DFI®

ES220-CS

(CS1S/CS3S)

Desktop Box PC

User's Manual

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Trademarks

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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.

Table of Contents

Copyright 2

Trademarks 2

FCC and DOC Statement on Class A 2

About this Manual 4

Static Electricity Precautions 4

Safety Measures 4

Safety Precautions 5

About the Package 5

Before Using the System 6

Chapter 1 - Introduction 7

- Specifications 7
- Getting to Know the ES220-CS 8
- Mechanical Dimensions 9

Chapter 2 - Getting Started 11

Chapter 3 - Installing Devices 12

Chapter 4 - BIOS Setup 15

- Overview 15
- Main 16
- Advanced 16
- Chipset 28
- Security 31
- Boot 32
- Save & Exit 32
- Updating the BIOS 33
- Notice: BIOS SPI ROM 33

About this Manual

An electronic file of this manual can be obtained from the DFI website at www.dfi.com. To download the user's manual from our website, please go to Support > Download Center. On the Download Center page, select your product or type the model name and click "Search" to find all technical documents including the user's manual for a specific product.

Warranty

1. Warranty does not cover damages or failures that arised 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.

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 con nectors 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 Measures

To avoid damage to the system:
- Use the correct AC input voltage range.

To reduce the risk of electric shock:
- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:
- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

Safety Precautions

- Use the correct DC 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 the power cord.
- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.
- Keep this system away from humidity.
- Place the system on a stable surface. Dropping it or letting it fall may cause damage.
- The openings on the system are for air ventilation to protect the system from overheating. DO NOT COVER THE OPENINGS.
- Place the power cord in such a way that it will not be stepped on. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the system and that it matches the voltage and current marked on the system's electrical range label.
- If the system will not be used 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 dropped or is damaged.
  - The system has obvious signs of breakage.

- 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 DC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

About the 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 ES220-CS system unit with wallmount
Adapter 12V 60W (option)
Power Cord 1830mm (option)
VESA mounting kit (option)

Optional Items

Optional Items	Part Number	Description
CPU	143-101805-500G	i7-9700TE, 1.8GHz to 3.8GHz, 8C8T, 12M cache, TDP 35W
	143-10220G-500G	i5-9500TE, 2.2GHz to 3.6GHz, 6C6T, 9M cache, TDP 35W
	143-10220E-500G	i3-9100TE, 2.2GHz to 3.2GHz, 4C4T, 6M cache, TDP 35W
	143-10240A-500G	i7-8700T, 2.4GHz to 4GHz, 6C12T, 12M cache, TDP 35W
	143-102104-501G	i5-8500T, 2.1GHz to 3.5GHz, 6C6T, 9M cache, TDP 35W
	143-103105-500G	i3-8100T, 3.1GHz, 4C4T, 6M cache, TDP 35W
	143-103103-500G	G5400T, 3.1GHz, 2C4T, 4M cache, TDP 35W
	143-112900-500G	G4900T, 2.9GHz, 2C4T, 2M cache, TDP 35W
Memory	138-540002-106G	4GB DDR4 2666Mhz SO-DIMM 1Rx8 512Mx8 CL19 1.2V
	138-580004-102G	8GB DDR4 2666Mhz SO-DIMM 1Rx8 1Gx8 CL19 1.2V
	138-5G0163-102G	16GB DDR4 2666Mhz SO-DIMM 2Rx8 1Gx8 CL19 1.2V
	TBD	32GB DDR4 2666Mhz SO-DIMM 2Rx8 1Gx8 CL19 1.2V
	138-540002-107G	4GB DDR4 2666Mhz ECC-SO-DIMM 1Rx8 512Mx8 CL19 1.2V (C246 only)
	138-580004-103G	8GB DDR4 2666Mhz ECC-SO-DIMM 1Rx8 1Gx8 CL19 1.2V (C246 only)
	TBD	16GB DDR4 2666Mhz ECC-SO-DIMM 1Rx8 1Gx8 CL19 1.2V (C246 only)
	TBD	32GB DDR4 2666Mhz ECC-SO-DIMM 1Rx8 1Gx8 CL19 1.2V (C246 only)

OS	921-151310-000G	Win10 IoT Ent 2019 LTSC MultiLang High End EPKEA
	921-151320-000G	Win10 IoT Ent 2019 LTSC MultiLang High End PKEA
	921-151340-000G	Win10 IoT Ent 2019 LTSC MultiLang High Value EPKEA
	921-151330-000G	Win10 IoT Ent 2019 LTSC MultiLang High Value PKEA
	642-000W10-000G	Win Pro 10 64Bit English 1pk DSP OEI DVD version 1809
Adapter	671-110006-100G	Power Adapter AC/DC 100W 12V, inlet C14
	TBD	Power Adapter AC/DC 160W 12V, inlet C14
Power Cord	332-700010-201G	Power Cord US 3pin 1830mm Length
	A81-004003-000G	Power Cord EU 2pin 1830mm Length
	A81-000001-000G	Power Cord China 3pin 1830mm Length
	332-054034-005G	Power Cord Japan 3pin 1830mm Length, with PSE logo label on cable (for worldwide)
	A81-004056-000G	Power Cord Japan 3pin 2000mm Length, with PSE logo mark on inlet plug (for Japan)
	A81-004031-007G	DC Cord UL 1185 5.5*2.5*9.5mm with Nut to stripped and tinned; L1000mm
M.2 WIFI	761-OPS150-001G	1x intel M.2 2230 AC 3168.NGWG 802.11abgn/ac 1T1R + Bluetooth 4.2, 2x MHF4 to SMA cable 200mm 2x dipole antenna 1x M2x4mm screw
	TBD	1x Intel® Wireless-AC 9260, 2230, 2x2 AC+BT, Gigabit No vPRO 2x MHF4 to SMA cable 200mm 2x dipole antenna 1x M2x4mm screw
VESA MOUNT	TBD	1x VESA mount bracket for ES220-CS, SGCC 1.2T, Black coating 6x Screw P/W #6-32 L=6mm OD=6.6mm Zn coating 4x M.4*10mm w/spring washer

The board and accessories in the package may not come similar to the information listed above. This may differ in accordance to 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.

Before Using the System

Before powering-on the system, prepare the basic system components.

If you are installing the system board in a new system, you will need at least the following internal components.

- Memory module
- Storage devices such as hard disk drive

You will also need external system peripherals you intend to use which will normally include at least a keyboard, a mouse and a video display monitor.

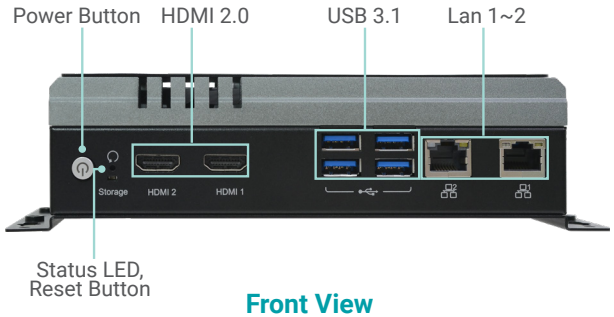
Chapter 1 - Introduction

Specifications

SYSTEM	**Processor**	9th Gen Intel® Core™ Processors, LGA 1151 Socket Intel® Core™ i7-9700TE Processor (8C/8T, 12M Cache, 3.6GHz, TDP 35W) Intel® Core™ i5-9500TE Processor (6C/6T, 9M Cache, 3.6GHz, TDP 35W) Intel® Core™ i3-9100TE Processor (4C/4T, 6M Cache, 3.2GHz, TDP 35W) 8th Gen Intel® Core™ Processors, LGA 1151 Socket Intel® Xeon® E-2278GEL Processor (8C/16T; Max speed 3.9GHz, TDP 35W) (C246 only) Intel® Core™ i7-8700T Processor (6C/12T, 12M Cache, 4.0GHz; TDP 35W) Intel® Core™ i5-8500T Processor (6C/6T, 9M Cache, 3.5GHz; TDP 35W) Intel® Core™ i3-8100T Processor (4C/4T, 6M Cache, 3.1GHz; TDP 35W) Intel® Pentium® G5400T Processor (2C/4T, 4M Cache, 3.1GHz; TDP 35W) Intel® Celeron® G4900T Processor (2C/2T, 2M Cache, 2.9GHz; TDP 35W)
	Chipset	Intel® C246/Q370/H310 Chipset
	Memory	2 x 260-pin SODIMM up to 64GB (ECC : C246 only) — Dual Channel DDR4 2666MHz
	BIOS	AMI SPI 128Mbit
GRAPHICS	**Controller**	Intel® HD Graphics
	Feature	OpenGL 4.5, DirectX 12, OpenCL 2.1 HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9 HW Encode: AVC/H.264, MPEG2, JPEG, HEVC/H265, VP8, VP9
	Display	2 x HDMI 2.0 — HDMI: resolution up to 4096x2160 @ 60Hz
	Dual Displays	2 x HDMI 2.0
STORAGE	**Internal**	2 x 2.5” SATA bay (optional) support RAID 0/1
EXPANSION	**Interface**	1 x M.2 2280 M key (PCIe x4/SATA 3.0) 1 x M.2 2230 E key (PCIe x1/USB2.0), WiFi
ETHERNET	**Controller**	2 x Intel® I219/I210IT (10/100/1000Mbps) (Support Intel® iAMT)
LED	**Indicators**	1 x Power LED 1 x HDD LED

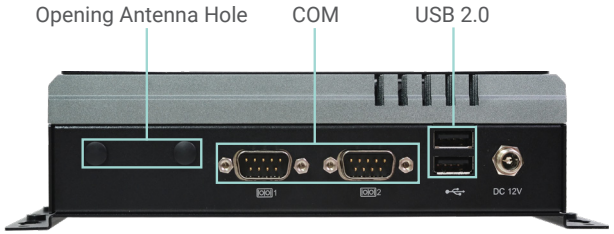
FRONT I/O	**Ethernet**	2 x GbE (RJ-45)
	USB	4 x USB 3.1 (type A)
	Buttons	1 x Power Button 1 x Reset Button
	Display	2 x HDMI
REAR I/O	**Serial**	2 x RS232/RS422/RS485 (DB9) or 1 x RS232/RS422/RS485 (DB9)(COM1) + 1 x 8bit DIO (DB9)
	USB	2 x USB 2.0 (type A)
	Wi-Fi Antenna	2 x Opening Antenna Hole
WATCHDOG TIMER	**Output & Interval**	System Reset, Programmable via Software from 1 to 255 Seconds
SECURITY	**TPM**	TPM2.0 (option)
POWER	**Type**	12V DC-in jack lockable — External power brick AC Power 100-250V, 50/60Hz
OS SUPPORT		Windows 10 IoT Enterprise 2019 LTSC + RS5 Windows 10 Professional
MECHANISM	**Construction**	Metal + Aluminum
	Mounting	Wall mount VESA mount 75x75/10x10cm (optional)
	Dimensions (W x H x D)	175 x 48.5 x 120mm (1 Storage: 1 x m.2 SSD) 175 x 73.5 x 120mm (3 Storage: 1 x m.2 SSD + 2x 2.5” SSD)
	Weight	1.315 kg (1 Storage: 1 x m.2 SSD) 1.665 kg (3 Storage: 1 x m.2 SSD + 2 x 2.5” SSD)
COOLING	**Fan**	Active Fan
ENVIRONMENT	**Operating Temperature**	-5° to 45° C
	Storage Temperature	-20° to 60° C
	Acoustic level	Full load 36dB @op. temp. 45° C Full load 30dB @op. temp. 25° C Idle Mode 26dB @op. temp. 45° C Idle Mode 21dB @op. temp. 25° C
	Relative Humidity	5 to 90% RH
STANDARDS AND CERTIFICATIONS	**Certification**	FCC, CE Class B, ROHs, WEEE

Getting to Know the ES220-CS



Front View
ES220-CS (1 Storage)

Front View
ES220-CS (3 Storage)

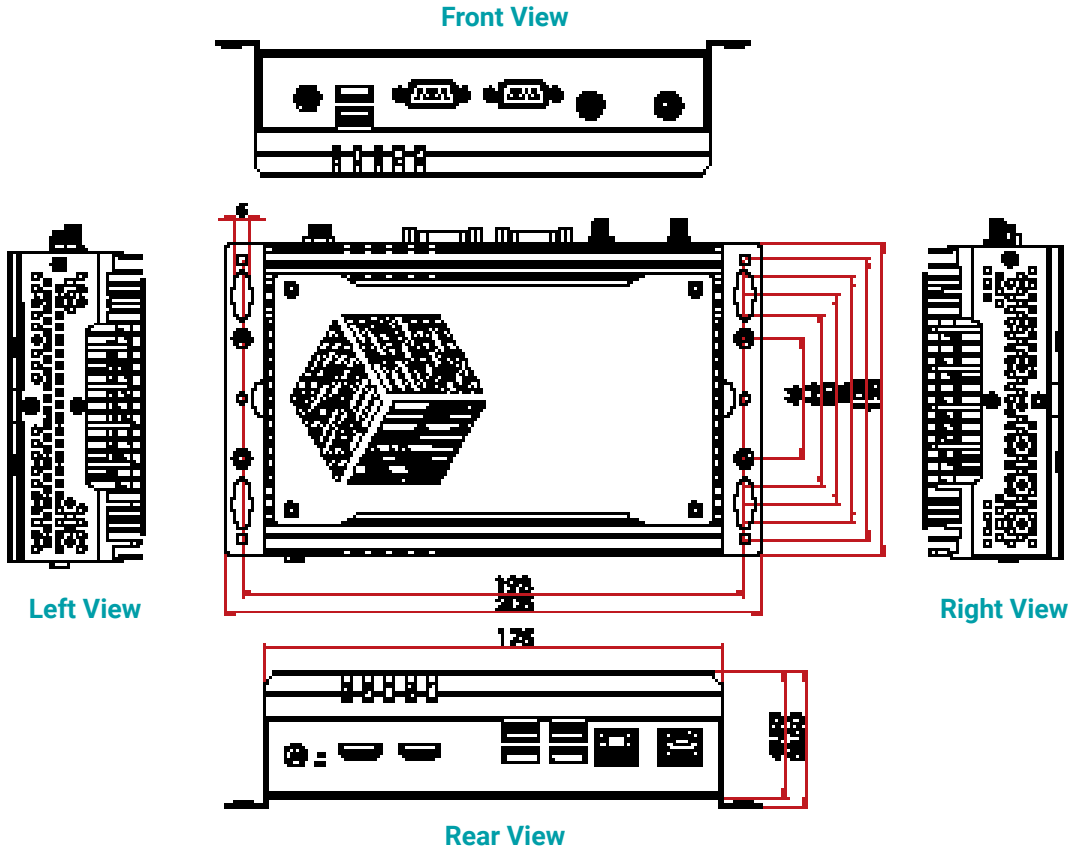


Rear View
ES220-CS (1 Storage)

Rear View
ES220-CS (3 Storage)

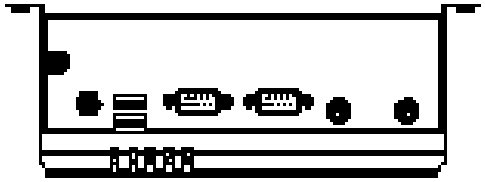
Mechanical Dimensions

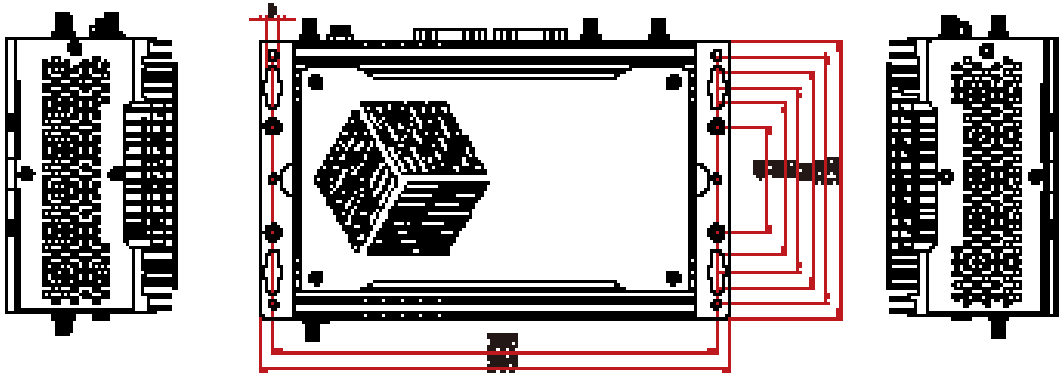
1 Storage (1x m.2 SSD)



3 Storage (1x m.2 SSD + 2x 2.5" SSD)

Front View





Left View

Right View

Rear View

Chapter 2 - Getting Started

Preparing the System

Before you start using the system, you need the following items:

- Storage Device : 2.5” HDD/SSD (SATA) or M.2 2280 SSD (SATA or PCIe)
- AC power adapter
- Screwdriver
- Memory modules

Installing Devices

The following devices can be installed in the system.

- Memory module(s)
- Storage Device

Configuring the BIOS

To get you started, you may need to change configurations such as the date, time and the type of hard disk drive.

1. Power on the system.
2. After the memory test, the message “Press DEL to run setup” will appear on the screen. Press the Delete key to enter the BIOS setup utility.

Installing the Operating System

Depending on the method you choose to install your system, you may use a USB flash drive.

Make sure that a storage device is already installed.

1. Refer to the following chapters for information on installing a storage device
2. Refer to your operating system manual for instructions on installing an operating system.

Installing the Drivers

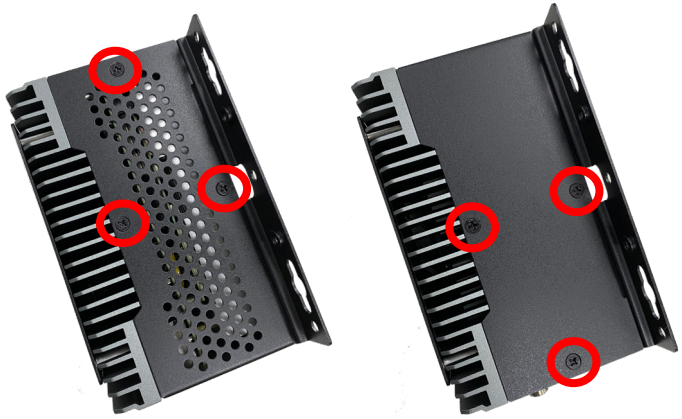
Download the drivers and install.

Chapter 3 - Installing Devices

Import:
To prevent damage to the system board, power down the system and remove all AC power cords before opening the chassis cover.

1. Before installing any internal devices, please reverse the bottom of the case to the top.

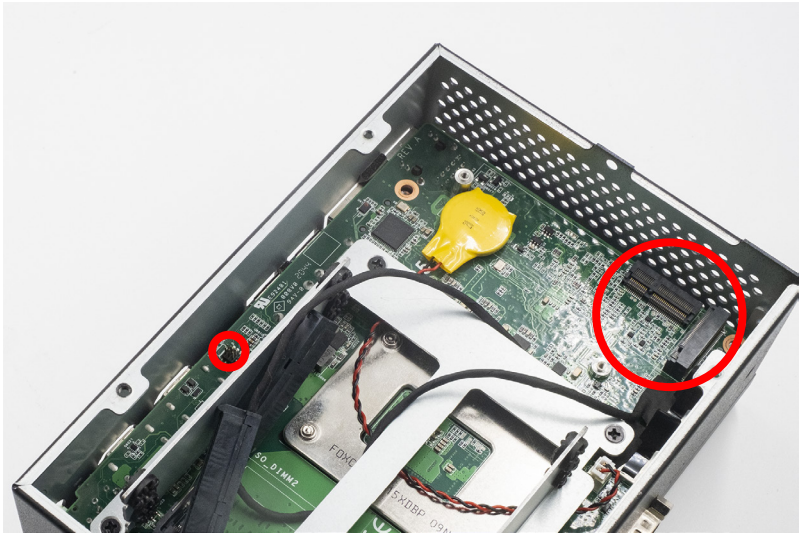
2. If you need to install or replace the CPU and 2nd memory, please also remove the three screws at each side of the box.



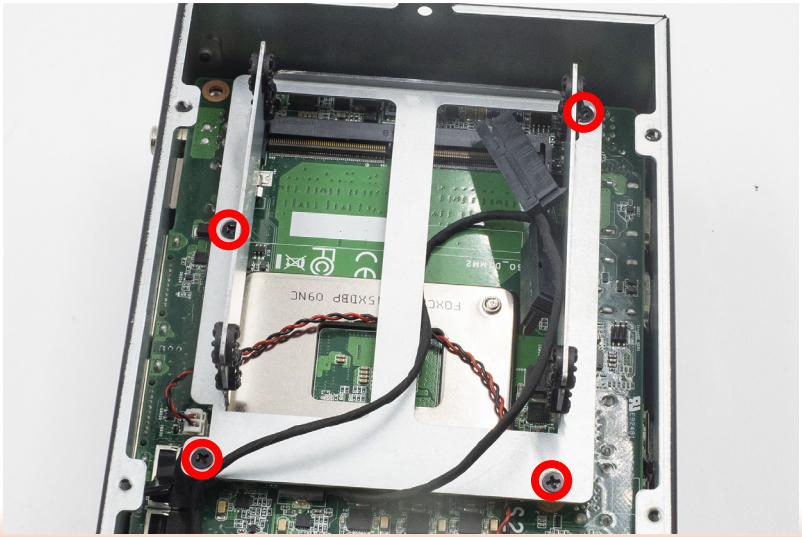
3. After the screws was removed in last two steps, tilt up the case carefully.

4. After the upper case was removed, 2.5" SDD slots / M.2 slots appears.

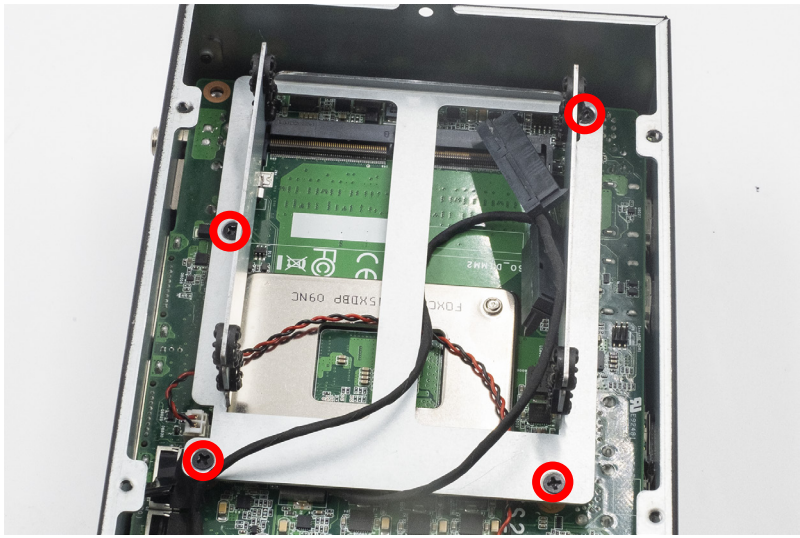
5. There are two M.2 slots and an InnoAGE HDR1 pinout on the board.



6. To install or replace the SO_DIMM2, remove the 4 screw around the 2.5" slots first, and tilt up the slot.



7. To install or replace the SO_DIMM2, remove the 4 screw around the 2.5" slots first, and tilt up the slot.

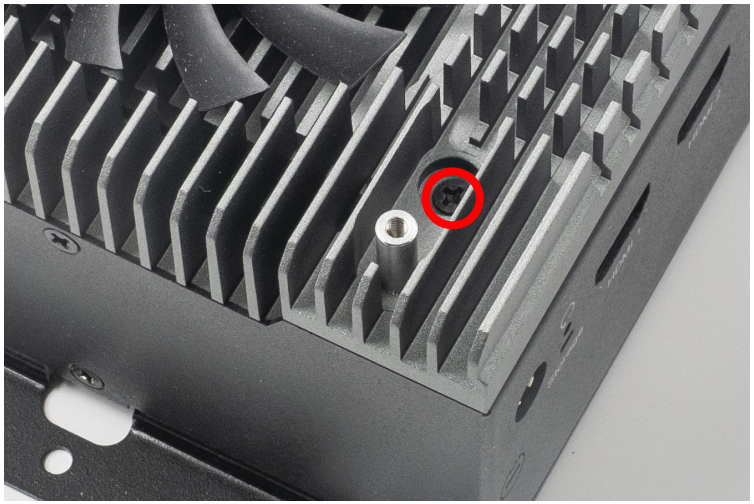


8. Then you can install the memory on the SO_DIMM2 slot.

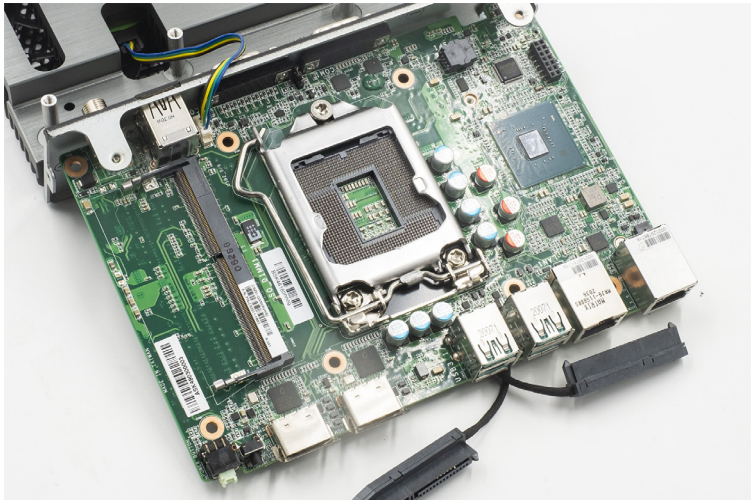
9. Before rotate the board to the next side, remove the side case first.

10. Rotate the case, loosen the four screws marked in red, and tilt up the plate.

11. After that plate was tilted up, remove each screw marked in red located in each corner.



12. Rotate the case again and reverse the board, then you can install other components including CPU on the board.



Chapter 4 - BIOS Setup

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 and Left arrows	Move the highlight left or right to select a menu.
Up and Down arrows	Move the hightlight up or down between submenu or fields.
+ (plus key)	Scroll forward through the values or options of the highlighted field
- (minus key)	Scroll backward through the values or options of the highlighted field
<Esc>	Return to previous menu
<F1>	Display general help
<F2>	Display previous values
<F9>	Optimized defaults
<F10>	Save and Exit
<Enter>	Press <Enter> to enter the highlighted submenu.

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.

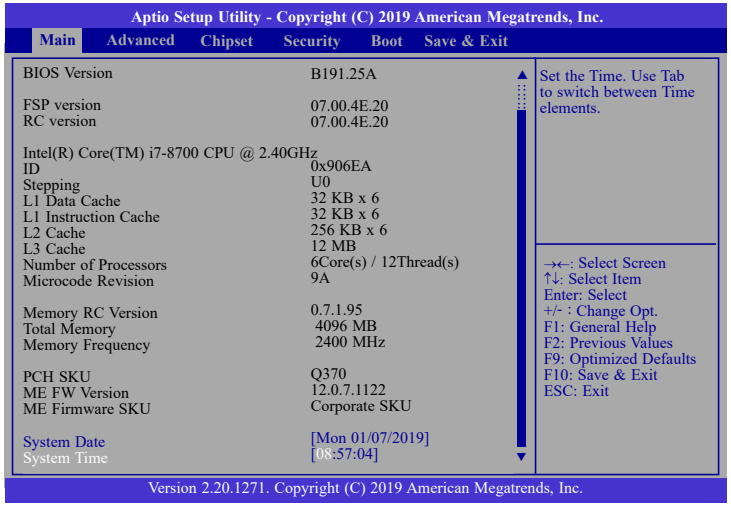
Submenu

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>.

Aptio BIOS Setup Utility

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>. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 2005 to 2099.

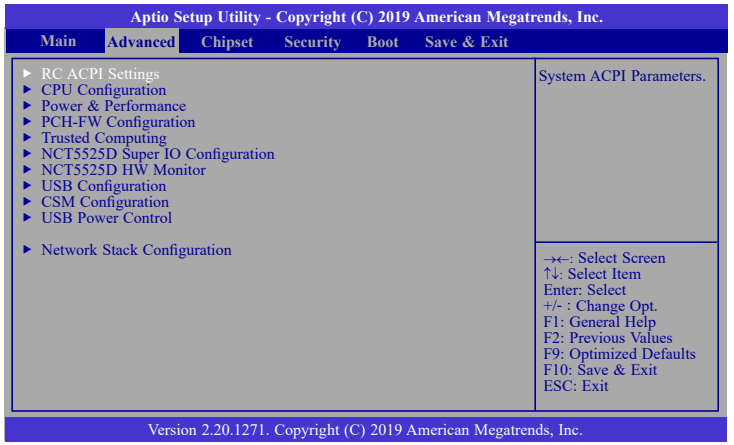
System Time

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

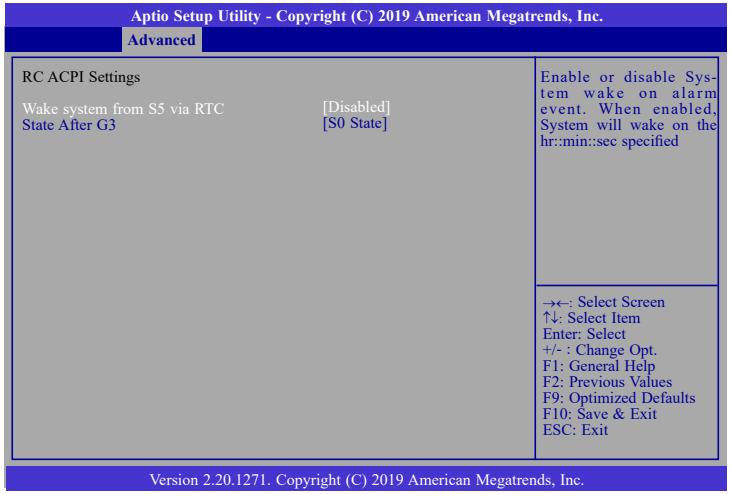
The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

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



RC ACPI Settings

Configure power management related settings in this page.

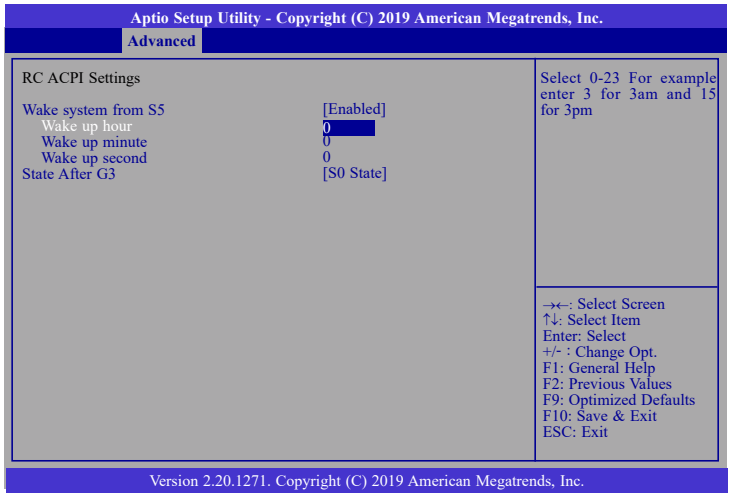


Wake system from S5 via RTC

When Enabled, the system will automatically power up at a designated time every day from the Real-time clock (RTC) battery. More settings will be displayed once it's switched to [Enabled] as detailed in the next page.

State After G3

Select between S0 State, Last State, and S5 State. This field is used to specify what state the system is set to return to when power is re-applied after a power failure (G3 state).



When "Wake system from S5" is enabled, the following fields will appear.

Wake up hour

Press +/- to set the hour from 0 to 23.

Wake up minute

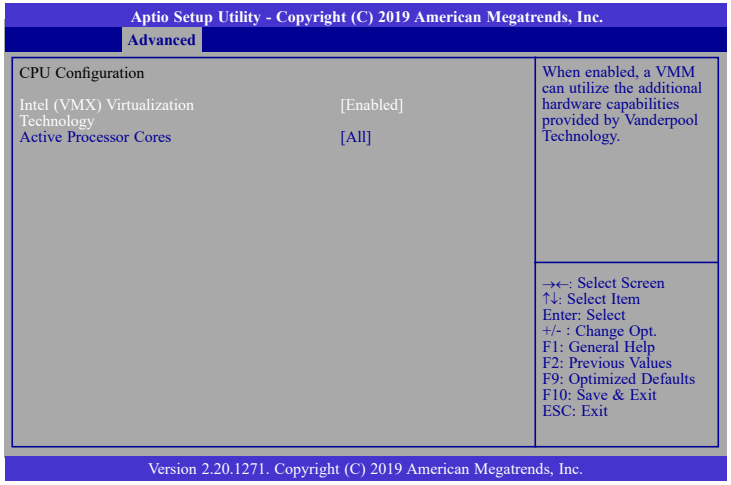
Press +/- to set the minute from 0 to 59.

Wake up second

Press +/- to set the second from 0 to 59.

CPU Configuration

This section configures the CPU.



Intel (VMX) Virtualization Technology

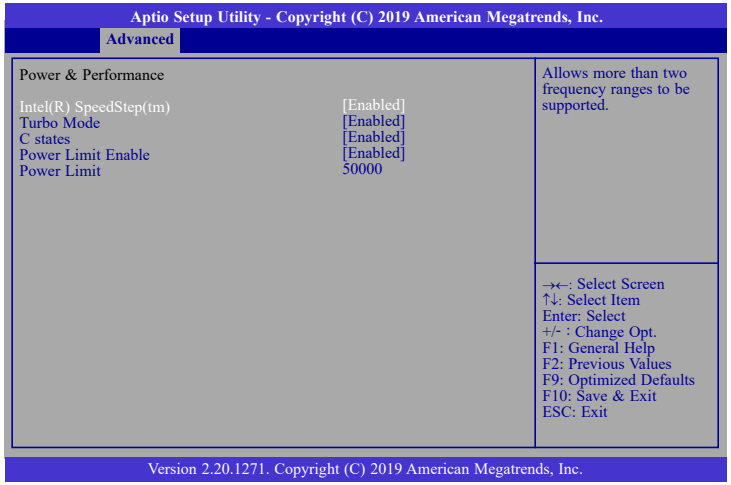
When this field is enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Active Processor Cores

Select number of cores to be enabled in each processor package.

Power & Performance

Configure the power and performance settings in this page.



Intel(R) SpeedStep(tm)

Enable or disable Intel Enhanced SpeedStep Technology. Voltage and frequency are switched between high and low levels in response to processor load when this field is enabled, and the Turbo Mode field will appear.

Turbo Mode

Enable or disable processor turbo mode, which allows the processor core to automatically run faster than the base frequency when the processor's power, temperature, and specification are within the limits of TDP. This field is only available when "Intel(R) SpeedStep(tm)" is enabled.

C states

Enable or disable CPU Power Management. When enabled, the CPU is allowed to go to C states when it's not 100% utilized.

Power Limit Enable

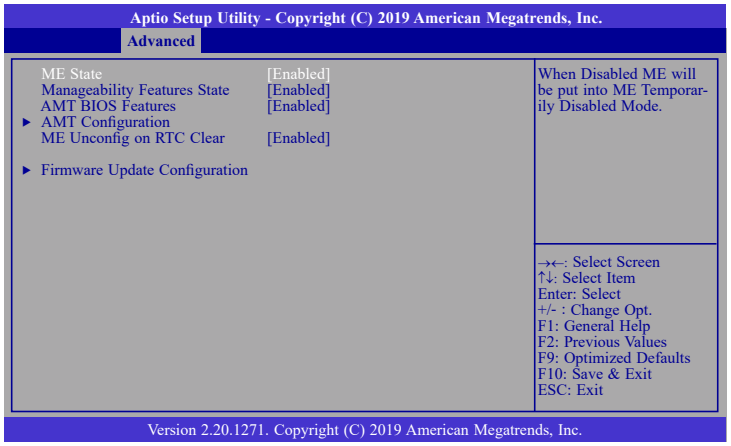
Enable/Disable Power Limit. If this option is disabled, BIOS will leave the default values for Power Limit.

Power Limit

In milli-watts. BIOS will round to the nearest 1/8W when programming. For 12.50W, enter 12500. If the value is 0, BIOS leaves default value.

PCH-FW Configuration

Configure the parameters of Management Engine Technology.



ME State

Enable or disable Management Engine. When this field is set to Disabled, ME will be put into ME Temporarily Disabled Mode. The following fields will only appear when ME State is enabled.

Manageability Features State

Enable or disable Intel(R) Manageability features. This option disables/enables Manageability Features support in FW. To disable, support platform must be in an unprovisioned state first.

AMT BIOS Features

When disabled, AMT BIOS features are no longer supported and user is no longer able to access MEBx Setup. This option does not disable manageability features in FW.

► AMT Configuration

This section is used to configure Intel(R) Active Management Technology Parameters. Please refer to the following pages.

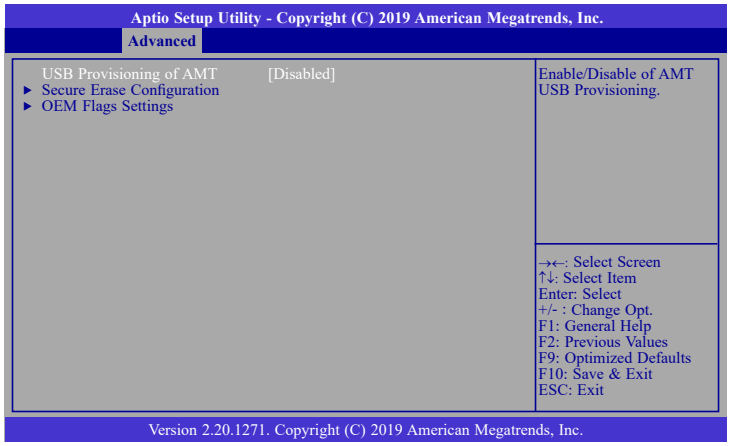
ME Unconfig on RTC Clear

When disabled, ME will not be unconfigured on RTC Clear.

► Firmware Update Configuration

Please refer to the following pages.

► AMT Configuration



USB Provisioning of AMT

Enable or disable AMT USB Provisioning.

► Secure Erase Configuration

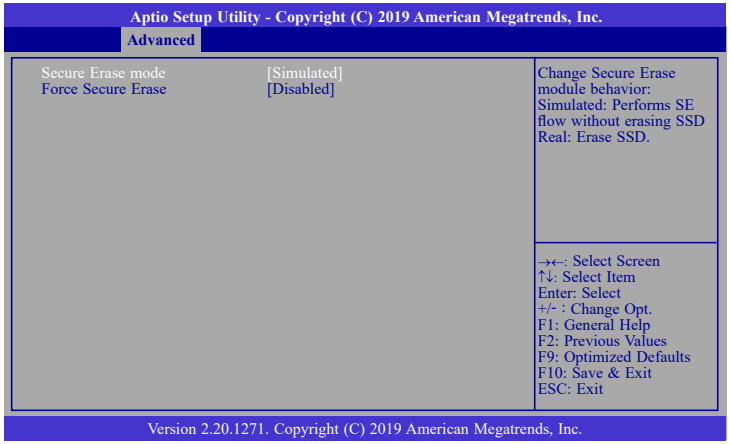
Please refer to the following pages.

► OEM Flags Settings

Please refer to the following pages.

► AMT Configuration ► Secure Erase Configuration

This section is used to configure Secure Erase.



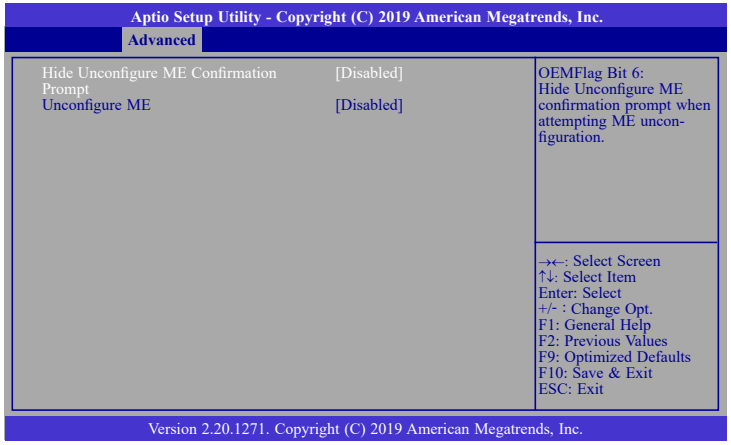
Secure Erase Mode

Select Secure Erase module behavior: Simulated or Real.

Force Secure Erase

Enable or disable Force Secure Erase on next boot.

► AMT Configuration ► OEM Flags Settings



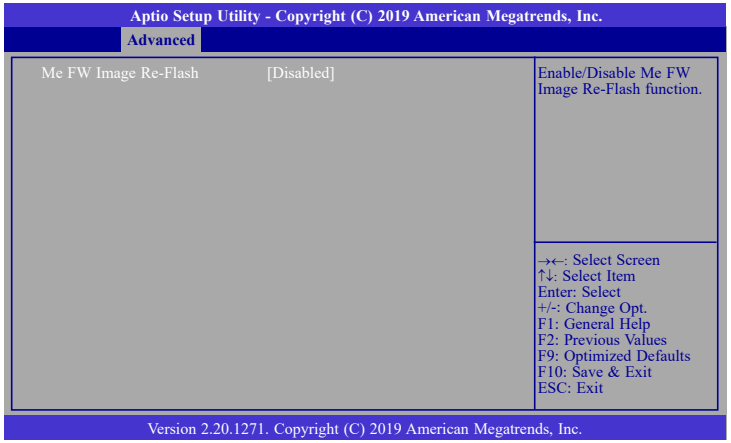
Hide Unconfigure ME Confirmation Prompt

Enable or disable to hide unconfigure ME confirmation prompt when attempting ME unconfiguration.

Unconfigure ME

Enable or disable to unconfigure ME with resetting MEBx password to default.

► Firmware Update Configuration

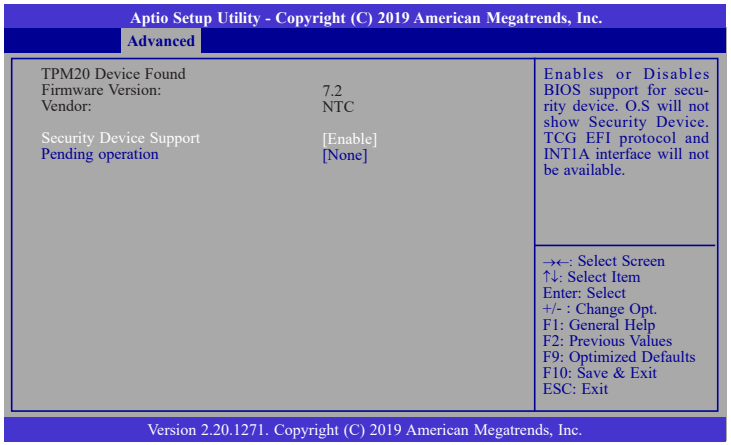


Me FW Image Re-Flash

This field is used to enable or disable the Me FW Image Re-Flash function.

Trusted Computing

Configure Trusted Computing settings.



Security Device Support

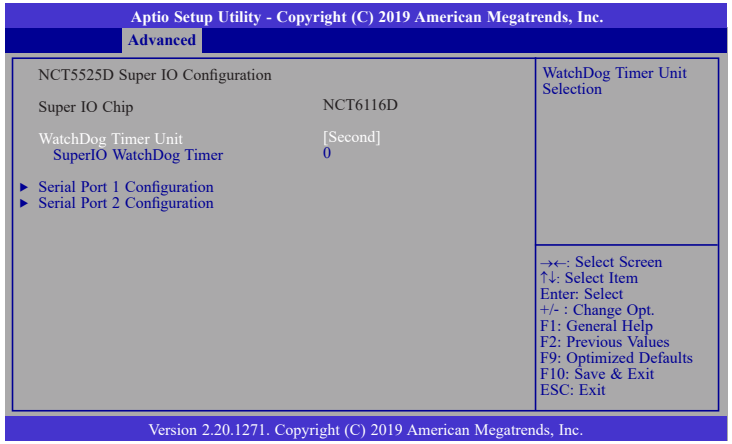
This field is used to enable or disable BIOS support for the security device. A security device will not be shown on the OS. TCG EFI protocol and INT1A interface will not be available.

Pending operation

Schedule an opeartion for the security device. Your computer will reboot during restart in order to change state of the security device.

NCT5525D Super IO Configuration

TThis section is used to configure the I/O functions supported by the onboard Super I/O chip.



WatchDog Timer Unit

Select WatchDog Timer Unit: Second or Minute.

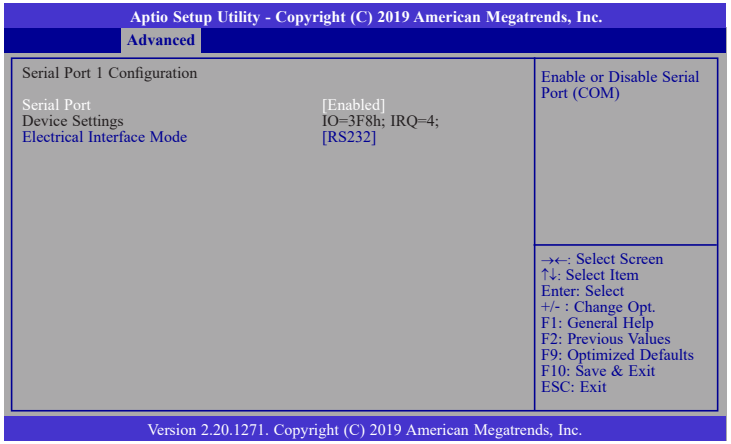
SuperIO WatchDog Timer

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

► Serial Port Configuration

Configure the parameters of serial port 1 (COM 1) to serial port 4 (COM 4) as detailed later.

► Serial Ports Configuration



Serial Port

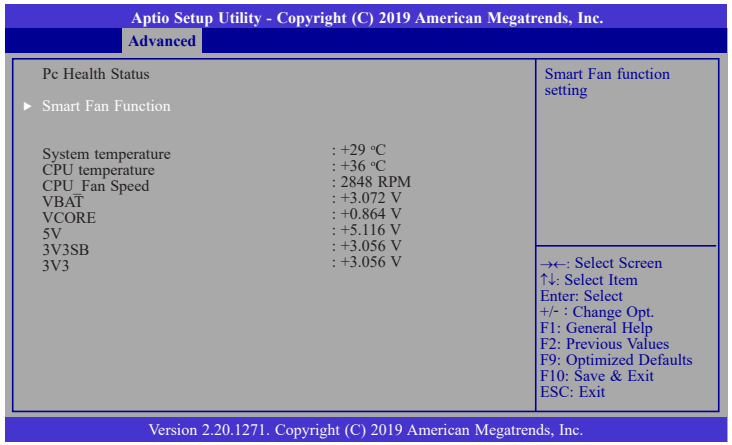
Enable or disable the serial COM port.

PCI Express Configuration

Select a PCI Express root port and press "Enter" to configure.

NCT5525D HW Monitor

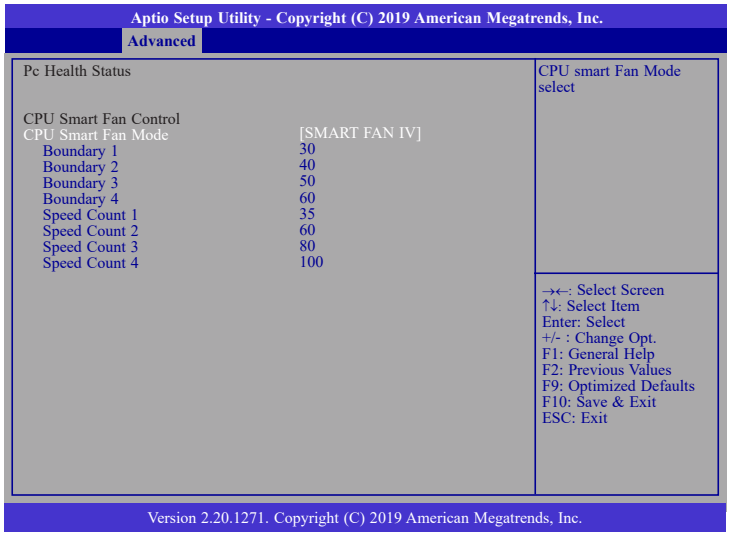
This section displays the hardware health monitor.



► Smart Fan Function

Please refer to the following pages.

► Smart Fan Function



CPU Smart Fan Mode

Enable or disable the system smart fan. When set to "Manual mode", fan speed will not be controllable according to different system temperatures. Instead, a "Manual PWM Setting" field will be displayed to configure at which speed the fan will always be fixed regardless of system temperature.

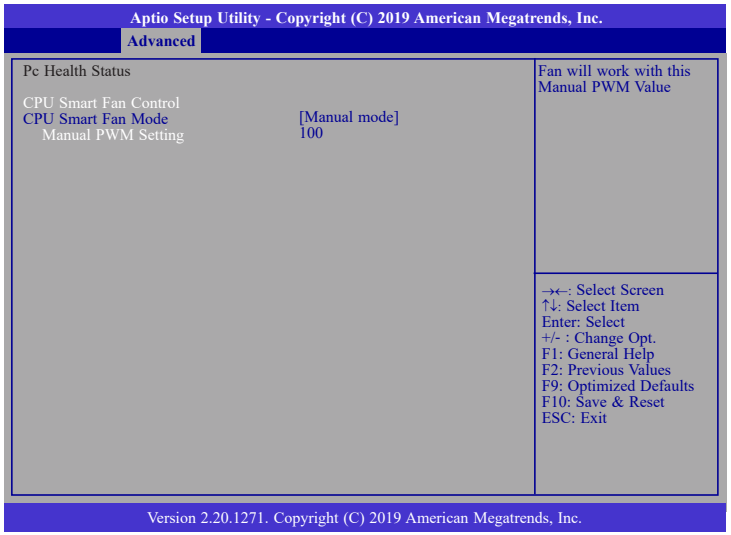
When "CPU Smart Fan Mode" is set to "SMART FAN IV", the following fields will appear.

Boundary 1 to Boundary 4

Set the boundary temperatures that determine the fan speeds accordingly, the value ranging from 0-127oC. For example, when the system temperature reaches Boundary 1 setting, the fan speed will be turned up to the designated speed of the Fan Speed Count 1 field.

Speed Count 1 to Speed Count 4

Set the fan speed, the value ranging from 1-100%, 100% being full speed. The fans will operate according to the specified boundary temperatures above-mentioned.



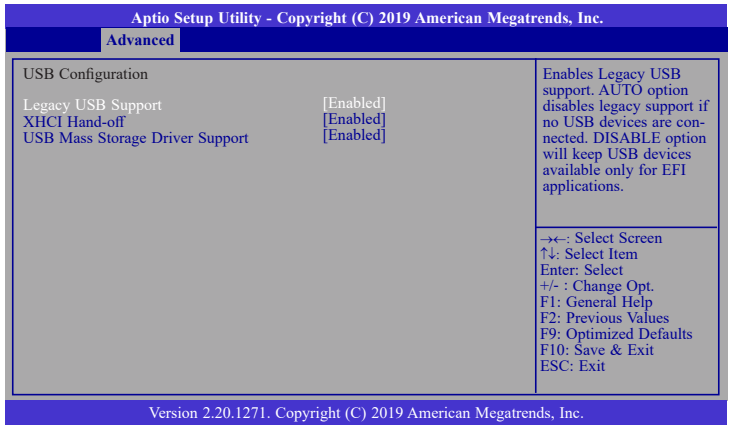
When "CPU Smart Fan Mode" is set to "Manual mode", the following field will appear.

Manual PWM Setting

Set the fan speed to a fixed value, ranging from 1-100%, 100% being maximum speed.

USB Configuration

This section is used to configure the USB settings.



Legacy USB Support

Enabled Enable Legacy USB support.

Disabled Keep USB devices available only for EFI applications.

Auto Disable Legacy support if no USB devices are connected.

XHCI Hand-off

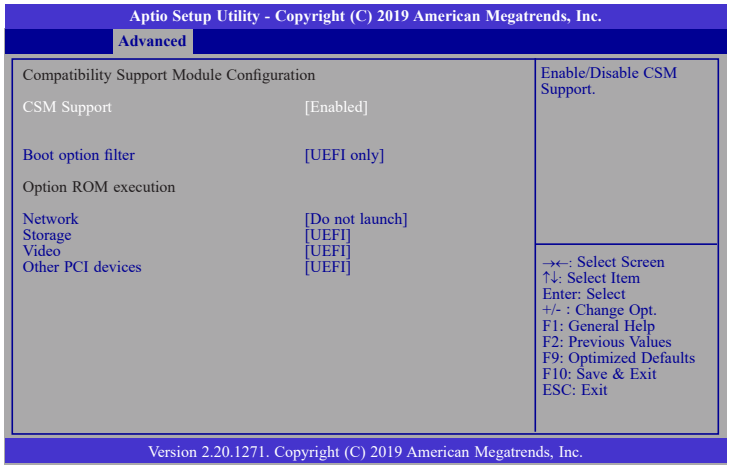
Enable or disable XHCI Hand-off.

USB Mass Storage Driver Support

Enable or disable USB Mass Storage Driver Support.

CSM Configuration

This section is used to configure the CSM settings.



CSM Support

This section is used to enable or disable CSM Support. When CSM Support is set to enabled, several options will appear for configuration.

Boot option filter

This field controls Legacy/UEFI ROMs priority.

Network

This field controls the execution of UEFI and Legacy Network OpROM.

Storage

This field controls the execution of UEFI and Legacy Storage OpROM.

Video

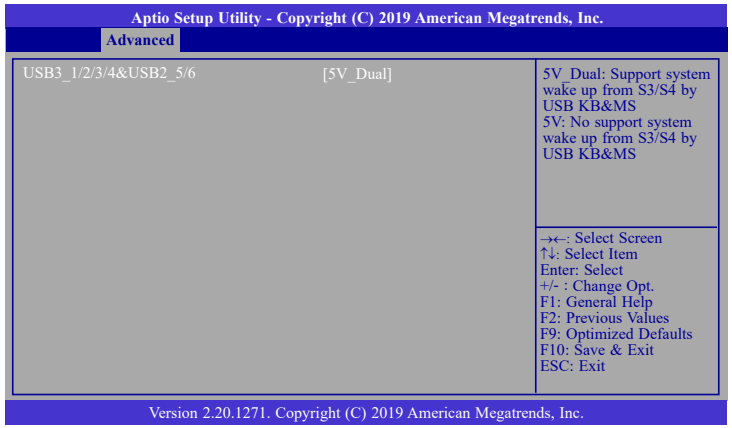
This field controls the execution of UEFI and Legacy Video OpROM.

Other PCI devices

This field determines OpROM execution policy for devices other than Network, Storage or Video.

USB Power Control

Configure USB port power voltage.

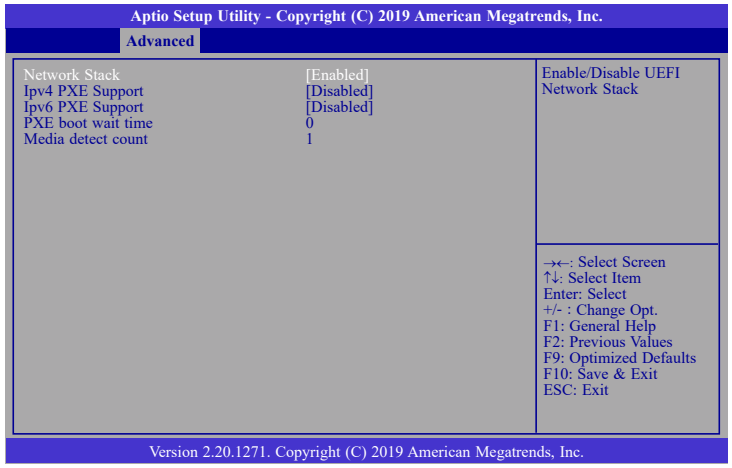


USB3_1/2/3/4&USB2_5/6

Select the power voltage for USB — 5V_Dual or 5V.

Network Stack Configuration

This section is used to configure the Network Stack settings.



Network Stack

This section is used to enable or disable UEFI network stack. When Network Stack is enabled, the following fields will appear.

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

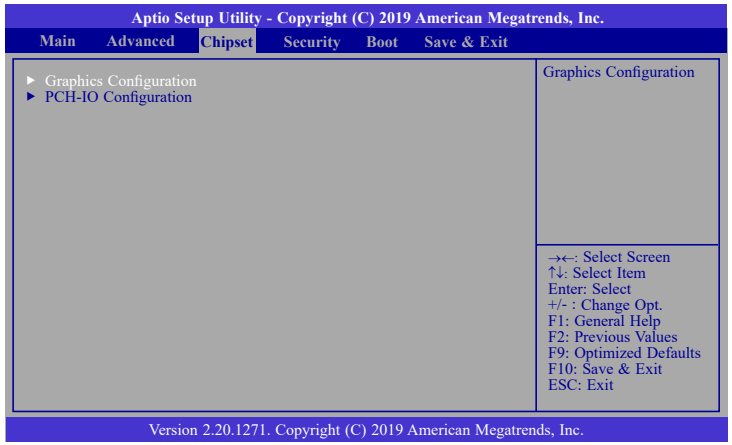
Set the wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.

Media detect count

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

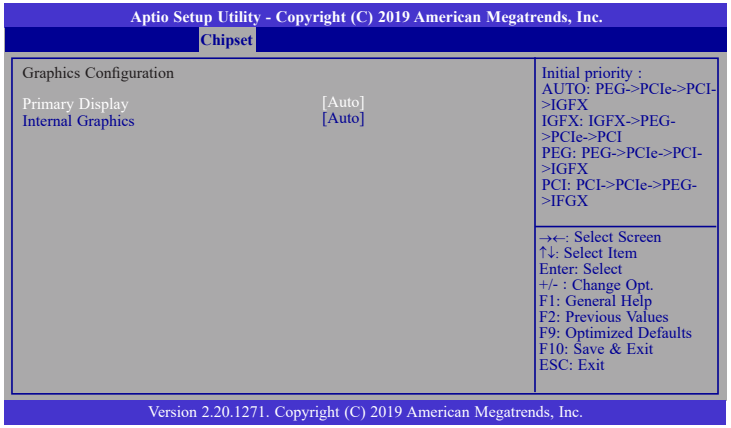
Chipset

This section configures relevant chipset functions.



Graphics Configuration

This section is used to configure the Network Stack settings.



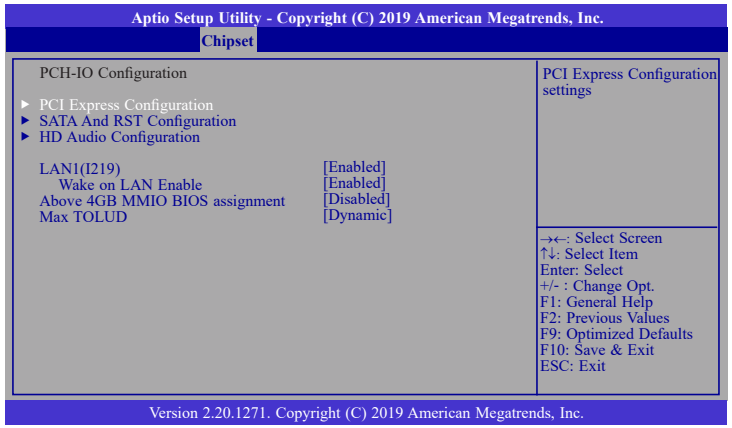
Primary Display

Select a Graphics device to be the primary display — Auto, IGFX, PEG, PCI.

Internal Graphics

Keep IGFX enabled based on the setup options.

PCH-IO Configuration



► PCI Express Configuration

Please refer to the following pages.

► SATA And RST Configuration

Please refer to the following pages.

► HD Audio Configuration

Please refer to the following pages.

LAN1(I219)

Enable or disable onboard NIC.

Wake on LAN Enable

Enable or disable integrated LAN to wake the system.

Above 4GB MMIO BIOS assignment

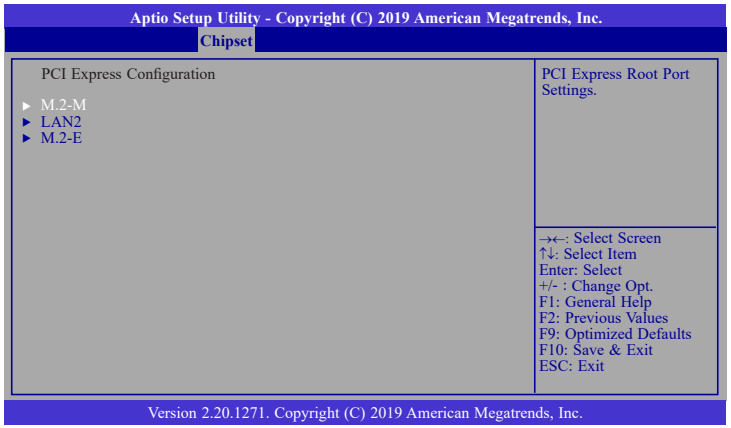
Switch MemoryMappedIO BIOS assignment above 4GB.

Max TOLUD

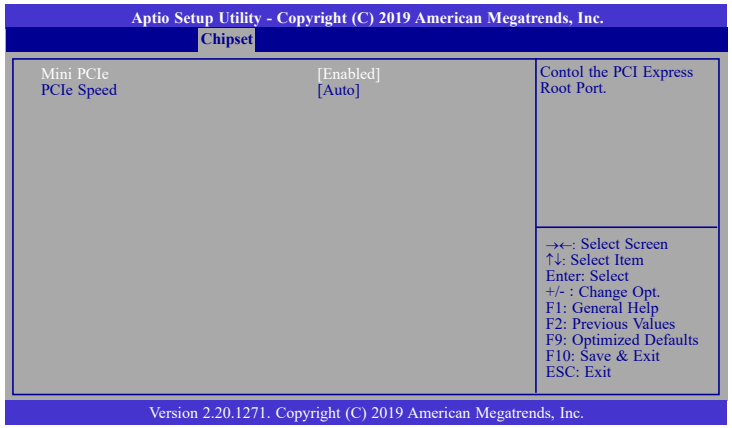
Assign a value or set "Dynamic" to automatically adjust TOLUD based on largest MMIO length.

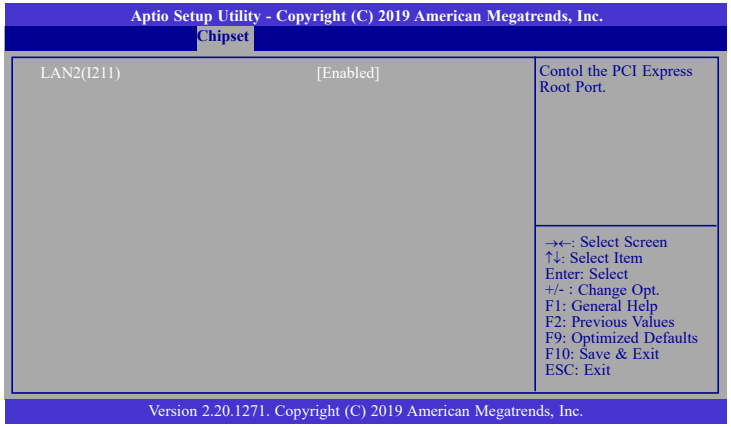
► PCI Express Configuration

Select a PCIe root port.



► PCI Express Configuration ► Enumerated Devices





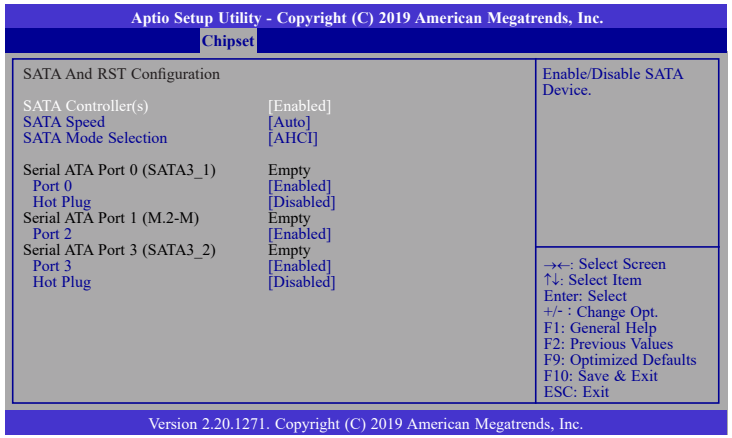
Enumerated Devices

This field is used to enable or disable the PCI express root port.

PCIe Speed

Select the speed of the PCI Express root port: Auto, Gen1, Gen 2 or Gen3. This field will not appear when the root port does not support speed configuration.

► SATA and RST Configuration



SATA Controller(s)

Enable or disable the Serial ATA controller. When theis field is enabled, the following fields will appear.

SATA Speed

Select the speed of the Serial ATA controller: Auto, Gen1, Gen 2 or Gen3.

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).

Intel RST Premium With Intel Optane System Acceleration This option allows you to create RAID or Intel Rapid Storage configuration with Intel® Optane™ system acceleration on Serial ATA devices.

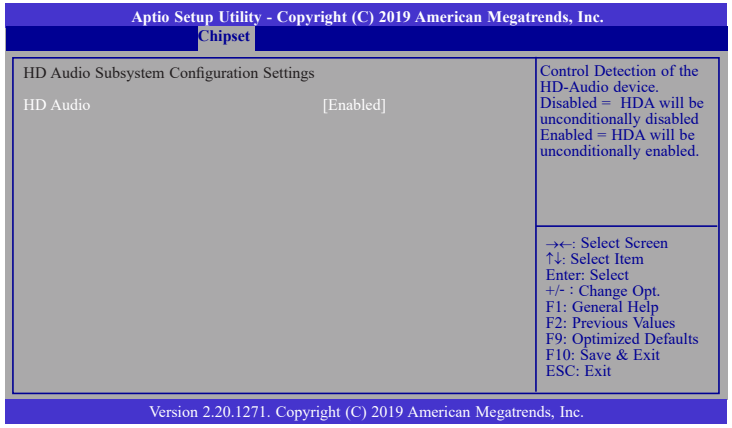
Use RST Legacy OROM

This field is only available when SATA Mode Selection is set to "Intel RST Premium With Optane System Acceleration." It is used to enable or disable to use RST Legacy OROM.

Serial ATA Ports and Hot Plug

Enable or disable the Serial ATA port and its hot plug function.RST Legacy OROM.

► HD Audio Configuration



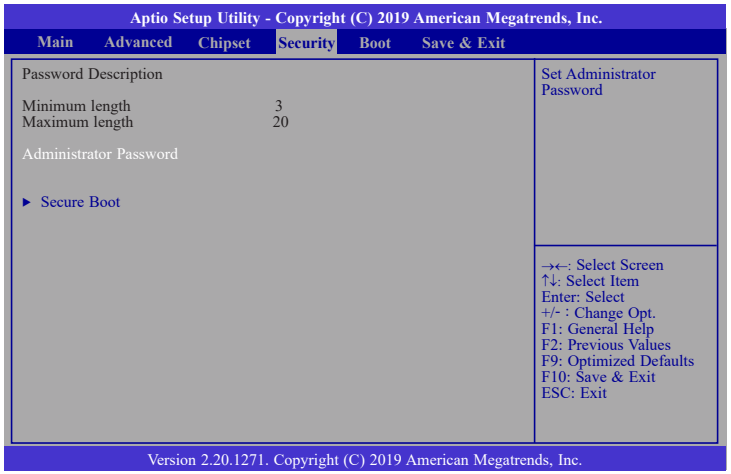
HD Audio

Control the detection of the HD Audio device.

Disabled HDA will be unconditionally disabled.

Enabled HDA will be unconditionally enabled.

Security

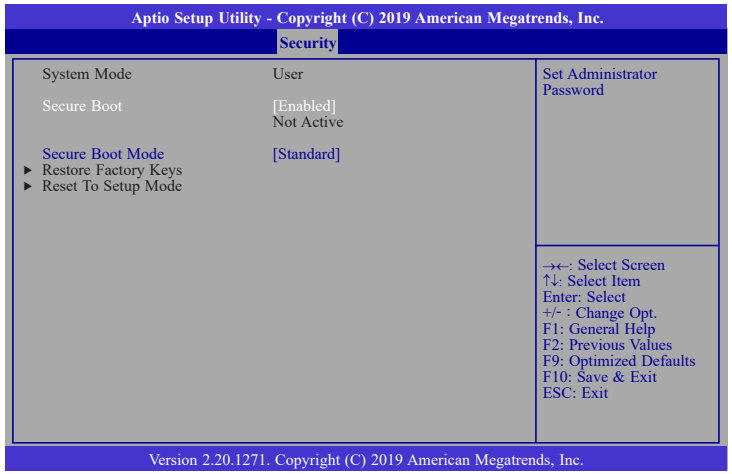


Administrator Password

Set the administrator password. Input the password, press Enter, and then input the same character string again to confirm. To remove the password, input no character.

Secure Boot

Secure Boot is used to verify that your boot loader is not tampered by malware.



System Mode

This field displays whether the system is in User or Setup mode.

Secure Boot

Enable or disable Secure Boot. Please reset the platform after changing the setting.

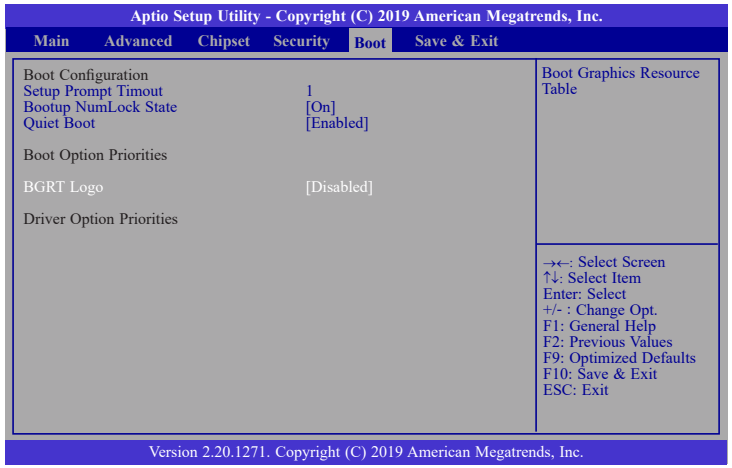
Restore Factory Keys

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

Return to Setup Mode

This command is only available when the system mode is in User mode and Secure Boot Mode is set to Custom.

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

Select the system boot order.

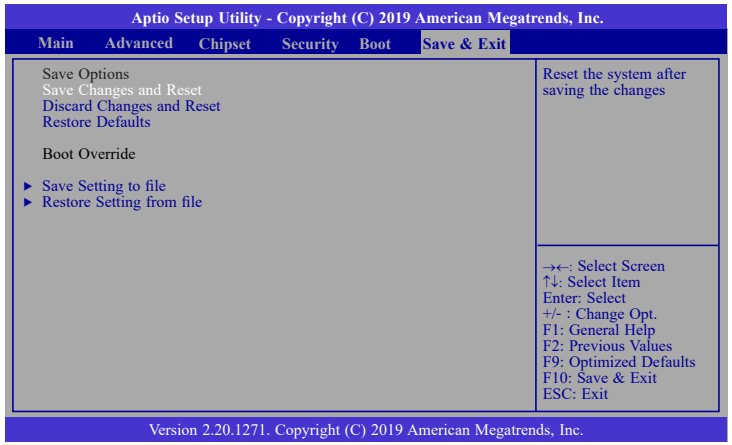
BGRT Logo

It is used to enable or disable to support display logo with ACPI BGRT table.

Driver Option Priorities

Select the driver boot order.

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.

Boot Override

Move the cursor to an available boot device and press Enter, the system will immediately boot from the boot device. This function will only be effective for the current boot. The "Boot Option Priorities" 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. You may refer to the how-to video "How to update AMI BIOS in UEFI mode on DFI products?" at https://www.dfi.com/Knowledge/Video/5 for updating the BIOS steps.

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.