



# SCH3X2-DC SCH3X2-RDC

SMART ENERGY 13 / 12<sup>TH</sup> PROCESSOR  
FANLESS COMPUTER



**User's Manual**

Revision Date: Jul.2.2024



## Safety Information

### Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

### Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

### Statement

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- All product specifications are subject to change without prior notice

## Revision History

| Revision | Date (yyyy/mm/dd) | Changes                           |
|----------|-------------------|-----------------------------------|
| V1.0     | 2024/01/15        | First release                     |
| V1.1     | 2024/05/24        | Change 2.5G to 1G for IEC-61850-3 |
| V1.2     | 2024/7/2          | Add Accessories Kit for option    |
| V1.3     | 2025/1/10         | Power Change to 16~31V            |

## Packing List

| Item | Description                                                                | Q'ty  |
|------|----------------------------------------------------------------------------|-------|
| 1    | SCH3X2-DC/RDC Smart Energy Intel 13/12th CPU Fanless Computer              | 1     |
| 2    | Driver CD                                                                  | 1     |
| 3    | SSD Tray Key                                                               | 1     |
| 4    | (Option)Accessories Kit for SCH3X2/SCH4X2 Single Machine Rackmount Bracket | 1 set |
| 5    | (Option) Accessories Kit for SCH3X2/SCH4X2 Dual Machine Rackmount Bracket  | 1 set |

## Ordering information

| Model Number | Description                                                                                                                                                                                                                                                                                                                                 |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SCH3X2-D7    | Smart Energy Fanless Computer with Intel 13th /12th Gen Intel® Raptor Lake-S/Alder Lake-S LGA1700 Socket Processor / Core i9/i7/i5/i3 Processor TDP 65W, up to 64G SO-DIMM DDR4 3200MHz, 2 × 1GbE RJ45, 2 x USB3.2, 2 x USB3.0, 2 x USB2.0, 2 x DP, 2 x 2.5" SwapSSD Tray, DC-IN 16~31V , Operating Temperature -20°C~+60°C                 |
| SCH3X2-RD7   | Smart Energy Fanless Computer with Intel 13th /12th Gen Intel® Raptor Lake-S/Alder Lake-S LGA1700 Socket Processor / Core i9/i7/i5/i3 Processor / TDP 65W, up to 64G SO-DIMM DDR4 3200MHz, 2 × 1GbE RJ45, 2 x USB3.2, 2 x USB3.0, 2 x USB2.0, 2 x DP, 2 x 2.5" SwapSSD Tray, DC-IN 16~31V with redundant, Operating Temperature -20°C~+60°C |

## RoHS Compliance



### **Perfectron RoHS Environmental Policy and Status Update**

Perfectron is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with

European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

In order to meet the RoHS compliant directives, Perfectron has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard Perfectron development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which Perfectron are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant

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## Chapter 1 : Production Introduction

### 1.1 Specifications

#### System

|                 |                                                                                                                     |
|-----------------|---------------------------------------------------------------------------------------------------------------------|
| CPU             | 13th/12th Gen Intel® Raptor Lake-S/Alder Lake-S LGA1700 Socket Processor / Core i9/i7/i5/i3 Processor up to TDP 65W |
| Memory Capacity | DDR4 SO-DIMM 3200 MHz up to 64G                                                                                     |
| Chipset         | Q670                                                                                                                |

#### Display

|                              |                                                                |
|------------------------------|----------------------------------------------------------------|
| GPU                          | Intel® UHD Graphics                                            |
| Display Port                 | DisplayPort 1.4, DP++ Max resolution up to 4K (4096x2304@60Hz) |
| 2 <sup>nd</sup> Display Port | DisplayPort 1.4, DP++ Max resolution up to 4K (4096x2304@60Hz) |

#### Expansion

|           |                        |
|-----------|------------------------|
| PCIe Slot | 2 x PCIe Gen4 x 8 Slot |
|-----------|------------------------|

#### Ethernet

|          |                         |
|----------|-------------------------|
| Ethernet | Intel® I219-LM Giga LAN |
|----------|-------------------------|

#### Front I/O

|              |                                         |
|--------------|-----------------------------------------|
| Power Button | 1 x Power Button                        |
| Indicator    | 1 x HDD backlight / 1 x Power backlight |
| USB3.0       | 2 x USB 3.0                             |

#### Rear I/O

|             |                                                                                           |
|-------------|-------------------------------------------------------------------------------------------|
| Power Input | 1 x 4P Terminal Block 16~31V DC-IN<br>(2 x 4P Terminal Block 16~31V DC-IN with Redundant) |
| LAN         | 2 x 1GbE RJ45                                                                             |
| USB3.2      | 2 x USB 3.2                                                                               |
| USB2.0      | 2 x USB2.0                                                                                |
| DisplayPort | 2 x DP                                                                                    |
| Storage     | 2 x Swap SSD Tray                                                                         |

#### Power

|             |                               |
|-------------|-------------------------------|
| Power Input | DC-IN 16~31V( With Redundant) |
|-------------|-------------------------------|



## OS support list

|    |                                                             |
|----|-------------------------------------------------------------|
| OS | Windows® 11 64bit, / Windows® 10 IoT LTSC 64bit (LTSC 2021) |
|    | Ubuntu 22.04 / Linux (support by request)                   |

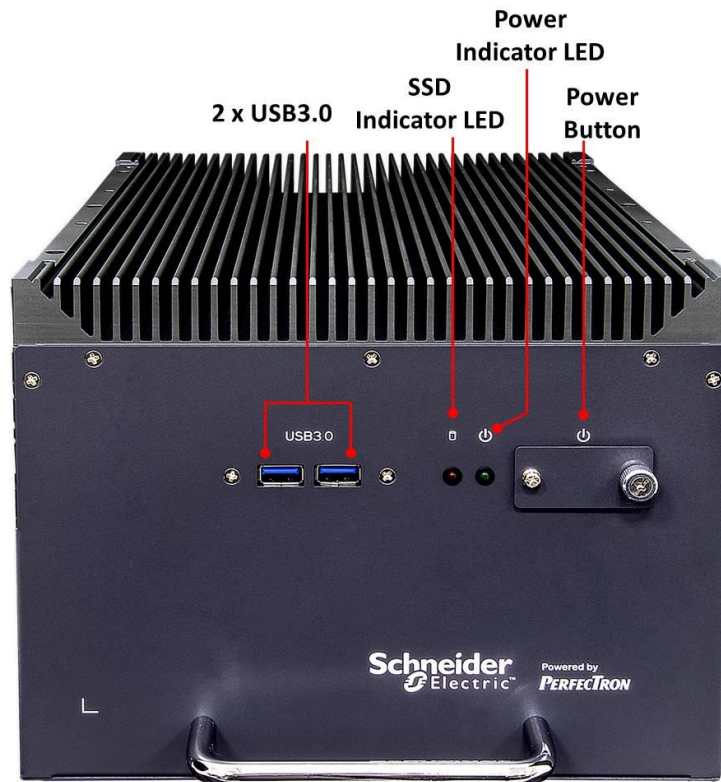
## Mechanical and Environmental

|                   |                                 |
|-------------------|---------------------------------|
| Dimension         | 220 x 315 x167 mm ( W x D x H ) |
| Operating Temp.   | -20°C to 60°C                   |
| Storage Temp.     | -40°C to 85°C                   |
| Relative Humidity | 5% to 95%, non-condensing       |
| System Design     | Fanless                         |

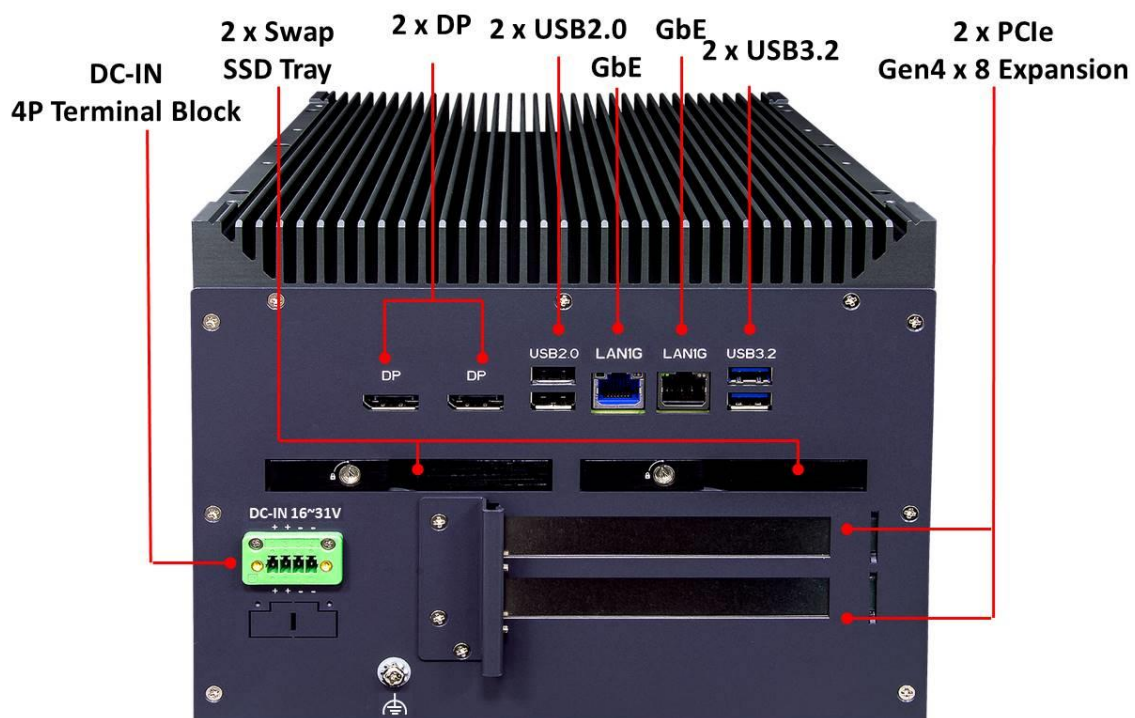
## Mechanical and Environmental

|                                                           |
|-----------------------------------------------------------|
| IEC-61850-3 / IEEE-1613 / UL 62368-1 / EN60945 / CE / FCC |
|-----------------------------------------------------------|

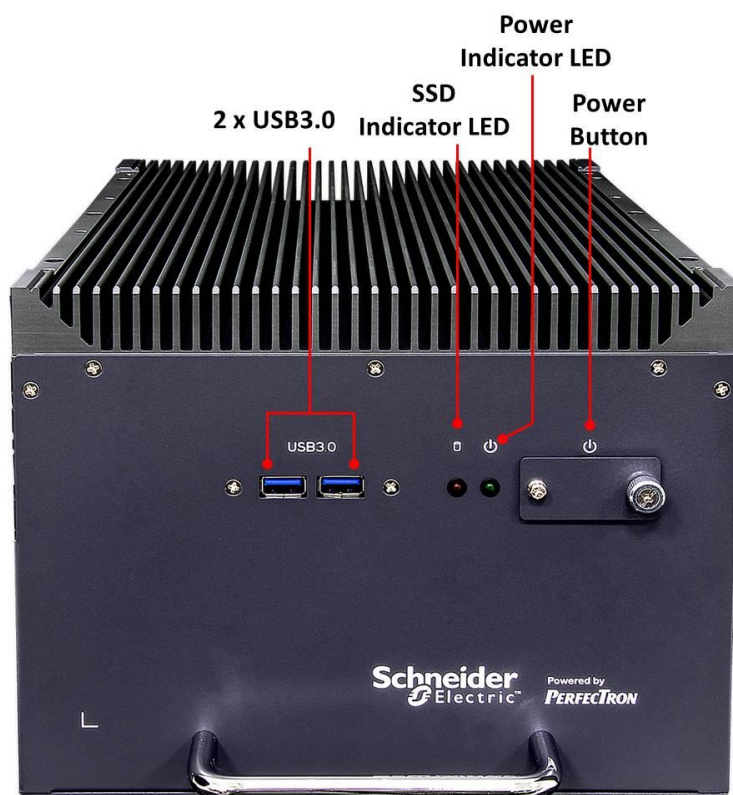
## 1.2 SCH3X2-D7 Front Panel I/O Placement



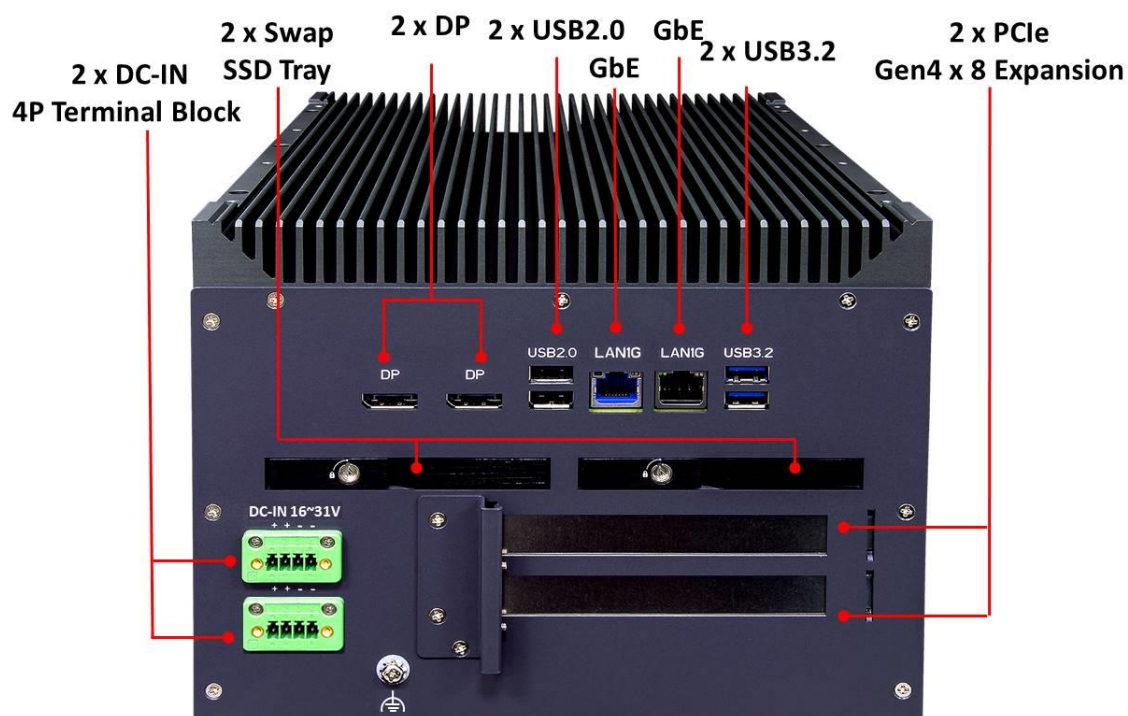
## 1.3 SCH3X2-D7 Rear Panel I/O Placement



## 1.4 SCH3X2-RD7 Front Panel I/O Placement

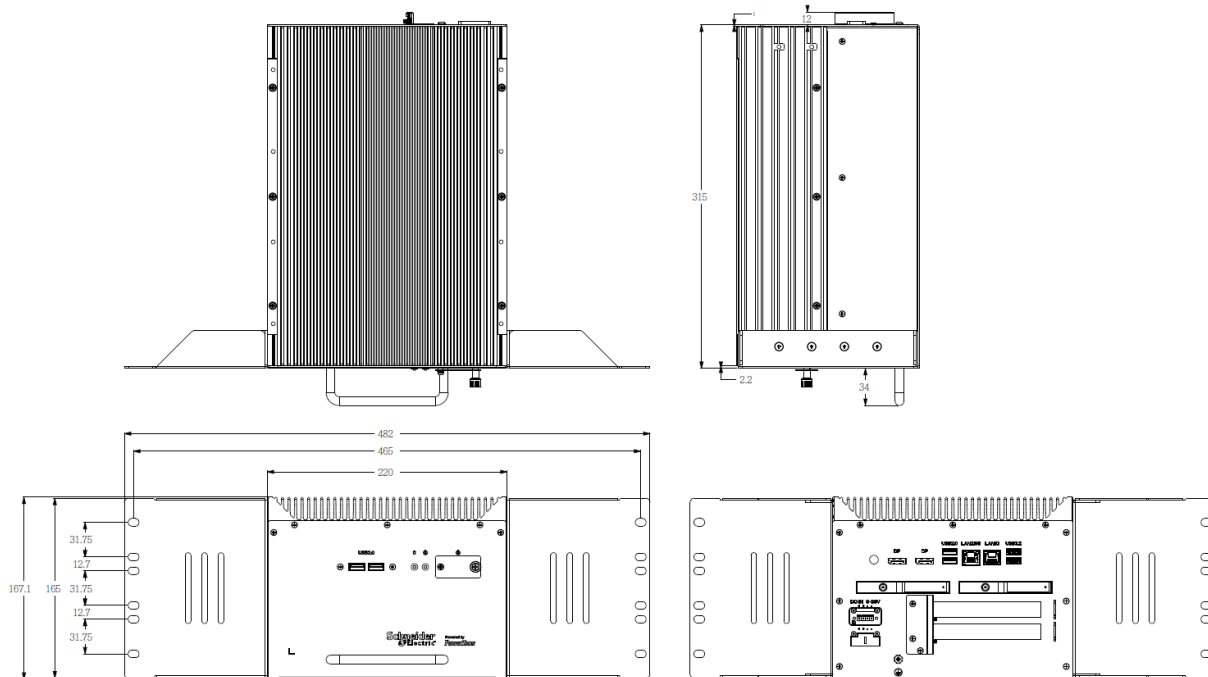


## 1.5 SCH3X2-RD7 Rear Panel I/O Placement

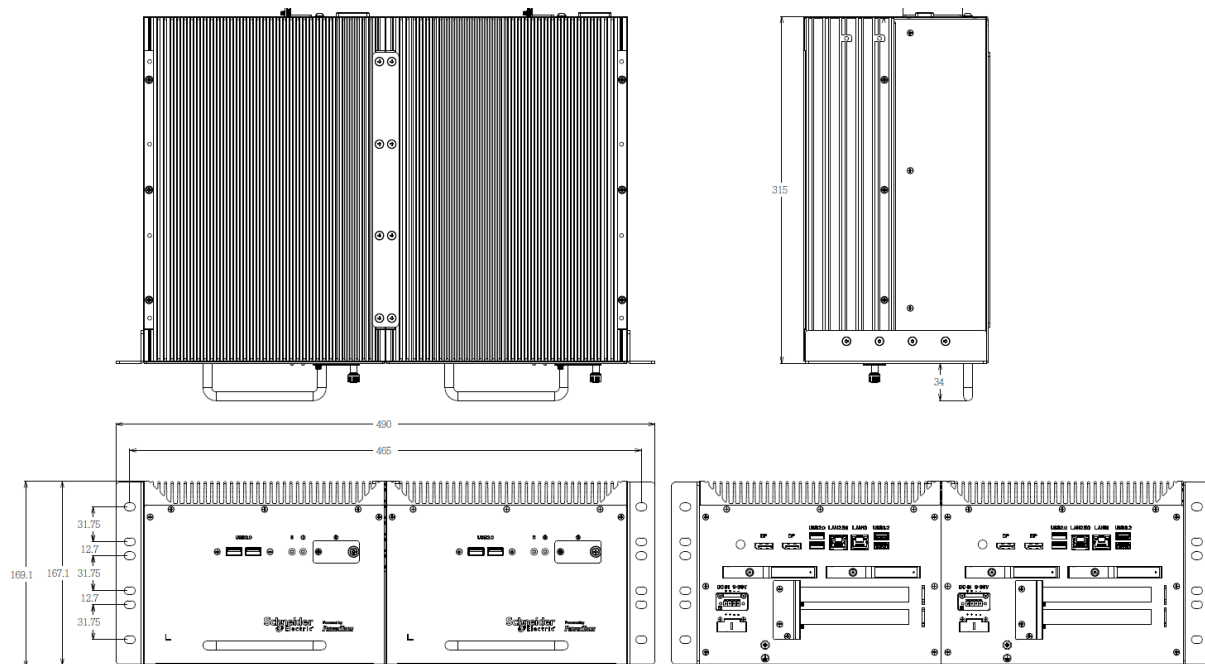


## 1.6 SCH3X2-D7 Mechanical Dimensions

### Single System :

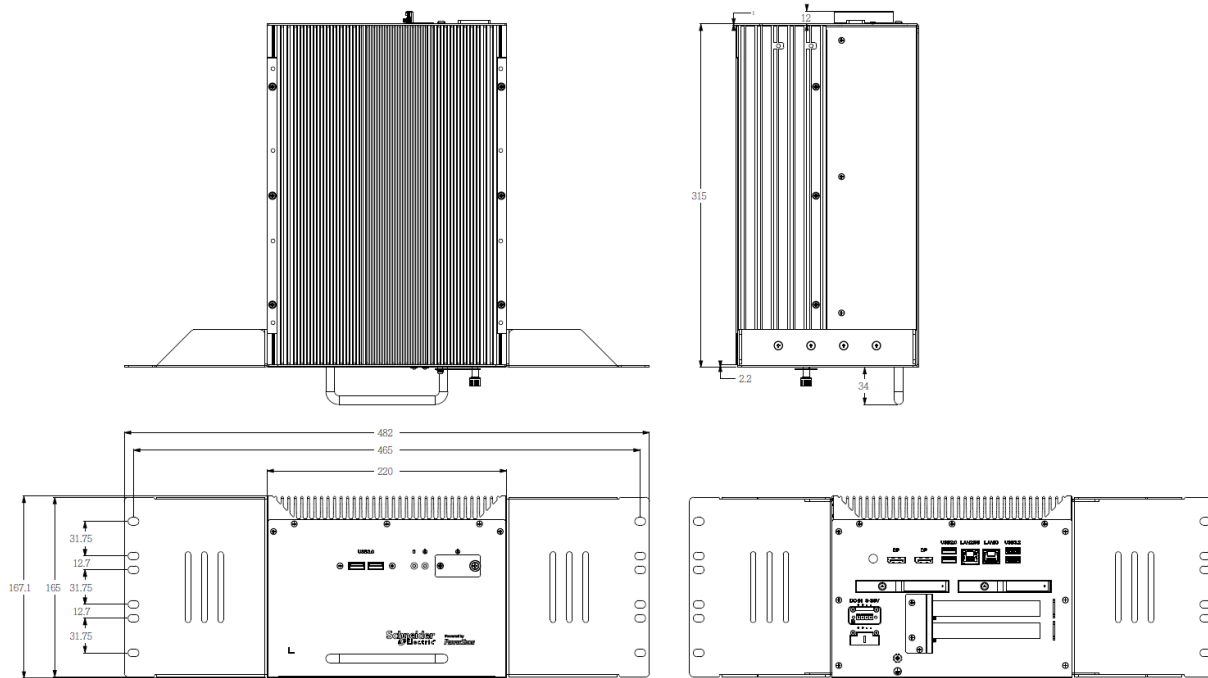


### Dual System :

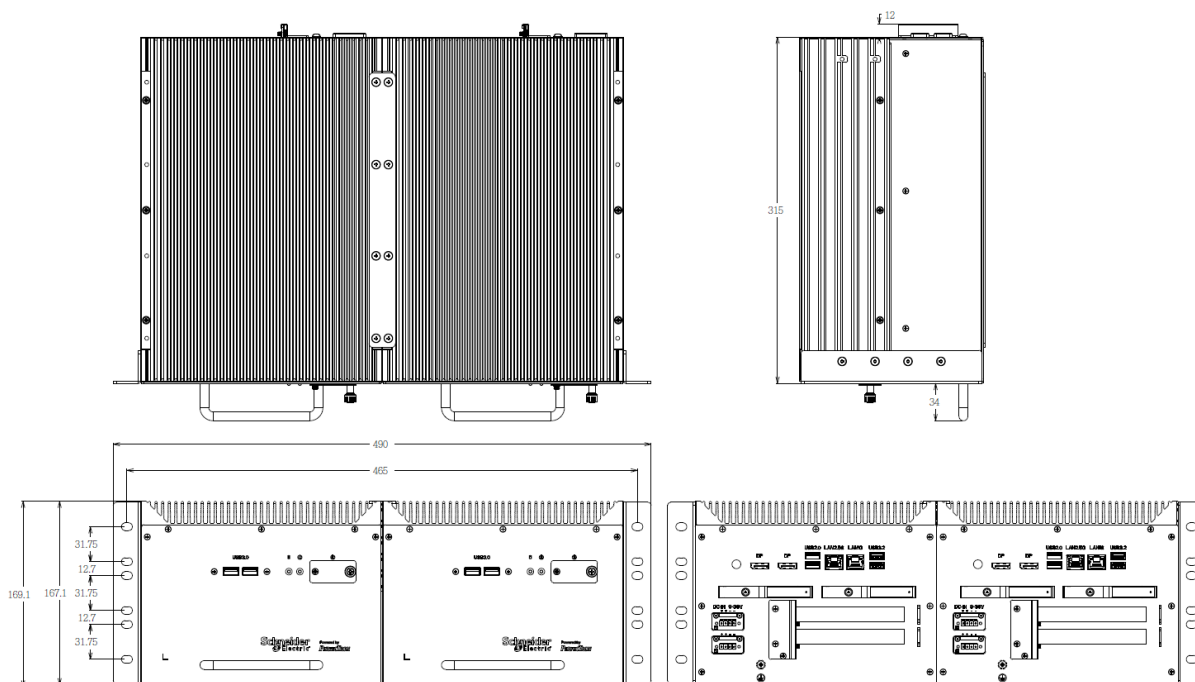


## 1.7 SCH3X2-RD7 Mechanical Dimensions

### Single System :



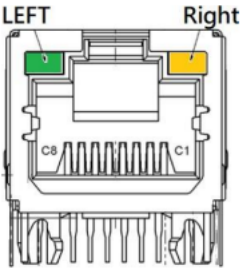
### Dual System :



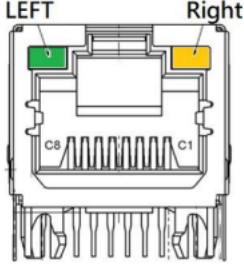
## Chapter 2 : Rear I/O Port

### 2.1 LAN port LED Indications

#### 2.5G LAN :

| Diagram                                                                           | LED   | Color  | State    | Condition                   |
|-----------------------------------------------------------------------------------|-------|--------|----------|-----------------------------|
|  | Link  | N/A    | Off      | LAN link is not established |
|                                                                                   |       | Green  | On       | LAN link is established     |
|                                                                                   |       |        | Blinking | LAN activity occurring      |
|                                                                                   | Speed | N/A    | Off      | 10 M/100M b/s data rate     |
|                                                                                   |       | Orange | On       | 1000 M data rate            |
|                                                                                   |       | Green  | On       | 2500 Mb/s data rate         |

#### 1G LAN :

| Diagram                                                                             | LED   | Color  | State    | Condition                   |
|-------------------------------------------------------------------------------------|-------|--------|----------|-----------------------------|
|  | Link  | N/A    | Off      | LAN link is not established |
|                                                                                     |       | Green  | On       | LAN link is established     |
|                                                                                     |       |        | Blinking | LAN activity occurring      |
|                                                                                     | Speed | N/A    | Off      | 10 Mb/s data rate           |
|                                                                                     |       | Green  | On       | 100 Mb/s data rate          |
|                                                                                     |       | Orange | On       | 1000 Mb/s data rate         |

## Chapter 3: System Setup

This chapter provides more detailed information and let you know how to install components into the SCH3X2-D7/RD7 series embedded system.



**Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.**

### 3.1 2.5" Easy swap SSD installation

SCH3X2-D7/RD7 series supports two 2.5" Easy swap SSD

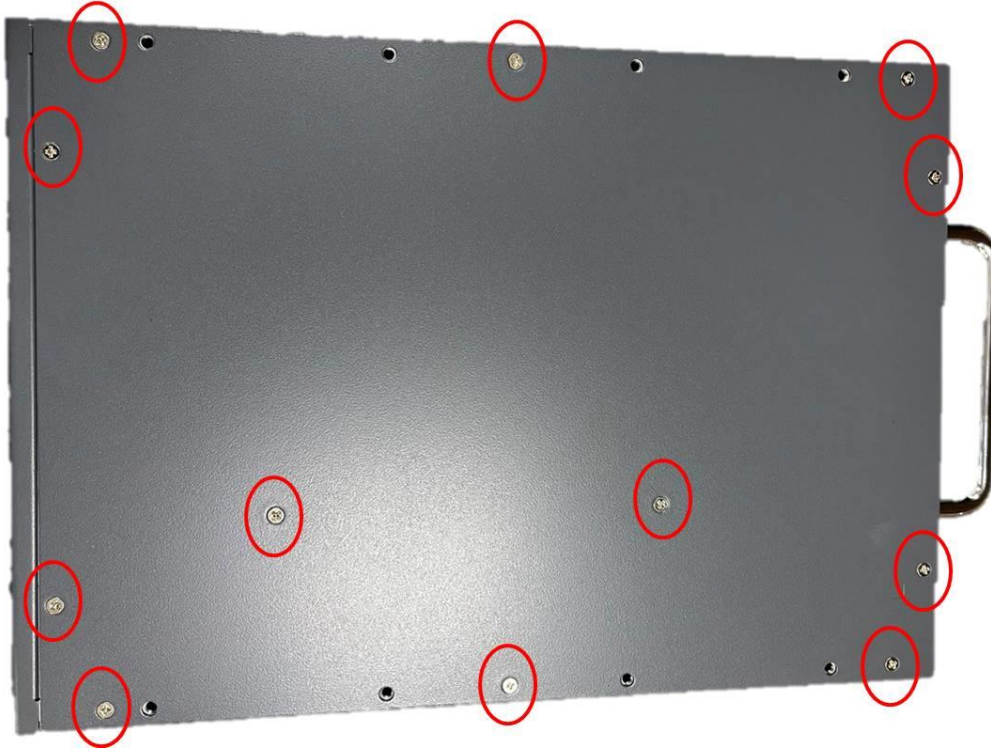
- Use Tri-angle security key to open keylock and pull out 2.5" SSD tray.
- Put 2.5"SSD on the tray and make sure SSD is fixed and push the tray back.
- Use Tri-angle security key to lock the tray door.



## 3.2 PCIe Card installation

SCH3X2-D7/RD7 series supports two PCIe Gen3 x 8 slot :

- Remove the back cover screws



- Remove the BKT-1 screw of the cover



- Remove the BKT-2 screws of the cover

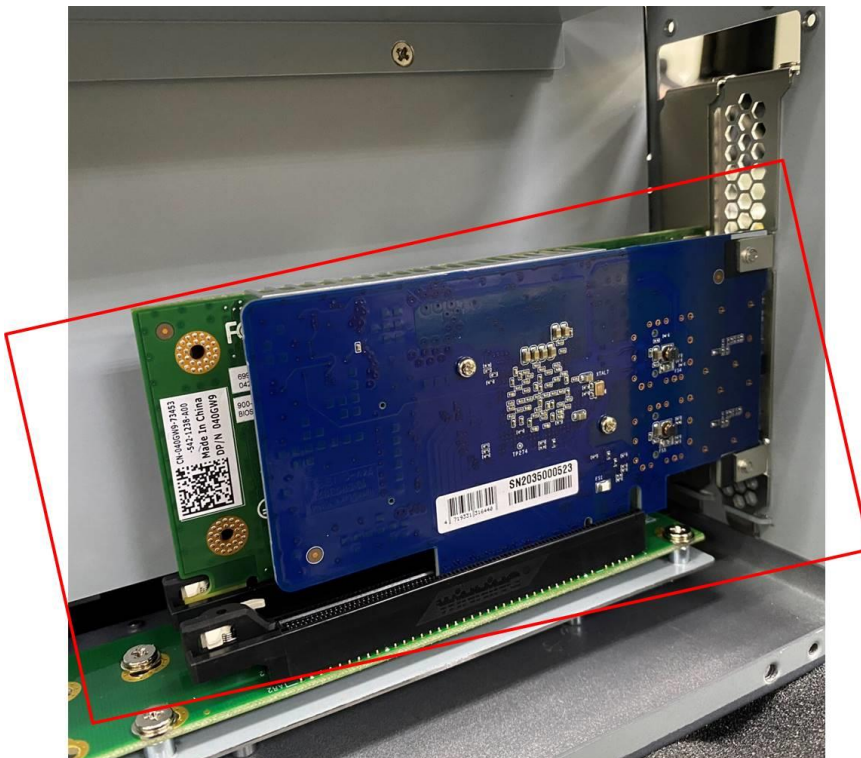


- 2\*PCIe x8 Slot





- Install PCIe Card



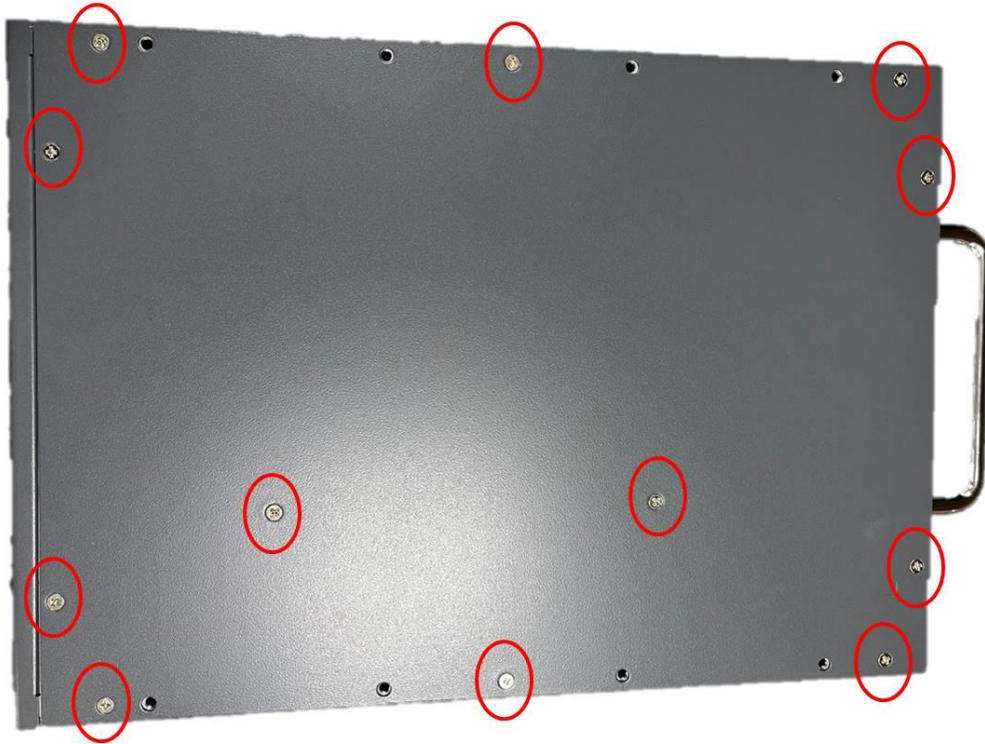
- Lock BKT-2 screw



- Lock BKT-1 screw



- Lock back cover screws



## Chapter 4: AMI BIOS UTILITY

This chapter provides users with detailed descriptions on how to set up a basic system configuration through the AMI BIOS setup utility.

### 4.1 Starting

To enter the setup screens, perform the following steps:

- Turn on the computer and press the <Del> key immediately.
- After the <Del> key is pressed, the main BIOS setup menu displays. Other setup screens can be accessed from the main BIOS setup menu, such as the Chipset and Power menus.

### 4.2 Navigation Keys

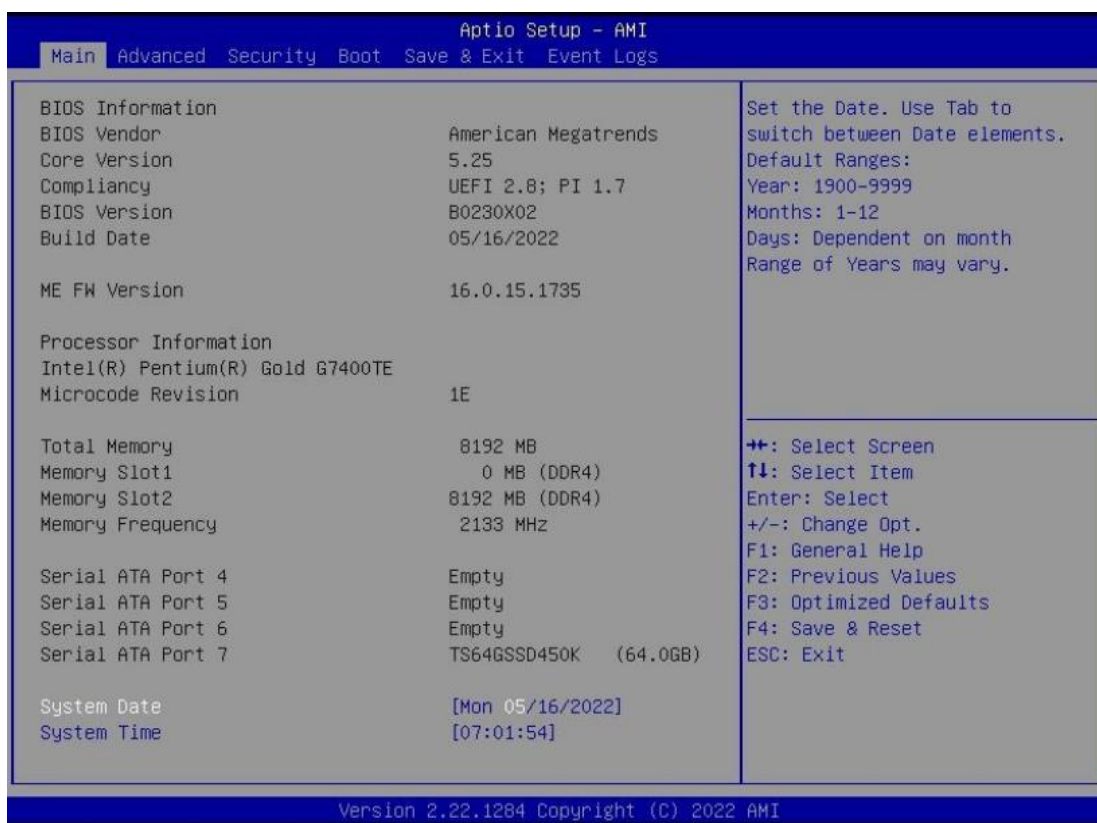
The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process. Some of the hot keys are <F1>, <F10>, <Enter>, <ESC>, and <Arrow> keys.



Some of the navigation keys may differ from one screen to another.

|               |                                                                                                 |
|---------------|-------------------------------------------------------------------------------------------------|
| Left/Right    | The Left and Right <Arrow> keys moves the cursor to select a menu.                              |
| Up/Down       | The Up and Down <Arrow> keys moves the cursor to select a setup screen or sub-screen.           |
| +– Plus/Minus | The Plus and Minus <Arrow> keys changes the field value of a particular setup setting.          |
| Tab           | The <Tab> key selects the setup fields.                                                         |
| F1            | The <F1> key displays the General Help screen.                                                  |
| F10           | The <F10> key saves any changes made and exits the BIOS setup utility.                          |
| Esc           | The <Esc> key discards any changes made and exits the BIOS setup utility.                       |
| Enter         | The <Enter> key displays a sub-screen or changes a selected or highlighted option in each menu. |

## 4.3 Main Page



### BIOS Information

It displays BIOS related information.

### ME FW Version

ME Firmware Version.

### Processor Information

Display the installed CPU brand.

### Memory Information

This displays the installed memory size, installed memory size of Slot 1 & Slot2, and the installed memory frequency.

### Serial ATA Port 4/5/6/7

Display the installed SATA device model/size of port 4/5/6/7.

## System Date

Set the Date. Use Tab to switch between Date elements. Default Ranges:

Year: 1998-9999

Months: 1-12

Days: dependent on month. Range of Years may vary.

## System Time

Set the Time. Use Tab to switch between Time elements.

hh: 0-23

mm: 0-59

ss: 0-59

## 4.4 Advance Page



### Onboard Device

Onboard Device Configuration

### CPU Configuration

CPU Configuration Parameters



|                       |
|-----------------------|
| <b>VMD setup menu</b> |
|-----------------------|

|                           |
|---------------------------|
| VMD Configuration setting |
|---------------------------|

|                          |
|--------------------------|
| <b>Trusted Computing</b> |
|--------------------------|

|                            |
|----------------------------|
| Trusted Computing Settings |
|----------------------------|

|                                        |
|----------------------------------------|
| <b>NCT6126D Super IO Configuration</b> |
|----------------------------------------|

|                                  |
|----------------------------------|
| System Super IO Chip Parameters. |
|----------------------------------|

|                   |
|-------------------|
| <b>HW Monitor</b> |
|-------------------|

|                         |
|-------------------------|
| Monitor hardware status |
|-------------------------|

|                             |
|-----------------------------|
| <b>S5 RTC Wake Settings</b> |
|-----------------------------|

|                                                |
|------------------------------------------------|
| Enable system to wake from S5 using RTC alarm. |
|------------------------------------------------|

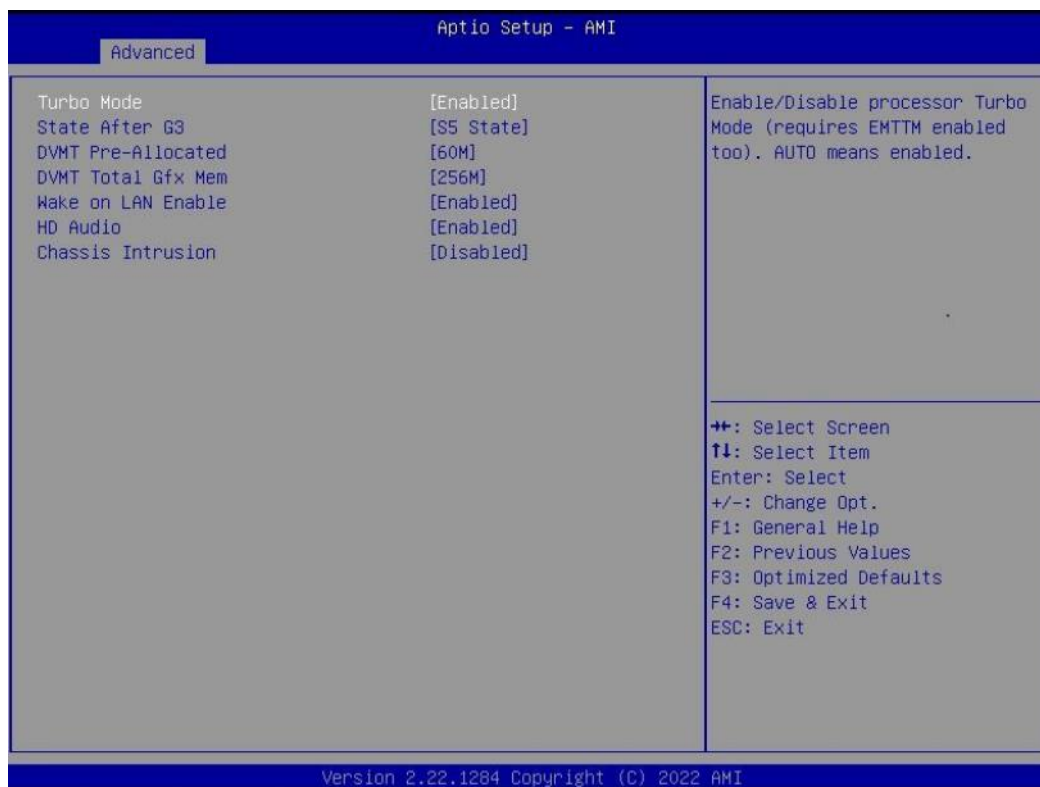
|                                    |
|------------------------------------|
| <b>Network Stack Configuration</b> |
|------------------------------------|

|                         |
|-------------------------|
| Network Stack Settings. |
|-------------------------|

|                           |
|---------------------------|
| <b>NVMe Configuration</b> |
|---------------------------|

|                              |
|------------------------------|
| NVMe Device Options Settings |
|------------------------------|

## 4.4.1 Onboard Device



### Turbo Mode

Enable/Disable processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled. Disabled / Enabled

### State After G3

Specify what state to go to when power is re-applied after a power failure (G3 state). S0 State / S5 State

### DVMT Pre-Allocated

Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device. 32M/F7 / 36M / 40M / 44M / 48M / 52M / 56M / 60M / 64M

### DVMT Total Gfx Mem

Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device. 128M / 256M / MAX

## Wake on LAN Enable

Enable/Disable integrated LAN to wake the system. Disabled / Enabled

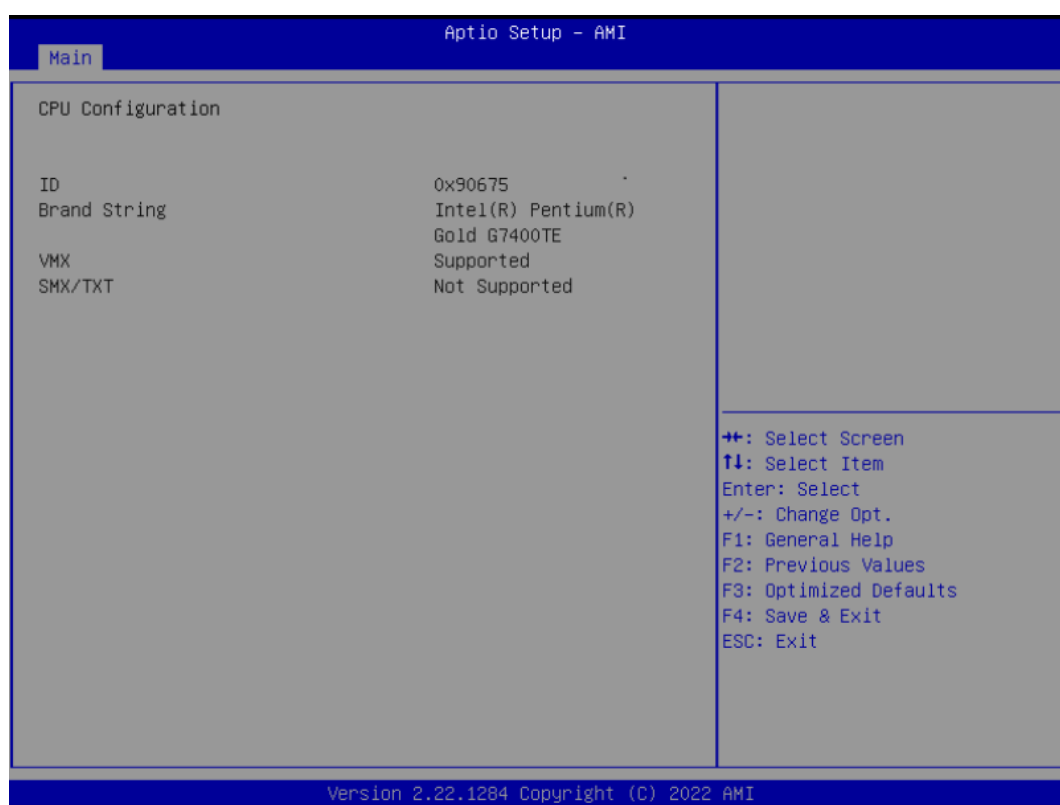
## HD Audio

Control Detection of the HD-Audio device. Disabled: HDA will be unconditionally disabled. Enabled: HDA will be unconditionally enabled. Disabled / Enabled

## Chassis Intrusion

Configure Chassis Intrusion. Disabled / Enabled / Reset

## 4.4.2 CPU Configuration



## ID

Displays CPU Signature

## Brand String

Displays the CPU brand string

## VXM

L3 Cache Size

## SMX/TXT

SMX/TXT Supported or Not

### 4.4.3 VMD setup menu



## Enable VMD controller

Enable/Disable to VMD controller. Disabled / Enabled

#### 4.4.4 Trusted Computing



##### Security Device Support

Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available. Disabled / Enabled

##### Pending operation

Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device. None / TPM Clear



## 4.4.5 NCT6126D Super IO Configuration



### Serial Port 1 Configuration

Set Parameters of Serial Port 1 (COMA)

### Serial Port 2 Configuration

Set Parameters of Serial Port 2 (COMB)

## 4.4.6 Serial Port 1 Configuration



### Serial Port

Enable or Disable Serial Port (COM). Disabled / Enabled

### Device Settings

Device Super IO COM1 Address and IRQ.Read only

### Change Settings

Select an optimal setting for Super IO Device.

Auto / IO=3E8h; IRQ=7;

/ IO=3E8h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

/ IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

/ IO=220h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

/ IO=228h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

### Mode Configuration

Configure serial port as RS232/RS422/RS485.

1T/1R RS422 / 3T/5R RS232 / 1T/1R RS485 TX ENABLE Low Active /

1T/1R RS422 with termination resistor /

1T/1R RS485 with termination resistor TX ENABLE Low Active /

Disabled

## 4.4.7 Serial Port 2 Configuration



### Serial Port

Enable or Disable Serial Port (COM). Disabled / Enabled

### Device Settings

Device Super IO COM2 Address and IRQ. Read only

## Change Settings

Select an optimal setting for Super IO Device.

Auto / IO=3E8h; IRQ=7;

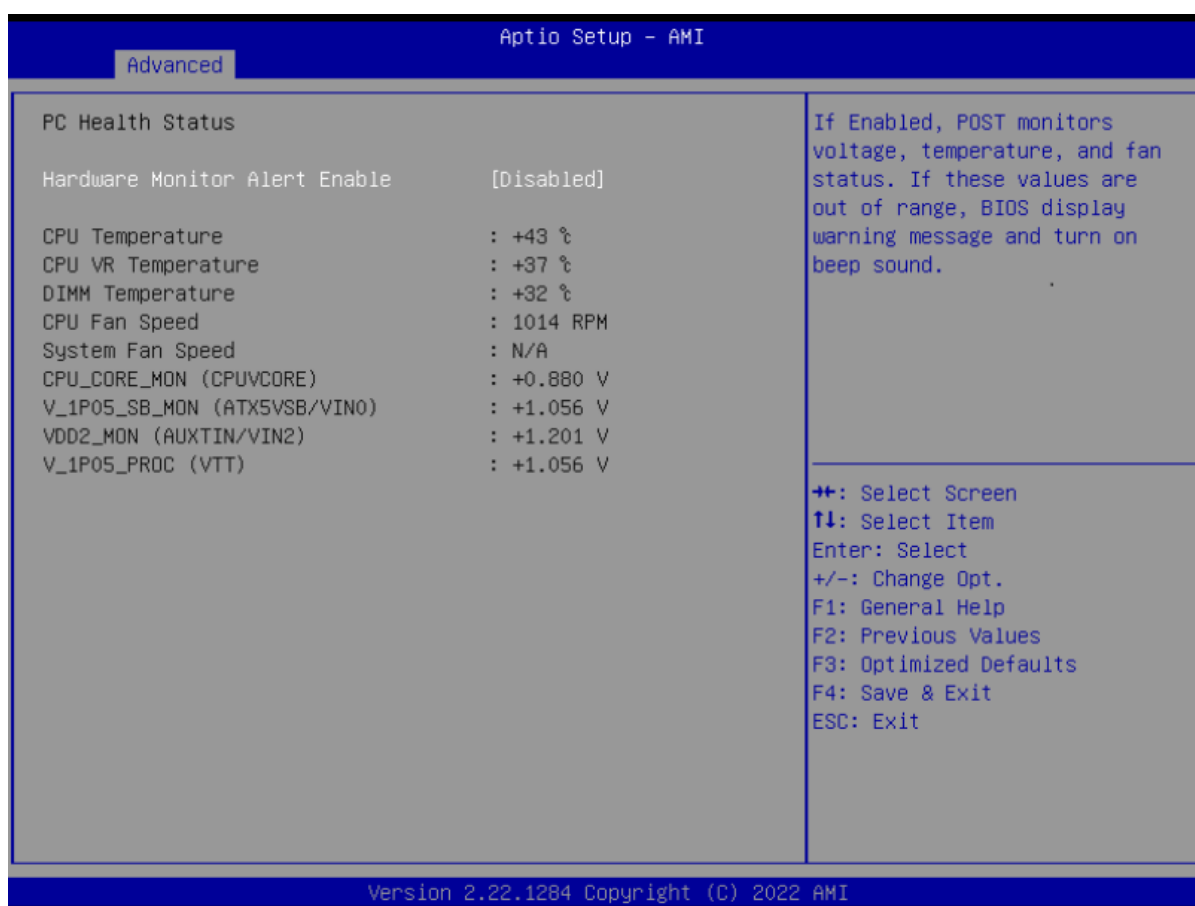
/ IO=3E8h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

/ IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

/ IO=220h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

/ IO=228h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

## 4.4.8 Hardware Monitor



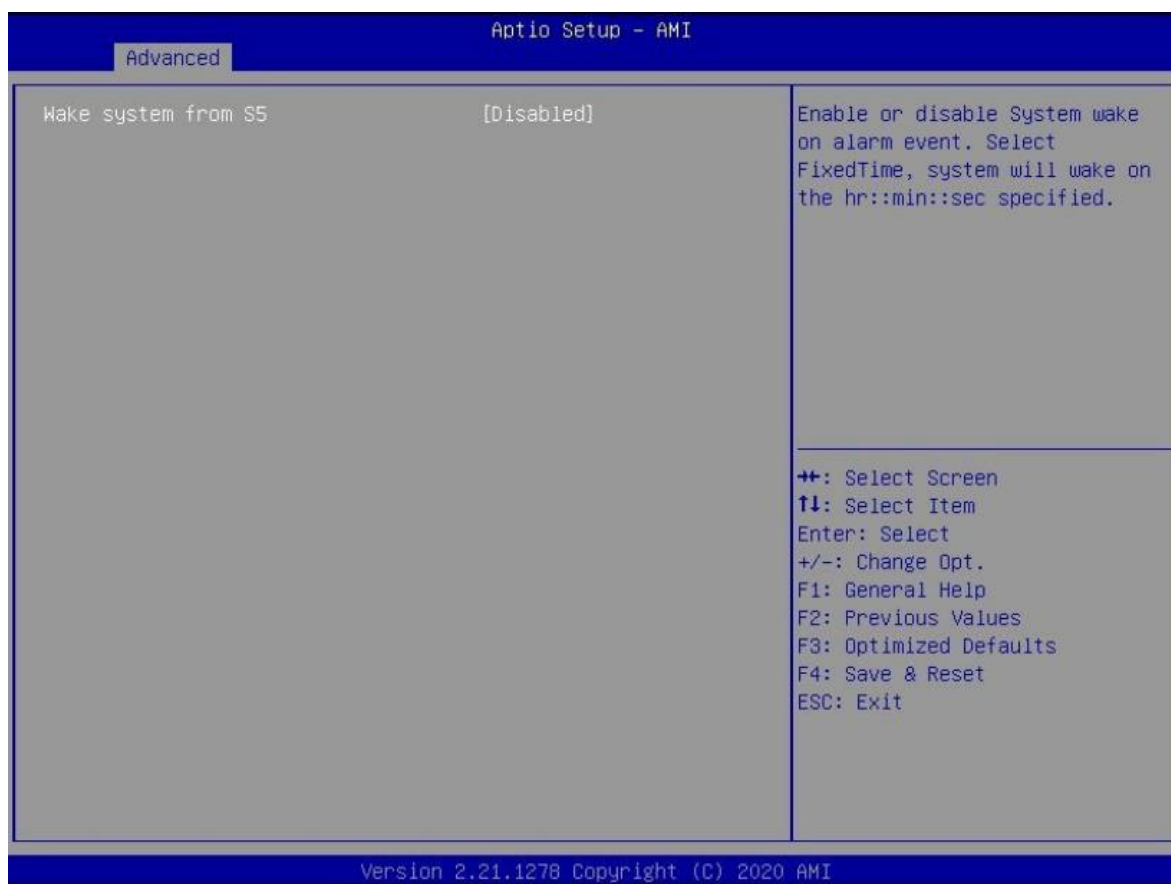
## Hardware Monitor Alert Enable

[Disabled If Enabled, POST monitors voltage, temperature, and fan status. If these values are out of range, BIOS display warning message and turn on beep sound. Disabled / Enabled]

## System Fan Enable (Suppressed if Hardware Monitor Alert is Disabled)

If Enabled, POST monitors system fan status. If this value is out of range, BIOS display warning message and turn on beep sound. Disabled / Enabled

### 4.4.9 S5 RTC Wake Settings



#### Wake system from S5

Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr:min:sec specified. Disabled / Fixed Time

#### Wake up hour(Show when Wake system from S5 set to Fixed Time)

Select 0-23. For example enter 3 for 3am and 15 for 3pm.

0

#### Wake up minute(Show when Wake system from S5 set to Fixed Time)

Select 0-59. For example enter 3 for 3am and 15 for 3pm.

0

## Wake up second(Show when Wake system from S5 set to Fixed Time)

Select 0-59. For example enter 3 for 3am and 15 for 3pm.

0

## Wake system from S5 (when set to [Dynamic time])

Wake up minute increase

Select 1-5.

1

## 4.4.10 Network Stack Configuration



### Network stack

Enable/Disable UEFI Network Stack. Disabled / Enabled

### Ipv4 PXE Support (Available when Network stack Enabled)

Enable/Disable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot option will not be created. Disabled / Enabled

## Ipv6 PXE Support (Available when Network stack Enabled)

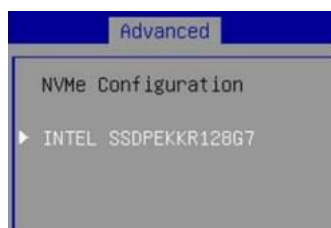
Enable/Disable Ipv6 PXE Boot Support. If disabled IPV6 PXE boot option will not be created. Disabled / Enabled

### 4.4.11 NVMe Configuration



## (Device)

Here shows the Device Name you installed. A sample screenshot shows below.



| Advanced         |                     |
|------------------|---------------------|
| Seg:Bus:Dev:Func | 00:01:00:00         |
| Model Number     | INTEL SSDPEKKR128G7 |
| Total Size       | 128.0 GB            |
| Vendor ID        | 8086                |
| Device ID        | F1A5                |
| Namespace: 1     | Size: 128.0 GB      |

## 4.5 Security Page

| Aptio Setup - AMI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                |   |                |    |                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---|----------------|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Advanced       |   |                |    |                                                                                                                                                                                                                                                              |
| Event Logs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Security       |   |                |    |                                                                                                                                                                                                                                                              |
| Boot                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Save & Exit    |   |                |    |                                                                                                                                                                                                                                                              |
| <p>Password Description</p> <p>If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.</p> <p>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.</p> <p>The password length must be in the following range:</p> <table border="0"> <tr> <td>Minimum length</td> <td>3</td> </tr> <tr> <td>Maximum length</td> <td>20</td> </tr> </table> <p>Administrator Password</p> <p>User Password</p> <p>HDD Security Configuration:</p> <p>P0:ST2000NM0008-2F3100</p> <p>► Secure Boot</p> <p>► BIOS Update</p> | Minimum length | 3 | Maximum length | 20 | <p>Set Administrator Password</p> <p>←+: Select Screen</p> <p>↑↓: Select Item</p> <p>Enter: Select</p> <p>+/-: Change Opt.</p> <p>F1: General Help</p> <p>F2: Previous Values</p> <p>F3: Optimized Defaults</p> <p>F4: Save &amp; Reset</p> <p>ESC: Exit</p> |
| Minimum length                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 3              |   |                |    |                                                                                                                                                                                                                                                              |
| Maximum length                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 20             |   |                |    |                                                                                                                                                                                                                                                              |

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| Administrator Password     |
|----------------------------|
| Set Administrator Password |
| User Password              |
| Set User Password.         |

## HDD Security drive

HDD Security Configuration for selected drive

Press Enter when selected to go into the associated Sub-Menu.

## Secure Boot

Set User Password.

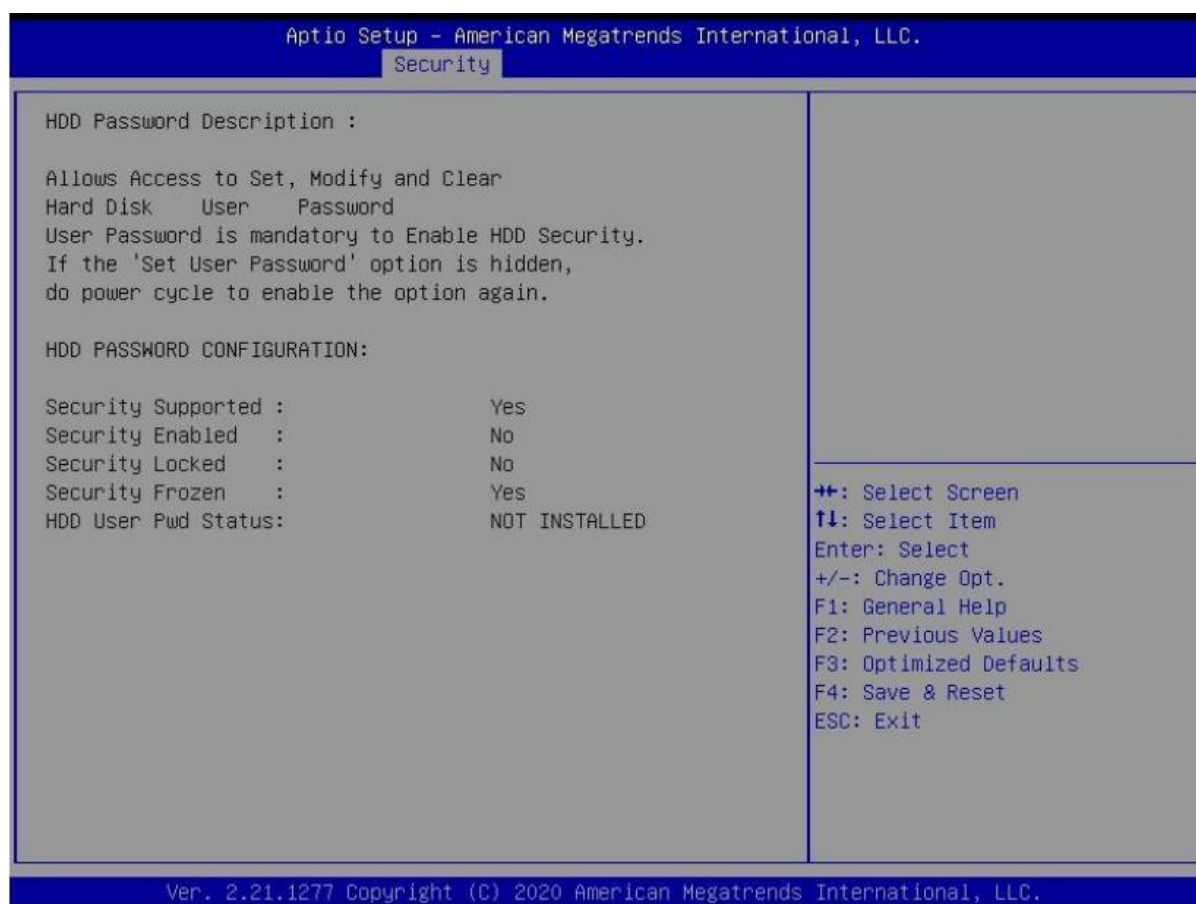
Press Enter when selected to go into the associated Sub-Menu.

## BIOS Update

BIOS Update support

Press Enter when selected to go into the associated Sub-Menu.

### 4.5.1 HDD Security configuration

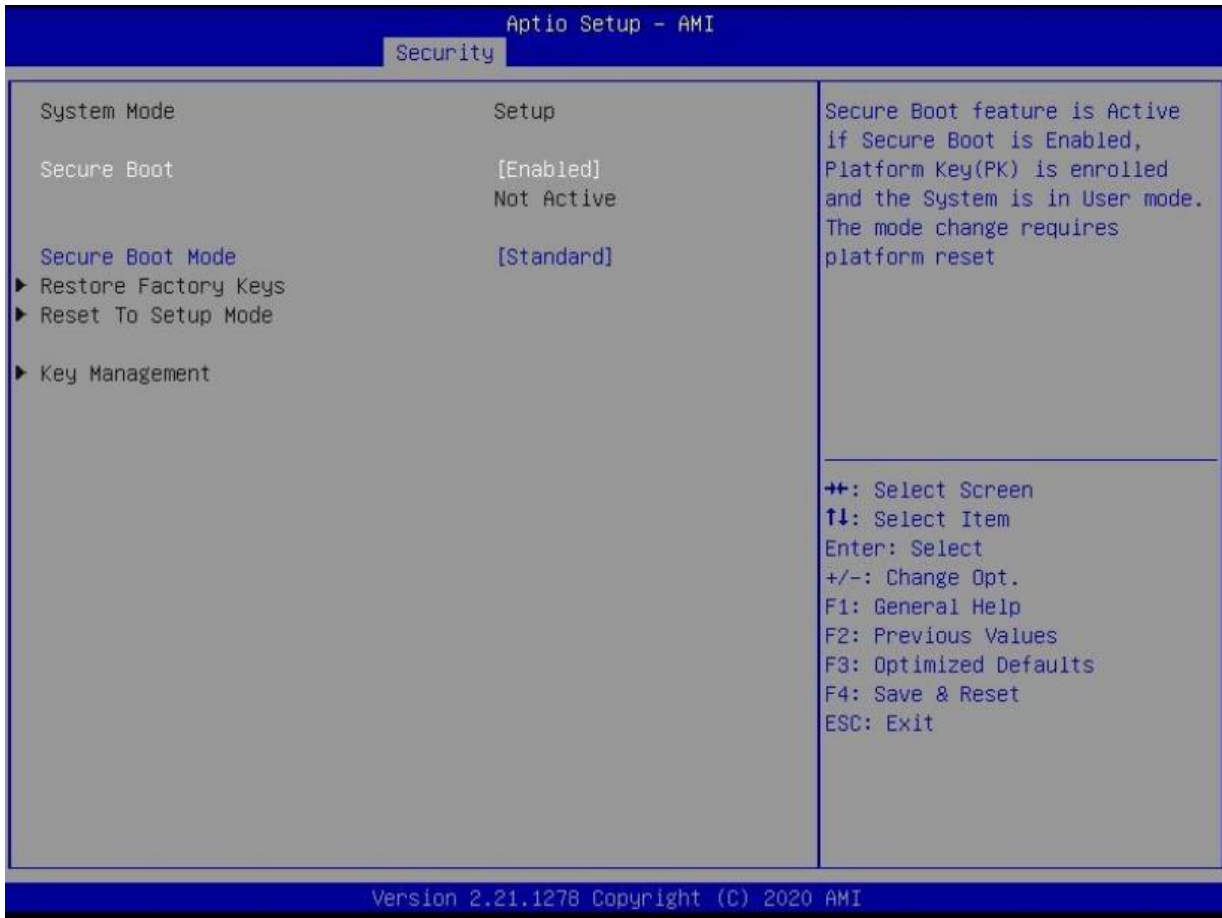


## (Device)

Read only



## 4.5.2 Secure Boot



### Secure Boot

Secure Boot feature is Active if Secure Boot is Enabled. Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset. Disabled / Enabled

### Secure Boot Mode

Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication. Custom / Standard

### Restore Factory Keys

Force System to User Mode. Install factory default Secure Boot key databases.

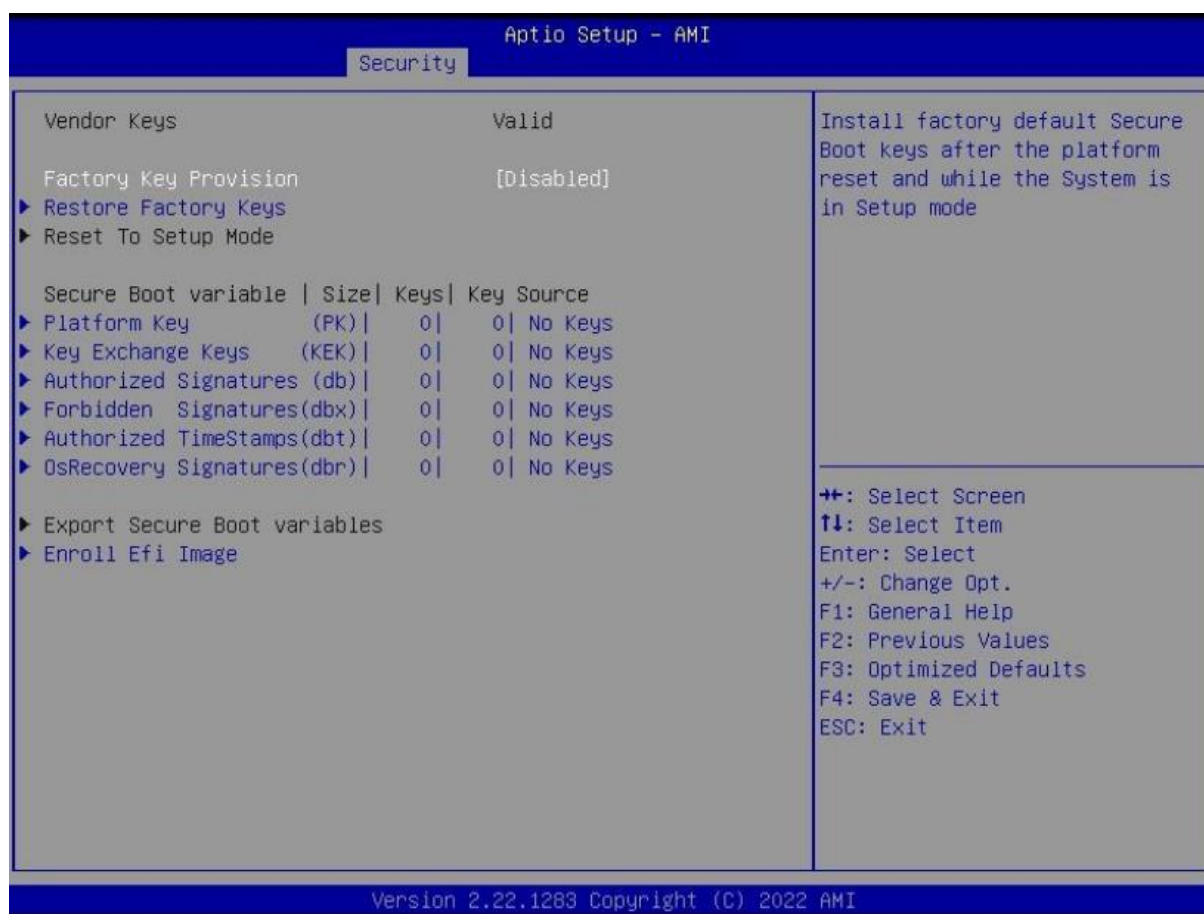
## Reset to Setup Mode

Delete all Secure Boot key databases from NVRAM.

## Key Management

Enables expert users to modify Secure Boot Policy variables without full authentication

### 4.5.3 Key Management



## Factory Key Provision

Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode. Disabled / Enabled

## Restore Factory Keys

Force System to User Mode. Install factory default Secure Boot key databases



## Reset to Setup Mode

Delete all Secure Boot key databases from NVRAM

## Platform Key (PK)

Enroll Factory Defaults or load certificates from a file:

1.Public Key Certificate:

- a)EFI\_SIGNATURE\_LIST
- b)EFI\_CERT\_X509 (DER)
- c)EFI\_CERT\_RSA2048 (bin)
- d)EFI\_CERT\_SHAXXX

2.Authenticated UEFI Variable

3.EFI PE/COFF Image(SHA256)

Key Source:

Factory,External,Mixed

## Key Exchange Keys

Enroll Factory Defaults or load certificates from a file:

1.Public Key Certificate:

- a)EFI\_SIGNATURE\_LIST
- b)EFI\_CERT\_X509 (DER)
- c)EFI\_CERT\_RSA2048 (bin)
- d)EFI\_CERT\_SHAXXX

2.Authenticated UEFI Variable

3.EFI PE/COFF Image(SHA256)

Key Source:

Factory,External,Mixed



## Authorized Signatures

Enroll Factory Defaults or load certificates from a file:

- 1.Public Key Certificate:
  - a)EFI\_SIGNATURE\_LIST
  - b)EFI\_CERT\_X509 (DER)
  - c)EFI\_CERT\_RSA2048 (bin)
  - d)EFI\_CERT\_SHAXXX
- 2.Authenticated UEFI Variable
- 3.EFI PE/COFF Image(SHA256)  
Key Source:  
Factory,External,Mixed

## Forbidden Signatures

Enroll Factory Defaults or load certificates from a file:

- 1.Public Key Certificate:
  - a)EFI\_SIGNATURE\_LIST
  - b)EFI\_CERT\_X509 (DER)
  - c)EFI\_CERT\_RSA2048 (bin)
  - d)EFI\_CERT\_SHAXXX
- 2.Authenticated UEFI Variable
- 3.EFI PE/COFF Image(SHA256)  
Key Source:  
Factory,External,Mixed

## Authorized TimeStamps

Enroll Factory Defaults or load certificates from a file:

- 1.Public Key Certificate:
  - a)EFI\_SIGNATURE\_LIST
  - b)EFI\_CERT\_X509 (DER)
  - c)EFI\_CERT\_RSA2048 (bin)
  - d)EFI\_CERT\_SHAXXX
- 2.Authenticated UEFI Variable
- 3.EFI PE/COFF Image(SHA256)  
Key Source:  
Factory,External,Mixed



## OsRecovery Signatures

Enroll Factory Defaults or load certificates from a file:

1.Public Key Certificate:

- a)EFI\_SIGNATURE\_LIST
- b)EFI\_CERT\_X509 (DER)
- c)EFI\_CERT\_RSA2048 (bin)
- d)EFI\_CERT\_SHAXXX

2.Authenticated UEFI Variable

3.EFI PE/COFF Image(SHA256)

Key Source:

Factory,External,Mixed

## Export Secure Boot variables

Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device

## Enroll Efi Image

Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)

## 4.5.4 BIOS Update

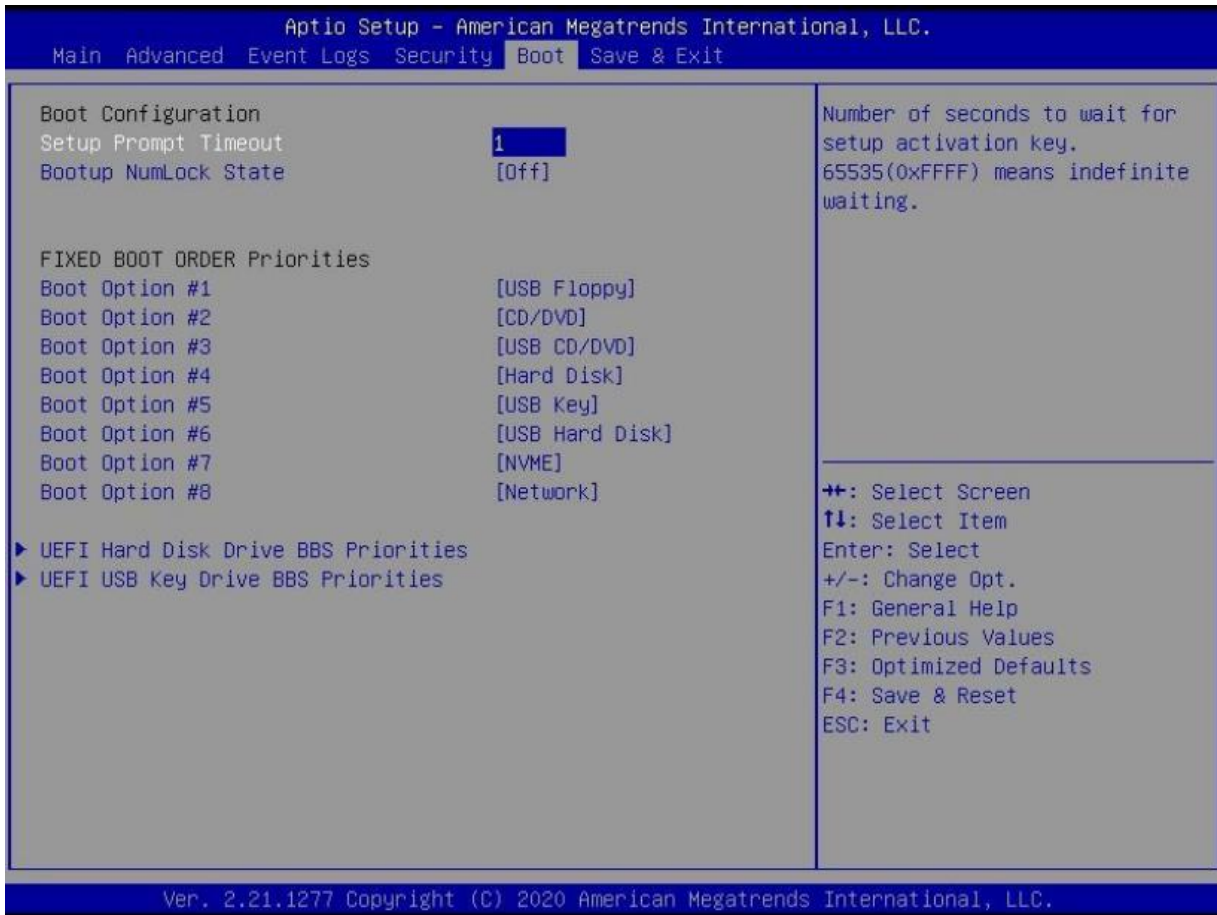


### Path for ROM Image

Enter the path to the BIOS update option.



## 4.6 Boot Page



### Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

1

### Bootup NumLock State

Select the keyboard NumLock state.

On / Off

### Boot Option #1 ~ Boot Option #8

[Sets the system boot order. Device Name / Disabled]

**(UEFI) Hard Disk Drive BBS Priorities**

Specifies the Boot Device Priority sequence from available Hard Disk Drives.

**(UEFI) USB KEY Drive BBS Priorities**

Specifies the Boot Device Priority sequence from available Hard Disk Drives.

**(UEFI) USB Hard Disk Drive BBS Priorities**

Specifies the Boot Device Priority sequence from available Hard Disk Drives.

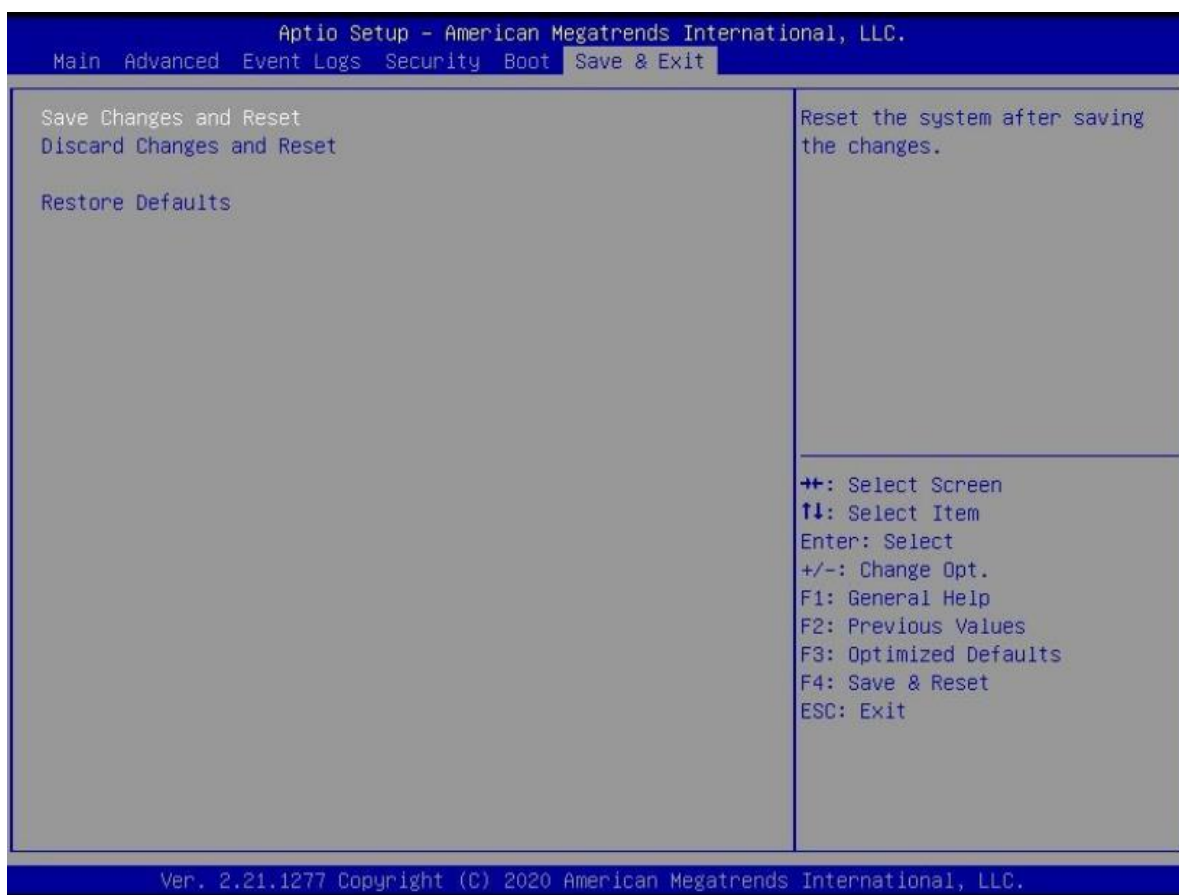
## 4.6.1 (List Boot Device Type) Drive BBS Priorities

**Boot Option #1**

Sets the system boot order.

Boot Device Name #1 of this type / Disabled

## 4.7 Save & Exit Page



### Discard Changes and Exit

Exit system setup without saving any changes.

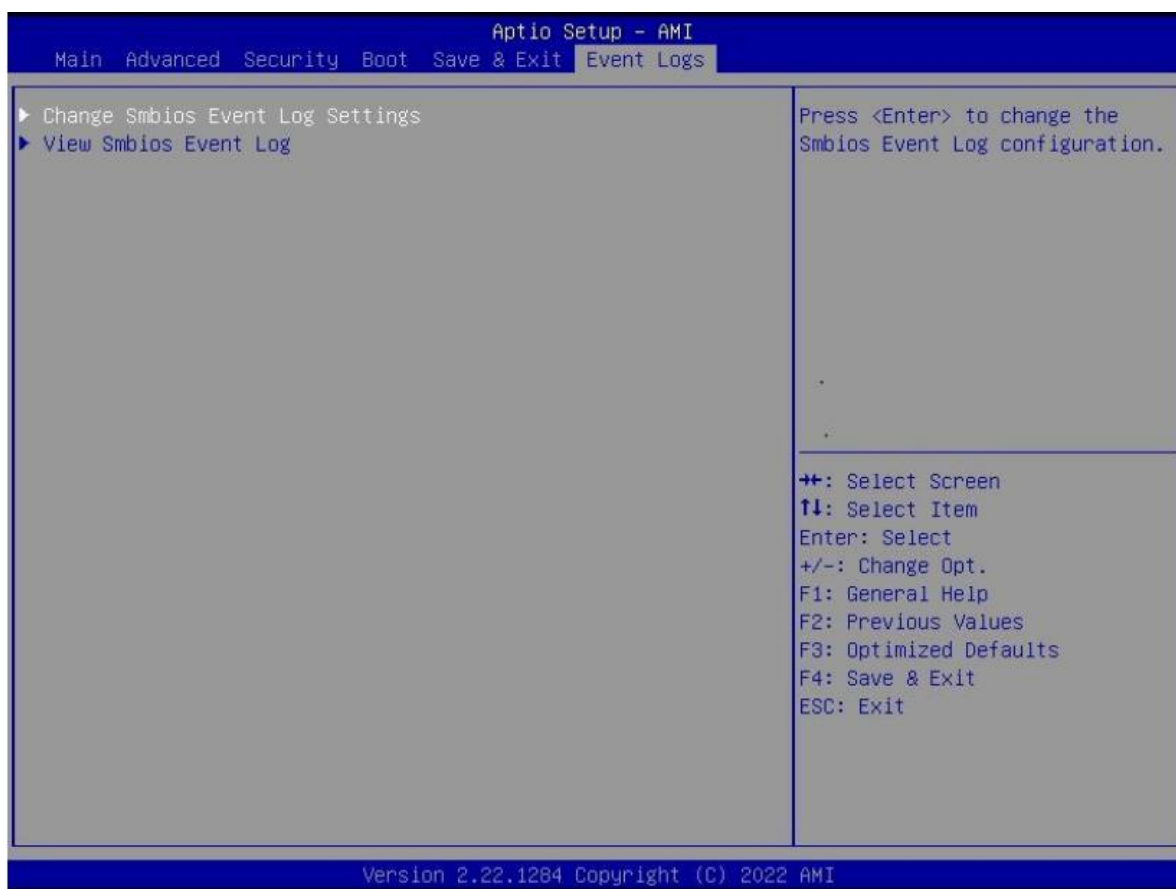
### Save Changes and Reset

Reset the system after saving the changes.

### Restore Defaults

Restore/Load Default values for all the setup options.

## 4.8 Event Logs



### Change Smbios Event Log Settings

Press <Enter> to change the Smbios Event Log configuration.

### View Smbios Event Log

Press <Enter> to change the Smbios Event Log records.



## 4.8.1 Change Smbios Event Log Setting



### Smbios Event Log

Change this to enable or disable all feature of Smbios Event Logging during boot.

Disabled / Enabled

### Erase Event Log

Choose options for erasing Smbios Event Log. Erasing is done prior to any logging activation during reset.

No / Yes, next reset / Yes, every reset

### Whea Log is Full

Choose options for reactions to a full Smbios Event Log.

Do Nothing / Erase Immediately



## 4.8.2 ViewSmbios Event Log

| Aptio Setup - AMI                        |          |             |          |       |                                                                                                                                                                                 |
|------------------------------------------|----------|-------------|----------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Event Logs                               |          |             |          |       |                                                                                                                                                                                 |
| DATE                                     | TIME     | ERROR CODE  | SEVERITY | COUNT | DESCRIPTION                                                                                                                                                                     |
| 06/04/20                                 | 06:35:10 | Smbios 0x16 | N/A      | N/A   | Log Area Reset and Count is applicable only for Multi-Events                                                                                                                    |
|                                          |          |             |          |       | ++: Select Screen<br>↑↓: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Reset<br>ESC: Exit |
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| DATE / TIME / ERROR CODE / SEVERITY / COUNT |
|---------------------------------------------|
|---------------------------------------------|

|                                                                                       |
|---------------------------------------------------------------------------------------|
| Description: Log Area Reset and Count is applicable only for Multi-Events. By Events. |
|---------------------------------------------------------------------------------------|

|                                       |
|---------------------------------------|
| MM/DD/YY HH:MM:SS Smbios 0x16 N/A N/A |
|---------------------------------------|