SB-226-1J64

Industrial Fanless PC w/Intel® Elkhart Lake Celeron J6412 Processor

User's Manual
Version 1.0

CE

RoHS VERIFIED

2024.03

Revision History

Version	Date	Description
1.0	2024.01	Initial release

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Declaration of Conformity

CE

The CE symbol on your product indicates that it is in compliance with the directives of the Union European (EU). A Certificate of Compliance is available by contacting Technical Support.

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from ARBOR. Please contact your local supplier for ordering information.

Warning
This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE:

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 own expense.

RoHS

ARBOR Technology Corp. certifies that all components in its products are in compliance and conform to the European Union's Restriction of Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC.

The above mentioned directive was published on 2/13/2003. The main purpose of the directive is to prohibit the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic products. Member states of the EU are to enforce by 7/1/2006.

ARBOR Technology Corp. hereby states that the listed products do not contain unintentional additions of lead, mercury, hex chrome, PBB or PBDB that exceed a maximum concentration value of 0.1% by weight or for cadmium exceed 0.01% by weight, per homogenous material. Homogenous material is defined as a substance or mixture of substances with uniform composition (such as solders, resins, plating, etc.). Lead-free solder is used for all terminations (Sn(96-96.5%), Ag(3.0-3.5%) and Cu(0.5%)).

SVHC / REACH

To minimize the environmental impact and take more responsibility to the earth we live, Arbor hereby confirms all products comply with the restriction of SVHC (Substances of Very High Concern) in (EC) 1907/2006 (REACH --Registration, Evaluation, Authorization, and Restriction of Chemicals) regulated by the European Union.

All substances listed in SVHC < 0.1 % by weight (1000 ppm)

Important Safety Instructions

Read these safety instructions carefully

1. Read all cautions and warnings on the equipment.

2. Place this equipment on a reliable surface when installing. Dropping it or letting it fall may cause damage

3. Make sure the correct voltage is connected to the equipment.

4. For pluggable equipment, the socket outlet should be near the equipment and should be easily accessible.

5. Keep this equipment away from humidity.

6. The openings on the enclosure are for air convection and protect the equipment from overheating. DO NOT COVER THE OPENINGS.

7. Position the power cord so that people cannot step on it. Do not place anything over the power cord.

8. Never pour any liquid into opening. This may cause fire or electrical shock.

9. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

10. If one of the following situations arises, get the equipment checked by service personnel:

    a.   The power cord or plug is damaged.

    b.   Liquid has penetrated into the equipment.

    c.   The equipment has been exposed to moisture.

    d.   The equipment does not work well, or you cannot get it to work according to the user's manual.

    e.   The equipment has been dropped or damaged.

    f.   The equipment has obvious signs of breakage.

11. Keep this User's Manual for later reference.

Warning

The Box PC and its components contain very delicately Integrated Circuits (IC). To protect the Box PC and its components against damage caused by static electricity, you should always follow the precautions below when handling it:

1. Disconnect your Box PC from the power source when you want to work on the inside.

2. Use a grounded wrist strap when handling computer components.

3. Place components on a grounded antistatic pad or on the bag that came with the Box PC, whenever components are separated from the system.

Lithium Battery Replacement

Incorrect replacement of the lithium battery may lead to a risk of explosion.

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.

Do not throw lithium batteries into the trash can. It must be disposed of in accordance with local regulations concerning special waste.

Technical Support

If you have any technical difficulties, please consult the user's manual first at: https://www.arbor-technology.com

Please do not hesitate to call or e-mail our customer service when you still cannot find out the answer.

> https://www.arbor-technology.com
>
> E-mail:info@arbor.com.tw

Warranty

This product is warranted to be in good working order for a period of two year from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party.

Vendors disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose, with respect to the hardware, the accompanying product's manual(s) and written materials, and any accompanying hardware. This limited warranty gives you specific legal rights.

Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

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Chapter 1

Introduction

1.1 Features

- Intel® Celeron® J6412 CPU Elkhart Lake(2.0 GHz/2.6GHz)
- 1 x SDRAM DDR4 3200 MHz (max. 32G)
- Support 2 Gigabit LAN
- Support M.2 SSD, MiniPCIE, mSATA

1.2 About this Manual

This manual is meant for the experienced users and integrators with hardware knowledge of personal computers. If you are not sure about the description in this manual, consult your vendor before further handling.

We recommend that you keep one copy of this manual for the quick reference for any necessary maintenance in the future. Thank you for choosing ARBOR products.

1.3 Specifications

System	
CPU	Intel® Celeron® J6412 CPU Elkhart Lake (2.0 GHz/2.6GHz)
Memory	1 x SDRAM DDR4 3200 MHz SO-SIMM slot (max. 32G) 4GB DDR4 SO-DIMM pre-installed*(CTOS)
Graphics	Intel® UHD Graphics for 10th Gen Intel® Processors
LAN Chipset	2 x Intel I211 for 10/100/1000 Mbps, colay I210
Watchdog Timer	Programmable 255 levels timer interval, from 1~255 sec/min
Storage	
Device	1 x M.2 2242, 1 x mSATA, 128GB M.2 SSD pre-installed*(CTOS)
External I/O	
Serial Ports	1 x RS232/422/485(default RS-232) with auto flow control 4 x RS485 ± 2KV protection, 1 x RS232
USB Ports	4 x USB3.1
LAN	2 x RJ45
Video Port	1 x HDMI up to 4096 x 2160 @ 24 Hz
Internal I/O	
Expansion Slot	1 x Mini-PCIe slot (PCIe/ USB2.0 / mSATA signal supported)
SIM Card	1 x SIM Card socket for 3G/4G module
USB	2 x USB2.0 encryption dongle (optional by internal pin head)
GPIO	1 x 4bit programmable GPIO (default 3.3V, 5V optional) (optional by internal pin head)
Mechanical	
Button	1 x Power button (with LED)
LED	1 x Power LED, 1 x HDD LED
Chassis	Aluminum Alloy
Mounting	Desk-Mount, Wall-Mount

Dimension (W x H x D)	200 x 130 x 44 mm
Weight (Net)	1.5kg
Environmental	
Operating Temp.	-20 ~ 60°C (-4 ~ 140°F)
Storage Temp.	-40 ~ 85°C (-40 ~ 185°F)
Operating Humidity	5% ~ 95% (non-condensing)
Random Vibration	5~500Hz, 2Grms operation
Shock	Operation: 10G@11ms Non-operation: 30G@11ms
Qualification	
Certification	CE, FCC
Power System	
Power Input	12-36V DC, 2-pin phoenix connector
OS Support	
Windows 10 Ubuntu 20.04	

1.3 Inside the Package

Upon opening the package, carefully inspect the contents. If any of the items is missing or appears damaged, contact your local dealer or distributor. The package should contain the following items:

 1 x SB-226-1J64

• User's manual

• Acessory pack
(Brackets, 2 pin power ternal block and screws)

Chapter 2

Getting Started

2.1 Dimensions

2.2 Overview
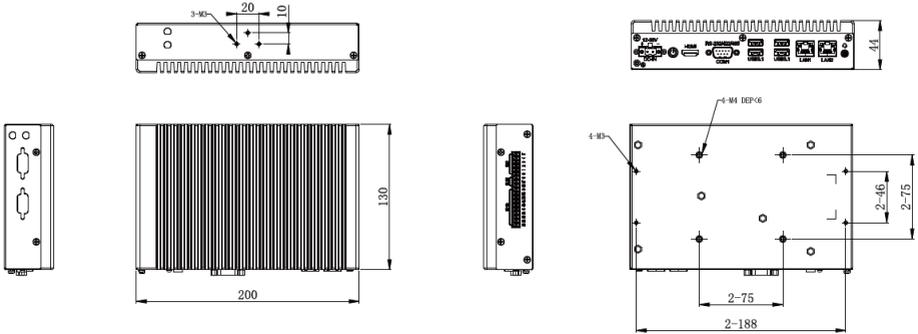
2.2.1 Front side View
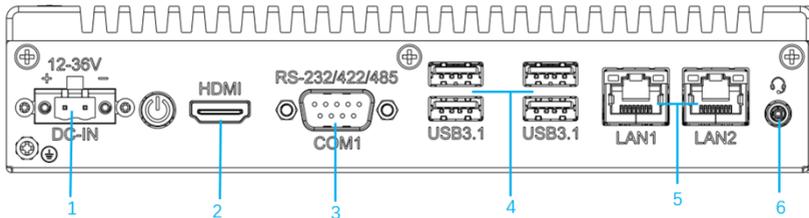
Front Side Panel List

No.	Item	No.	Item
1	DC-IN	4	USB 3.1
2	HDMI	5	LAN
3	COM1	6	Audio

2.2.2 Left Side View
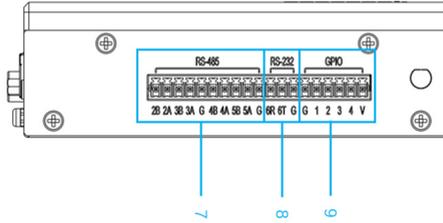
Pin	Pin Definition	Pin	Pin Definition
7	COM2/3/4/5	9	GPIO
8	COM6		

2.2.3 DC-IN Power Input
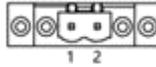
Pin	Pin Definition	Pin	Pin Definition
1	+12~36V	2	GND

2.2.4 HDMI/DP Input
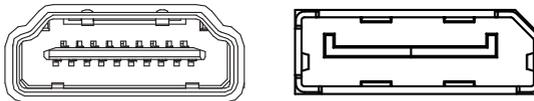
Figure 2.2.2-1 HDMI / DP Connector

2.2.5 Serial Port Connector(COM1, COM2)

COM1, COM2

Function: RS-232/422/485 Selectable Serial Port
Connector Type: External 9-pin D-sub male connector
Pin Assignment:

	Pin	Desc.	Pin	Desc
RS-232	1	DCD	6	DSR
	2	RXD	7	RTS
	3	TXD	8	CTS
	4	DTR	9	RI
	5	GND		
RS-422	1	Tx-		
	2	Tx+		
	3	Rx+		
	4	Rx-		
	5	GND		
RS-485	1	Data-	4	NC
	2	Data+	5	GND
	3	NC		
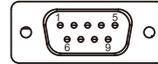
Note: COM1/2 support RS232/422/485.

COM2/3/4/5/6 + GPIO PIN Definition
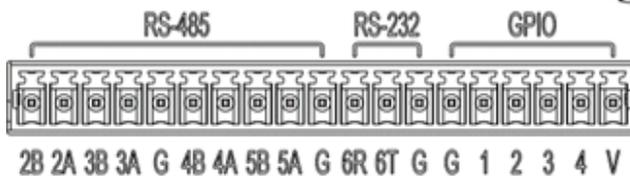
2.2.6 USB Port

Function: USB 3.1/3.0/2.0 Stacked Connectors
Connector Type: USB 3.1/3.0/2.0 type A connectors
Pin Assignment: The pin assignments conform to the industry standard.

USB Ver.	Max Speed	Speed name	Max V/I
USB2.0		High-Speed	DSR 5V/0.5A
USB3.0	5Gbps(500MB/S)	Super-Speed USB	5V/900mA
USB3.1	10Gbps(1000MB/S)	Super-Speed USB	5V/900mA

Note: Support 4 x USB ports, 2 x USB3.1 and 2 x USB2.0

2.2.7 LAN Port

LAN Port

Function: RJ-45 port for Giga Lan
Connector Type: 4 x RJ-45 connectors that support 10/100/1000Mbps fast Ethernet
Pin Assignment: The pin assignments conform to the industry standard.
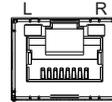
LED Indicators

Indicator	Function	Status
L	Networking Status	Off: Not working Green: Working
R	Networking Speed Status	Off: 10Mbps Green: 100Mbps Orange: 1000Mbps

2.2.8 Audio Port

Function: For external microphone, headphones or speakers.
Connector Type: 3.5mm audio port interface
Pin Assignment: Support a 2-in-1 audio I/O interface with a 3.5mm hole diameter for external microphones, headphones, or speakers on a 4-segment iPhone version devices.
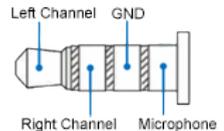
Note: As the microphone pins of Android and iPhone version devices are opposite, they cannot be used the same audio input/output ports.

2.2.9 Power LED Status

Description	Status	
Power LED Status	► Off: Power off or system is in hibernate mode ► Green LED Permanently: Ststem is working ► Green LED Blinking: The system is processing data	

2.2.10 Antenna Hole

There are 2 antenna reserved holes on the rear panel of the product to facilitate users to install the antenna of the wireless module.

2.3 Internal I/O / Connector / Jumper
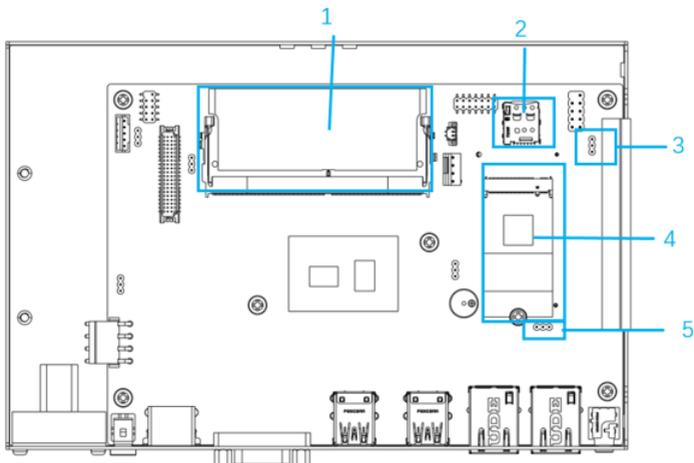
No.	Item	Printing
1	DDR4 SO-DIMM socket	DIMM1
2	3G/4G SIM socket	JSIM1
3	GPIO voltage switch jumper	GPIO_PWR1
4	M.2_SSD	M.2_SSD
5	AT/ATX selection jumper	JP1

2.3.1 DDR4 SO-DIMM socket

Function: 260-pin DDR4 SO-DIMM memory socket
Setting: The Pin assignment conform to the industry standard.

2.3.2 3G/4G SIM socket

Function: SIM Card Socket
Connector Type: 6-pin SIM card socket
Pin Assignment:

Pin	Desc.	Pin	Desc
C1	VCC	C2	RST
C3	CLK	C5	GND
C6	VPP	C7	I/O
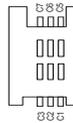
2.3.3 GPIO voltage switch jumper

JGPIO Jump

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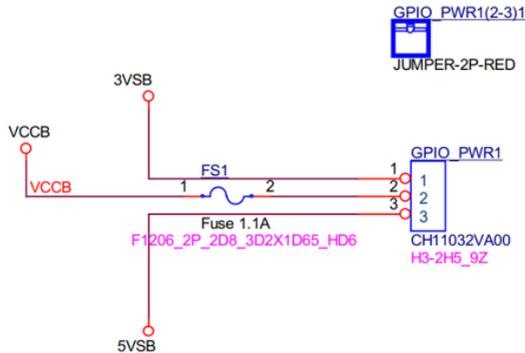
1) Default setting is 3.3V, users is able to set to 5V.

---

2) Follow the table as below for the GPIO setting

GPIO	Address
GPIO1	GP85
GPIO2	GP84
GPIO3	GP83
GPIO4	GP82

---

3) Open the RW setting for GPI/GPO settings. Please refer to the instructions below.

This function is located in Index/Data, i.e. 2E/2F. After filling EnterKey(0x87,0x01,0x55,0x55), Register[0x07] is filled with 0x07 to start the GPI/GPO setting controlled by Register[0xCF].

Here is 8 Bit in 0~7 of Register[0xCF] corresponds to GP 80~87, i.e., GPIO 1~8 (the GPIO address value on CES-RJ64 is GP82~85), the current Bit value of 0 indicates that the corresponding GPIO is GPI, and the current Bit value of 1 indicates that the corresponding GPIO is GPO.

About High/Low setting:

This function is located in IO Space after filling in the starting Register[0xA00], from the upper left Register, i.e., Register [0xA00], from left to right in order Register[0xA01], Register[0xA02]...... Register[0xA01], Register[0xA02].

Each Register corresponds to a group of GPIOs (GPIO 1~8); as shown in the figure, the correspondence between Register and GPIO groups, starting from Register [0xA00] <--> the first group of GP10~17 corresponds to each other sequentially.

Here, Register[0xA07] 8 Bit in 0~7 corresponds to GP 80~87, i.e. GPIO 1~8, the current Bit value is 0 means the corresponding GPIO is Low, the current Bit value is 1 means the corresponding GPIO is High.

2.3.4 M.2_SSD

Function: M.2 B-Key Connector
Connector Type: M.2 B-Key Connector supporting 22x42 modules
Pin Assignment: The pin assignments conform to the industry standard.

2.3.5 AT/ATX Selection Jumper(JP1)

Function: AT/ATX selection mode
Setting:

Pin	Description	
Short 1-2	ATX Mode(Default)	
Short 2-3	AT mode	

2.4 PIN definition for Optional 8DI/8DO card

Function: AT/ATX selection mode
Setting:

Pin	Description

Short 1-2   ATX Mode(Default)

Short 2-3   AT mode

8DI/8DO Channel definition

COM 8 7 6 5 4 3 2 1 G 8 7 6 5 4 3 2 1 EXT

DI   DO
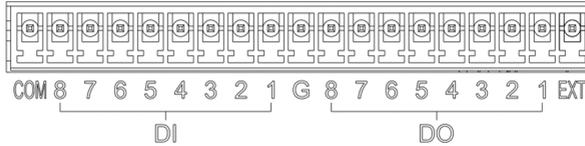
DI Pin	Signal	Description	DO Pin	Signal	Description
1	Pext VDD	5-24V for external power positive	11	DI1	Isolated channel 1
2	DO1	Isolated channel 1	12	DI2	Isolated channel 2
3	DO2	Isolated channel 2	13	DI3	Isolated channel 3
4	DO3	Isolated channel 3	14	DI4	Isolated channel 4
5	DO4	Isolated channel 4	15	DI5	Isolated channel 5
6	DO5	Isolated channel 5	16	DI6	Isolated channel 6
7	DO6	Isolated channel 6	17	DI7	Isolated channel 7
8	DO7	Isolated channel 7	18	DI8	Isolated channel 8
9	DO8	Isolated channel 8	19	DI_COM	Isolated common ground
10	DO_GND	External power negative			

2.4.1 I/O Port Definition & Wiring Method
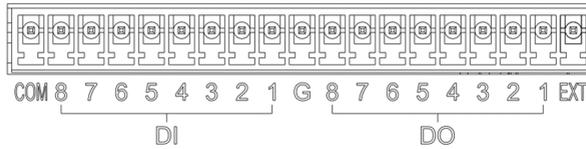
Features: Compatible with PNP and NPN sensor inputs. The input voltage DC 5-24V.

2.4.2 NPN Input Wiring Method

Features: NPN-type device connected to the IO input, DI_COM connected to the NPN-type sensor, the signal line connected to the DI (1-8), resistance according to the requirements of the sensor on the signal line "PULL HIGH" resistance.
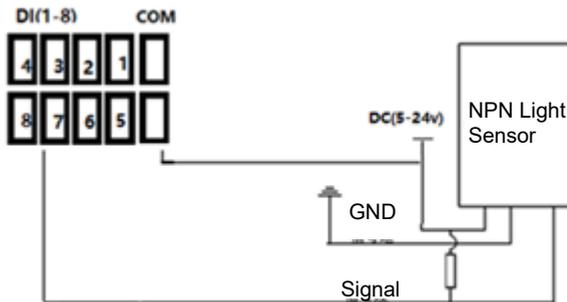
2.4.3 PNP Input Wiring Method

Features: PNP-type device connected to the IO input, then DI_COM connected to the GND of the NPN-type sensor, the signal line connected to the DI (1-8), the resistance according to the requirements of the sensor on the signal line "PULL DOWN" resistance.
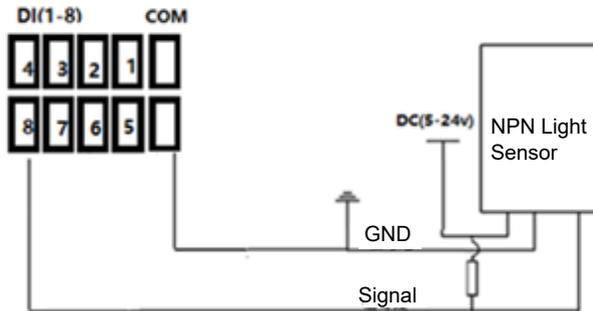
2.4.4 Output Connect to External Loading Device(LED, Buzzer, Relay)

The product was designed to meet the power supply range of DC 5-24V, 100mA per channel, programmable NPN and PNP outputs switching, and reverse connection protection.The wiring method is shown below for connecting to loading devices (e.g., relays, LEDs, motors, etc.) and PLC.

2.4.5 Output PNP Wiring Method

DO is connected to "+" of the loading device and "-" of the loading device is connected to DO_GND. The EXT is connected to the external DC voltage.
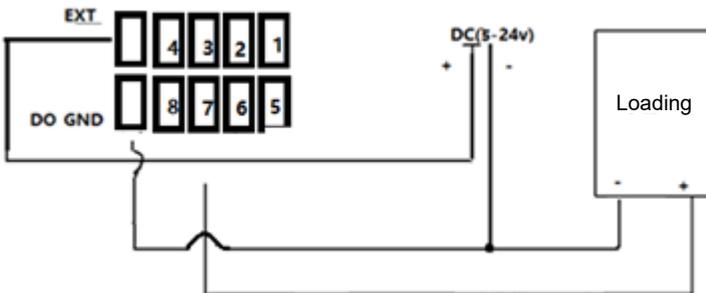
Note: If inductive loads are to be connected, please make sure there is a reverse drain diode to prevent the reverse electromotive force from damaging the internal parts.

2.4.6 Output NPN Wiring Method

DO is connected to "-" of the loading device and "+" of the loading device is connected to EXT. The EXT is connected to the external DC voltage.
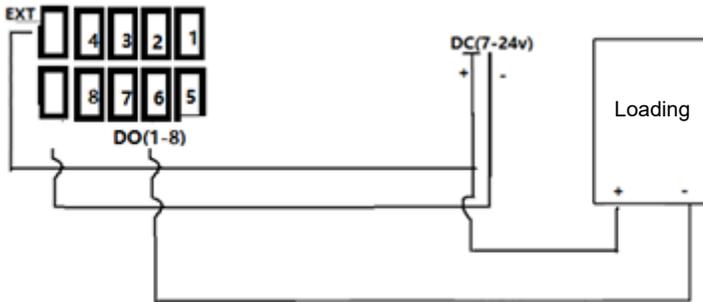
Note: If inductive loads are to be connected, please make sure there is a reverse drain diode to prevent the reverse electromotive force from damaging the internal parts.

2.4.7 Output Connect to PLC Wiring Method

PNP PLC Features: VCC connects to EXT, DO_GND connects to PLC GND, and then the input of PLC connects to DO1-8.
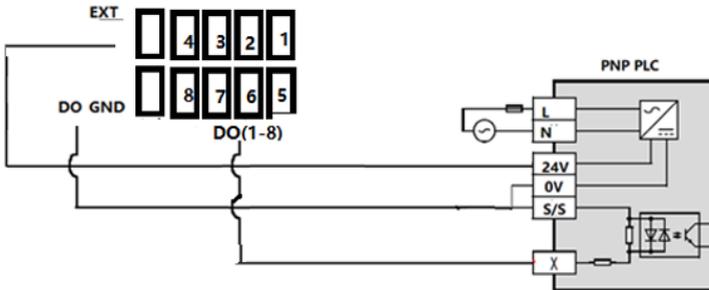
NPN PLC Features: PLC VCC connects to EXT, DO_GND connects to PLC GND, and then the input of PLC connects to DO1-8.
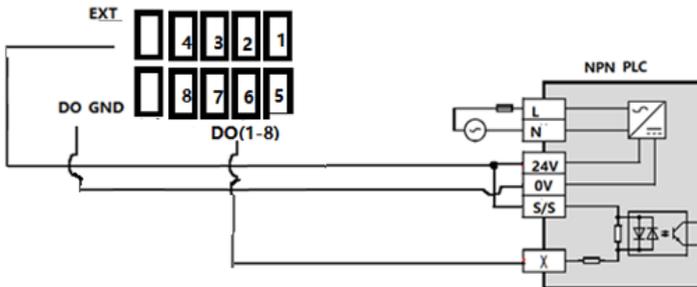
Chapter 3

Installation & Maintenance

3.1 Installation and Maintenance

1. Remove 12 screws on the 4 sides of the system, as shown below.
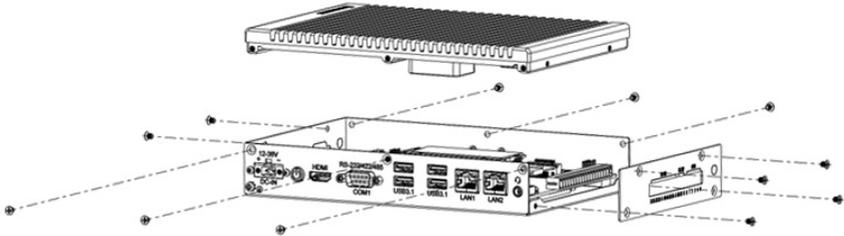
2. Remove 6 screws from the board inside, as shown in 3.1.2.
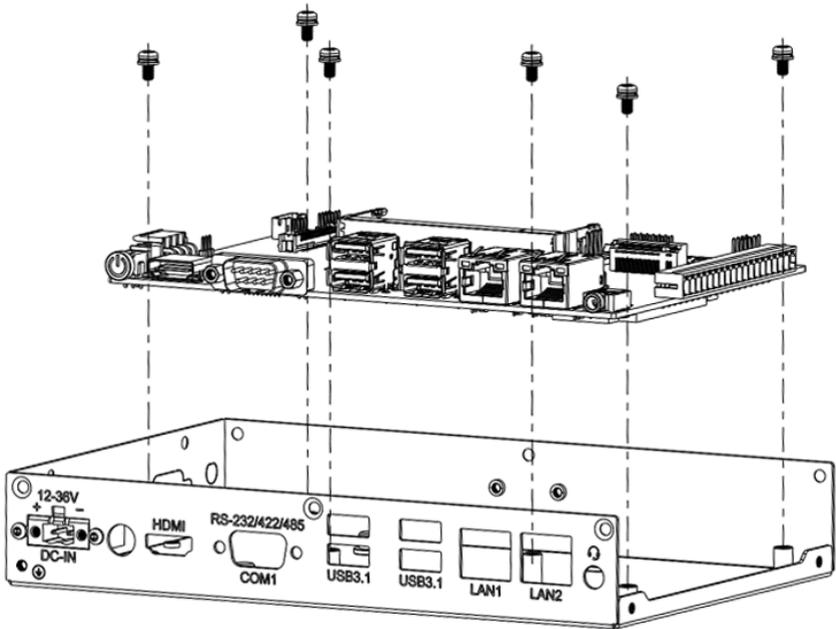
3.2 Install M.2 2242 Storage/Thermal Pad

1. Remove 12 screws on the bottom cover from the computer as described in 3.1-1
2. Install/Remove the storage and attach the thermal pad to the storage.
3. Attach the accessory hexagonal studs to the screw holes, insert/remove the storage. Fastern 6 screws of P-head M3, and attach the SSD thermal pad to the M.2 SSD.
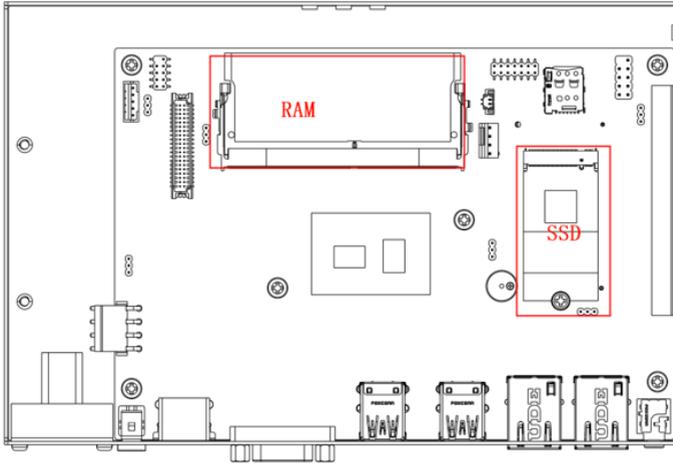
3.3 Install WiFi / 4G Module / SIM

1. Install/Remove SIM card on the board.
2. Insert MINI-PCIE WiFi/CAN/4G module, then fasten with L head M2*3 screws.
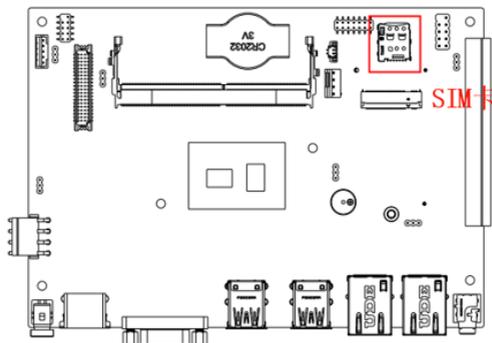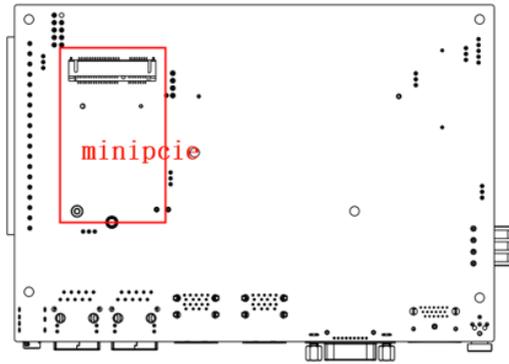
3.4 Mounting

SB-226-1J64 can support desktop mounting, wall mounting, VESA mounting and DIN-Rail mounting. VESA and DIN-rail mounting require optional mounting brackets.

3.4.1 Desktop & Wall Mounting

1. Take the bracket from the box:
2. Fastern 4 M3x6 screws, then install the device on a flat surface. .
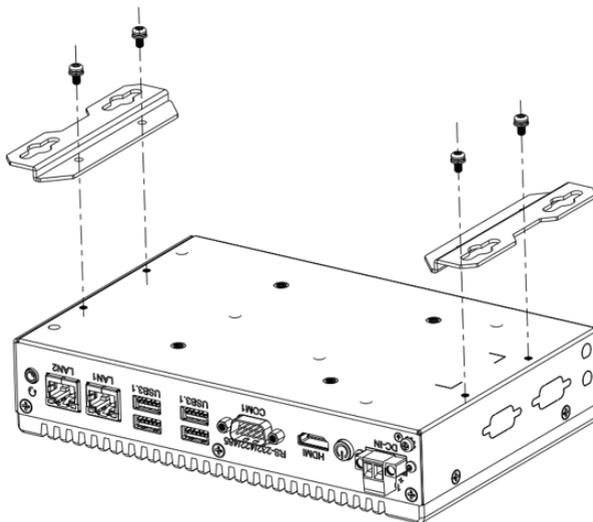
3.4.2 VESA Mounting (Optional)

1. Take the VESA from the box and attach it to the monitor, positioning holes with four screws.
2. Fasten the four screws to the device.
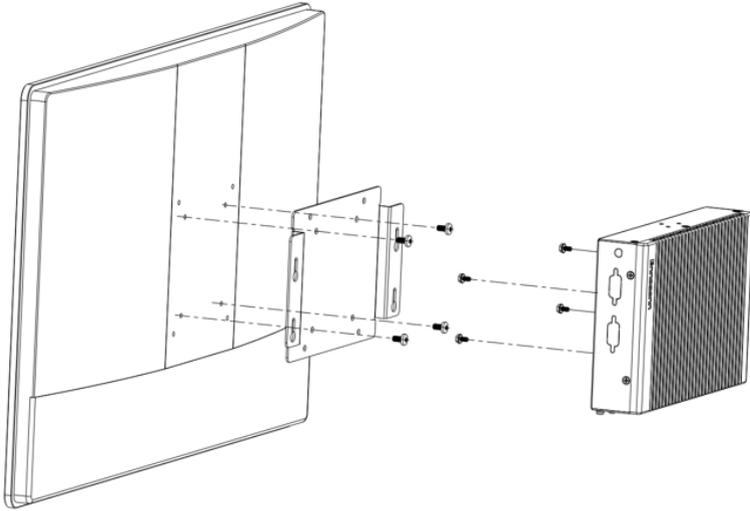
3.4.3 DIN-rail Mounting (Optional)

1. Take the VESA bracket from the box and attach it to the SB-226-1J64 with 4 screws.
2. Take the DIN-Rail from the box and attach it to the VESA bracket with 2 screws.
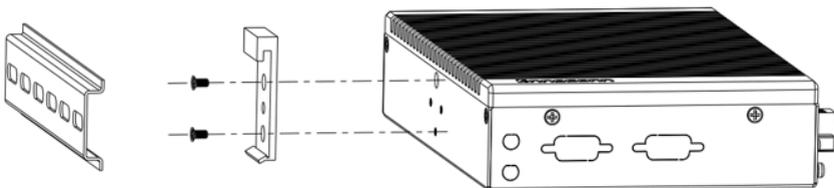
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Chapter 4

BIOS

The BIOS Setup utility is to configure the system settings stored in the system's BIOS ROM. The BIOS is activated once the computer powers on. When the computer is off, the battery on the main board supplies power to BIOS RAM.

To enter the BIOS Setup utility, keep hitting the "**Delete**" key upon powering on the computer.

```
                          Aptio Setup - AMI
   Main  Advanced  Chipset  Security  Boot  Save & Exit

   BIOS Information                                    Choose the system default
   Model Name                                         language
   BIOS Version                 T02
   Build Date and Time          08/25/2023 10:19:41

   CPU Information
   Name                         ElkhartLake ULX
   Type                         Intel(R) Celeron(R)
                                J6412 @ 2.00GHz
   Speed                        2000 MHz
   Number of Processors         4Core(s) / 4Thread(s)

   Total Memory                 8192 MB
   Memory Data Rate             2667 MHz                ++: Select Screen
                                                        ↑↓: Select Item
   System Language              [English]               Enter: Select
                                                        +/-: Change Opt.
   System Date                  [Wed 09/06/2023]        F1: General Help
   System Time                  [16:32:40]              F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit




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```

Note: Actual model name and board information varies according to your model.

Key Commands

The BIOS Setup utility relies on a keyboard to receive user's instructions. Hit the following keys to navigate within the utility and use the utility.

Keystroke	Function	
F7	Enter the boot up sequence menu	**After System Open**
Ctrl + Alt + DEL	Restart the system	
← →	Moves left/right between the top menus.	**In BIOS**
↓ ↑	Moves up/down between highlight items.	
Enter	Selects an highlighted item/field.	
Page Up / +	Increases current value to the next higher value or switches between available options.	
Page Down / -	Decreases current value to the next lower value or switches between available options.	
F3	Load defaults	
F4	Save the Settings and Quit the BIOS	
Esc	► On the top menus: Use **Esc** to quit the utility without saving changes to CMOS. (The screen will prompt a message asking you to select **OK** or **Cancel** to exit discarding changes.) ► On the submenus: Use **Esc** to quit current screen and return to the top menu.	

Note: Pay attention to the "WARNING" that shows at the left pane onscreen when making any change to the BIOS settings.

This BIOS Setup utility is updated from time to time to improve system performance and hence the screenshots hereinafter may not fully comply with what you actually have onscreen.

4.1 Main - Sets system Time & Date

The **Main** menu features the settings of **System Date** and **System Time** and displays some BIOS info.

```
                          Aptio Setup - AMI
   Main  Advanced  Chipset  Security  Boot  Save & Exit

   BIOS Information                              Choose the system default
   Model Name                                   language
   BIOS Version              TO2
   Build Date and Time      08/25/2023 10:19:41

   CPU Information
   Name                     ElkhartLake ULX
   Type                     Intel(R) Celeron(R)
                            J6412 @ 2.00GHz
   Speed                    2000 MHz
   Number of Processors     4Core(s) / 4Thread(s)

   Total Memory             8192 MB
   Memory Data Rate         2667 MHz                →←: Select Screen
                                                    ↑↓: Select Item
   System Language          [English]              Enter: Select
                                                   +/-: Change Opt.
   System Date              [Wed 09/06/2023]       F1: General Help
   System Time              [16:32:40]             F2: Previous Values
                                                   F3: Optimized Defaults
                                                   F4: Save & Exit
                                                   ESC: Exit


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```

Note: Actual model name and board information varies according to your model.

Select System Date or System Time to modify the system date and system time. The format of system date is "**Month/Day/Year**". The system time is in 24-hour format, and the format is "hour:minute:second". Press "**+**", "**-**" and numeric keys to modify the value.
Press **Enter** to toggle between hour/minute/second or month/day/year. When the setting is complete, press **F4** to save the setting.

Setting	Description
System Date	Sets system date.
System Time	Sets system time.

4.2 Advanced

```
                         Aptio Setup - AMI
    Main  Advanced  Chipset  Security  Boot  Save & Exit

  ▶ CPU Configuration                        CPU Configuration Parameters
  ▶ Power & Performance
  ▶ Trusted Computing
  ▶ ACPI Settings
  ▶ IT8786 Super IO Configuration
  ▶ Hardware Monitor
  ▶ S5 RTC Wake Settings
  ▶ Network Stack Configuration


                                             →←: Select Screen
                                             ↑↓: Select Item
                                             Enter: Select
                                             +/-: Change Opt.
                                             F1: General Help
                                             F2: Previous Values
                                             F3: Optimized Defaults
                                             F4: Save & Exit
                                             ESC: Exit



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```

4.2.1 Turbo Mode Setting

```
                           Aptio Setup - AMI
        Advanced

CPU - Power Management Control                      Enable/Disable processor Turbo
                                                    Mode (requires EMTTM enabled
Intel(R) SpeedStep(tm)            [Enabled]         too). AUTO means enabled.
Intel(R) Speed Shift Technology   [Enabled]
Turbo Mode                        [Enabled]
C states                          [Disabled]


                        ┌──── Turbo Mode ────┐
                        │  Disabled           │
                        │  Enabled            │
                        └─────────────────────┘
                                                    ──────────────────────────────
                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit



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```

Enter Advanced menu, select "**Power & Performance**" -> "**CPU-Power Management Control**" -> "**Turbo Mode**". After that users can choose Enabled/Disabled. After setting, press F4 to save and exit, the system will take effect after reboot.

4.2.2 COM Mode Setting

```
                          Aptio Setup - AMI
      Main  Advanced  Chipset  Security  Boot  Save & Exit

   ▶ CPU Configuration                              System Super IO Chip
   ▶ Power & Performance                            Parameters.
   ▶ Trusted Computing
   ▶ ACPI Settings
   ▶ IT8786 Super IO Configuration
   ▶ Hardware Monitor
   ▶ S5 RTC Wake Settings
   ▶ Network Stack Configuration

                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit

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```

```
                          Aptio Setup - AMI
         Advanced

    IT8786 Super IO Configuration                   Set Parameters of Serial Port
                                                    1 (COMA)
    Super IO Chip                 IT8786
   ▶ Serial Port 1 Configuration
   ▶ Serial Port 2 Configuration
   ▶ Serial Port 3 Configuration
   ▶ Serial Port 4 Configuration
   ▶ Serial Port 5 Configuration
   ▶ Serial Port 6 Configuration

                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit

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```

```
   Advanced

 Serial Port 1 Configuration                                    Select Function Mode

 Serial Port                        [Enabled]
 Device Settings                    IO=3F8h; IRQ=4;
 COM Mode Select                    [RS232]


                        ┌─── COM Mode Select ───┐
                        │ RS232                 │
                        │ RS485                 │
                        │ RS422                 │
                        │ RS485+120OHM          │      →←: Select Screen
                        └───────────────────────┘      ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit



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```

Under the **Advanced** menu, select "**IT8786 Super IO Configuration**" -> "**Serial Port X Configuration**" -> "C**OM Mode Select**". Users can select RS232, RS422 and RS485 for COM mode setting. After setting, press F4 to save and exit, the system will take effect after reboot.

4.3 USB Power Setting in Power Off / Hibernation Mode

```
                          Aptio Setup - AMI
              Chipset

   PCH-IO Configuration                                  Specify what state to go to
                                                         when power is re-applied after
 ▶ PCI Express Configuration                             a power failure (G3 state).
 ▶ SATA Configuration
 ▶ USB Configuration

   State After G3                    [S5 State]
```

Select "**Chipset**" menu->"**PCH-IO Configuration**"-> "**USB Power in S5**" in order. Users can set the USB power in S5 according to the actual application's requirements and select High or Low to turn it on or off. After setting, press F4 to save and exit, the system will take effect after reboot.

4.4 Auto TURN-ON (AT/ATX)

```
                        Aptio Setup - AMI
          Chipset

  PCH-IO Configuration                              Specify what state to go to
                                                    when power is re-applied after
  ▶ PCI Express Configuration                       a power failure (G3 state).
  ▶ SATA Configuration
  ▶ USB Configuration

    State After G3                    [S5 State]



                        ┌── State After G3 ──┐
                        │  S0 State          │
                        │  S5 State          │
                        └────────────────────┘
                                                    →←: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Opt.
                                                    F1: General Help
                                                    F2: Previous Values
                                                    F3: Optimized Defaults
                                                    F4: Save & Exit
                                                    ESC: Exit



                    Version 2.22.1282 Copyright (C) 2023 AMI
```

Enter "**Chipset**" menu, and select "**Chipset**"->"**PCH-IO Configuration**"->"**State After G3**" in order. Users can select "**S0 State/S5 State**" for power mode on the system. "**S0 State**" is AT mode, it will power on the system automatically after connecting the power supply, and S5 State is ATX mode.Users need to press the power button to turn on the system after connecting the power supply. **S5 State** is ATX mode. After connecting the power supply, you need to press the power button to power up the device. After setting, press F4 to save and exit, the system will take effect after reboot.

4.5 Security

```
              Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

   Password Description                                     Set Administrator Password

   If ONLY the Administrator's password is set,
   then this only limits access to Setup and is
   only asked for when entering Setup.
   If ONLY the User's password is set, then this
   is a power on password and must be entered to
   boot or enter Setup. In Setup the User will
   have Administrator rights.
   The password length must be
   in the following range:
   Minimum length                    3
   Maximum length                    20
                                                            →←: Select Screen
                                                            ↑↓: Select Item
   Administrator Password                                   Enter: Select
   User Password                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Exit
                                                            ESC: Exit


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```

Setting	Description
Adminstration Password	To set up an administrator password: 1. Select **Administrator Password**. 2. An **Create New Password** dialog then pops up onscreen. 3. Enter your desired password that is no less than 3 characters and no more than 20 characters. 4. Hit [Enter] key to submit.
User Password	To set up an administrator password: 1. Select **User Password**. 2. An **Create New Password** dialog then pops up onscreen. 3. Enter your desired password that is no less than 3 characters and no more than 20 characters. 4. Hit [Enter] key to submit.

Note: Users can select Administrator Password and User Password to set the administrator password and user password respectively, the minimum length is 3 digits, the maximum length is 20 digits.

4.6 Boot

```
                 Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
      Main  Advanced  Chipset  Security  Boot  Save & Exit

     Boot Configuration                                          Sets the system boot order
     Setup Prompt Timeout              3
     Bootup NumLock State              [On]

     Quiet Boot                        [Enabled]

     Boot option filter                [UEFI and Legacy]
     Video                             [Legacy]

     Legacy Network PXE                [Disabled]
     UEFI Network PXE                  [Disabled]

     Fast Boot                         [Disabled]
                                                                 →←: Select Screen
                                                                 ↑↓: Select Item
     Boot Option Priorities                                      Enter: Select
     Boot Option #1                    [P1: TS64GMTS550T   ...]  +/-: Change Opt.
     Boot Option #2                    [UEFI: Built-in EFI ...]  F1: General Help
     Boot Option #3                    [SanDisk]                 F2: Previous Values
     Boot Option #4                    [UEFI OS (P1: TS64GM...]  F3: Optimized Defaults
     Boot Option #5                    [UEFI: SanDisk, Part...]  F4: Save & Exit
     Boot Option #6                    [UEFI: SanDisk, Part...]  ESC: Exit

     Hard Drive BBS Priorities
     USB Device BBS Priorities


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```

"**Boot**" menu contains the boot settings above. Users can set the boot logo or select the bootup devices, etc.

4.7 Setting the Boot Logo

Enter the **Boot** menu, select **Quiet Boot**, and then press F4 to save and exit, the system will take effect after reboot.

Setting	Description
Quiet Boot	► **Enabled:** Logo will be displayed at boot up. ► **Disabled:** Boot up the system and display the self-test screen, no logo, white label interface.

4.8 Setting Boot Option Priority

Set the system boot priorities.

Enter **Boot** menu. In **"Boot Option Priorities"**, users can set the order of boot devices. Boot Option #1 is the first priority boot item, Boot Option #2 is the second boot item, and so on. Press F4 to save and exit, the system will take effect after reboot.

4.9 Save & Exit

```
              Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
    Main  Advanced  Chipset  Security  Boot  Save & Exit

   Save Changes and Exit                              Exit system setup after saving
   Discard Changes and Exit                           the changes.
   Save Changes and Reset
   Discard Changes and Reset

   Save Options
   Save Changes
   Discard Changes

   Restore Defaults
   Save as User Defaults
   Restore User Defaults

   Boot Override
   UEFI: Built-in EFI Shell                           →←: Select Screen
   P1: TS64GMTS550T                                   ↑↓: Select Item
   UEFI OS (P1: TS64GMTS550T)                         Enter: Select
   SanDisk                                            +/-: Change Opt.
   UEFI: SanDisk, Partition 1                         F1: General Help
   UEFI: SanDisk, Partition 2                         F2: Previous Values
                                                      F3: Optimized Defaults
   Launch EFI Shell from filesystem device           F4: Save & Exit
 ▶ Reset System with ME disable Mode                  ESC: Exit



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```

The Save & Exit menu displays the way to exit the BIOS setup utility. When users have completed the setup, users must save and exit for the changes to take effect.

Setting	Description
Save Changes and Exit	Saves the changes and quits the BIOS Setup utility.