ZRT 智锐通

HLC-6007

边缘整机
USER Manual V1.0

USER MANUAL
用户手册

Shenzhen ZRT Technology Co., Ltd
深圳智锐通科技有限公司

www.zrt-tech.com

声明

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⚠ 安全须知

1	产品使用前，务必仔细阅读产品说明书。
2	对未准备安装的板卡，应将其保存在防静保护袋中。
3	在从包装袋中拿板卡前，应将手先置于接地金属物体上一会儿，以释放身体及手中的静电。
4	在拿板卡时，需佩带静电保护手套，并且应该养成只触及其边缘部份的习惯。
5	主板与电源连接时，请确认电源电压。
6	为避免人本被电击或产品被损坏，在每次对主板、板卡进行拔插或生新配置时须先关闭交流电源或将交流电源线从电源插座中拔掉。
7	在对板卡进行搬动前，先将交流电源线从电源插座中拔掉。
8	当您需连接或拔除任何设备前，须确定所有的电源线事先已被拔掉。
9	为避免频繁开关机对产品造成不必要的损伤,关机后,应至少等待30秒后再开机。
10	设备在使用过程时出现异常情况，请找专业人员处理。

目录

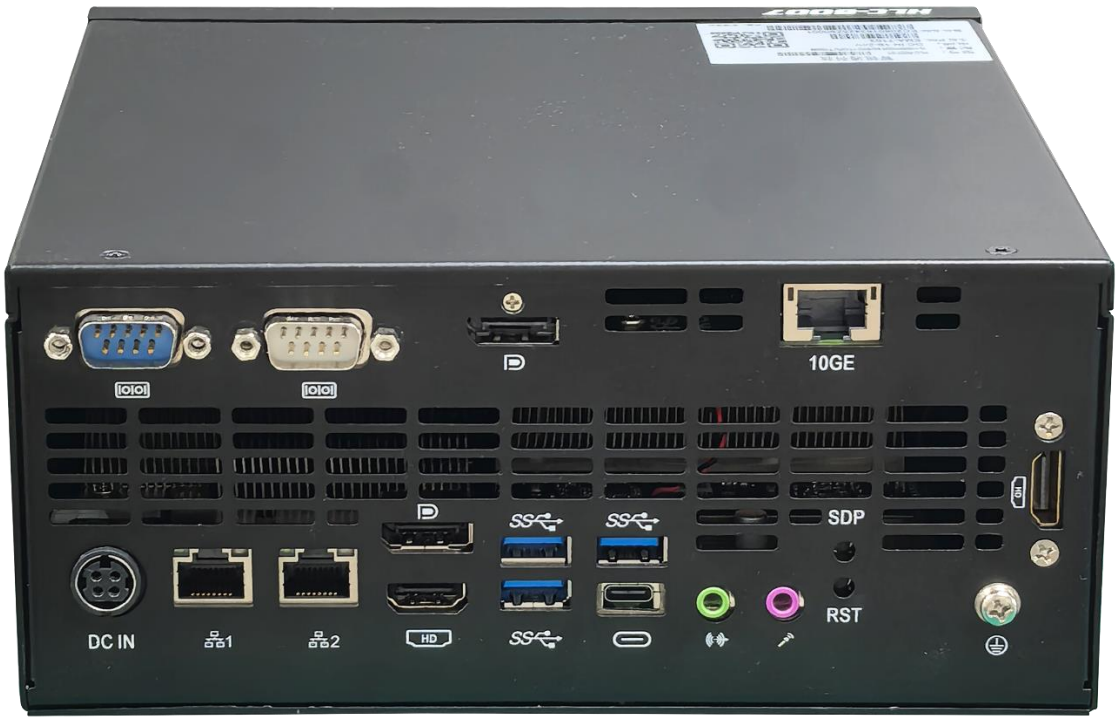
第一章 产品介绍

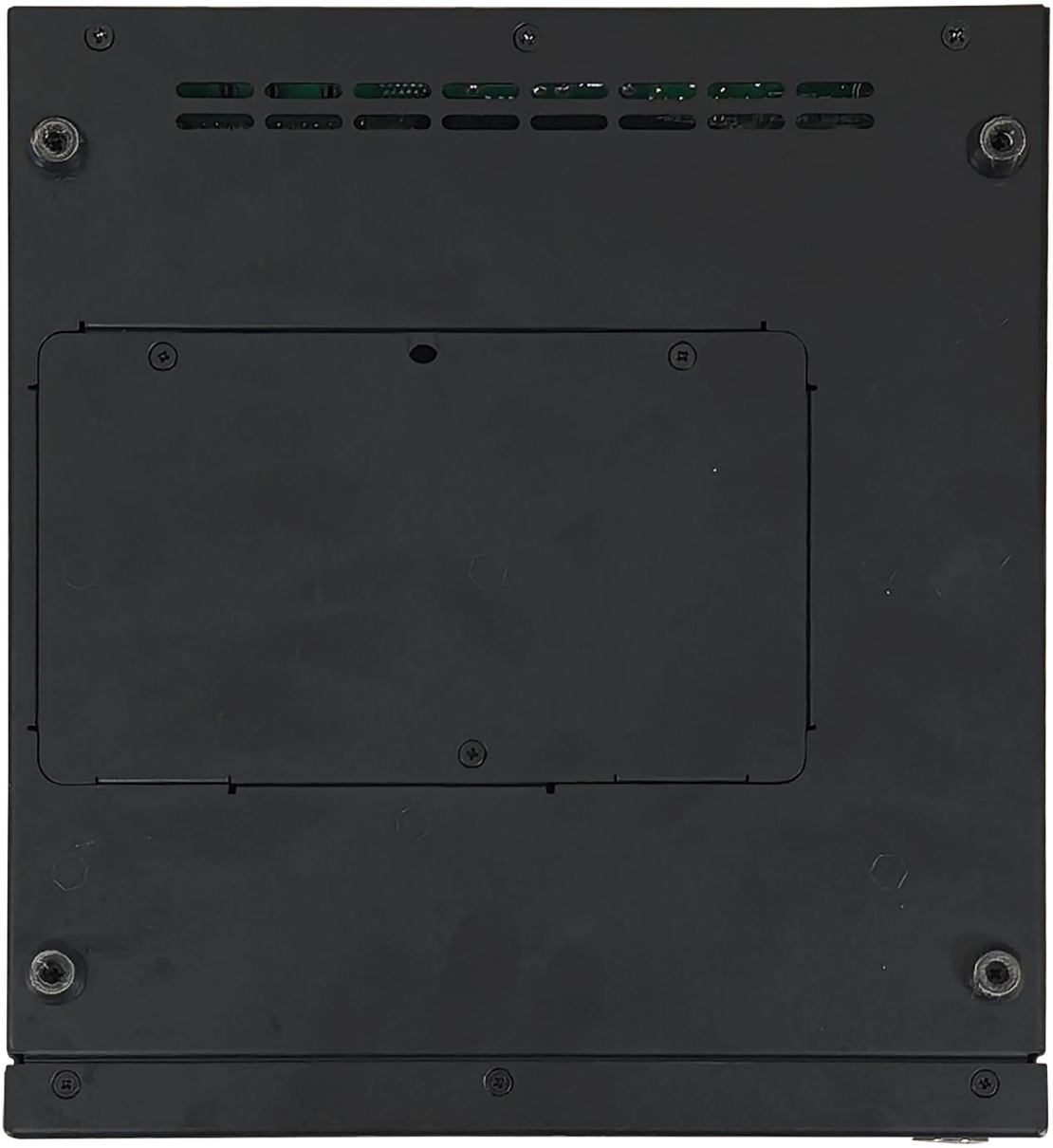
1.1 产品规格 Specification

Model		HLC-6007		
配置 Item	规格 Specification	描述 Describe		
处理器 Processor System	处理器 CPU	i5-11500H	i7-11850H	i9-11950H
	内核数 Core Number	6	8	8
	最高主频 Max. Speed	4.6GHz	4.9GHz	4.5GHz
	二级缓存 L2 Cache	12M	24M	24M
	功耗 TDP (W)	45W	45W	45W
	芯片组 Chipset	QM580		
	BIOS	128Mb SPI FLASH		
内存 Memory	规格 Technology	DDR4 Non-ECC		
	最大容量 Max. Capacity	64G 3200MHz		
	插槽 Socket	2*SO-DIMM		
扩展插槽 Expansion Slot	SIM	1*SIM		
存储 Storage	SATA	1*SATA3.0(7 Pins)		
	M.2	1*M.2 Key-M(2242/2280) for PCIe/SATA 1*M.2 Key-B(2242/2260/2280) for SATA & 4G/5G 1*M.2 Key-E(2230) for Wifi		
USB	前面板 Front I/O	2*USB2.0		
	后面板 Rear I/O	3*USB3.0 1*Type C (Support USB3.0)		
	功能 Function	Support wake up from S3/S4		
音频 Audio	芯片 Chipset	Integrated High Definition Audio Stereo(ALC897)		
	后面板 Rear I/O	1*Line Out 1*MIC In		

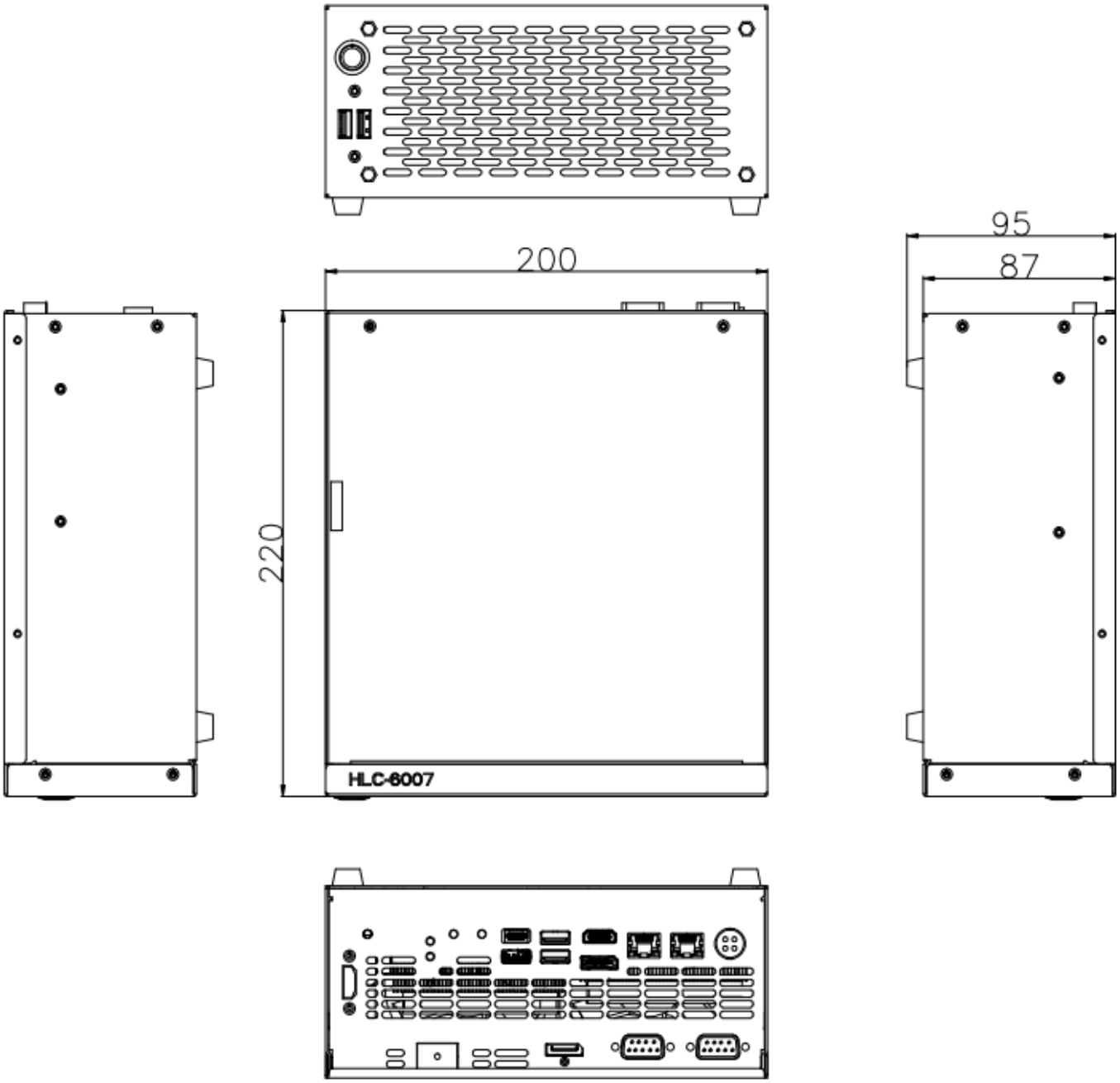
显示 Display	多显 Multiple Display	4 Ports
	后面板 Rear I/O	2*HDMI(From GPU DP_A DP to HDMI+CPU) 2*DP(From GPU DP_B+DP_C)
	分辨率 Resolution	HDMI2.0:4096*2160@60Hz DP:7680*4096@60Hz
串口 COM	后面板 Rear I/O	2*RS232
以太网 Ethernet	芯片 Chipset	Integrated 10/100/1000M/2.5GB Adaption (Intel® Ethernet Controller i225-AT)
	后面板 Rear I/O	2*千兆网口 1*万兆网口(Option)
	功能 Function	Support wake up and PXE
其它 Others	按钮 Button	1*RV Button 1*Reset Button 1*Power Buton
电源 Power Requirements	电源类型 Power Type	1*DC In(4P In)
	电源电压 Input Voltage	18V~26V
环境 Environment	工作温度 Operating Temperature	0~50℃
	存储温度 Storage Temperature	-20~70℃
	工作湿度 Operating Humidity	20~95%RH(non-condensing)
	存储湿度 Storage Humidity	10~95%
物理特性 Physical	尺寸 Dimensions	220*200*94.5mm
操作系统 OS	Microsoft	Windows 10 LTSC/1809(RS5)
	Linux	Red Hat 8.4 / Ubuntu 20.04 / Yocto 4.0xLTS

1.2 产品照片 Photo


10GE
SDP
RST
DC IN
HD



1.3 尺寸图 Dimension



1.4 产品料号 Part Number

Model Name	Part Number	Specification
HLC-6007	8.ZRT.80-1634-25-LEF	HLC-6007-01 整机,EMA-7103_V2.1,i5-11500H,F88 T 1000m(50W),DDR4 8G,1TB SSD,5*USB,2HDMI+2DP,2*RS232,2 个千兆网口+1 个万兆网口,散热器,线材,机箱,电源 300W,包装,版本 V00
	8.ZRT.80-1634-26-LEF	HLC-6007-02 整机,EMA-7103_V2.1,i5-11500H,F88 T 1000m(50W),DDR4 8G,1TB SSD,5*USB,2HDMI+2DP,2*RS232,2 个千兆网口,散热器,线材,机箱,电源 300W,包装,版本 V00

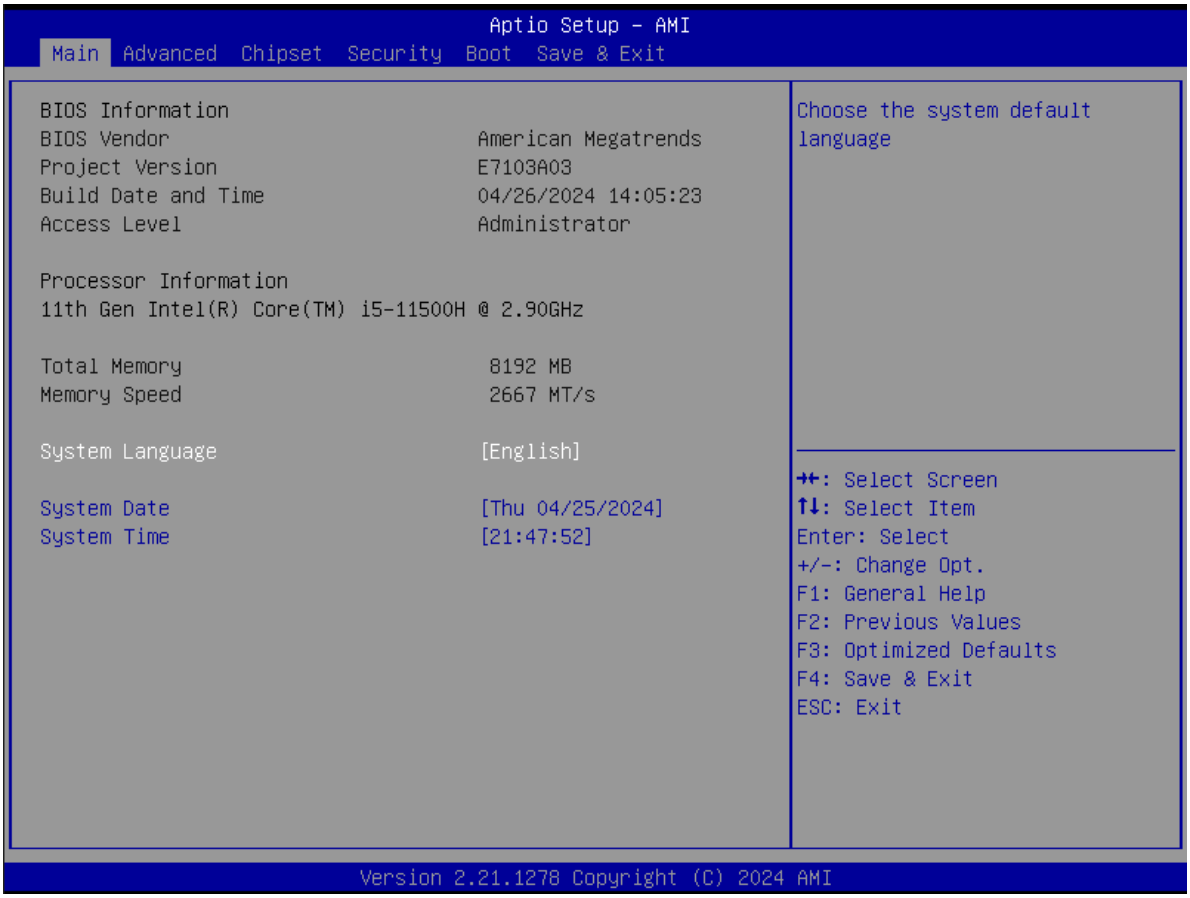
第二章 BIOS 设置说明

Setup Utility User Interface

This document describes BIOS Setup Utility user interface.

2.1 Main Screen

The Main screen is the first screen that is displayed when the BIOS Setup is entered.

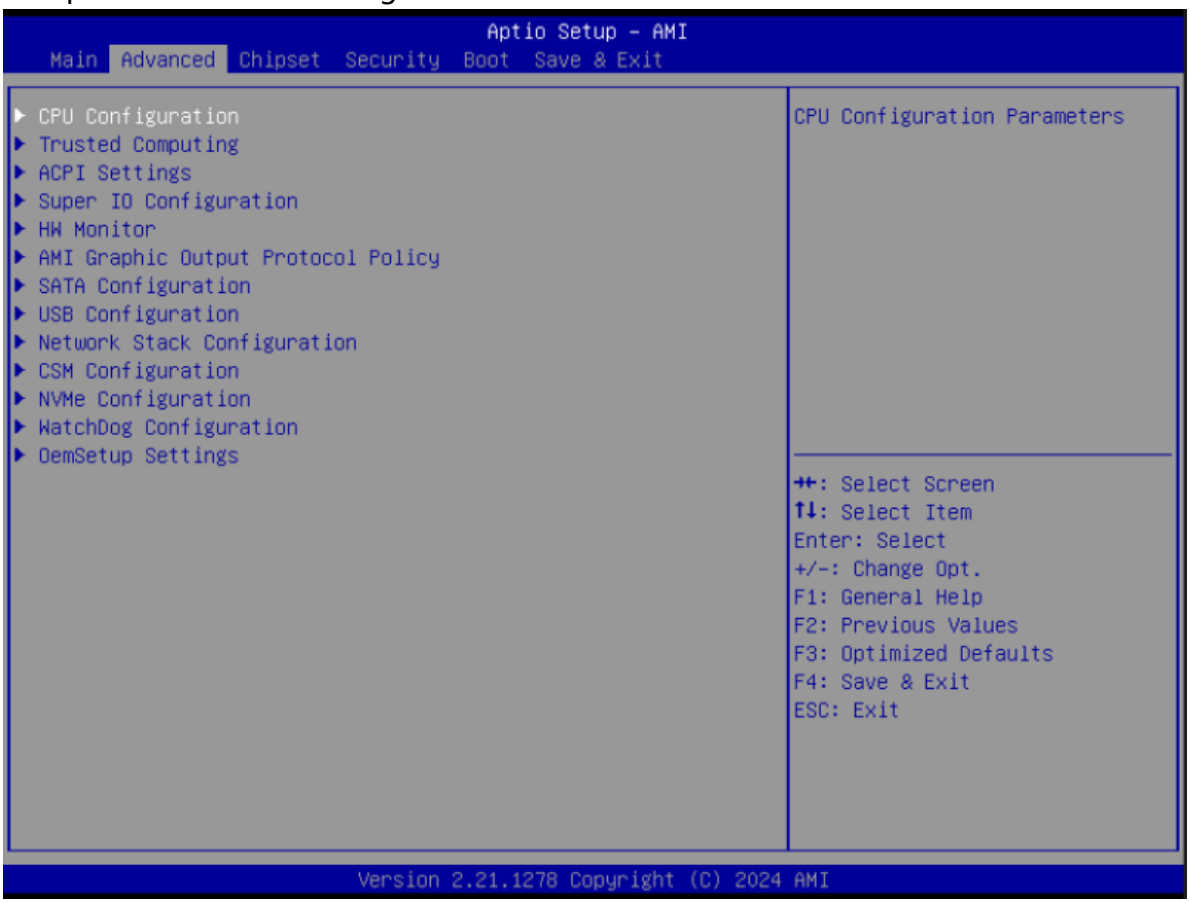


Setup Item	Options	Help Text	Comments
BIOS Information			
BIOS Vendor			Displays BIOS vendor.
Project Version			Displays the current BIOS version: Format: AAAABBC **AAAAA = Project name** **BB = BIOS revision** **C = Customer number**
Build Date and Time			Displays the current BIOS build date.
Access Level			Displays password level that setup is running in: Administrator or User. With no passwords set, Administrator is the default mode.
Process Information			

Setup Item	Options	Help Text	Comments
CPU XXXXX			Displays the CPU BrandString installed in the system.
Memory Information			
Total Memory			Displays the total physical memory installed in the system, MB Unit.
Memory Speed			
System Language	English	Choose the system default language.	
System Date	[Day of week MM/DD/YYYY]	Set and display the Date..	
System Time	[HH:MM:SS]	Set and display the Time.	

2.2 Advanced Screen

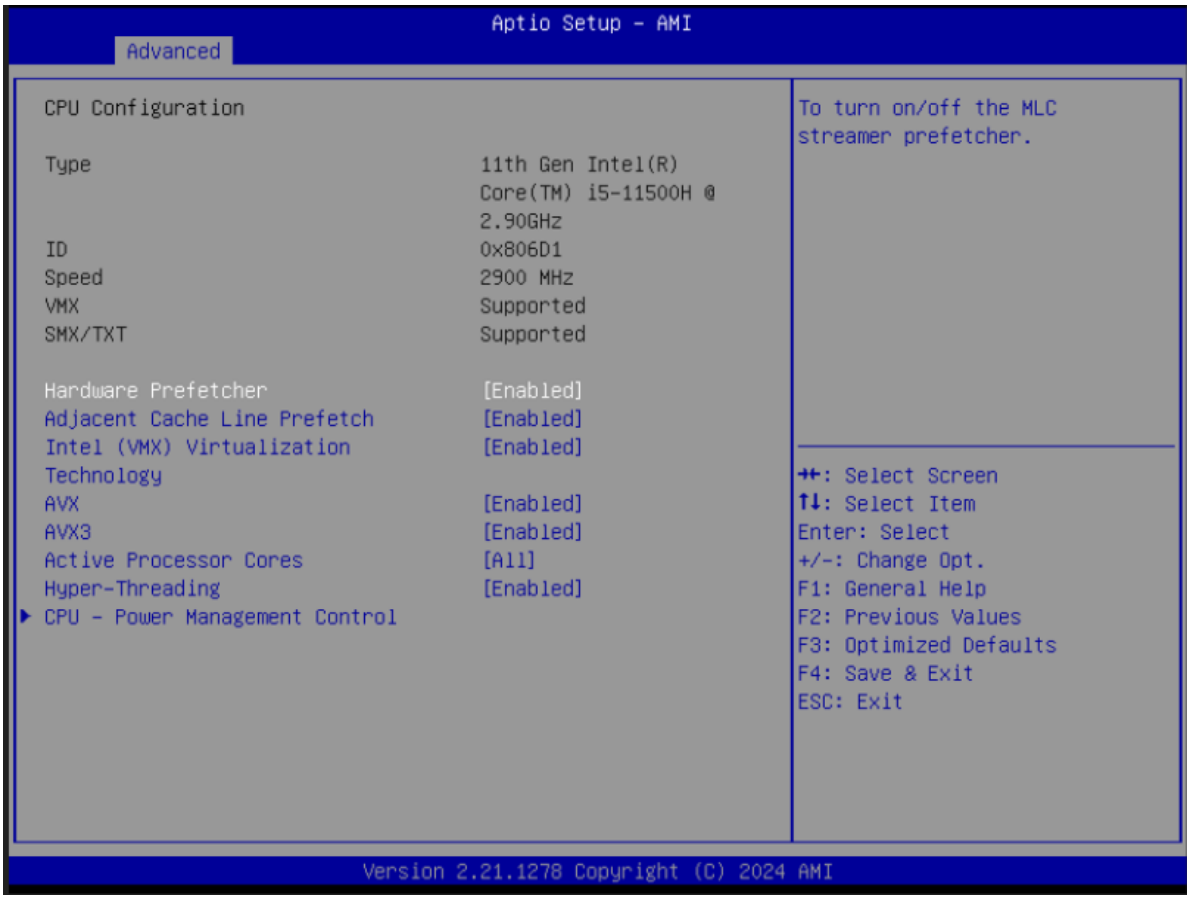
The Advanced screen provides an access point to configure several options. On this screen, the user selects the option that is to be configured.

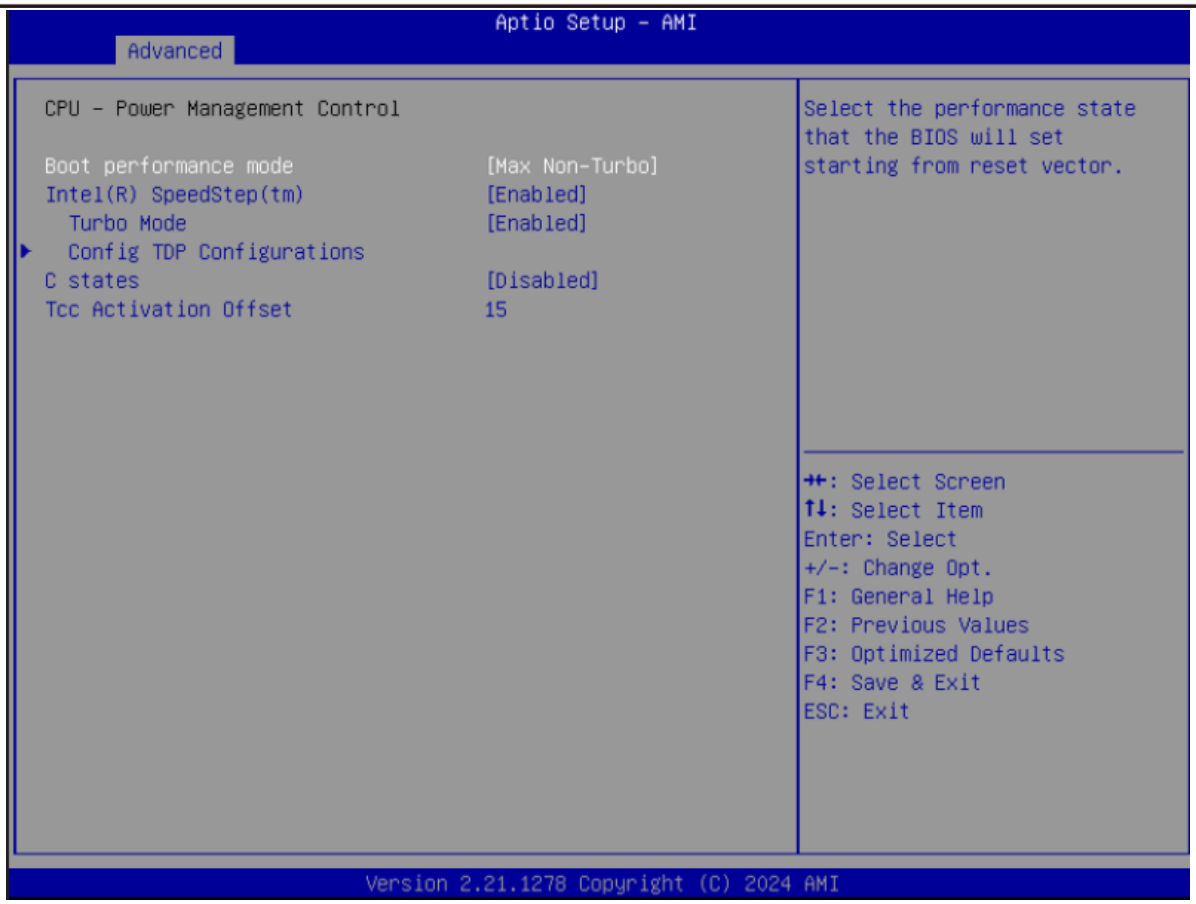


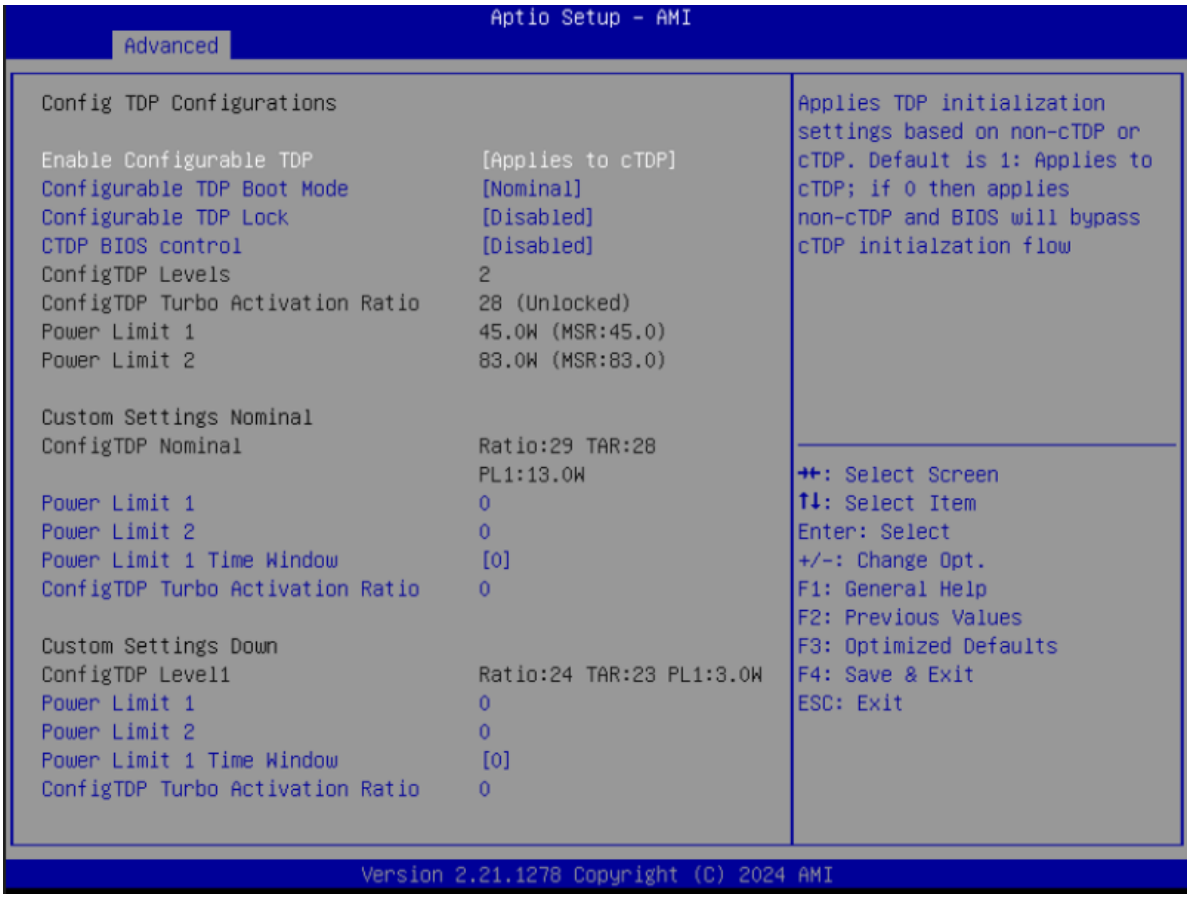
Setup Item	Options	Help Text	Comments
CPU Configuration		CPU Configuration Parameters.	
Trusted Computing		Trusted Computing Settings.	
ACPI Settings		System ACPI Parameters.	
Super IO Configuration		System Super IO chip Parameters.	
HW Monitor		Monitor hardware stats.	
AMI Graphic Output Protocol Policy			
SATA Configuration		SATA Devices Configuration.	
USB Configuration		USB Configuration Parameters.	
Network Stack configuration		Enable/Disable UEFI Network Stack.	
CSM Configuration		CSM configuration: Enable/Disable, Option ROM execution settings, etc.	
NVMe Configuratioin		NVMe Device Options Settings.	
Watchdog configuration		Set System WatchDog Parameters.	
OemSetup Settings		OemSetup Parameters.	

2.2.1 CPU Configuration Screen

The CPU Configuration screen allows the user to view the processor information, and to enable or disable processor options. To access this screen from the Main screen, choose ***Advanced > CPU Configuration***.



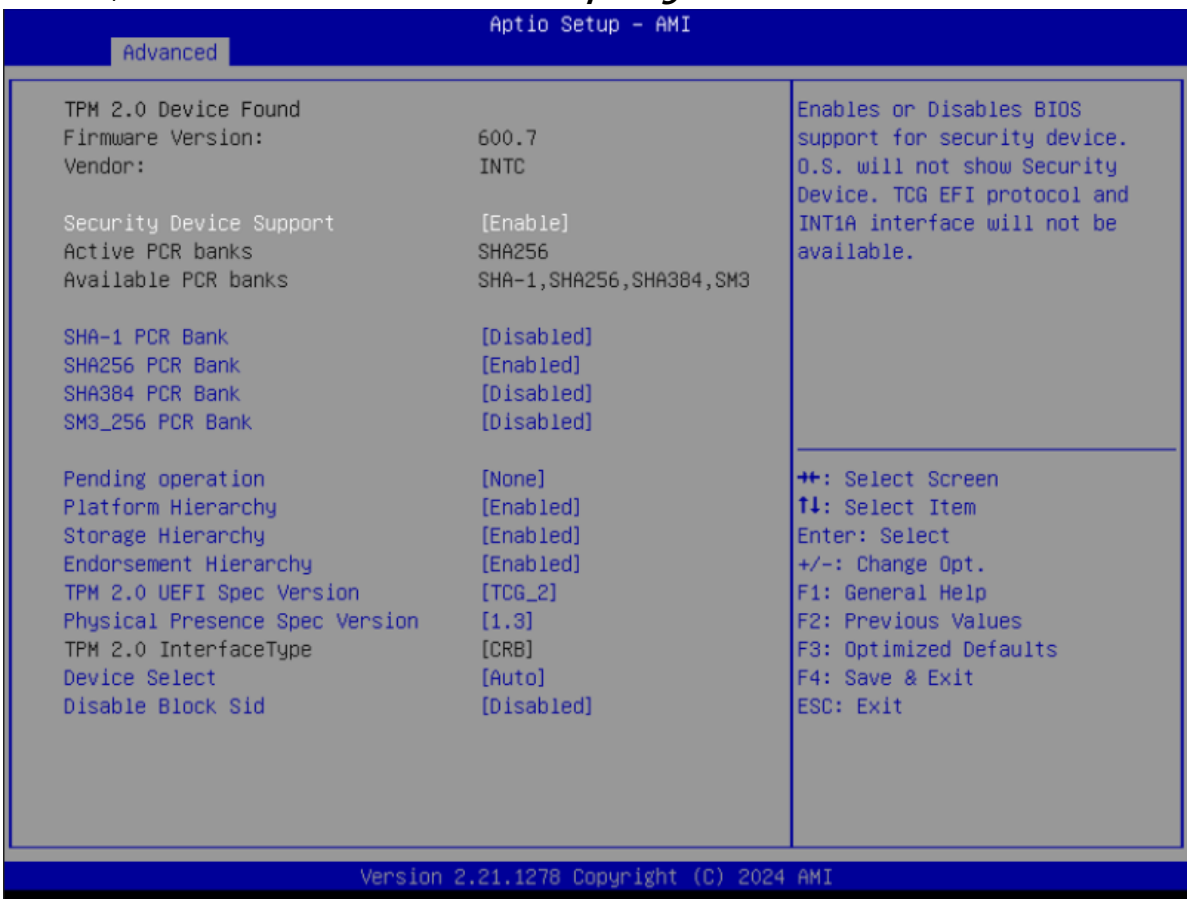

Aptio Setup – AMI
Advanced
CPU – Power Management Control
Boot performance mode [Max Non-Turbo]
Intel(R) SpeedStep(tm) [Enabled]
Turbo Mode [Enabled]
Config TDP Configurations
C states [Disabled]
Tcc Activation Offset 15
Select the performance state that the BIOS will set starting from reset vector.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.21.1278 Copyright (C) 2024 AMI


Aptio Setup – AMI
Advanced
Config TDP Configurations
Enable Configurable TDP [Applies to cTDP]
Configurable TDP Boot Mode [Nominal]
Configurable TDP Lock [Disabled]
CTDP BIOS control [Disabled]
ConfigTDP Levels 2
ConfigTDP Turbo Activation Ratio 28 (Unlocked)
Power Limit 1 45.0W (MSR:45.0)
Power Limit 2 83.0W (MSR:83.0)
Custom Settings Nominal
ConfigTDP Nominal Ratio:29 TAR:28 PL1:13.0W
Power Limit 1 0
Power Limit 2 0
Power Limit 1 Time Window [0]
ConfigTDP Turbo Activation Ratio 0
Custom Settings Down
ConfigTDP Level1 Ratio:24 TAR:23 PL1:3.0W
Power Limit 1 0
Power Limit 2 0
Power Limit 1 Time Window [0]
ConfigTDP Turbo Activation Ratio 0
Applies TDP initialization settings based on non-cTDP or cTDP. Default is 1: Applies to cTDP; if 0 then applies non-cTDP and BIOS will bypass cTDP initialzation flow
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.21.1278 Copyright (C) 2024 AMI

Setup Item	Options	Help Text	Comments
CPU Configuration			
Type			
ID			
Speed			
VMX			
SMX/TXT			
Hardware Prefetcher	Enabled Disabled	To turn on/off the MLC streamer prefetcher.	
Adjacent Cache line Prefetch	Enabled Disabled	To turn on/off prefetching of adjacent cache lines.	
Intel(VMX) Technology	Enabled Disabled	When enabled,a VMM can utilize the additional hardware capabilities provided by vanderpool technology.	
AVX	Enabled		
AVX3	Enabled		
Active Processer Cores	All 1 2 3	Number of cores to enable in each processor package.	
Hyper-Threading	Enabled		
CPU - Power Management Control			
Boot performance mode	Max Non-Turbo Max battery Turbo Performance	Select the performance state that the BIOS will set starting from reset vector.	
Intel® SpeedStep™	Enabled Disabled	Allows more than two frequency ranges to be supported.	
Turbo Mode	Enabled Disabled	Enabled/Disabled processor Turbo Mode.	
Config TDP configurations			
C states	Disabled		
Tcc Activation Offset	15		

2.2.2 Trusted Computing

The screen allows the user to set the Trusted Computing(TPM) parameters. To access this screen from the Main screen, choose ***Advanced > Trusted Computing***.



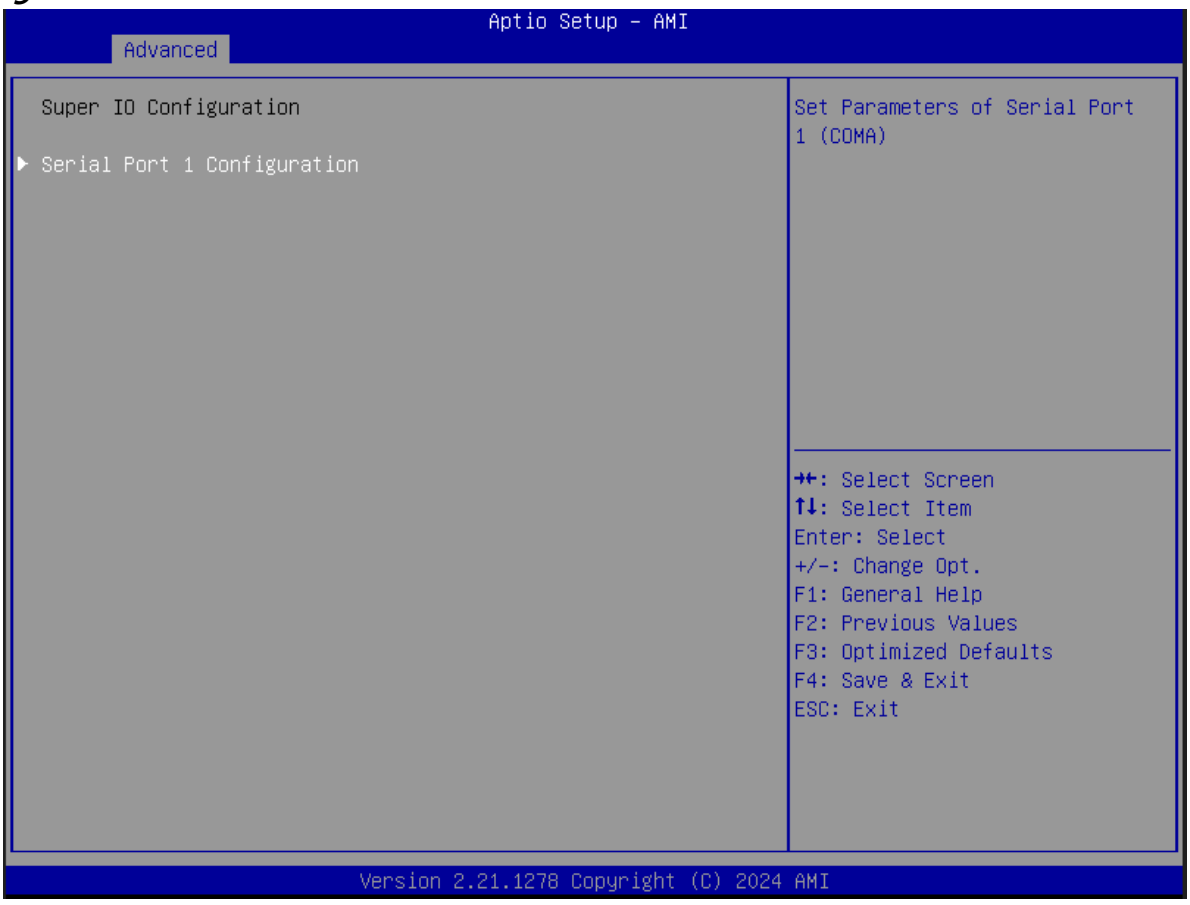
2.2.3 ACPI Settings Screen

The ACPI Settings screen allows the user to set the system ACPI parameters. To access this screen from the Main screen, choose ***Advanced > ACPI Settings***.

Setup Item	Options	Help Text	Comments
ACPI Settings			
Enable Hibernation	Enabled		
ACPI Sleep State	Suspend Disabled S3 (Suspend to RAM)	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.	Sleep supported optionally.

2.2.4 Super IO Configuration

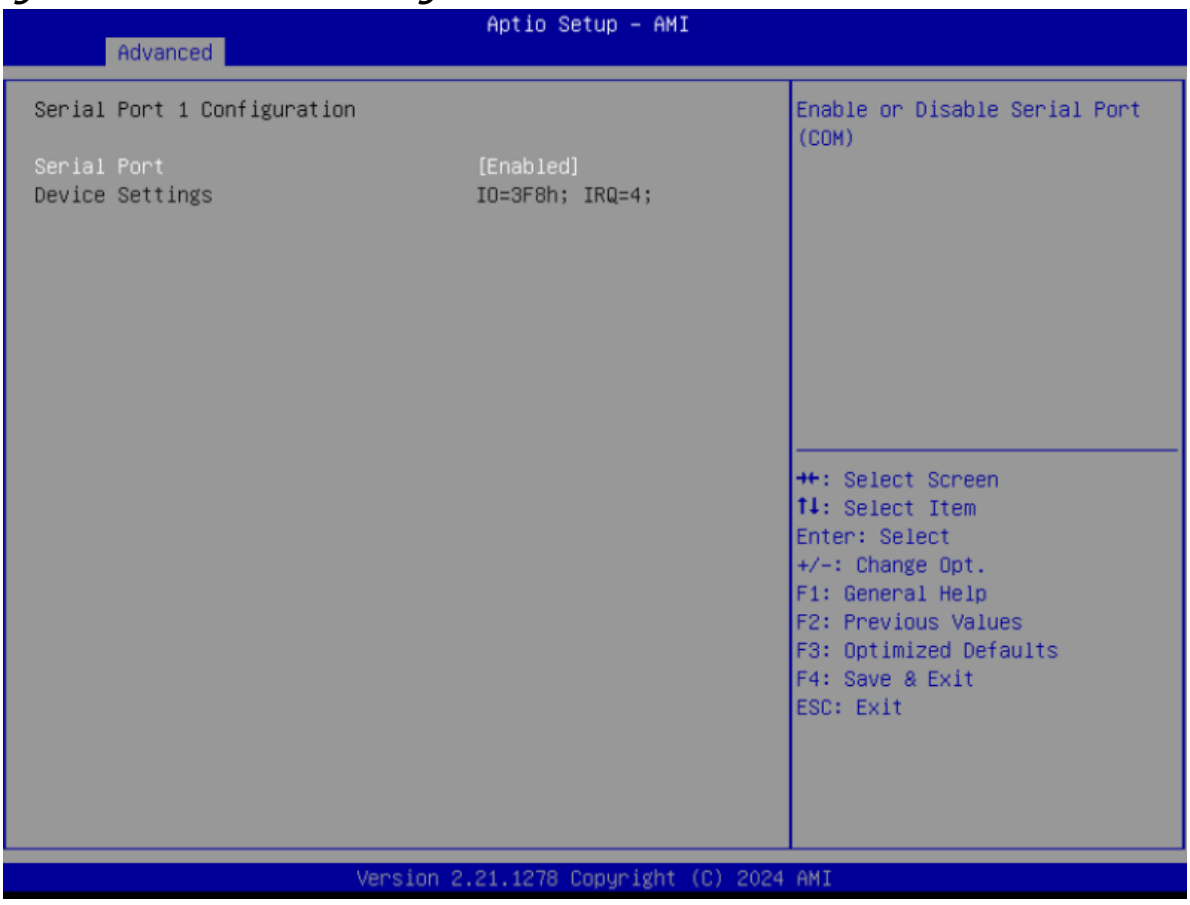
The Super IO Configuration screen allows the user to view the super IO information, and to enable or disable super IO options. To access this screen from the Advanced screen, choose ***Advanced > Super IO Configuration.***



Setup Item	Options	Help Text	Comments
Super IO Configuration			
Serial Port 1 Configuration			Set Parameters of Serial Port 1 (COM1).

2.2.4.1 Serial PortX Configuration

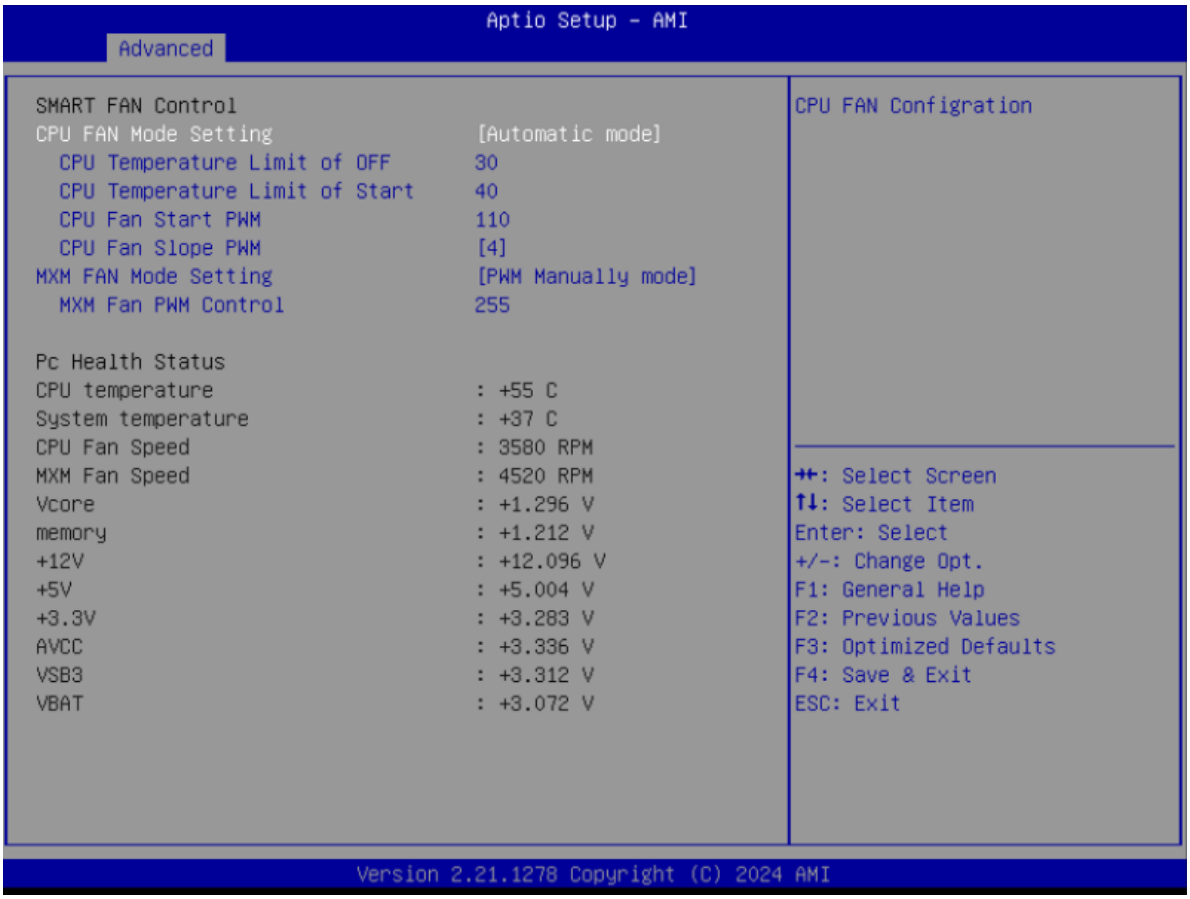
The Super IO Configuration screen allows the user to view the super IO information, and to enable or disable serial port options. To access this screen from the Advanced screen, choose ***Advanced-> Super IO Configuration->Serial PortX Configuration***.



Setup Item	Options	Help Text	Comments
Serial PortX Configuration			
Serial Port	Enabled/Disabled	Enabled or Disabled Serial Port (COM).	
Device Settings			

2.2.5 Hardware Monitor

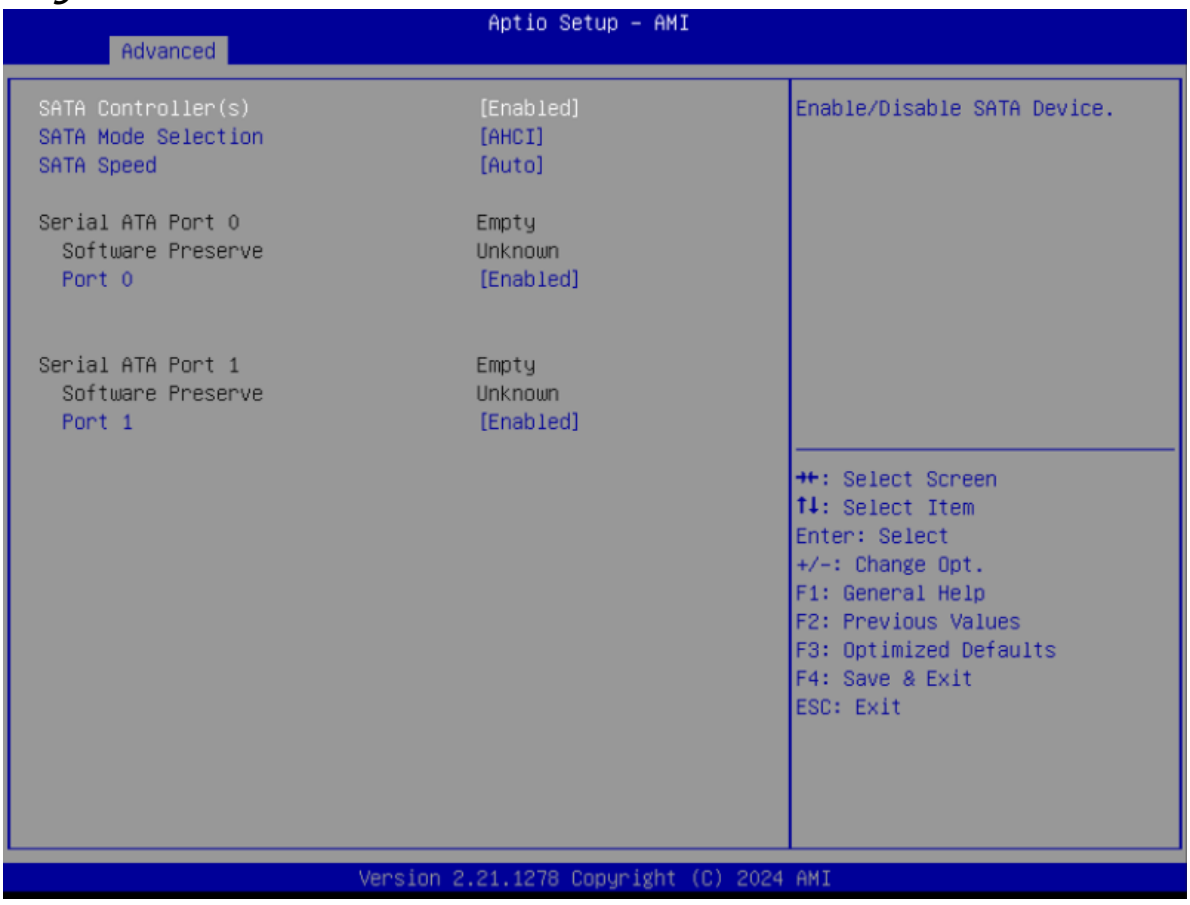
The hardware monitor screen allows the user to view the hardware information. To access this screen from the Advanced screen, choose ***Advanced-> Hardware Monitor***.



Setup Item	Options	Help Text	Comments
SMART FAN Control			
CPU FAN Mode Setting	Full On mode Automatic mode Manual mode	Fan control mode select.	When Manual mode selected, Manual PWM Setting shows to set FAN PWM Duty.
MXM FAN Mode Setting	Full On mode Automatic mode Manual mode	Fan control mode select.	When Manual mode selected, Manual PWM Setting shows to set FAN PWM Duty.
MXM Fan PWM Control	255		
PC Health Status			
CPU temperature		Shows Current CPU temperature.	NOTE1:Sometimes not the actual temperature value, just indicates temperature tolerance limitation.
CPU FAN Speed			HW Information.
MXM FAN Speed			

2.2.6 SATA Configuration

The SATA Configuration screen allows the user to view the SATA Controller information, and to enable or disable SATA Controller options. To access this screen from the Main screen, choose ***Advanced > SATA Configuration***.

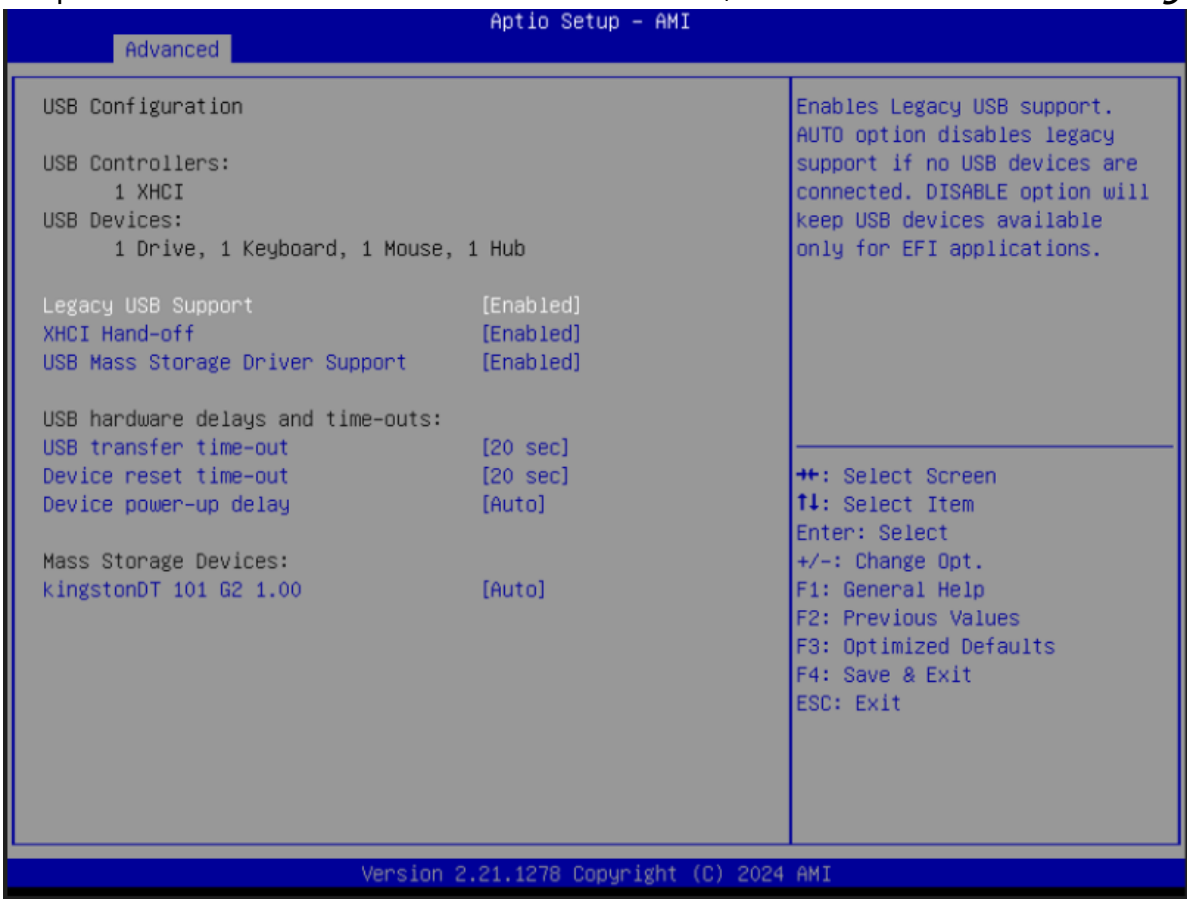


Setup Item	Options	Help Text	Comments
SATA Configuration			
SATA Controller(s)	Enabled Disabled	Enable / Disable SATA Device.	
SATA Mode Selection	AHCI Mode	Select AHCI.	
SATA Speed	Auto Gen1 Gen2 Gen3	Configure SATA Speed.	
Serial ATA Port 0			Show HDD information connected.
Serial ATA Port 1			

Note: If SATA or PCIE RAID groups are configured separately, contact technical support.

2.2.7 USB Configuration

The USB Configuration screen allows the user to view the USB Configuration information, and to enable or disable options. To access this screen from the Main screen, choose ***Advanced > USB Configuration***.



Setup Item	Options	Help Text	Comments
USB Configuration			
Legacy USB Support	Enabled Disabled	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.	
XHCI Hand-off	Enabled Disabled	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.	
USB MASS Storage Driver Support	Enabled Disabled	Enable/Disable USB Mass Storage Driver Support.	
USB hardware delays and time-outs:			
USB transfer time-out	1 sec 5 sec 10 sec 20 sec	The time-out value for Control, Bulk, and Interrupt transfers.	

Setup Item	Options	Help Text	Comments
Device reset time-out	1 sec 5 sec 10 sec 20 sec	USB mass storage device Start Unit command time-out.	
Device power-up delay	Auto Manual	Maximum time the device will take before it properly reports itself to the Host Controller. ’ auto’ uses default value: for a Root port it is 100ms,for a Hub port the delay is taken from Hub descriptor.	

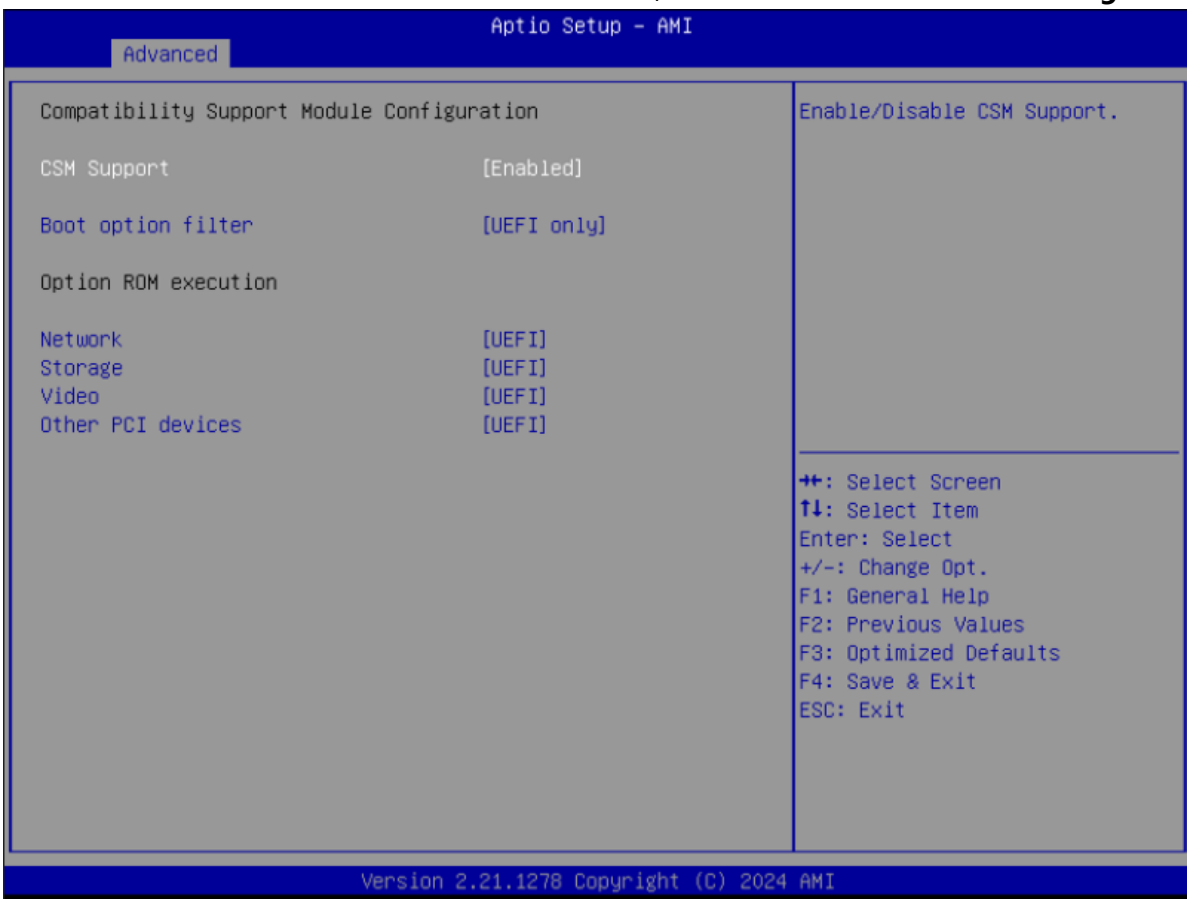
2.2.8 Network Stack Configuration

To access this screen from the Main screen, choose ***Advanced > Network Stack Configuration***.

Setup Item	Options	Help Text	Comments
Network Stack Configuration			
Network Stack	Disabled Enabled		Enable/Disable UEFI Network Stack
IPv4 PXE Support	Disabled Enabled		Enable/Disable IPv4 PXE boot support
IPv4 HTTP Support	Disabled Enabled		Enable/Disable IPv4 HTTP boot support.
IPv6 PXE Support	Disabled Enabled		Enable/Disable IPv6 PXE boot support
IPv6 HTTP Support	Disabled		
PXE boot wait time	0		
Media detect count	1		

2.2.9 CSM Configuration

The CSM Configuration screen allows the user to view the CSM information, and to enable or disable CSM options. To access this screen from the Main screen, choose **Advanced > CSM Configuration**.

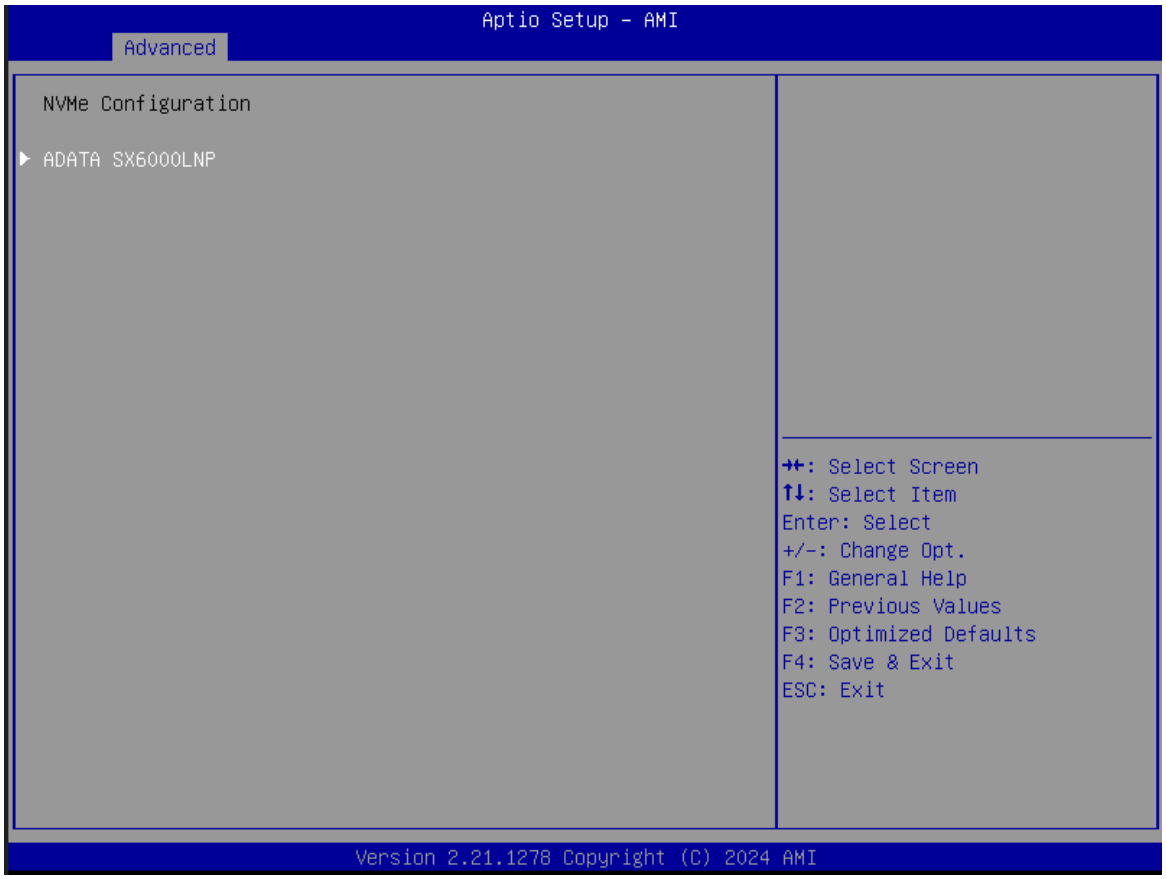


Setup Item	Options	Help Text	Comments
CSM Configuration			
CSM Support	Enabled Disabled	Enable / Disable CSM support.	
Boot option filter	UEFI and Legacy Legacy only UEFI only	This option control Legacy/UEFI ROMs priority.	
Option ROM execution			
Network	Legacy UEFI Do not lunch	Control the execution of UEFI and Legacy PXE OpROM.	
Storage	Legacy UEFI Do not lunch	Control the execution of UEFI and Legacy Storage OpROM.	
Video	Legacy UEFI Do not lunch	Control the execution of UEFI and Legacy video OpROM.	

Setup Item	Options	Help Text	Comments
Other PCI devices	Legacy UEFI Do not lunch	Determines OpROM execution policy for devices other than Network, Storage or video.	

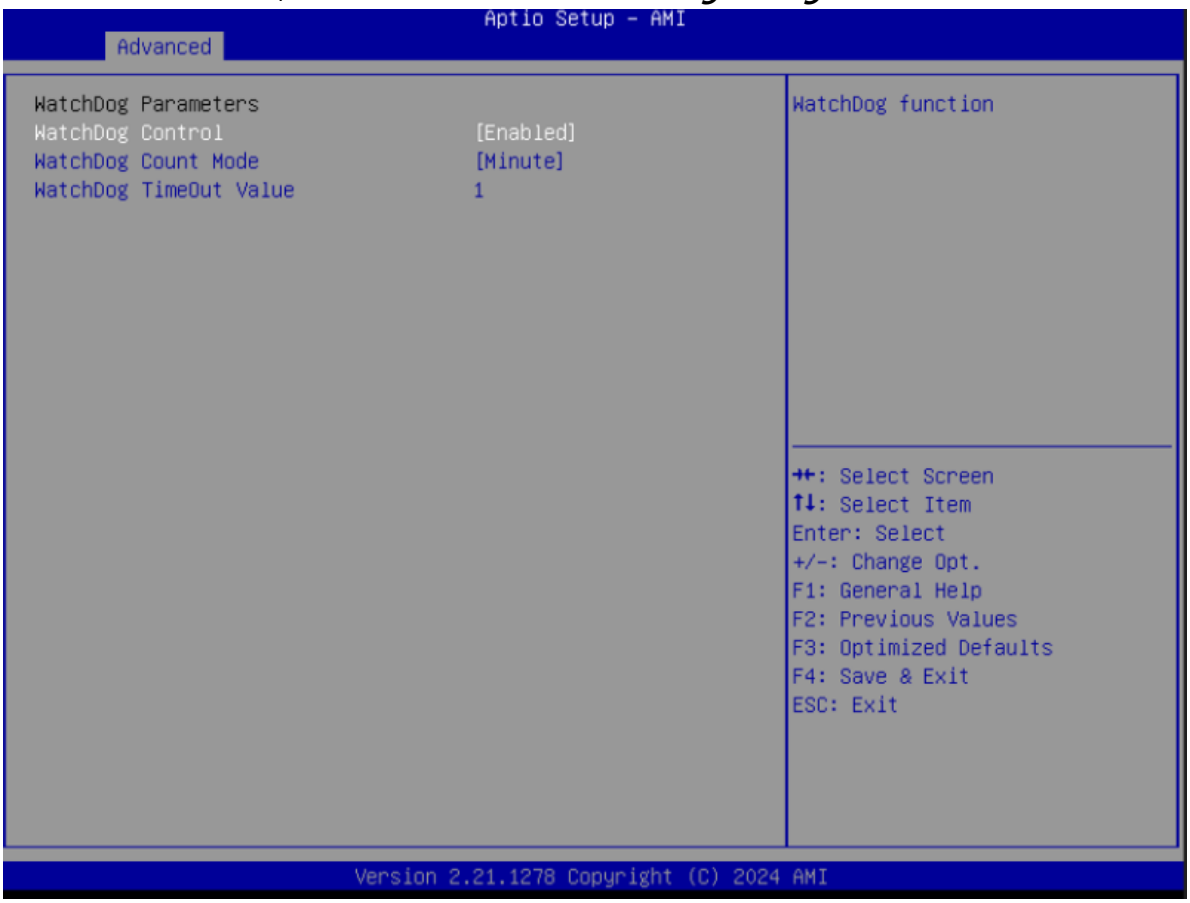
2.2.10 NVMe Configuration

The NVMe Configuration screen allows the user to view the NVMe Device information. To access this screen from the Main screen, choose ***Advanced > NVMe Configuration***.



2.2.11 Watchdog Configuration

The Watchdog Configuration screen allows the user to Set System WatchDog Parameters. To access this screen from the Main screen, choose ***Advanced > Watchdog Configuration***.



Setup Item	Options	Help Text	Comments
Watchdog Parameters			
WatchDog Control	Disabled Enabled		WatchDog function.
WatchDog Count Mode	Minute Second		WatchDog Count Mode Selection.
WatchDog TimeOut Value	1		Fill WatchDog TimeOut (0~255),0 means function disabled.

2.2.12 OemSetup Settings

To access this screen from the Main screen, choose ***Advanced > OemSetup Settings***.

Setup Item	Options	Help Text	Comments
OemSetup Settings			
WatchDog Control	Disabled Enabled		WatchDog function.
LVDS Panel	Disabled Enabled		Enable or Disable for LVDS control(Only Support LVDS bom)
LVDS Panel	1024*768/24/Single		
HeartBeat Default	LOW High	HeartBeat Default value, as high, low.	

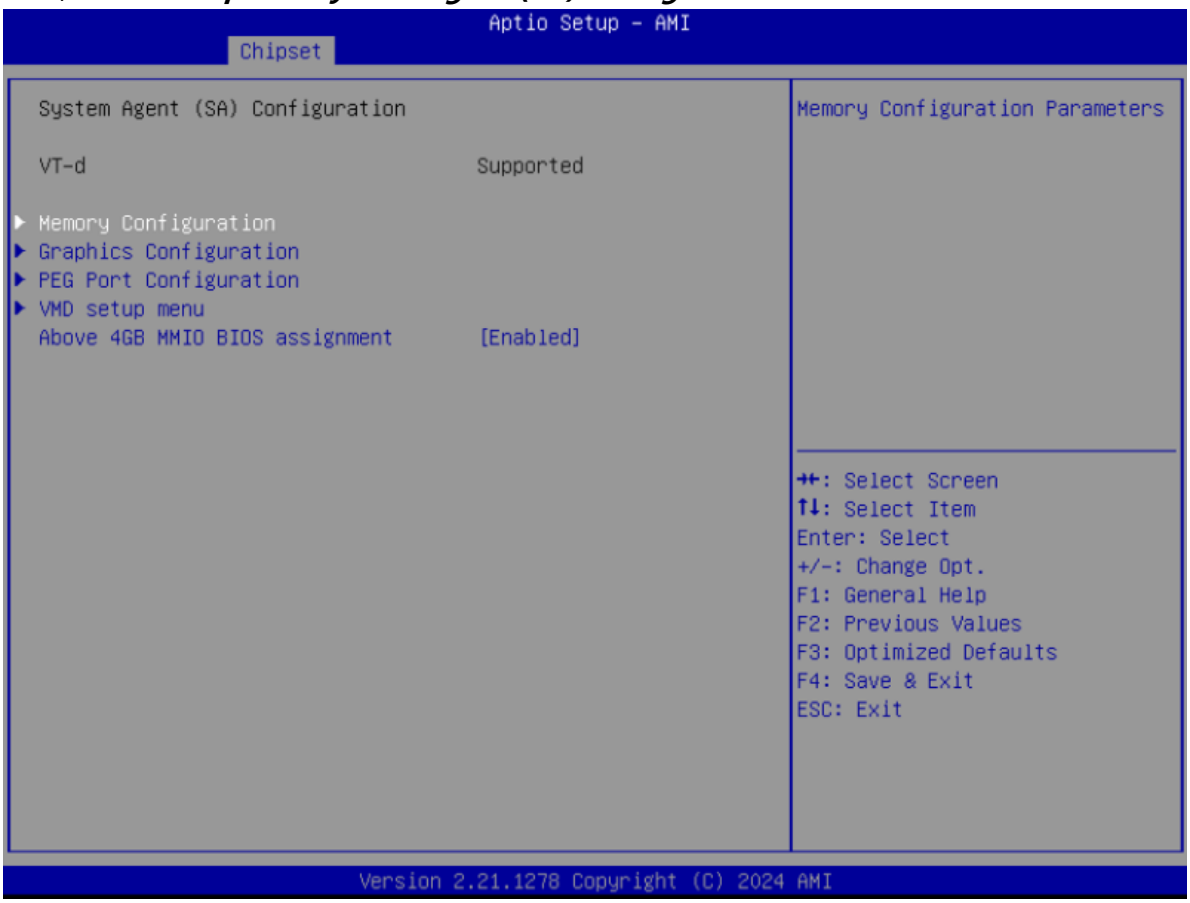
2.3 Chipset Screen

The Chipset screen provides an access point to configure SA Configuration and PCH-IO configuration. To access this screen from the Main screen, press the right arrow until the Chipset screen is chosen.

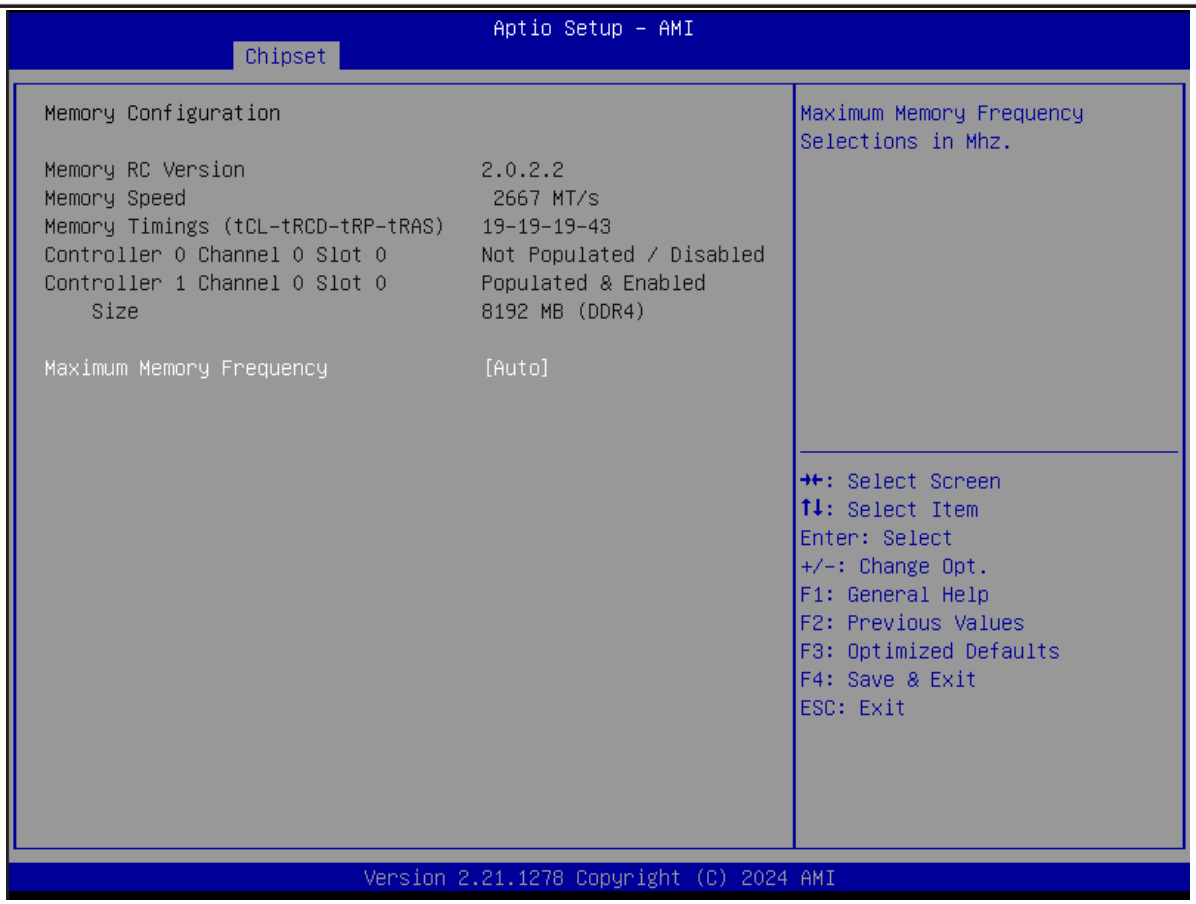
Setup Item	Options	Help Text	Comments
Chipset Screen			
System Agent (SA) Configuration		System Agent (SA) Parameters.	
PCH-IO Configuration		PCH Parameters.	

2.3.1 System Agent (SA) Configuration

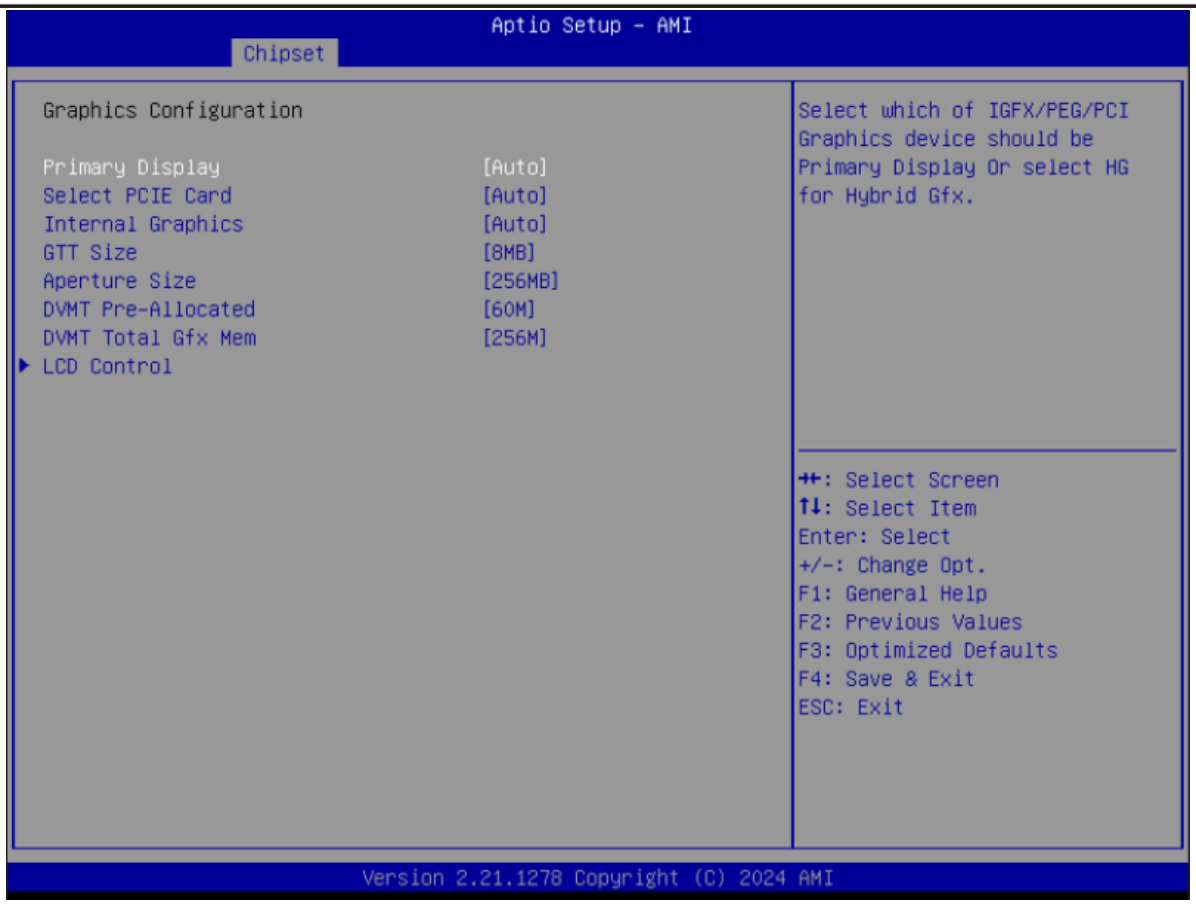
The North Bridge Screen allows user to set NB chipset configuration. To access this screen, form the Main screen, choose ***Chipset> System Agent (SA) Configuration***.



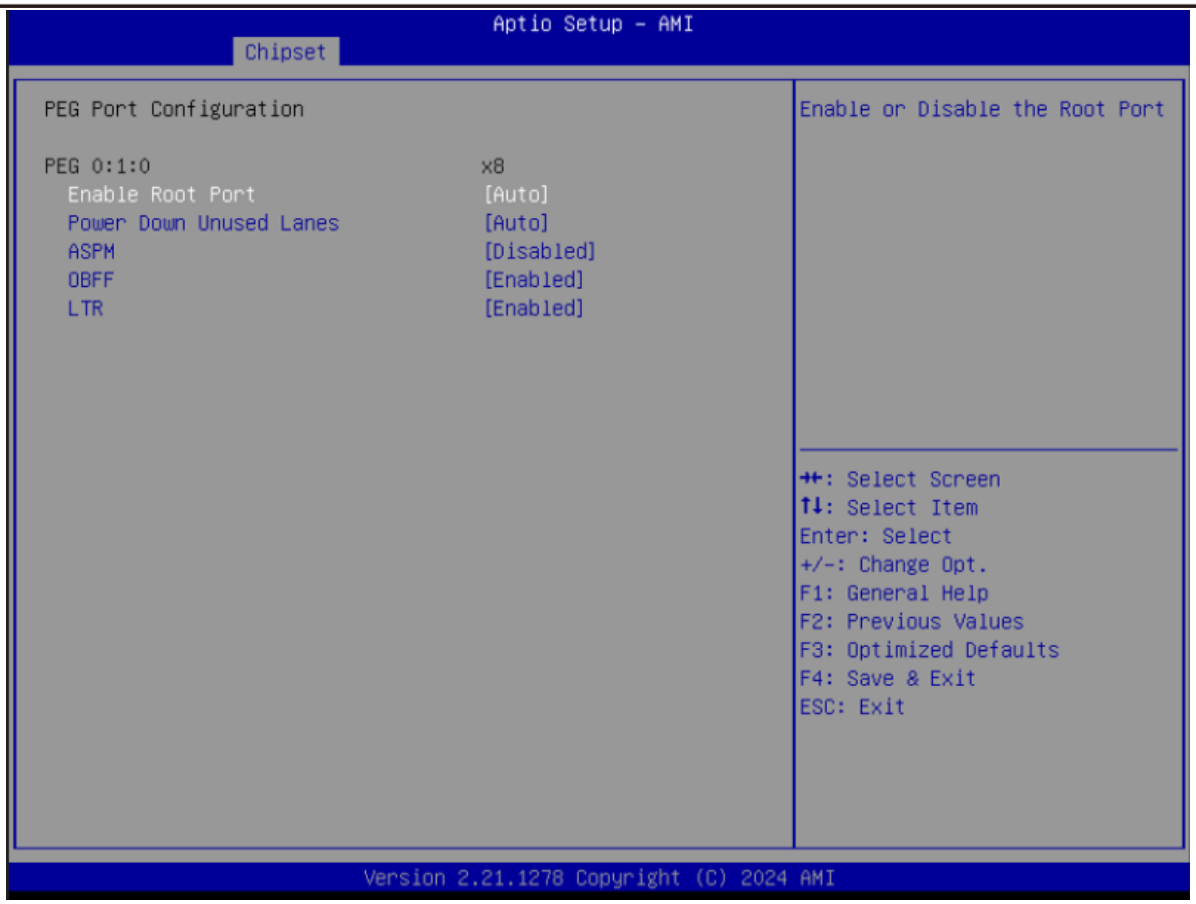
Setup Item	Options	Help Text	Comments
System Agent (SA) Configuration			
Memory Configuration			
Graphics Configuration			
PEG Port Configuration			
VMD setup menu			
Above 4GB MMIO BIOS assignment	Disabled Enabled	Enable/Disable above 4GB MemoryMappedIO BIOS assignment.	



Setup Item	Options	Help Text	Comments
Memory Information			
Maximum Memory Frequency	Auto	Maximum Memory Frequency Selections in Mhz.	



Setup Item	Options	Help Text	Comments
Graphics Configuration			
Primary Display	Auto IGFX PEG PCH	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select HG for Hybrid Gfx.	
Select PCIE Card	**Auto**		
Internal Graphics	Auto Disabled Enabled	Keep IGFX enabled based on the setup options.	
GTT Size	2MB 4MB 8MB	Select the GTT Size.	
Aperture Size	128MB 256MB 512MB 1024MB 2048MB	Select the Aperture Size. Note: Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.	
DVMT Pre-Allocated	32M		
DVMT Total Gfx Mem	128M 256M MAX	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.	
LCD Control			

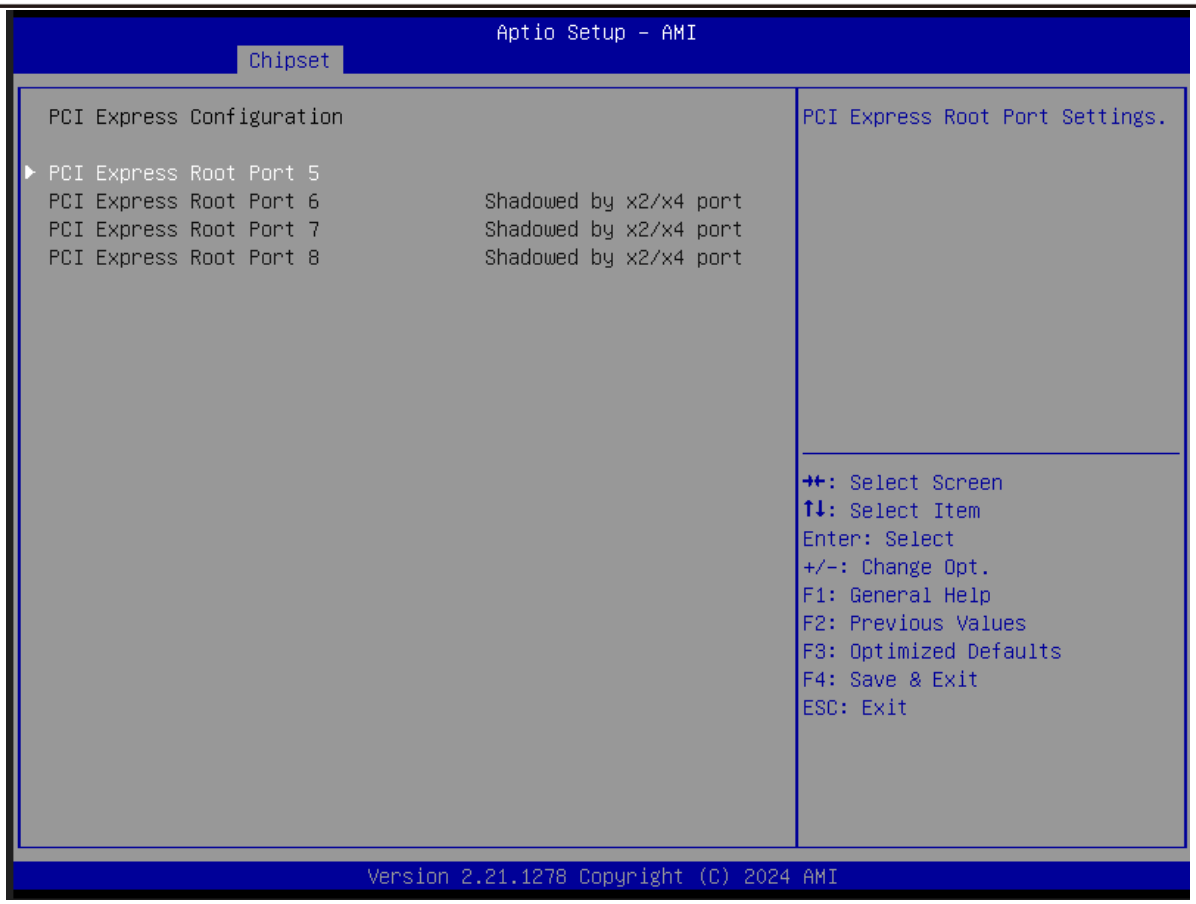


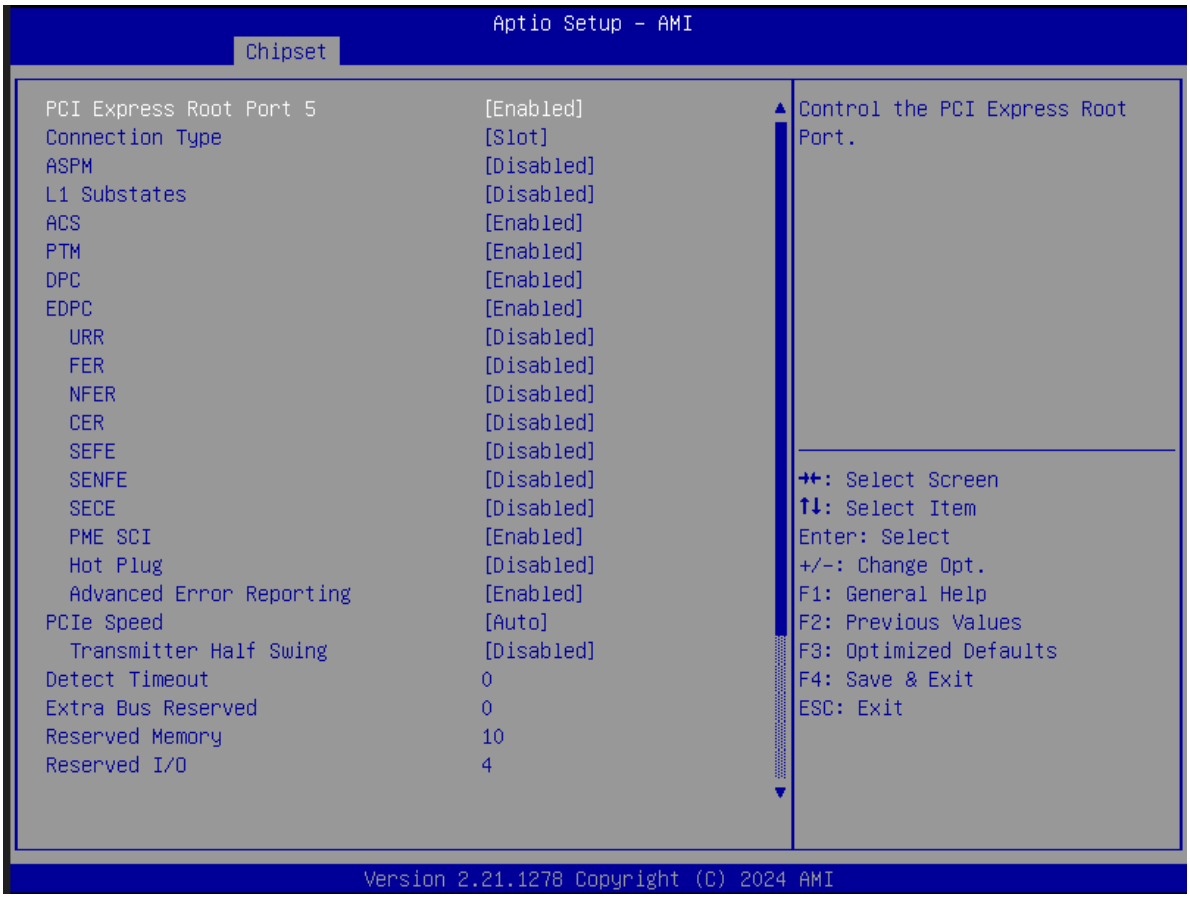
Setup Item	Options	Help Text	Comments
PEG Port Configuration			
PEG Port Configuration		PEG Port Options.	
PEG 0:1:0			
Enable Root Port	Auto Disabled Enabled	Enable or Disable the Root Port.	
Power Down Unused Lanes	Auto Disabled	Power Down Unused Lanes.	
ASPM	Disabled Enabled	Control ASPM support for the PEG 0.	
OBFF	Disabled Enabled	CPU PEG0 (0,1,0) OBFF Enable/Disable.	
LTR	Enabled		

2.3.2 PCH-IO Configuration

The South Bridge Screen allows user to set SB chipset configuration. To access this screen form the Main screen, choose ***Chipset> PCH-IO Configuration***.

Setup Item	Options	Help Text	Comments
PCH-IO Configuration			
Restore AC Power Loss	Power on Power off	Select AC power state when power is re-applied after a power failure.	
PCI Express Configuration			
PCI Express Root Port 5			


Aptio Setup – AMI
Chipset
PCI Express Configuration
PCI Express Root Port 5
PCI Express Root Port 6 Shadowed by x2/x4 port
PCI Express Root Port 7 Shadowed by x2/x4 port
PCI Express Root Port 8 Shadowed by x2/x4 port
PCI Express Root Port Settings.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.21.1278 Copyright (C) 2024 AMI


Aptio Setup – AMI
Chipset
PCI Express Root Port 5 [Enabled]
Connection Type [Slot]
ASPM [Disabled]
L1 Substates [Disabled]
ACS [Enabled]
PTM [Enabled]
DPC [Enabled]
EDPC [Enabled]
URR [Disabled]
FER [Disabled]
NFER [Disabled]
CER [Disabled]
SEFE [Disabled]
SENFE [Disabled]
SECE [Disabled]
PME SCI [Enabled]
Hot Plug [Disabled]
Advanced Error Reporting [Enabled]
PCIe Speed [Auto]
Transmitter Half Swing [Disabled]
Detect Timeout 0
Extra Bus Reserved 0
Reserved Memory 10
Reserved I/O 4
Control the PCI Express Root Port.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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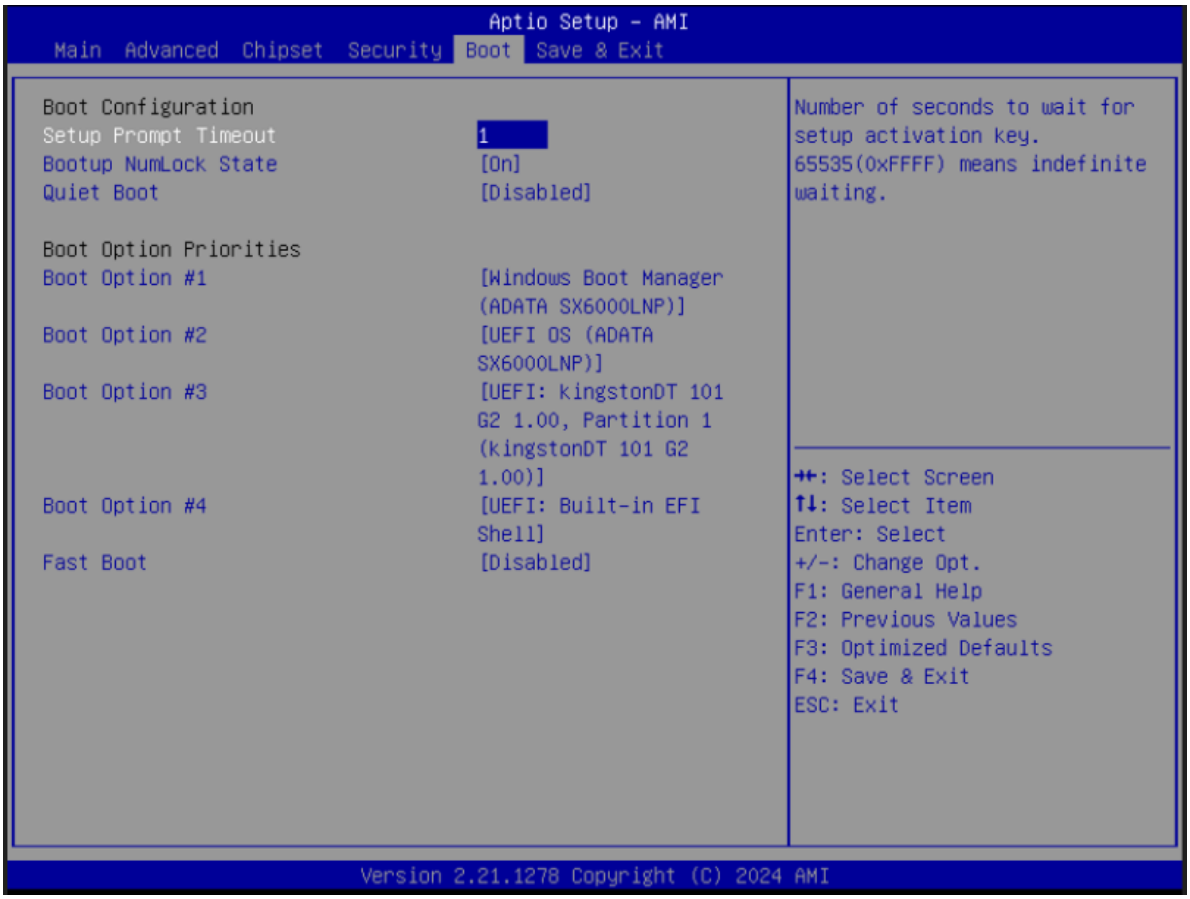
2.4 Security

To access this screen form the Main screen, choose ***Security***.

Setup Item	Options	Help Text	Comments
Security			
Administrator Password		Set Administrator Password.	
User Password		Set User Password.	

2.5 Boot Screen

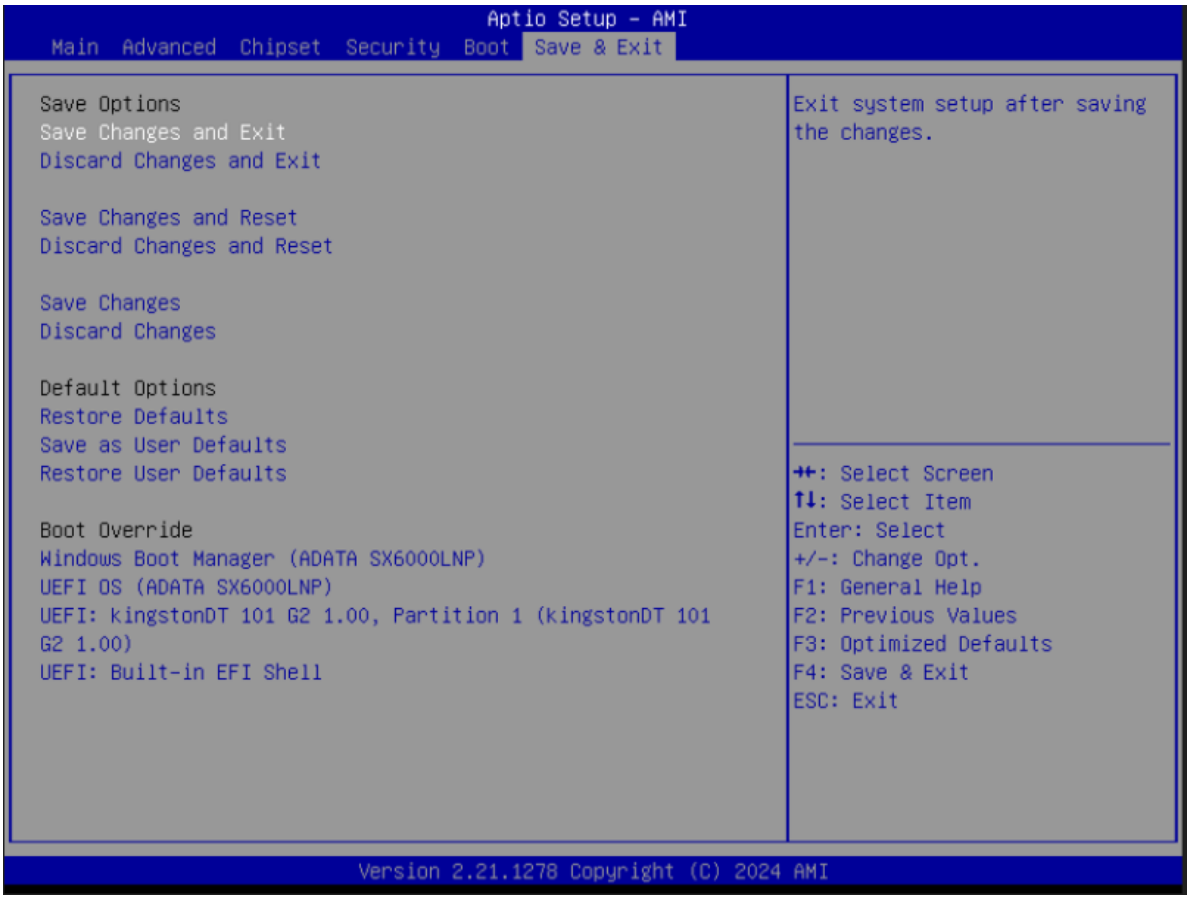
The Boot screen displays any bootable media encountered during POST, and allows the user to configure desired boot device. To access this screen from the Main screen, choose ***Boot***.



Setup Item	Options	Help Text	Comments
Boot Configuration			
Setup Prompt Timeout	1~65535	Number of seconds to wait for setup activation key.65535(0xFFFF) means indefinite waiting.	
Bootup NumLock State	On off	Select the keyboard Number state.	
Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option.	
Boot Option Priorities			
Boot Option #1		Sets the system boot order.	Note：Showed When boot devices existed.
Boot Option #2		Sets the system boot order.	
Boot Option #3		Sets the system boot order.	
Boot Option #4		Sets the system boot order.	
Fast Boot	Disabled		
Hard Drive BBS Priorities		Set the order of the legacy devices in this group.	Set boot order in each group of the same kind, such as HDD, network.

2.6 Save & Exit Screen

The Save & Exit screen allows the user to choose whether to save or discard the configuration changes made on the other screens. It also allows the user to restore the server to the factory defaults or to save or restore them to set of user-defined default values.



Setup Item	Options	Help Text	Comments
Save & Exit Screen			
Save Options			
Save Changes and Exit		Exit system setup after saving the changes.	User is prompted for confirmation only if any of the setup fields were modified.
Discard Changes and Exit		Exit system setup without saving any changes.	
Save Changes and Reset		Reset the system after saving the changes.	
Discard Changes and Reset		Reset system setup without saving and changes.	
Save Changes		Save Changes done so far to any of the setup options.	
Discard Changes		Discard Changes done so far to any or the setup options.	
Default Options			
Restore Defaults		Restore/Load Default values for all the setup options.	

Setup Item	Options	Help Text	Comments
Save as User Defaults		Save the changes done so far as User Defaults.	
Restore User Defaults		Restore the User Defaults to all the setup options.	
Boot Override			
Shows the Device can boot.			Note：Showed When boot devices existed.

第三章 故障问题排除

常见故障	可能原因	故障解决方法
设备不能运行	无电源	请检查电源和电源线/连接器。
	设备运行不符合指定的环境条件	1、检查环境条件。 2、在开启冷天运输的设备之前请等待大约 12 小时。
外接显示器不亮	显示器未打开	打开显示器。
	显示器处于“节电”模式	按键盘上的任意键。
	亮度控件被设置为黑暗状态	通过亮度控件提高亮度。 有关详细信息，可参考显示器操作说明。
	未连接电源线或显示器电缆	1、检查电源线是否正确地连接到显示器和系统单元或接地出口。 2、检查显示器电缆是否正确地连接到系统单元和显示器。 3、如果执行这些检查后显示器屏幕仍不亮，请与技术支持联系。
PC 上的时间或日期不正确	BIOS 设置不正确	根据开机画面提示的按键，打开 BIOS Setup，在 BIOS Setup 中调整时间和日期。
BIOS 设置正确，时间和日期不对	备用电池电量不足	更换电池。
USB 设备不响应	在 BIOS 中已禁用 USB 端口	使用不同的 USB 端口或启用该端口。
计算机未启动或显示 Boot device not found	在 BIOS 设置的启动优先级中，该启动设备不是第一优先级，或者未包括在启动设备中	在 BIOS 设置的“启动”(Boot)菜单中更改该启动设备的启动优先级，或将该启动设备包括在启动优先级中。
开机提示找不到系统盘	硬盘电源线或数据线未接好	检查硬盘（硬盘必须是已经装好系统可引导的）的电源线、数据线是否插好。
	硬盘系统文件损坏	用可引导的光盘进入系统（常用 winpe 系统），检查硬盘系统是否已损坏，有必要时最好重新安装系统。
BIOS 设置不能保存	可能是 CMOS 电池的问题	用万用表测量 CMOS 电池，电压不足就更换新电池，重新设置保存。
找不到外接设备	没有连接；没有装驱动；设备已坏。	查看设备与主板的连接线是否正常，如正常则更换正常连接线确定连接无问题；重新安装设备驱动，看是否可以识别；检测设备是否正常；如设备正常考虑与主板是否兼容。
目视	1、零件是否烧毁。 2、撞件。 3、断线。	

常见故障	可能原因	故障解决方法
触摸		元件是否有发烫现象。
测量		是否电压接地短路以及基本电压是否正常，测量 AGP BUS 与 GPU 之间是否正常。
BIOS 是否工作		1、正常时，用示波器测量其 CS 脚，应该有两次波形，说明 GPU 选中 ROM，ROM 返回数据。 2、如果没有波形，在以上供电和时钟，以及 C、A、D 线二极体值都正常的情况下，说明 GPU 坏。 3、如果有一次波形，说明 GPU 已经选中 BIOS，BIOS 未能正常返回数据，此时要么是 BIOS 有问题，要么就是 GPU 坏。
花屏		花屏在实际维修中是极为常见的故障，故障的原因是由于 GPU 与显存之间不能正常进行数据通信，原因可能是 GPU 坏、显存坏、GPU 与显存之间断路（大多会连着排阻）、显存供电问题、BIOS 设定 GPU 与显存之间数据传输频率异常。
硬盘启动项设置		1、开机时按 DEL 进 BIOS 设置选 Advanced。 2、选 CSM Configuration 回车。 3、选 CSM Support 打开 Enabled。 4、选 Boot option filter 回车。 5、UEFI and Legacy 是两种不同的系统引导方式，可以实现网络启动，UEFI 只支持 64 位操作系统。 6、Legacy only Legacy 启动是 BIOS 之前的启动方式，不能实现网络启动。但它可以引导 32 位操作系统，也可以引导 64 位操作系统。
设置来电开机		开机时按 DEL 进 BIOS 设置 Chipset→PCH-Io Configuration 回车。 1）AC Power loss 将 Power off→Power ON 上电开机。 2）State After G3 选 S5 State S0 State 上电开机。
开机时核显可以正常显示，但独显不显示 拼接设置		开机时按 DEL 进 BIOS 设置选 Chipset。 1、选 System Agent(SA) Configuration 回车。 2、选 Graphics Configuration 回车。 3、选 Primary Display 回车。 3.1)Auto 独显。 3.2)IGFX 核显。(做分屏拼接选 IGFX 模式)

深圳智锐通科技有限公司
Shenzhen Zrt Co., Ltd.

智锐通公众号 & 智锐通抖音号

集团总部：深圳市宝安区碧桂园凤凰智谷A栋21楼
北京分公司：北京市昌平区科星西路106号院2号楼5层
南京分公司：南京市江宁区万科都荟天地B2栋7楼
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400-838-6869