KIWI330

Intel® Atom® Alder Lake N Processor 1.6” Board

User’s Manual

USER’S MANUAL

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CAUTION

If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

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ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

Trademarks Acknowledgments

Table of Contents

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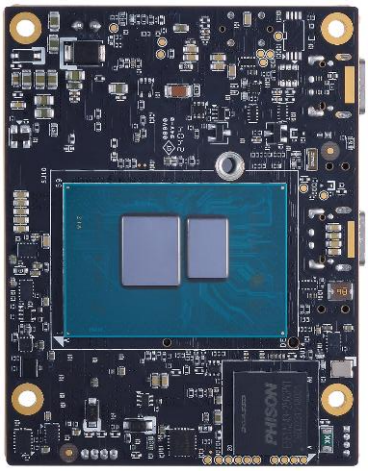
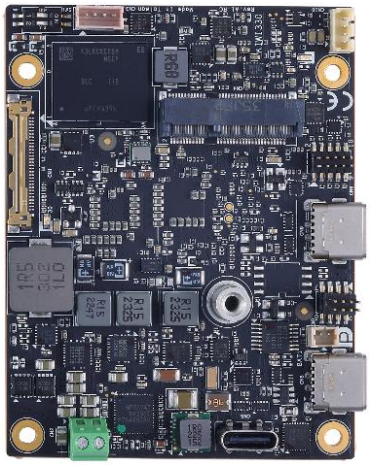
Section 1
Introduction





The KIWI330 is designed for Edge Computing and IoT applications, delivering powerful performance in an ultra-compact form. Equipped with an Intel Atom® Alder Lake N processor, up to 4GB LPDDR5 memory, and 64GB NVMe SSD, it ensures high efficiency and fast data processing.

The KIWI330 is equipped with Alder Lake CPU on board, it also features 4GB LPDDR5 RAM and 64GB NVMe on board. With M.2 Key E for wireless expansion, eDP and Type C-DP support for display connectivity, it can be expanded into a MIO board required by various scenarios through the Type-C connector. It seamlessly integrates into various applications. Compatible with Linux and Windows, KIWI330 is the ideal solution for intelligent, space-constrained deployments.

1.1 Features

- Ultra-compact 1.6-inch embedded board
- Intel Atom® Alder Lake N processor onboard
- 4GB LPDDR5 memory onboard
- 64GB NVMe SSD storage onboard
- M.2 2230 Key E socket support
- eDP display support
- 2 USB 3.2 (Horizontal Type-C), 1 USB 3.2 (Vertical Type-C)
- Compatible with Linux and Windows

1.2 Specifications

- **CPU**
  - Intel® Atom® Alder Lake N dual core processor (1.0GHz)
- **System Memory**
  - Onboard 4GB LPDDR5
- **Storage**
  - Onboard NVMe 64GB (PCIe Gen3 x2)
- **BIOS**
  - AMI UEFI BIOS
  - 256Mbit SPI Flash
- **Watchdog Timer**
  - 255 levels, 1 to 255 secs
- **Expansion Interface**
  - One M.2 2230 Key E (PCIE 3.0 x2/USB 2.0)
  - 8-pin DIO
- **Display**
  - Intel UHD Graphic, shared system memory
  - One eDP (Resolution up to 1920x1080)
  - One Type-C DP Alt mode
- **USB Interface**
  - **Horizontal**
    1 x USB 3.2 Gen2 Type-C (2 x USB 3.2 Gen2 + 2 x USB 2.0 + 5V/3A + DisplayPort)
    1 x USB 3.2 Gen2 Type-C (2 x USB 3.2 Gen2 + 2 x USB 2.0 + 5V/3A)
  - **Vertical**
    1 x USB 3.2 Gen2 Type-C (2 x USB 3.2 Gen2+ 2 x USB 2.0 + 5V/3A)
  - **Internal**
    1 x USB 2.0 header (1 x 4-pin wafer)
- **Dimension**
  - 72 mm x 56 mm
- **Thermal Solution**
  - Cooler
- **Operating Temperature**
  - 0°C~60°C
- **Operating Humidity**
  - 10% to 95% relative humidity, non-condensing
- **Power Input**
  - 2-pin phoenix type
  - 12V DC/5A

- **Power Management**
  - ACPI (Advanced Configuration and Power Interface)

- **Form Factor**
  - 1.6" form factor

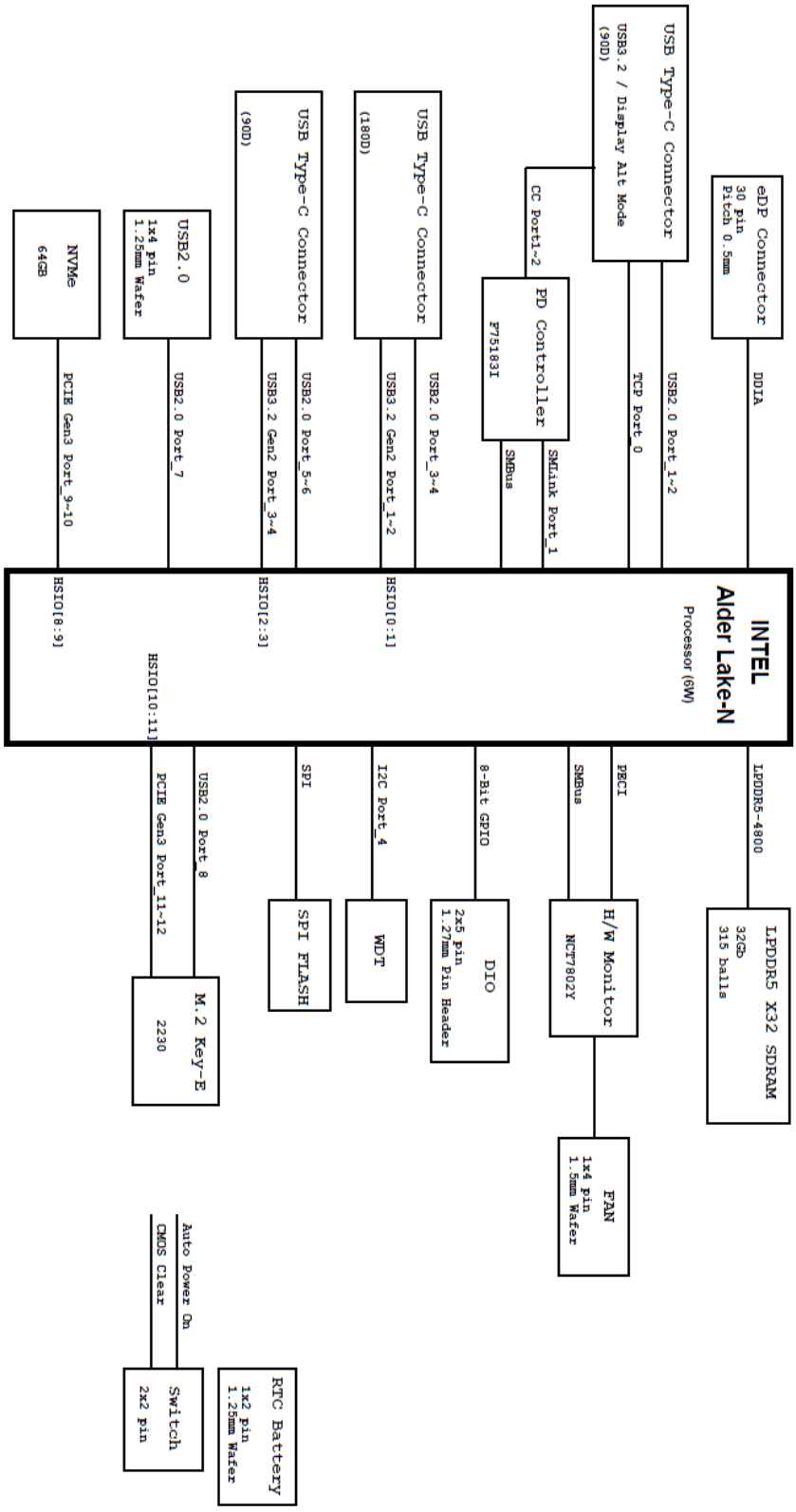
Note

All specifications and images are subject to change without notice.

1.3 Utilities

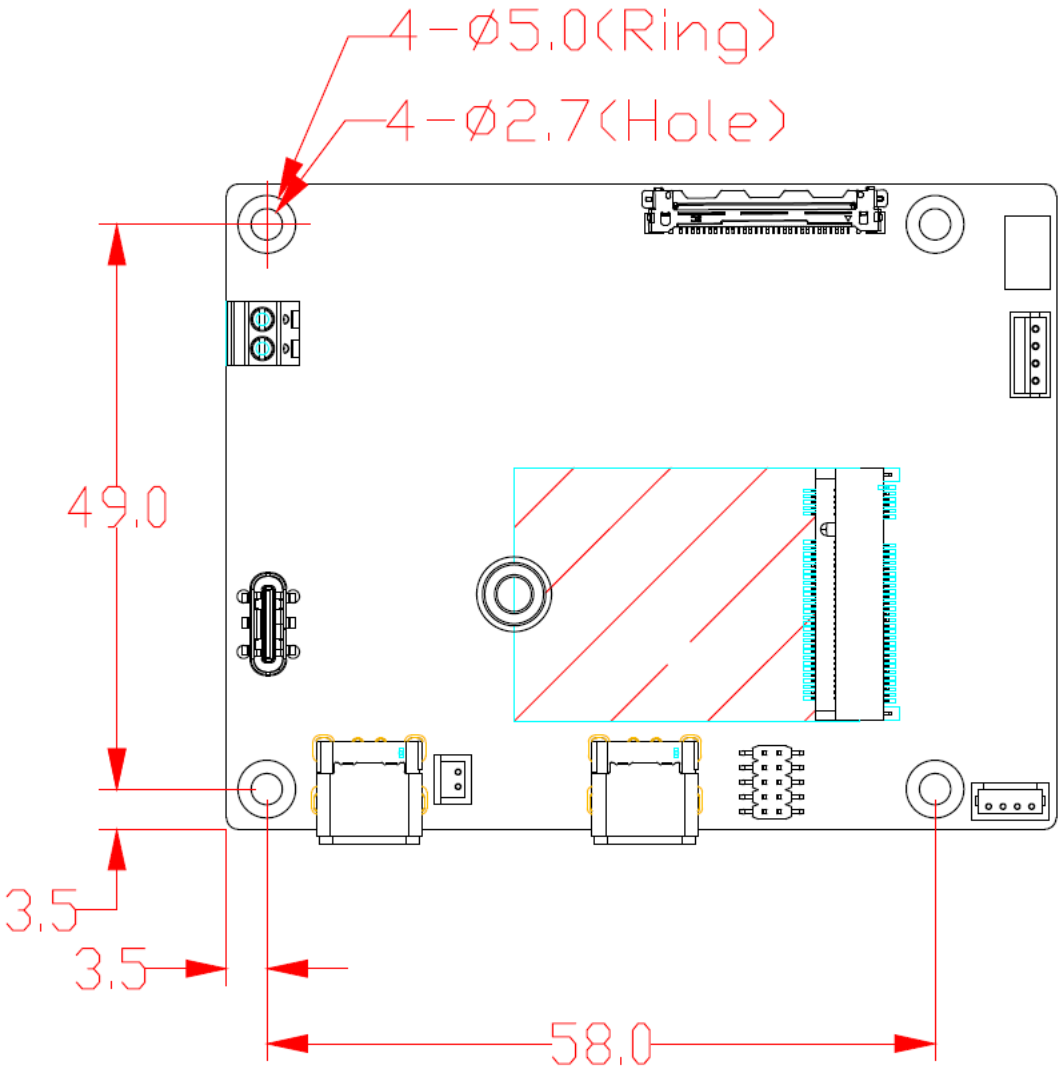
- Chipset driver
- Graphic driver
- ME driver
- Serial IO driver

1.4 Block Diagram

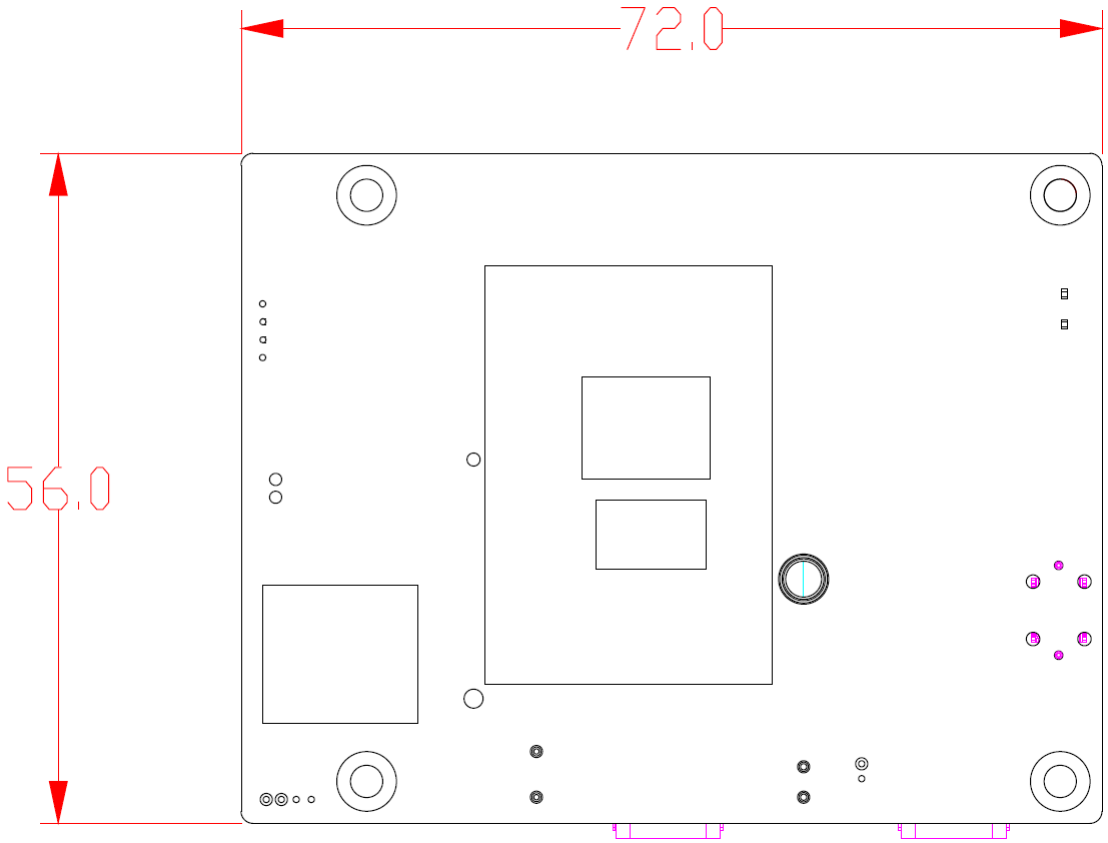


Section 2
Board and Pin Assignments

2.1 Board Dimensions and Fixing Holes

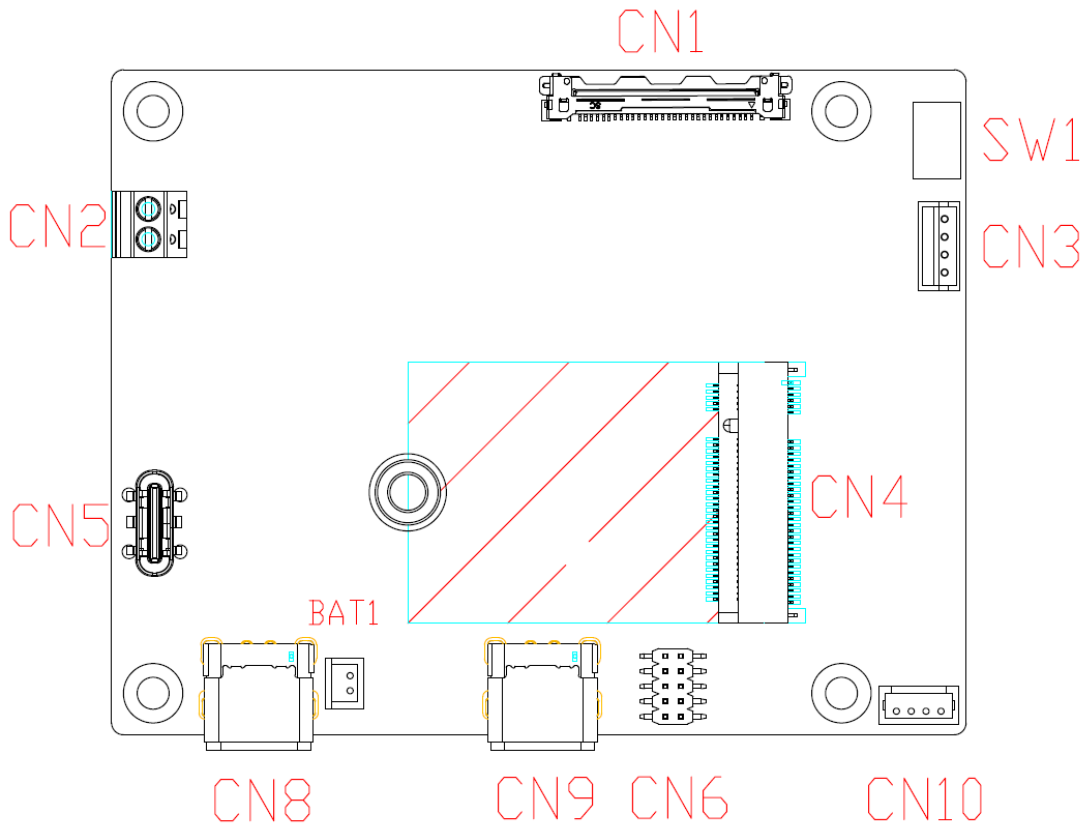


Top View

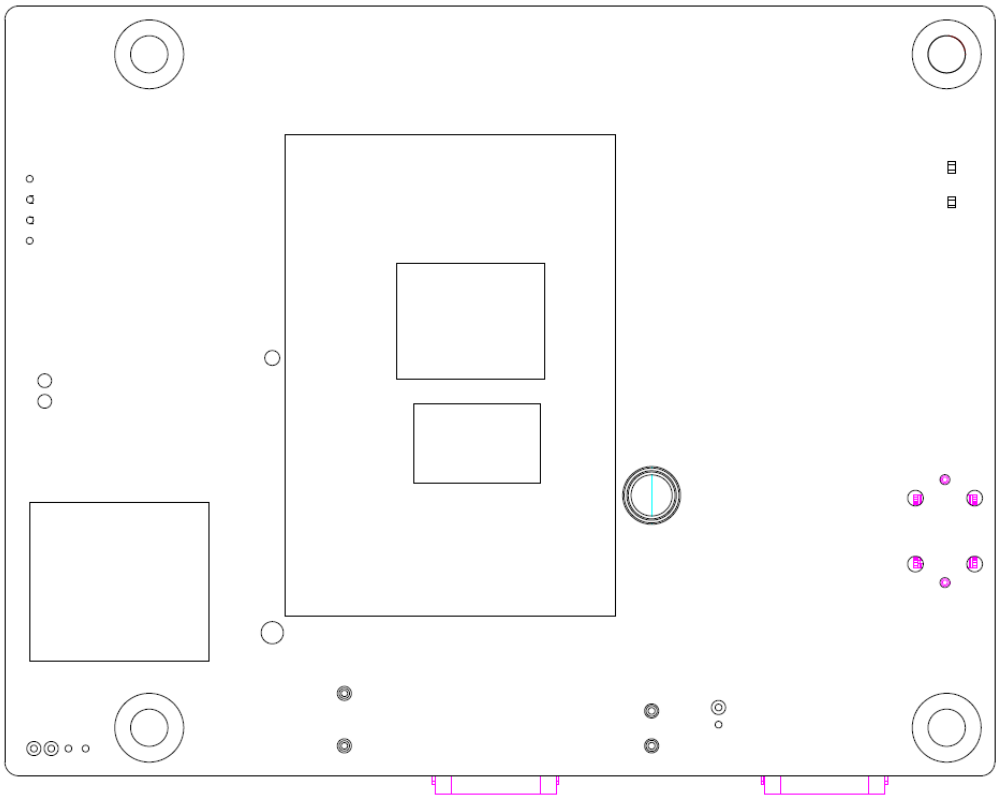


Bottom View

2.2 Board Layout



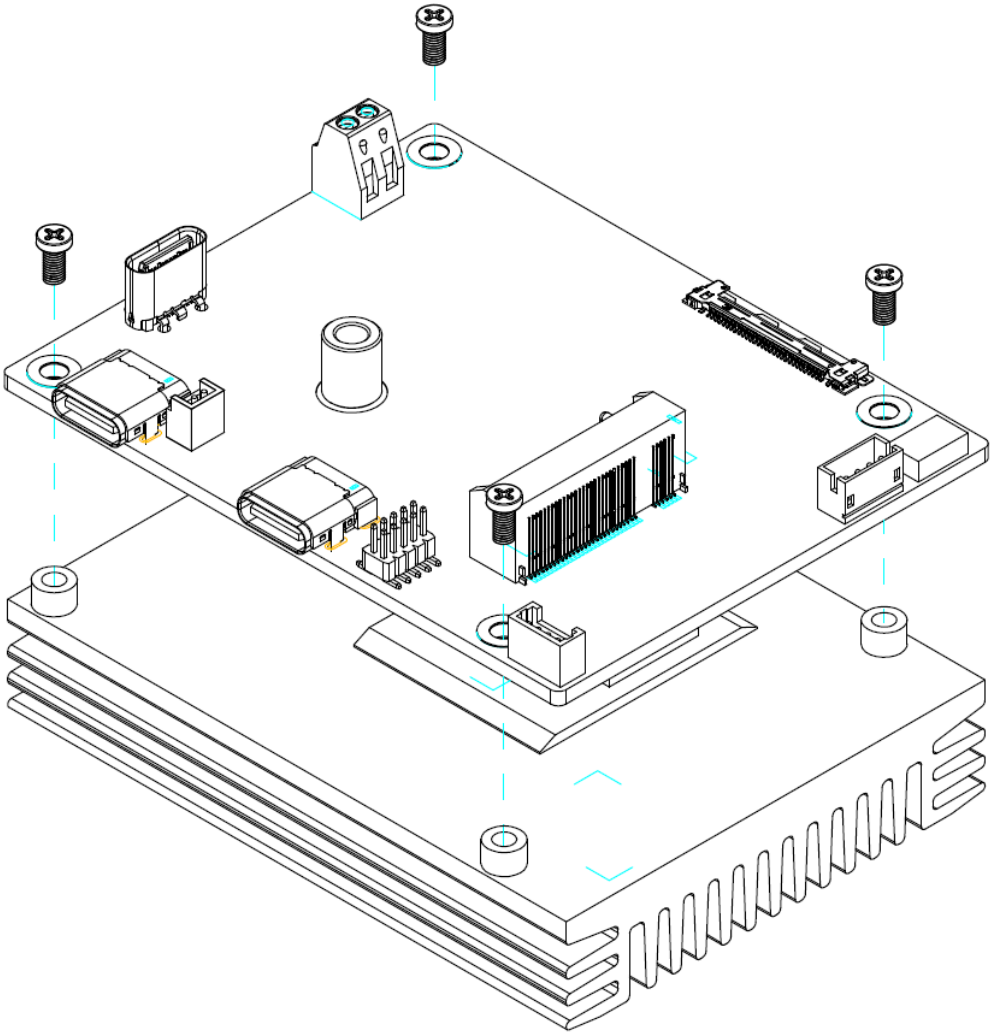
Top View

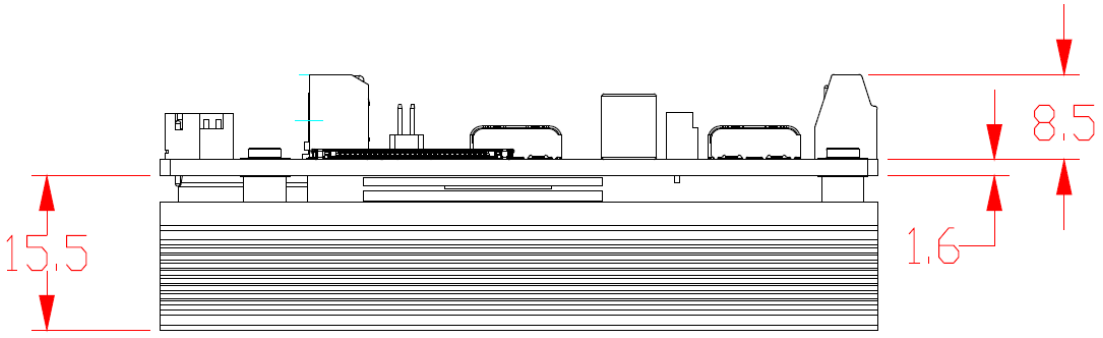


Bottom View

2.3 Assembly Drawing

For thermal dissipation, a heatsink enables the KIWI330's components to dissipate heat efficiently. All heat generating components are thermally conducted to the heatsink in order to avoid hot spots. Images below illustrate how to install the thermal solution on KIWI330.





2.4 Switch Settings

Properly configure switch setting on the KIWI330 to meet your application purpose. Below you can find a summary table of onboard default settings.

Note

Once the default switch setting needs to be changed, please do it under power-off condition.

Switch	Description	Setting
SW1	Auto Power On Default: Enable	SW1-1 ON
	Clear CMOS Default: Normal Operation	SW1-2 OFF

2.4.1 Auto Power On and Clear CMOS (SW1)

If dip1 of SW1 (SW1-1) is set to ON position, the system will be automatically power on without pressing soft power button. If set to OFF position, the power must be turned off and then turned on again to power on the system.

The dip2 of SW1 (SW1-2) is for clearing the Real Time Clock (RTC) RAM in CMOS. Flip SW1-2 to ON position for 5 seconds then flip it back to OFF position. Doing this procedure can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data.

Function	Setting
Disable auto power on	SW1-1 OFF
Enable auto power on (Default)	SW1-1 ON
Normal Operation (Default)	SW1-2 OFF
Restore BIOS optimal defaults	SW1-2 ON

2.5 Connectors

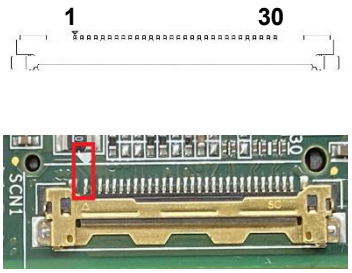
Signals go to other parts of the system through connectors. Loose or improper connection might cause problems, please make sure all connectors are properly and firmly connected. Here is a summary table of connectors on the hardware.

Connector	Description
CN1	eDP Connector
CN2	DC-IN Power Input Connector
CN3	4-pin Fan Wafer Connector
CN4	M.2 Key E Connector
CN5	USB 3.2 Gen2 Type C Vertical Connector
CN6	Digital I/O Pin Header
CN8	ALT Mode Type C Connector
CN9	USB 3.2 Gen2 Type C Horizontal Connector
CN10	USB 2.0 Wafer Connector

2.5.1 eDP Connector (CN1)

The embedded DisplayPort (eDP) interface is available through 30-pin connector (IPEX-20453-030T-01), which is compliant with I-PEX-CABLINE II HT1 20143.

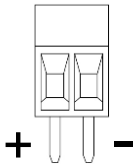
Pin	Signal	Pin	Signal
1	NC	2	GND
3	+12V_EDP_BKLT	4	NC
5	+12V_EDP_BKLT	6	eDP_VCCM
7	+12V_EDP_BKLT	8	eDP_VCCM
9	+12V_EDP_BKLT	10	GND
11	NC	12	eDP_AUX_DN
13	NC	14	eDP_AUX_DP
15	eDP_BKLT_CTL	16	GND
17	eDP_BKLT_EN	18	eDP_TX0_P
19	GND	20	eDP_TX0_N
21	GND	22	GND
23	GND	24	eDP_TX1_P
25	GND	26	eDP_TX1_N
27	eDP_HPD#	28	GND
29	GND	30	NC



2.5.2 DC-IN Power Input Connector (CN2)

This is a 2-pin DC-IN power input connector.

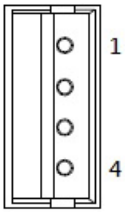
Pin	Signal
1	+12V
2	GND



2.5.3 Fan Wafer Connector (CN3)

This is a 4-pin connector for fan interface. You can find fan speed option within BIOS Setup Utility if fan is installed. For further information, see BIOS Setup Utility: Advanced\HW Monitor\PC Health Status in section 4.4.

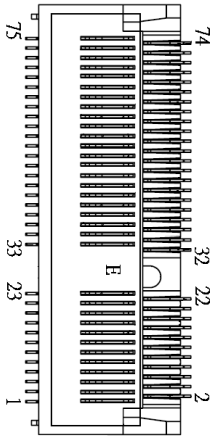
Pin	Signal
1	GND
2	+12V
3	FAN TACH
4	FAN CTRL



2.5.4 M.2 Key E Connector (CN4)

The board comes with a M.2 2230 Key E connector. It is suggested to install the M.2 wireless module via PCIe x1 and USB 2.0 with 22mm width and 30mm length.

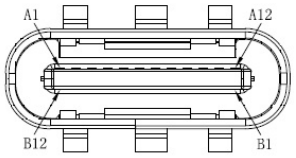
Pin	Signal	Pin	Signal
1	GND	2	+3.3V
3	USB2_P8_D+	4	+3.3V
5	USB2_P8_D-	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	NC	24	**KEY E**
25	**KEY E**	26	
27		28	
29		30	
31		32	NC
33	GND	34	NC
35	PCIE_TX11_P	36	NC
37	PCIE_TX11_N	38	NC
39	GND	40	NC
41	PCIE_RX11_P	42	NC
43	PCIE_RX11_N	44	NC
45	GND	46	NC
47	REF_CLK2_P	48	NC
49	REF_CLK2_N	50	SUSCLK
51	GND	52	PERST#
53	NC	54	W_DISABLE2#
55	PEWAKE#	56	W_DISABLE1#
57	GND	58	NC
59	PCIE_TX12_P	60	NC
61	PCIE_TX12_N	62	NC
63	GND	64	NC
65	PCIE_RX12_P	66	NC
67	PCIE_RX12_N	68	NC
69	GND	70	NC
71	REF_CLK3_P	72	+3.3V
73	REF_CLK3_N	74	+3.3V
75	GND		



2.5.5 USB 3.2 Gen2 Type C Vertical Connector (CN5)

The board comes with a USB 3.2 Gen 2 Type-C port, which is compliant with USB 3.2 Gen2 (10 Gbps) and mounted in a vertical orientation on the circuit board. You can connect expansion MIO modules using this Type-C connector.

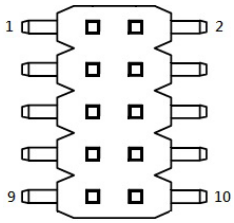
Pin	Signal	Pin	Signal
A1	GND	B1	GND
A2	USB32_P1_TXP	B2	USB32_P2_TXP
A3	USB32_P1_TXN	B3	USB32_P2_TXN
A4	USB_VCC (+5VA)	B4	USB_VCC (+5VA)
A5	NC	B5	NC
A6	USB2_P3_P	B6	USB2_P4_P
A7	USB2_P3_N	B7	USB2_P4_N
A8	NC	B8	NC
A9	USB_VCC (+5VA)	B9	USB_VCC (+5VA)
A10	USB32_P2_RXN	B10	USB32_P1_RXN
A11	USB32_P2_RXP	B11	USB32_P1_RXP
A12	GND	B12	GND



2.5.6 Digital I/O Pin Header (CN6)

The board comes with a 2x5-pin header for 8-bit digital I/O interface.

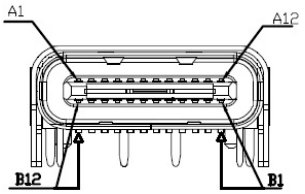
Pin	Signal	Pin	Signal
1	DIO1	2	DIO8
3	DIO2	4	DIO7
5	DIO3	6	DIO6
7	DIO4	8	DIO5
9	+3.3V	10	GND



2.5.7 ALT Mode Type C Connector (CN8)

The board comes with a USB Type-C connector that supports Alternate Mode (ALT Mode), enabling the transmission of non-USB signals such as DisplayPort, while also supporting high-speed data transfer and power delivery.

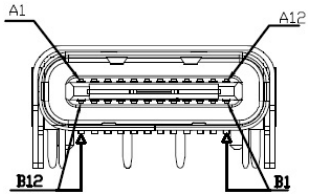
Pin	Signal	Pin	Signal
A1	GND	B1	GND
A2	TCP0_TX0_P	B2	TCP0_TX1_P
A3	TCP0_TX0_N	B3	TCP0_TX1_N
A4	VCC (+5VA)	B4	VCC (+5VA)
A5	TCP0_CC1	B5	TCP0_CC2
A6	USB2_P1_P	B6	USB2_P2_P
A7	USB2_P1_N	B7	USB2_P2_N
A8	TCP_SBU1	B8	TCP0_SBU2
A9	VCC (+5VA)	B9	VCC (+5VA)
A10	TCP0_TXRX1_N	B10	TCP0_TXRX0_N
A11	TCP0_TXRX1_P	B11	TCP0_TXRX0_P
A12	GND	B12	GND



2.5.8 USB 3.2 Gen2 Type C Horizontal Connector (CN9)

The board comes with a USB 3.2 Gen 2 Type-C port, which is compliant with USB 3.2 Gen2 (10 Gbps) and mounted in a horizontal orientation on the circuit board.

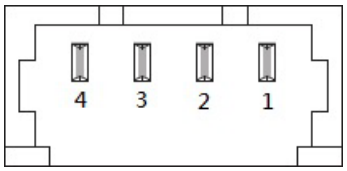
Pin	Signal	Pin	Signal
A1	GND	B1	GND
A2	USB32_P3_TXP	B2	USB32_P4_TXP
A3	USB32_P3_TXN	B3	USB32_P4_TXN
A4	USB_VCC (+5VA)	B4	USB_VCC (+5VA)
A5	NC	B5	NC
A6	USB2_P5_P	B6	USB2_P6_P
A7	USB2_P5_N	B7	USB2_P6_N
A8	NC	B8	NC
A9	USB_VCC (+5VA)	B9	USB_VCC (+5VA)
A10	USB32_P4_RXN	B10	USB32_P3_RXN
A11	USB32_P4_RXP	B11	USB32_P3_RXP
A12	GND	B12	GND



2.5.9 USB 2.0 Wafer Connector (CN10)

This is a 4-pin wafer connector for installing versatile USB 2.0-compliant interface peripherals, supporting data transfer speeds of up to 480 Mbps. Note that we also offer a USB wired cable (PN：594P8802810E). If you wish to purchase it, please contact your sales representative.

Pin	Signal
1	USB_PWR (+5VA)
2	USB2_P7_P
3	USB2_P7_N
4	USB_GND



Section 3
Hardware Description

3.1 Microprocessors

The KIWI330 supports Alder Lake N® processor which enables your system to operate under Windows® 11/10 and Linux environments. The system performance depends on the microprocessor. Make sure all the correct settings are arranged for your installed microprocessor to prevent the CPU from damage.

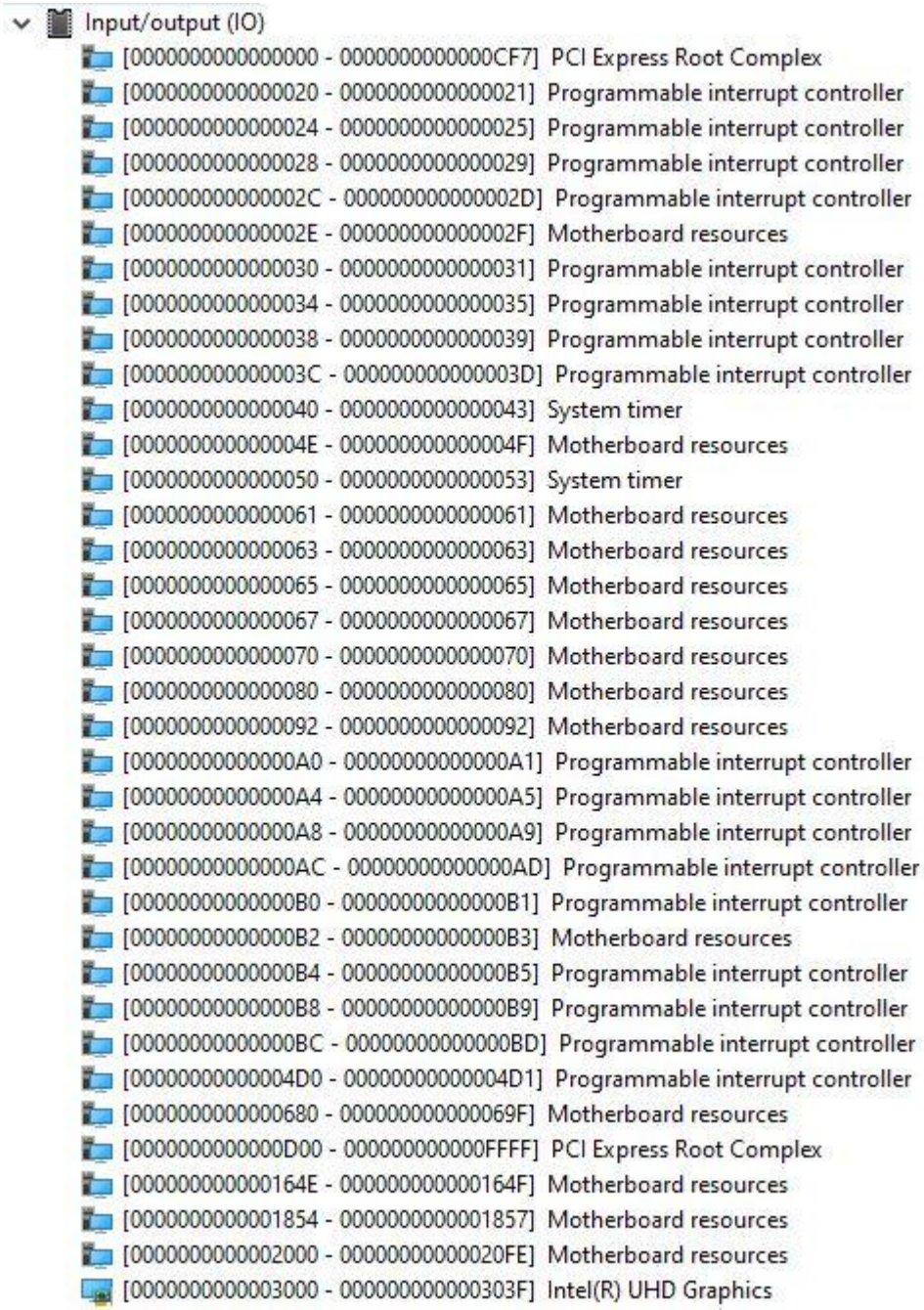
3.2 BIOS

The KIWI330 uses AMI Plug and Play BIOS with a single 256Mbit SPI Flash.

3.3 System Memory

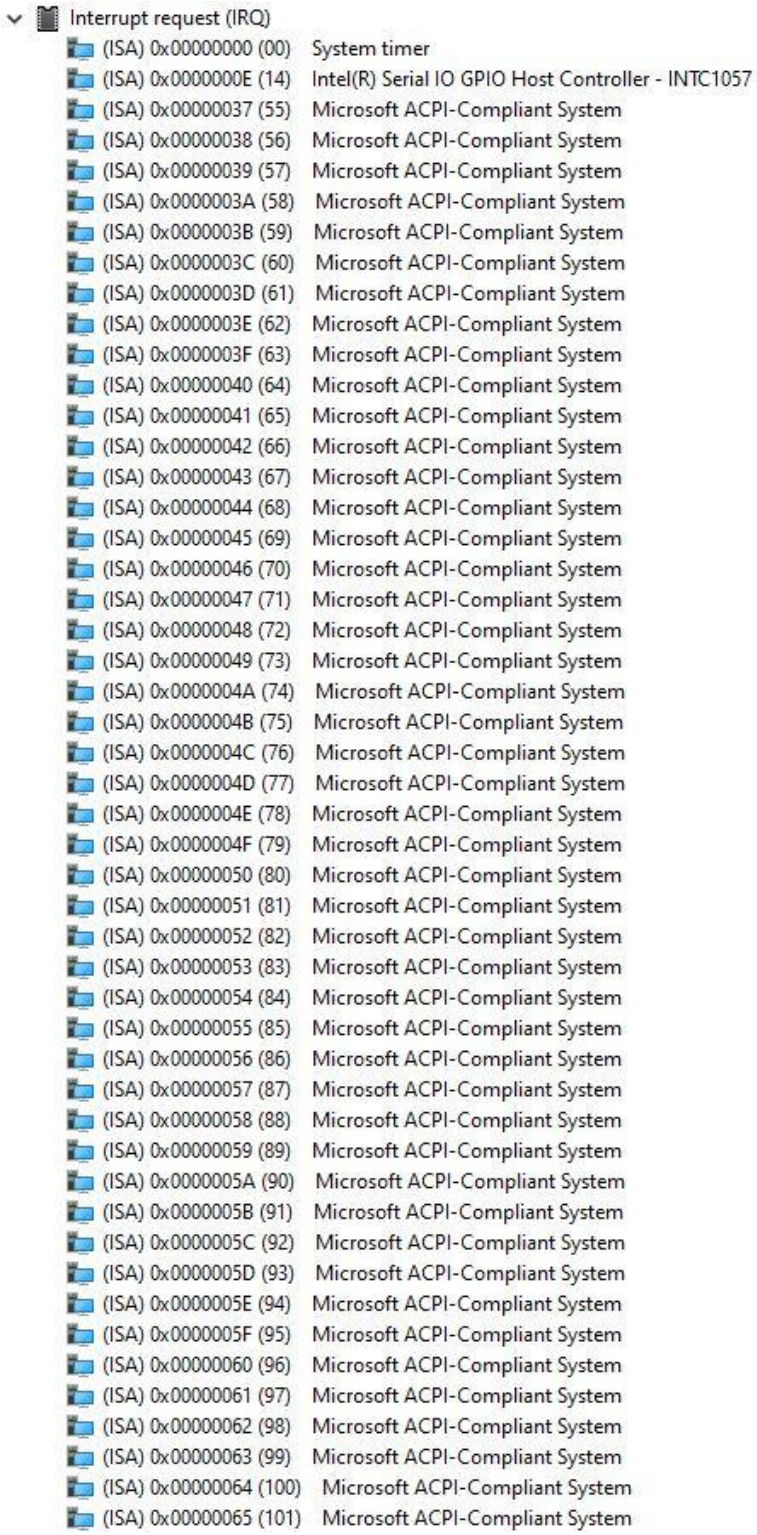
The KIWI330 supports onboard LPDDR5 4GB memory.

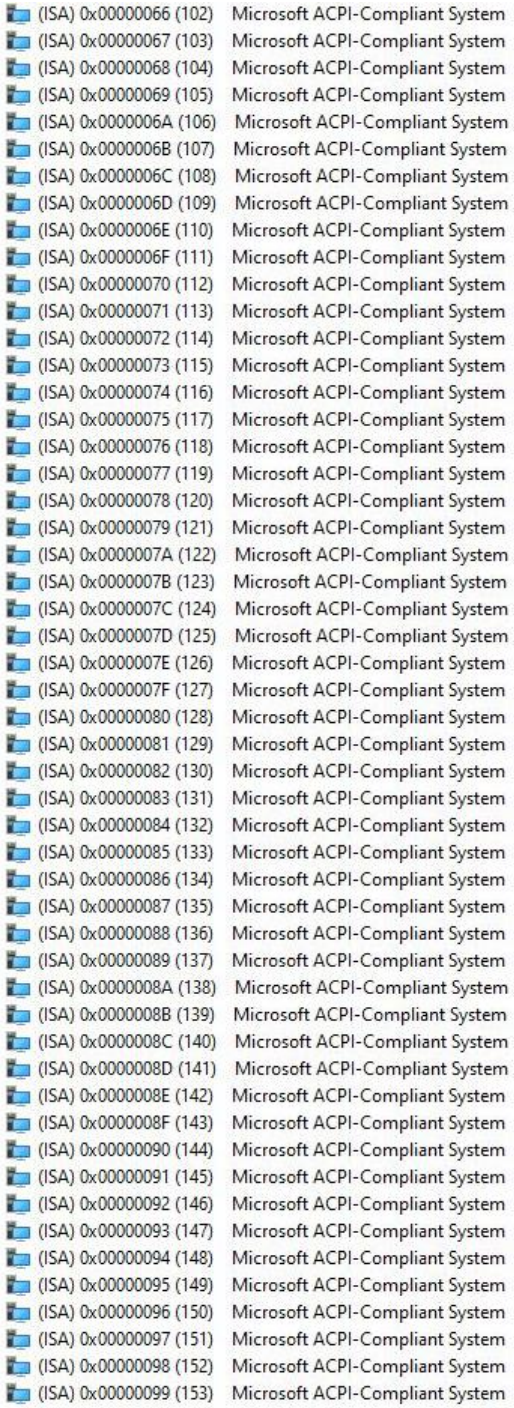
3.4 I/O Port Address Map



3.5 Interrupt Controller (IRQ) Map

The interrupt controller (IRQ) mapping list is shown below:

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(ISA) 0x00000069 (105) Microsoft ACPI-Compliant System
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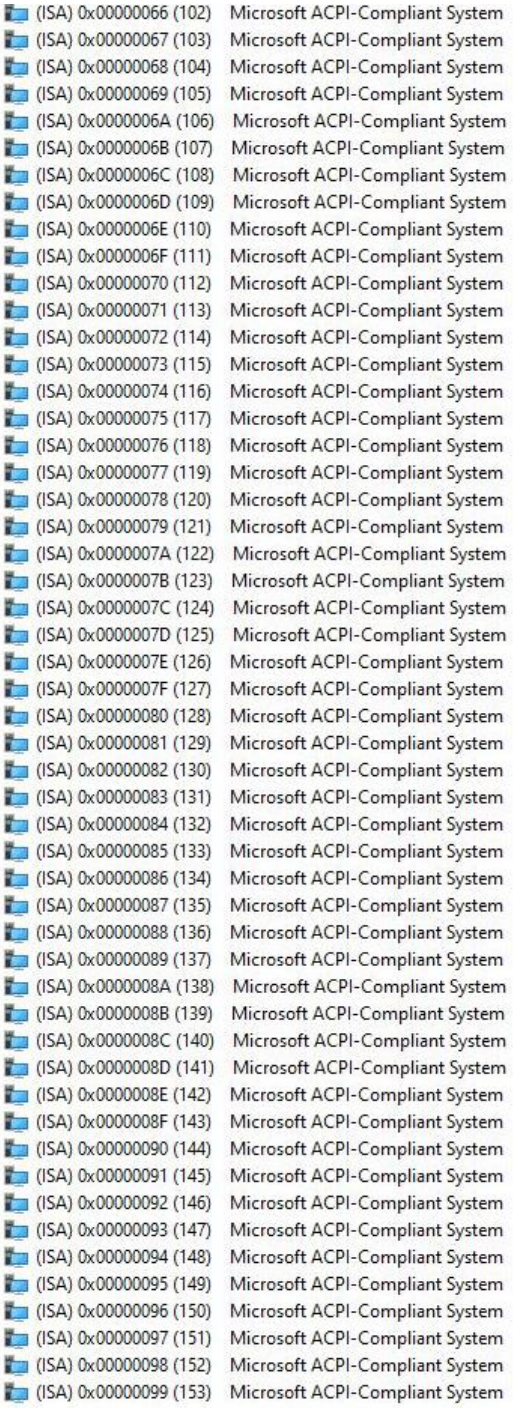
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(PCI) 0x00000020 (32) Intel(R) Serial IO I2C Host Controller - 54C6
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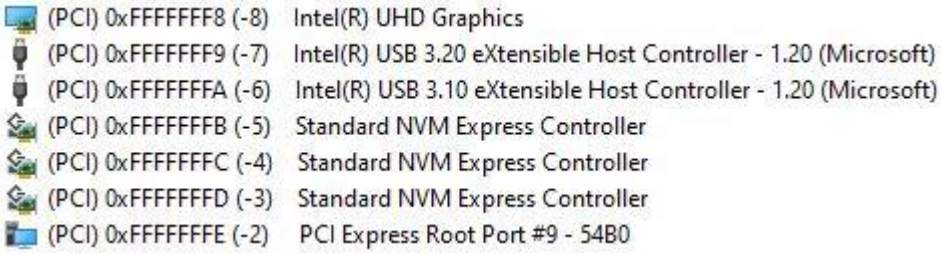
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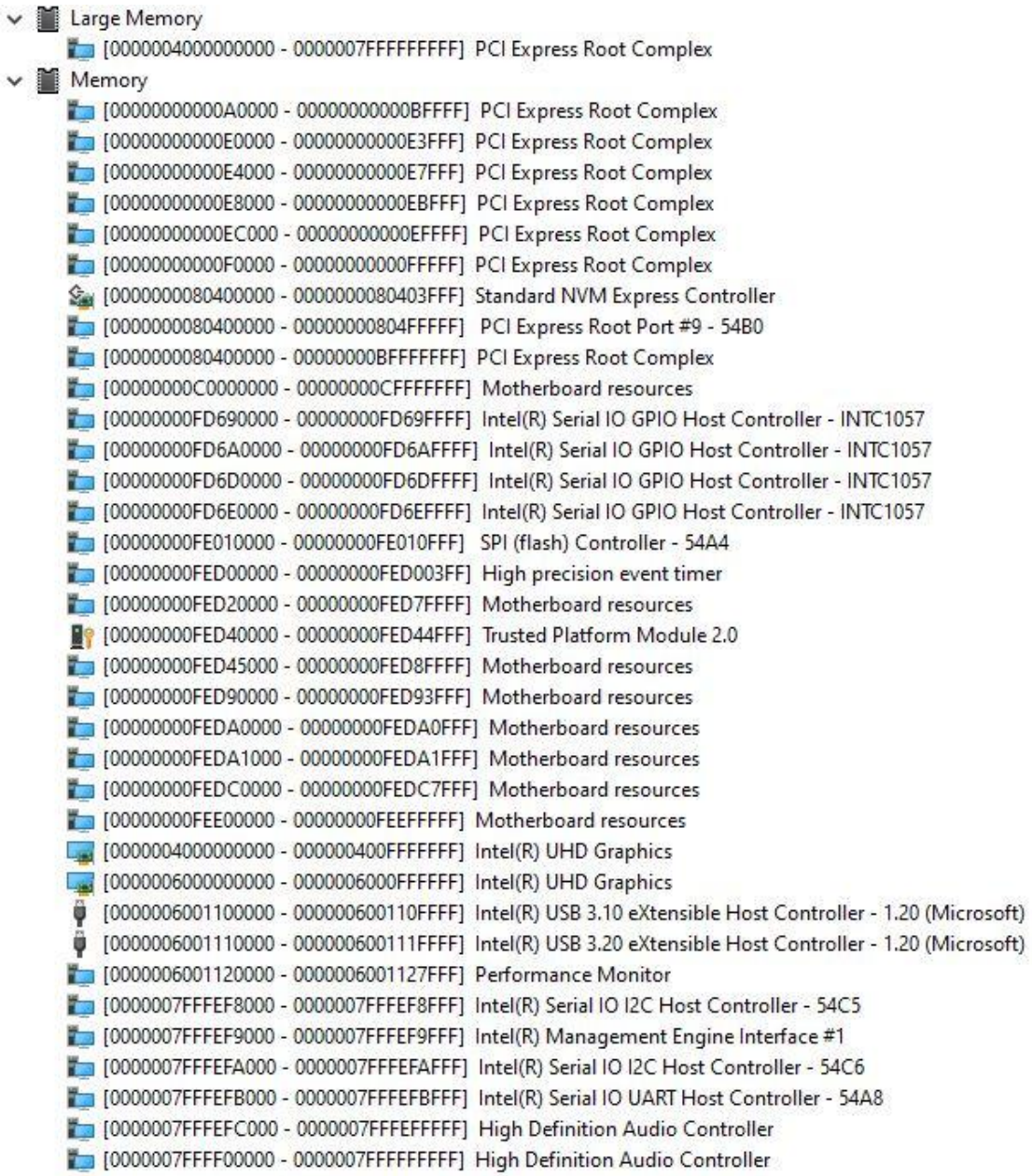
3.6 Memory Map

The memory mapping list is shown below:



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Section 4
AMI BIOS Setup Utility

The AMI UEFI BIOS provides users with a built-in setup program to modify basic system configuration. All configured parameters are stored in a flash chip to save the setup information whenever the power is turned off. This section provides users with detailed description about how to set up basic system configuration through the AMI BIOS setup utility.

4.1 Starting

To enter the setup screens, follow the steps below:

1. Turn on the computer and press the <Del> key immediately.
2. After you press the <Del> key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Advanced and Chipset menu.

Note

If your computer cannot boot after making and saving system changes with BIOS setup, you can clear restore BIOS optimal defaults by setting SW1-2 (see section 2.4.1).

It is strongly recommended that you should avoid changing the chipset's defaults. Both AMI and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

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. These keys include <F1>, <F2>, <Enter>, <ESC>, <Arrow> keys, and so on.

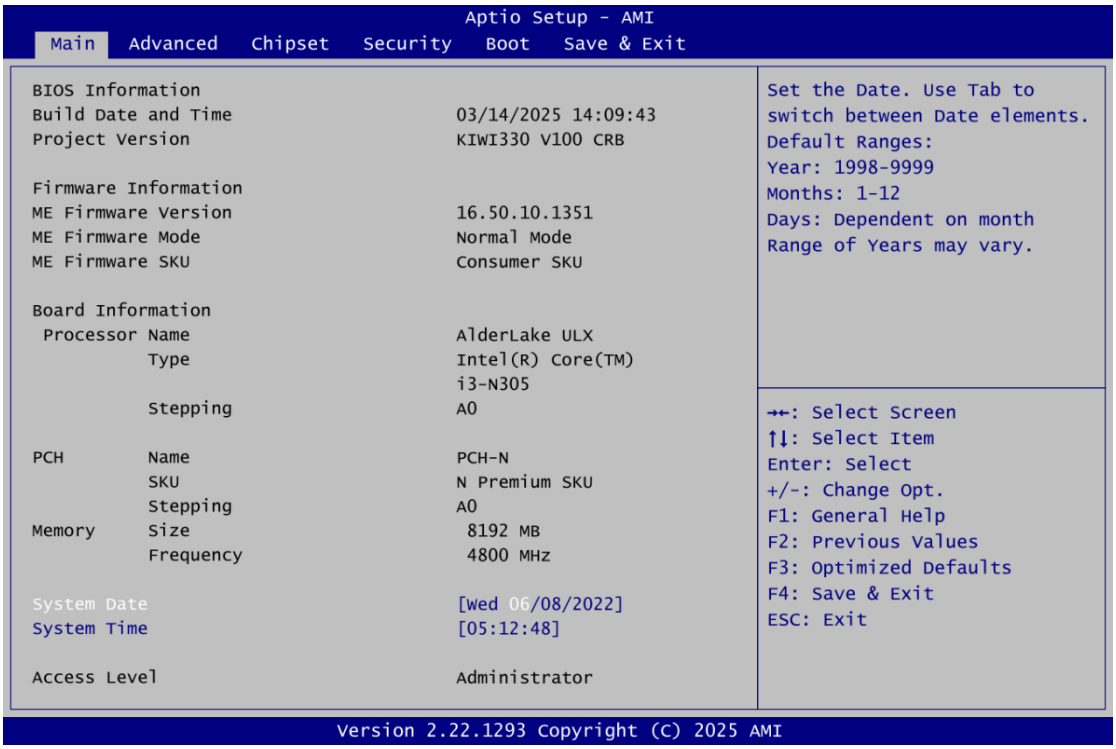
Note

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

Hot Keys	Description
→← **Left/Right**	The Left and Right <Arrow> keys allow you to select a setup screen.
↑↓ **Up/Down**	The Up and Down <Arrow> keys allow you to select a setup screen or sub-screen.
Enter	The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub- screens.
+– Plus/Minus	The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item.
Tab	The <Tab> key allows you to select setup fields.
F1	The <F1> key allows you to display the General Help screen.
F2	The <F2> key allows you to Load Previous Values.
F3	The <F3> key allows you to Load Optimized Defaults.
F4	The <F4> key allows you to save any changes you have made and exit Setup. Press the <F4> key to save your changes.
Esc	The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes.

4.3 Main Menu

When you first enter the setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. System Time/Date can be set up as described below. The Main BIOS setup screen is shown below.



- **BIOS Information**
  Display BIOS firmware information.

- **System Date/Time**
  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 is entered in HH:MM:SS format.

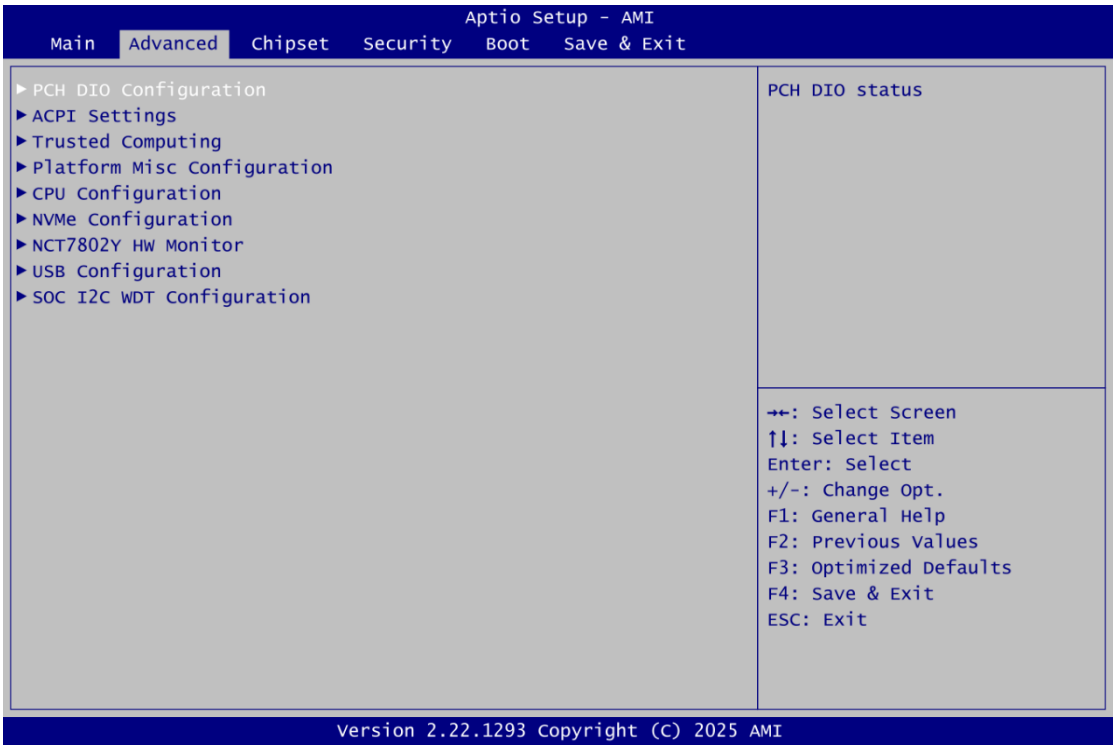
- **Access Level**
  Display the access level of current user.

4.4 Advanced Menu

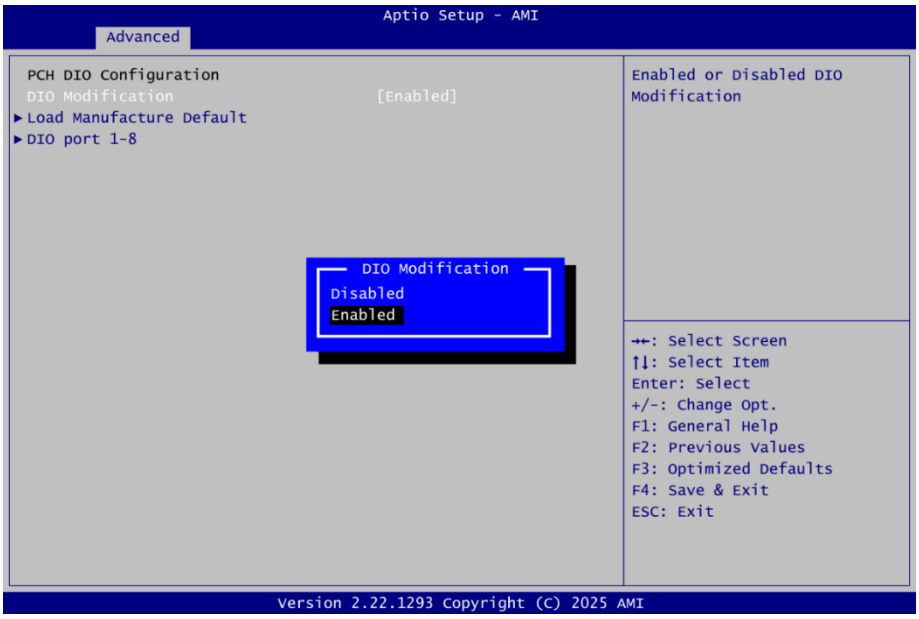
The Advanced menu also allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus:

- ▶ PCH DIO Configuration
- ▶ ACPI Settings
- ▶ Trusted Computing
- ▶ Platform Misc Configuration
- ▶ CPU Configuration
- ▶ NVMe Configuration
- ▶ NCT7802Y HW Monitor
- ▶ USB Configuration
- ▶ SOC I2C WDT Configuration

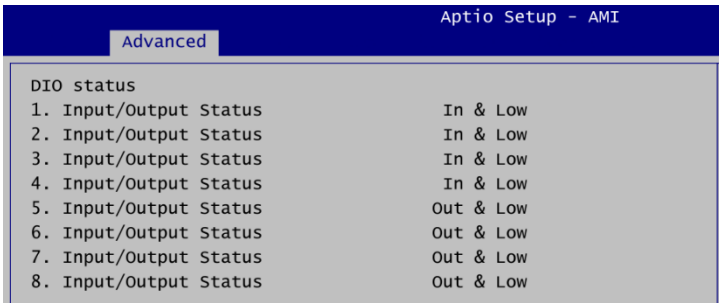
For items marked with "▶", please press <Enter> for more options.



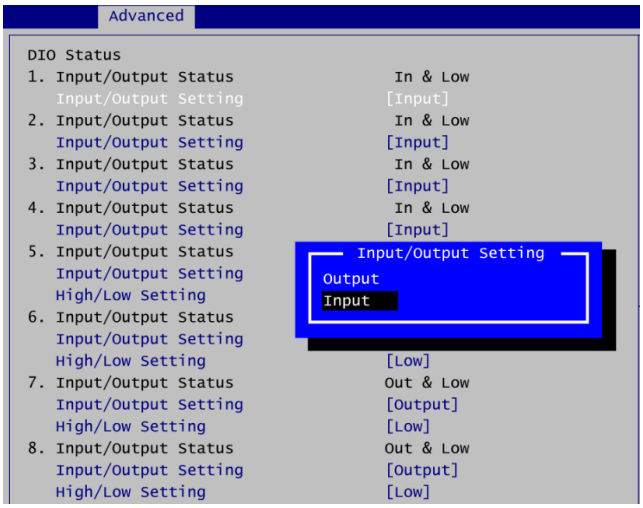
- **PCH DIO Configuration**
  Use this screen to set parameters related to digital I/O configuration.



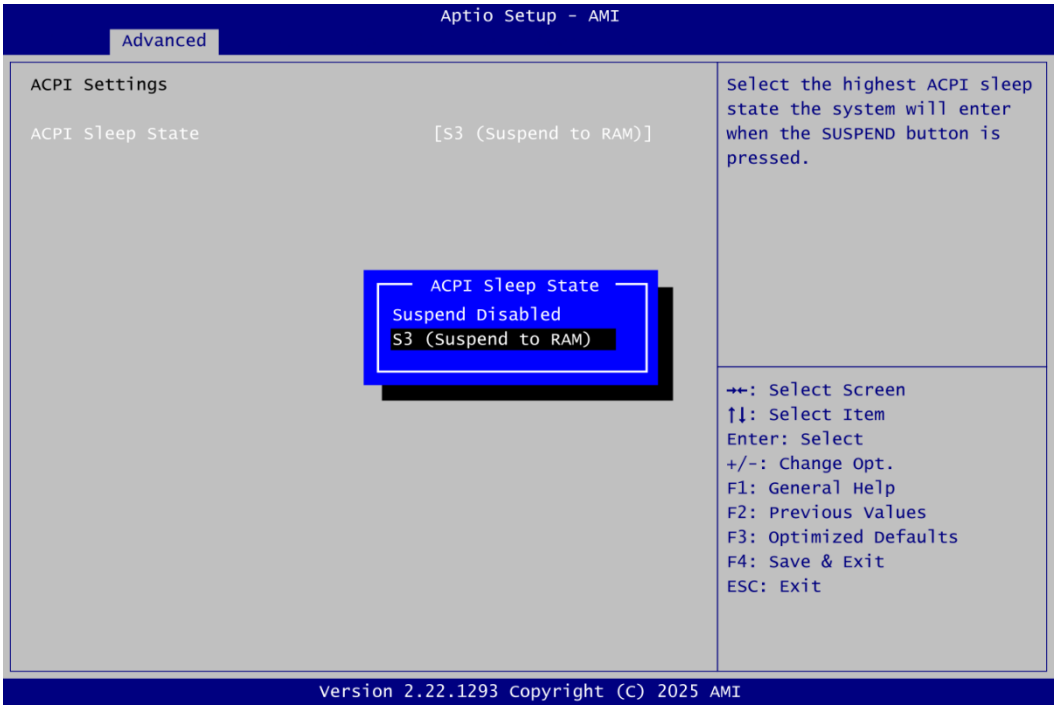
DIO Modification
Enable or disable digital I/O modification. If modification is disabled, the DIO status sub screen is as follows:



Once it is enabled, you can access the DIO status sub screen to set output or input, see image below.

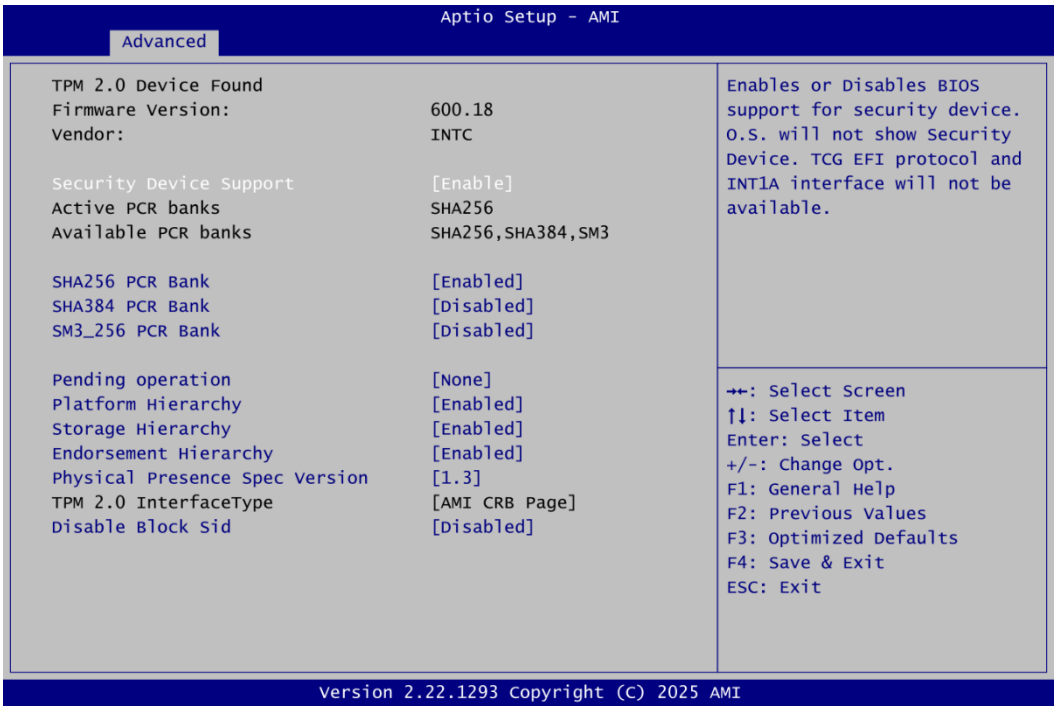


- **ACPI Settings**
  You can use this screen to select options for the ACPI configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.



ACPI Sleep State
Select the ACPI (Advanced Configuration and Power Interface) sleep state. Configuration options are Suspend Disabled and S3 (Suspend to RAM). The S3 (Suspend to RAM) option selects ACPI sleep state the system will enter when suspend button is pressed.

- **Trusted Computing**
  This screen provides function for specifying the TPM settings.



Security Device Support
Enable or disable BIOS support for security device, typically a TPM. When enabled (default setting), the BIOS initializes and makes the TPM available for use by the operating system and other system components. When disabled, the TPM is effectively hidden from the OS, and critical security functions, such as secure boot and disk encryption, may not function. Additionally, TCG EFI protocols and the INT1A interface, which are used for secure boot and other trusted computing tasks, will not be available.

SHA256 PCR Bank
Enable or disable SHA256 hashing algorithm for PCR (Platform Configuration Register) Bank within the TPM.

SHA384 PCR Bank
Enable or disable SHA384 hashing algorithm for PCR Bank within the TPM.

SM3_256 PCR Bank
Enable or disable SM3_256 cryptographic hash algorithm for PCR Bank.

Pending operation
Schedule an operation for the security device.
- None
- TPM Clear: Clear all data secured by TPM.

Note that your computer will reboot during restart in order to change State of Security Device.

Platform Hierarchy
Enable or disable platform hierarchy, used to manage keys and operations related to the entire platform.

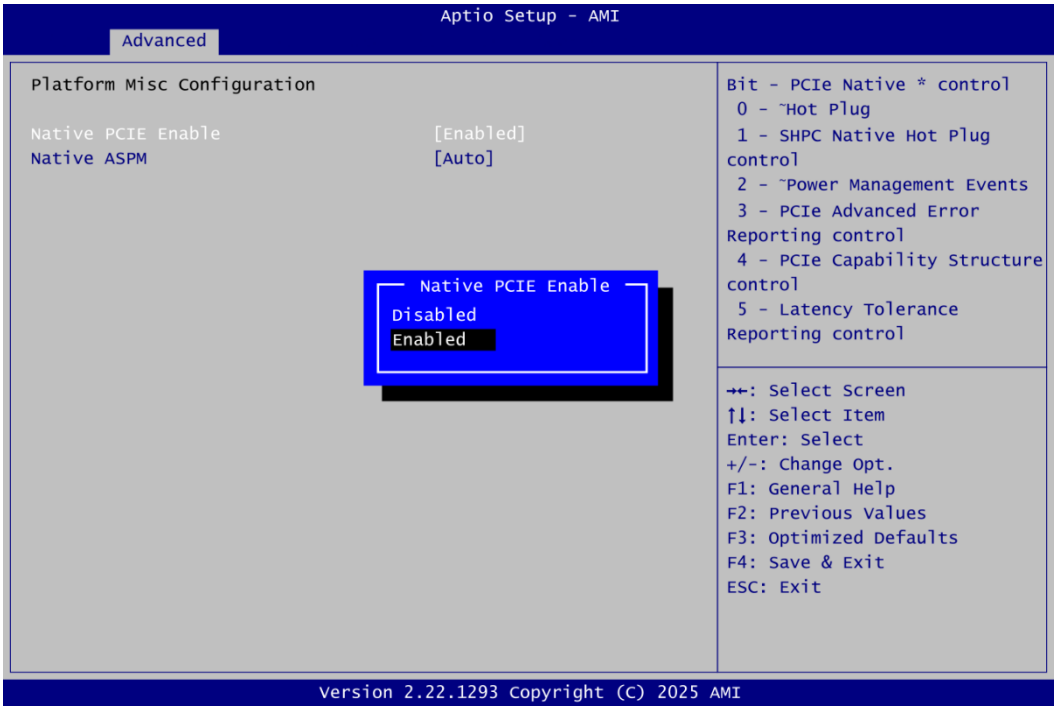
Storage Hierarchy
Enable or disable storage hierarchy, used to manage keys and operations related to data storage.

Endorsement Hierarchy
Enable or disable endorsement hierarchy, used to manage keys and operations related to the TPM's endorsement keys.

Physical Presence Spec Version
This setting allows you to select the version of the Physical Presence Interface (PPI) Specification: Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.

Disable Block SID
Overrides restrictions to allow SID authentication for TCG Storage devices.

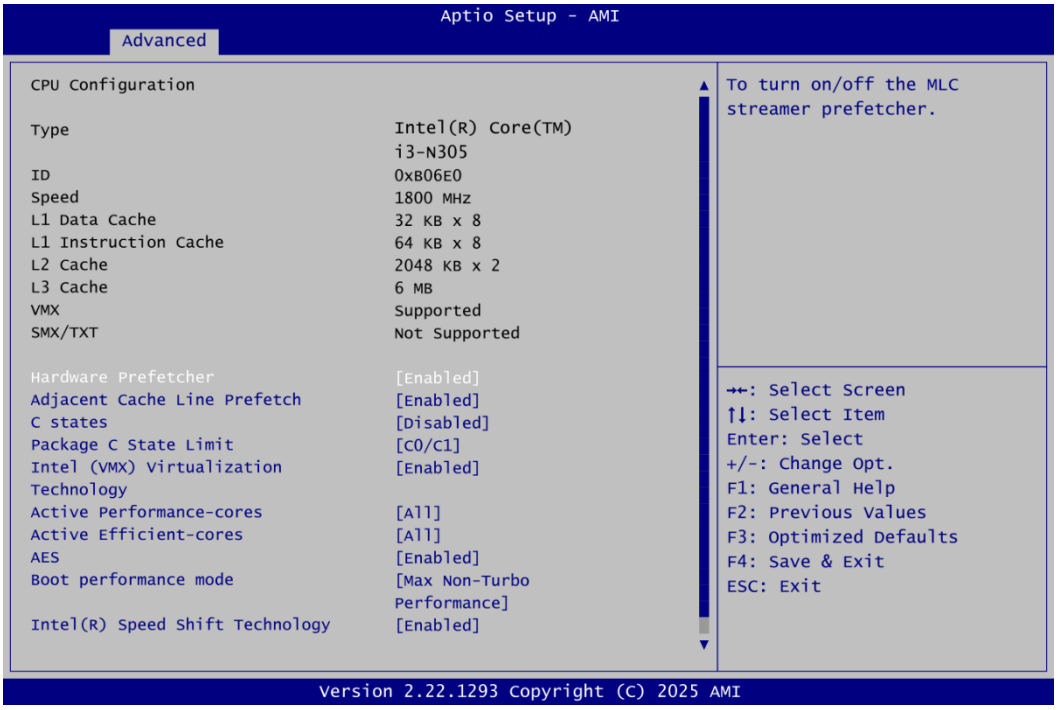
- **Platform Misc Configuration**
  Use this screen to configure platform-related features.



Native PCIE Enable
Enable or disable OS to control below features: Hot Plug, SHPC Native Hot Plug control, Power Management Events, PCIe Advanced Error Reporting control, PCIe Capability Structure control and Latency Tolerance Reporting control.

Native ASPM
This item allows OS to control PCIe Active-state power management (ASPM) features. If enabled, OS will control ASPM features of PCIe devices. If disabled, BIOS will control ASPM.

- **CPU Configuration**
  This screen shows the CPU Configuration, and you can change the value of the selected option.



Hardware prefetcher
To turn on/off the MLC (Mid-Level Cache) streamer prefetcher.

Adjacent Cache Line Prefetch
To turn on/off prefetching adjacent cache lines.

C states
Enable or disable CPU Power Management. Allow CPU to go to C states when it's not 100% utilized.

Package C State Limit
Maximum Package C State Limit Setting. CPU default: Leaves to factory default value. Auto: Initializes to deepest available Package C State Limit.

Intel (VMX) Virtualization Technology
Enable or disable Intel® Virtualization Technology. When enabled, a VMM (Virtual Machine Mode) can utilize the additional hardware capabilities. It allows a platform to run multiple operating systems and applications independently, hence enabling a computer system to work as several virtual systems.

Active Performance-cores
Number of P-cores to enable in each processor package. Note: Number of Cores and E-cores are looked at together. When both are {0,0}, P code will enable all cores.

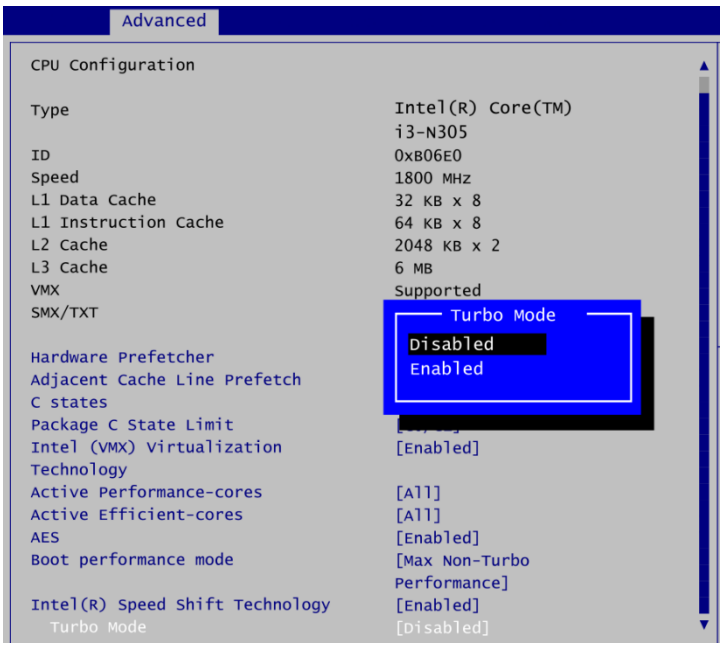
Active Efficient-cores
Number of E-cores to enable in each processor package. Note: Number of Cores and E-cores are looked at together. When both are {0,0}, P code will enable all cores.

AES
Enable or disable AES (Advanced Encryption Standard).

Boot performance mode
Select the performance state that the BIOS will set starting from reset vector. The options are:

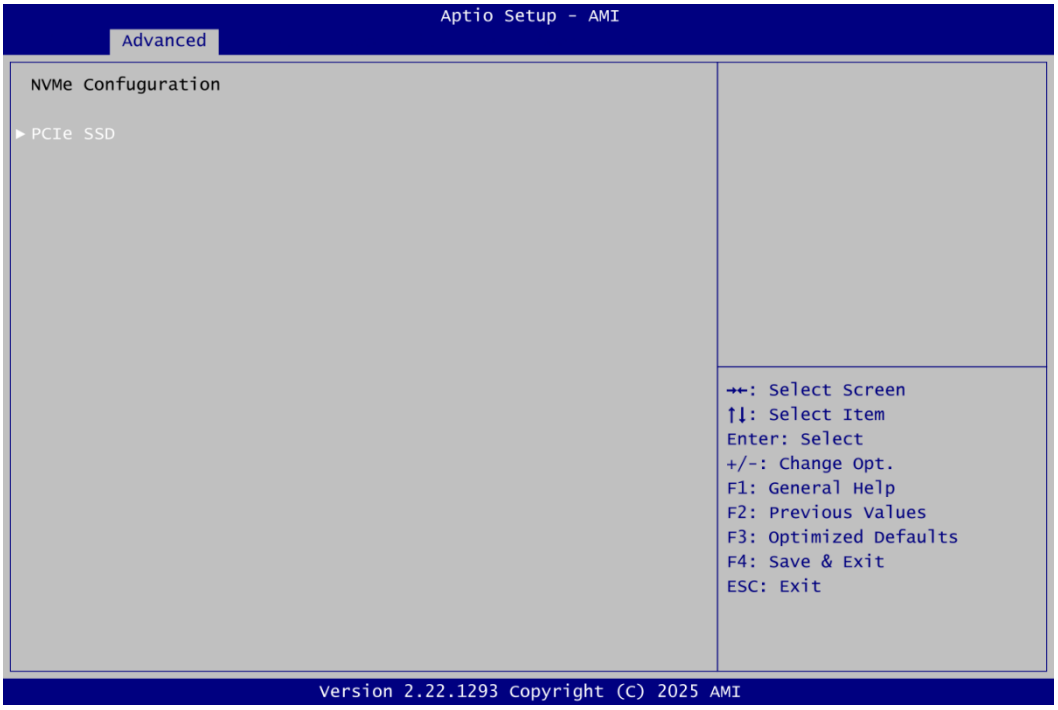
- Max Battery
- Max Non-Turbo Performance
- Turbo Performance

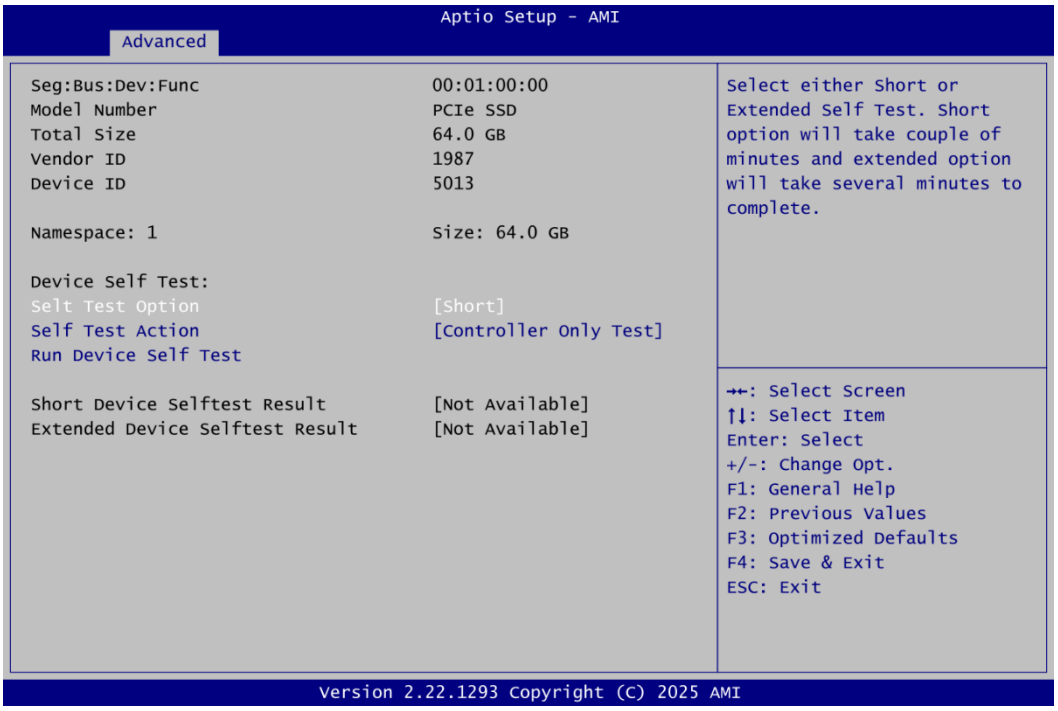
Intel(R) Speed Shift Technology
Enable or disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware-controlled P-states.



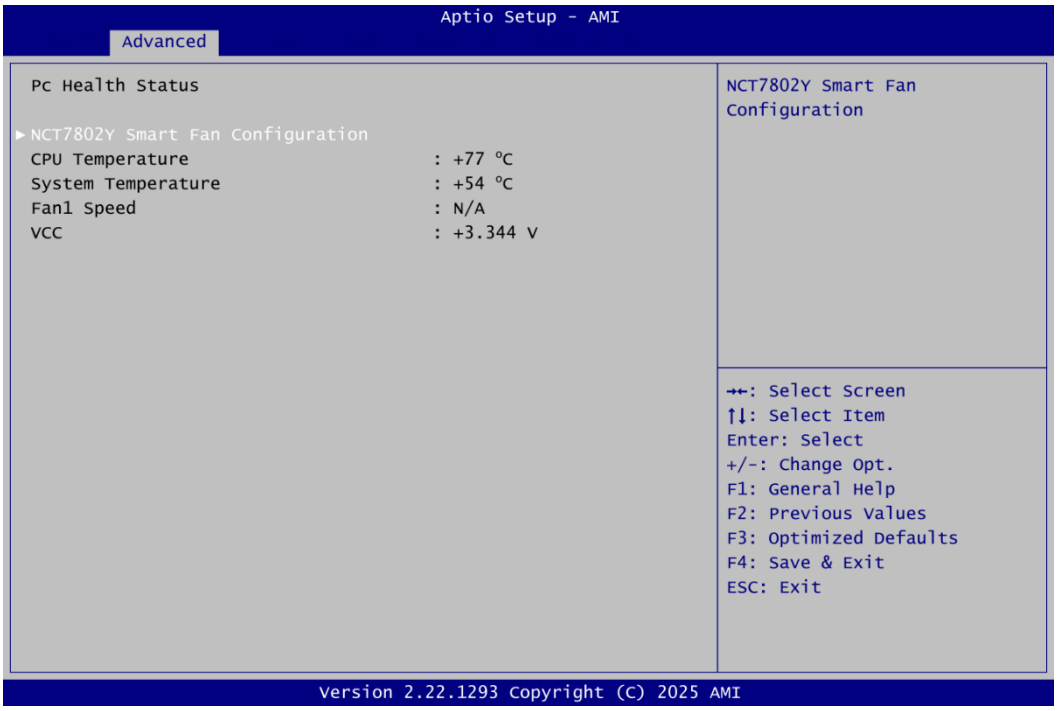
Turbo Mode
Enable or disable Intel® turbo boost mode allowing processor cores to run faster but not exceed CPU defined frequency limits.

- **NVMe Configuration**
  This screen shows related information and settings for NVMe (Non-Volatile Memory Express) storage device.





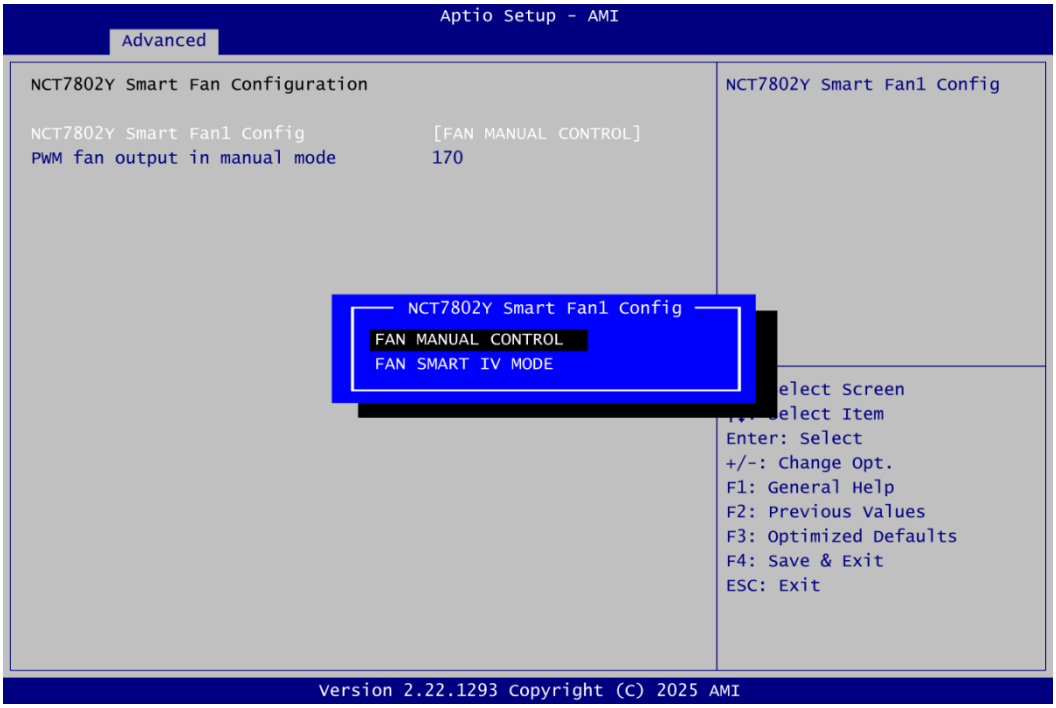
- **NCT7802Y HW Monitor**
  This screen monitors hardware health status.



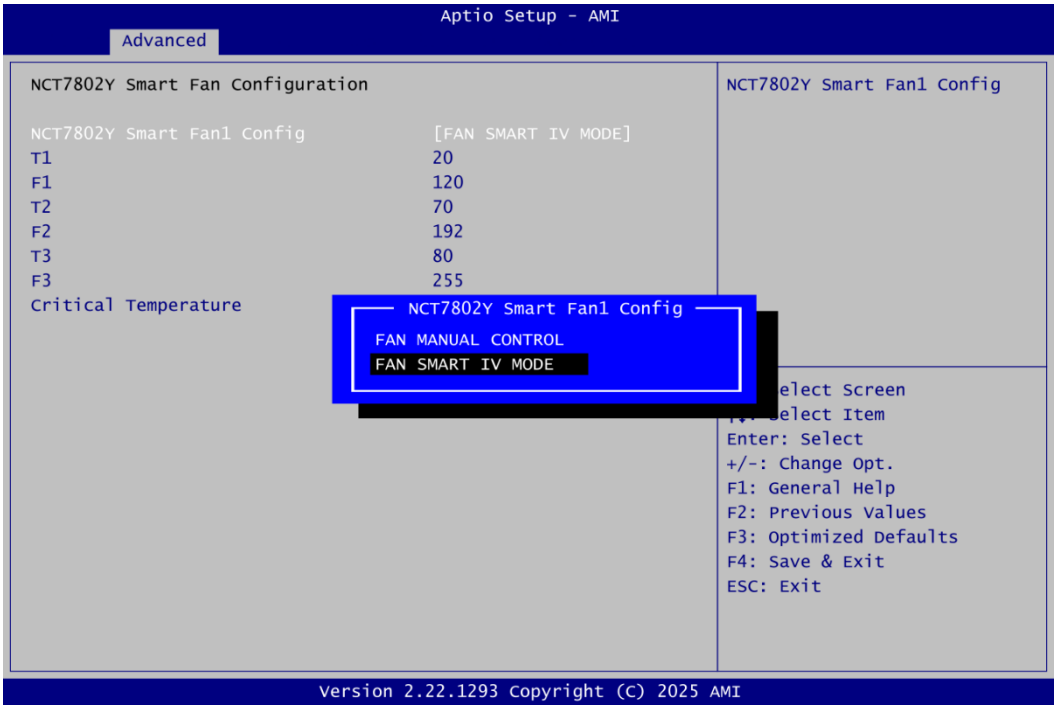
This screen displays the temperature of system and CPU, fan speed in RPM and system voltage (VCC).

- **NCT7802Y Smart Fan Configuration**
  There are two modes: "FAN MANUAL CONTROL" and "FAN SMART IV MODE".

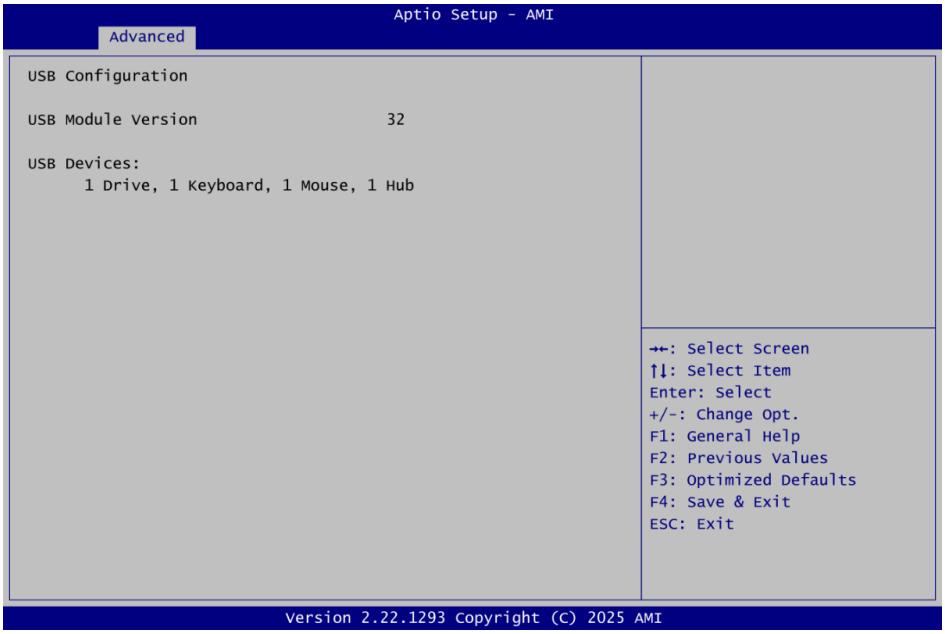
  NCT7802Y Smart Fan1 Config
  In FAN MANUAL CONTROL, the fan speed is controlled by fan PWM duty, and the range is from 0 to 255. The following example uses manual mode to set the PWM control to 170.



In FAN SMART IV MODE, the fan speed is controlled by T1(temperature level1)/F1(fan duty 1), T2(temperature level2)/F2(fan duty 2) and T3(temperature level3)/F3(fan duty 3). Please base on the specification of the fan to set these parameters. We suggest that the range of fan duty is from 120 to 255. Setting the value of these parameters must follow T3>T2>T1 and F3>F2>F1. The default is FAN SMART IV MODE, and each default setting of temperature/fan duty is T1:20 F1:120, T2:70 F2:192, T3:80 F3:255.

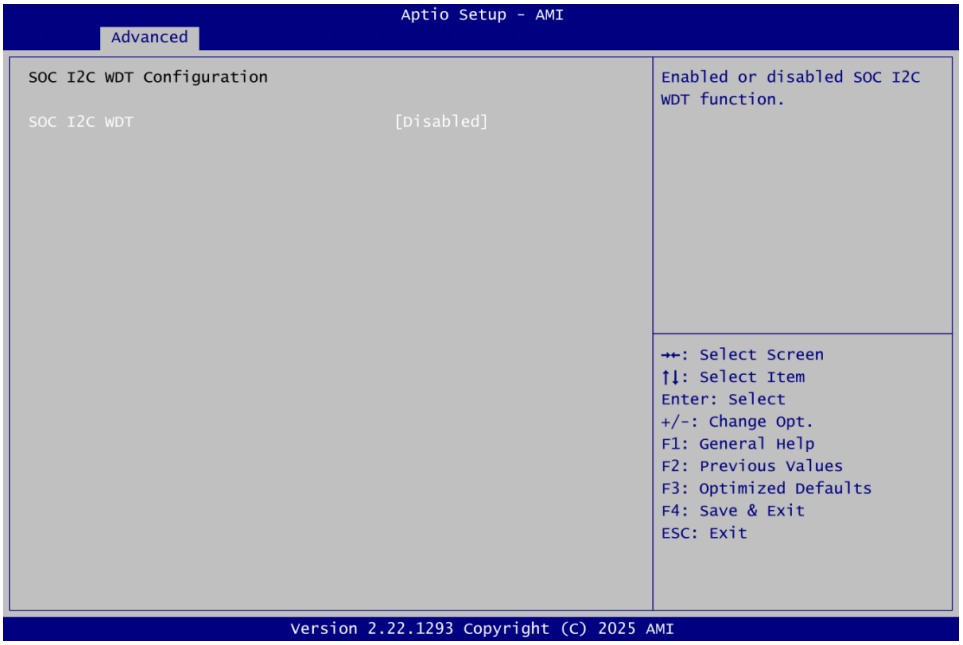


- **USB Configuration**

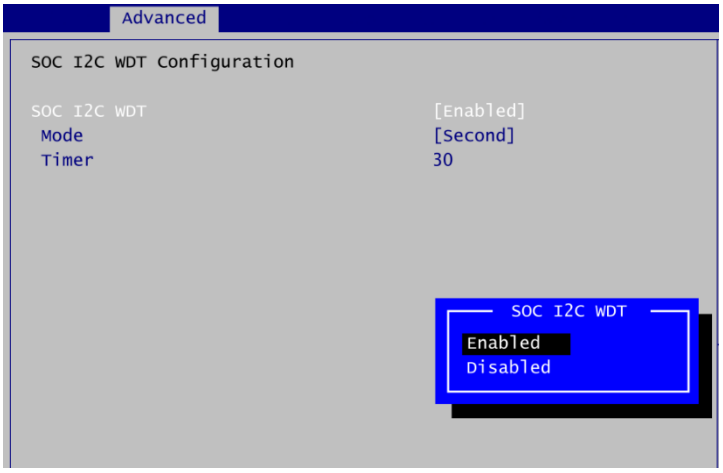


USB Devices
Display all detected USB devices.

- **SOC I2C WDT Configuration**



SOC I2C WDT
Enable or disable SOC I2C WDT function.



Mode
Set the SOC I2C WDT mode: Minute or Second.

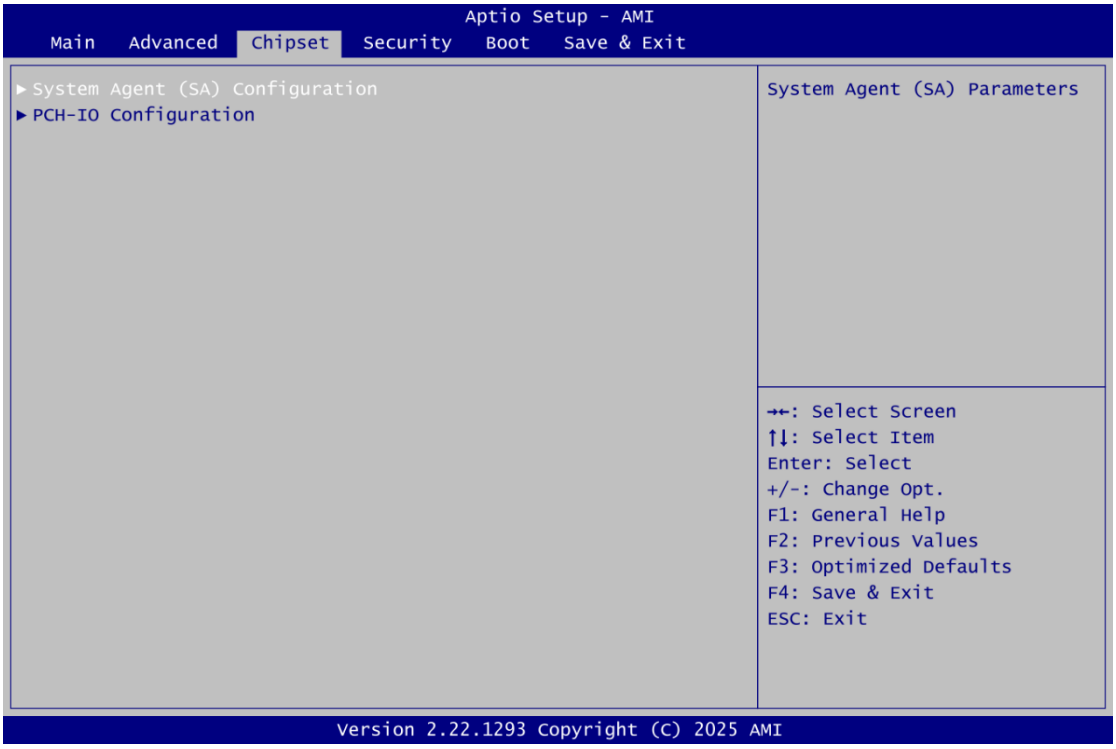
Timer
Timer countdown.

4.5 Chipset Menu

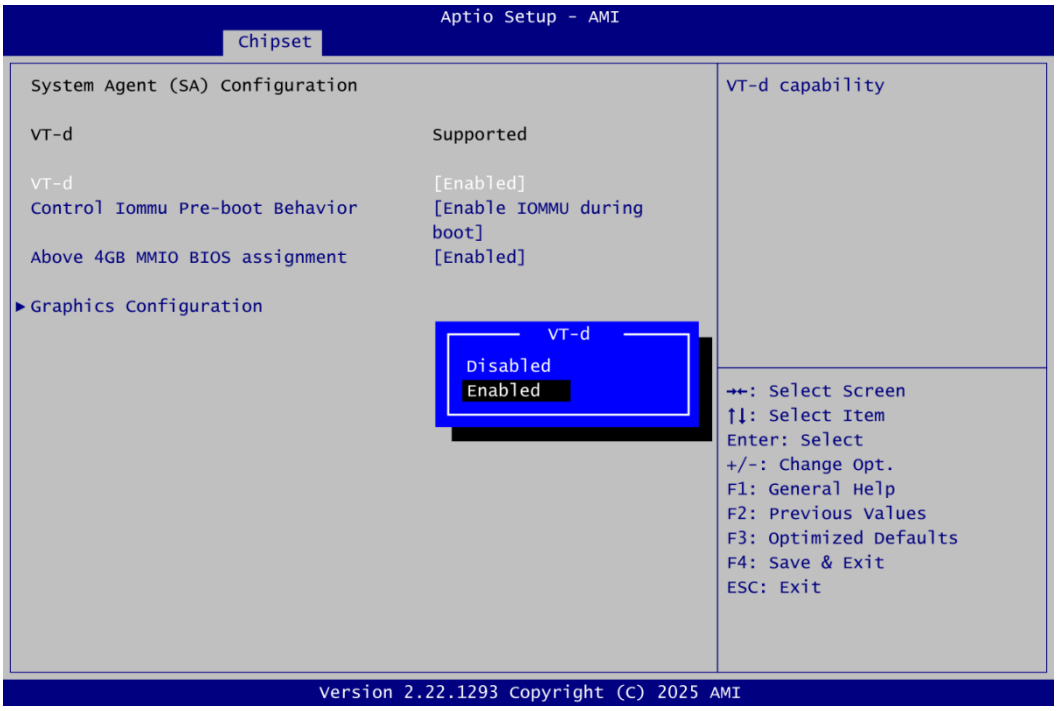
The Chipset menu allows users to change the advanced chipset settings. You can select any of the items in the left frame of the screen to go to the sub menus:

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

For items marked with "►", please press <Enter> for more options.



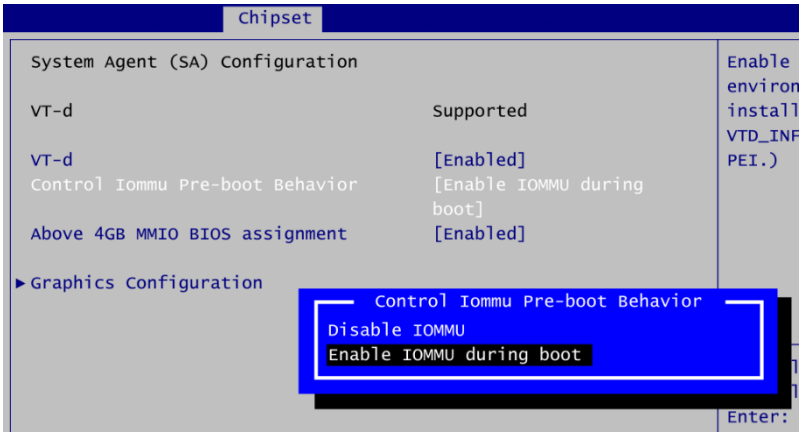
- **System Agent (SA) Configuration**
  This screen allows users to configure System Agent (SA) parameters.



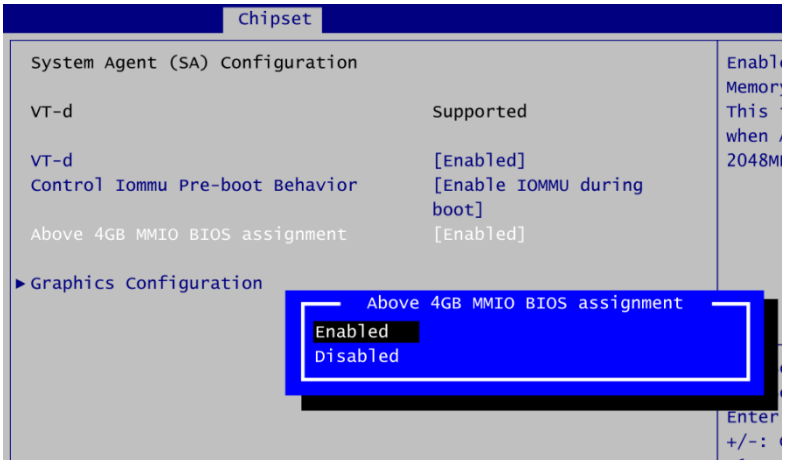
System Agent (SA) configuration options:
- VT-d
- Control Iommu Pre-boot Behavior
- Above 4GB MMIO BIOS assignment
- Graphics Configuration

VT-d
Enable or disable the VT-d (Intel Virtualization Technology for Directed I/O) function. The default setting is Enabled. If this option is Disabled, the "Control IOMMU Pre-boot Behavior" setting becomes unavailable.

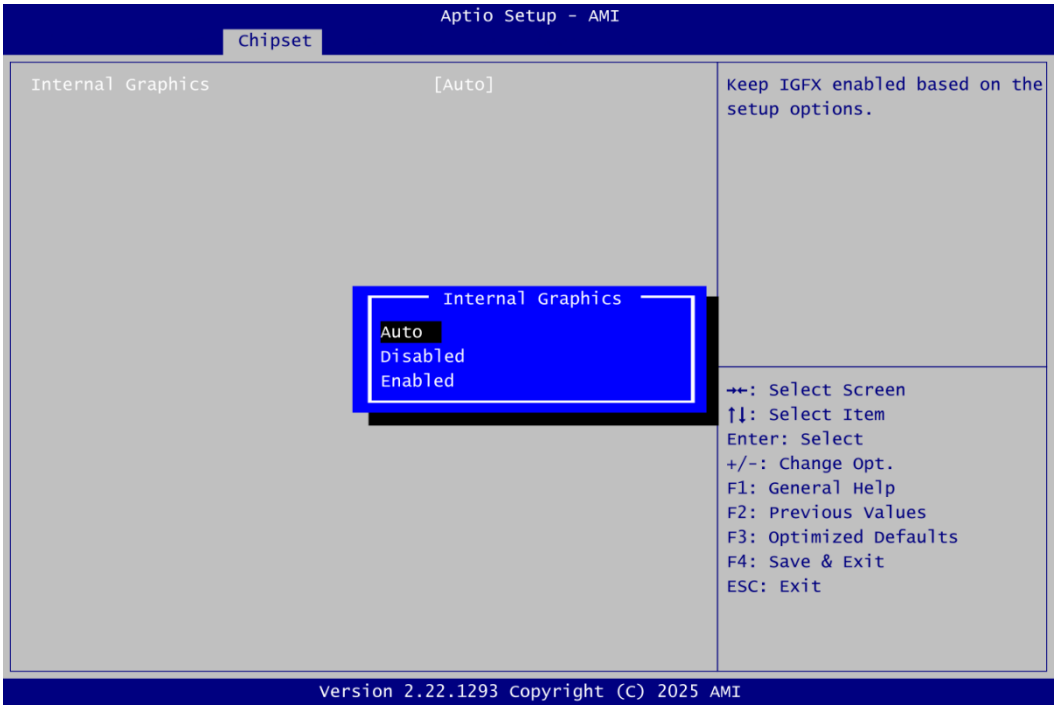
Control Iommu Pre-boot Behavior
Enable or disable the IOMMU (I/O Memory Management Unit) in pre-boot environment.



Above 4GB MMIO BIOS assignment
Enable or disable above 4GB Memory Mapped IO BIOS assignment. This is enabled automatically when Aperture Size is set to 2048MB.



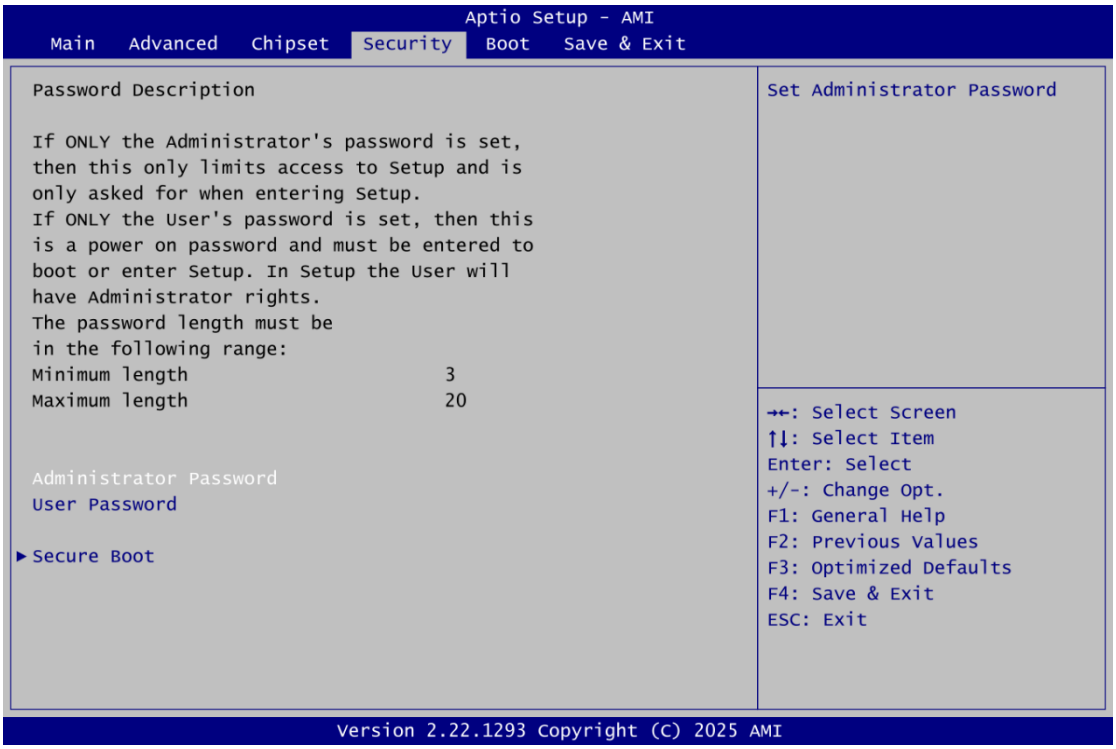
- **Graphics Configuration**



Internal Graphics
Use this item to set parameters related to internal graphics controller.

4.6 Security Menu

The Security menu allows users to change the security settings for the system.

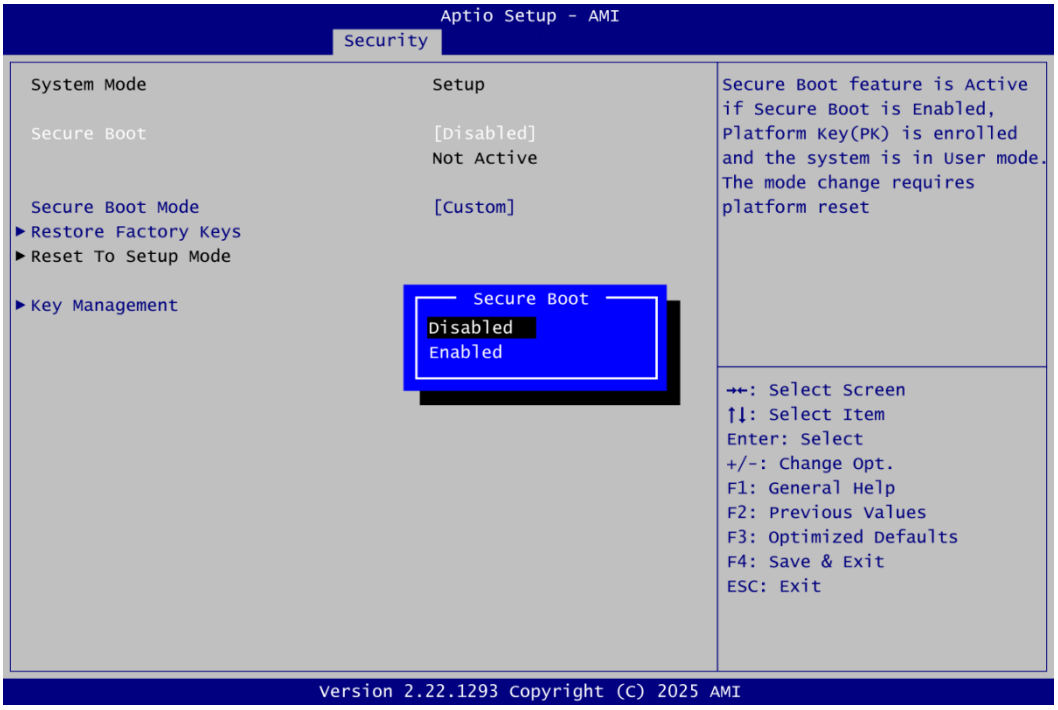


- **Administrator Password**
  Set administrator password.

- **User Password**
  Set user password.

- **Secure Boot**
  Use this item to set parameters related to Secure Boot.

- **Secure Boot**
  The Secure Boot feature is designed to ensure and protect the system from unauthorized access and malwares during boot-up.



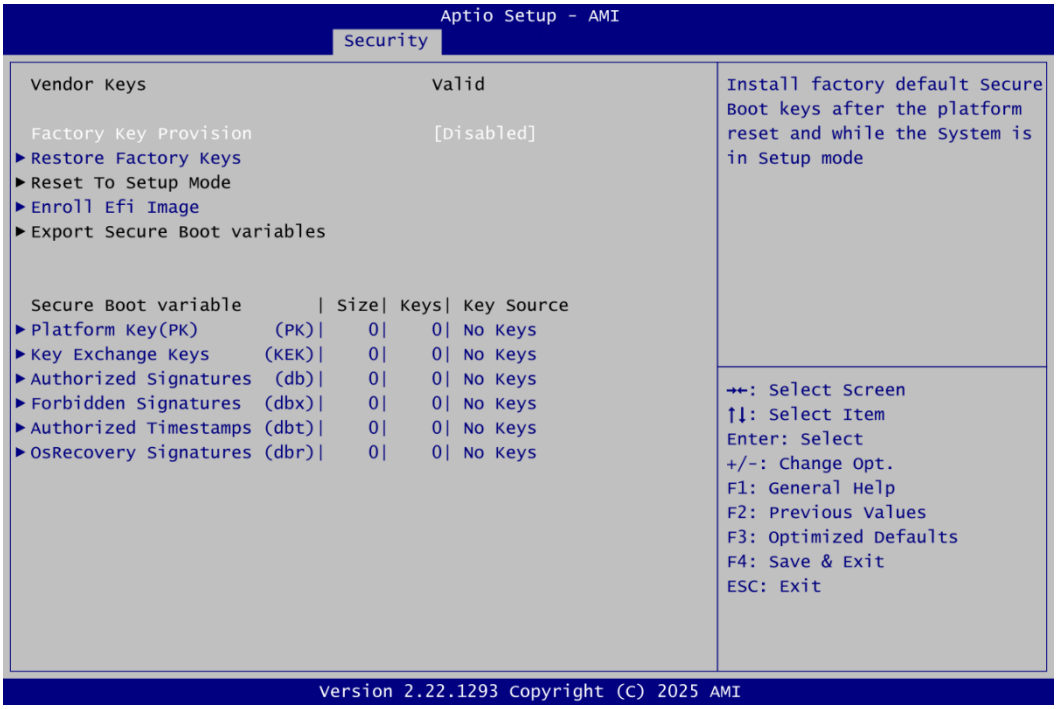
Secure Boot
Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset. Secure Boot ensures that the system only boots from trusted software, preventing malicious software from loading and compromising the device. It checks the digital signatures of boot loaders, firmware, and operating systems to verify that they are from trusted sources and have not been tampered with. Users can choose whether to enable it or not, between standard and custom mode.

Secure Boot Mode
Secure Boot mode options: Standard or Custom. In Custom mode, the policy of Secure Boot variables can be configured by a physically present user without full authentication.

Restore Factory Keys
Force System to User mode. Install factory default Secure Boot key databases.

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

- **Key Management**



Factory Key Provision
Enable or disable provision factory default keys on next reboot only when System in Setup mode.

Restore Factory Keys
Force System to User mode. Install factory default Secure Boot key databases.

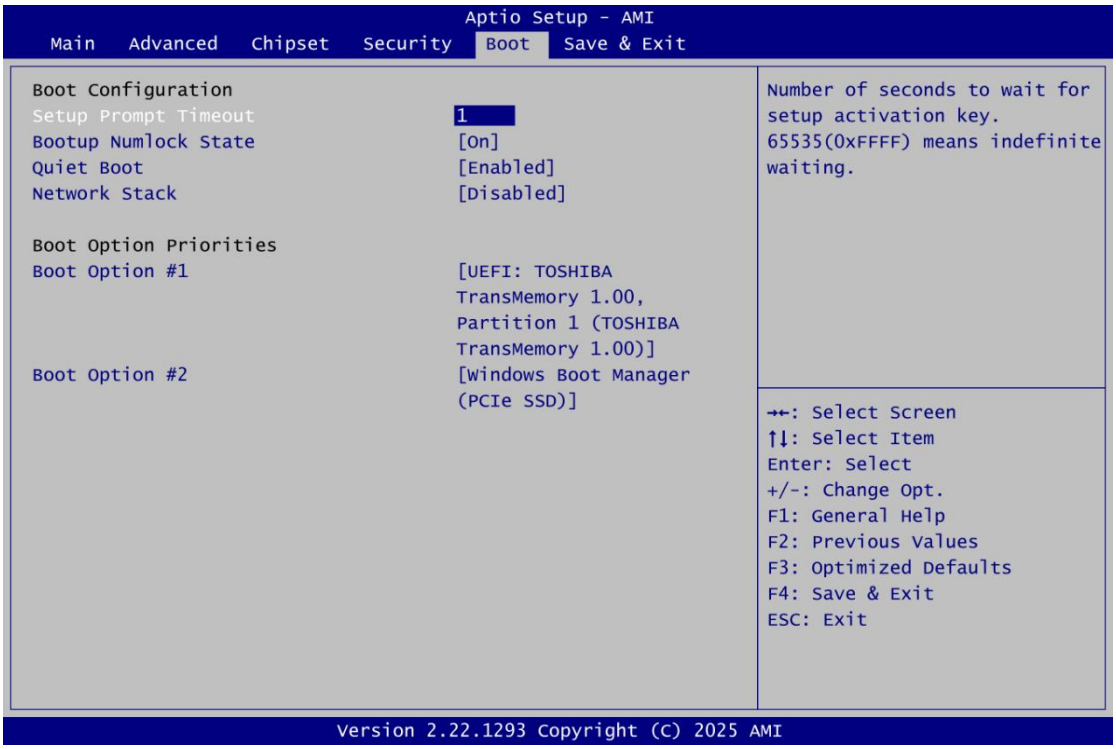
Reset To Setup Mode
Delete all Secure Boot key databases from NVRAM.

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).

Export Secure Boot Variables
Export all Secure Boot variables to the files in a root folder on a file system device.

4.7 Boot Menu

The Boot menu allows users to change boot options of the system.



- **Setup Prompt Timeout**
  Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

- **Bootup Numlock State**
  Use this item to select the power-on state for the keyboard Numlock.

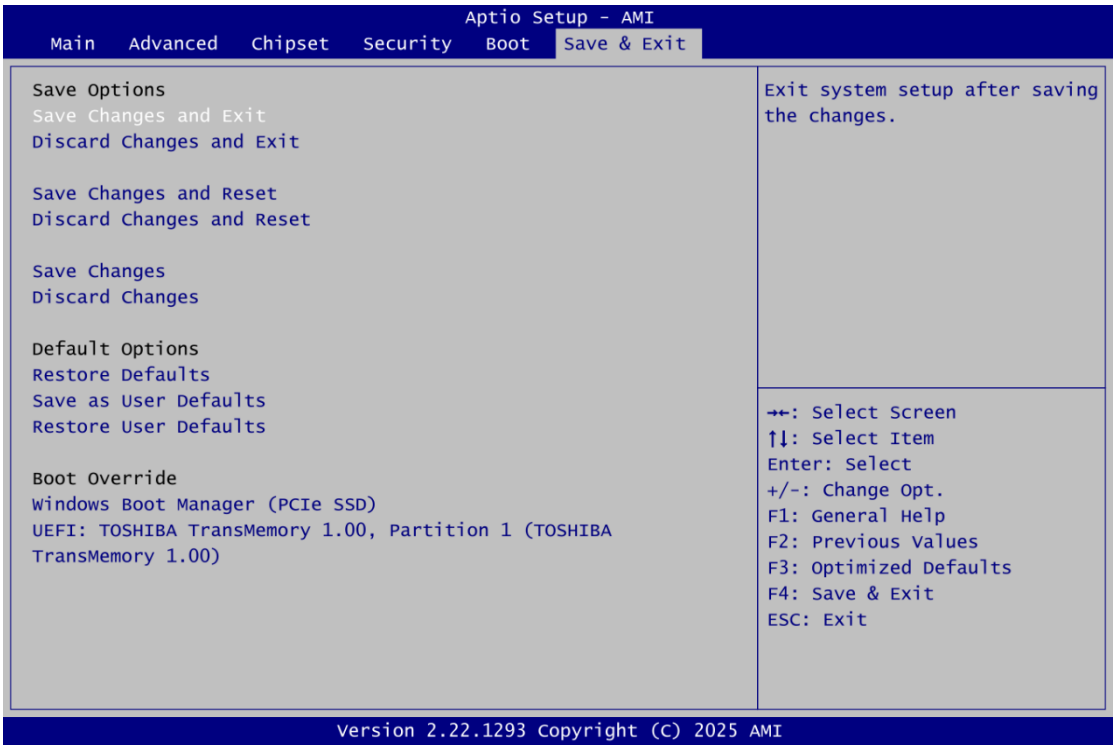
- **Quiet Boot**
  Select to display either POST output messages or a splash screen during boot-up.

- **Network Stack**
  Enable or disable UEFI Network stack.

- **Boot Option Priorities [Boot Option #1, …]**
  These are settings for boot priority. Specify the boot device priority sequence from the available devices.

4.8 Save & Exit Menu

The Save & Exit menu allows users to load your system configuration with optimal or fail-safe default values.



- **Save Changes and Exit**
  When you have completed the system configuration changes, select this option to leave Setup and return to Main Menu. Select Save Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to save changes and exit.

- **Discard Changes and Exit**
  Select this option to quit Setup without making any permanent changes to the system configuration and return to Main Menu. Select Discard Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to discard changes and exit.

- **Save Changes and Reset**
  When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select Save Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to save changes and reset.

- **Discard Changes and Reset**
  Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to discard changes and reset.

- **Save Changes**
  When you have completed the system configuration changes, select this option to save changes. Select Save Changes from the Save & Exit menu and press <Enter>. Select Yes to save changes.

- **Discard Changes**
  Select this option to quit Setup without making any permanent changes to the system configuration. Select Discard Changes from the Save & Exit menu and press <Enter>. Select Yes to discard changes.

- **Restore Defaults**
  It automatically sets all Setup options to a complete set of default settings when you select this option. Select Restore Defaults from the Save & Exit menu and press <Enter>.

- **Save as User Defaults**
  Select this option to save system configuration changes done so far as User Defaults. Select Save as User Defaults from the Save & Exit menu and press <Enter>.

- **Restore User Defaults**
  It automatically sets all Setup options to a complete set of User Defaults when you select this option. Select Restore User Defaults from the Save & Exit menu and press <Enter>.

- **Boot Override**
  Select a drive to immediately boot that device regardless of the current boot order.