It includes a selection of frequently used ports as part of the external I/O coastline.

2.1. External I/O Ports

The AMOS-3002 has external I/O ports placed along both faces of the chassis.

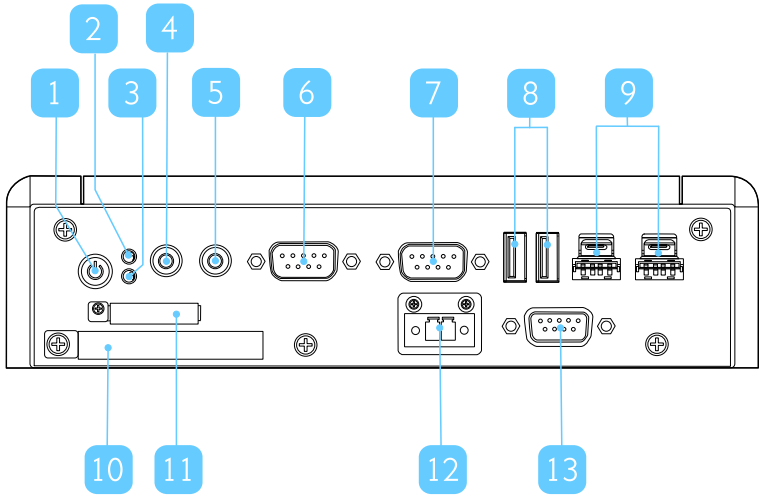


Figure 5: Front I/O panel

Item	Description	Item	Description
1	Power (on/off) button	8	USB 2.0 ports
2	HDD LED indicator	9	Lockable USB 2.0 ports
3	Power LED indicator	10	CFast slot
4	Mic-in	11	SIM card slot
5	Line-out	12	2-pole Phoenix DC jack
6	COM1 port	13	DIO port
7	COM2 port		

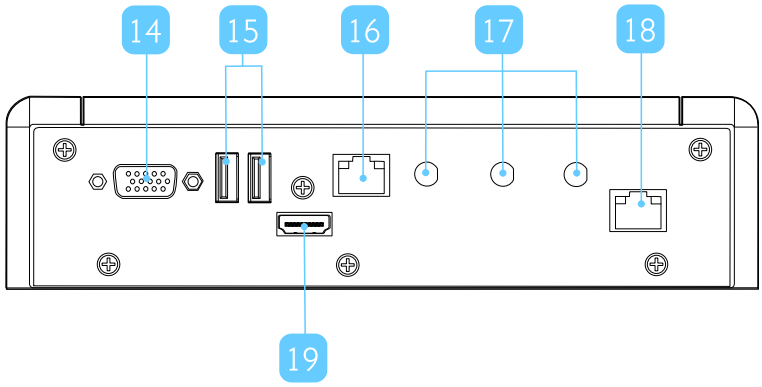


Figure 6: Rear I/O panel

Item	Description	Item	Description
14	VGA port	17	3G, GPS and Wi-Fi antenna holes
15	USB 2.0 ports	18	Gigabit Ethernet port 2 (LAN2)
16	Gigabit Ethernet port 1 (LAN1)	19	HDMI port

2.1.1. Power Button

The AMOS-3002 comes with a power button on the front panel that supports two functions: Soft power On/Off (instant off or delay 4 seconds), and Suspend.

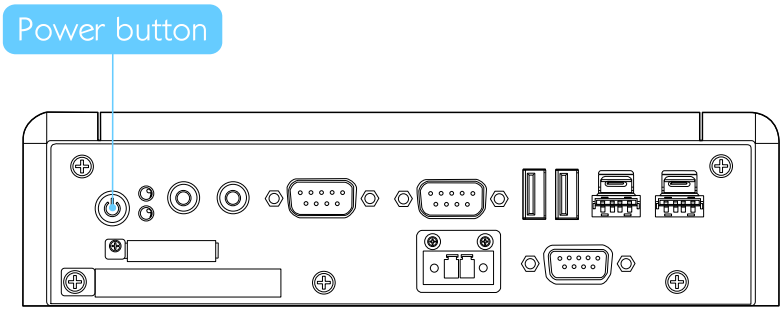


Figure 7: Power button diagram

2.1.2. DC Jack

The AMOS-3002 comes with a 2-pole Phoenix DC jack on the front panel that carries 12V DC external power input.

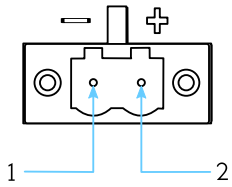


Figure 8: DC jack diagram

Pin	Signal
1	GND
2	12VDC

Table 1: DC jack pinouts

2.1.3. LED Indicators

There are two LEDs on the front panel of the AMOS-3002 that indicate the status of the system:

- PWR LED is green and indicates the status of the system's power status.
- HDD LED is red and indicates any storage activity for the CFast card/hard disk drive.

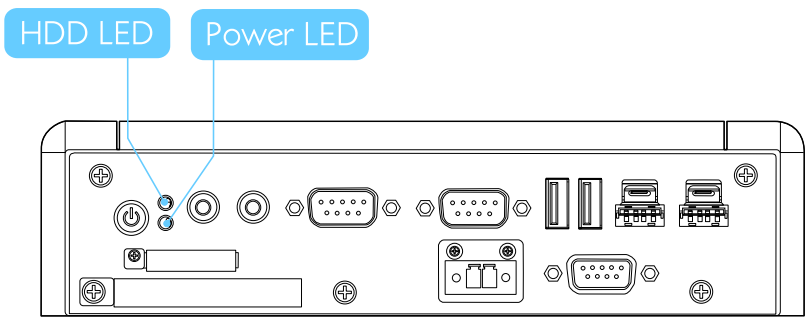


Figure 9: System LED indicators

2.1.4. Audio Jacks

The AMOS-3002 has two 3.5mm TRS audio jacks for Mic-in and Line-out on the front panel. The Mic-in jack is for connecting to a microphone while the Line-out jack is for connecting to external speakers or headphones.

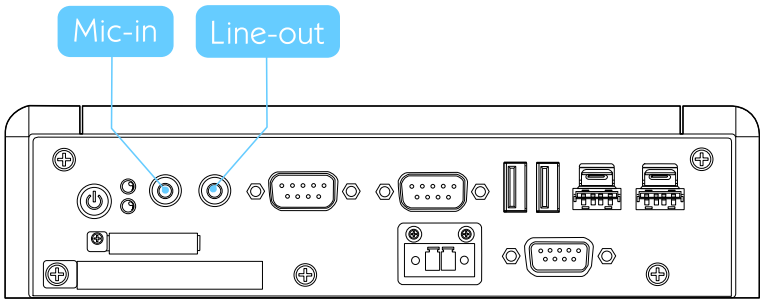


Figure 10: Audio jack receptacle stack

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

Table 2: Audio jack receptacle pinouts

2.1.5. COM Ports

The AMOS-3002 has two COM ports named COM1 and COM2. The COM1 and COM2 ports can be configured as RS-232, RS-422, or RS-485 through jumper settings. The default setting of COM1 and COM2 ports is RS-232.

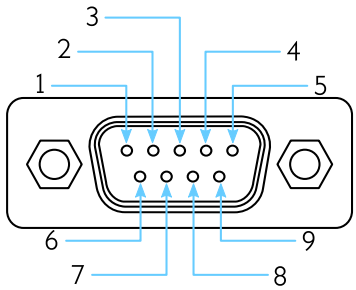


Figure 11: COM port diagram

Pin	RS-232	RS-422	RS-485
	Signal	Signal	Signal
1	DCD	Tx-	DATA-
2	RxD	Tx+	DATA+
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 3: COM port pinouts

2.1.6. USB 2.0 Ports

The AMOS-3002 has four standard USB 2.0 ports. Two USB ports are located on the front panel while the other two are located on the rear panel. Each USB port gives complete Plug and Play and hot swap capability for external devices. The USB interface complies with USB UHCI, Rev. 2.0.

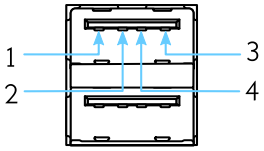


Figure 12: USB 2.0 ports diagram

Pin	Signal	Pin	Signal
1	VCC	1	VCC
2	USB data -	2	USB data -
3	USB data +	3	USB data +
4	GND	4	GND

Table 4: USB 2.0 ports pinouts

2.1.7. Lockable USB 2.0 Ports

The AMOS-3002 has two lockable USB 2.0 ports on the front panel. Each lockable USB port gives complete Plug and Play and hot swap capability for external devices. The USB interface complies with USB UHCI, Rev. 2.0. Lockable USB port is specially designed to secure USB connection.

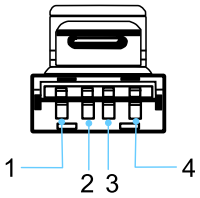


Figure 13: Lockable USB port diagram

Pin	Signal	Pin	Signal
1	VCC	1	VCC
2	USB data -	2	USB data -
3	USB data +	3	USB data +
4	GND	4	GND

Table 5: Lockable USB port pinouts

Note:
Gently lift the tab before removing the USB from the lockable port.

2.1.8. SIM Card Slot

The AMOS-3002 has SIM card slot located on the front panel.

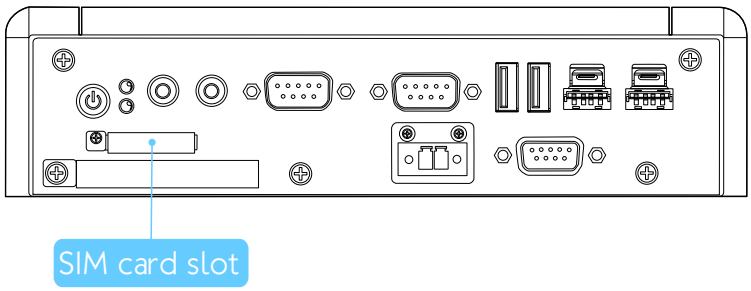


Figure 14: SIM card slot diagram

2.1.9. CFast Slot

The AMOS-3002 has CFast slot located on the front panel. The CFast slot is compatible with Type I and Type II.

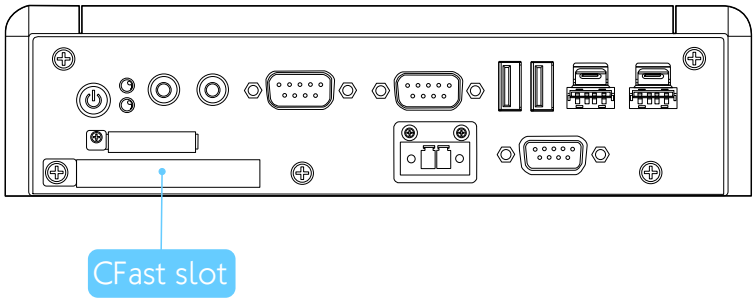


Figure 15: CFast slot diagram

2.1.10. DIO Port

AMOS-3002 provides one DIO (D-sub 9-pin) port which offers Digital IO communication interface.

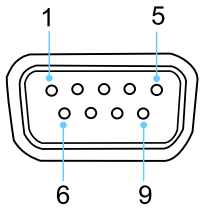


Figure 16: DIO port diagram

Pin	Signal	Pin	Signal
1	GPIO32	6	GPI9
2	GPI4	7	GPIO12
3	GPO12	8	GPI8
4	GPI5	9	+5V
5	GPIO9		

Table 6: DIO port pinouts

2.1.11. VGA Port

The AMOS-3002 provides a high resolution VGA interface through DE-15 female port on the rear I/O panel. It supports resolutions up to 2560 x 1600. The pinouts of the VGA port are shown below.

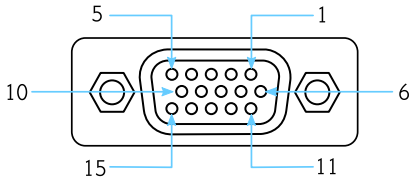


Figure 17: VGA port diagram

Pin	Signal	Pin	Signal	Pin	Signal
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	DDC_SPD
3	BLUE	8	GND	13	HSync
4	NC	9	+5V	14	VSync
5	GND	10	GND	15	DDC_SCL

Table 7: VGA port pinouts

2.1.12. Gigabit Ethernet Port

The AMOS-3002 system is equipped with two Gigabit Ethernet ports (LAN1 and LAN2) on rear I/O panel. Both ports are fully compliant with IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX), and 802.3ab (1000BASE-T) standards. The pinouts of the LAN1 and LAN2 ports are shown below.

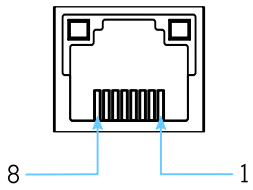


Figure 18: Gigabit Ethernet port diagram

LAN1		LAN2	
Pin	Signal	Pin	Signal
1	LAN1_TD0+	1	LAN2_TD0+
2	LAN1_TD0-	2	LAN2_TD0-
3	LAN1_TD1+	3	LAN2_TD1+
4	LAN1_TD1-	4	LAN2_TD1-
5	LAN1_TD2+	5	LAN2_TD2+
6	LAN1_TD2-	6	LAN2_TD3-
7	LAN1_TD3+	7	LAN2_TD3+
8	LAN1_TD3-	8	LAN2_TD3-

Table 8: Gigabit Ethernet port pinouts

Both LAN1 and LAN2 are equipped with two LED indicators located to show its active/link status and speed status.

LAN LED Status	Link LED (Left LED on RJ-45 port)	Active LED (Right LED on RJ-45 port)
Active	The LED is always On, different LED colors represent LAN connection speed.	Flash in Orange color
Link	The LED is always On, different LED colors represent LAN connection speed.	LED is off
Speed_10Mbit	The LED is always On in Orange color	Flash in Orange color
Speed_100Mbit	The LED is always On in Green color	Flash in Orange color
Speed_1000Mbit	The LED is always On in Red color	Flash in Orange color

2.1.13. HDMI® Port

The AMOS-3002 has one HDMI® port (19-pin HDMI® Type A receptacle) connector. The HDMI® port is for connecting to HDMI® display. The pinouts of the HDMI® port are shown below.

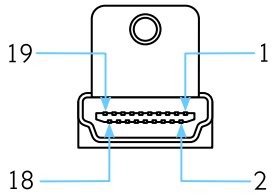


Figure 19: HDMI port diagram

Pin	Signal	Pin	Signal
1	HDMITX2+	2	GND
3	HDMITX2-	4	HDMITX1+
5	GND	6	HDMITX1-
7	HDMITX0+	8	GND
9	HDMITX0-	10	HDMITXC+
11	GND	12	HDMITXC-
13	CEC	14	NC
15	SPCLK	16	SPDAT
17	GND	18	PVDD5
19	-DP1_HPD		

Table 9: HDMI port pinouts

3. Hardware Installation

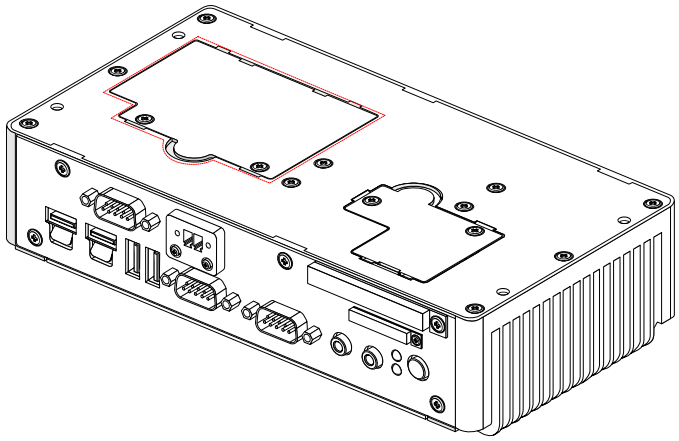
This chapter provides information about hardware installation procedures.

3.1. Installing a Memory

Step 1

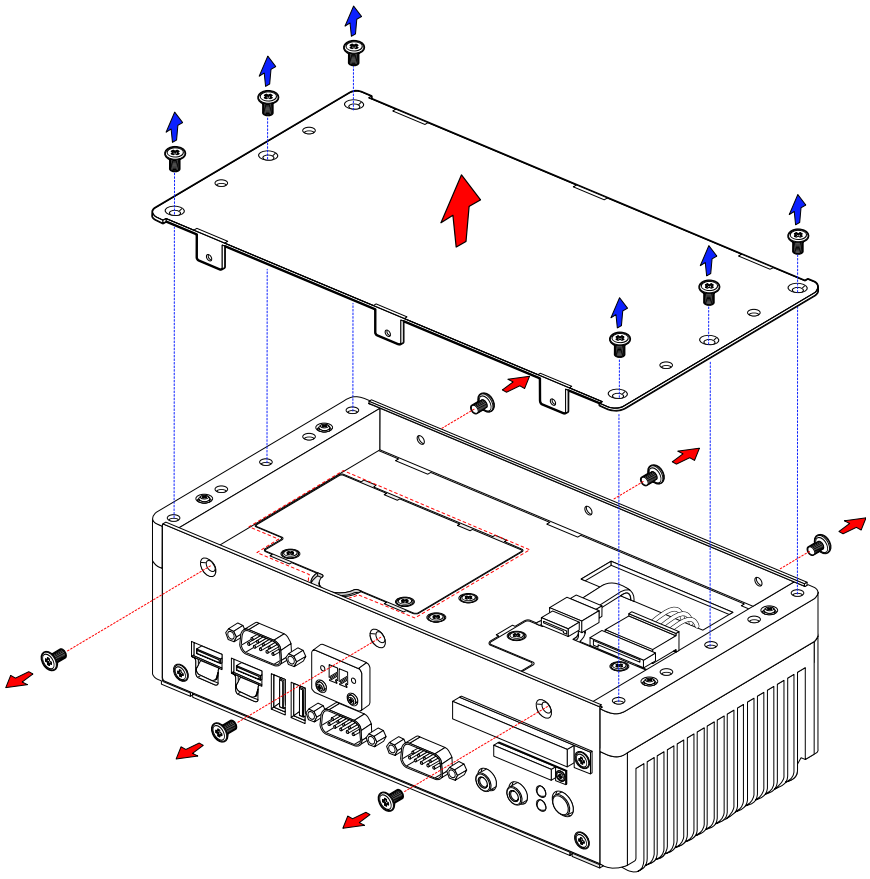
(AMOS-3002-1D1A02)

Flip over the AMOS-3002 to locate the memory access cover.



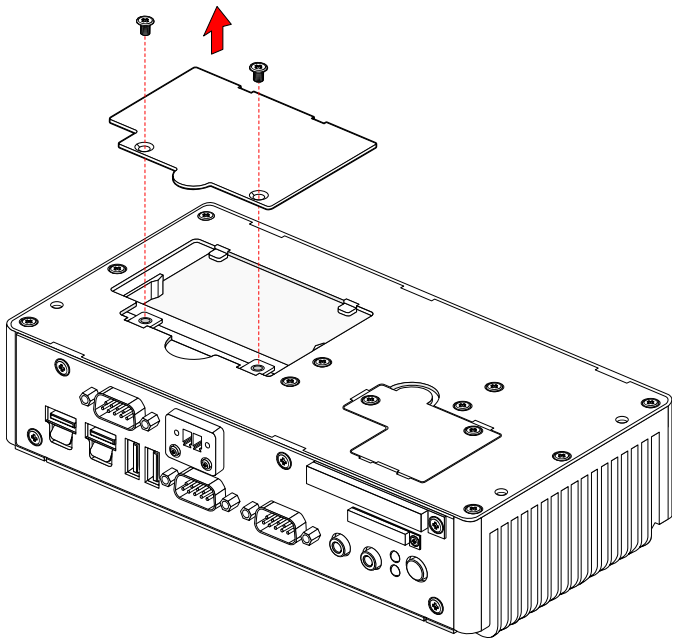
(AMOS-3002-2D1A02)

Flip over the AMOS-3002 and remove the expansion bottom plate cover to locate the memory access cover.



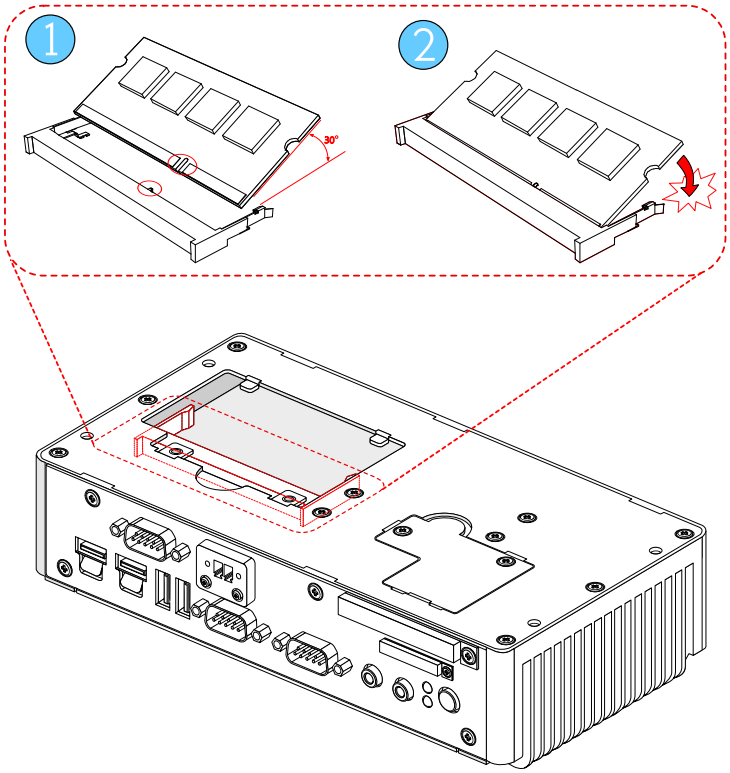
Step 2

Remove the two screws from the memory access cover and lift up the cover.



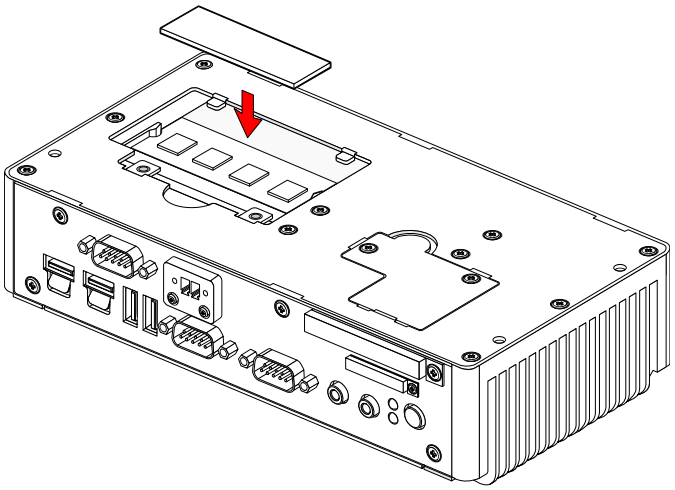
Step 3

Insert the memory module into the SODIMM slot at the 30 degrees angle. Then push down until the memory module snaps into place. The SODIMM slot has two locking mechanisms that will click once the memory module has been fully inserted.



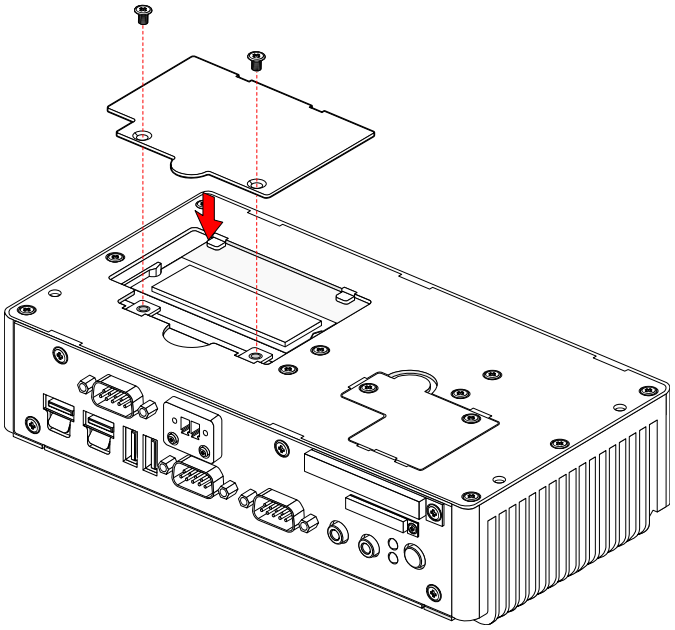
Step 4

Install the memory thermal pad on the memory module.



Step 5

Align the memory access cover with the mounting holes on the chassis. Secure the memory access cover in place with two screws.

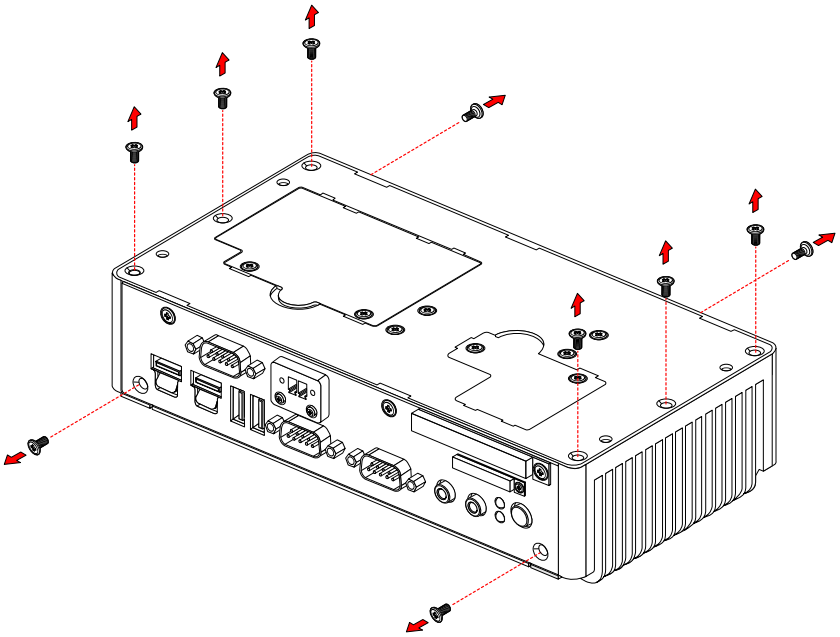


3.2. Removing the top cover

Step 1

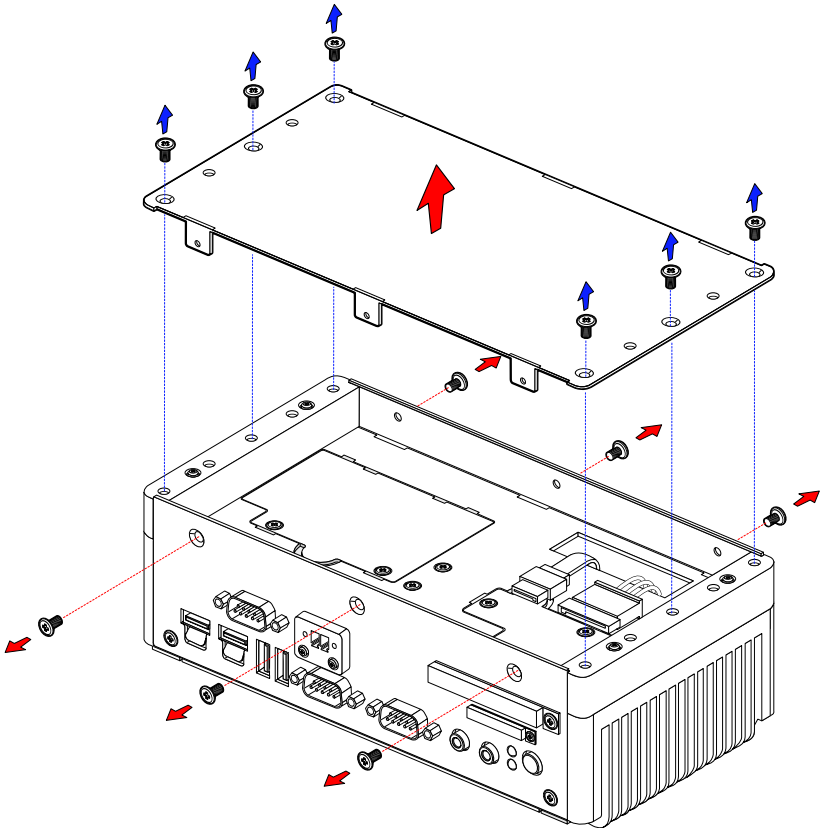
(AMOS-3002-1D1A02)

Flip over the AMOS-3002. Remove the ten screws from the bottom side and both face plates as indicated in the figure below.

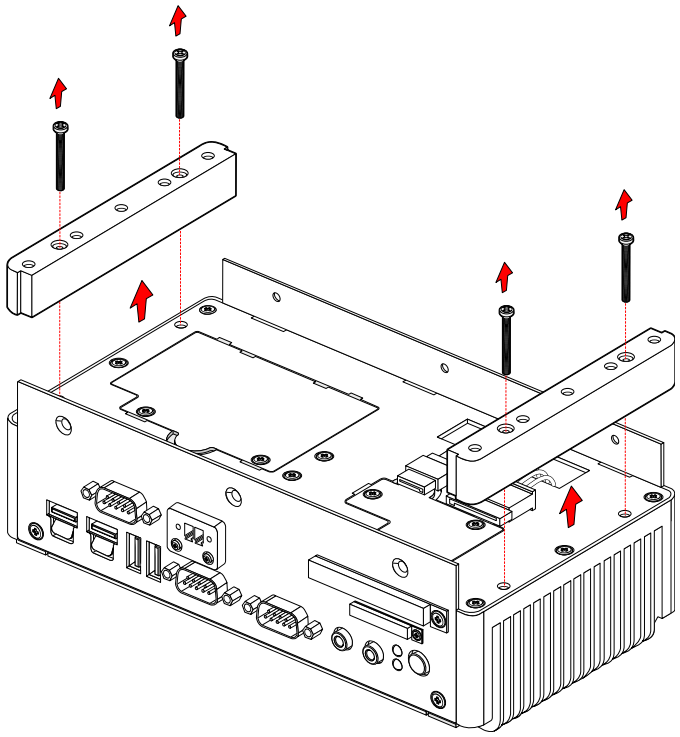


(AMOS-3002-2D1A02)

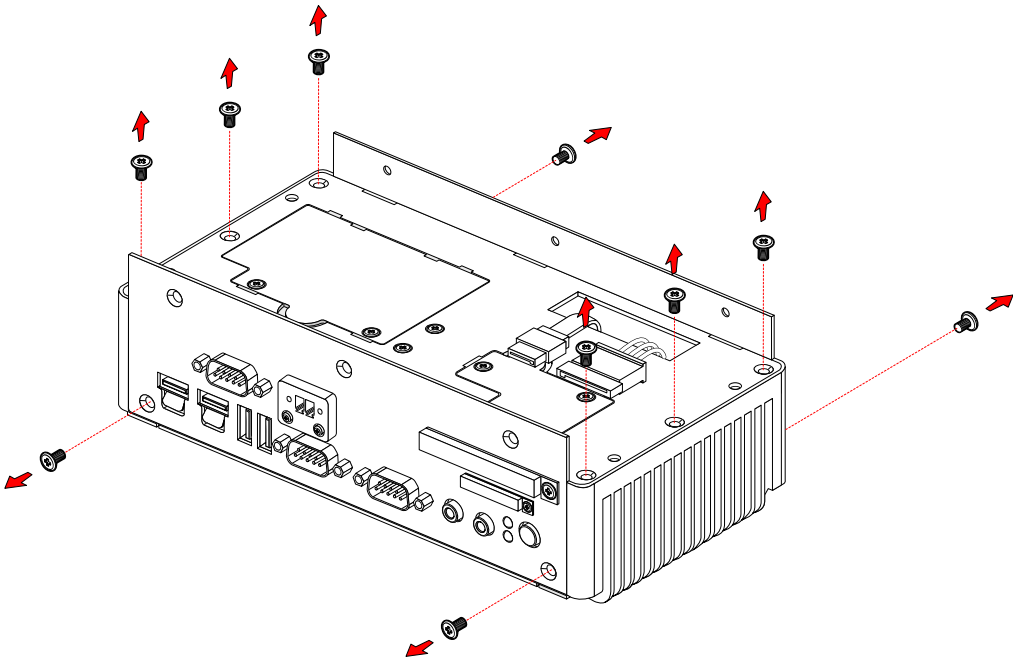
Flip over the AMOS-3002, and remove the expansion bottom plate cover.



Then remove the expansion side bars by unscrewing the four screws.

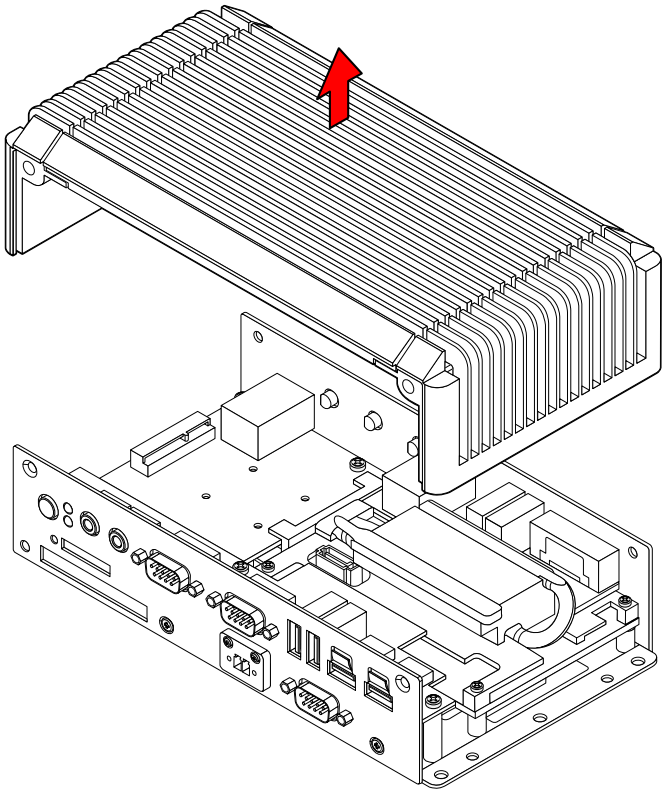


Remove the ten screws from the bottom side and both face plates.



Step 2

Turn it back to the top side and lift up the cover.

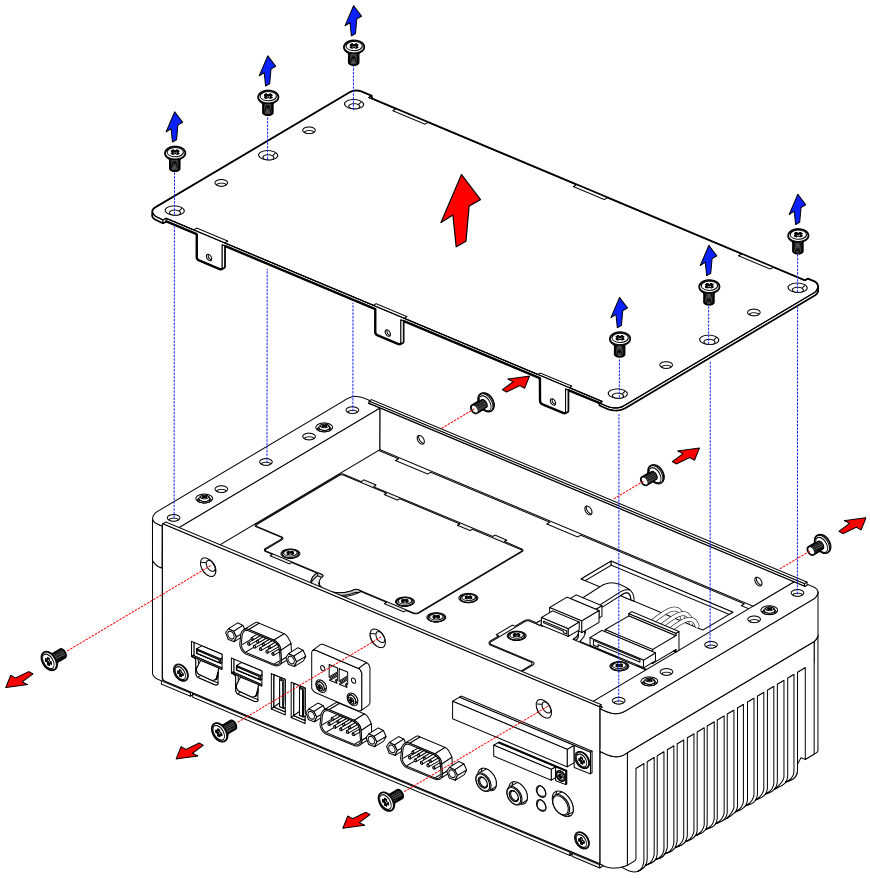


3.3. Installing the 2.5" SATA Hard Disk Drive

The hard disk drive installation section is applicable only to AMOS-3002-2D1A01.

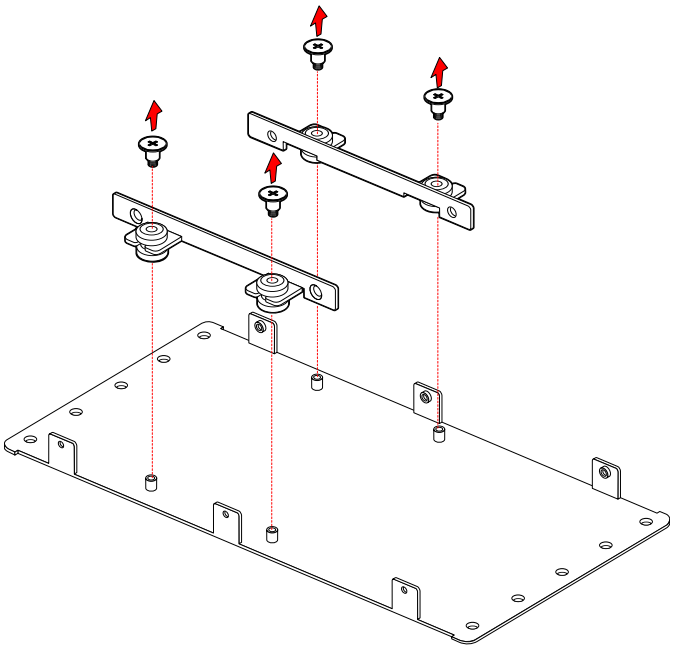
Step 1

Remove the expansion bottom plate cover from the AMOS-3002.



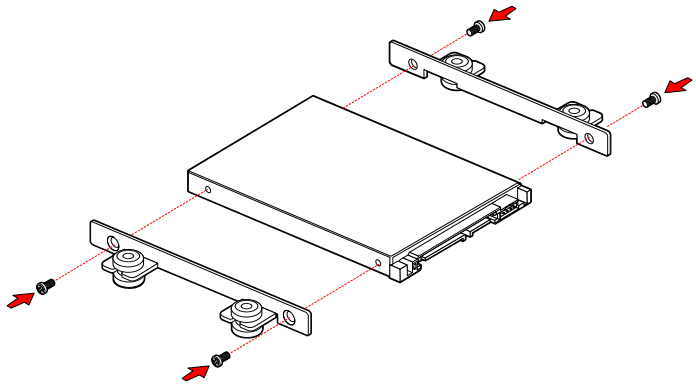
Step 2

Flip over the expansion bottom plate cover then remove the HDD brackets by unscrewing the four screws.



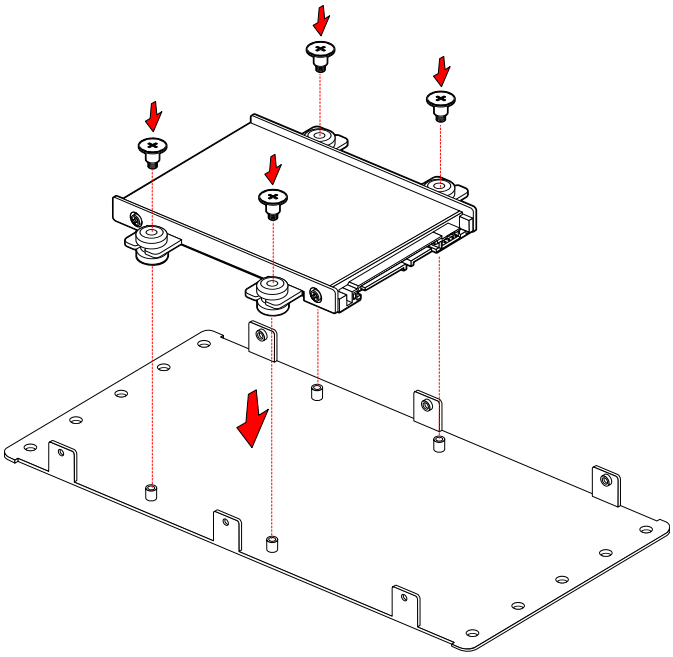
Step 3

Mount the hard disk drive brackets on the 2.5" SATA hard disk drive and secure it with four screws.



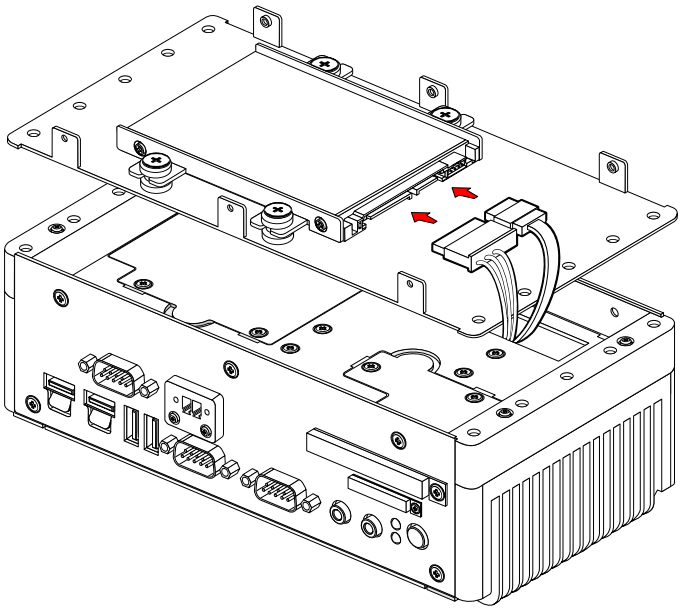
Step 4

Mount the hard disk drive brackets on the expansion bottom plate cover. Then secure it with four hard drive mounting screws.



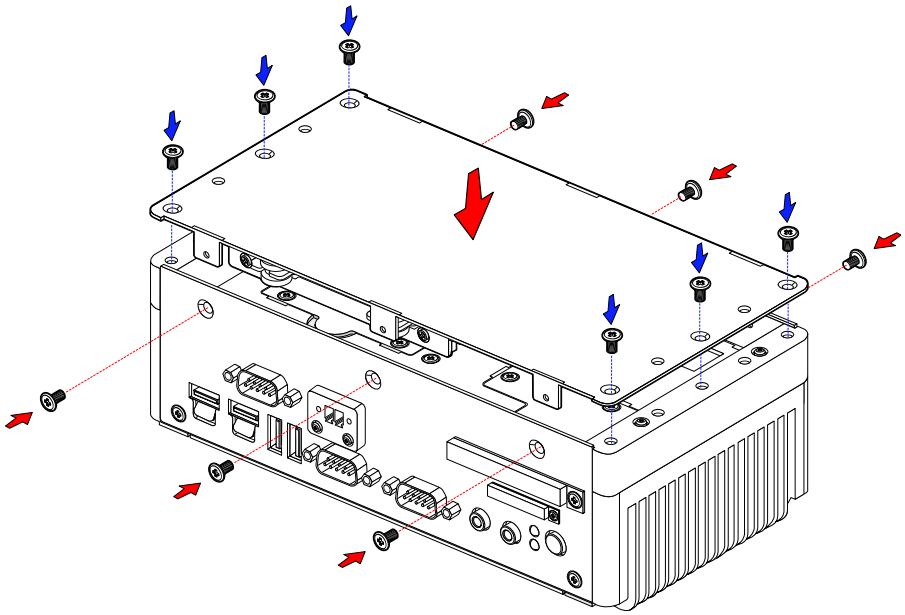
Step 5

Connect the SATA (power and data) cables to the hard disk drive.



Step 6

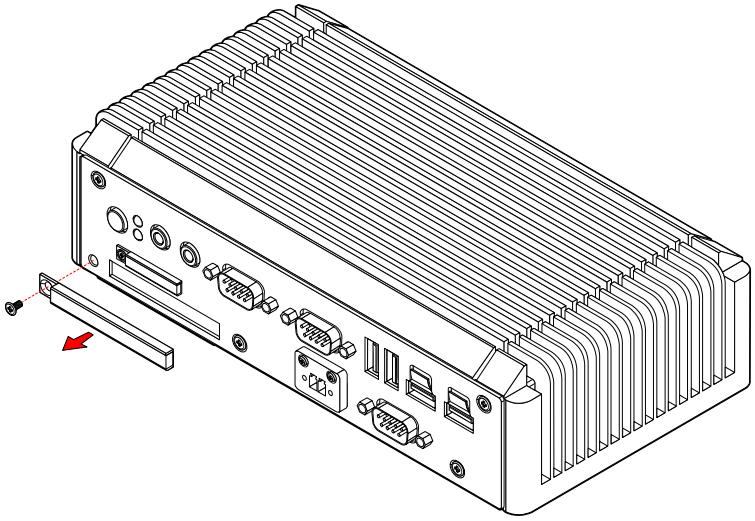
Flip over the expansion bottom plate cover. Align it over the mounting holes of expansion side bars then secure the plate cover with twelve screws.



3.4. Inserting the CFast Card

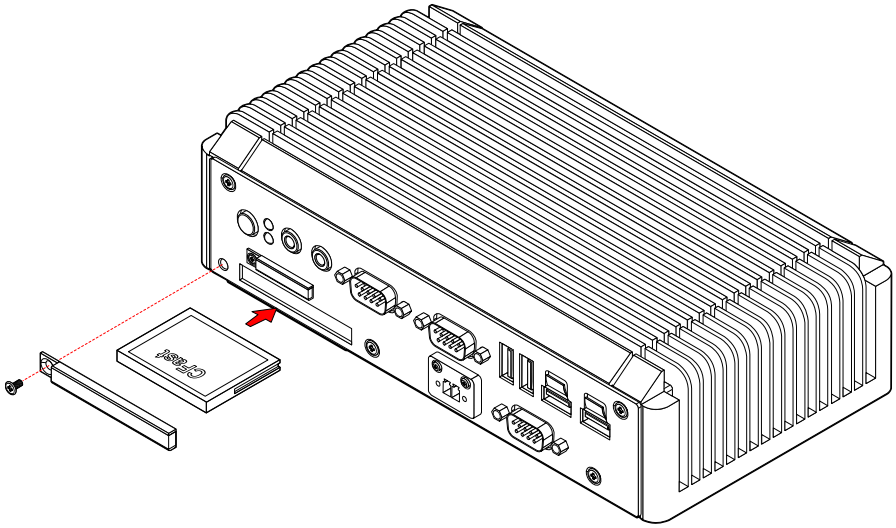
Step 1

Remove the CFast card cover from the front panel plate.



Step 2

Insert the CFast card into the CFast slot. Ensure the orientation is correct before inserting the card. Reinstall the CFast slot cover and secure it with screw.



Step 3

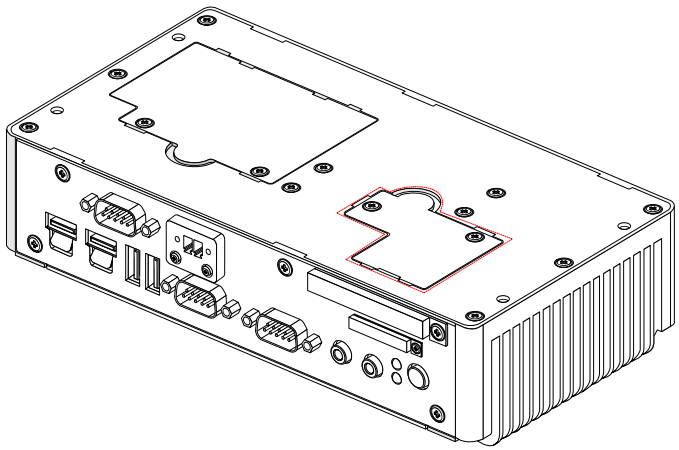
Reinstall the CFast slot cover and secure it with screw. Then install the CFast thermal pad (refer to section 3.5).

3.5. Installing the CFast thermal pad

Step 1

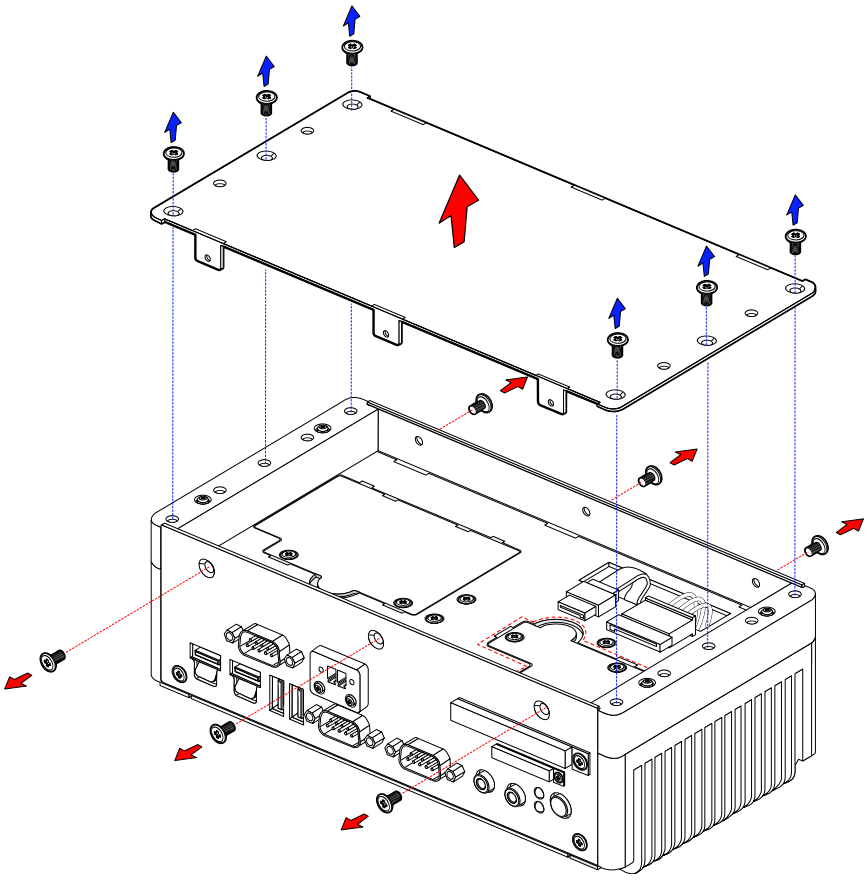
(AMOS-3002-1D1A02)

Flip over the AMOS-3002, a CFast access hole cover is located at the bottom side of the unit.



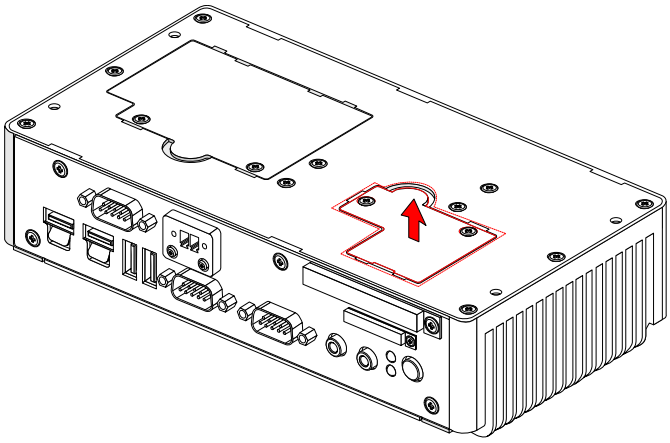
(AMOS-3002-2D1A02)

Flip over the AMOS-3002 and remove the expansion bottom plate cover to locate the CFast access hole cover.



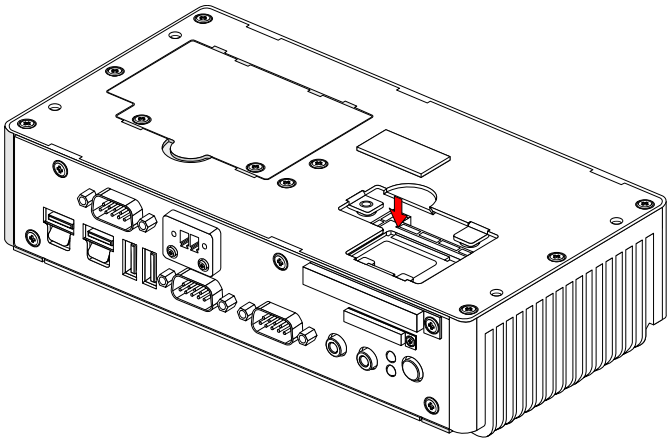
Step 2

Remove the two screws from the CFast access hole cover and lift up the cover.



Step 3

Install the CFast thermal pad on the CFast card.



Step 4

Reinstall the CFast access hole cover.

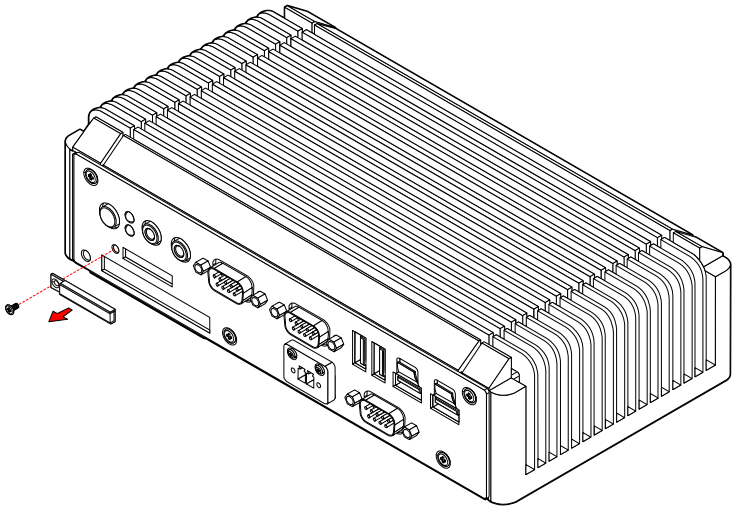
Note:

Before removing the CFast card, remember to take off the thermal pad first.

3.6. Inserting SIM Card

Step 1

Remove the SIM card slot cover from the front panel plate.

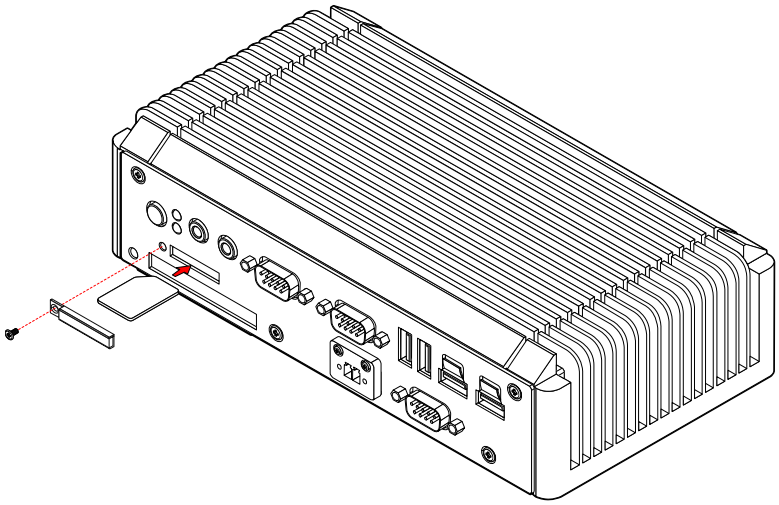


Note:

Unplug the power before inserting the SIM card, otherwise it may cause malfunction to the device.

Step 2

Insert the SIM card into the SIM slot. Ensure the orientation is correct before inserting the card. Install back the SIM slot cover and secure it with screw.



3.7. Installing the Mounting Brackets

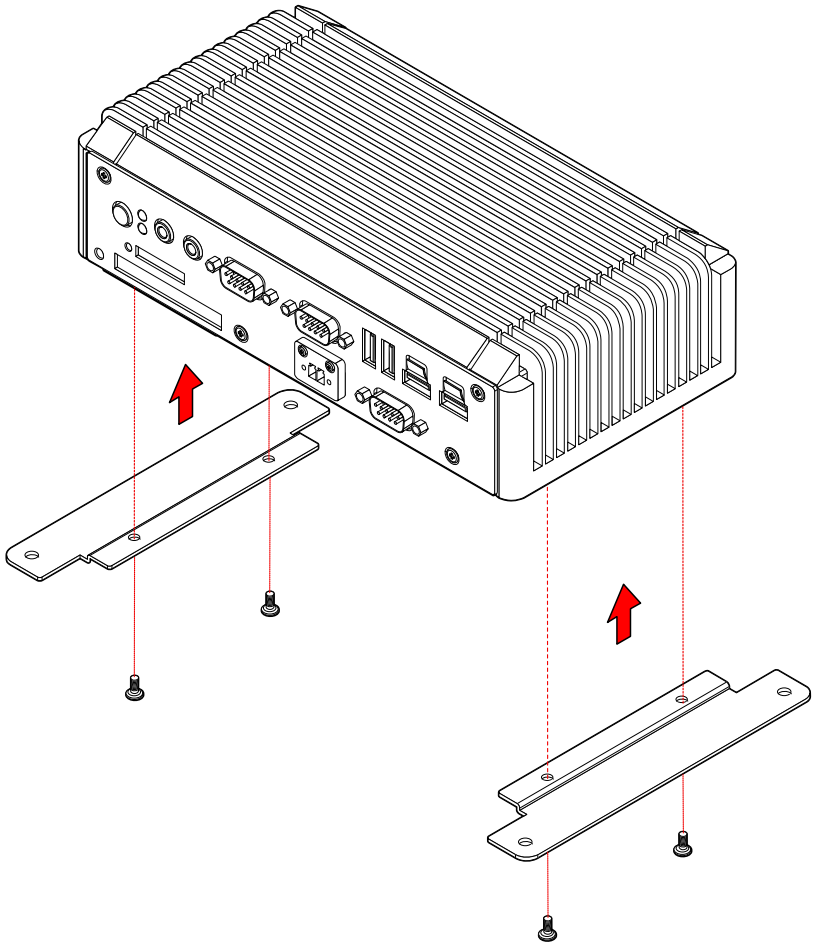
Step 1

Prepare the left and right brackets and the four screws.

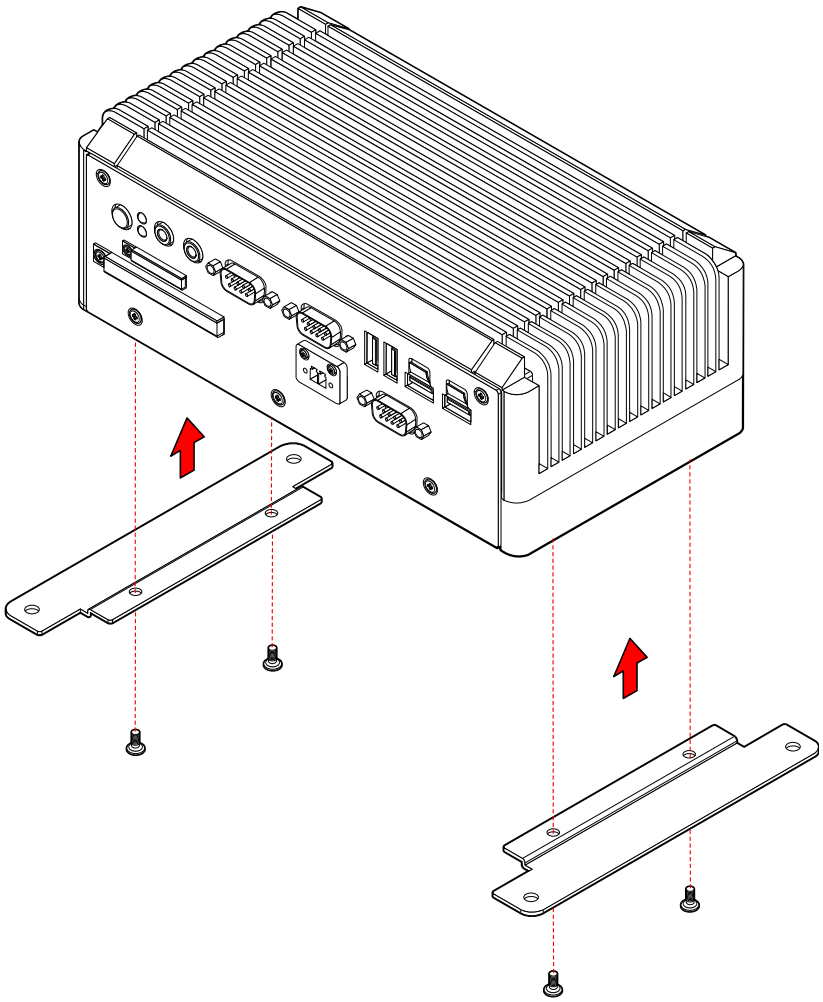
Step 2

Fasten the mounting brackets to the bottom side of the AMOS-3002 chassis by using four screws.

(AMOS-3002-1D1A02)



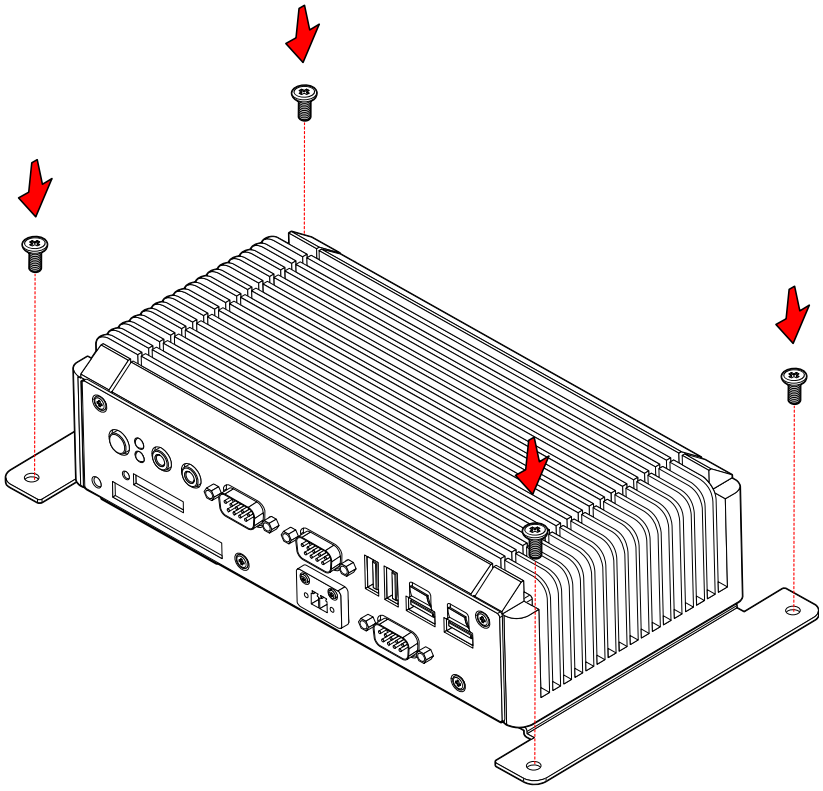
(AMOS-3002-2D1A02)



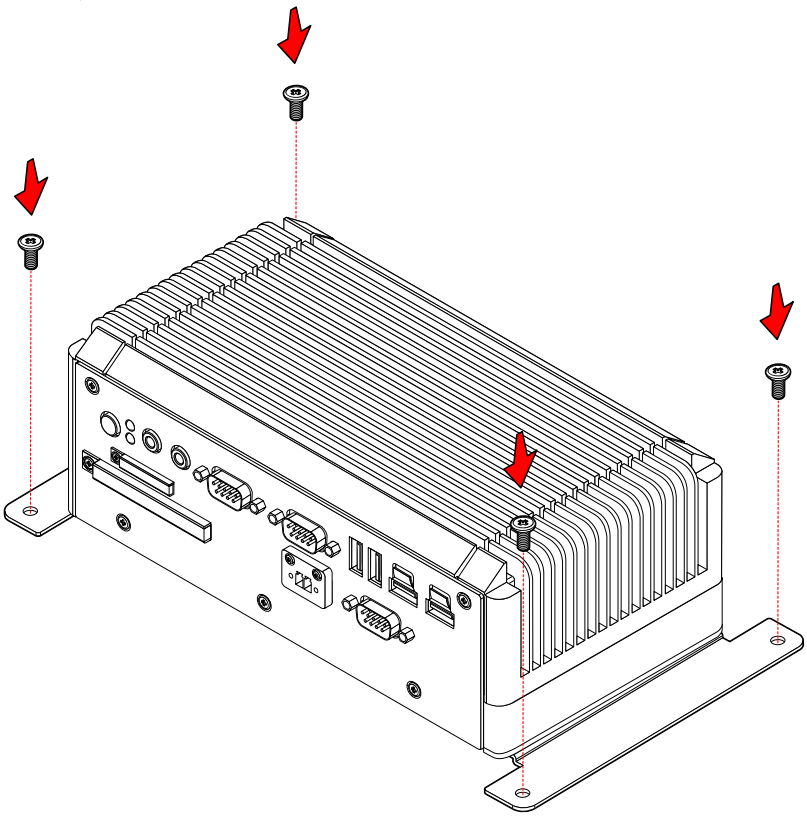
Step 3

Secure both mounting brackets to the wall/table with four screws.

(AMOS-3002-1D1A02)



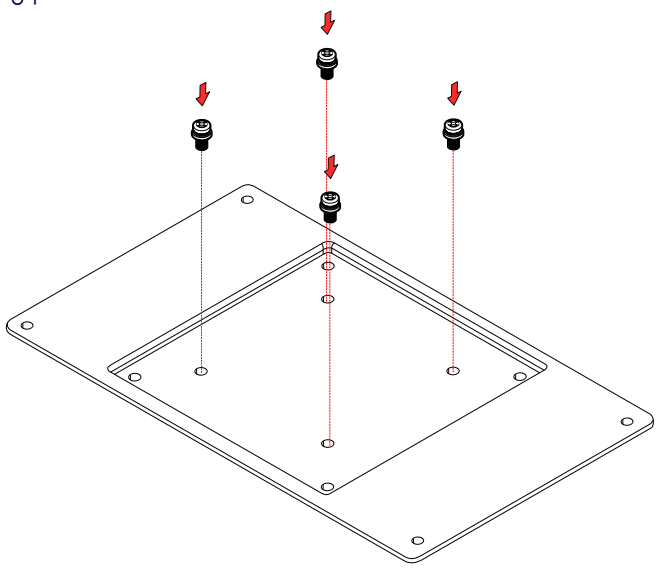
(AMOS-3002-2D1A02)



3.8. Installing the VESA plate

Step 1

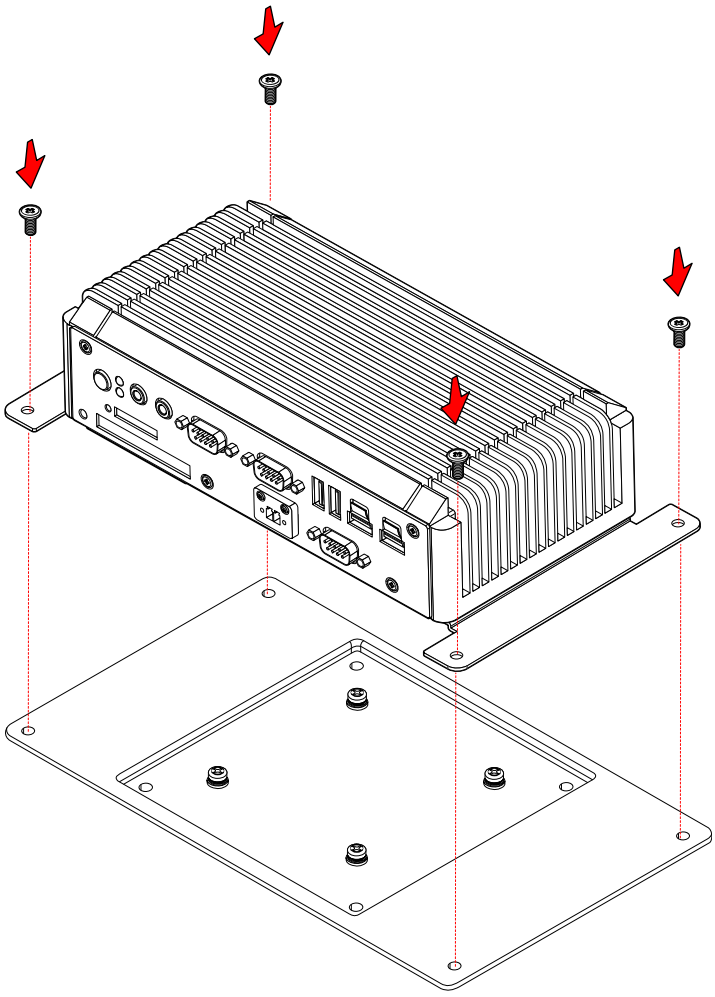
Fasten the VESA mounting plate to a VESA mountable device with four screws.



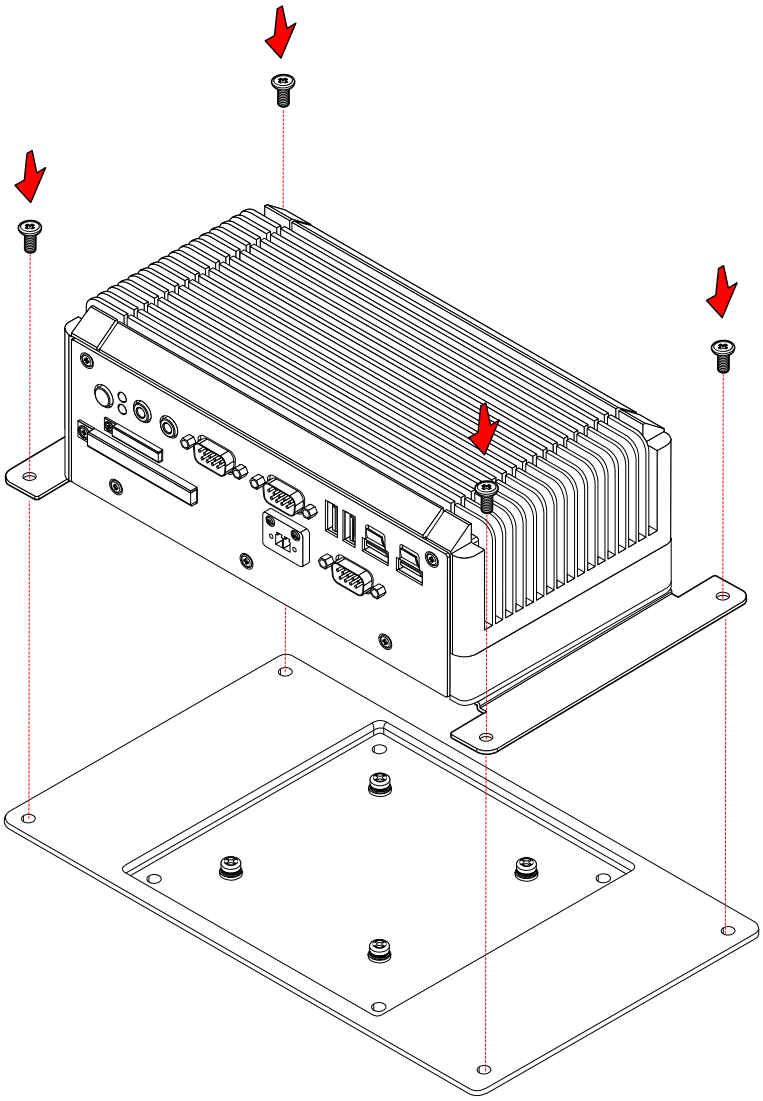
Step 2

Secure the mounting brackets to the VESA mounting plate with four screws.

(AMOS-3002-1D1A02)



(AMOS-3002-2D1A02)



4. BIOS Setup

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

4.1. Entering the BIOS Setup Menu

Power on the computer and press **Delete** during the beginning of the boot sequence to enter the BIOS setup menu. If you missed the BIOS setup entry point, restart the system and try again.

4.2. 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

Esc Jumps to the Exit screen or returns to the previous screen

+[1] Increase the numeric value

-[1] Decrease the numeric value

F1 General help[2]

F10 Save all the changes and exit

Notes:

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.

4.3. 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.

4.4. System Overview

The System Overview screen is the default screen that is shown when the BIOS Setup Utility is launched. This screen can be accessed by traversing the navigation bar to the "Main" label.

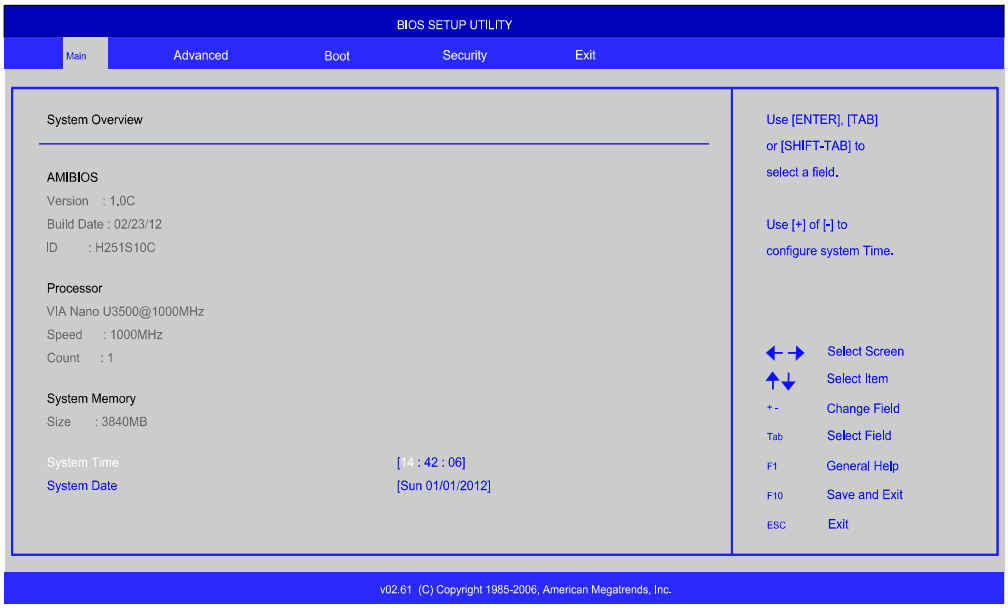


Figure 20: Illustration of the Main menu screen

4.4.1. AMIBIOS

The content in this section of the screen shows the current BIOS version, build date, and ID number.

4.4.2. Processor

This content in this section shows the CPU information that has been detected.

4.4.3. System Memory

This section shows the amount of available memory that has been detected.

4.4.4. 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].

4.4.5. 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].

4.5. Advanced Settings

The Advanced Settings screen shows a list of categories that can provide access to a sub-screen. Sub-screen links can be identified by the preceding right-facing arrowhead.

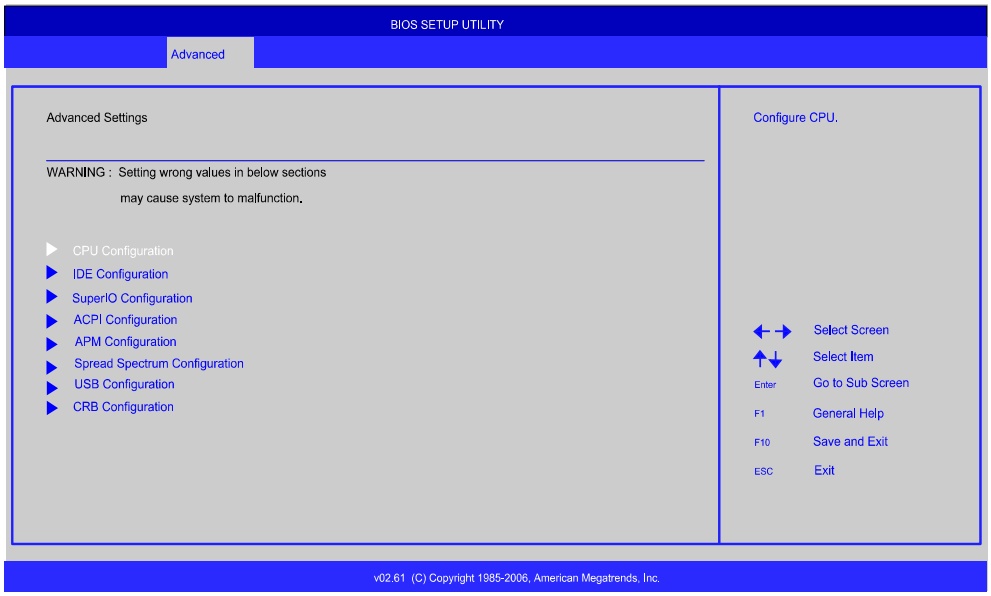


Figure 21: Illustration of the Advanced Settings screen

The Advanced Settings screen contains the following links:

- CPU Configuration
- IDE Configuration
- SuperIO Configuration
- ACPI Configuration
- APM Configuration
- Spread Spectrum Configuration
- USB Configuration
- CRB Configuration

4.5.1. CPU Configuration

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

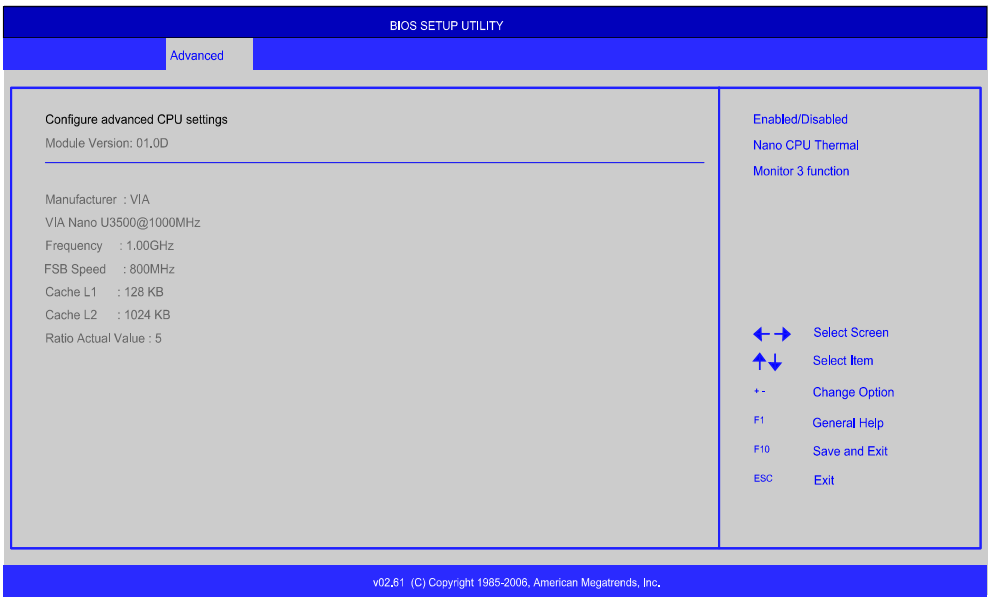


Figure 22: Illustration of the CPU Configuration screen

4.5.2. IDE Configuration

The IDE Configuration screen shows links to the primary master and slave IDE hard drive information screens.

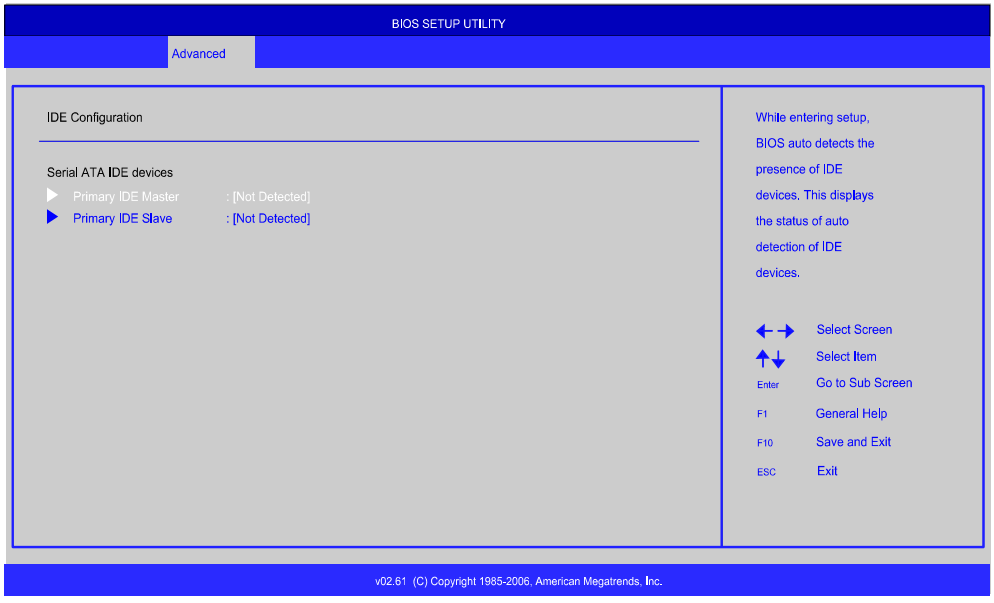


Figure 23: Illustration of IDE Configuration screen

Available submenus include the following:

Primary IDE Master

Primary IDE Slave

4.5.3. SuperIO Configuration

The SuperIO Configuration screen shows the specific addresses and IRQs of the onboard serial ports.

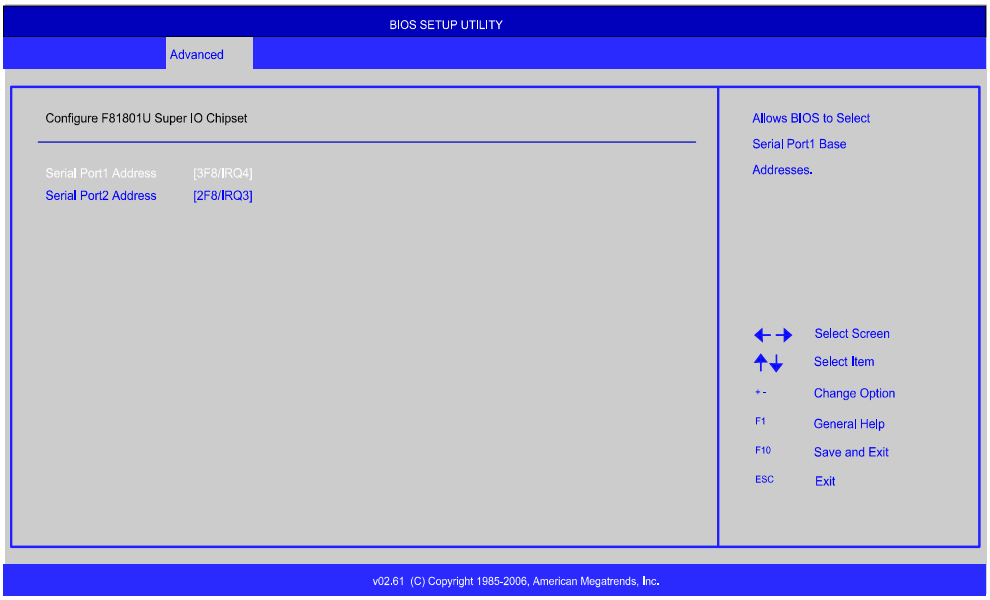


Figure 24: Illustration of SuperIO Configuration screen

4.5.3.1. Serial Ports 1 to 2

Serial Port1 Address

3F8/IRQ4, 3E8/IRQ4, 2E8/IRQ3, Disabled.

Serial Port2 Address

2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Disabled.

4.5.4. ACPI Configuration

ACPI grants the operating system direct control over system power management. The ACPI Configuration screen can be used to set a number of power management related functions.

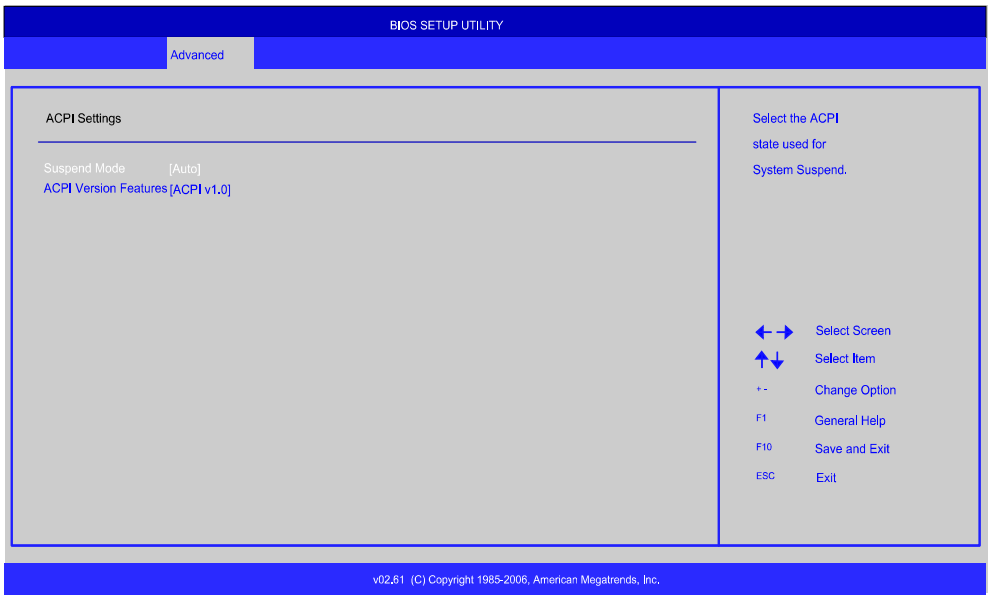


Figure 25: Illustration of ACPI Configuration screen

4.5.4.1. Suspend Mode

The Suspend Mode field has three selectable options.

S1(POS)

S1/Power On Suspend (POS) is a low power state. In this state, no system context (CPU or chipset) is lost and hardware maintains all system contexts.

S3(STR)

S3/Suspend To RAM (STR) is a power-down state. In this state, power is supplied only to essential components such as main memory and wakeup-capable devices. The system context is saved to main memory, and context is restored from the memory when a "wakeup" event occurs.

Auto

When the Suspend Mode is set to Auto, the operating system will control the power state.

4.5.4.2. ACPI Version Features

The ACPI Version Features enables the BIOS to support the designated ACPI specification. There are three versions to choose from: ACPI v1.0, ACPI v2.0, and ACPI v3.0.

4.5.5. APM Configuration

APM enables the operating system to co-work with the BIOS to control the system power management. The APM Configuration screen can be used to set a number of power management functions.

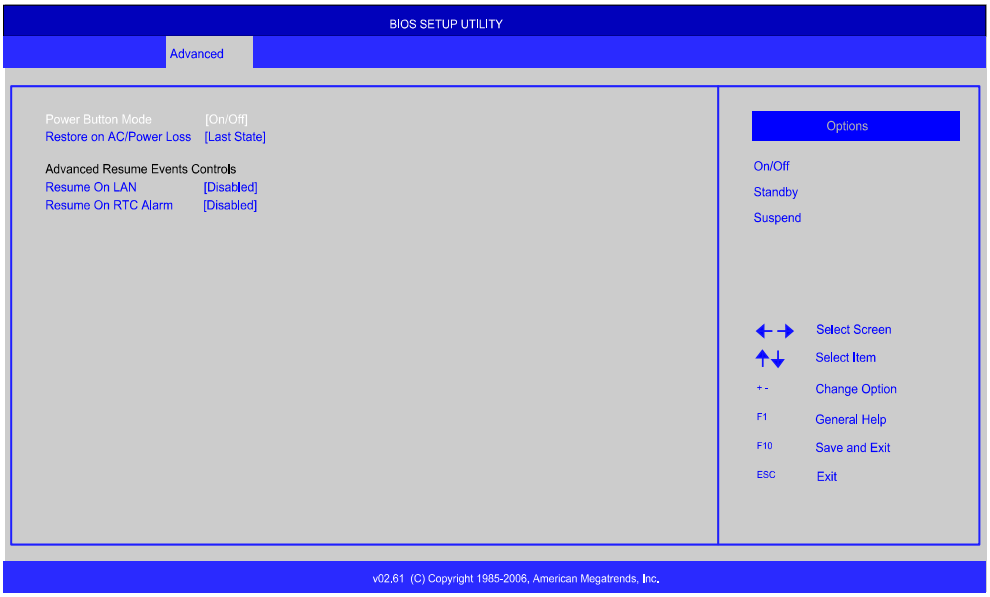


Figure 26: Illustration of APM Configuration screen

4.5.5.1. Power Button Mode

The Power Button Mode has three options.

On/Off

When On/Off is selected, pressing the power button will instantly cause the system to power on or off.

Standby

When Standby is selected, the power button must be pressed and held down for 4 seconds before the system will power off.

Suspend

When Suspend is selected, pressing the power button will instantly cause the system to enter suspend mode.

4.5.5.2. Restore on AC/Power Loss

Restore on AC/Power Loss defines how the system will respond after AC power has been interrupted while the system is on. There are three options.

Power Off

The Power Off option keeps the system in an off state until the power button is pressed again.

Power On

The Power On option restarts the system when the power has returned.

Last State

The Last State option restores the system to its previous state when the power was interrupted.

4.5.5.3. Resume on LAN

Resume on LAN wakes up a system that has been put into suspend or standby mode. When this feature is enabled, the system can be restored to an active state when a PCIE wake up signal is detected on the LAN.

4.5.5.4. Resume on RTC Alarm

Resume on RTC Alarm can only be used if **Resume on Software RTC Alarm** is not enabled. This feature enables the BIOS to automatically power on the system at a scheduled time. When enabled, the **RTC Alarm Date** and **System Time** features will be unlocked.

4.5.5.5. RTC Alarm Date (Days)

The RTC Alarm Date feature is visible only when **Resume on RTC Alarm** is enabled. This feature enables the user to specify a specific date each month or daily recurrence. Use the **+** and **-** keys on the number pad to change the value of the RTC Alarm Date.

Every Day

The Every Day option triggers the RTC Alarm daily.

1 – 31

When a specific numeric date is selected, the RTC Alarm will be triggered on that day of the month.

4.5.5.6. System Time

The System Time option enables the user to specify the time the system should power on for the date that is set in **RTC Alarm Date**.

4.5.6. Spread Spectrum Configuration

The Spread Spectrum Configuration screen enables access to the CPU Spread Spectrum Setting feature.

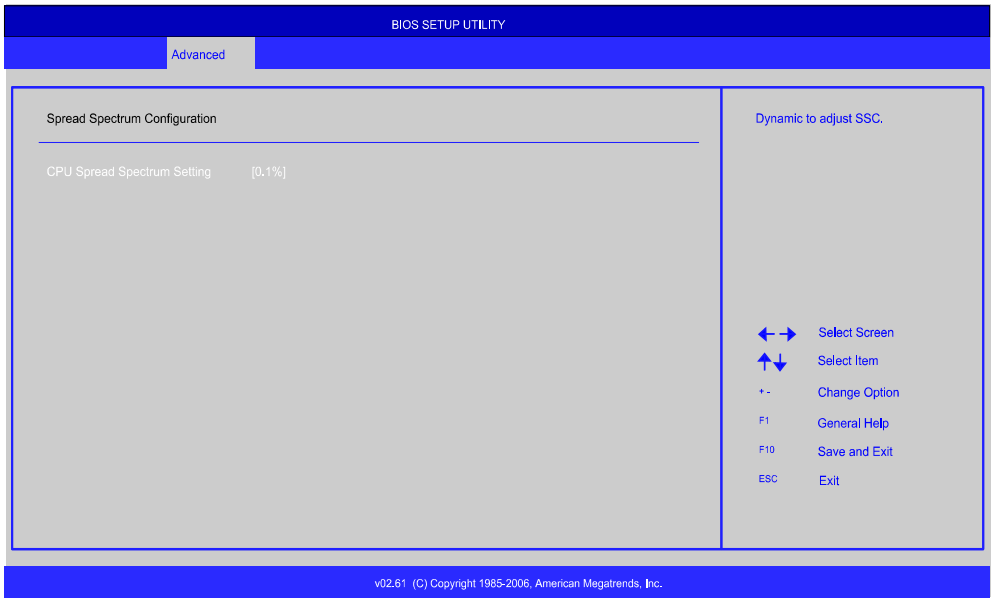


Figure 27: Illustration of CPU Spread Spectrum Configuration screen

4.5.6.1. CPU Spread Spectrum Setting

The CPU Spread Spectrum Setting feature enables the BIOS to modulate the clock frequencies originating from the mainboard. The settings are in percentages of modulation. Higher percentages result in greater modulation of clock frequencies. This feature has settings that range from 0.1% to 0.9%.

4.5.7. USB Configuration

The USB configuration page detects all connected USB device.

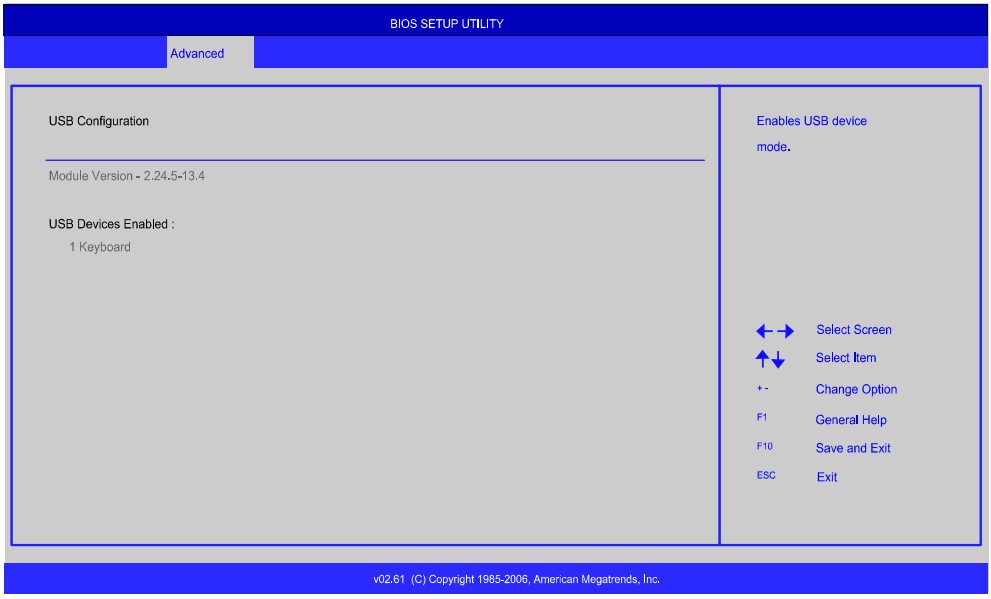


Figure 28: Illustration of USB Configuration screen

4.5.8. CRB Configuration

The CRB Configuration screen includes chipset settings.

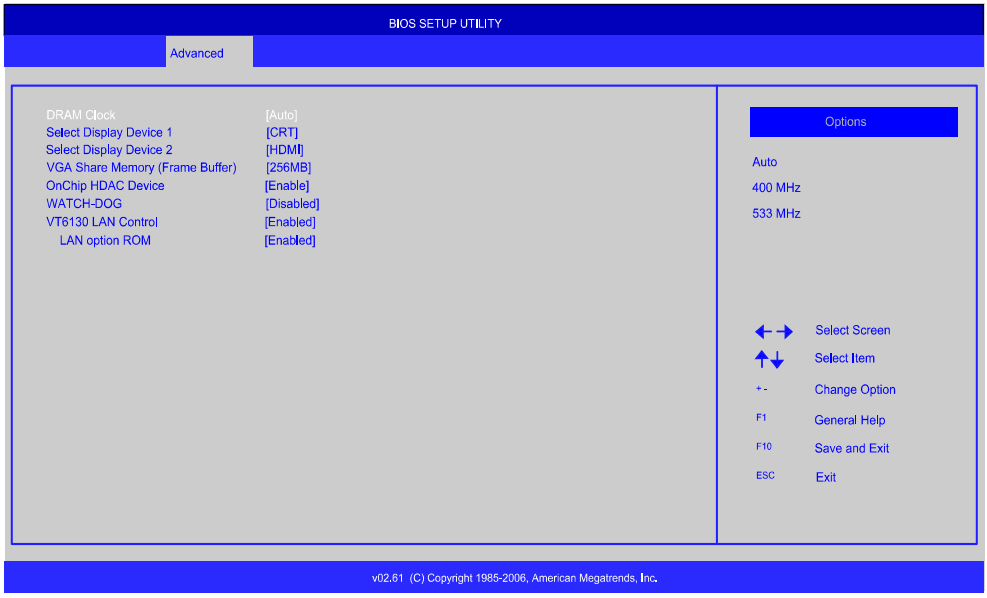


Figure 29: Illustration of CRB Configuration screen

4.5.8.1. DRAM Clock

The DRAM Clock option enables the user to determine how the BIOS handles the memory clock frequency. The memory clock can either be dynamic or static. This feature has three options.

Auto

The Auto option enables the BIOS to select a compatible clock frequency for the installed memory.

400 MHz

The 400 MHz option forces the BIOS to be fixed at 800 MHz for DDR3 memory modules.

533 MHz

The 533 MHz option forces the BIOS to be fixed at 1066 MHz for DDR3 memory modules.

4.5.8.2. Select Display Device 1 and 2

The Select Display Device feature enables the user to choose a specific display interface. This feature has two options: CRT and HDMI. If both Select Display Device 1 and Select Display Device 2 are set to the same interface, then any display device connected to the other interface will not function. For example, if both Select Display 1 and 2 are set to CRT, then no data will be sent to the HDMI port.

4.5.8.3. VGA Share Memory (Frame Buffer)

The VGA Share Memory feature enables the user to choose the amount of the system memory to reserve for use by the integrated graphics controller. The selections of memory amount that can be reserved are 128MB, 256MB and 512MB.

4.5.8.4. OnChip HDAC Device

The OnChip HDAC Device feature enables the BIOS to control the high definition audio codec in the chipset. This feature has two options: "Enable" or "Disable".

4.5.8.5. WATCH-DOG

The WATCHDOG Timer Enable feature unlocks three other features that enable the BIOS to monitor the state of the system. This feature has two options: "Enabled" or "Disabled".

4.5.8.6. VT6130 LAN Control

The VT6130 LAN Control feature determines whether the onboard LAN controller will be used or not.

4.5.8.7. LAN Option ROM

The LAN Option ROM feature will only be visible if the **VT6130 LAN Control** feature is enabled. If the LAN Option ROM feature is enabled, then the system will load a separate ROM for the LAN controller in order to boot through the Gigabit Ethernet.

4.6. Boot Settings

The Boot Settings screen has two links that goes to the **Boot Settings Configuration** and **Boot Device Priority** screens.

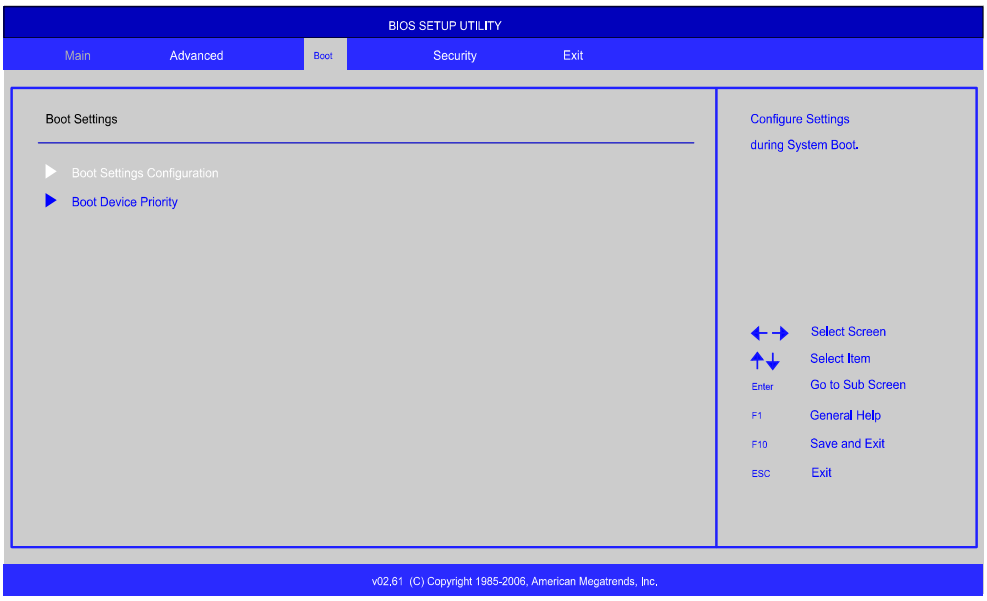


Figure 30: Illustration of Boot Settings screen

4.6.1. Boot Settings Configuration

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

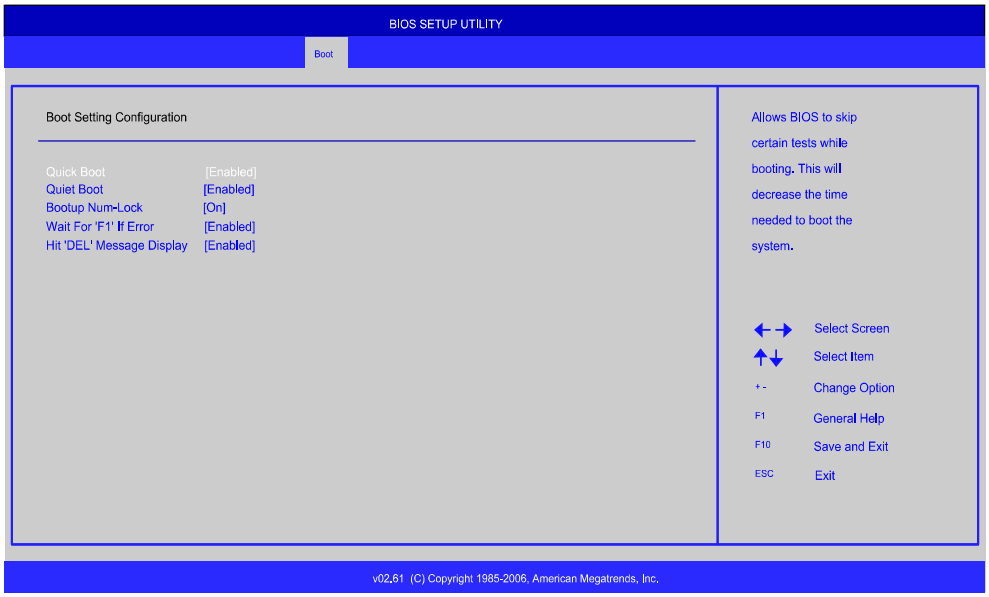


Figure 31: Illustration of Boot Settings Configuration screen

4.6.1.1. Quick Boot

The Quick Boot feature enables the BIOS to skip certain tests in order to speed up the boot sequence. This feature has two options: enabled and disabled.

4.6.1.2. Quiet Boot

The Quiet Boot feature hides all of the Power-on Self Test (POST) messages during the boot sequence. Instead of the POST messages, the user will see an OEM logo. This feature has two options: enabled and disabled.

4.6.1.3. Bootup Num-Lock

The Bootup Num-Lock feature determines how the 10-key pad will behave. When the feature is enabled, the 10-key pad will behave as a number pad. When the feature is disabled, the 10-key pad will behave as cursor navigation keys.

4.6.1.4. Wait for 'F1' if Error

This feature determines how the system will respond if an error is detected during the boot sequence. If this feature is enabled, the BIOS will pause booting and wait for the user to press F1 to enter the BIOS setup menu. This feature has two options: enabled and disabled.

4.6.1.5. Hit 'DEL' Message Display

This feature determines if the BIOS will display a POST message that informs the user how to access the BIOS Setup Utility.[1] This feature has two options: enabled and disabled.

Note:

1. If the Quiet Boot option is enabled, the settings of this feature will have no effect.

4.6.2. Boot Device Priority

The Boot Device Priority screen lists all bootable devices.

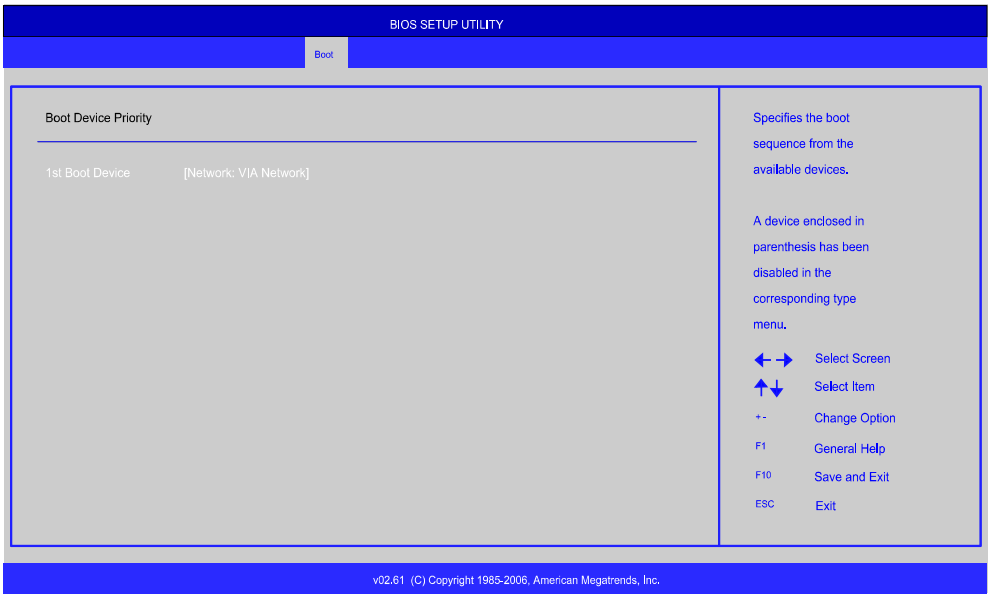


Figure 32: Illustration of the Boot Device Priority screen

4.6.2.1. 1st Boot Device

This feature specifies the boot sequence from the available devices. The available boot devices are detected dynamically and bootable devices will be listed accordingly.

4.7. Security Settings

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

Figure 33: Illustration of Security Settings screen

4.7.1. Change Supervisor 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.

4.7.2. User Access Level

This feature controls the level of access a user (without the supervisor password) is granted to the BIOS setup utility. This feature has four options.

No Access

The No Access option completely locks the BIOS setup utility. The supervisor password is required to access and change the BIOS settings.

View Only

The View Only option only allows access to view the BIOS settings. Users with this permission level cannot make changes to the BIOS.

Limited

The Limited option only allows non-critical BIOS settings to be changed. Changes are allowed to the following BIOS features:

- System Time
- System Date
- Quick Boot
- Display Logo

Full Access

The Full Access option allows all BIOS settings to be changed except for the Change Supervisor Password and User Access Level options.

4.7.3. Change User Password

This option is for setting a password for non-supervisors. When a user password is set, the **Clear User Password** and **Password Check** options will be unlocked.

4.7.4. Clear User Password

This option is only available when the user accesses the BIOS Setup Utility when the user password has been specified.

4.7.5. Password Check

This feature is compulsory when the **Change Supervisor Password** option is set. The user will have up to three chances to enter the correct password before the BIOS forces the system to stop booting. If the user does not enter the correct password, the keyboard will also lock up. The only way to get past this is to do a hard reboot (i.e., use the system reset button or cut off the power to the system). A soft reboot (i.e., Ctrl+Alt+Del) will not work because the keyboard will be locked. This feature has two options.

Setup

The Setup option forces users to enter a password in order to access the BIOS Setup Utility.

Always

The Always option forces users to enter a password in order to boot up the system.

4.8. Exit Options

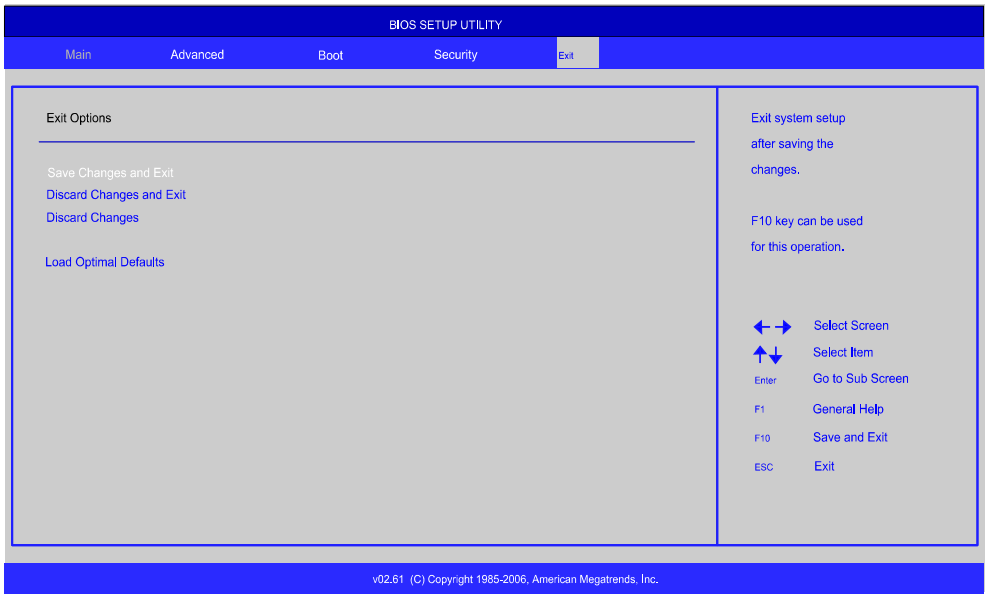


Figure 34: Illustration of Exit Options screen

4.8.1. Save Changes and Exit

Save all changes to the BIOS and exit the BIOS Setup Utility. The "F10" hotkey can also be used to trigger this command.

4.8.2. Discard Changes and Exit

Exit the BIOS Setup Utility without saving any changes. The "Esc" hotkey can also be used to trigger this command.

4.8.3. Discard Changes

This command reverts all changes to the settings that were in place when the BIOS Setup Utility was launched.

4.8.4. Load Optimal Defaults

Load optimal default values for all the setup items. The default optimized values are defined by the mainboard manufacturer to provide optimized environment for a basic system.

5. Driver Installation

5.1. Microsoft Driver Support

The AMOS-3002 is compatible with Microsoft operating systems. The latest Windows drivers can be downloaded from the VIA website at www.viatech.com.

For embedded operating systems, the related drivers can be found in the VIA website at www.viatech.com

5.2. Linux Driver Support

The AMOS-3002 is compatible with many Linux distributions.

Support and drivers are provided through various methods including:

- Drivers provided by VIA
- Using a driver built into a distribution package
- Visiting www.viatech.com for the latest updated drivers
- Installing a third party driver (such as the ALSA driver from the Advanced Linux Sound Architecture project for integrated audio)
- Debian Linux 6 (Kernel 2.6.32-5-686)

For OEM clients and system integrators developing a product for long term production, other code and resources may also be made available. Contact VIA to submit a request.

6. Troubleshooting

For Windows 7 or Windows Server 2008 R2 Service Pack 1 user only:
If encounter the issue such as the system reboots automatically instead of entering sleep mode. Install the hotfix released by Microsoft to address this issue. The hotfix is available at the following link:
http://support.microsoft.com/kb/2502664/en-us

Appendix A. Installing Wireless Accessories

This section provides information on how to install the optional wireless accessories to provide wireless connection such as Wi-Fi, Bluetooth, GPS and 3G.

A.1. Inserting VNT9271 USB Wi-Fi Dongle

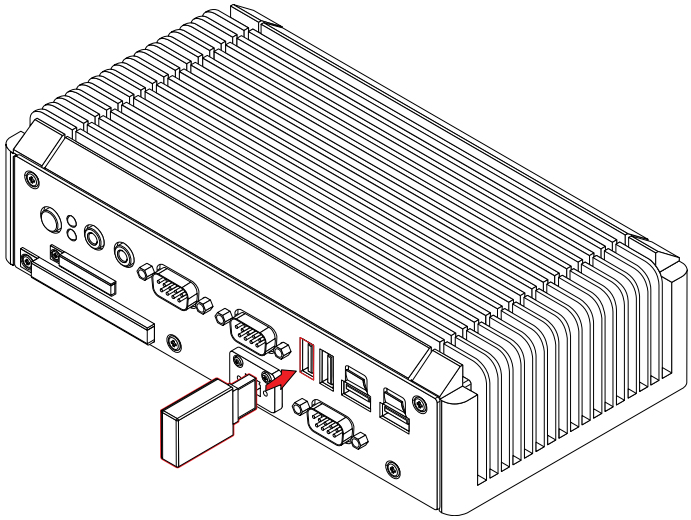
Step 1

Locate a USB 2.0 port on the rear panel.

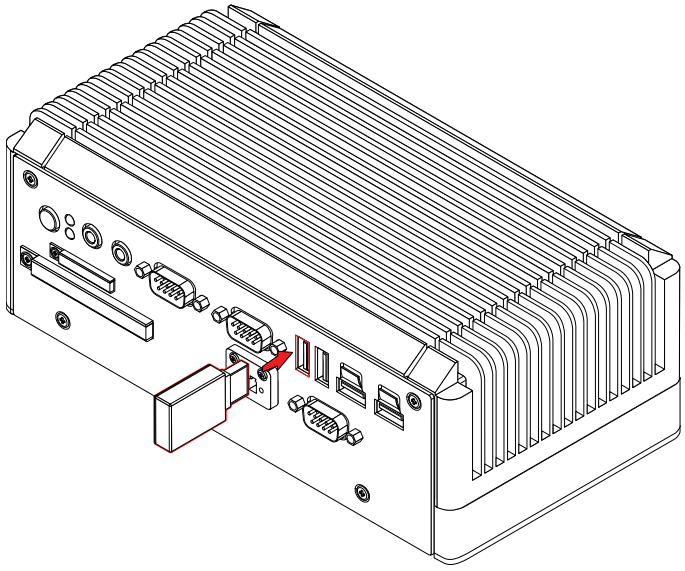
Step 2

Insert the VNT9271 dongle in one of the USB 2.0 port.

(AMOS-3002-1D1A02)



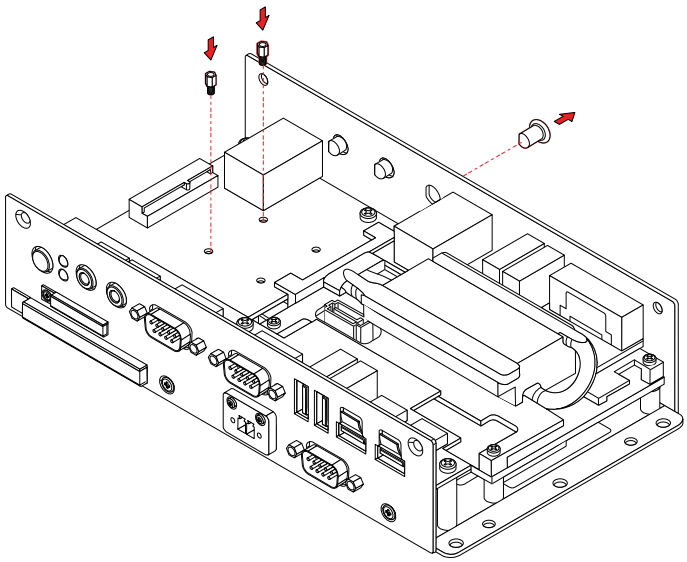
(AMOS-3002-2D1A02)



A.2. Installing EMIO-1541 miniPCIe Wi-Fi Module

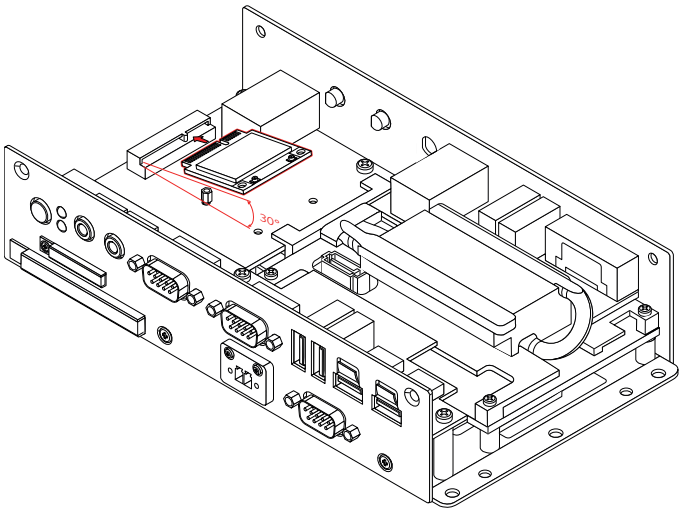
Step 1

Install the hex standoff screws on the daughterboard. Take off the antenna hole cover from the rear panel. To facilitate removing the cover, use a pair of needle-nose pliers to depress both locking clips simultaneously.



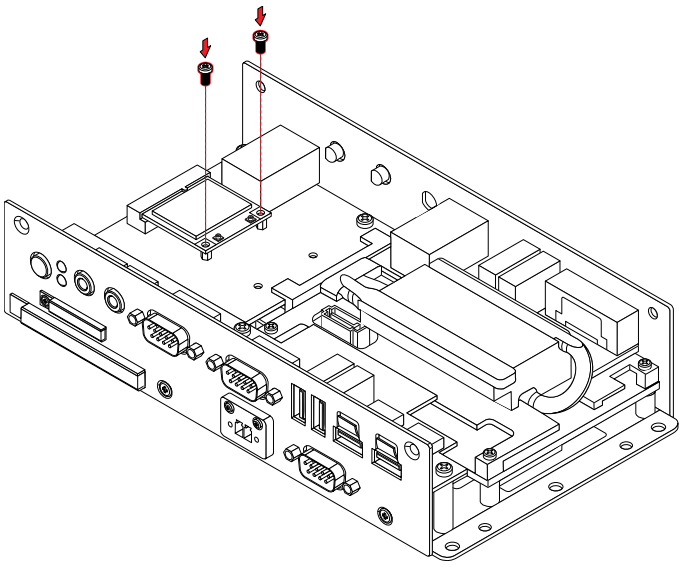
Step 2

Align the notch on the EMIO-1541 module with the protruding wedge on the miniPCIe slot then insert the module at 30 degrees angle.



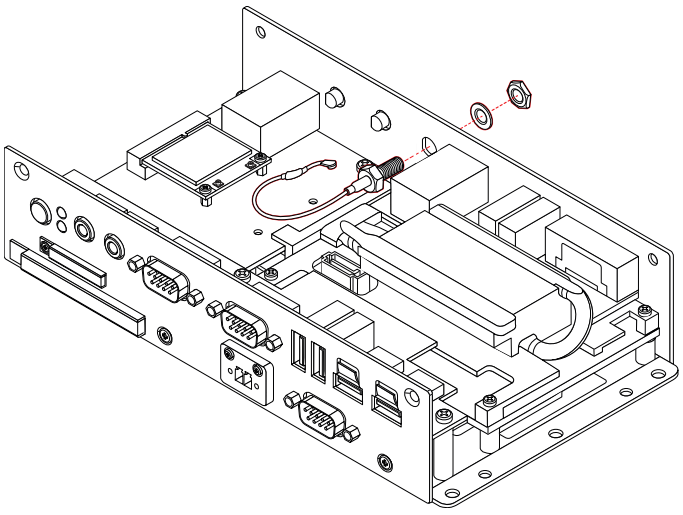
Step 3

Once the module has been inserted, push down the module until the screw holes align with the mounting holes on the hex standoff screws. Secure the module with two screws to the standoffs.



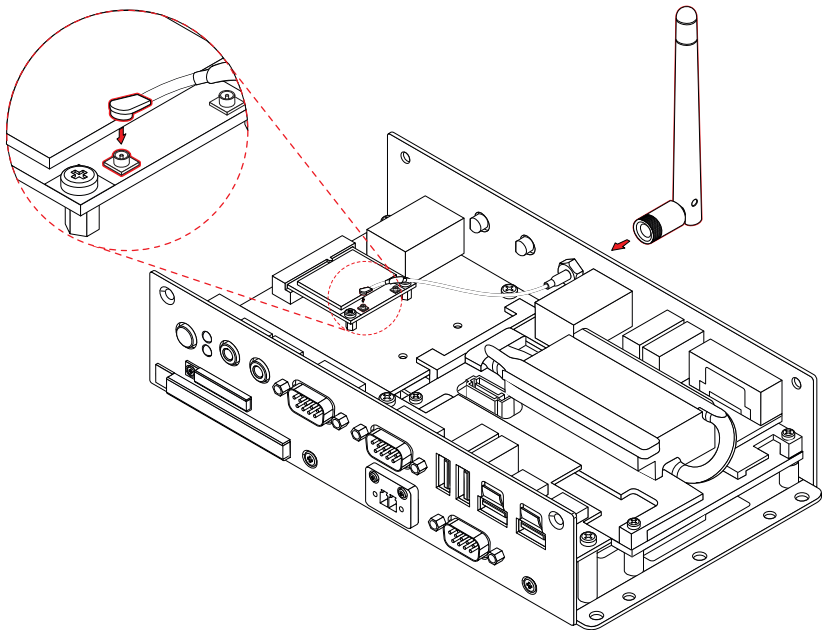
Step 4

Insert the Wi-Fi antenna cable into the antenna hole from inside of the rear panel plate. Insert the washer, and fasten it with the nut.



Step 5

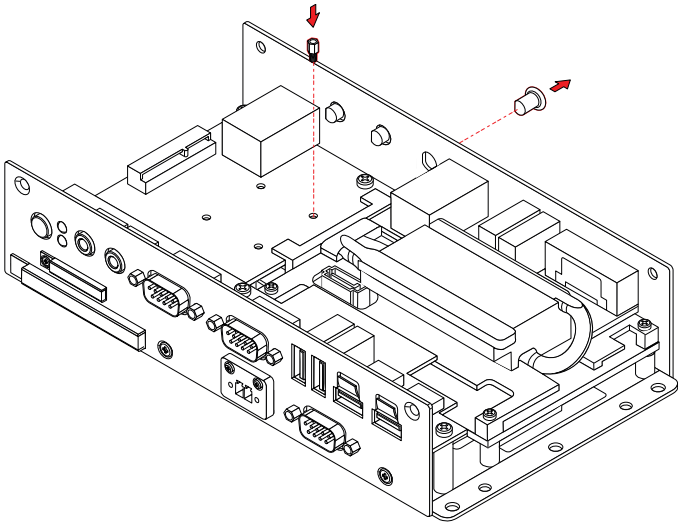
Connect the other end of the Wi-Fi antenna cable onto the micro-RF connector labeled "TRX" on the EMIO-1541 module. Then install the external antenna.



A.3. Installing EMIO-2531 miniPCIe Wi-Fi + Bluetooth Module

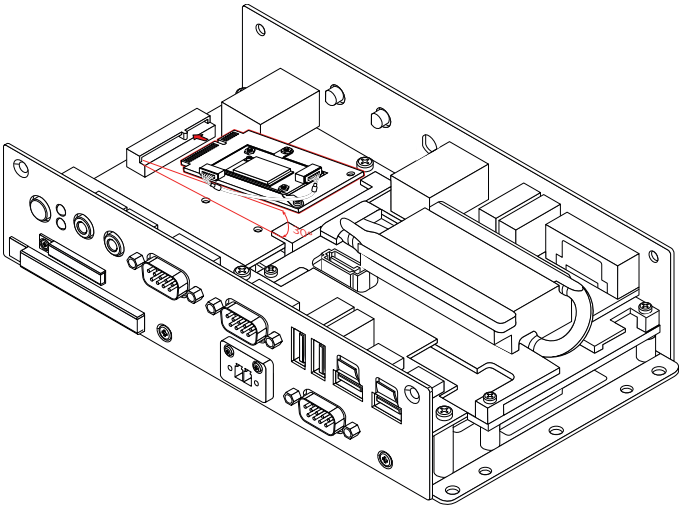
Step 1

Install the hex standoff screw on the daughterboard, and then take off the antenna hole cover from rear panel. To facilitate removing the cover, use a pair of needle-nose pliers to depress both locking clips simultaneously.



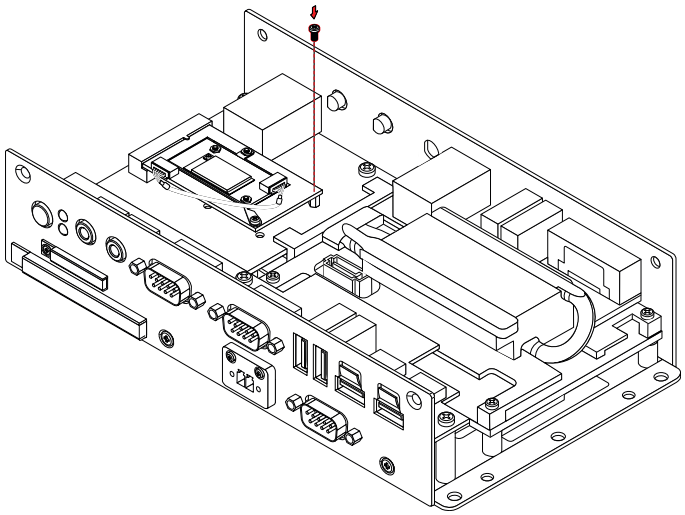
Step 2

Align the notch on the EMIO-2531 module with the protruding wedge on the miniPCIe slot then insert the module at 30 degrees angle.



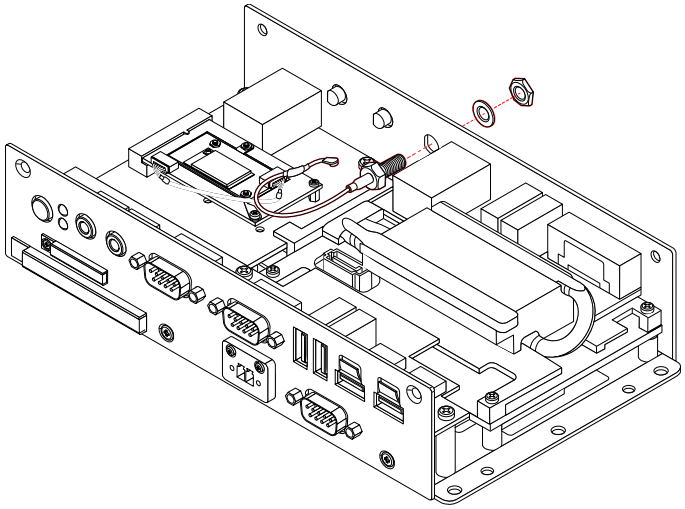
Step 3

Once the module has been inserted, push down the module until the screw hole align with the mounting hole on the standoff. Reinstall the screw to secure the module to the standoff.



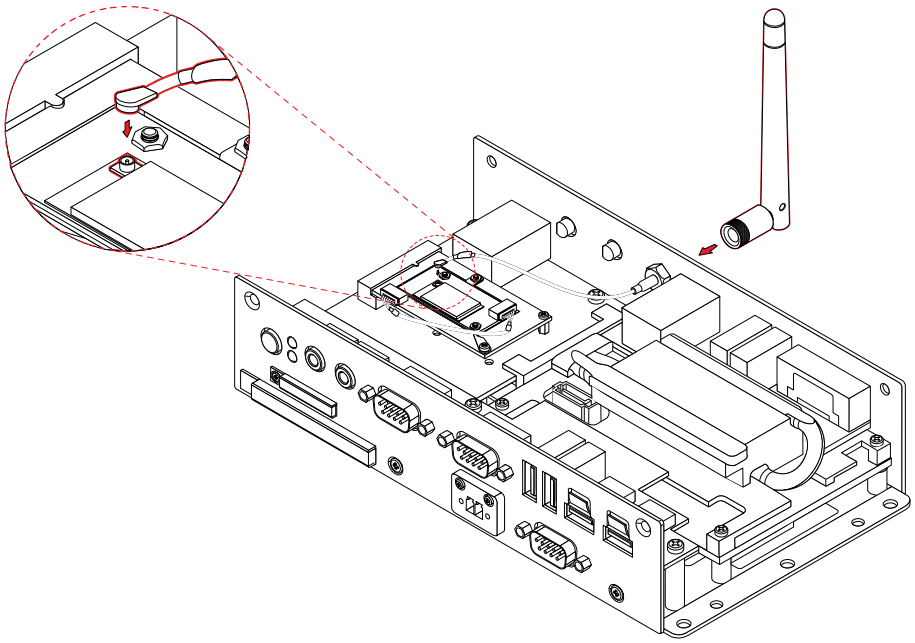
Step 4

Insert the Wi-Fi antenna cable into the antenna hole from inside of the rear panel plate. Insert the washer, and fasten it with the nut.



Step 5

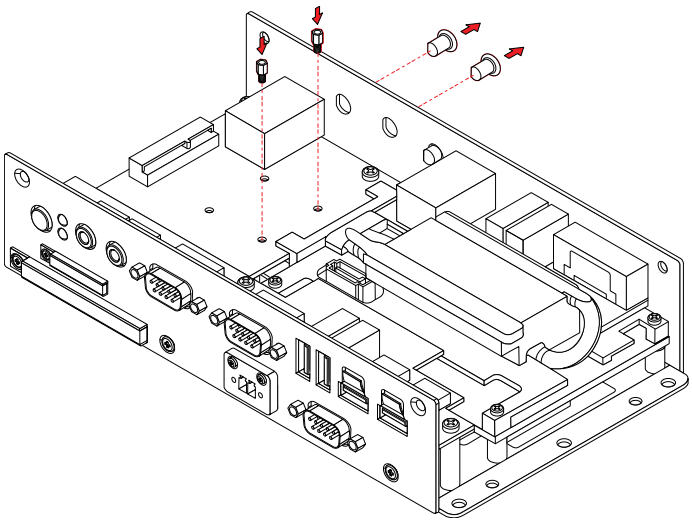
Connect the other end of the Wi-Fi antenna cable to the micro-RF connector labeled "MH2" on the EMIO-2531 module.



A.4. Installing EMIO-2550 miniPCIe Mobile Broadband Module

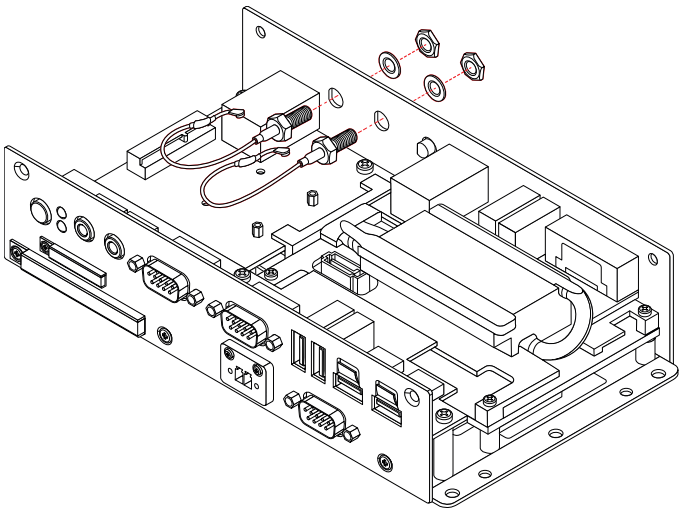
Step 1

Install the hex standoff screws on the daughterboard. Take off the antenna holes cover from the rear panel. To facilitate removing the covers, use a pair of needle-nose pliers to depress both locking clips simultaneously.



Step 2

Insert the 3G and GPS antenna cables into the antenna holes from inside of the rear panel plate. Insert the washer, and fasten it with the nut.



Note:

Any installation steps related to GPS is not applicable if using EMIO-2550-01A1 module.

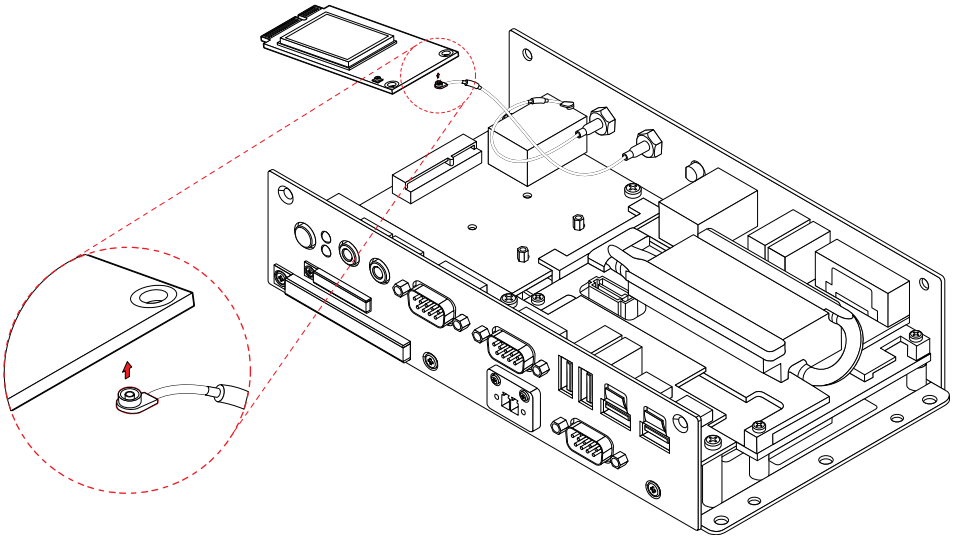
Step 3

Insert the SIM card either to the bottom side of the EMIO-2550 module or to the SIM card slot on the front panel.

Note:
If preferred to use the SIM card slot on the module then make sure to install first the SIM card on the module before installing it to the miniPCIe slot.

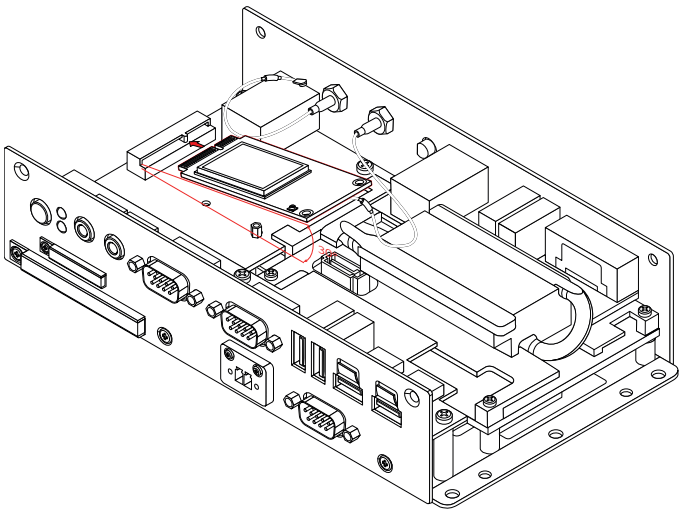
Step 4

Connect first the other end of the GPS antenna cable onto the micro-RF connector labeled "GPS" on the bottom side of EMIO-2550 module as shown in the illustration below.



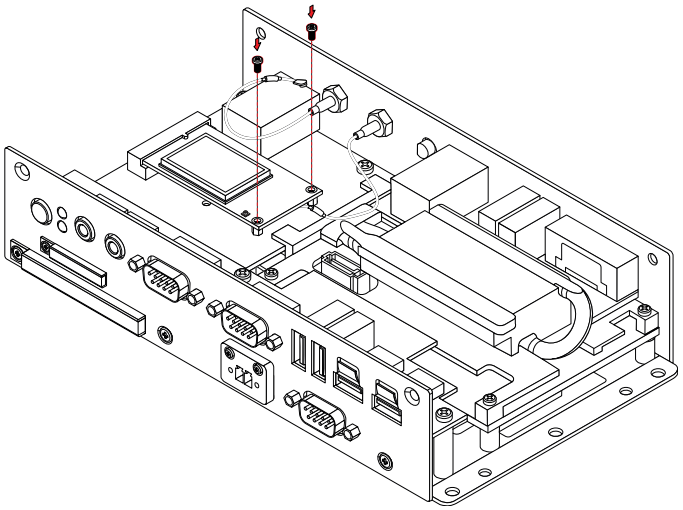
Step 5

Align the notch on the EMIO-2550 module with the protruding wedge on the miniPCIe slot then insert the module at 30 degrees angle.



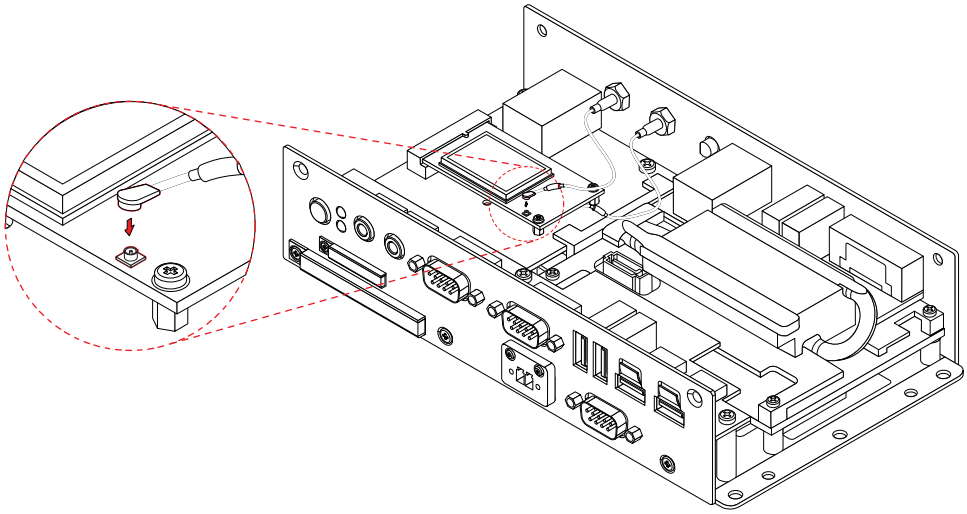
Step 6

Once the EMIO-2550 module has been inserted, push down the module until the screw holes align with the mounting holes on the hex standoff screws. Secure the module with two screws to the standoffs.



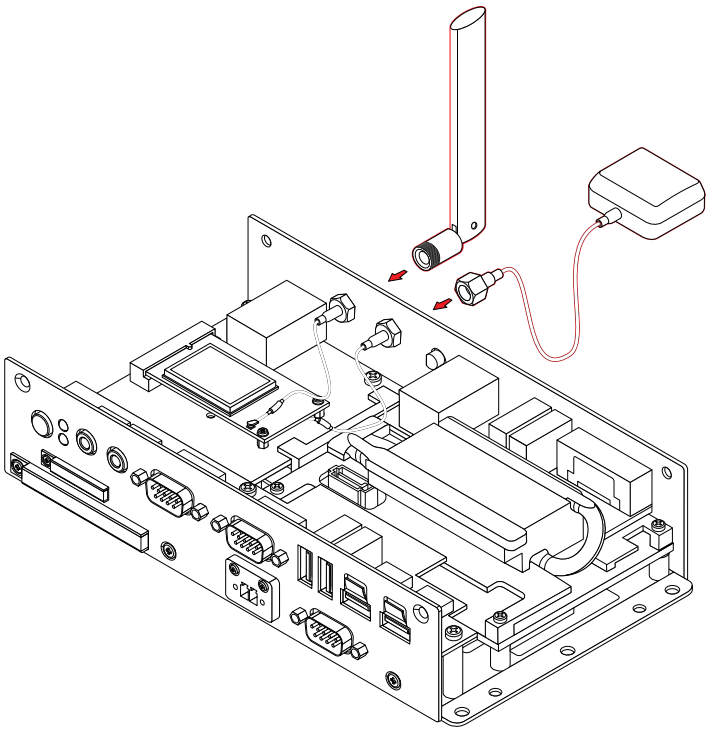
Step 7

Connect the other end of the 3G antenna cable onto the micro-RF connector labeled "MAN" on the EMIO-2550 module.



Step 8

Install the 3G and GPS external antenna respectively.



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