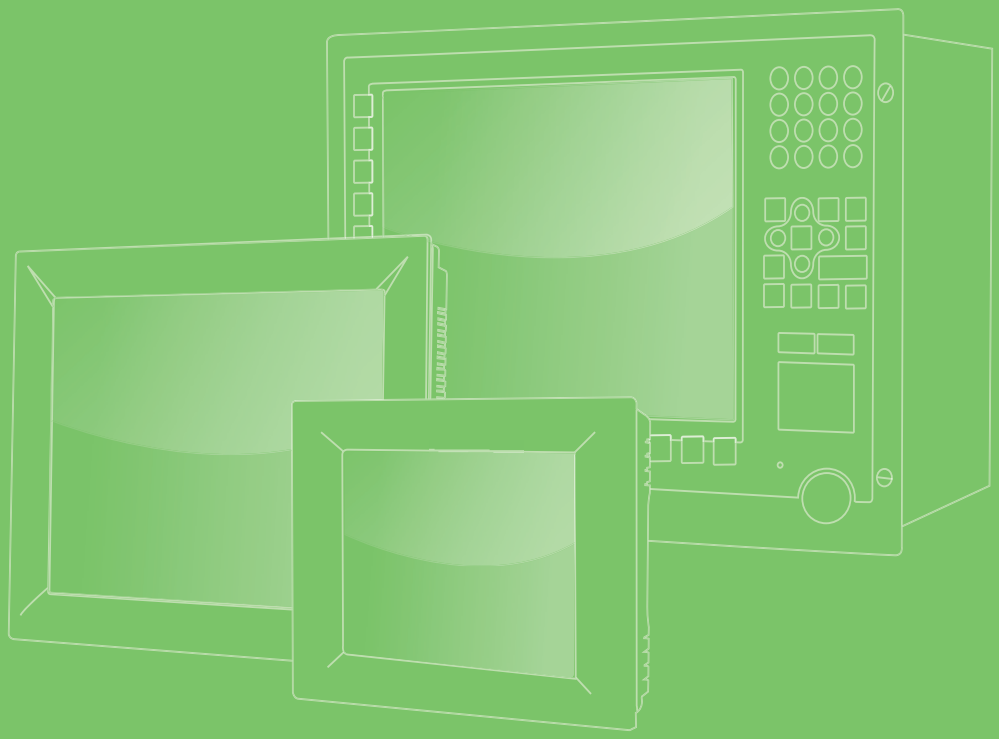


User Manual

TPC-B610 電腦

Industrial Touch Panel Computer - Modular Computing Box with Intel® 10th Gen Core™ i CPU socket (LGA1200)

ADVANTECH

Enabling an Intelligent Planet

限用物質含有情況標示聲明書
Declaration of the Presence Condition of the Restricted Substances Marking

設備名稱：電腦 Equipment name	型號（型式）： Type designation (Type)	TPC-B610H-A00A TPC-B610W-A00A （系列型號請參見次頁說明書）

單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr^{+6})	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominateddiphenyl ethers (PBDE)
電路板	—	○	○	○	○	○
內外殼（外殼、內部框架…等）	○	○	○	○	○	○
其它固定組件（螺絲、夾具、卡榫）	—	○	○	○	○	○
配件（排線、傳輸線、網路線…等）	○	○	○	○	○	○
散熱片	—	○	○	○	○	○

備考 1. 〝超出 0.1 wt %〞及〝超出 0.01 wt %〞係指限用物質之百分比含量超出百分比含量基準值
Note 1: “Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

備考 2. 〝○〞係指該項限用物質之百分比含量未超出百分比含量基準值。
Note 2: “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

備考 3. 〝－〞係指該項限用物質為排除項目。
Note 3: The “–” indicates that the restricted substance corresponds to the exemption.

Copyright

Acknowledgments

This manual covers the following models:

- TPC-B610H-A00A
- TPC-B610W-A00A
- TPC-B610H-A00AO
- TPC-B610W-A00AO

Part No. 2003B61000 Edition 1

Printed in Taiwan September 2021

Product Warranty (2 years)

Advantech warrants the original purchaser that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products that have been repaired or altered by persons other than repair personnel authorized by Advantech, or products that have been subject to misuse, abuse, accident, or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe your product to be defective, follow the steps outlined below.

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages displayed when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain a return merchandise authorization (RMA) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and a proof of purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without a proof of purchase date are not eligible for warranty service.
5. Write the RMA number clearly on the outside of the package and ship the package prepaid to your dealer.

Declaration of Conformity

CE

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 type of cable is available from Advantech. Please contact your local supplier for ordering information.

Test conditions for passing also include the equipment being operated within an industrial enclosure. In order to protect the product from damage caused by electrostatic discharge (ESD) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

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. Opera-

tion of this equipment in a residential area is likely to cause harmful interference. In this event, users are required to correct the interference at their own expense.

甲類警語

警告使用者：這是甲類資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當對策。

Technical Support and Assistance

1. Visit the Advantech website at www.advantech.com/support to obtain the latest product information.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before calling:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

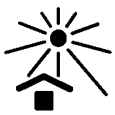
Warnings, Cautions, and Notes

Warning! *Warnings indicate conditions that if not observed can cause personal injury!*

Caution! *Cautions are included to help prevent hardware damage and data losses. For example,*

"Batteries are at risk of exploding if incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions."

Note! *Notes provide additional optional information.*



Please keep equipment away from sunlight, which may cause equipment damage.

Packing List

Before installation, please ensure the following items have been shipped:

- TPC-B610 bare-bone system x1
- 4-pin power connector x 1. (P/N: 1652006277-01)
- Thermal grease for CPU x 1. (P/N: 2170000093-01)
- Thermal pad for Memory (Top, Channel 1) x 1. (P/N: 1990031076N000)
- Thermal pad for Memory (Bottom, Channel 2) x 1. (P/N: 1990031076N000)
- Thermal pad for Memory (Bottom, Channel 2, in between the MB) x 1. (P/N: 1990021847N000)
- Thermal pad for M.2 (2280) x 1. (P/N: 1990037589N000)
- Thermal pad for M.2 (3052/2242), mPCIe x 2. (P/N: 1990027303N000)

Please find below table for more details about the usage of the thermal pads included in the packing list.

Item	Usage	Part Number	Qty	Placement	Dimension (mm)	K value
Thermal pad	Memory (Top, Channel 1)	1990031076N000	1	On top of Memory module	65 x 18 x 1.0	6
Thermal pad	Memory (Bottom, Channel 2)	1990031076N000	1	On top of Memory module	65 x 18 x 1.0	6
Thermal pad	Memory (Bottom, Channel 2)	1990021847N000	1	In between the MB	64 x 24.5 x 2.0	6
Thermal pad	M.2 (2280)	1990037589N000	1	On top of M.2 module	60 x 15 x 3.0	6
Thermal pad	M.2 (3052/2242)	1990027303N000	1	On top of M.2 module	39 x 29.5 x 1.5	6
Thermal pad	mPCIe	1990027303N000	1	On top of mPCIe module	39 x 29.5 x 1.5	6

Note! *Thermal pads included must be employed correctly as indicated in the table above, and must be completely covered and secured when installing.*

Ordering Information

- TPC-B610H-A00A
  Intel® Core™ i CPU Socket (LGA1200), PCIe x16, PCI
- TPC-B610W-A00A
  Intel® Core™ i CPU Socket (LGA1200), PCIe x16, PCIe x4, NVMe, RAID 0/1

*TPC-B610 is compatible with FPM-Display Module of sizes ranging from 15” to 23.8”.

Please find below the comparison between TPC-B610H-A00A and TPC-B610W-A00A.

I/O & Feature	TPC-B610H-A00A	TPC-B610W-A00A
COM	2	2
USB	6	6
LAN	2	2
DP	1	1
Line out	1	1
mPCIe	1	1
PCIe x 16	1	1
PCIe x 4	0	1
PCI	1	0
2.5" SSD/HDD SATA	2	2
M.2 (2280) SATA	1	0
M.2 (2280) NVMe PCIe x4	0	1
M.2 (3052/3042) SATA/USB	1	1
M.2 (2242) SATA	1	1
SIM	1	1
TPM 2.0	v	v
RAID 0, 1		v
ECC		v

For more information about the optional panel module, please find "FPM-Display Module" on Advantech's website.

Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings.
8. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
9. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage.
12. Never pour liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

14. If any of the following occurs, have the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated the equipment.
    - The equipment has been exposed to moisture.
    - The equipment is malfunctioning, or does not operate according to the user manual.
    - The equipment has been dropped and damaged.
    - The equipment shows obvious signs of breakage.
15. Do not leave the equipment in an environment with a storage temperature of below -20 °C (-4 °F) or above 60 °C (140 °F) as this may damage the components. The equipment should be kept in a controlled environment.
16. CAUTION: Batteries are at risk of exploding if incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.
17. In accordance with IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Caution! *Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.*

Danger d'explosion si la pile est remplacée de façon incor- recte. Remplacez seulement avec le même type ou équivalent recom- mandé par le fabricant. disposer des piles usagées selon les instructions du fabricant.

Contents

Chapter 1

General Information

1.1 Introduction

Advantech's TPC-B610 is a performance Panel PC solution to future-proof your Industry 4.0 applications. This modular computing box, with its fanless design, is powered by 10th Gen. Intel Core i Socket (LGA1200), a total of 64GB DDR4, comprehensive I/Os including 6 x USBs, expansion via PCIe x16 and bountiful storage through M.2 SATA/NVME and 2 x 2.5" HDD/SSD slots. TPC-B610 allows easy pairing with panel modules ranging from 15" to 23.8" up to FHD resolutions.

*For the optional Panel Modules, please find 'FPM-Display Module' on Advantech's official website.

Key Features

- High Performance Computing Box powered by Intel® 10th Gen. Core™ i CPU Socket (LGA1200) with fanless design.
- 6 x panel modules (IP66) ranging from 15" to 23.8" in selection.
- Dual channel memory slots (DDR4) support up to 64GB in total
- Comprehensive I/Os, including 6 x USB, 2 x COM, 2 x RJ45...etc.
- Supports expansion via 1 x PCIe x16, 1 x mPCIe, 2 x M.2 (NVMe, SATA, 5G).
- Supports storage via 2 x 2.5" HDD/SSD (RAID 0/1), 2 x M.2 (2242/2280).
- Supports Fieldbus protocols/GPS/GPRS/Wi-Fi capabilities via iDoor technology.
- Supports diverse system I/O, DIO, PoE...etc. via iDoor technology.
- Supports TPM 2.0 hardware security.

Note! *1. PCI and M.2 2280 (SATA) are only for TPC-B610H-A00A.*

2. PCIex4, NVMe, RAID 0/1 and ECC are only for TPC-B610W-A00A.

3. Both SKUs support iBMC via LAN B.

1.2 Specification

1.2.1 General

- BIOS: AMI UEFI BIOS
- Certification: BSMI, CCC, CE, FCC Class A, CB/UL
- Cooling System: Fanless design
- Dimension (L x W x H): 269 mm x 224 mm x 70 mm (10.6" x 8.8" x 2.8")
- Enclosure: Die cast aluminum alloy
- Mounting: VESA Mount, Desktop, Wall or Panel Mount
- Power Input: 24 VDC ± 20% 9.58A
- Watchdog Timer: 15-255 sec (system)
- Weight (Net): 4.5kg (9.92lbs)
- Power Consumption: 35.3W (Typical)
  This product is intended to be supplied by IEC/UL 62368-1 listed adapter complies with limited power source and rated from:24Vdc ± 20%, minimum 9.58A, maximum operation temperature of TPC-B610 is 50°C.

1.2.2 System Hardware

- CPU: Intel® Gen. 10th Core™ I CPU socket (LGA1200)
- Chipset: H420E (TPC-B610H-A00A), W480E (TPC-B610W-A00A)
- Memory: Dual-channel DDR4 2933/2666 MHz (TPC-B610W supports ECC)
  260-pin SODIMM (up to 32GB per socket)
- LAN: 2 x 10/100/1000BASE-T (LAN A: i219, LAN B: i210)
- Expansion Slot:
  1 x Full-size mini PCIe
  1 x M.2 key-B (3052/3042)
  1 x SIM card slot
- Storage Slots:
  1 x M.2 key-M (2280): NVMe PCIe x4 (only for TPC-B610W); SATA (only for TPC-B610H)
  1 x M.2 key-B (2242): SATA
  2 x 2.5” HDD/SSD: SATA (max. 7mm)
- I/O Ports:
  1 x RS-232 (COM 2)
  1 x RS-232/422/485 (COM1)
  5 x USB 3.2 (Gen1)
  1 x USB 2.0
  1 x DisplayPort 1.2
  1 x Audio line out/ mic in

Note! *TPC-B610 supports only wide temperature (~85°C or wider) M.2 storage.*

1.2.3 Safety and Environment

1.2.3.1 Safety

- FCC Class A
- CE certificated

1.2.3.2 Environment

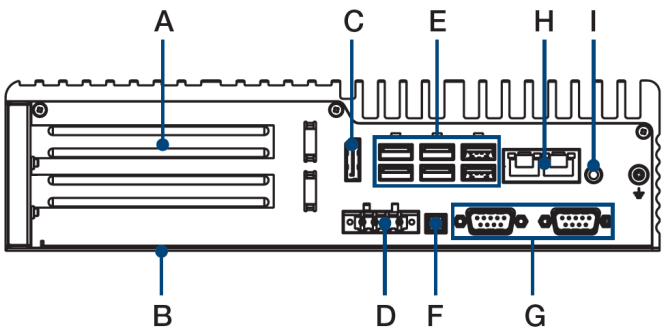
- Humidity: 10~95% Relative humidity @ 40°C, non-condensing
- Ingress Protection: Front panel IP66 (optional FPM-display module)
- Vibration Protection: With SSD: 1 Grms (5 ~ 500 Hz) (operating, random vibration)
- Operating Temperature: -10 ~ 40°C (65W CPU) & -10 ~ 50°C (35W CPU) with 0.7m/sec air flow: with 1 x Industrial SSD without PC expansion boards
- Storage Temperature: -20~70°C (-4~158°F)

1.2.4 OS support

- Windows 10
- AdvLinux

1.3 I/O Port Arrangement

The arrangement of TPC-B610 I/O ports is shown in Figure 1.1.



A. PCI expansion slot
B. 2.5” HDD/SSD slot
C. DisplayPort
D. Power Receptor
E. USB (5 x 3.2, 1 x 2.0)
F. Remote Power
G. RS-232, RS-232/422/485
H. RJ45
I. Audio line out/Mic in

Figure 1.1 I/O Port Arrangement

1.4 Dimensions and Cutout

- Weight (Net): 4.5 kg (9.92 lbs)
- Dimensions (L x W x H): 269 mm x 224 mm x 70 mm (10.6” x 8.8” x 2.8”)

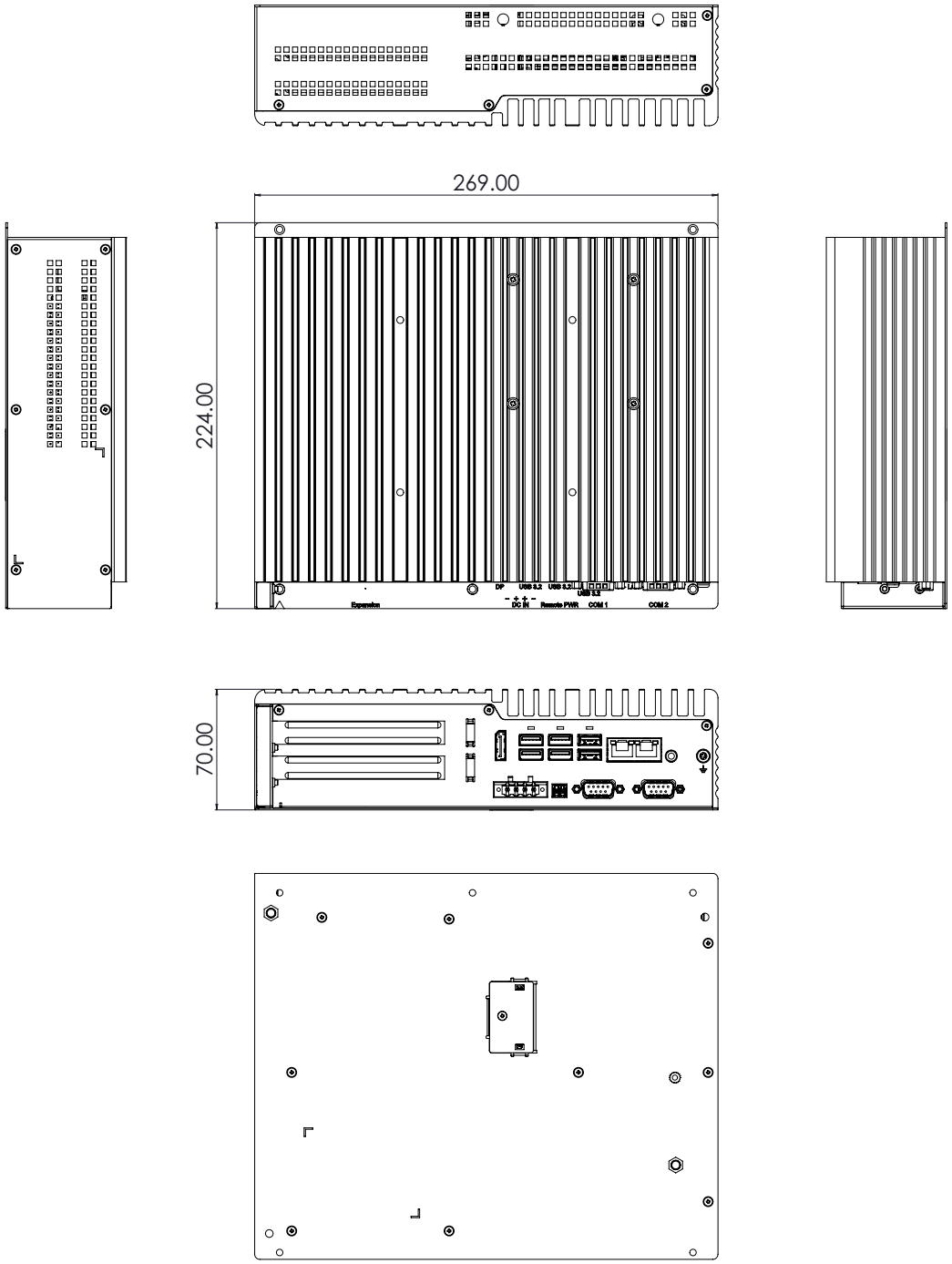


Figure 1.2 TPC-B610 Dimension

Chapter 2

System Setup

2.1 Transport and Unpacking

2.1.1 Transport

When accepting a delivery, please check the packaging for visible transport damage and check the delivery for completeness by comparing it with your order. If you notice any shipping damage or inconsistencies between the contents and your order, please inform the responsible delivery service immediately.

During transportation, the TPC should be protected from excessive mechanical stress. If the TPC is transported or stored without packaging, shocks, vibrations, pressure, and moisture may impact the unprotected unit. Damaged packaging indicates that ambient conditions have already had a massive impact on the device. Therefore, please use the original packaging during transportation and storage.

If the TPC is transported in cold weather or is exposed to extreme variations in temperature, make sure that moisture (condensation) does not build up on or inside the HMI device. Moisture can result in short-circuits in electrical circuits and damage the device. To avoid that, please store the TPC in a dry place and bring the TPC to room temperature before starting it up. If condensation occurs, a delay time of approximately 12 hours must be allowed to make sure the TPC is completely dry before the TPC is switched on.

2.1.2 Unpacking

1. Unpack the TPC-B610 package. Check the packing list at the beginning of this manual to make sure all items have been included.
2. Connect the power connector (P/N: 1652006277-01) to the 24 VDC power lines. The power lines can either be of some power adapter or in-house power source.

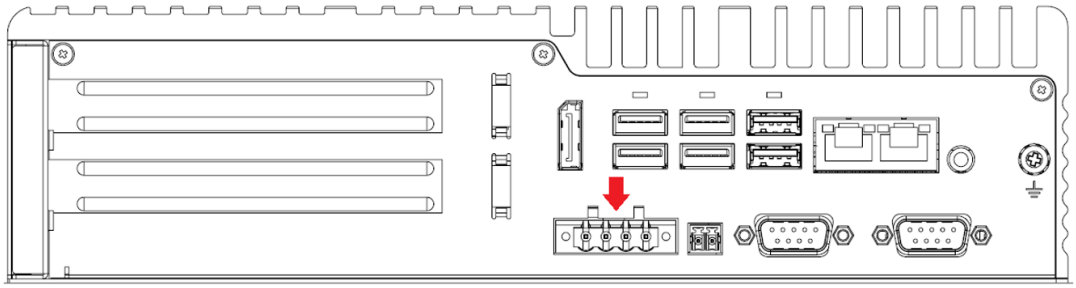


Figure 2.1 Power Connector

3. Plug the power lines into the system's power receptor.
4. Attach power to the system.
5. Calibrate the touchscreen. (optional FPM-Display Module)

2.2 Installation

2.2.1 CPU/Memory (Channel 1)/M.2 (2280)

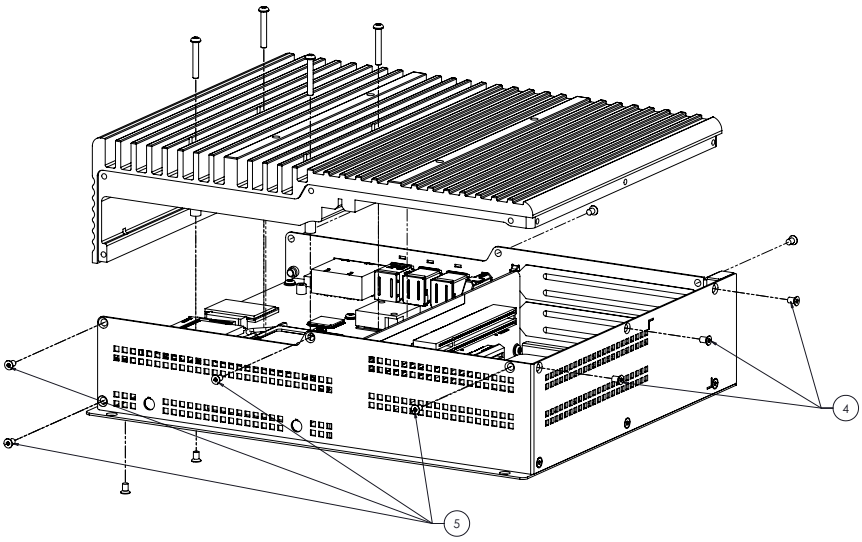


Figure 2.2 Removing Top Cover, I/O Bracket

1. Undo 4 screws and remove the top cover.
2. Undo 3 screws on the bottom cover.
3. Undo 3 screws on the I/O bracket.

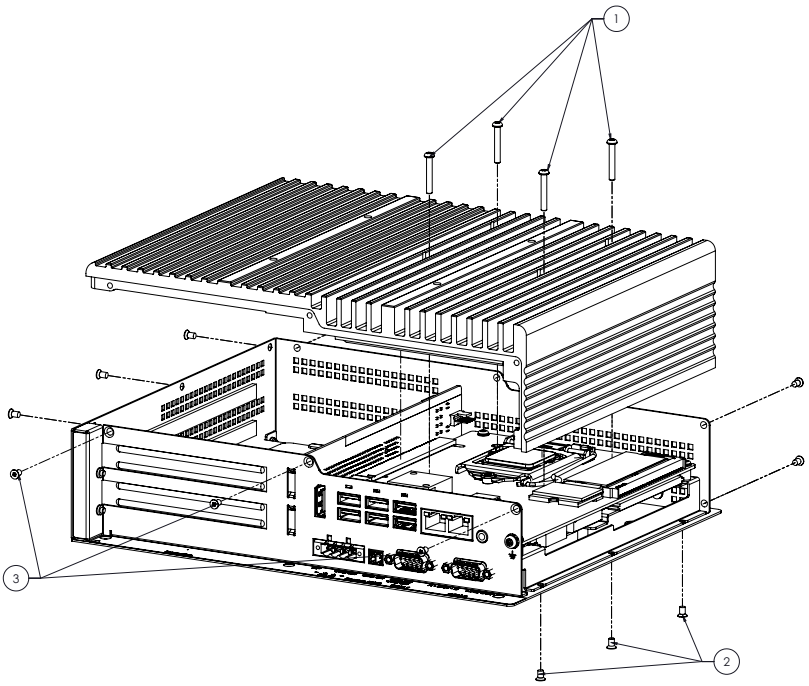


Figure 2.3 Removing Side Door

4. Undo 3 screws on the side door.
5. Undo 4 screws on the side door.

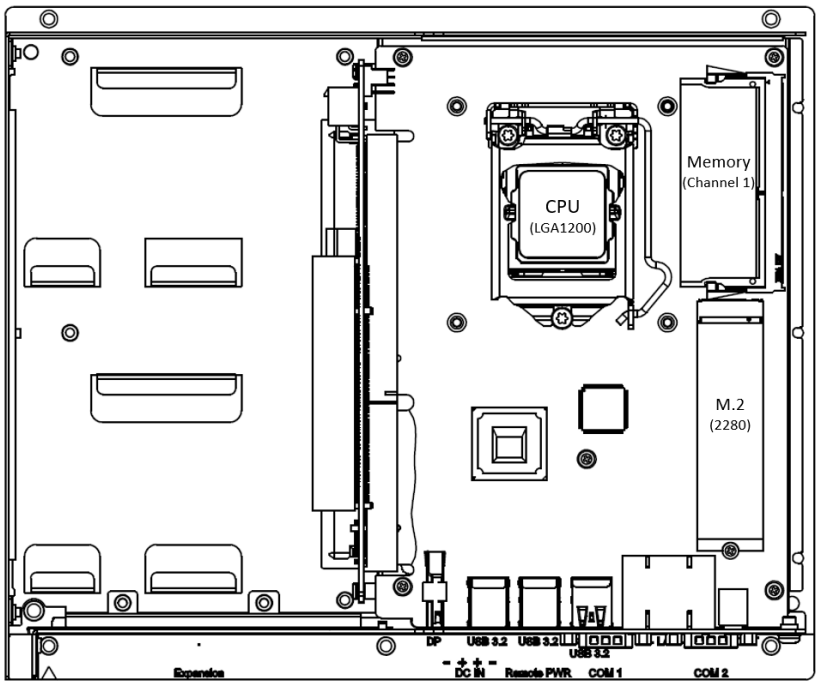


Figure 2.4 Top View - CPU/Memory (Channel 1)/M.2 (2280)

- **CPU:** Apply the thermal grease (P/N: 2170000093-01) and install the CPU (LGA1200).
- **Memory (Channel 1):** Affix the thermal pad (P/N: 1990031076N000) and reassemble memory.
- **M.2 (2280):** Undo 1 screw (P/N: 19350304A0), affix the thermal pad (P/N: 1990037589N000) and reassemble the M.2 SSD.

Note! *Thermal pad and memory thermal cover must be completely covered and secured.*

TPC-B610 supports only wide temperature (~85°C or wider) M.2 storage.

2.2.2 Memory (Channel 2)/mPCIe/M.2 (3052/2242)

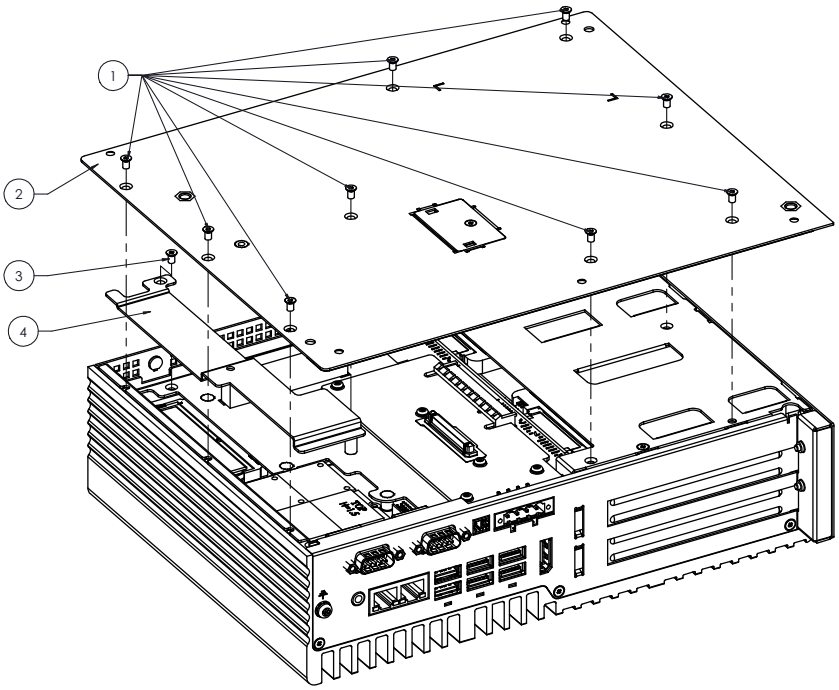


Figure 2.5 Removing Bottom Cover

1. Undo 9 screws on the bottom cover.
2. Remove the bottom cover.
3. Undo 1 screw on the thermal bracket.
4. Remove the thermal bracket.

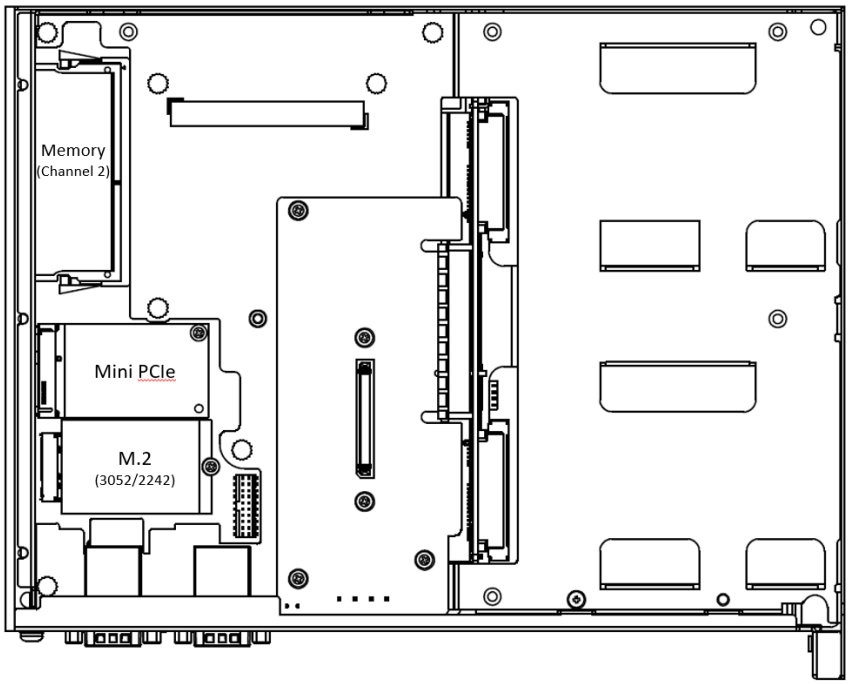


Figure 2.6 Top View - Memory (Channel 2)/mPCIe/M.2 (3052/2242)

- **Memory (Channel 2):** Affix the thermal pad (P/N: 1990031076N000) on top of the memory and the other thermal pad (P/N: 1990021847N000) at the bottom side in between the MB, and reassemble the memory.
- **mPCIe:** Undo 1 crew (P/N: 1930000198) and install the mPCIe module onto the mPCIe socket.
- **M.2 (3052/2242):** Undo 1 screw (P/N: 19350304A0), affix the thermal pad (P/N: 1990027303N000) and reassemble the M.2 4G/5G module or SSD.

Note! *Thermal pad and memory thermal cover must be completely covered and secured.*

TPC-B610 supports only wide temperature (~85°C or wider) M.2 storage.

2.2.3 HDD/SSD (2.5”)/PCI expansion/iDoor module

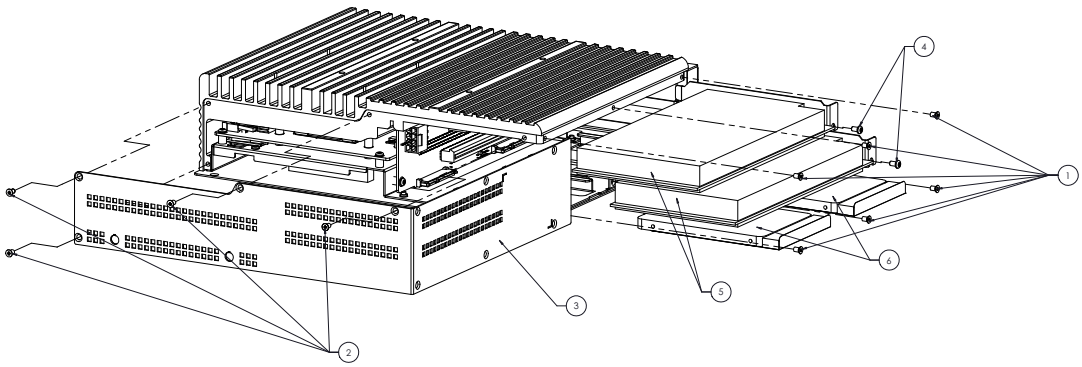


Figure 2.7 Installing PCIe/2.5” HDD/SSD

1. Undo 6 screws on the side door.
2. Undo 4 screws on the side door.
3. Remove the side door.
4. Undo 2 screws on the PCIe slots.
5. Install the PCIe/PCI cards into the slots.
6. Install the 2.5” HDD/SSD into the slots.

Note!

1. *The max. dimension of PCI expansion card supported is 191 x 111.15 x 34.80 mm.*
2. *The max. power consumption of PCI expansion card supported is 75W.*
3. *iDoor module can be installed on either one of the PCIe slots by using an extra adapter "PCM-28P1AD".*

*Please find "Advantech iDoor Module" on Advantech's official website for more information about the iDoor module choices, and check with your local sales support for compatibility confirmation.

2.2.4 Panel Module

This chapter is applicable to TPC-B610 when an optional FPM-Display Module is paired with TPC-B610. For more information about the FPM-Display Module, please check Advantech's official website of "FPM-Display Module".

Use the 5 screws (1930000881) included in the accessory kit to attach the TPC-B610 to the optional panel module via the board-to-board connector.

Note! *TPC-B610 supports sizes of optional FPM-Display module from 15" to 23.8".*

Front View

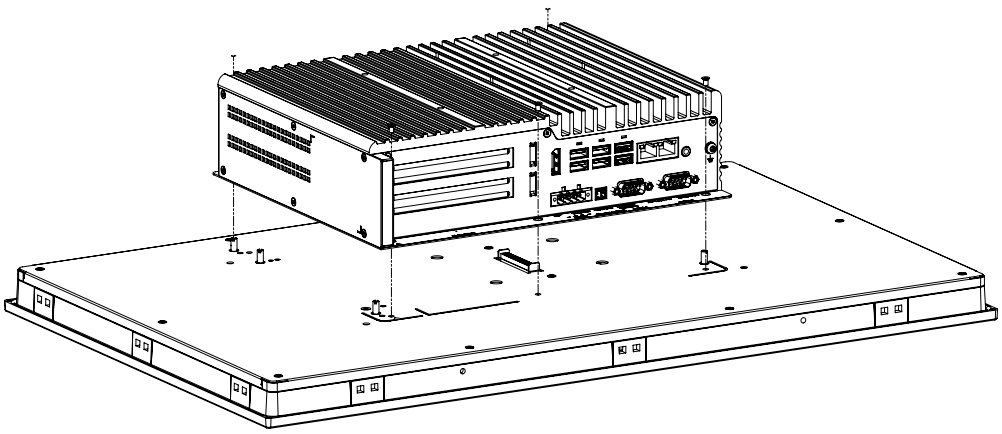


Figure 2.8 Panel Module Assembly (Front View)

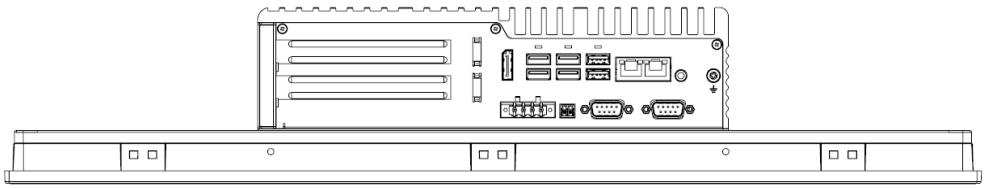


Figure 2.9 Panel Module Assembled (Front View)

Rear View

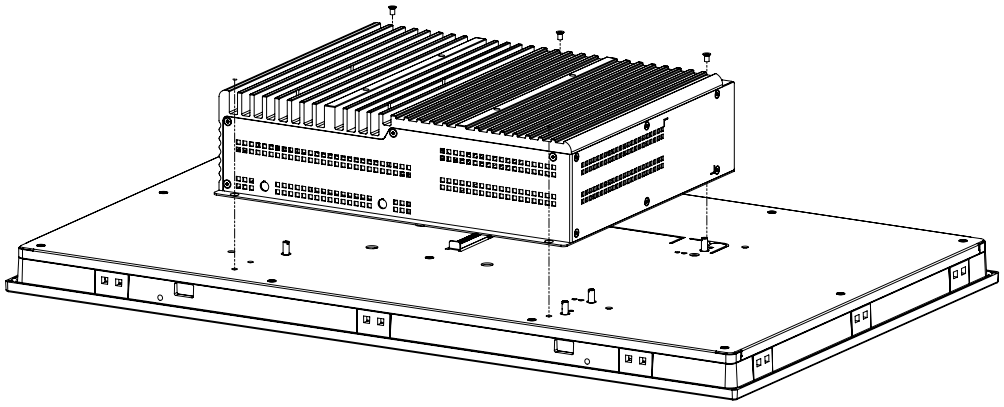


Figure 2.10 Panel Module Assembly (Rear View)

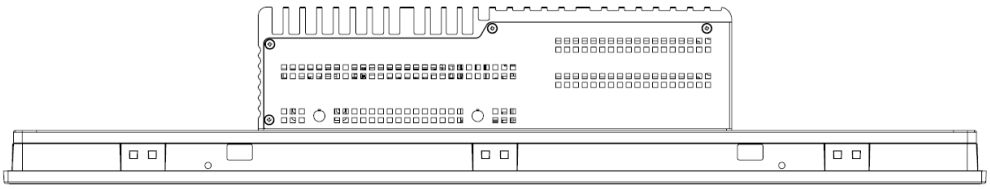
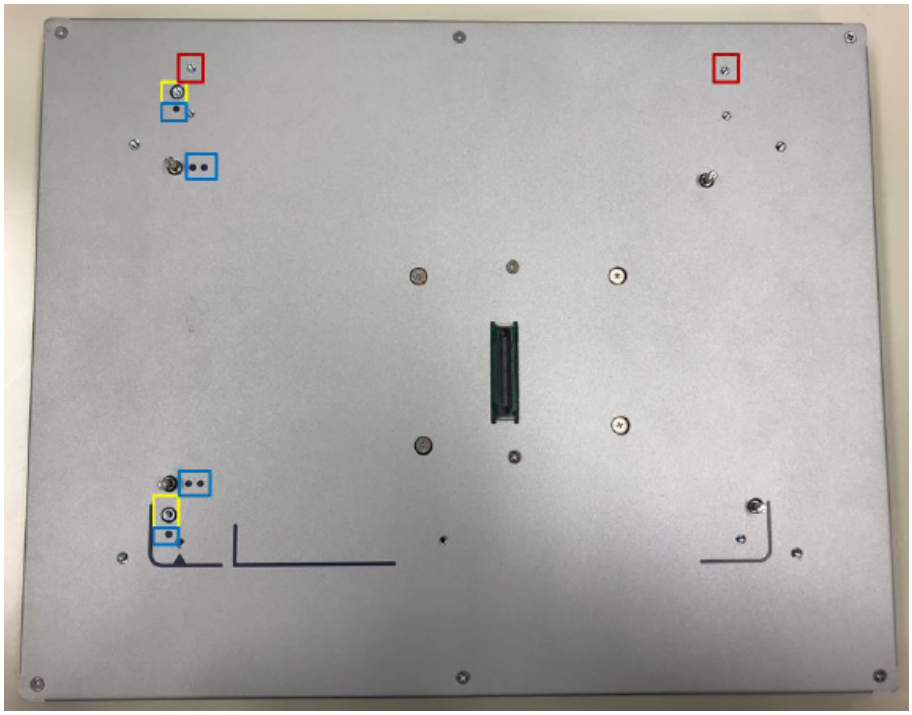


Figure 2.11 Panel Module Assembled (Rear View)

Note! *Please make sure the Boss on the left sides on the back of the optional panel should be installed in the holes with a signal of one dot aside, as marked in yellow in the picture below, so to be successfully paired with TPC-B610.*



2.3 Panel Mounting

This chapter describes the panel mounting methods. It is applicable to TPC-B610 when an optional FPM-Display Module is paired with TPC-B610. For more information about the FPM-Display Module, please check Advantech's official website of "FPM-Display Module".

1. Position the system (TPC-B610 + FPM-Display Module) against the wall

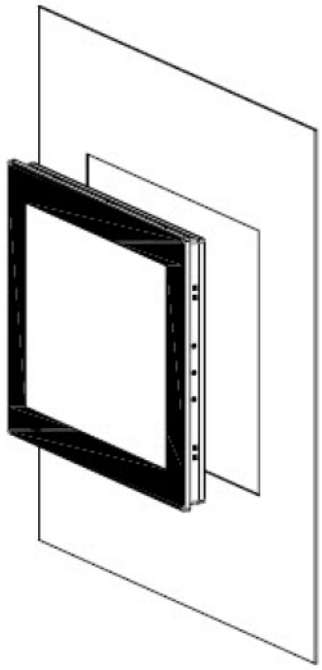


Figure 2.12 Panel Mounting – Positioning

2. Insert the clamps into the side of the panel.

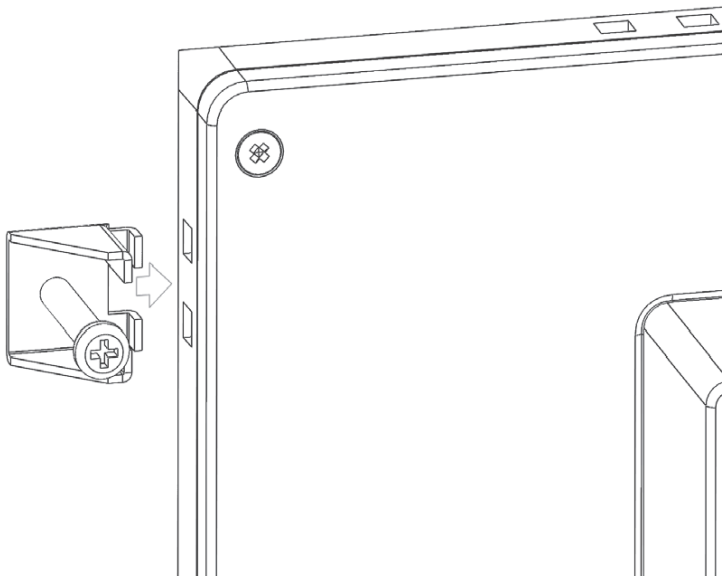


Figure 2.13 Panel Mounting – Clamps Insertion

3. Secure the clamp to the panel using the included screws.

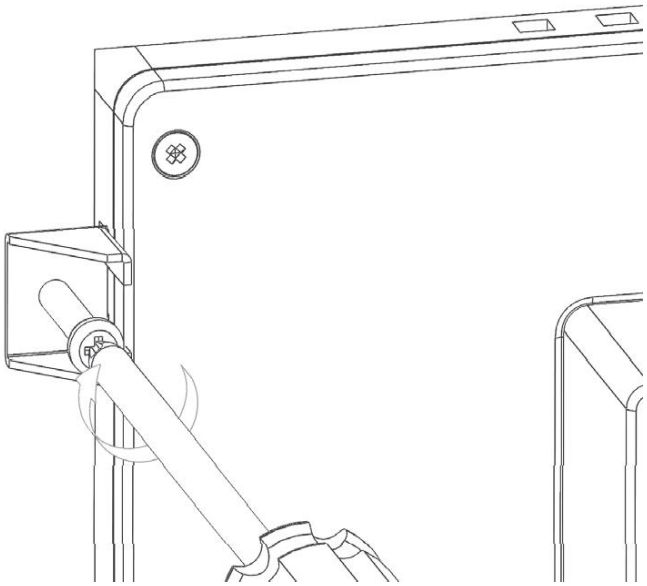
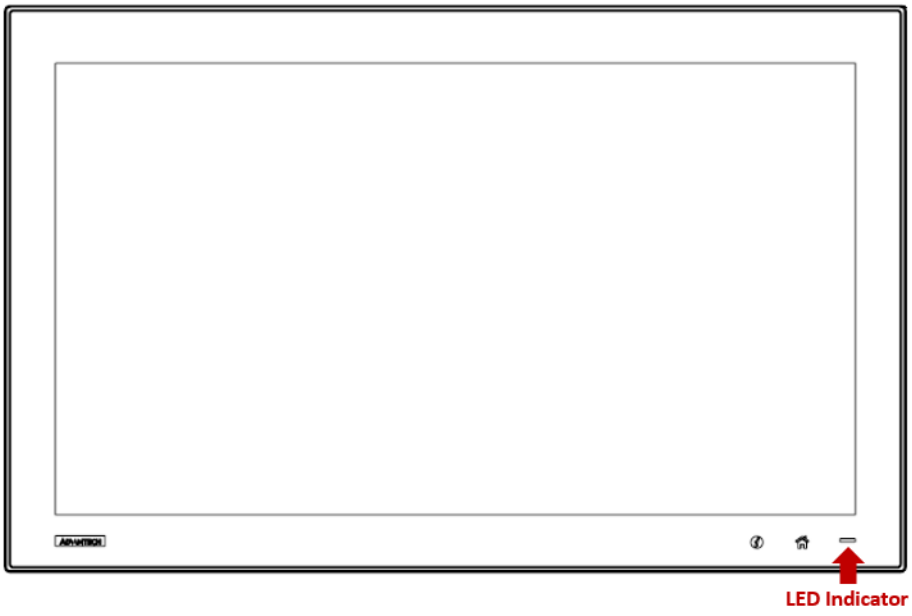


Figure 2.14 Panel Mounting – Clamps Fixing

Note! *The meanings of the varied colors of the LED indicator on the optional FPM-Display module are as follows:*



ACPI Sleep States	Definition	Color of LED Indicator
S0	Normal Powered-On State	Blue
S3	Suspend to RAM	Orange
S4	Suspend to Disk	Orange
S5	Soft Off	Orange

2.4 VESA Mounting

1. TPC-B610 supports VESA 100x100 standard.
2. M4 x 10 screws are recommended for VESA mounting.

Please find below the picture of TPC-B610 when combined with optional FPM-Display Module.

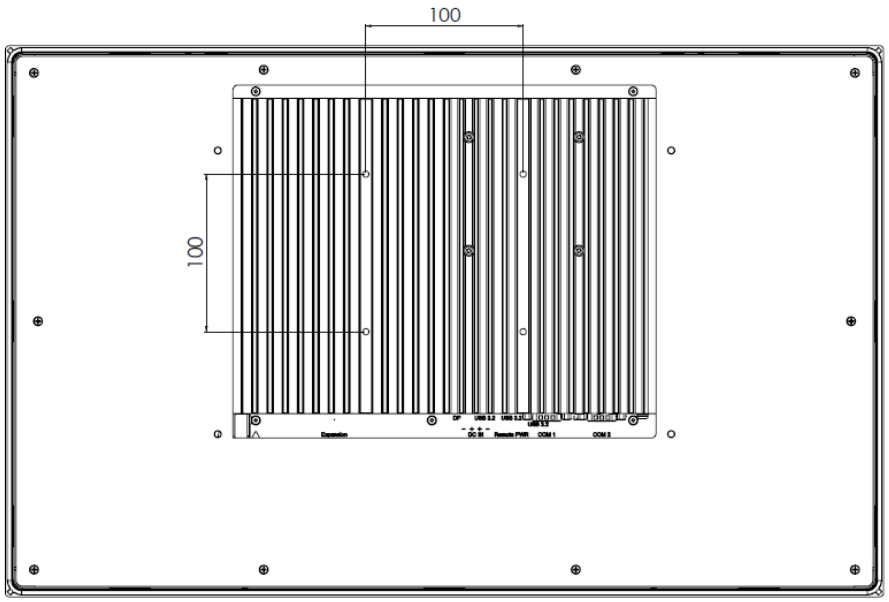


Figure 2.15 VESA Mounting

Chapter 3

BIOS Setup

3.1 Introduction

With the AMI BIOS Setup Utility, you can modify BIOS settings and control the specific features of your computer. The Setup Utility uses a number of menus for making changes and turning the specific features on or off. This chapter describes the basic navigation of the TPC-B610 setup screens.

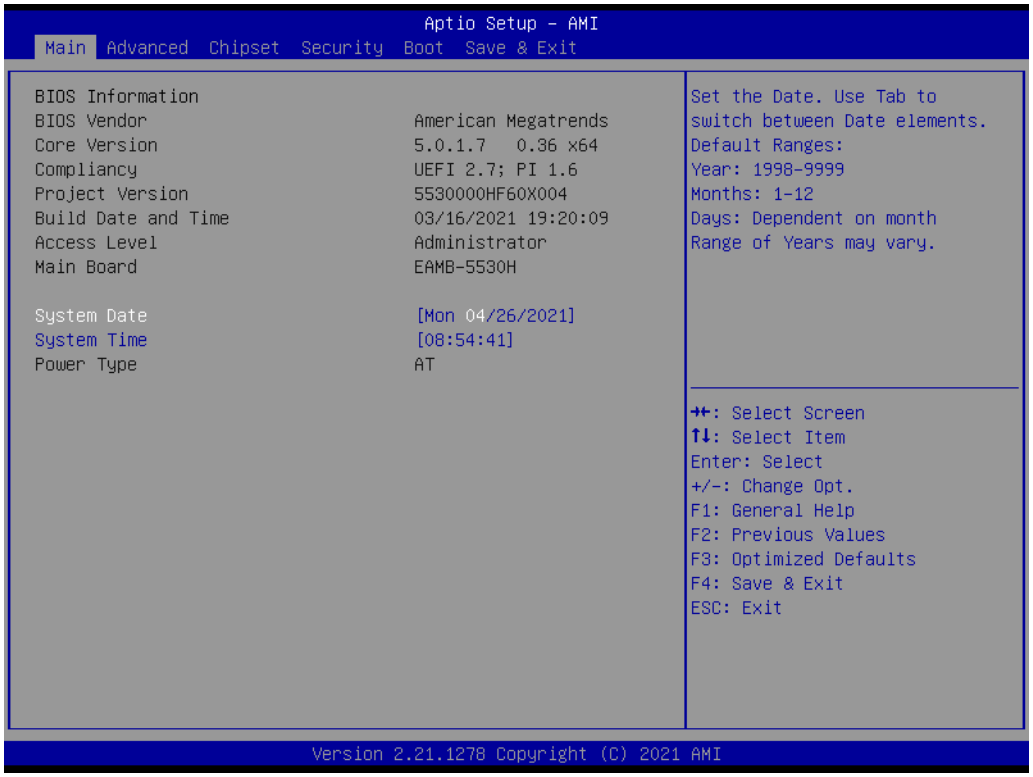


Figure 3.1 Main setup screen

AMI's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in the NVRAM area so it retains the setup information when the power is turned off.

3.2 Entering BIOS Setup

Press <Del> to enter AMI BIOS Setup Utility, the Main Menu will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can be. The right frame displays the key legend.

The key legend above is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

3.2.1 Main Setup

When users first enter the BIOS Setup Utility, they enter the Main setup screen. Users can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options described in this section. The Main BIOS Setup screen is shown below.

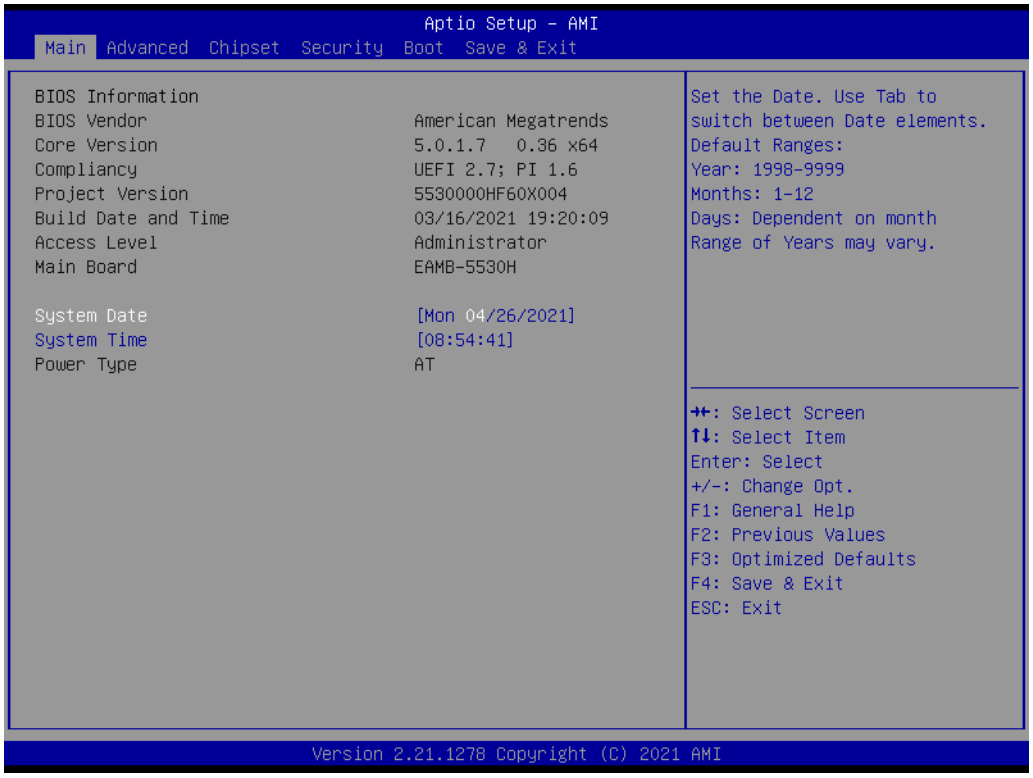


Figure 3.2 Main setup screen

- **System Time / System Date**

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

3.2.2 Advanced BIOS Features Setup

Select the Advanced tab from the TPC-B610 setup screen to enter the Advanced BIOS setup screen. You can select any of the items in the left frame of the screen, such as CPU configuration, to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screens are shown below. The sub menus are described on the following pages.

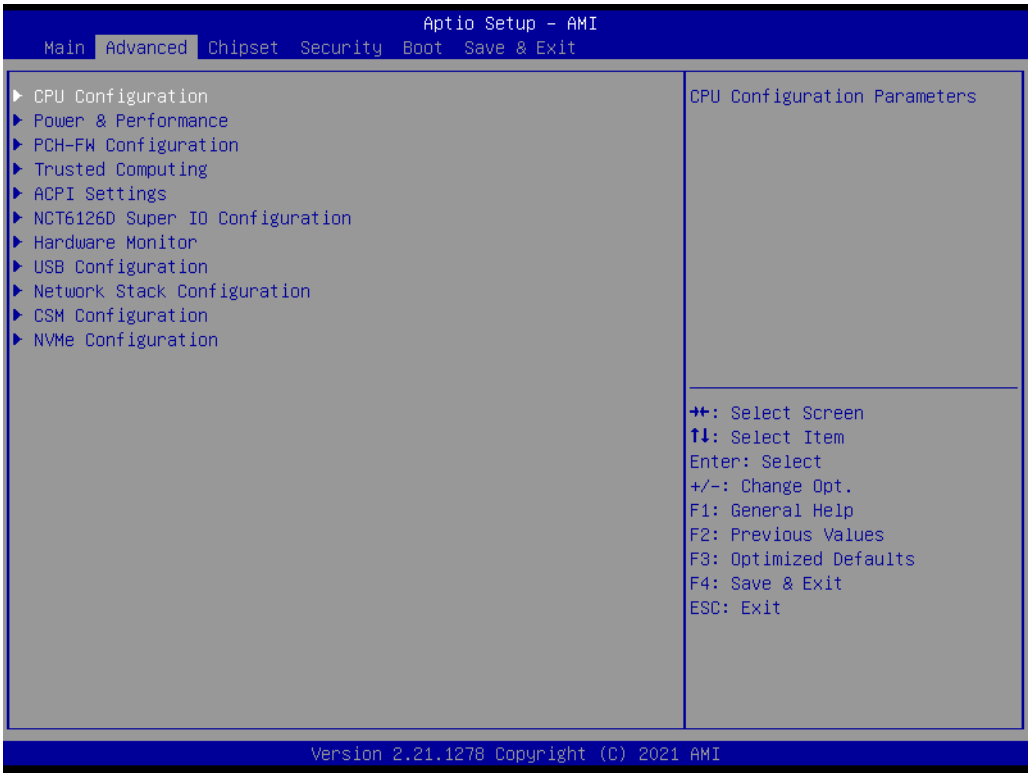


Figure 3.3 Advanced BIOS features setup screen

3.2.2.1 Platform Misc Configuration

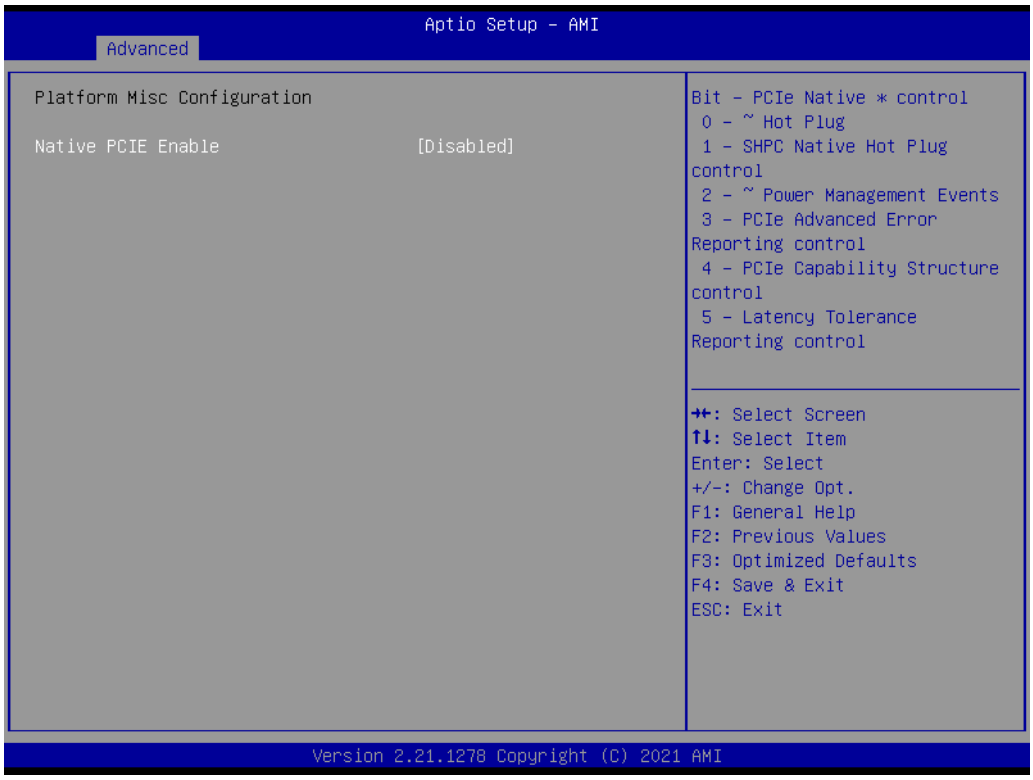


Figure 3.4 Platform Misc Configuration

- **Platform Misc Configuration**
  - **Native PCIE Enable**
    PCI Express Native Support Enable/Disable.

3.2.2.2 CPU Configuration

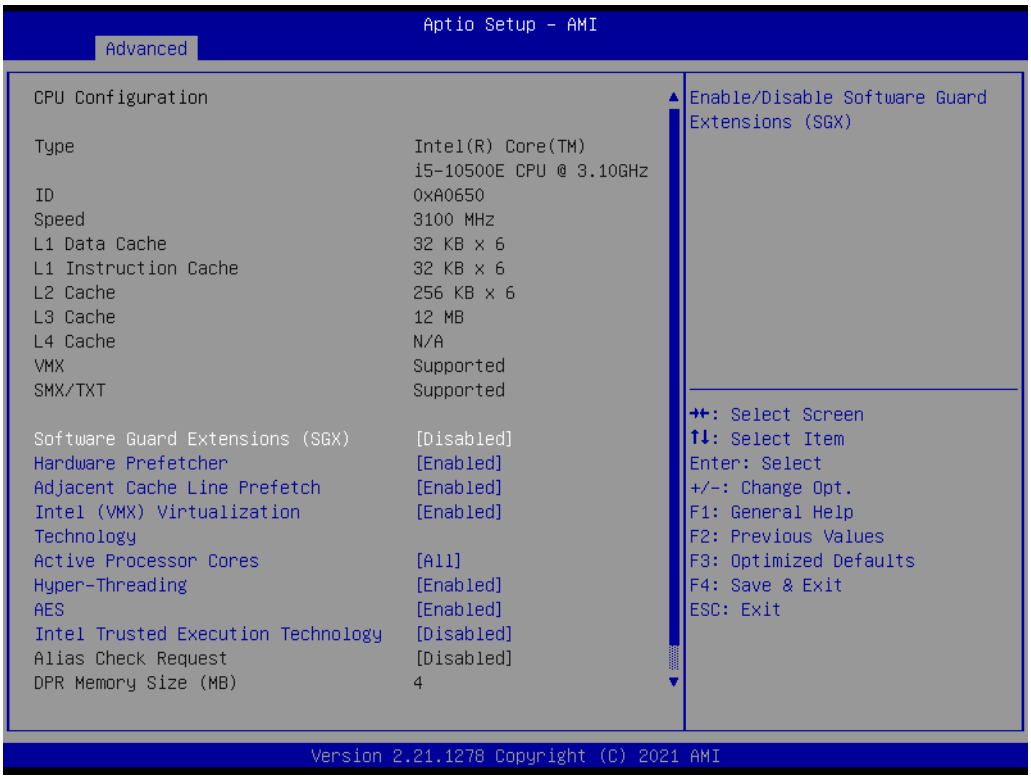


Figure 3.5 CPU Configuration

- **Hardware Prefetcher**
  Hardware Prefetcher is a technique that fetches instructions and/or data from memory into the CPU cache memory well before the CPU needs it to improve the load-to-use latency. You may choose to Enable or Disable it.
- **Adjacent Cache Line Prefetch**
  The Adjacent Cache-Line Prefetch mechanism, like automatic hardware prefetch, operates without programmer intervention. When it is enabled through the BIOS, two 64-byte cache lines are fetched into a 128-byte sector, regardless of whether the additional cache line has been requested or not. You may choose to Enable or Disable it.
- **Intel Virtualization Technology**
  This feature is used to Enable or Disable Intel Virtualization Technology (IVT) extension. It allows multiple operating systems to run simultaneously on the same system by creating virtual machines, each running its own x86 operating system.
- **Active Processor Core**
  Use this item to select the number of processor cores you want to activate when you are using a dual or quad core processor.
- **AES**
  Enable or Disable CPA advanced encryption standard instruction.
- **Intel Trusted Execution Technology**
  "Enable or Disable" utilization of additional hardware capabilities provided by Intel Trusted Execution Technology. Changes require a full power cycle to take effect.
- **Rest AUX Content**
  Reset TPM AUX content. TXT may not be functional after AUX content gets reset.

3.2.2.3 Power & Performance

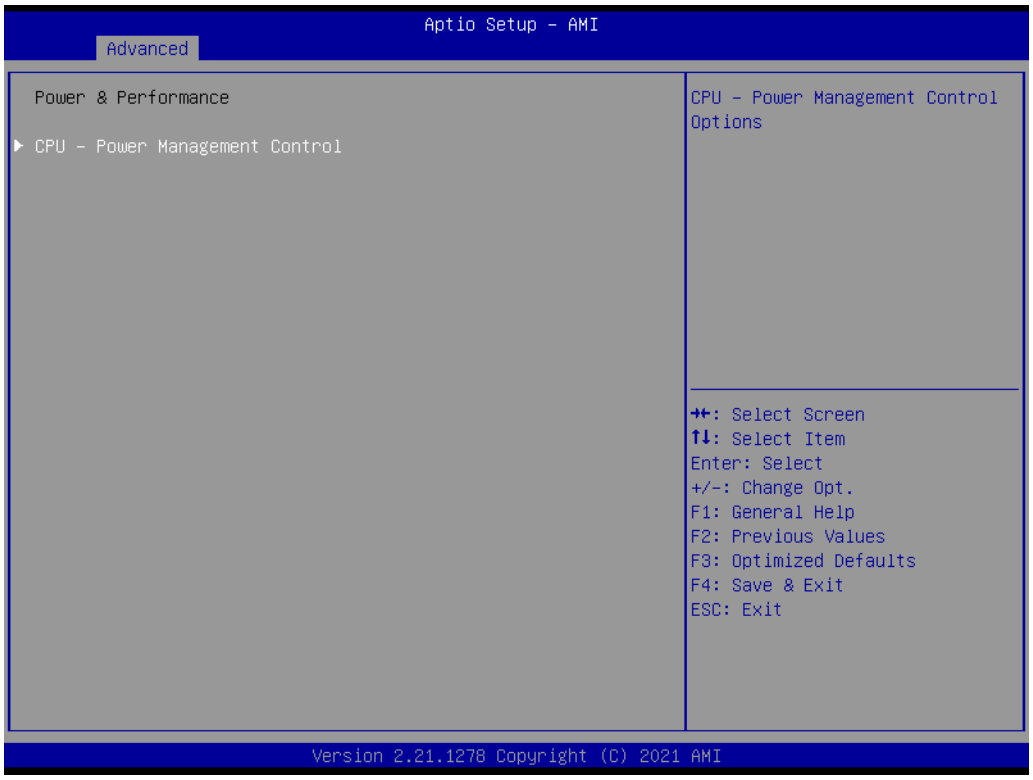


Figure 3.6 Power & Performance

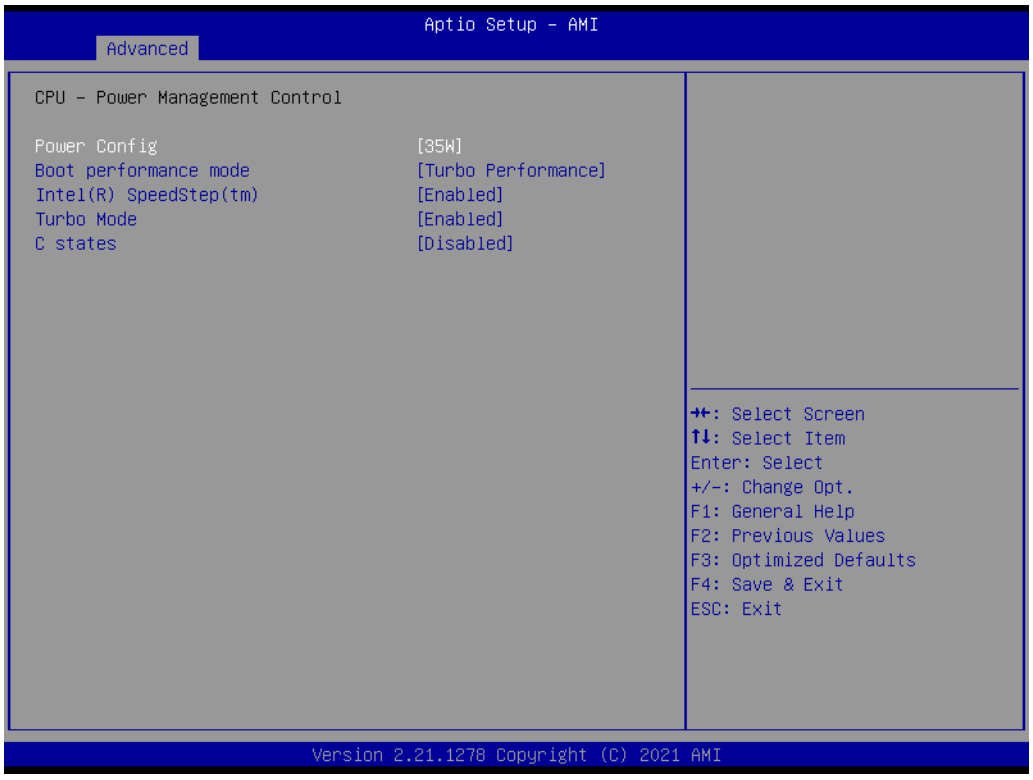


Figure 3.7 CPU Power Management Control

- **Boot Performance**
  Select the performance state that the BIOS will set before OS handoff.

- **Intel(R) Speedstep(tm)**
  Allows more than two frequency ranges to be supported.
- **Turbo Mode**
  Turbo mode.
- **C states**
  Intel C states setting for power saving.

3.2.2.4 PCH-FW Configuration

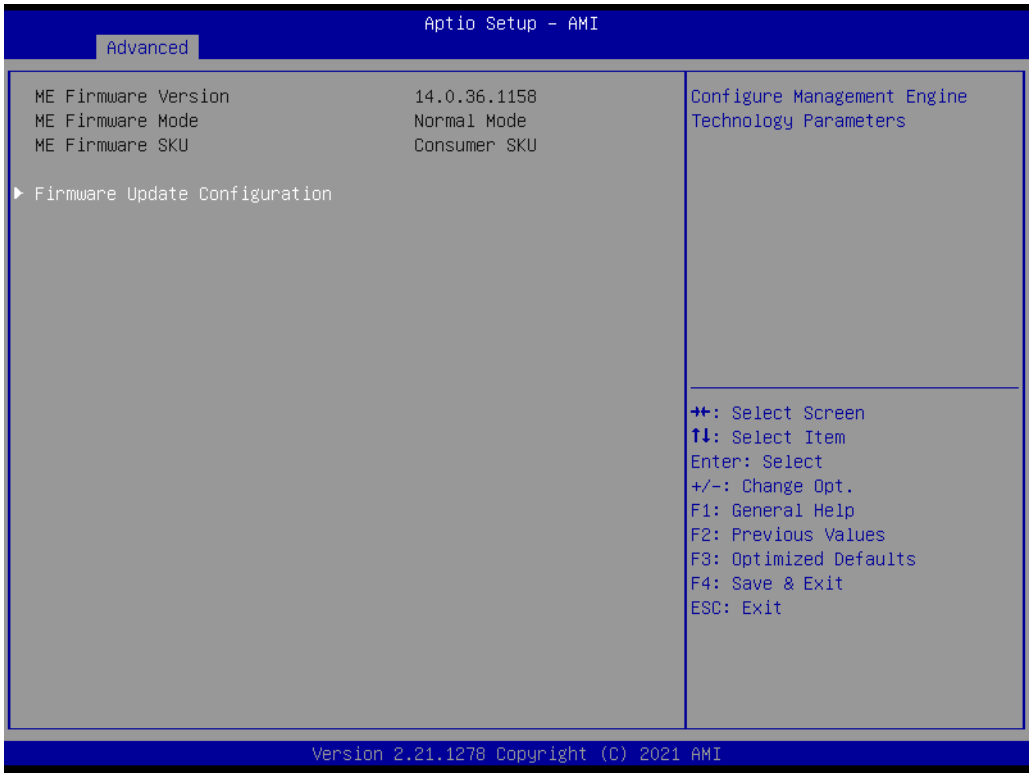


Figure 3.8 PCH-FW Configuration

- **PCH-FW Version**
  PCH-FW page shows Intel ME FW information.

3.2.2.5 Trusted Computing

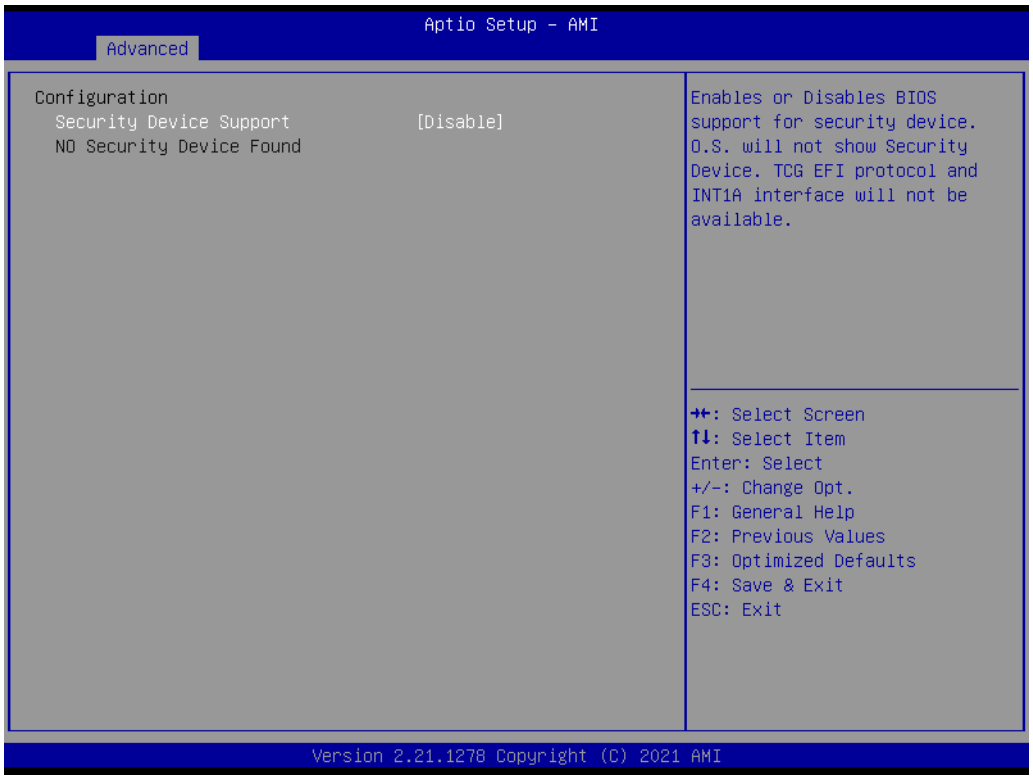


Figure 3.9 TPM Settings

- **TPM Support**
  "Enable or Disable" TPM Support.

3.2.2.6 ACPI Settings

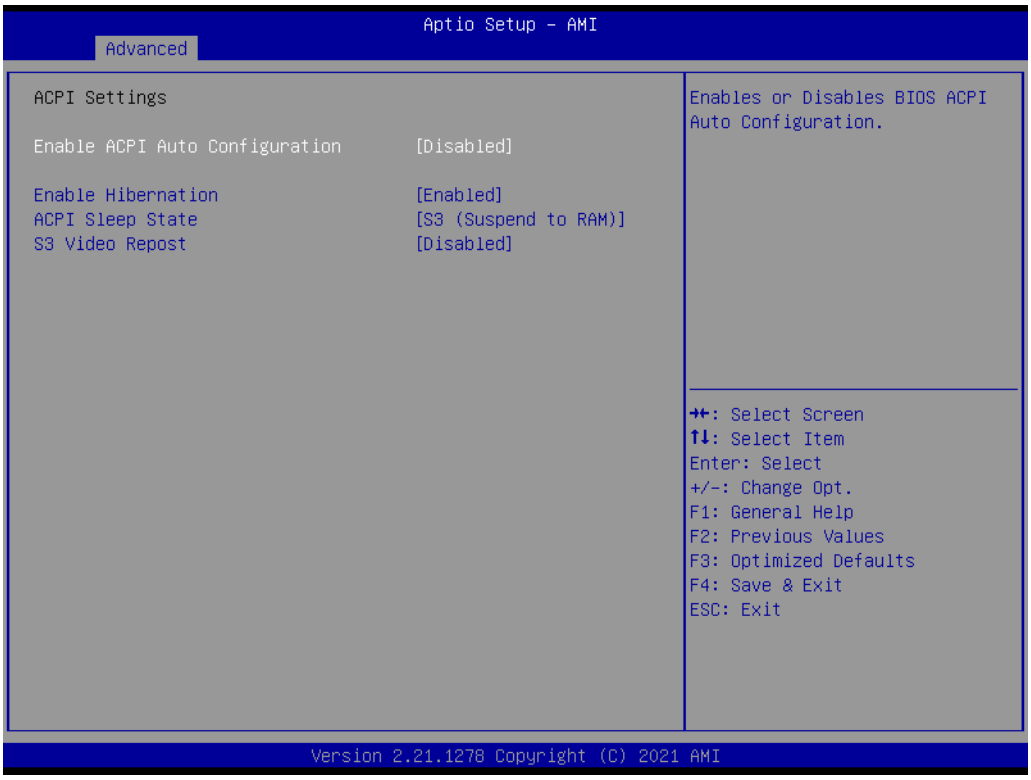


Figure 3.10 ACPI Settings

- **Enable Hibernation**
  Enable or Disable Hibernation (OS/S4 Sleep State). This option may not be applied in some OS.
- **ACPI Sleep State**
  Auto or S1 only or S3 only ACPI Sleep State.
- **Lock Legacy Resources**
  Enable or Disable Lock Legacy Resources.
- **S3 Video Repost**
  Enable or Disable S3 Video Repost.

3.2.2.7 SMART Settings

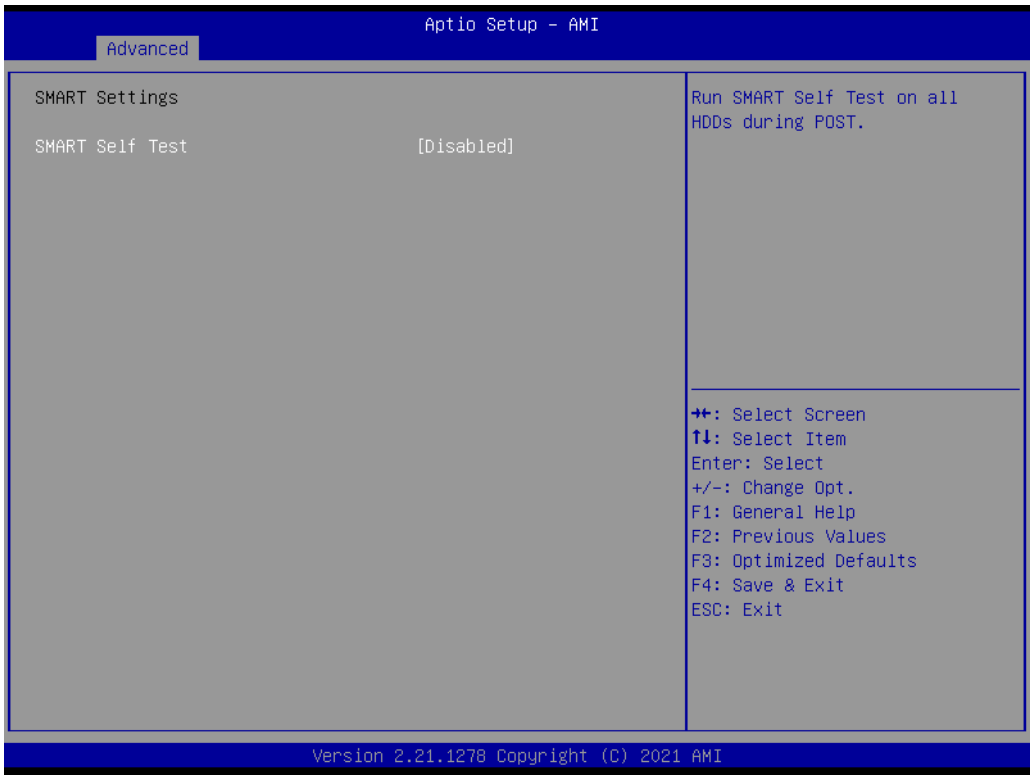


Figure 3.11 SMART Settings

- **SMART Self Test**
  Enable or Disable SMART Self Test on all HDDs during POST.

3.2.2.8 Super I/O Configuration

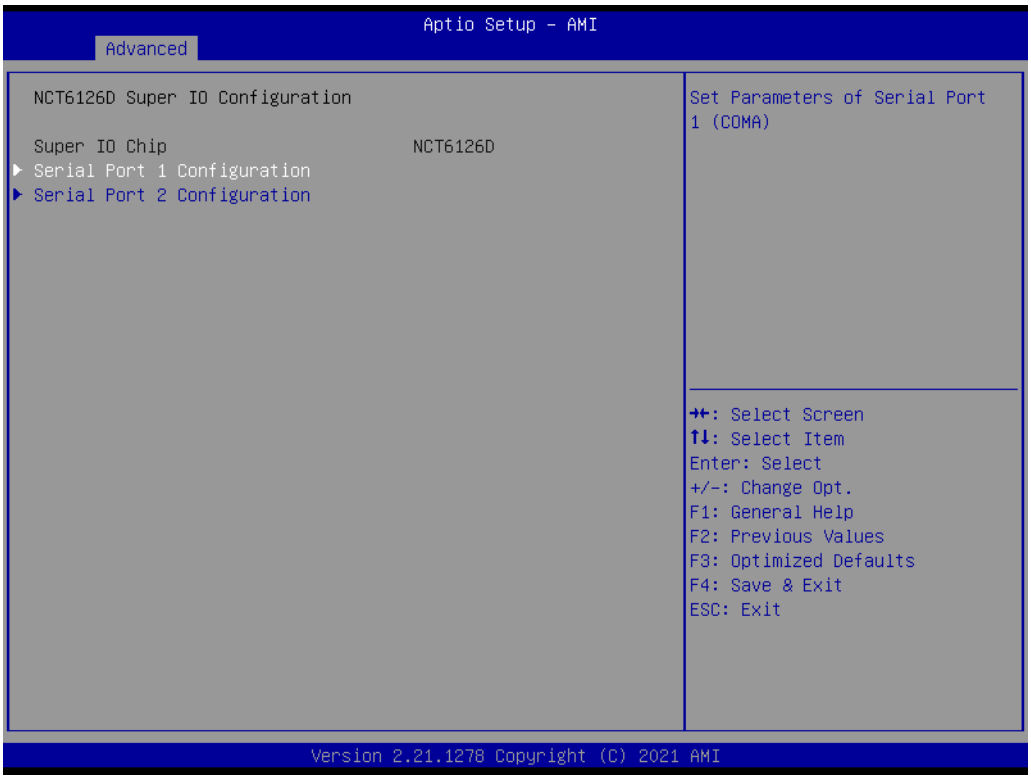


Figure 3.12 Super IO Configuration

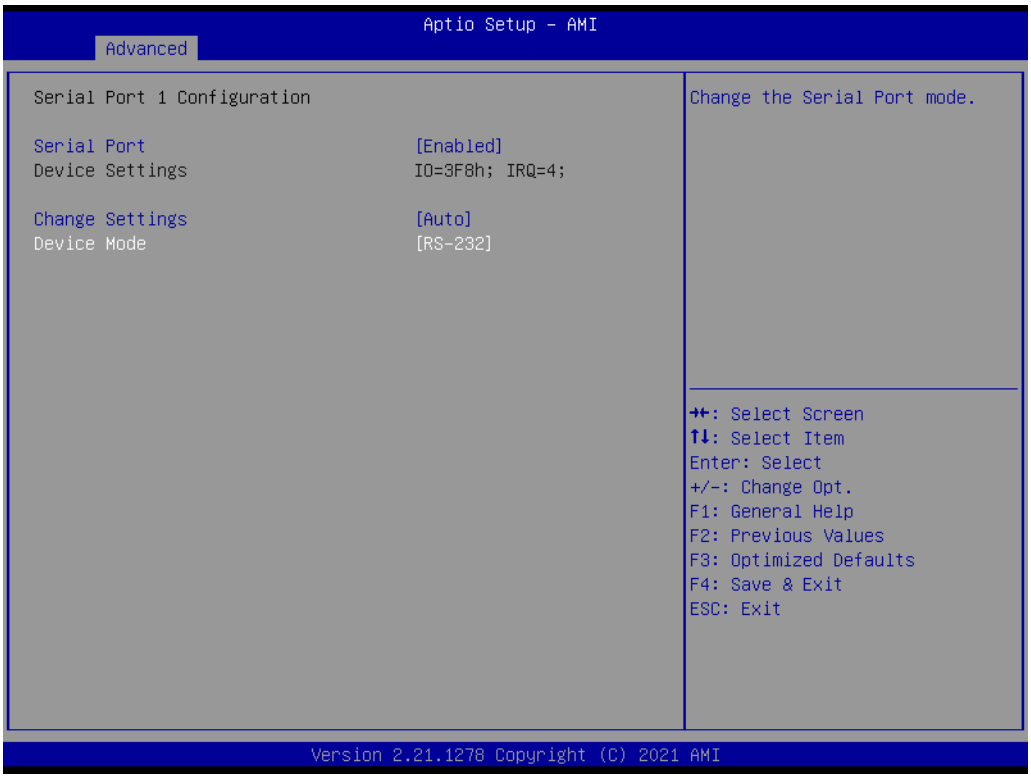


Figure 3.13 Serial Port 1 Configuration

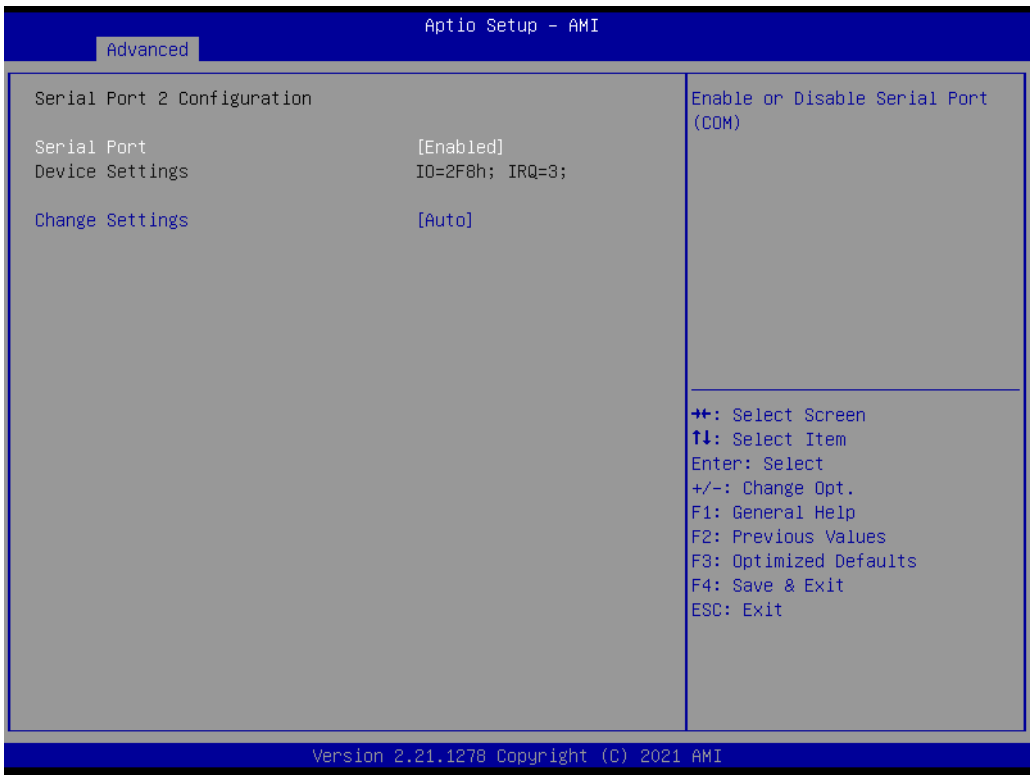


Figure 3.14 Serial Port 2 Configuration

- **Serial Port 1 Configuration**
  - **Serial Port**
    This item allows users to enable or disable Serial Port.
  - **Change Settings**
    This item allows users to Change Settings of the Serial Ports. The default setting is Auto.
  - **Device Mode**
    This item allows users to set the mode of serial port. The default setting is RS-232.When serial port 1 (COM1) is set to RS-485 mode via jumper JSET-COM1, this item should be selected as "RS-485 (Half Duplex)" and further set Auto Direction (Flow) Control setting to "On (enable) or Off (disable)". Default for this Device Mode is "RS-232".
- **Serial Port 2 Configuration**
  - **Serial Port**
    This item allows users to enable or disable Serial Port.
  - **Change Settings**
    This item allows users to Change Settings of Serial Ports. The default setting is Auto.
  - **Device Mode**
    This item allows users to set the mode of serial port. The default setting is RS-232.

3.2.2.9 H/W Monitor

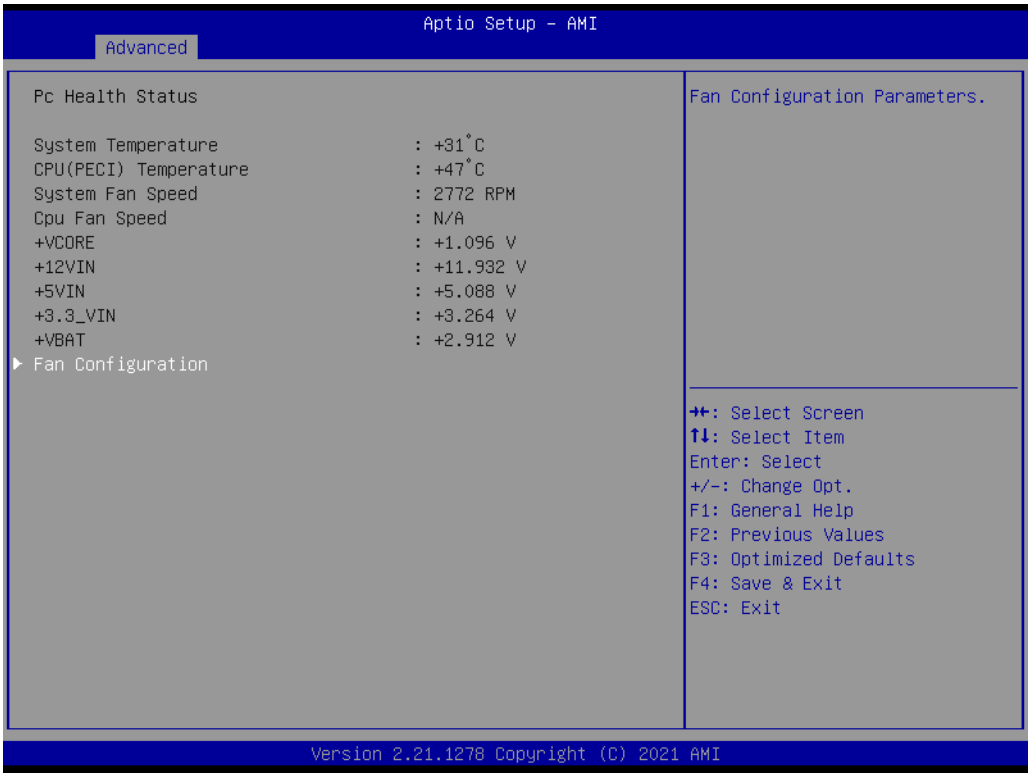


Figure 3.15 PC Health Status

3.2.2.10 S5 RTC Wake Settings

Figure 3.16 S5 RTC Wake Settings

- **Wake system with Fixed Time**
  To Enable or Disable System wake on alarm event. The system will wake on the hr:min:sec as specified.

3.2.2.11 Serial Port Console Redirection

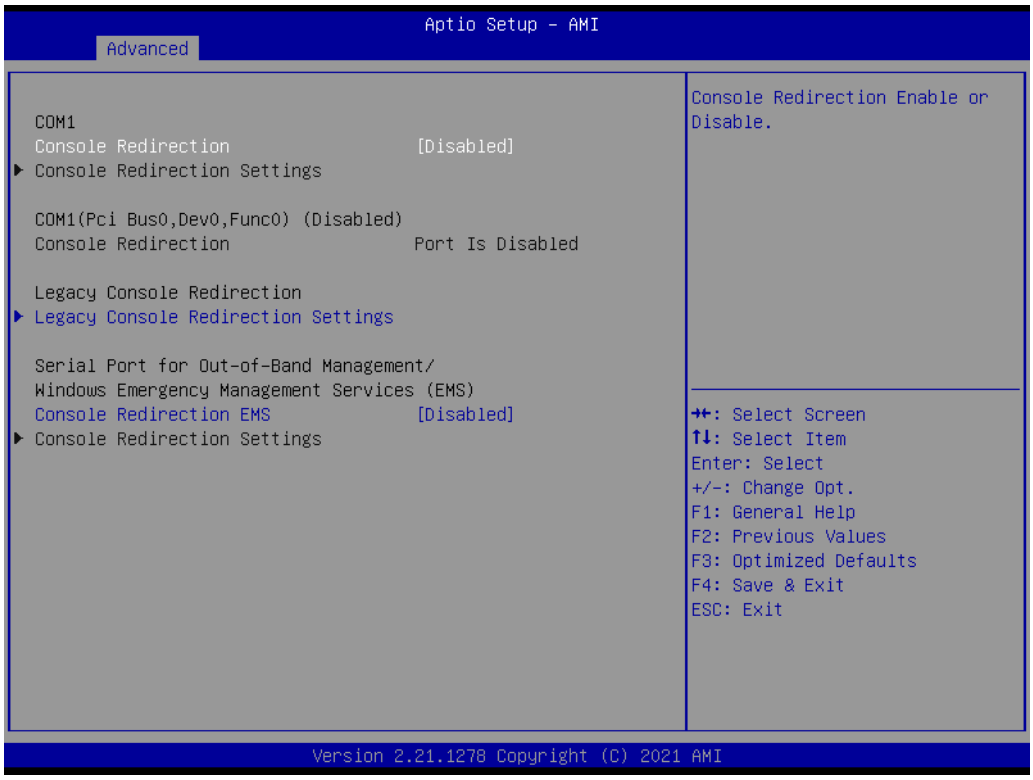


Figure 3.17 Serial Port Console Redirection

- **COM1**
  - **Console Redirection Settings**
    Console Redirection Enable or Disable
- **Legacy Console Redirection**
  - Legacy Console Redirection Settings
    Legacy Console Redirection Settings
- **Serial Port for Out-of-Band Management/ Windows Emergency Management services (EMS)**
  - Console Redirection
    Console Redirection Enable or Disable

3.2.2.12 Intel TXT Information

Figure 3.18 Intel TXT Information

3.2.2.13 USB Configuration

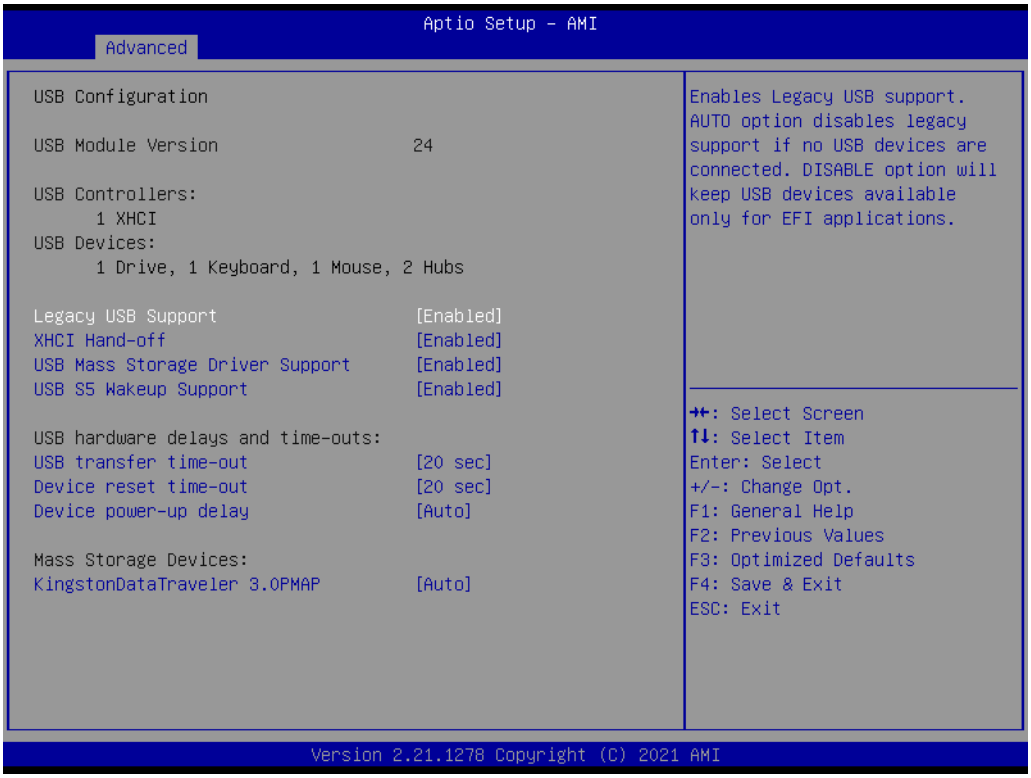


Figure 3.19 USB Configuration

- **Legacy USB Support**
  This is for supporting USB device under legacy OS such as DOS. When choosing Auto, the system will automatically detect if any USB device is plugged into the computer and enable USB legacy mode when a USB device is plugged and disable USB legacy mode when no USB device is plugged.
- **XHCI Hand-off**
  This is a workaround for OS without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
- **USB Mass Storage Driver Support**
  Enable or Disable USB Mass Storage driver support.
- **USB transfer time-out**
  Allows you to select the USB transfer time-out value. [1,5,10,20sec]
- **Device reset time-out**
  Allows you to select the USB device reset time-out value. [10,20,30,40sec]
- **Device power-up delay**
  Maximum time the device will take before it properly reports itself to the Host Controller. Auto uses default value: for a Root port it is 100 ms, for a Hub port the delay is take from Hub descriptor.

3.2.2.14 USB Network Stack Configuration

Figure 3.20 Network Stack

- **Network Stack**
  "Enable or Disable" UEFI Network Stack.

3.2.2.15 CSM Configuration

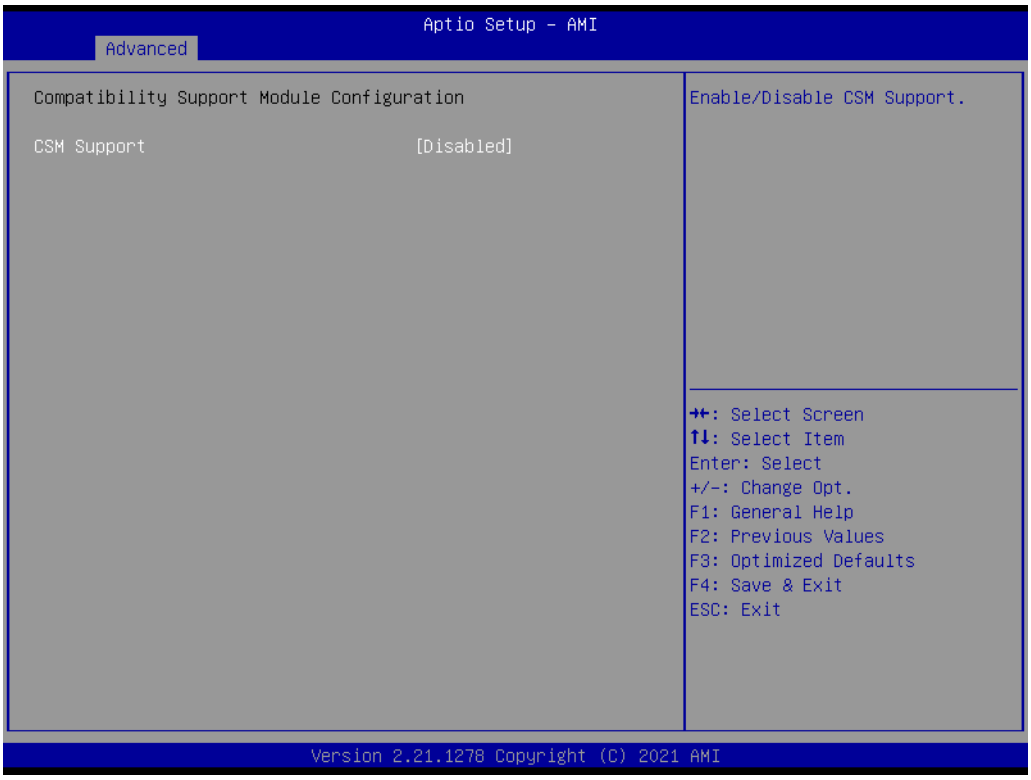


Figure 3.21 CSM Configuration

- **Compatibility Support Module Configuration**
  - CSM Support
    Enable/Disable CSM Support.
- **CSM16 Module Version**
  - GateA20 Active
    Upon Request - GA20 can be disabled using BIOS services. Do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.
  - Option ROM Message
    Set display mode for Option ROM.
  - INT19 Trap Response
    BIOS reaction on INT19 trapping by Option ROM: Immediate - execute the trap right away; Postponed - execute the trap during legacy boot.
  - Boot option filter
    This option controls Legacy/UEFI ROMs Priority.
- **Option ROM execution**
  - Network
    Controls the execution of UEFI and Legacy PXE OpROM.
  - Storage
    Controls the execution of UEFI and Legacy Storage OpROM.
  - Video
    Controls the execution of UEFI and Legacy Video OpROM.
  - Other PCI devices
    Determines OpROM execution policy for devices other than Network, Storage, or Video.

- Network
  Controls the execution of UEFI and Legacy PXE OpROM.
- Storage
  Controls the execution of UEFI and Legacy Storage OpROM.
- Video
  Controls the execution of UEFI and Legacy Video OpROM.
- Other PCI devices
  Determines OpROM execution policy for devices other than Network, Storage, or Video.

3.2.2.16 NVMe Configuration

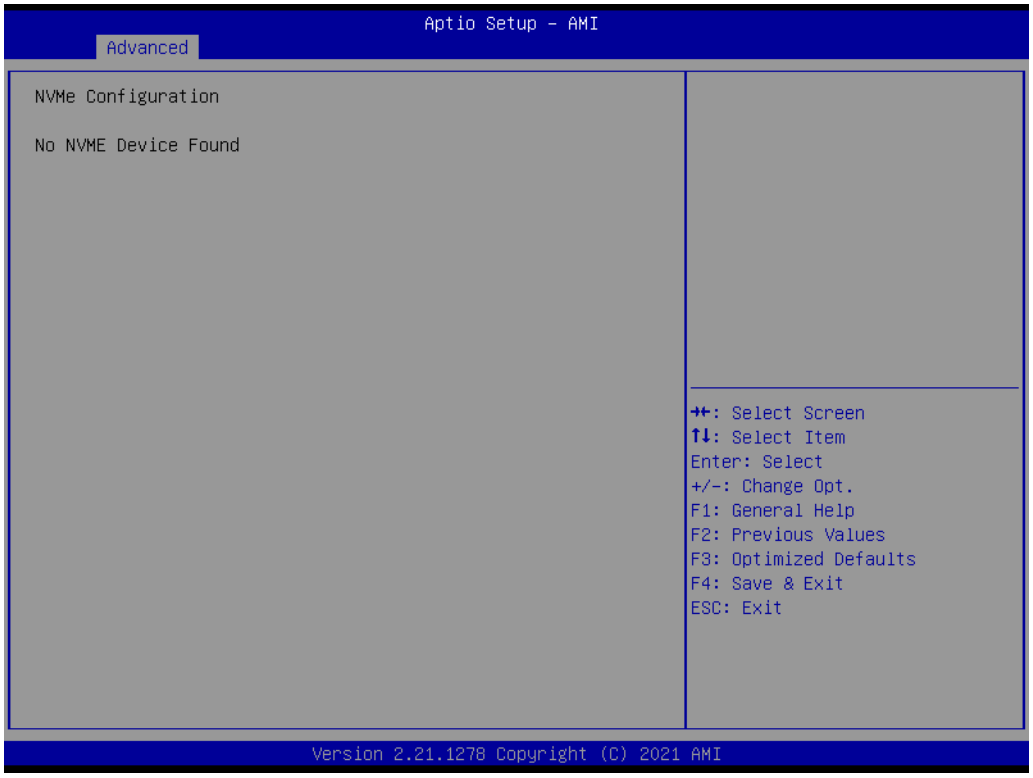


Figure 3.22 NVMe Configuration

3.2.3 Chipset Configuration

Figure 3.23 Chipset

This page provides information of the chipset on TPC-B610.

3.2.3.1 System Agent (SA) Configuration

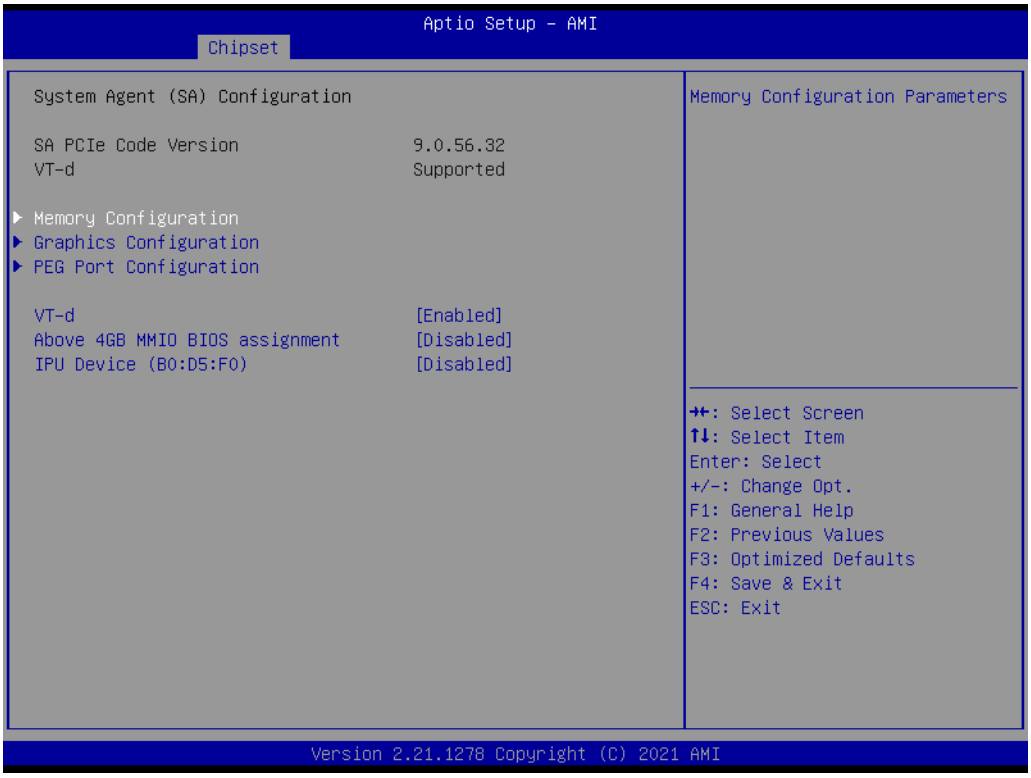


Figure 3.24 System Agent (SA) Configuration

3.2.3.2 Memory Configuration

Figure 3.25 Memory Configuration

- **Maximum Memory Frequency**
  Maximum memory frequency selections in Mhz.

3.2.3.3 Graphics Configuration

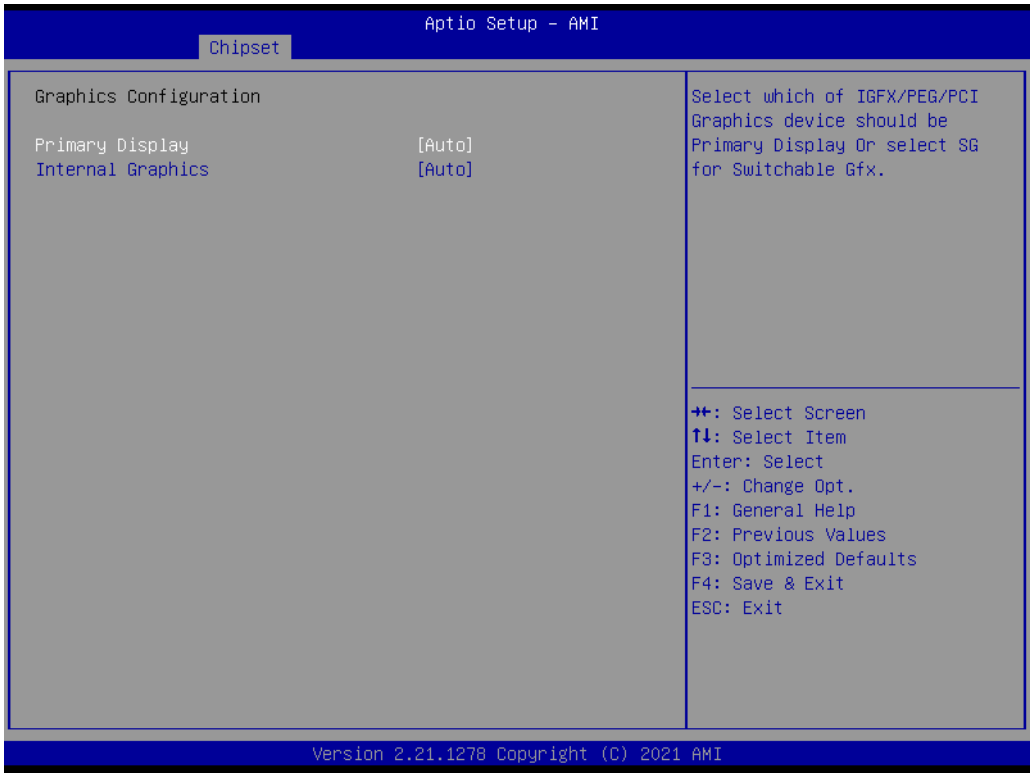


Figure 3.26 Graphics Configuration

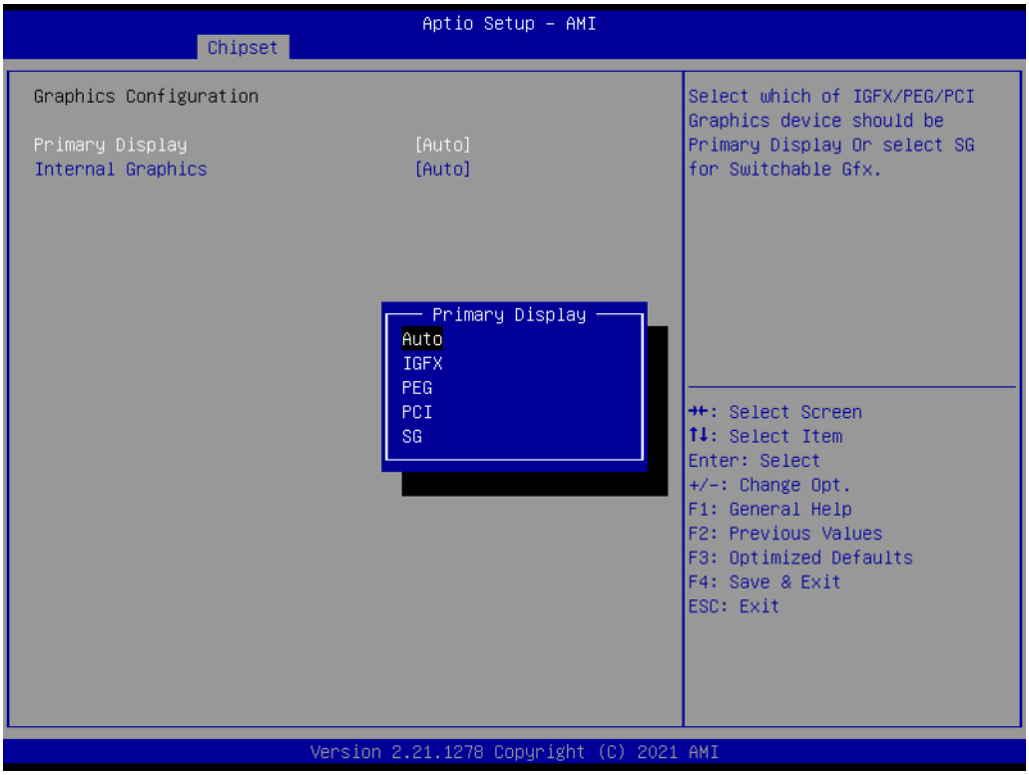


Figure 3.27 Primary Display Settings

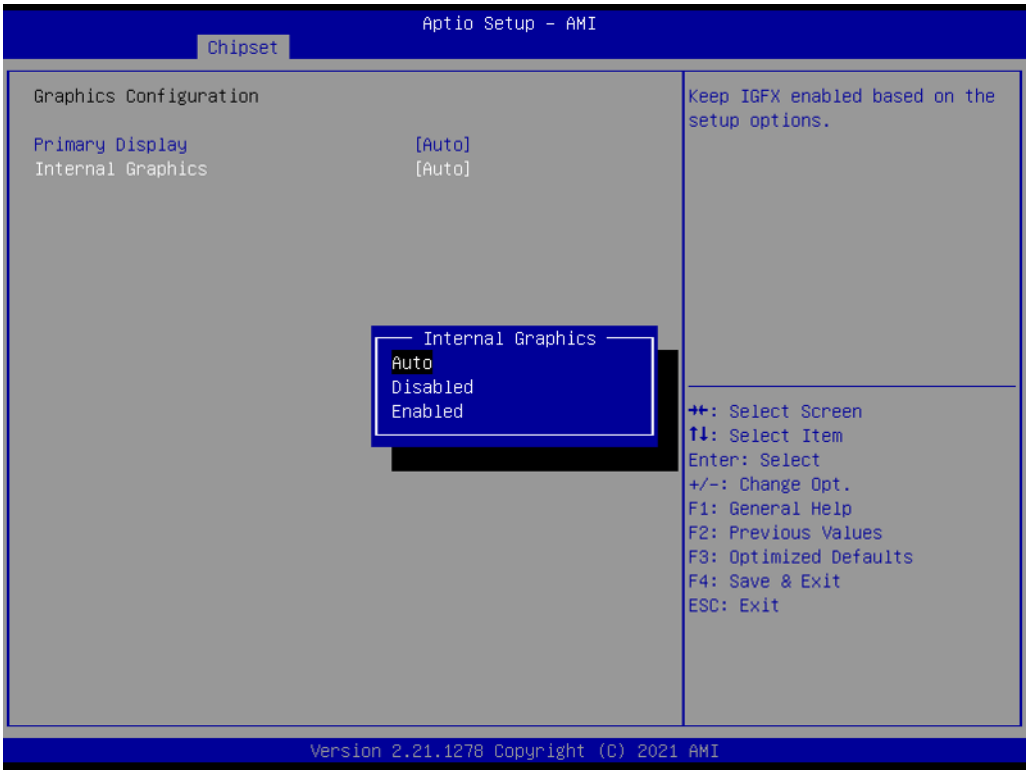


Figure 3.28 Internal Graphics Settings

- **Primary Display**
  Set Primary Display to "Auto", "IGFX", "PEG", "PCI", or "SG".
- **Primary Display**
  Select PEG0/PEG1/PEG2/PEG3 graphics device should be Primary PEG.

- **External Gfx Card Primary Display Configuration**
- **Primary PEG**
  Select Auto/PEG11/PEG12
- **Primary PCIE**
  Select Auto/PCIE1~PCIE19
- **Internal Graphics**
  Auto or Disable or Enable Internal Graphics.

3.2.3.4 PEG Port Configuration

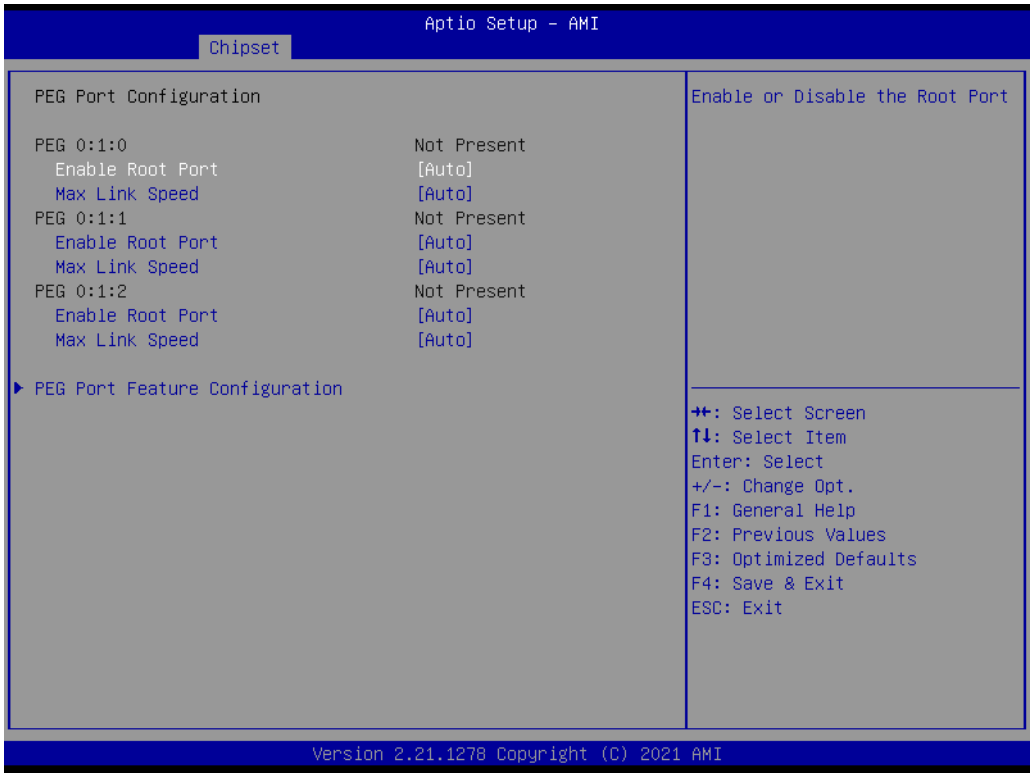


Figure 3.29 PEG Port Configuration

- **Enable Root Port**
  Enable or disable the root port
- **Max Link speed**
  Configure PEG 0:1:0 max speed
- **PEG Port Feature Configuration**
  - Detect Non-Compliance Device
    Detects non-compliance PCI Express device in PEG. If enabled, it will take more time during POST phase.

3.2.3.5 PCH-IO Configuration

Figure 3.30 PCH-IO Configuration

- **LAN1 Controller**
  Enable or Disable LAN1 controller.
- **LAN 1 Option-ROM**
  Enable or Disable LAN 1 boot option for legacy network devices.
- **LAN2 Controller**
  Enable or Disable LAN2 controller.
- **LAN 2 Option-ROM**
  Enable or Disable LAN 2 boot option for legacy network devices.
- **PCIE Wake**
  Enable or Disable PCIE to wake the system from S5.
- **PowerOn by Modem**
  "Enable and Disable" PowerOn by Modem
- **Restore AC Power Loss**
  Power off or Power on or Last State to restore AC Power Loss

3.2.3.6 PCI Express Configuration

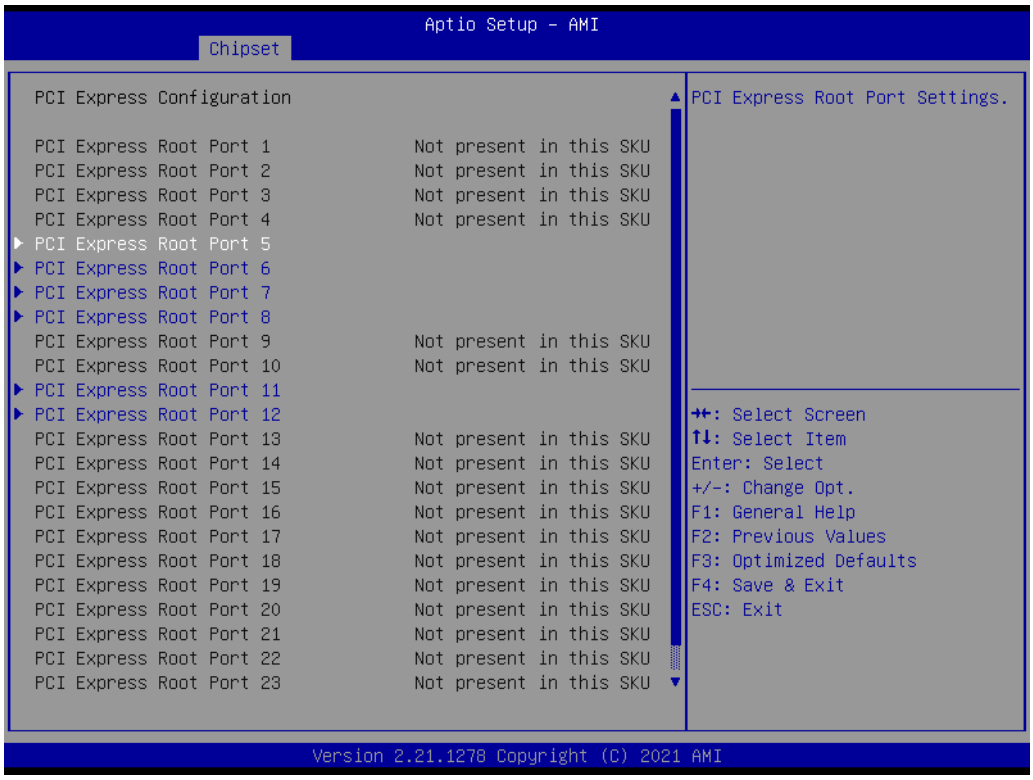


Figure 3.31 PCI Express Root Port Setting

- **PCI Express Root Port 1**
  Enable or Disable PCI Express Root Port.
- **PCIe Speed**
  Select "Auto, Gen1, Gen2, Gen3" for PCIe Speed

Note! *Please find below the corresponding board connectors for PCIe Root Port.*

PCI Express Root Port	MotherBoard Connector	Note
8	mPCIe slot (CN 16)	
22-25	M.2 key-M (2280) (CN15)	Only for TPC-B610W-A00A

3.2.3.7 SATA and RST Configuration

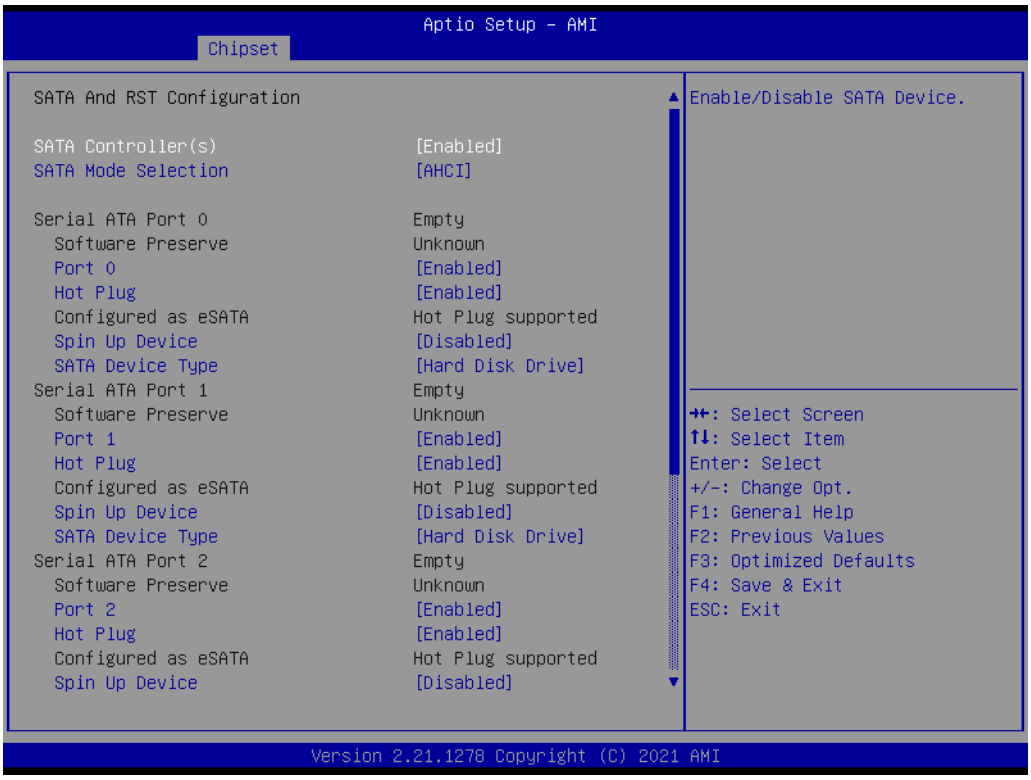


Figure 3.32 SATA Configuration

- **SATA Controller(s)**
  Enable or Disable SATA Controller
- **SATA Mode Selection**
  This can be configured as RAID or AHCI.
- **SATA Controller Speed**
  Indicates the maximum speed the SATA controller can support by selecting Default, Gen1, Gen2, Gen3.
- **Port 0~5**
  Enable or Disable SATA port 0~5.
- **Hot Plug**
  Enable or Disable SATA Hot-Plug
- **Spin up Device**
  Enable or Disable spin up device
- **SATA Device Type|**
  To identify the SATA that is connected to a Solid State or Hard Disk Drive.

3.2.3.8 USB Configuration

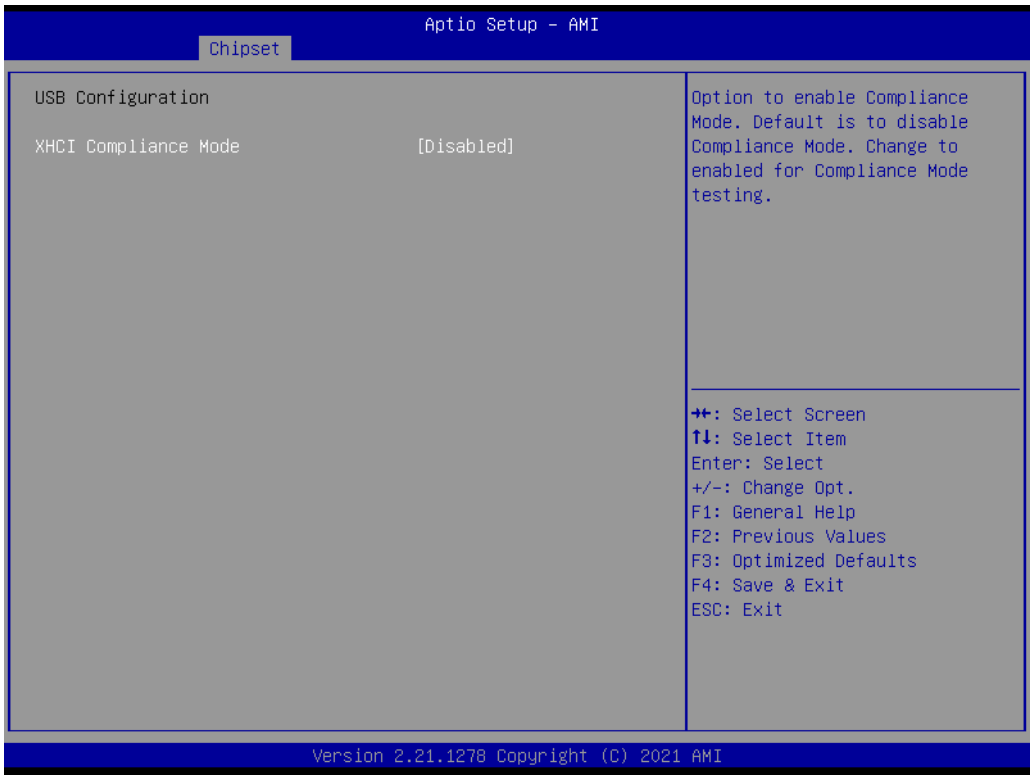


Figure 3.33 USB Configuration

- **XHCI Compliance mode**
  Option to "Enable or Disable" XHCI compliance mode. Default is to disable compliance mode.

3.2.3.9 Security Configuration

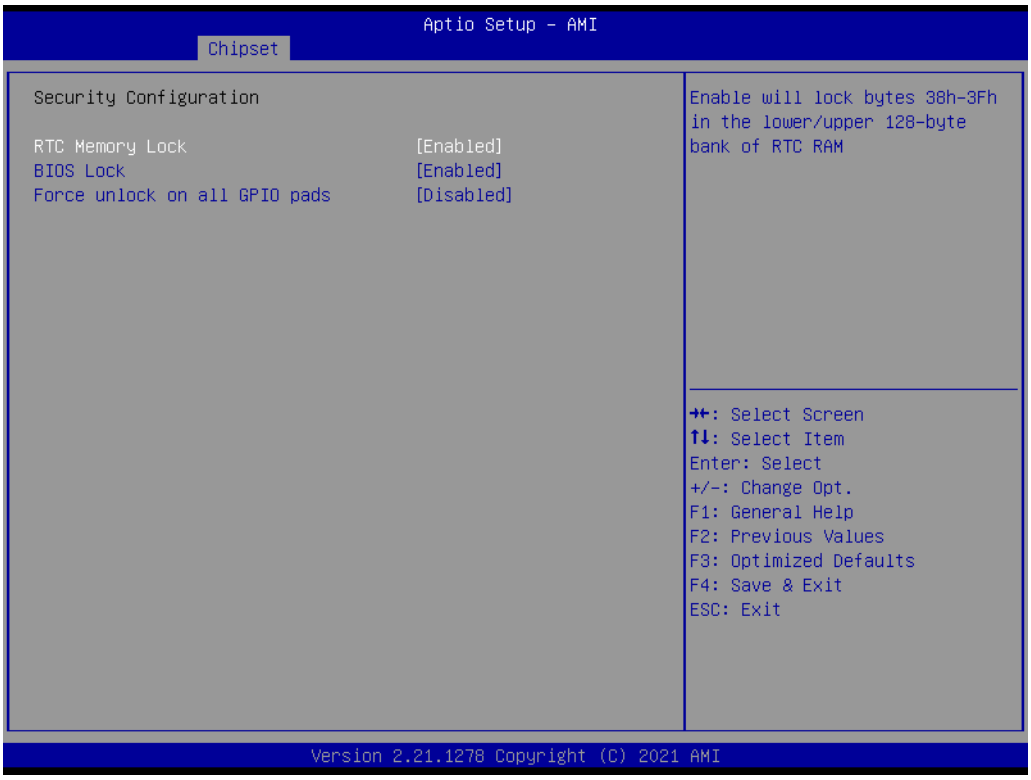


Figure 3.34 Security Configuration

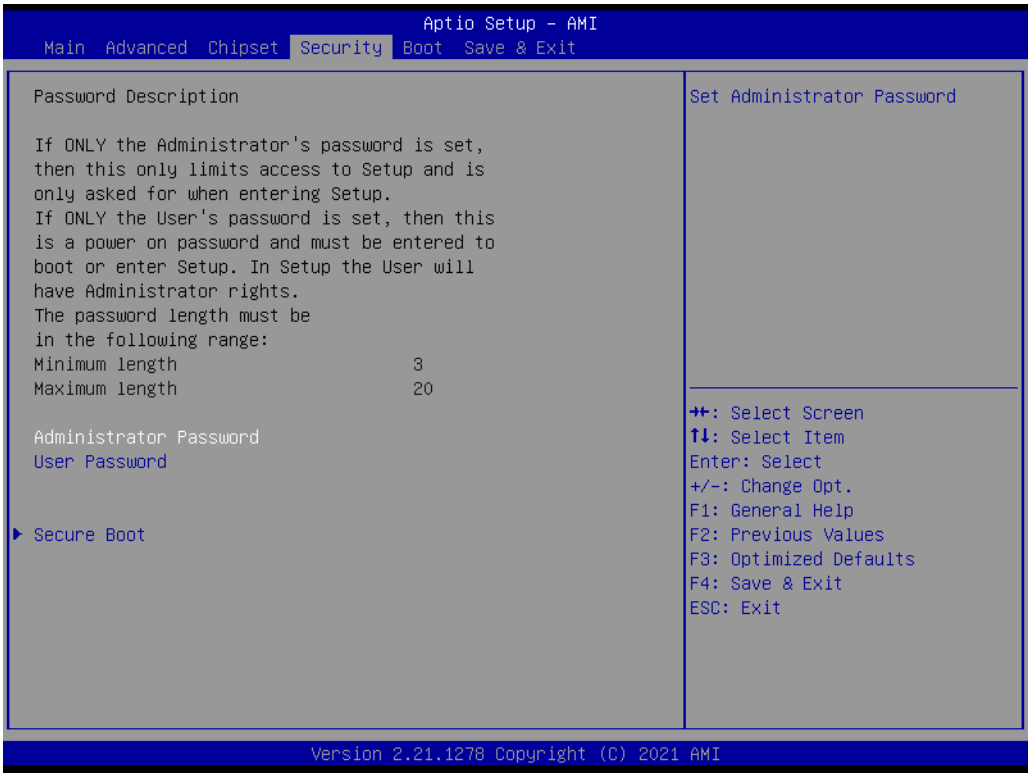
- **RTC Memory Lock**
  Enable will lock bytes 38h-3Fh in the lower/upper 128-byte bank of RTC RAM.
- **BIOS Lock**
  "Enable or Disable" the PCH BIOS Lock Enable feature. Required to be enabled to ensure SMM protection of flash.
- **Force unlock on all GPIO pads**
  If Enabled, BIOS will force all GPIO pads to be in an unlocked state.

3.2.3.10 HD Audio Configuration

Figure 3.35 HD Audio Configuration

- **HD Audio**
  Control detection of the HD-Audio device.
  Disable = HDA will be unconditionally disabled
  Enable=HDA will be unconditionally enabled

3.2.4 Security



Select Security Setup from the TPC-B610 Setup main BIOS setup menu. All Security Setup options, such as password protection is described in this section. To access the sub menu for the following items, select the item and press <Enter>.

Note! *If only the User's password is set, the User will have Administrator rights. To set Administrator password is strongly recommended if you have security concerns.*

3.2.4.1 Secure boot

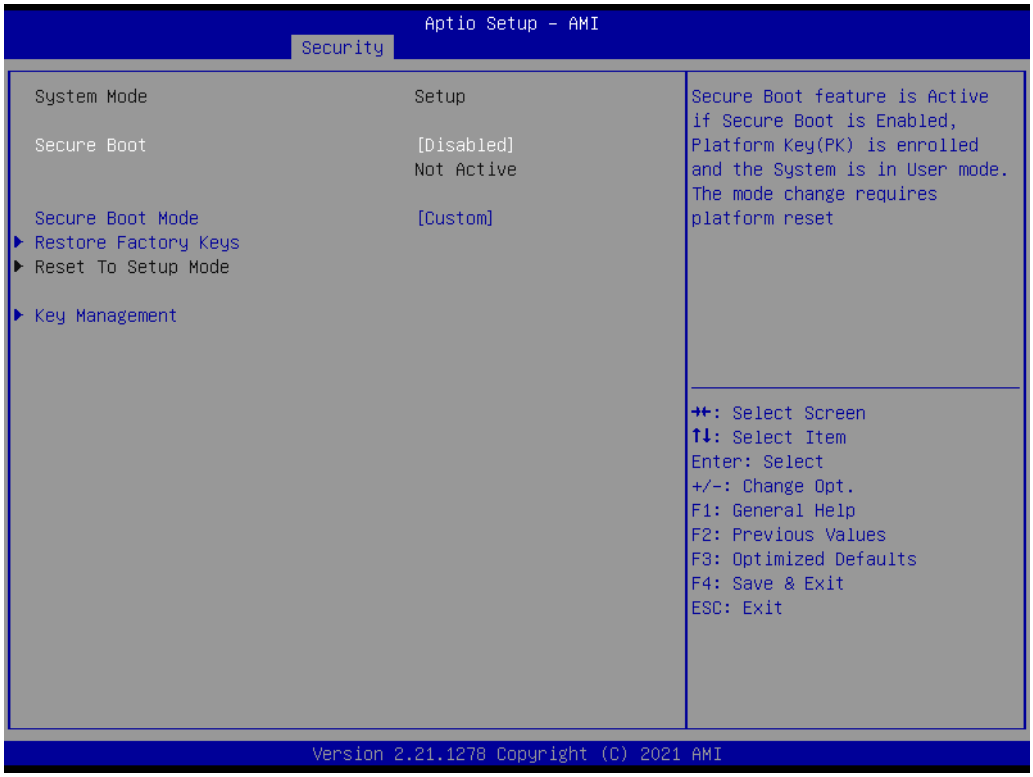


Figure 3.36 Secure Boot

3.2.5 Boot

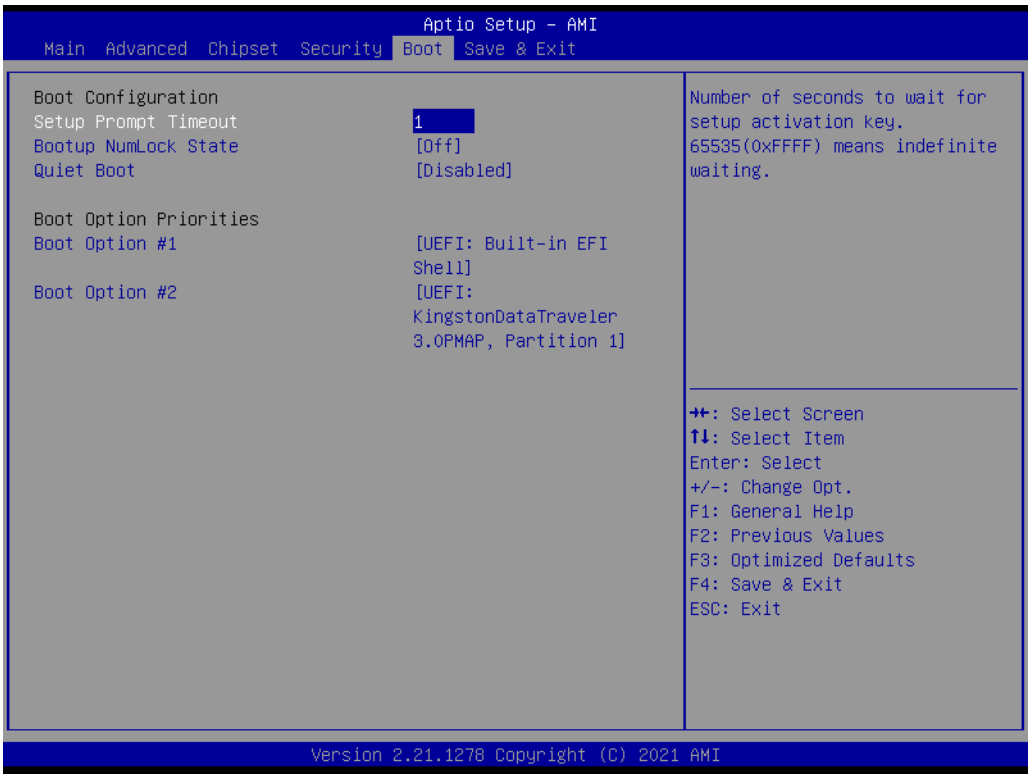


Figure 3.37 Boot

- **Setup Prompt Timeout**
  Use the <+> and <-> keys to adjust the number of seconds to wait for setup activation key.
- **Bootup NumLock State**
  "On or Off" power-on state for the NumLock.
- **Quiet Boot**
  Enable or Disable Quiet Boot option.
- **Boot Option Priorities**
  Sets the boot order.
- **Hard Drive BBS Priorities**
  Sets the order of the legacy devices on this group.

3.2.6 Save & Exit

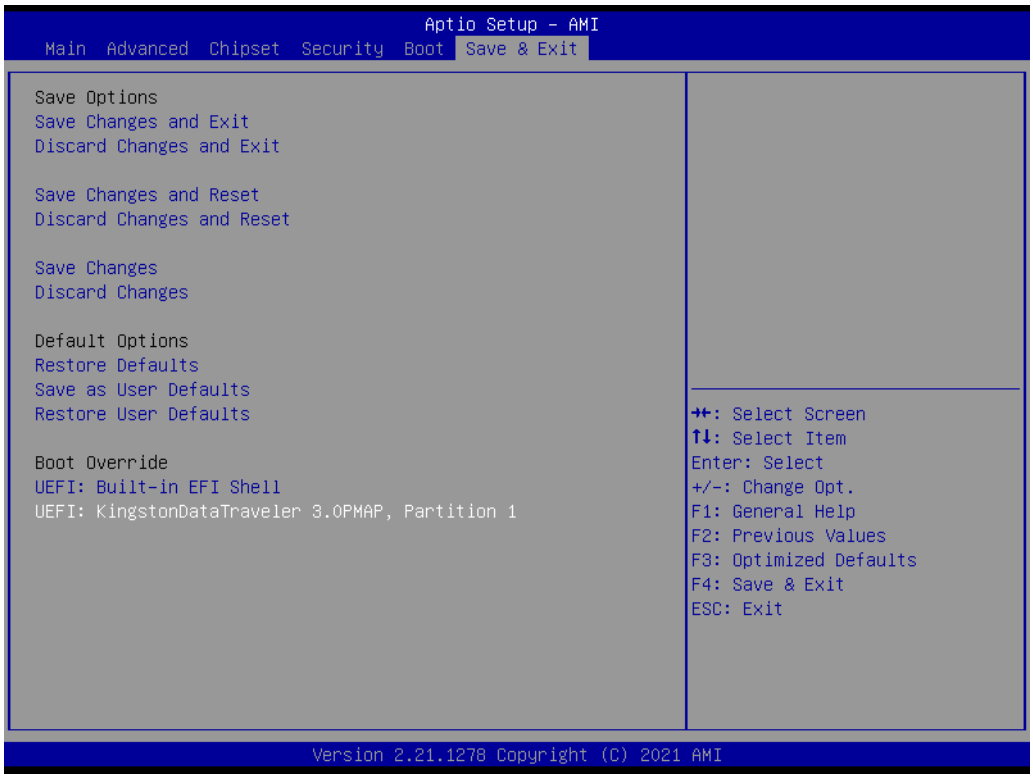


Figure 3.38 Save & Exit

- **Save Changes and Exit**
  When you complete system configuration, select this option to save your changes, exit BIOS setup and reboot the computer so the new system configuration parameters can take effect.
  1. Select Exit Saving Changes from the Exit menu and press <Enter>. The following message appears:
  Save Configuration Changes and Exit Now?
  [Yes] [No]
  2. Select Yes or No.
- **Discard changes and exit**
  Select this option to quit Setup without making any permanent changes to the system configuration.
  1. Select Exit Discarding Changes from the Exit menu and press <Enter>. The following message appears:
  Quit without saving?
  [Yes] [No]
  2. Select Yes to discard changes and exit.
  Discard Changes
  Select Discard Changes from the Exit menu and press <Enter>.

Appendix A

MB I/O Connector

A.1 Jumper, Dip switch and Connector location

A.1.1 Mother Board Placement

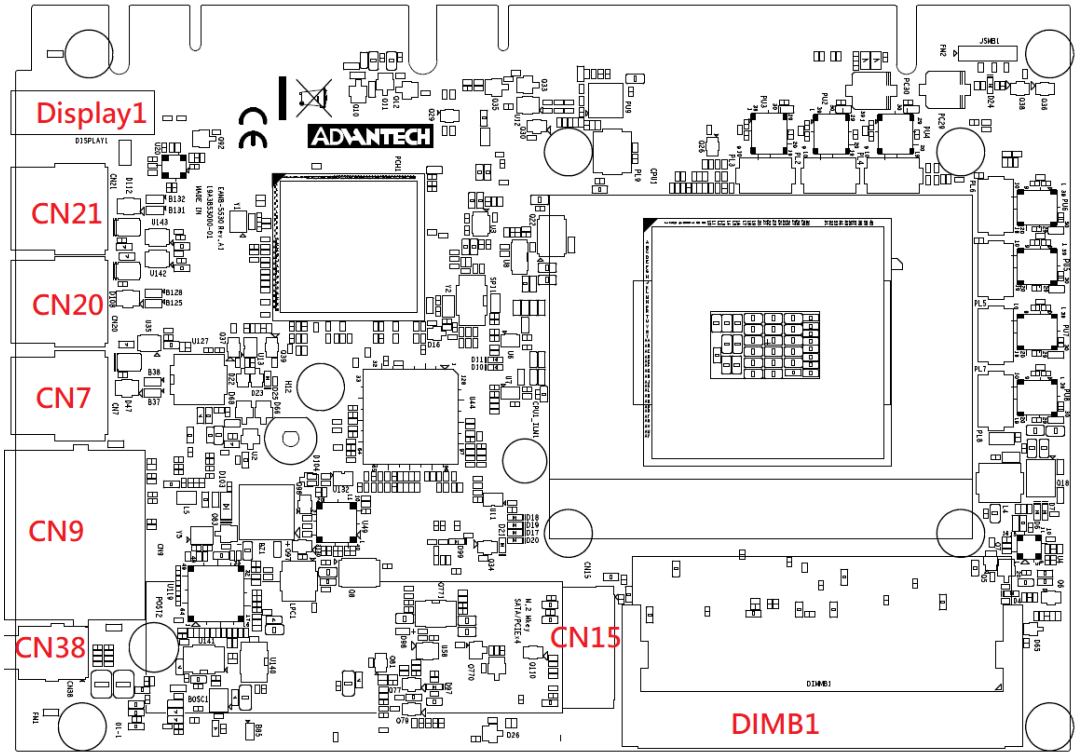


Figure A.1 Top View of Motherboard

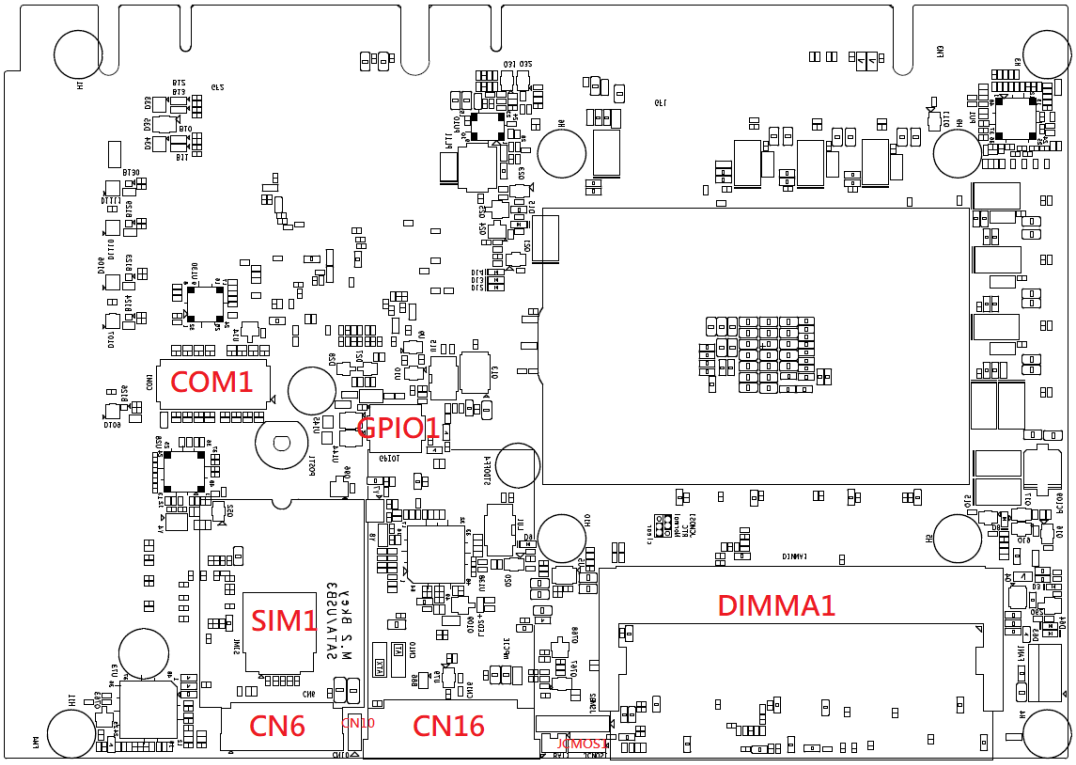


Figure A.2 Bottom View of Motherboard

Place	Function
JCMOS1	CMOS
SIM1	SIM slot
GPIO	GPIO port
Display1	Displayport
DIMMB1	Memory slot (channel 1)
DIMMA1	Memory slot (channel 2)
COM1	COM ports
CN9	LAN RJ45
CN7	USB 2.0/3.2 (Gen1)
CN6	M.2 key-B (3052/2242)
CN38	Audio jack
CN21	USB 3.2 (Gen1)
CN20	USB 3.2 (Gen1)
CN16	mPCIe slot
CN15	M.2 key-M (2280)
CN10	Power AT/ATX

Note! *Default Power AT/ATX setting: AT.*

A.2 Jumper setting and Description

A.2.1 CMOS Clear Function (JCMOS1)

Table A.1: CMOS Clear Function	
Description	This jumper is used to select CMOS Clear Enable/Disable
Default	(1-2)
(2-3)	Enable (Clear CMOS)
(1-2)	Disable

(1-2) Disable

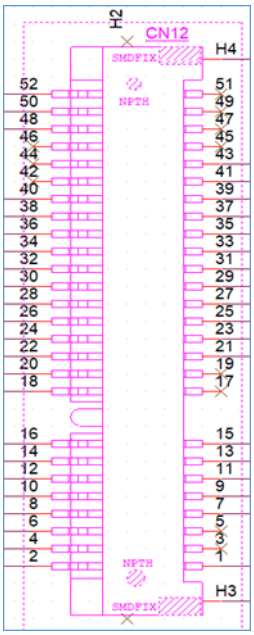
(2-3) Enable (Clear CMOS)

A.3 Connector Pin Definition

A.3.1 Mini PCIE slot (CN16)

Table A.2: Mini PCIE slot (CN16)

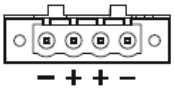
Pin	Signal	Description	Pin	Signal	Description
52	3.3V	3.3V power input	51	NC	floating
50	GND	system ground	49	NC	floating
48	1.5V	1.5V power input	47	NC	floating
46	NC	floating	45	NC	floating
44	NC	floating	43	Reserved	
42	NC	floating	41	3.3V	3.3V power input
40	GND	system ground	39	3.3V	3.3V power input
38	USB2_D+	USB2.0 data positive	37	GND	system ground
36	USB2_D-	USB2.0 data negative	35	GND	system ground
34	GND	system ground	33	PCIE_TX+	PCIE data transmit positive
32	SMBus_DATA	SMBus data	31	PCIE_TX-	PCIE data transmit negative
30	SMBus_CLK	SMBus clock	29	GND	system ground
28	1.5V	1.5V power input	27	GND	system ground
26	GND	system ground	25	PCIE_RX+	PCIE data receive positive
24	3.3V_AUX	3.3V standby power input	23	PCIE_RX-	PCIE data receive negative
22	PCIE_RESET#	mini PCIE device reset input	21	GND	system ground
20	WIFI_DISABLE#	mini PCIE wifi module disable input	19	NC	floating
18	GND	system ground	17	NC	floating
16	SIM_VPP	SIM card programing power input	15	GND	system ground
14	SIM_RESET	SIM card reset	13	PCIE_CLK+	PCIE clock output positive
12	SIM_CLK	SIM card clock	11	PCIE_CLK-	PCIE clock output negative
10	SIM_DATA	SIM card data	9	GND	system ground
8	SIM_VCC	SIM card 5V power input	7	PCIE_-CLKREQ#	device pcie clock request output
6	1.5V	1.5V power input	5	NC	floating
4	GND	system ground	3	NC	floating
2	3.3V	3.3V standby power input	1	PCIE_WAKE#	host wake up trigger output



A.3.2 Power-in connector

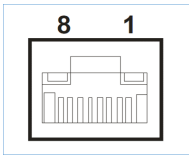
Table A.3: Power-in connector

Pin	Description
1	GND
2	24Vdc
3	24Vdc



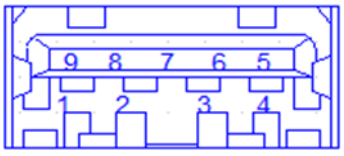
A.3.3 LAN RJ45 connector (CN9)

Table A.4: LAN RJ45 connector (CN9)		
Pin	Signal	Description
1	MDI0+	In BASE-T: Media-dependent interface[0]: 1000BASE-T: In MDI configuration, MDI[0]+/- corresponds to BI_DA+/-. In MDI-X configuration MDI[0]+/- corresponds to BI_DB+/-. 10BASE-T and 100BASE-TX: In MDI configuration, MDI[0]+/- is used for the transmit pair. In MDIX configuration, MDI[0]+/- is used for the receive pair.
2	MDI0-	
3	MDI1+	In BASE-T: Media-dependent interface[1]: 1000BASE-T: In MDI configuration, MDI[1]+/- corresponds to BI_DB+/-. In MDI-X configuration, MDI[1]+/- corresponds to BI_DA+/-. 10BASE-T and 100BASE-TX: In MDI configuration, MDI[1]+/- is used for the receive pair. In MDI-X configuration, MDI[1]+/- is used for the transmit pair
6	MDI1-	
4	MDI2+	In BASE-T: Media-dependent interface[3:2]: 1000BASE-T: In MDI and in MDI-X configuration, MDI[2]+/- corresponds to BI_DC+/- and MDI[3]+/- corresponds to BI_DD+/-. 100BASE-TX: Unused 10BASE-T: Unused
5	MDI2-	
7	MDI3+	
8	MDI3-	



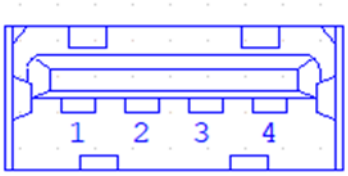
A.3.4 USB3.2 connector (CN7, CN20, CN21)

Table A.5: USB3.2 connector		
Pin	Signal	Description
1	VBUS	5V power output
2	USB2_D-	USB2.0 data negative
3	USB2_D+	USB2.0 data positive
4	GND	system ground
5	USB3_RX-	USB3.0 data receive negative
6	USB3_RX+	USB3.0 data receive positive
7	GND	system ground
8	USB3_TX-	USB3.0 data transmit negative
9	USB3_TX+	USB3.0 data transmit positive



A.3.5 USB 2.0 connector (CN7)

Table A.6: USB 2.0 connector		
Pin	Signal	Description
1	VBUS	5V power output
2	USB2_D-	USB2.0 data negative
3	USB2_D+	USB2.0 data positive
4	GND	system ground

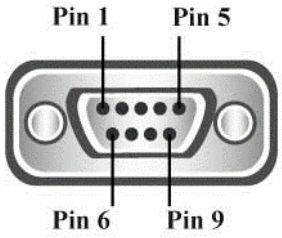


A.3.6 COM1 RS232/422/485 connector (COM1)

A.3.7 COM2 RS232/422/485 connector (COM2)

Pin	Signal for RS232	Description	Signal for RS422 / RS485	Description	Signal for RS485	Description
1	DCD#	data carrier detect	TX-	data transmit negative	D-	data positive
2	RX	data receiver	TX+	data transmit positive	D+	data negative
3	TX	data transmit	RX-	data receiver negative	-	-
4	DTR#	data terminal ready	RX+	data receiver positive	-	-
5	GND	system ground	GND	system ground	GND	system ground
6	DSR#	data set ready	-	-	-	-
7	RTS#	request to send	-	-	-	-
8	CTS#	clear to send	-	-	-	-
9	RI#	ring indicator	-	-	-	-

Legend: “-” = “no data”



A.3.8 M.2 (B-Key) Slot (CN6 PCIe/USB/SATA)

Table A.7: M.2 (B-Key) Slot (CN26 PCIe/USB/SATA)

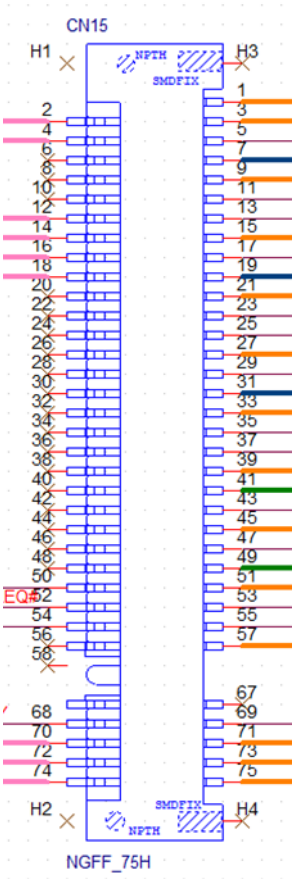
Pin	Signal	Pin	Signal
		75	CONFIG_2
74	3.3V/VBAT	73	VIO_CFG (I) or GND
72	3.3V/VBAT	71	GND
70	3.3V/VBAT	69	CONFIG_1
68	SUSCLK (O) (0/1.8V/3.3V)	67	RESET# (O) (0/1.8V)
66	SIM DETECT (O)	65	ANTCTL3 (I)(0/1.8V)
64	COEX_RXD (I) (0/1.8V)	63	ANTCTL2 (I)(0/1.8V)
62	COEX_TXD (O) (0/1.8V)	61	ANTCTL1 (I)(0/1.8V)
60	COEX3 (I/O) (0/1.8V)	59	ANTCTL0 (I)(0/1.8V)
58	NC	57	GND
56	NC	55	REFCLKp
54	PEWAKE# (I/O) (0/1.8V/3.3V)	53	REFCLKn
52	CLKREQ# (I/O) (0/1.8V/3.3V)	51	GND
50	PERST# (O) (0/1.8V/3.3V)	49	PETp0/SATA-A-
48	GPIO_4 (I/O) (0/1.8V)	47	PETn0/SATA-A-
46	GPIO_3 (I/O) (0/1.8V)	45	GND
44	GPIO_2 (I/O)/ALERT# (I)/(0/1.8V)	43	PETp0/SATA-B-
42	GPIO_1 (I/O)/SMB_DATA (I/O)/(0/1.8V)	41	PETn0/SATA-B+
40	GPIO_0 (I/O)/SMB_CLK (I/O)/(0/1.8V)	39	GND
38	DEVSLP (O)	37	PERp1/USB3.1-Tx+/SSIC-TxP
36	UIM_PWR (I)	35	PERn1/USB3.1-Tx-/SSIC-TxN
34	UIM_DATA (I/O)	33	GND
32	UIM_CLK (I)	31	PERp1/USB3.1-Rx+/SSIC-RxP
30	UIM_RESET (I)	29	PERn1/USB3.1-Rx-/SSIC-RxN
28	PLA_S2# (I) GPIO_8 (I/O) (0/1.8V)	27	GND
26	GPIO_10 (I/O)(0/1.8V)	25	DPR (O) (0/1.8V)
24	GPIO_7 (I/O)(0/1.8V)	23	GPIO_11 (I/O) (0/1.8V)
22	GPIO_6 (I/O)(0/1.8V)	21	CONFIG_0
20	GPIO_ (I/O)(0/1.8V)		Connector key B
	Connector key B		Connector key B
	Connector key B		Connector key B
	Connector key B		Connector key B
	Connector key B	11	GND
10	GPIO_9/DAS/DSS (I/O)/ LED_1# (I) (0/3.3V)	9	USB_D-
8	W_DISABLE1# (O) (0/1.8V/3.3V)	7	USB_D+
6	FULL_CARD_POWER_OFF# (O) (0/18.V or 3.3V)	5	GND
4	3.3V	3	GND
2	3.3V	1	CONFIG_3

A.3.9 M.2 (M-Key) Slot (CN15 NVMe/SATA Storage)

Table A.8: M.2 (M-Key) Slot (CN17 NVMe/SATA Storage)

Pin	Signal	Pin	Signal
		75	GND
74	3.3V	73	VIO_CFG(I) or GND
72	3.3V	71	GND
70	3.3V	69	PEDET = GND (SATA), PEDET = NC (
68	SUSCLK (O) (0/1.8V/3.3V)	67	NC
	Connector key M		Connector key M
	Connector key M		Connector key M
	Connector key M		Connector key M
	Connector key M		Connector key M
58	NC	57	GND
56	NC	55	REFCLKp
54	PEWAKE# (I/O) (0/1.8V/3.3V) or NC	53	REFCLKn
52	CLKREQ# (I/O) (0/1.8V/3.3V) or NC	51	GND
50	PERST# (O) (0/1.8V/3.3V) or NC	49	PETp0/SATA-A+
48	NC	47	PETn0/SATA-A-
46	NC	45	GND

44	ALERT# (I) (0/1.8V)	43	PETp0/SATA-B-
42	SMB_DATA (I/O)(0/1.8V)	41	PETn0/SATA-B+
40	SMB_CLK (I/O) (0/1.8V)	39	GND
38	DEVSLP (O) (SATA) or GND (USB)	37	PETp1
36	USB_D- or NC	35	PETn1
34	USB_D+ or NC	33	GND
32	NC or GND (USB)	31	PERp1
30	PLA_S3# (I) (0/1.8V/3.3V) or NC	29	PERn1
28	NC	27	GND
26	NC	25	PETp2
24	NC	23	PETn2
22	VIO 1.8V or NC	21	GND
20	NC	19	PERp2
18	3.3V	17	PERn2
16	3.3V	15	GND
14	3.3V	13	PETp3
12	3.3V	11	PETn3
10	DAS/DSS (I/O)/ LED_1# (I) (0/3.3V)	9	GND
8	PLN# (O)(0/1.8/3.3V) or NC	7	PERp3
6	PWRDIS (O)(0/1.8/3.3V) or NC	5	PERn3
4	3.3V	3	GND
2	3.3V	1	GND



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All product specifications are subject to change without notice.