



VC700-ASL

ITxPT-Certified, Fanless In-vehicle System
User's Manual

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FCC and DOC Statement on 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 residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

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About this Manual

This manual can be retrieved from the website.

The manual is subject to change and update without notice, and may be based on editions that do not resemble your actual products. Please visit our website or contact our sales representatives for the latest editions.

Warranty

1. Warranty does not cover damages or failures that arises from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.
2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.
3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.
4. We will not be liable for any indirect, special, incidental or consequential damages to the product that has been modified or altered.

About this Package

The package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- 1 VC700-ASL system unit

Note: The items are subject to change in the developing stage.

The product and accessories in the package may not come similar to the information listed above. This may differ in accordance with the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface.
4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.



Important:

Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Precautions

- Use the correct DC / AC input voltage range.
- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging in the power cord.
- There is danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent specifications of batteries recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.
- Keep this system away from humid environments.
- Make sure the system is placed or mounted correctly and stably to prevent the chance of dropping or falling may cause damage.
- The openings on the system shall not be blocked and shall be kept in distance from

other objects to make sure of proper air ventilation to protect the system from over-heating.

- Dress the cables, especially the power cord, so they will not be stepped on, in contact with high temperature surfaces, or cause any tripping hazards.
- Do not place anything on top of the power cord. Use a power cord that has been approved for use with the system and is compliant with the voltage and current ranges required by the system's electrical specifications.
- If the system is to be unused or stored for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
- If one of the following occurs, consult a service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated the system.
 - The system has been exposed to moisture.
 - The system is not working properly.
 - The system is physically damaged.
- The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace the outlet.
- Disconnect the system from the electricity outlet before cleaning. Use a damp cloth for cleaning the surface. Do not use liquid or spray detergents for cleaning.
- Before connecting, make sure that the power supply voltage is correct. The device is connected to a power outlet which should be grounded connection.



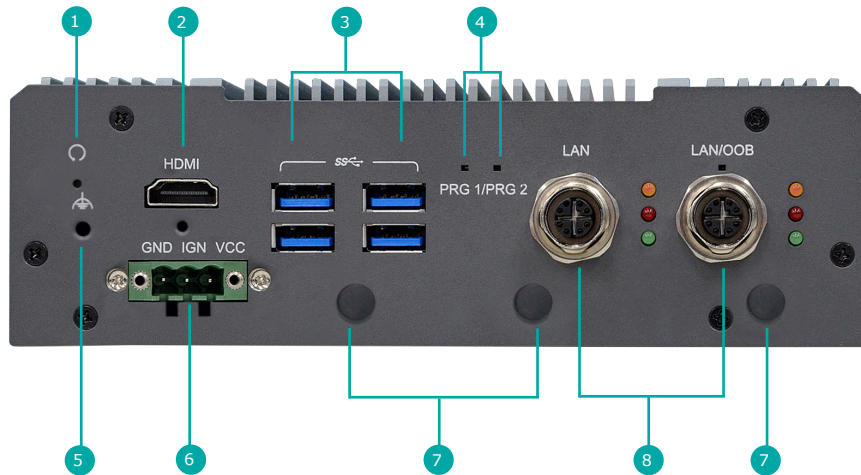
The system may burn fingers while running.

Wait for 30 minutes to handle electronic parts after power off.

Chapter 1 - Introduction

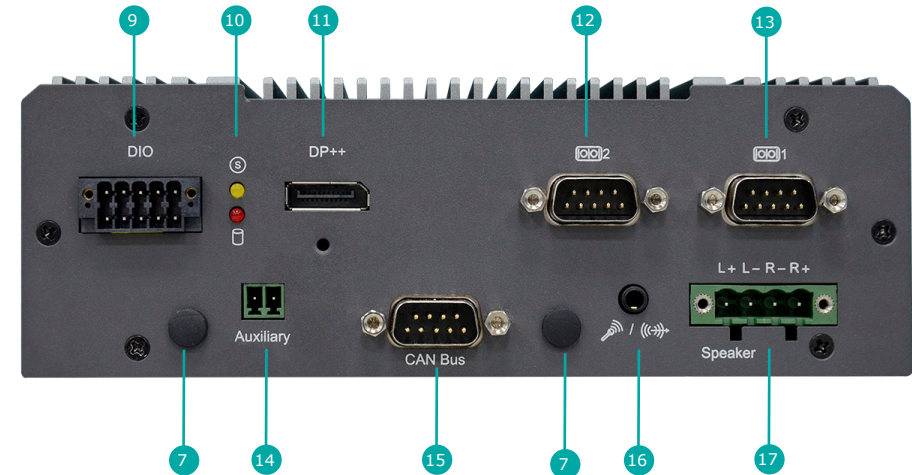
► Overview

Front View



- | | |
|--------------------------------------|---|
| 1 Reset Button | 5 Grounding |
| 2 1 x HDMI | 6 Vehicle Power and Ignition |
| 3 4 x USB 3.2 type A | 7 Antenna Holes |
| 4 2 x Programmable LED (Green, Blue) | 8 2 x GbE (M12 X-code) (1 share with OOB) |

Rear View



- | | |
|-------------------------------------|------------------------------|
| 9 1 x DIO | 14 Auxiliary |
| 10 1 x Power LED
1 x Storage LED | 15 1 x CAN Bus |
| 11 1 x DP++ | 16 1 x 3.5mm Line out/Mic In |
| 12 1 x COM2 | 17 1 x Speaker |
| 13 1 x COM1 | |

Side View



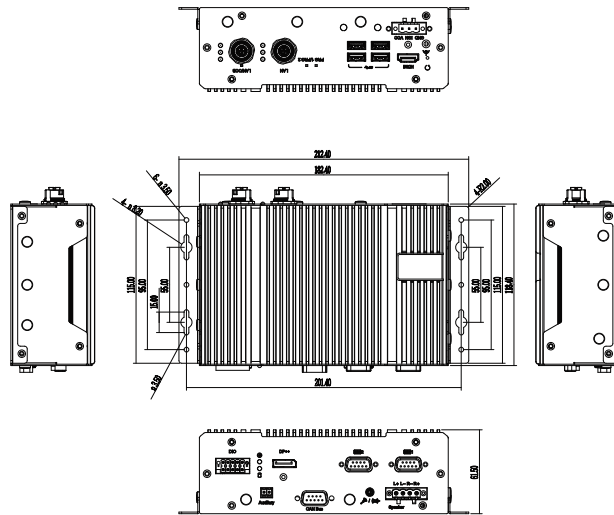
7 Antenna Holes

Side View

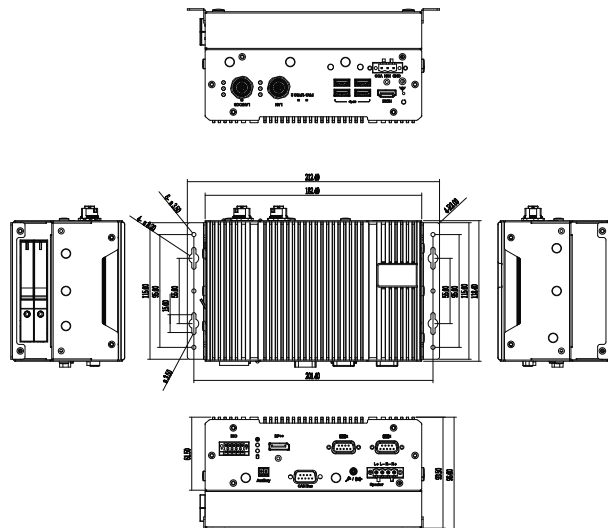


7 Antenna Holes

► Dimensions



2 x 2.5 inch SSD drive bays



► Key Features

Intel ATOM X7000RE Wide Temperature Series:

Support WIN 11 and Linux

9-axis IMU Sensor:

3 Accelerometer + 3 Gyroscope + 3 Magnetometer

Rich I/O Connectivity:

2 M12 GbE, 2 COM, 2 CAN Bus, 8bit DIO, 4 USB 3.2

Wide-Voltage:

9~36V vehicle power input with ACC/IGN function

Wide-Temperature:

-40°C~70°C operation without active fan

The energy efficiency in-vehicle telematics system assists smart vehicles in collecting data, including vehicle speed, engine speed, network packet records, etc., and finally uploads them to cloud storage through 4G synchronously for daily data analysis and services.

► Specifications

SYSTEM	Processor	Intel® Atom X7000RE processors (Code Name : Amston Lake) Intel® Atom Processor x7835RE, 8 Cores, 1.3~3.6GHz, 12W Intel® Atom Processor x7433RE, 4 Cores, 1.5~3.4GHz, 9W Intel® Atom Processor x7211RE, 2 Cores, 1.0~3.2GHz, 6W
	Memory	4GB/8GB LPDDR5 5200 Memory down
	BIOS	AMI SPI 64Mbit
GRAPHICS	Controller	Intel® HD Graphics
	Feature	Execution Units: Up to 32 Eus 3D API: Open GL 4.6, DirectX12, Vulkan 1.2 (Windows) / Mesa 3D,OpenGL 4.6, Vulkan 1.2 (Linux) Precision: FP32, FP16, INT8 Compute: OpenCL 3.0
	Display	1 x HDMI 1.4b (resolution up to 4096x2160 @ 24Hz) 1 x DP++ (resolution up to 4096x2160@24Hz)
STORAGE	Internal	eMMC 64GB or 128GB (Removeable)
	External	2 x swappable 2.5" SATA drive bays (option)
EXPANSION	Interface	1 x M.2 2230 A+E key (USB 2.0/PCIe) 1 x M.2 3042/3052 B key (USB 3.0/USB 2.0/PCIe) with Nano SIM 1 x M.2 2242/2280 B+M key (PCIe/SATA) 2 x Mini-PCIe (1 Half; 1 Full) (USB 2.0)
ETHERNET	Controller	2 x Intel Ethernet controller i210 GbE
	Interface	2 x GbE (M12 X-code)
LED	Indicators	1 x Power LED 1 x Storage LED 2 x Programmable LED (Green, Blue)
GNSS	GNSS	Support GPS, QZSS, Galileo, GLONASS, BeiDou by u-blox NEO-M9N Dead reckoning support upon request
SENSOR	Sensor	9 axis IMU (3 Accelerometer + 3 Gyroscope + 3 Magnetometer)
FRONT I/O	Display	1 x HDMI
	Ethernet	2 x GbE (M12 X-code) (1 share with OOB)
	USB	4 x USB 3.2 type A
	Button	1 x Reset button
	Antenna	3 x Fakra antenna holes

REAR I/O	Display	1 x DP++
	Serial	2 x RS-232/422/485 (DB9-M)
	CAN	2 x CAN 2.0B (DB9-M) (CAN FD by request) Support J1939
	DIO	Isolated 8 bits DIO with 2.5KV isolation Input voltage: 0 to 30VDC Output current: 50mA pre pin and Max. 200mA total On-state voltage: 12VDC nominal, open collector to 30VDC.
	Audio	Stereo speaker with Amplifier to drive 10W speaker (4 pin Terminal) 1 x 3.5mm Line out/Mic In
	Antenna	2 x Fakra antenna holes
SIDE I/O	Antenna	3 x Fakra antenna holes 3 x Fakra antenna holes
WATCHDOG TIMER	Output & Interval	Watchdog timeout programmable via software from 1 to 255 seconds
SECURITY	TPM	TPM2.0 (NUVOTON)
POWER	Type	Wide range 9~36V with ignition control
	Connector	3-pole terminal block
OS SUPPORT	Microsoft	Windows 10/11
	Linux	Linux Ubuntu 22.04
MECHANISM	Construction	Aluminum + SPGC Metal
	Color	Black
	Mounting	Wall mount
	Dimensions (W x H x D)	182.4mm x 61.5mm x 118.4mm 182.4mm x 93.5mm x 118.4mm (2.5" SATA drive bays)
	Weight	TBD
ENVIRONMENT	Temperature	Operating: -40 to 70°C Storage: -40 to 85°C
STANDARDS AND CERTIFICATIONS	Shock	Operating/non-operating: MIL-STD-810G Method 516.6, Procedure 1
	Vibration	Operating/non-operating: MIL-STD-810G Method 514.6, Category 4
	Certification	CE, FCC, E-Mark (E24), ITxPT, RoHS, UKCA (To be updated)

Chapter 2 - Hardware Installations

► Removing the Chassis Cover

Please observe the following guidelines and follow the instructions to open the system.

1. Make sure the system and all other peripheral devices connected to it have been powered off.
2. Disconnect all power cords and cables.

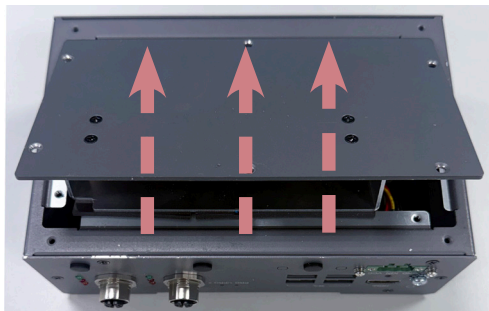
Step 1:

To remove the bottom cover - The 6 screws on the bottom of the system are used to secure the cover to the chassis. Remove the screws and put them in a safe place for later use. And then tilt the cover to remove it.



Step 2:

Lift the cover to open the system.



Step 3:

The board can be easily accessed after the chassis cover is removed.



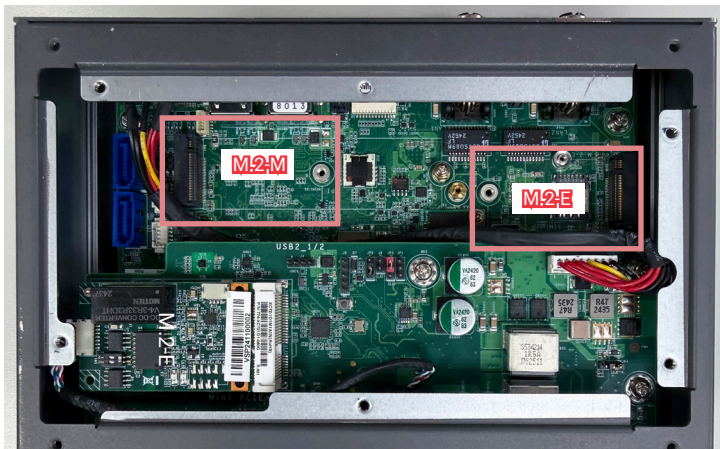
► Installing an M.2 Card

Please observe the following guidelines and follow the instructions to open the system.

1. Make sure the system and all other peripheral devices connected to it have been powered off.
2. Disconnect all power cords and cables.

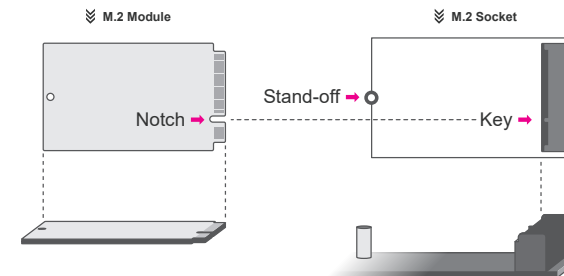
Step 1:

The 6 screws on the bottom of the system are used to secure the cover to the chassis. Remove the screws and put them in a safe place for later use. Lift the cover to open the system. M.2 card slots can be easily accessed after the chassis cover is removed.



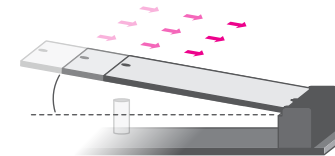
Step 2:

Please follow the steps below to install the card into the socket. Insert the card into the socket at an angle while making sure the notch and key are perfectly aligned.



Step 3:

Press the end of the card far from the socket down until against the stand-off.



Step 4:

Screw tight the card onto the stand-off with a screw driver and a stand-off screw until the gap between the card and the stand-off closes up. The card should be lying parallel to the board when it's correctly mounted.



► Installing an Antenna

Before installing the antenna, please make sure that the following safety cautions are well-attended.

1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.

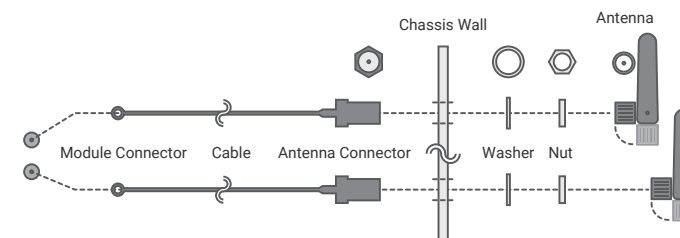
Step 1:

There are antenna holes reserved on every side of the system and covered by rubber plugs. Please remove the plug prior to installing an antenna.



Step 2:

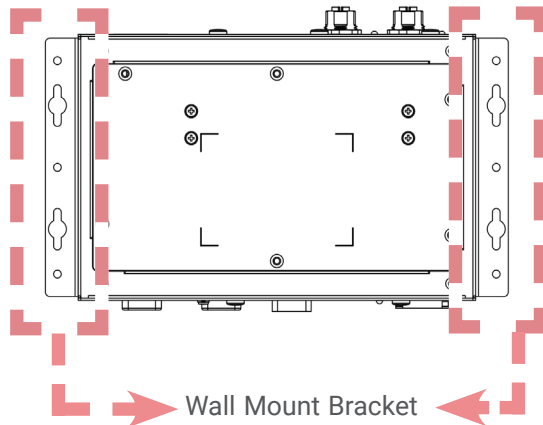
Connect the internal cable to the board's antenna connector, screw the antenna connector through the antenna hole with washers and nuts, and screw on the antenna as illustrated below.



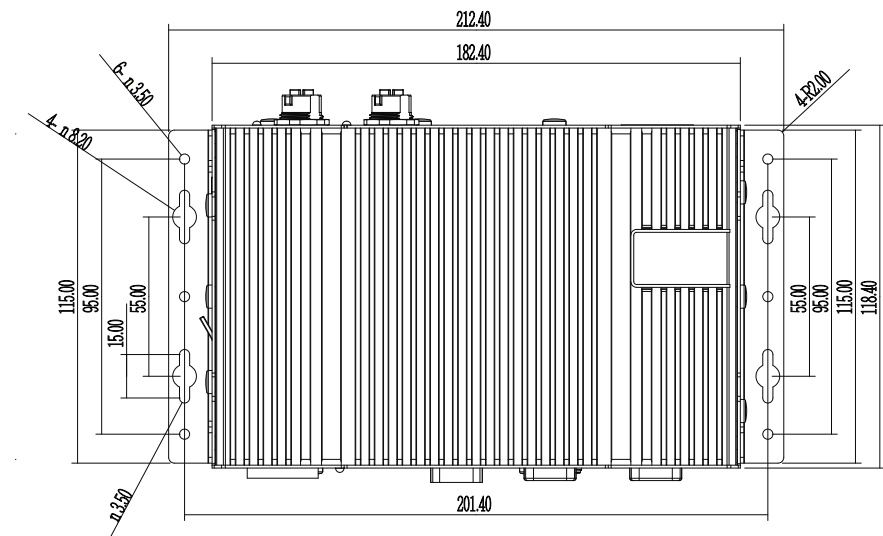
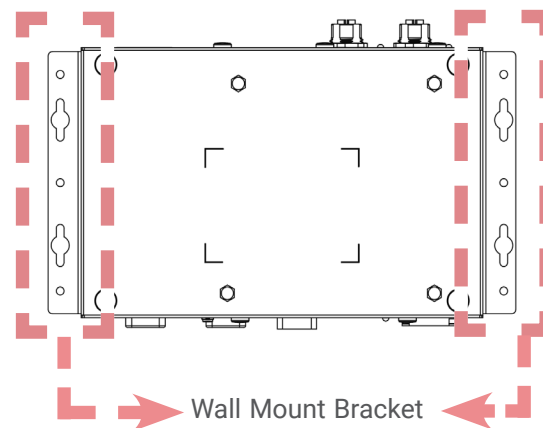
► Mounting Options

Wall Mount

The wall mount kit containing two mounting brackets — purchased as optional items — can be attached to the bottom of the system for mounting onto desired locations, such as walls, stands, or shelves. Locate the mounting holes on the bottom of the system as shown in the photo. Screw on the two brackets onto the system with four screws as illustrated below.



2 x 2.5 inch SSD drive bays



Chapter 3 - System Setting and Interface

► Pin Assignment

24V/12V Select (JP3)



Pin	Assignment
1	3.3V
2	12V_24V_DET
3	GND



USB2.0 Header (J4)



Pin	Assignment
1	5V
2	USB2_N
3	USB2_P
4	GND



DC IN (9V~36V) (J7)



Pin	Assignment
1	DC_IN
2	DC_IN
3	DC_IN
4	DC_IN
5	GND
6	GND
7	GND
8	GND



SATA POWER (CN5 & CN6)



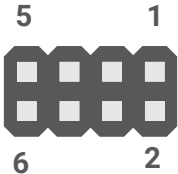
Pin	Assignment
1	5V
2	5V
3	12V
4	GND
5	GND



Front Panel (JP1)



Pin	Assignment	Pin	Assignment
1	PWR_BTN0	2	3V3SB
3	GND	4	SUS_LED#
5	SYS_RST0	6	HD_LED#



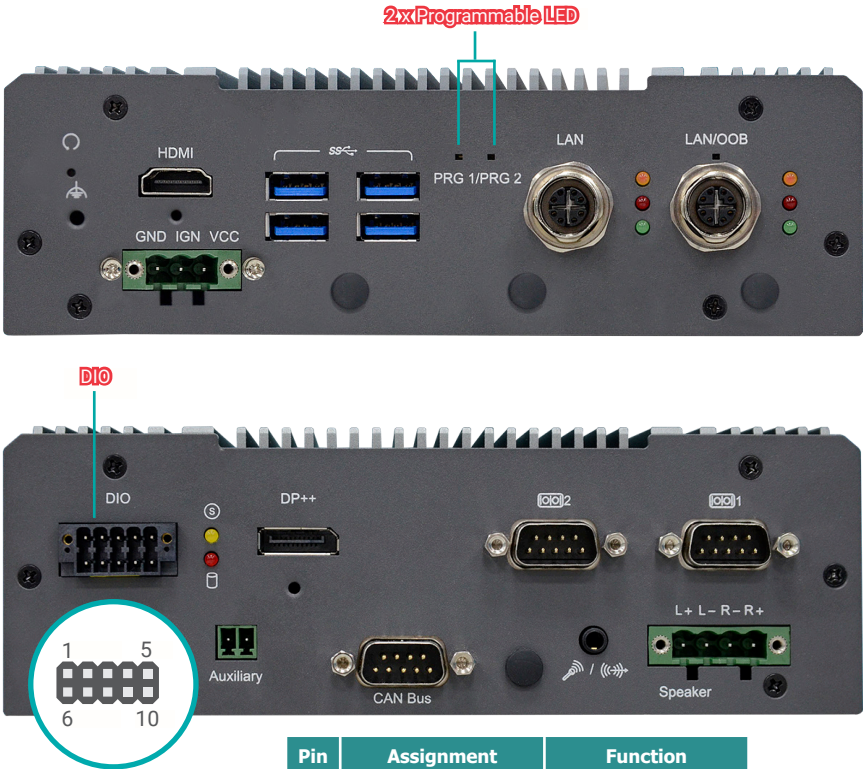
I2C (J8)



Pin	Assignment
1	3V3SB
2	GND
3	I2C1_SCL
4	I2C1_SDA
5	I2C1_INT#



► DIO and Programmable LED Indicators



Pin	Assignment	Function
1	Power	---
2	DI0	GPIO 4
3	DI1	GPIO 5
4	DI2	GPIO 6
5	DI3	GPIO 7
6	GND	---
7	DO0	GPIO 0
8	DO1	GPIO 1
9	DO2	GPIO 2
10	DO3	GPIO 3
N/A	PRG 1	GPIO 8
N/A	PRG 2	GPIO 9

EAPI GPIO Control Interface



Note:
The DIO and LED can be controlled through the EAPI application provided by DFI.
For detailed operation procedures, please refer to the DFI EAPI Programming Guide.

Chapter 4 - BIOS Settings

► Overview

The BIOS is a program that takes care of the basic level of communication between the CPU and peripherals. It contains codes for various advanced features found in this system board. The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data retains even when the power is off. In general, the information stored in the CMOS RAM of the EEPROM will stay unchanged unless a configuration change has been made such as a hard drive replaced or a device added. It is possible that the CMOS battery will fail causing CMOS data loss. If this happens, you need to install a new CMOS battery and reconfigure the BIOS settings.

**Note:**

The BIOS is constantly updated to improve the performance of the system board; therefore the BIOS screens in this chapter may not appear the same as the actual one. These screens are for reference purpose only.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering the BIOS Setup Utility

The BIOS Setup Utility can only be operated from the keyboard and all commands are keyboard commands. The commands are available at the right side of each setup screen. The BIOS Setup Utility does not require an operating system to run. After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the message "Press DEL to run setup" will appear on the screen. If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

Legends

Keys	Function
Right / Left arrow	Move the highlight left or right to select a menu
Up / Down arrow	Move the highlight up or down between submenus or fields
<Enter>	Enter the highlighted submenu
+ (plus key)/F6	Scroll forward through the values or options of the highlighted field
- (minus key)/F5	Scroll backward through the values or options of the highlighted field
<F1>	Display general help
<F2>	Display previous values
<F7>	Popup Boot Device List
<F9>	Optimized defaults
<F10>	Save and Exit
<Esc>	Return to previous menu

Scroll Bar

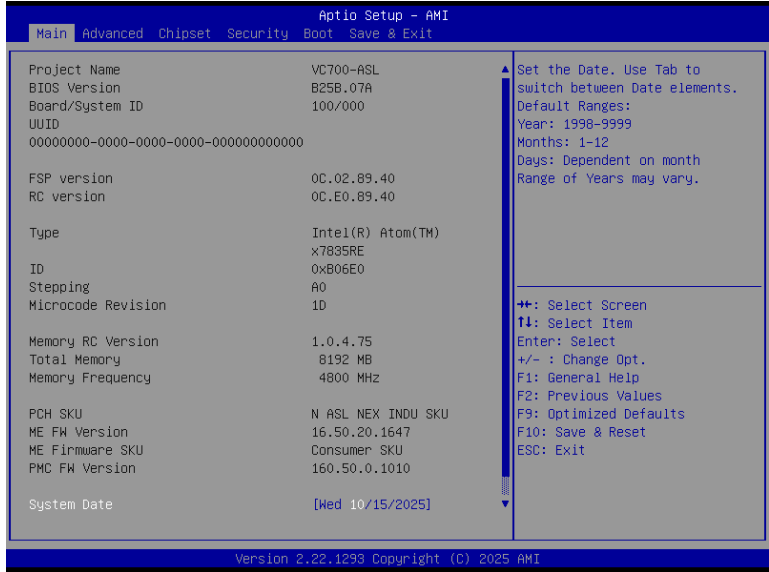
When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When "►" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>.

► Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.



System Date

The date format is <month>, <date>, <year>. Press "Tab" to switch to the next field and press "-" or "+" to modify the value.

System Time

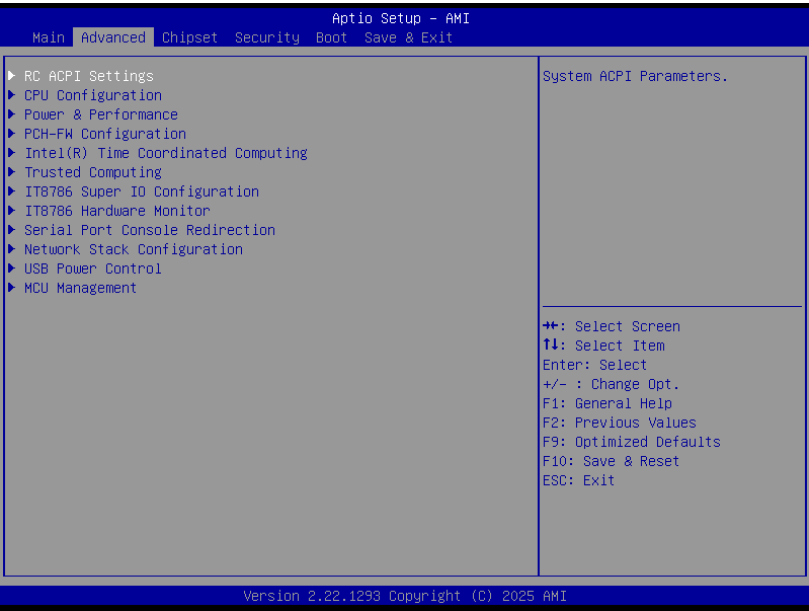
The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

► Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

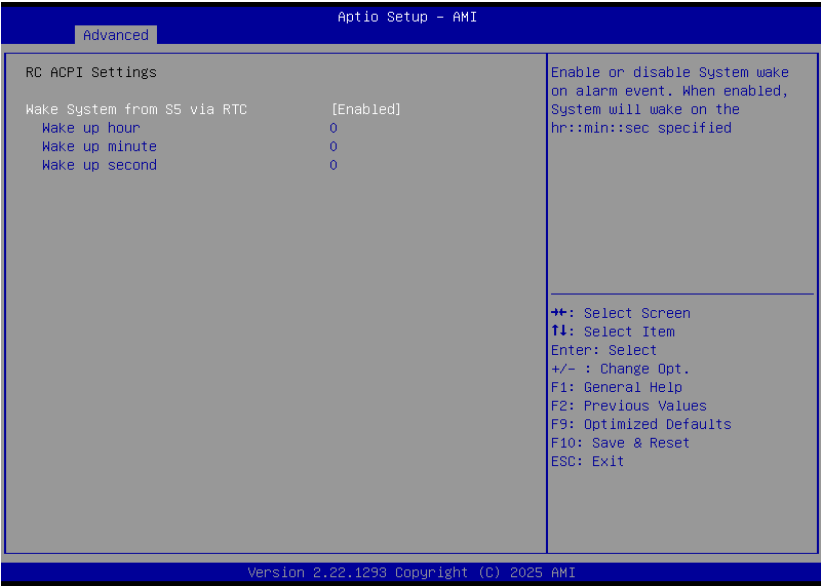


Important:
Setting incorrect field values may cause the system to malfunction.



► Advanced

RC ACPI Settings



Wake system from S5 via RTC

When Enabled, the system will automatically power up at a designated time every day. Once it's switched to [Enabled], please set up the time of day – hour, minute, and second – for the system to wake up.

Wake up hour

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

Wake up minute

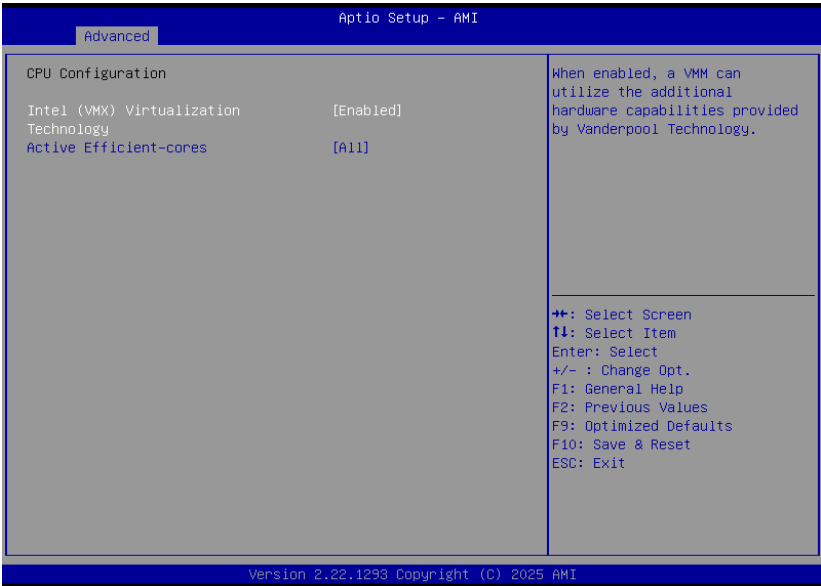
Select 0-59

Wake up second

Select 0-59

► Advanced

CPU Configuration



Intel (VMX) Virtualization Technology

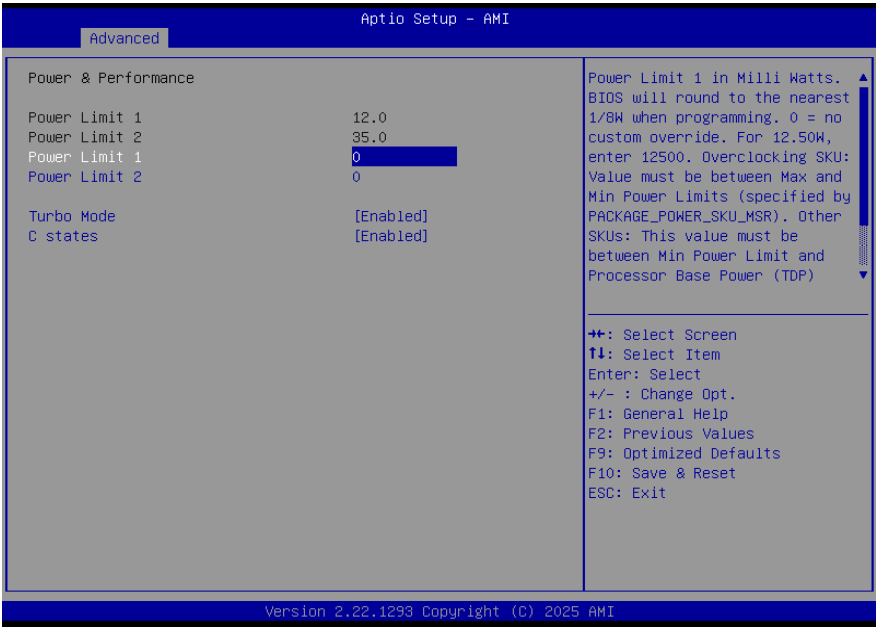
When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Active Efficient Cores

Select number of cores to enable in each processor package: all or 1.

► Advanced

Power & Performance



Turbo Mode

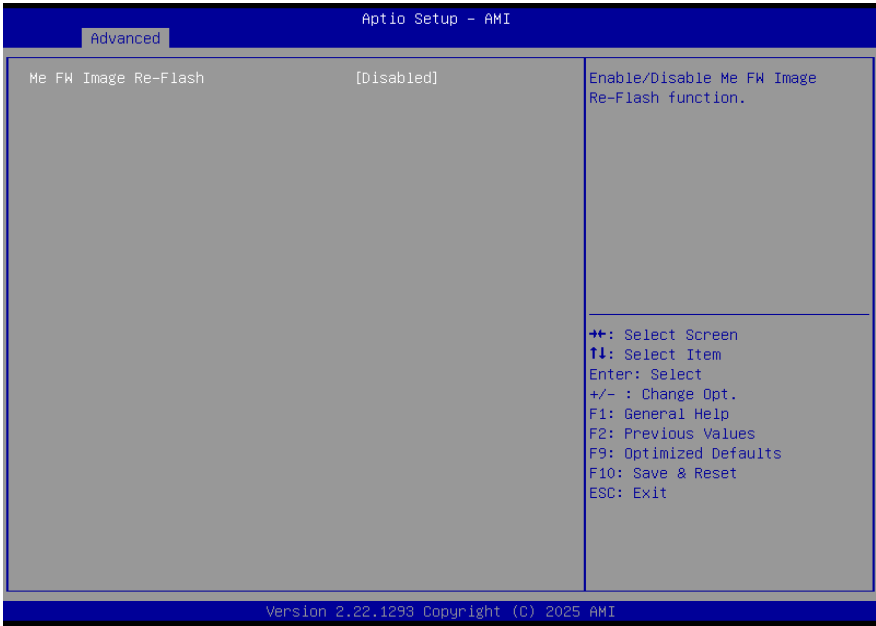
Enable or disable turbo mode of the processor. This field will only be displayed when EIST is enabled.

C states

Enable or disable CPU Power Management. It allows CPU to enter "C states" when it's idle and nothing is executing.

► Advanced

PCH-FW Configuration

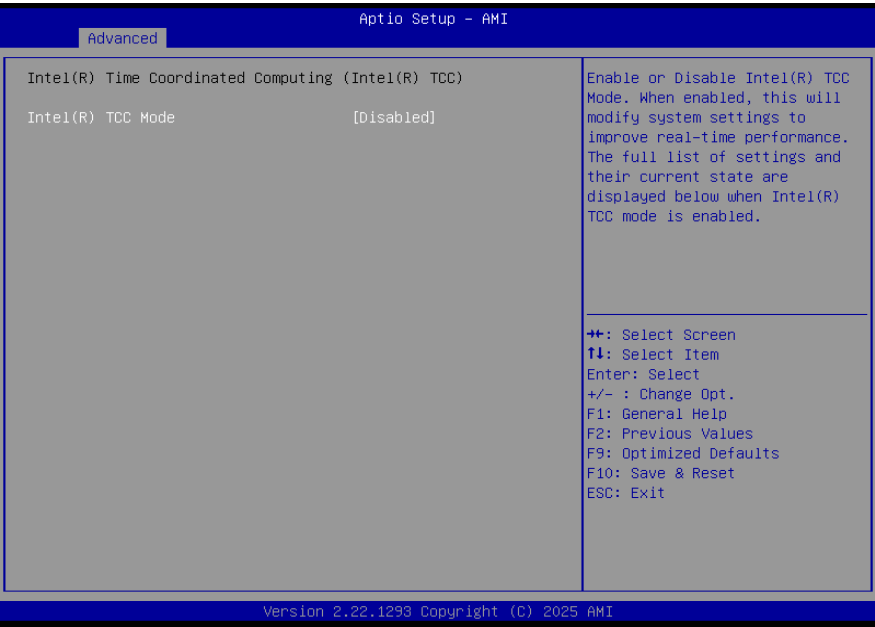


ME FW Image Re-Flash

Enable / Disable ME FW Image Re-Flash function.

► Advanced

Intel(R) Time Coordinated Computing



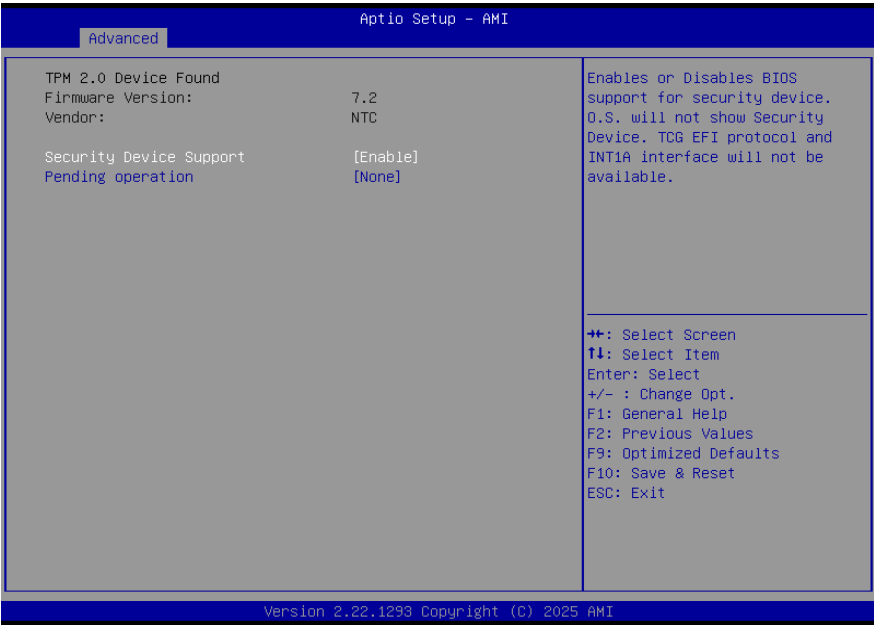
Intel(R) TCC Mode

Enable or Disable Intel(R) TCC Mode.

When enabled, this will modify system settings to improve real-time performance. The full list of settings and their current state are displayed below when Intel (R) TCC mode is enabled.

► Advanced

Trusted Computing



Security Device Support

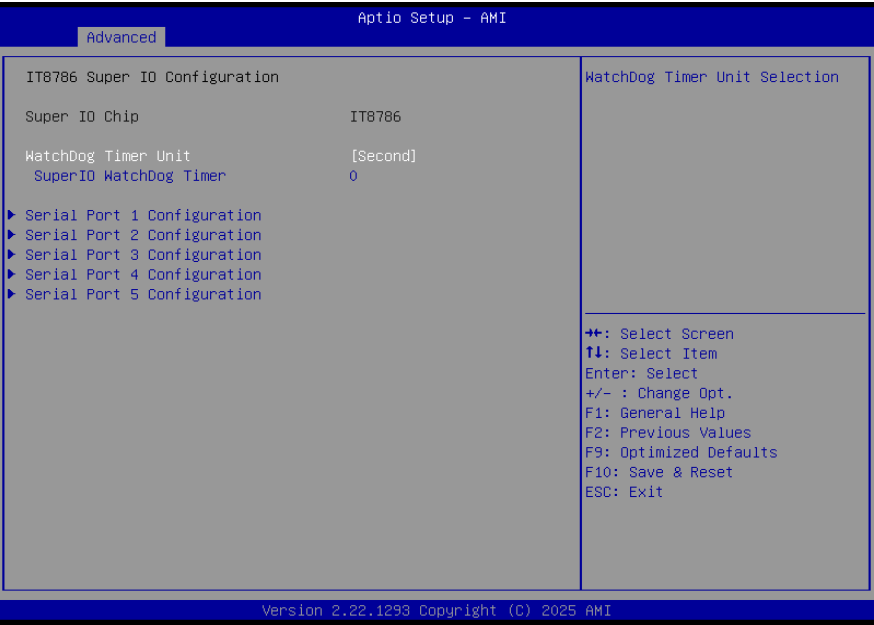
This field is used to enable or disable BIOS support for the security device such as an TPM 2.0 to achieve hardware-level security via cryptographic keys.

Pending operation

To clear the existing TPM encryption, select "TPM Clear" and restart the system. This field is not available when "Security Device Support" is disabled.

► Advanced

IT8786 Super IO Configuration



WatchDog Timer Unit

Select WatchDog Timer Unit — Second or Minute.

SuperIO WatchDog Timer

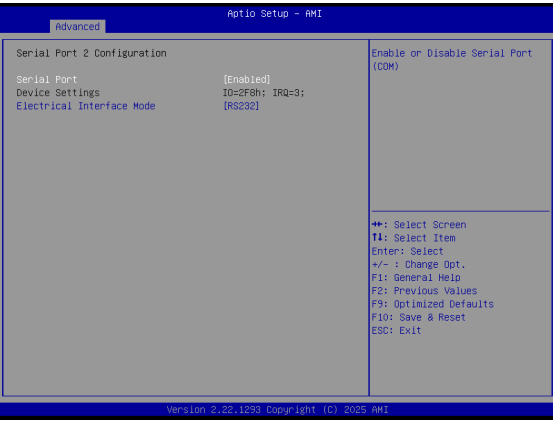
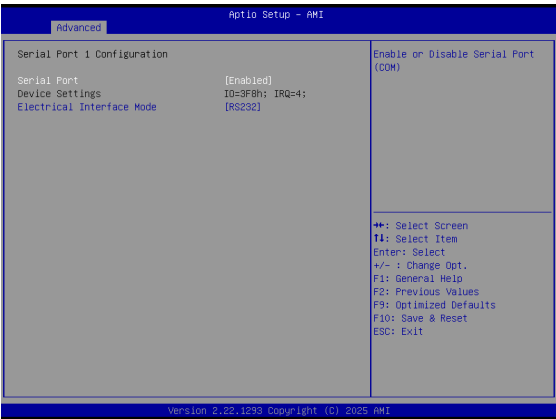
Set SuperIO WatchDog Timer Timeout value. The range is from 0 (disabled) to 255.



Note:
The sub-menus are detailed in following sections.

► Advanced

IT8786 Super IO Configuration ► Serial Port 1, 2 Configuration

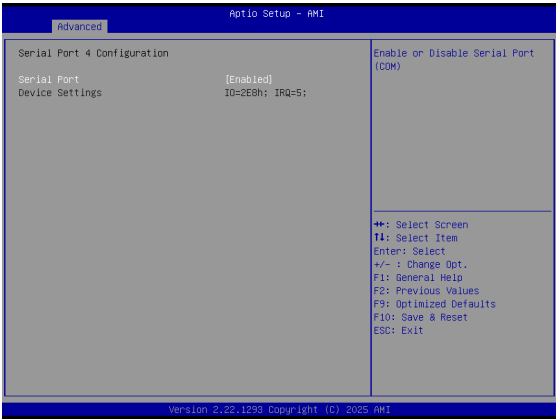
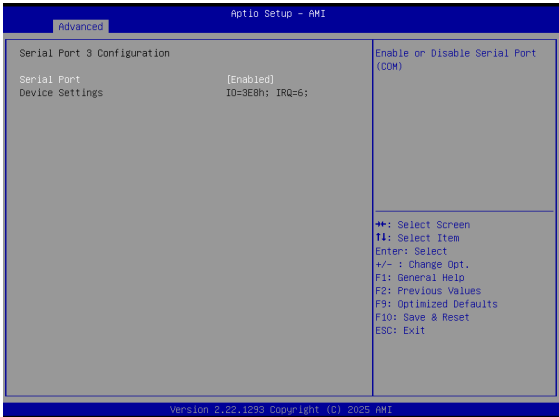


Serial Port

Enable or disable serial port.

► Advanced

IT8786 Super IO Configuration ► Serial Port 3, 4 Configuration

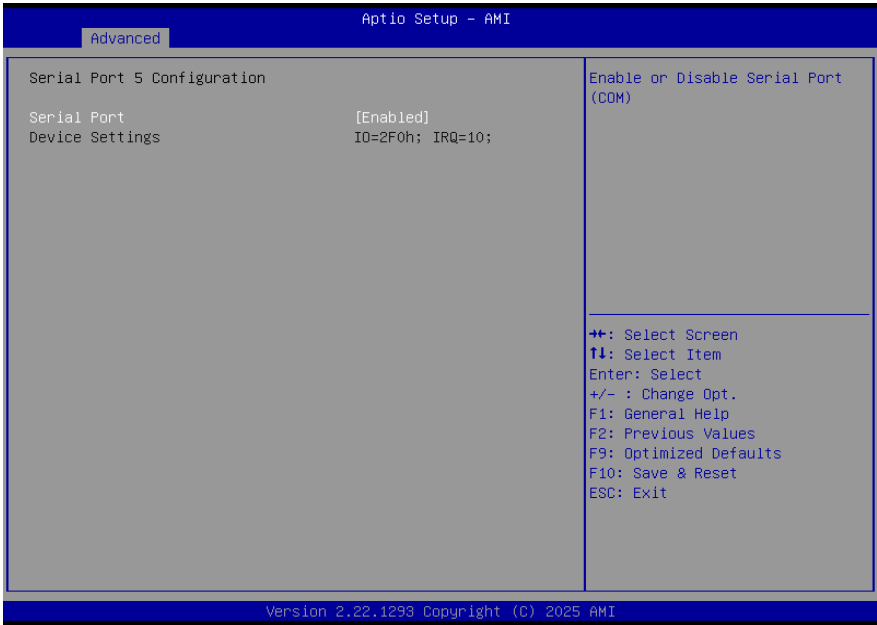


Serial Port

Enable or disable serial port.

► Advanced

IT8786 Super IO Configuration ► Serial Port 5 Configuration

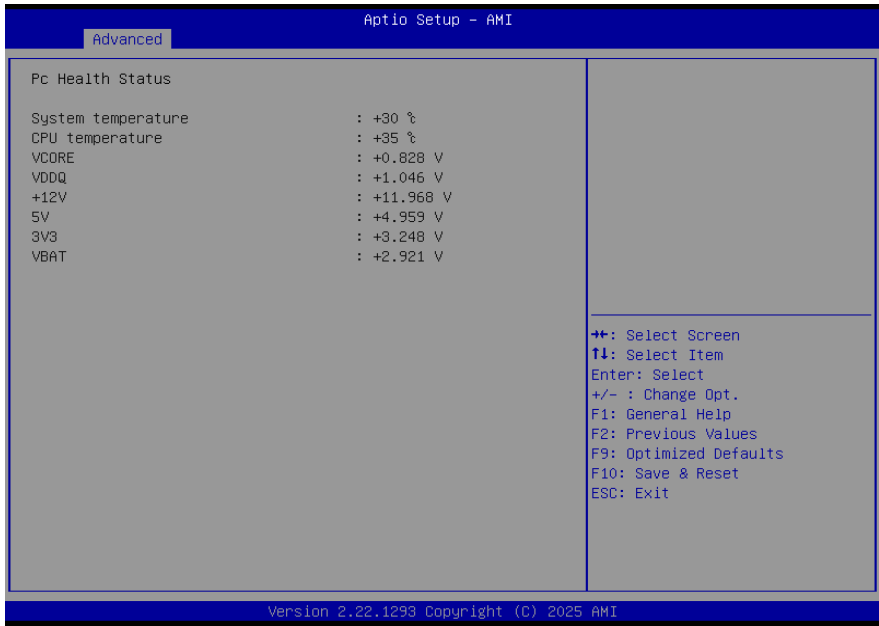


Serial Port

Enable or disable serial port.

► Advanced

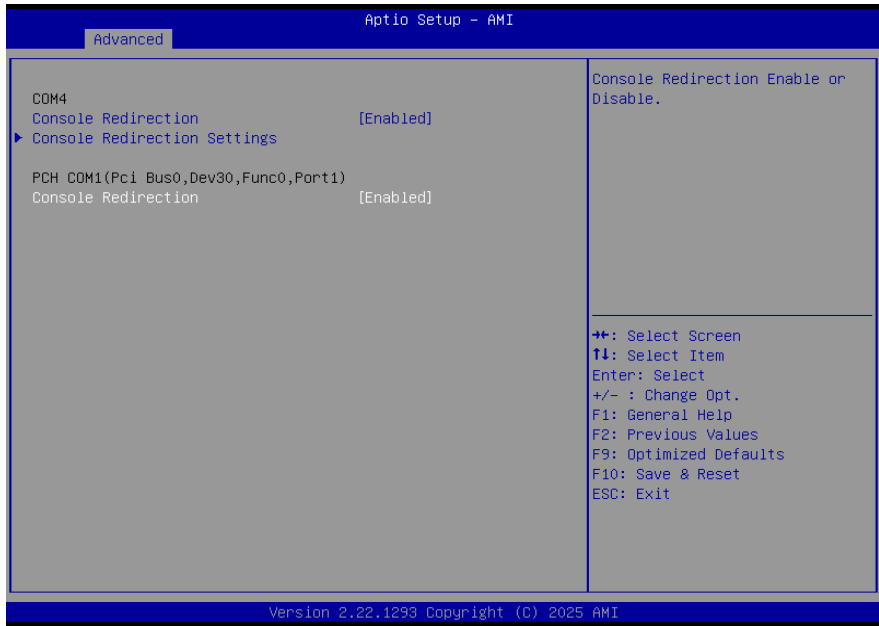
IT8786 Hardware Monitor



This section displays the system's health information, i.e. voltage readings, CPU and system temperatures, and fan speed readings

► Advanced

Serial Port Console Redirection

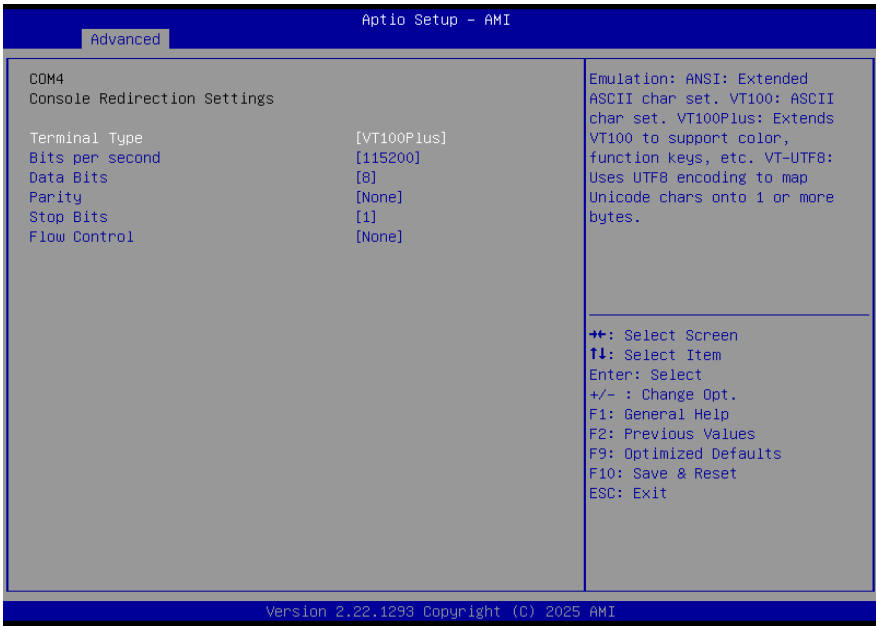


Console Redirection

By enabling Console Redirection of a COM port, the sub-menu of console redirection settings will become available for configuration as detailed in the following.

► Advanced

Serial Port Console Redirection ► Console Redirection Settings



Configure the serial settings of the current COM port.

Terminal Type

Select terminal type: VT100, VT100+, VT-UTF8 or ANSI.

Bits per second

Select serial port transmission speed: 9600, 19200, 38400, 57600 or 115200.

Data Bits

Select data bits: 7 bits or 8 bits.

Parity

Select parity bits: None, Even, Odd, Mark or Space.

Stop Bits

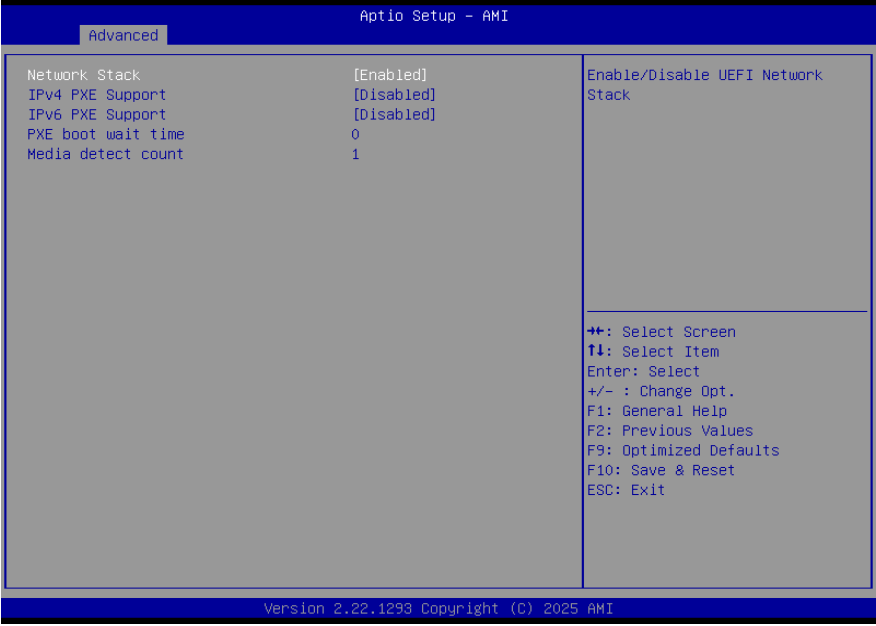
Select stop bits: 1 bit or 2 bits.

Flow Control

Select flow control type: None or Hardware RTS/CTS. Flow Control is for RS485 mode and is only supported by Serial Port 1 (COM1).

► Advanced

Network Stack Configuration



Network Stack

Enable or disable UEFI network stack. The following fields will appear when this field is enabled.

Ipv4 PXE Support

Enable or disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.

Ipv6 PXE Support

Enable or disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.

PXE boot wait time

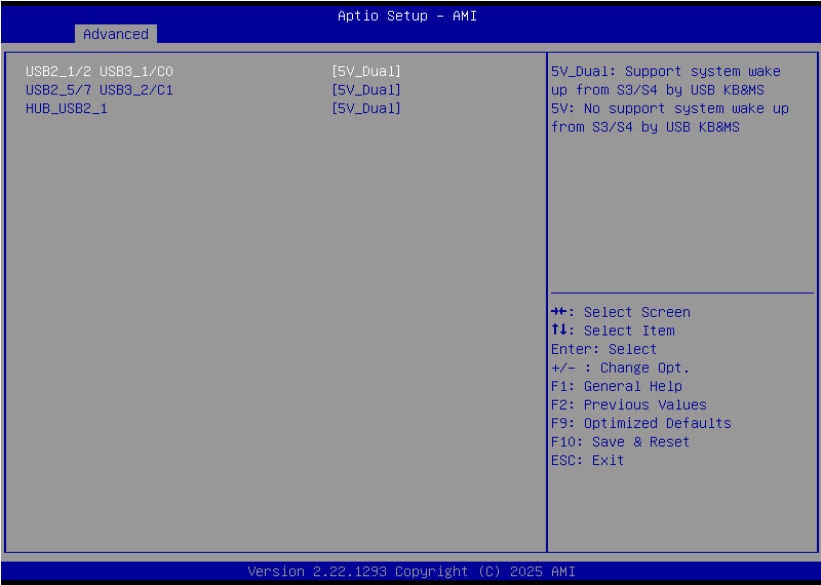
Set the wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.

Media detect count

Set the number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

► Advanced

USB Power Control



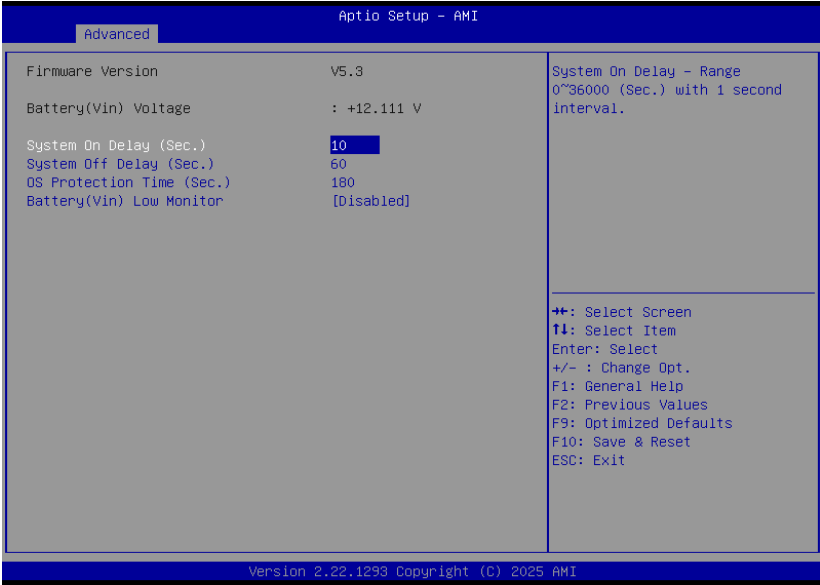
Server CA Configuration

5_Dual: Support system wake up from S3/S4 by USB KB&MS

5V: No support system wake up from S3/S4 by USB KB&MS

► Advanced

Ignition Power Control



System On Delay (Sec.)

Range 0~36000 (Sec.) with 1 second interval.

System Off Delay (Sec.)

Range 0~36000 (Sec.) with 1 second interval.

OS Protection Time (Sec.)

Range 120~36000 (Sec.) with 10 second interval.

Battery (Vin) Low Monitor

Battery (Vin) Low Voltage setup : **9.0V, 9.5V, 10.0V, 10.5V, 11.0V, 11.5V**



Note:

12V Power

Battery (Vin) Low Voltage setup : 9.0V, 9.5V, 10.0V, 10.5V, 11.0V, 11.5V

24V Power

Battery (Vin) Low Voltage setup : 21.0V, 21.5V, 22.0V, 22.5V, 23.0V, 23.5V

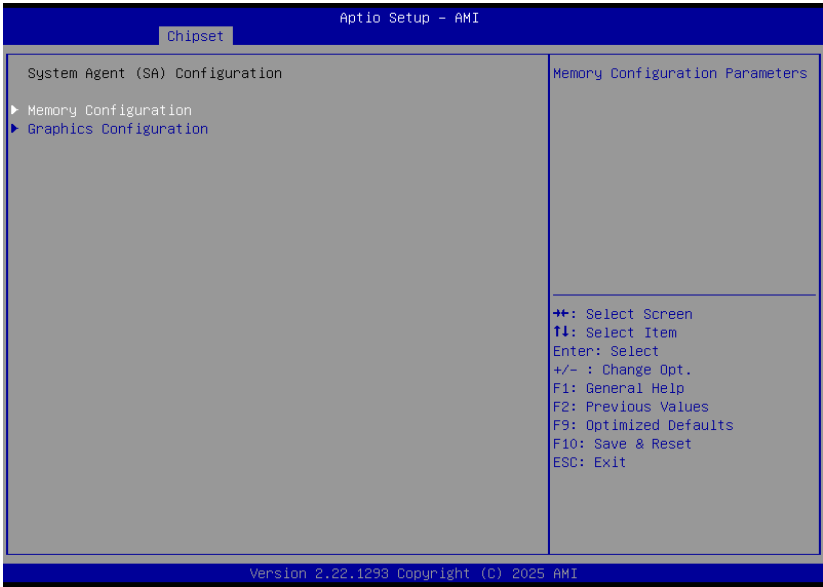
► Chipset



Please select a submenu and press Enter. The submenus are detailed in the following pages.

► Chipset

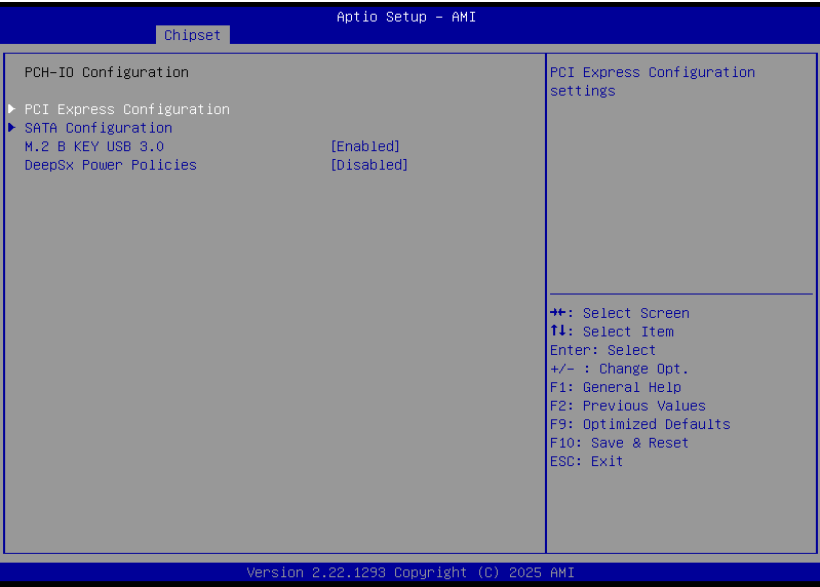
System Agent (SA) Configuration



- Memory Configuration**
Memory Configuration Parameters
- Graphics Configuration**
Graphics Configuration

► Chipset

PCH-IO Configuration



PCI Express Configuration

PCI Express Configuration Settings

SATA And RST Configuration

SATA Device Options Settings

M.2 B KEY USB3.0

Enable/Disable this USB Physical Connector (physical port).
Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.

DeepSx Power Policies

Configure the DeepSx Mode configuration:

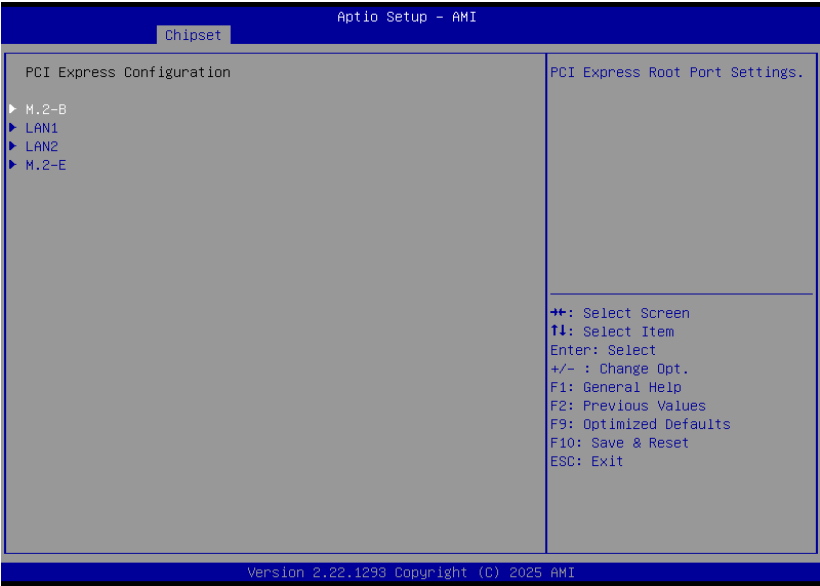
Disabled

Enabled in S4-S5

Enabled in S5

► Chipset

PCH-IO Configuration ► PCI Express Configuration



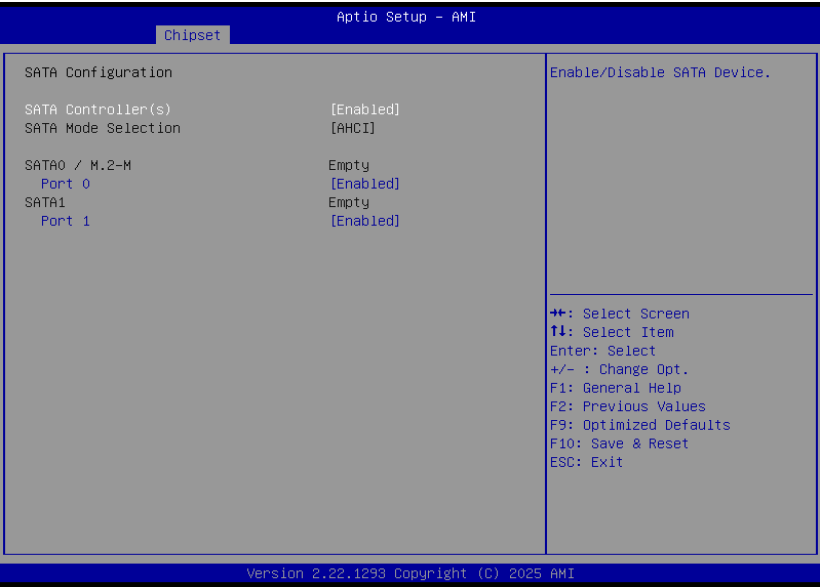
Select one of the PCI Express channels and press enter to configure the following settings.

LAN1, LAN2, M.2-E, M.2-B

Control the PCI Express Root Port.

► Chipset

PCH-IO Configuration ► SATA Configuration



SATA Controller(s)

This field is used to enable or disable the Serial ATA controller.

SATA Mode Selection

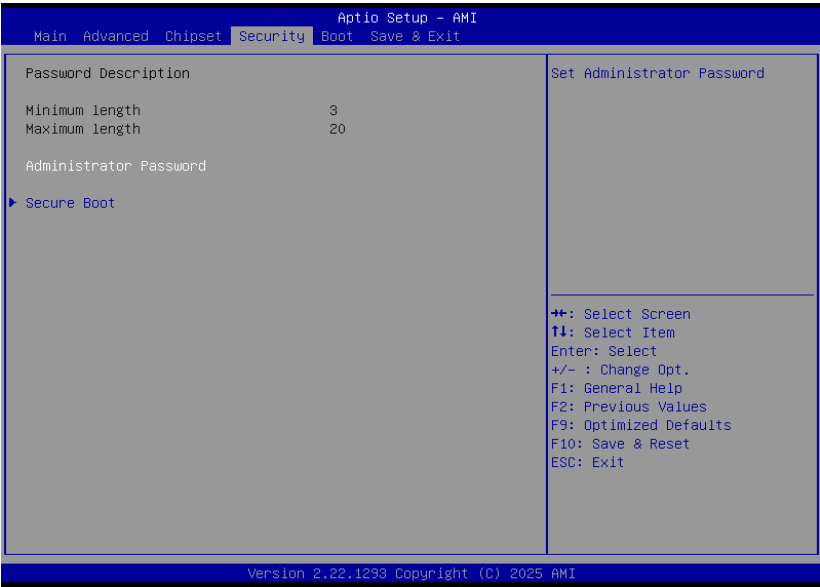
The mode selection determines how the SATA controller(s) operates.

- **AHCI** This option allows the Serial ATA controller(s) to use AHCI (Advanced Host Controller Interface).

Ports

Enable or disable the Serial ATA port.

► Security

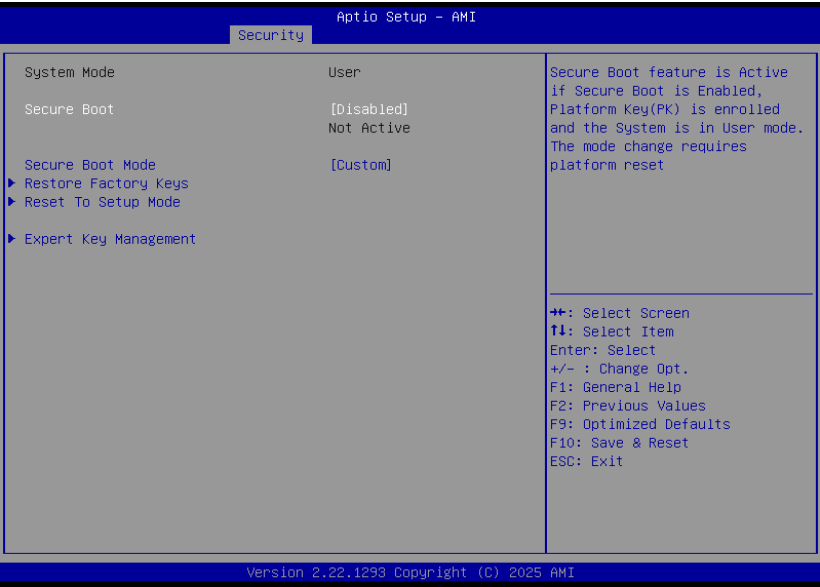


Administrator Password

Set the administrator password. To clear the password, input nothing and press enter when a new password is asked. Administrator Password will be required when entering the BIOS.

► Security

Secure Boot



Secure Boot

The Secure Boot store a database of certificates in the firmware and only allows the OSes with authorized signatures to boot on the system. To activate Secure Boot, please make sure that “Secure Boot” is “[Enabled]”, Platform Key (PK) is enrolled, “System Mode” is “User”, and CSM is disabled. After enabling/disabling Secure Boot, please save the configuration and restart the system. When configured and activated correctly, the Secure Boot status will be “Active”.

Secure Boot Mode

Select the secure boot mode — Standard or Custom. When set to Custom, the following fields will be configurable for the user to manually modify the key database.

Restore Factory Keys

Force system to User Mode. Load OEM-defined factory defaults of keys and databases onto the Secure Boot. Press Enter and a prompt will show up for you to confirm.

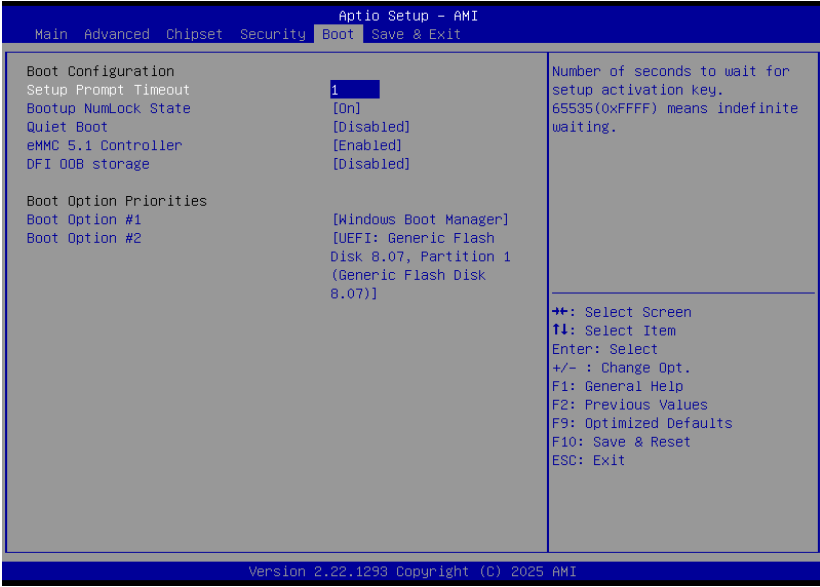
Reset To Setup Mode

Clear the database from the NVRAM, including all the keys and signatures installed in the Key Management menu. Press Enter and a prompt will show up for you to confirm.

Key Management

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

► Boot



Setup Prompt Timeout

Set the number of seconds to wait for the setup activation key. 65535 (0xFFFF) denotes indefinite waiting.

Bootup NumLock State

Select the keyboard NumLock state: On or Off.

Quiet Boot

This section is used to enable or disable quiet boot option.

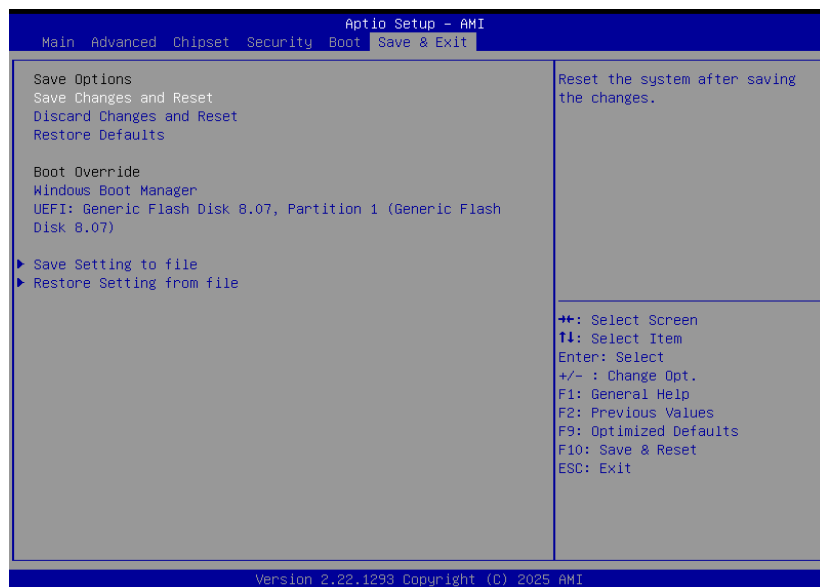
Boot Option Priorities

Rearrange the system boot order of available boot devices.



Note:
If “Boot option filter” of “CSM Configuration” is set to “UEFI and Legacy” or “UEFI only”, and “Quiet Boot” is set to enabled, “BGRT Logo” will show up for configuration. Refer to the Advanced > CSM Configuration submenu for more information.

► Save & Exit

**Save Changes and Reset**

To save the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system after saving all changes made.

Discard Changes and Reset

To discard the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system setup without saving any changes.

Restore Defaults

To restore and load the optimized default values, select this field and then press <Enter>. A dialog box will appear. Select Yes to restore the default values of all the setup options.

Boot Override

Move the cursor to an available boot device and press Enter, and then the system will immediately boot from the selected boot device. The Boot Override function will only be effective for the current boot. The "Boot Option Priorities" configured in the Boot menu will not be changed.

- **Save Setting to file** Select this option to save BIOS configuration settings to a USB flash device.
- **Restore Setting from file** This field will appear only when a USB flash device is detected. Select this field to restore setting from the USB flash device.

► Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility. Please contact technical support or your sales representative for the files and specific instructions about how to update BIOS with the flash utility.

► Notice: BIOS SPI ROM

1. The Intel® Management Engine has already been integrated into this system board. Due to the safety concerns, the BIOS (SPI ROM) chip cannot be removed from this system board and used on another system board of the same model.
2. The BIOS (SPI ROM) on this system board must be the original equipment from the factory and cannot be used to replace one which has been utilized on other system boards.
3. If you do not follow the methods above, the Intel® Management Engine will not be updated and will cease to be effective.

**Note:**

- a. You can take advantage of flash tools to update the default configuration of the BIOS (SPI ROM) to the latest version anytime.
- b. When the BIOS IC needs to be replaced, you have to populate it properly onto the system board after the EEPROM programmer has been burned and follow the technical person's instructions to confirm that the MAC address should be burned or not.