EC9-Q170-6L

mATX 工控板

USER Manual V1.1

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

Model		EC9-Q170-6L
配置 Item	规格 Specification	描述 Describe
处理器 Processor System	CPU	Intel 9/8/7/6th Coffee Lakey/Kaby Lake/Skylake FCLGA1151 不支持 i9-9900K
	芯片组 Chipset	Intel PCH Q170
	BIOS	AMI EFI
内存 Memory	规格 Technology	DDR4 6th 2133MHz 7th 2400MHz 8/9th 2666MHz
	最大容量 Max. Capacity	64GB
	插槽 Socket	4*U-DIMM
扩展插槽 Expansion Slot	M.2	1*M.2 Key-M for PCIe
	PCI-Express	1*PCIe 16x Gen3(2*PCIe x16 都插卡则是 x8，只插一个是 x16) 1*PCIe 4x Gen3
	PCI	1*PCI
存储 Storage	SATA	3*SATA3.0(7Pins)
显示 Graphics	最多显示 Multiple Display	3Ports
	I/O	1*VGA 1*HDMI1.4
	插针 Header Pin	1*HDMI1.4
	分辨率 Resolution	VGA:2048*1536@60Hz HDMI1.4:2560*1600@60Hz
以太网 Ethernet	控制器 Controller	Integrated 10/100/1000M Adaption (Intel® Ethernet Controller i210-AT)
	I/O	6*RJ45 10/100/1000M (i210-AT)
PS2	插针 Header Pin	1*PS2
USB	I/O	4*USB3.0 Gen1 Type A 2*USB2.0 Type A
	插针 Header Pin	2*USB2.0(2*2.54mm_2*5Pin)

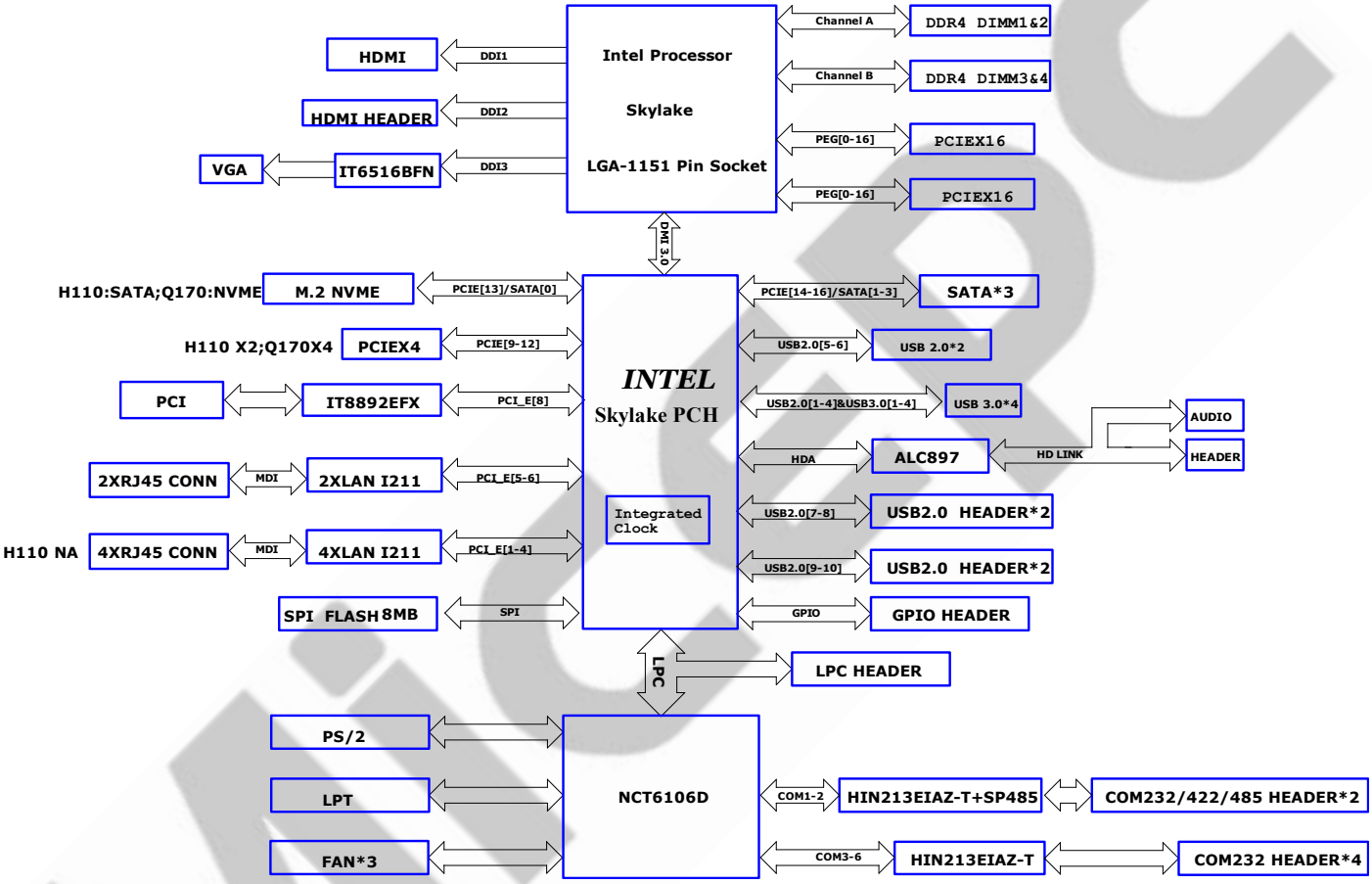
	功能 **Function**	关机后不带电
串口 **COM**	**I/O**	2*RS232/422/485
	插针 **Header Pin**	4*RS232(4*2.54mm_2*5Pin)
GPIO	**插针** **Header Pin**	1*8bit GPIO(1*2.0mm_2*5Pin)
音频 **Audio**	**芯片** **Chipset**	Integrated High Definition Audio Stereo(ALC897)
	I/O	1*Line In 1*Line Out 1*MIC In
	插针 **Header Pin**	1*Line Out+1*MIC In(1*2.54mm_2*5Pin)
其它 **Others**	**F_Panel**	1*F_Panel(1*2.54mm_2*5Pin)
	FAN	3*PWM FAN(1*2.54mm_1*4Pin)
	TPM	1*TPM(1*2.0mm_2*10Pin)
	LPC	1*LPC
	看门狗 **Watch Dog**	Support
电源 **Power Requirements**	**电源类型** **Power Type**	ATX
	RTC	3.3V/210 mAH
操作系统 **OS**	**Microsoft**	Windows 10 LTSC 2016(1607)、2019(1809)
	Linux	Kemel 4.14、Yocto YP3.1x LTS
环境 **Environment**	**工作温度** **Operating Temperature**	0~60℃
	存储温度 **Storage Temperature**	-20~80℃
	工作湿度 **Operating Humidity**	95%RH@40℃(non-condensing)

物理特性 **Physical**	**尺寸** **Dimensions**	mATX (243.8*243.8mm)
	PCB 颜色 **Color**	Green

1.2 驱动

提供网址下载

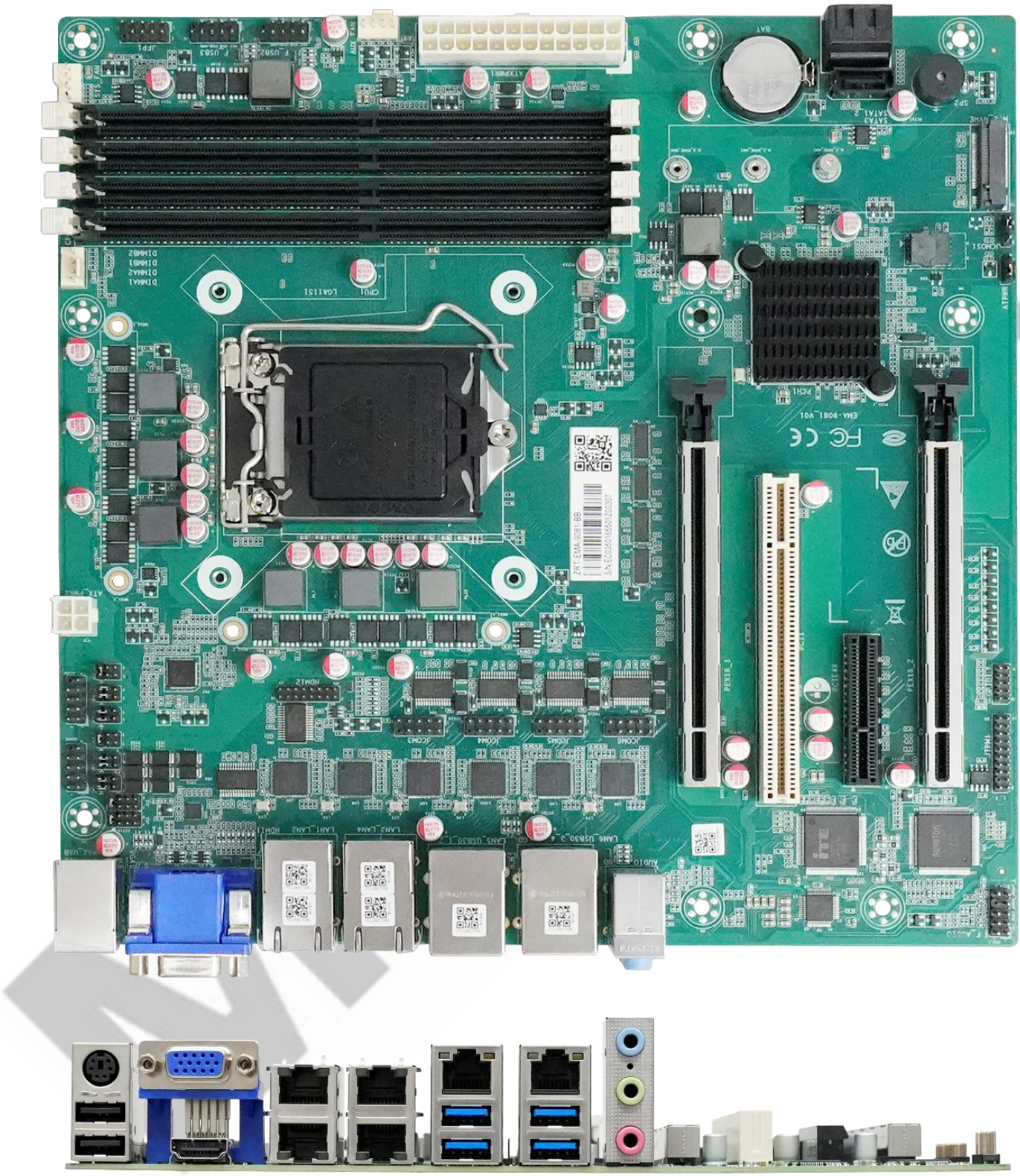
1.3 功能框图



1.4 产品料号

Model Name	Part Number	Specification
EC9-Q170-6L	8.ZRT50-1655-04-LEF	EC9-Q170V10,0170,M.2*1,PCIE*3,SATA*3.LINeOUT*1 .MIC*1.LAN*6.USb3.0*4USb20*6.COM*6 HDMI

1.5 产品照片



第二章 安装说明

2.1 接口/尺寸图

安装设备时，请对照此示意图并详细阅读下面的说明，安装组件过程中必须小心，对于有些部件，如果安装不正确，设备将不能正常工作。

Mechanical Drawing (TOP Side)

Mechanical Drawing (Bottom Side)

2.2 硬件安装

⚠注意：操作时，请戴上防静电手套，因为静电有可能会损坏部件。

本主板关键元器件都是集成电路，而这些元件很容易因为遭受静电的影响而损坏。因此，请在正式安装主板之前，请先做好以下的准备：

1. 拿主板时手握板边，尽可能不触及元器件和插头插座的引脚。
2. 接触集成路元件(如 CPU、RAM 等)时，最好戴上防静电手环/手套。
3. 在集成电路元件未按装前，需将元件放在防静电垫或防静电袋内。
4. 在确认电源的开关处于断开位置后，再插上电源插头。

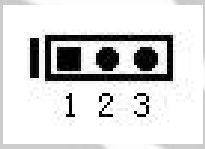
2.3 跳线功能设置

在进行硬件设备安装之前，请按照您的需要对相应的跳线进行设置。

提示：如何识别跳线、接口的第 1 针脚，观察插头插座旁边的文字标记，会用“1”或加粗的线条或三角符号表示；看看背面的焊盘，方型焊盘为第 1 针脚；所有跳线的针脚 1 旁都有 1 个白色箭头。

2.3.1 清 CMOS 跳线设置

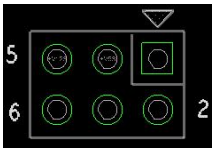
主板提供插针 JCMOS1 来清 CMOS，1*3pin，2.54mm， JCMOS1 插针定义如下：



设 置	功 能
1-2 短路	清除 CMOS 内容，所有 BIOS 设置恢复成出厂值
2-3 短路	正常工作状态(Default)

2.3.2 COM1，COM2 工作模式选择

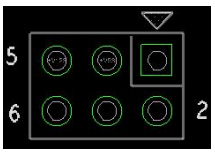
提供插针 JC1，JC2，JC3 来进行 COM1 工作模式选择，通过设置不同的跳帽来设置不同工作模式，如下：



COM1	RS232 模式	RS485 模式	RS422 模式
JC1	1-3，2-4	3-5，4-6	3-5，4-6
JC2	1-3，2-4	3-5，4-6	3-5，4-6

COM1	RS232 模式	RS485 模式	RS422 模式
JC3	1-2	5-6，7-8	3-4，7-8

提供插针 JC6，JC7，JC8 来进行 COM2 工作模式选择，通过设置不同的跳帽来设置不同工作模式，如下：

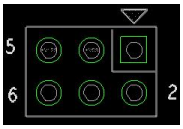


COM2	RS232 模式	RS485 模式	RS422 模式
JC6	1-3，2-4	3-5，4-6	3-5，4-6
JC7	1-3，2-4	3-5，4-6	3-5，4-6

COM2	RS232 模式	RS485 模式	RS422 模式
JC8	1-2	5-6，7-8	3-4，7-8

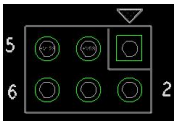
2.3.3 COM1，COM2 工作电压模式选择

提供插针 JC4 来进行 COM1 工作电压模式选择，通过设置不同的跳帽来设置不同工作电压模式，如下：



COM1	RI	5V	12V
JC4	1-2	3-4	5-6

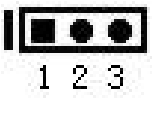
提供插针 JC5 来进行 COM2 工作电压模式选择，通过设置不同的跳帽来设置不同工作电压模式，如下：



COM2	RI	5V	12V
JC5	1-2	3-4	5-6

2.3.4 工作模式选择

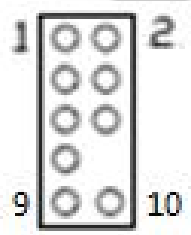
提供插针 ATPWR 来进行工作模式选择，1*3pin，2.54mm 来设置不同工作模式，插针定义如下：



设　置	功　能
1-2 短路	AT 模式
2-3 短路	ATX 模式

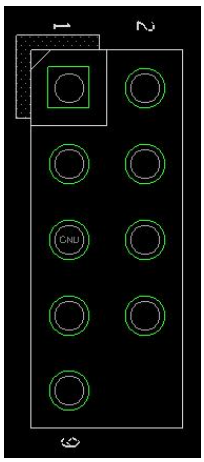
2.4 插针定义

2.4.1 音频接口 F_AUDIO 2.54mm 间距 2*5Pin 插针



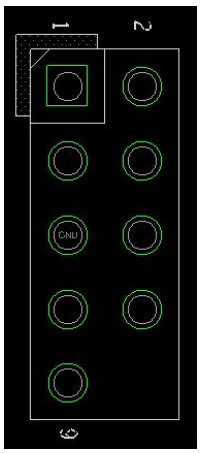
管 脚	信号名称	管 脚	信号名称
1	MIC L	2	GND
3	MIC R	4	PRESENCE
5	Line out R	6	MIC-JD
7	IO-SENSE	8	NC
9	Line out L	10	LINE-JD

2.4.2 串口 JCOM1,JCOM2 RS232/422/485 串口 2.54mm 间距 2*5Pin 插针



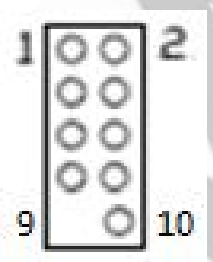
管 脚	RS232 信号名称	RS422 信号名称	RS485 信号名称
1	DCD#	TXD-	DATA-
2	RXD	TXD+	DATA+
3	TXD	RXD+	NC
4	DTR#	RXD-	NC
5	GND	GND	GND
6	DSR#	NC	NC
7	RTS#	NC	NC
8	CTS#	NC	NC
9	RI#	NC	NC

2.4.3 串口 JCOM3，JCOM4，JCOM5，JCOM6 RS232 串口，2.54mm 间距 2*5Pin 插针



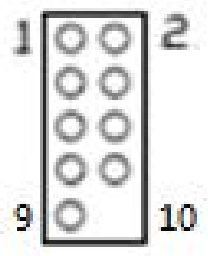
管 脚	信号名称
1	DCD#
2	RXD
3	TXD
4	DTR#
5	GND
6	DSR#
7	RTS#
8	CTS#
9	RI#

2.4.4 USB 接口 F_USB2,F_USB3 USB 2.0 接口，2.54mm 间距 2*5Pin 插针



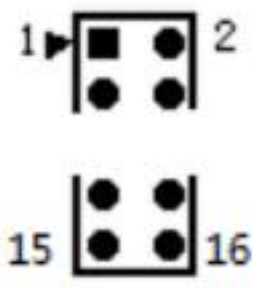
管 脚	信号名称	管 脚	信号名称
1	+5V	2	+5V
3	USB1_Data-	4	USB2_Data-
5	USB1_Data+	6	USB2_Data+
7	GND	8	GND
9	--	10	GND

2.4.5 前置面板接口 JFP1 FPANEL 前面板状态接口，2.54mm 间距 2*5Pin 插针



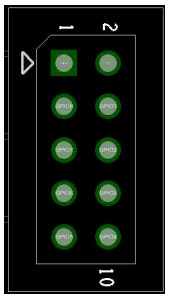
管 脚	信号名称	管 脚	信号名称
1	HDD LED+	2	PW LED+
3	HDD LED-	4	PW LED-
5	GND	6	PW Button
7	RESET	8	GND
9	NC	10	--

2.4.6 显示输出接口 HDMI2，2.0mm 间距 2*8Pin 插针



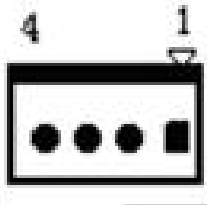
管 脚	信号名称	管 脚	信号名称
1	TMDS Data2+	2	TMDS Data1+
3	TMDS Data2-	4	TMDS Data1-
5	GND	6	GND
7	TMDS Data0+	8	TMDS Clock+
9	TMDS Data0-	10	TMDS Clock-
11	GND	12	--
13	DDC CLK	14	+5V
15	DDC DAT	16	Hot Plug Detect

2.4.7 GPIO 接口 GPIO1，2.0mm 间距 2*5Pin 插针



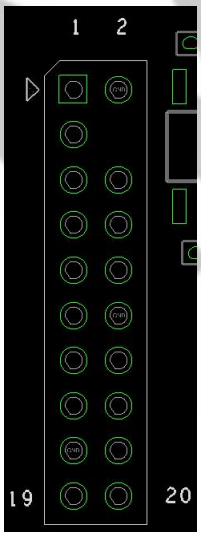
管 脚	信号名称	管 脚	信号名称
1	GND	2	VCC_5V
3	GPO1	4	GPI1
5	GPO2	6	GPI2
7	GPO3	8	GPI3
9	GPO4	10	GPI4

2.4.8 风扇电源接口，支持 4 个风扇座子分别为 CPU_FAN，SYS_FAN，AUX_FAN 4Pin 风扇接口



管 脚	信号名称
1	GND
2	+12V
3	FAN_TACH
4	FAN_PWM

2.4.9 TPM 接口 JTPM1，2.0mm 间距 2*10Pin 插针



管 脚	信号名称	管 脚	信号名称
1	LPC_CLK4	2	GND
3	LPC_FRAME	4	--
5	PLTRST_N	6	NC
7	LPC_AD3	8	LPC_AD2
9	+V3.3S	10	LPC_AD1
11	LPC_AD0	12	GND
13	NC	14	NC
15	+3V3_DUAL	16	SERIRQ
17	GND	18	NC
19	NC	20	SUSCLK

第三章 BIOS 程序设置

AMI BIOS 刷新

BIOS 提供对硬件资源的底层驱动，是联系硬件和操作系统的桥梁。现在硬件和各种应用软件不断更新，当您的系统遇到问题时，例如系统不支持最新公布的 CPU 时，就需要升级您的 BIOS 了。

注意：
1.升级 BIOS 只在遇到问题，必要的时侯进行。
2.在升级过程中不要关闭电源或重新启动系统，以免造成您的 BIOS 资料将被损坏，系统也可能不能启动。
3.为防止意外发生，请您先备份当前的 BIOS 资料。

AMI BIOS 描述

开机时，BIOS 会对主板上的硬件进行自我诊断，设定硬件时序参数等工作，最后才将系统控制权交给操作系统。如何正确的设定 BIOS 参数对系统是否稳定的工作及系统是否工作在最佳状态至关重要。

进入 BIOS 参数设置

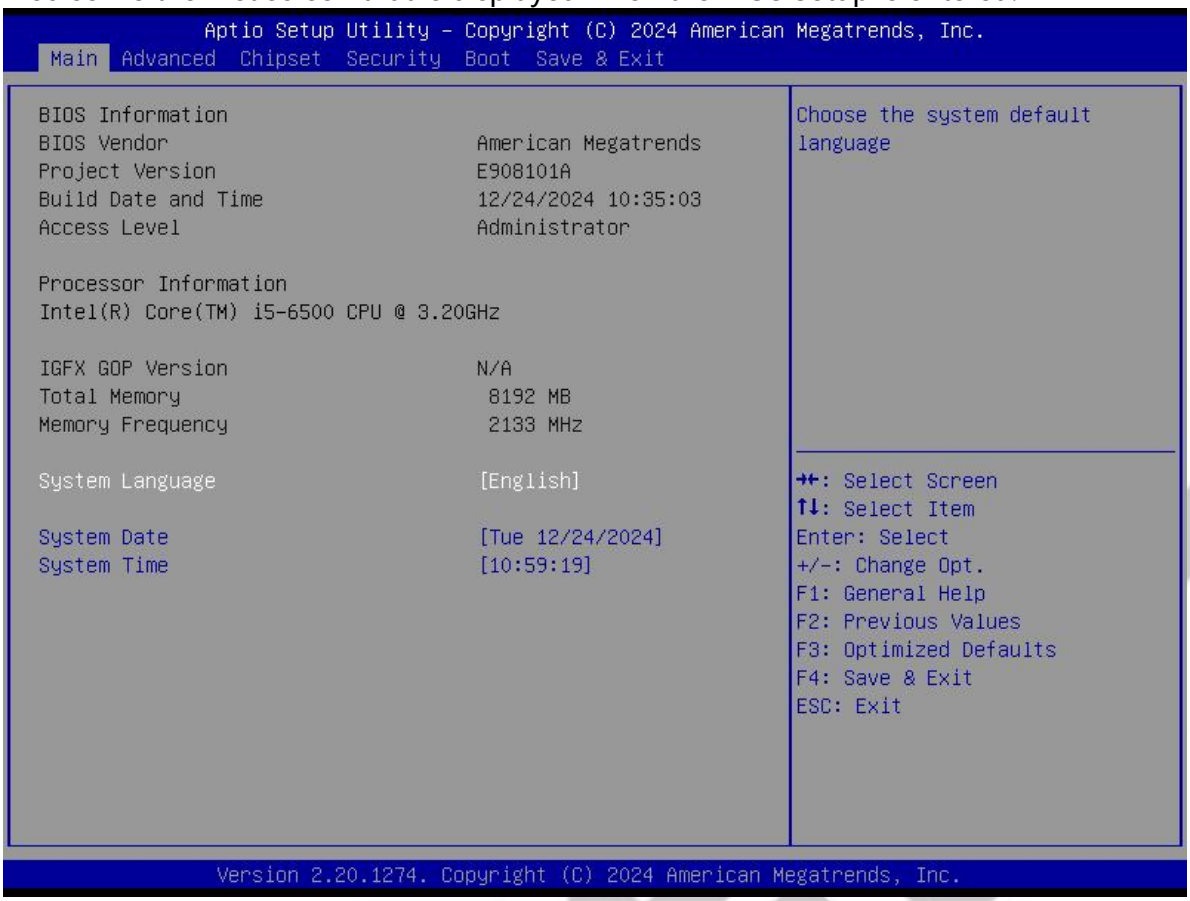
电脑开机，在完成自我诊断后，屏幕上会显示出如下信息：Del->SETUP，此时您点击一下 Del 键，则 BIOS 在完成 IDE 等设备的侦测后会自动转入 SETUP 设置画面。

1. 打开系统电源或重新启动系统，显示器屏幕将出现自我测试的信息。
2. 当屏幕中间出 G 现〝Press<Del>to enter setup〞提示时，按下<Del>键，就可以进入 BIOS 设定程序。
3. 以方向键移动至你要修改的选项，按下<Enter>键即可进入该选项的子画面。
4. 使用方向键及<Enter>键即可修改所选项目的值，按回车键选择 BIOS 选项并修改。
5. 任何时侯按下<Esc>键即可回到上一画面。

提示：BIOS 参数属于系统关键信息，请勿随意设置，如需设置或者升级请联系我司售后支持，谢谢！

3.1 Main Screen

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

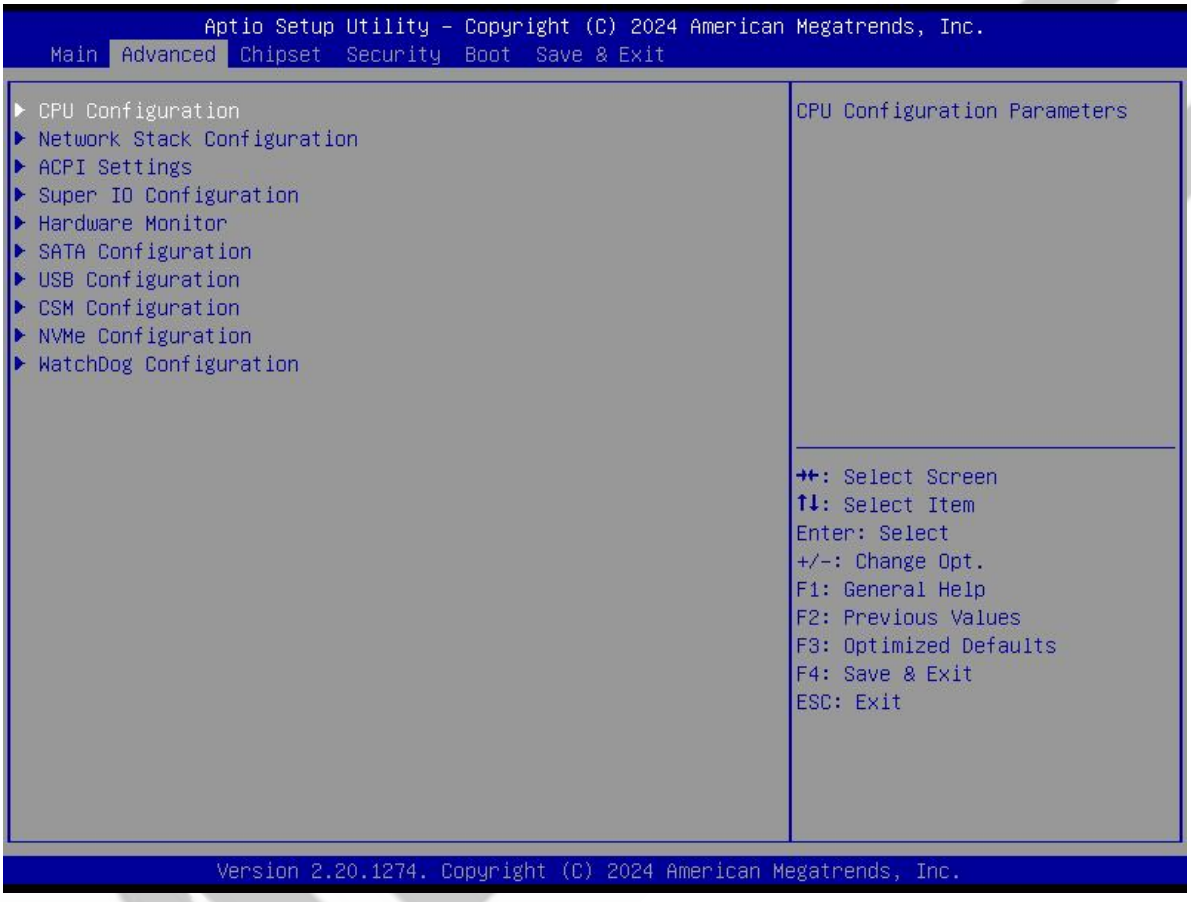


Setup Item	Options	Help Text	Comments
BIOS Information			
BIOS Vendor			Displays BIOS vendor.
Project Version			Displays the current BIOS version: Format: AAAABBC **AAAAA = Project name** **BB = BIOS revision** **C = Customer number**
Build Date and Time			Displays the current BIOS build date.
Access Level			Displays password level that setup is running in: Administrator or User. With no passwords set, Administrator is the default mode.
Process Information			
CPU XXXXX			Displays the CPU BrandString installed in the system.
Gop Information			
IGFX GOP Version			
Memory Information			
Total Memory			Displays the total physical memory installed in the system, MB Unit.
Memory Frequency			
System Language	English	Choose the system	

Setup Item	Options	Help Text	Comments
		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.	

3.2 Advanced Screen

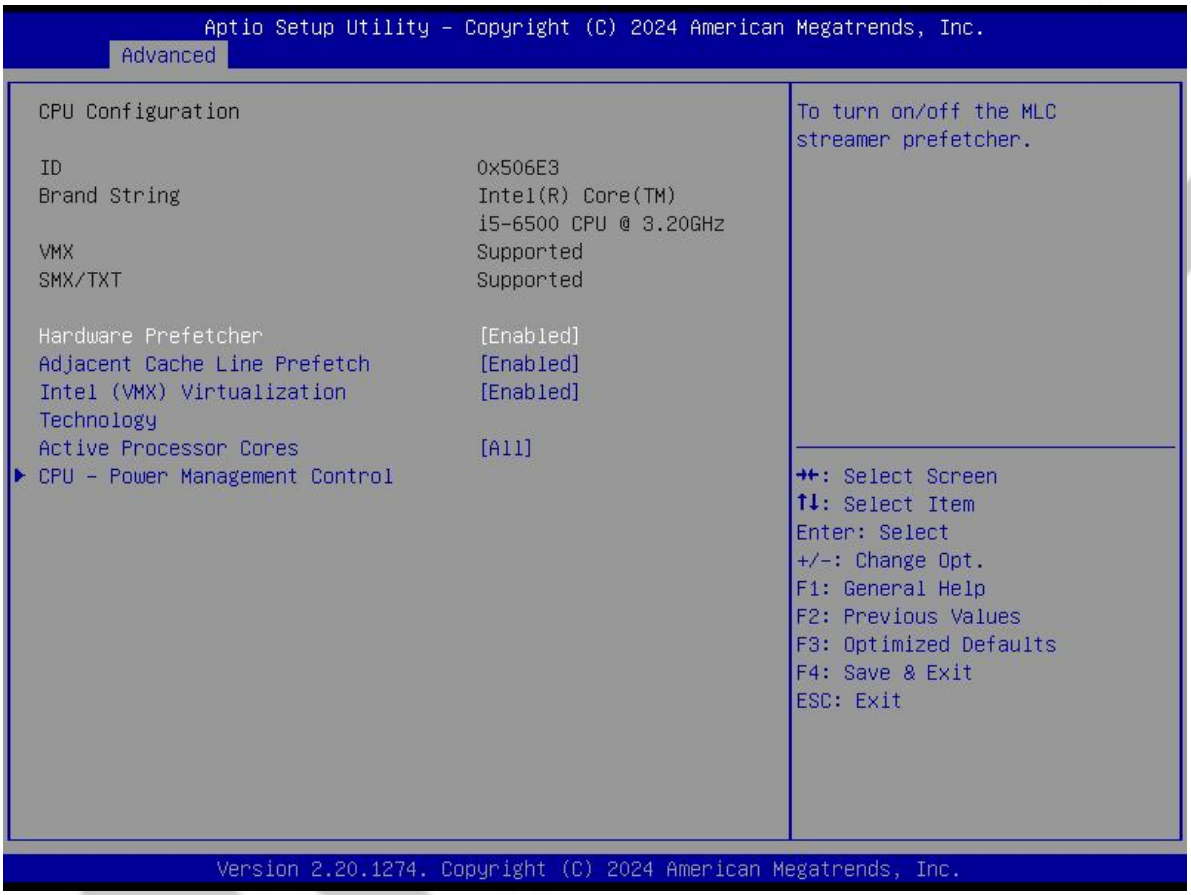
The Advanced screen provides an access point to configure several options. On this screen, the user selects the option that is to be configured.

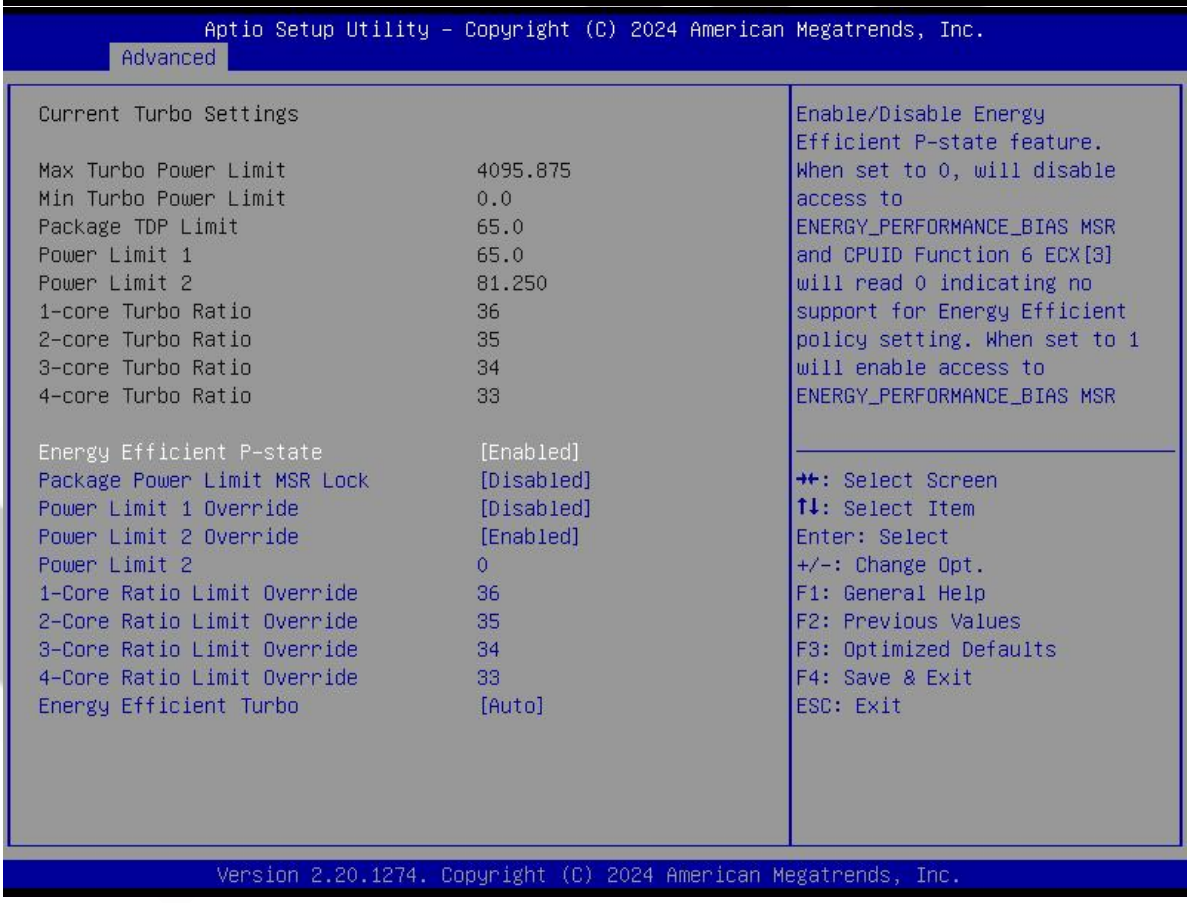


Setup Item	Options	Help Text	Comments
CPU Configuration		CPU Configuration Parameters.	
Network Stack configuration		Enable/Disable UEFI Network Stack.	
ACPI Settings		System ACPI Parameters.	
Super IO Configuration		System Super IO chip Parameters.	
Hardware Monitor		Monitor hardware states.	
SATA Configuration		SATA Devices Configuration.	
USB Configuration		USB Configuration Parameters.	
CSM Configuration		CSM configuration: Enable/Disable, Option ROM execution settings, etc.	
NVMe Configuration			
Watchdog configuration		Set System Watchdog Parameters.	

3.2.1 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***.



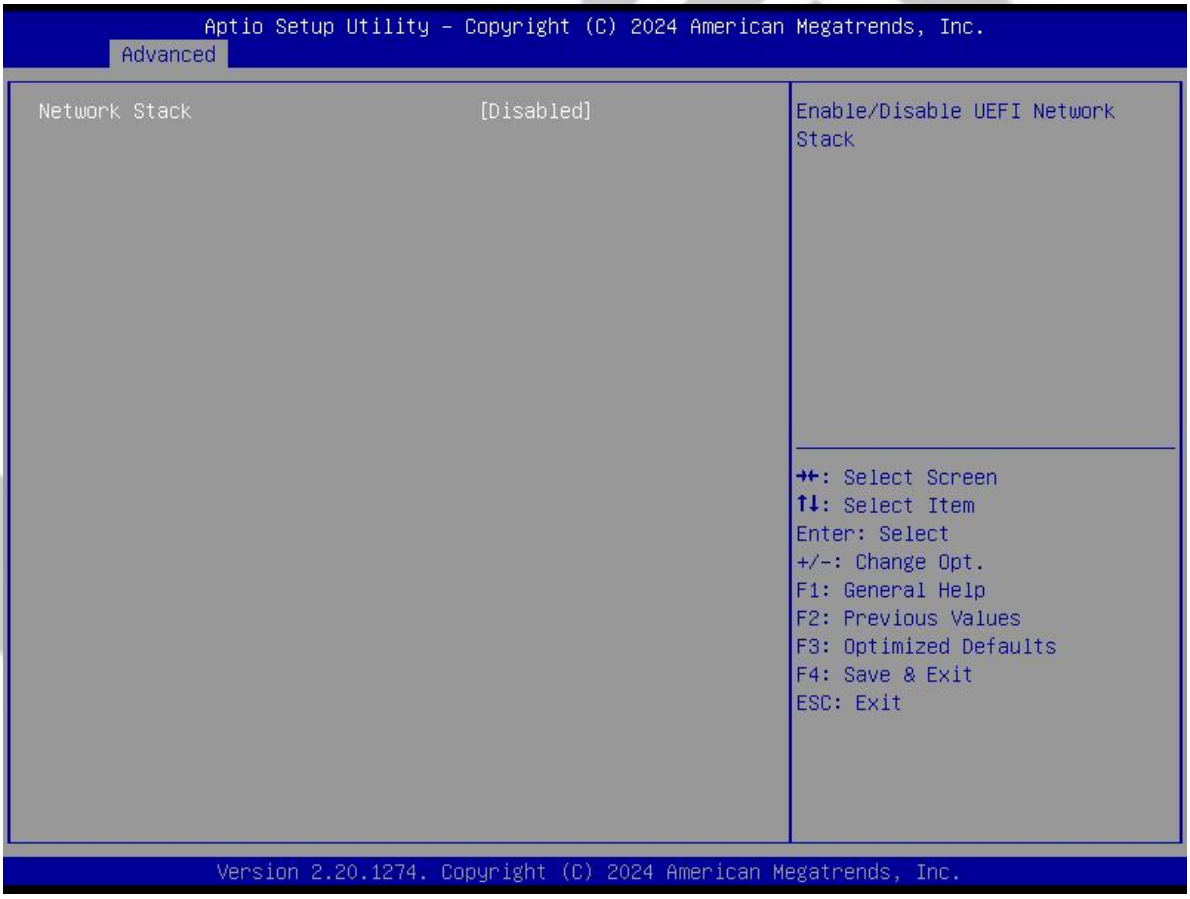


Setup Item	Options	Help Text	Comments
CPU Configuration			
ID			
Brand String			
VMX			

Setup Item	Options	Help Text	Comments
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) Virtualization Technology	Enabled Disabled	When enabled, a VMM can utilize the additional hardware capabilities provided by vanderpool technology.	
Active Processor Cores	All 1 2 3	Number of P-cores to enable in each processor package.	
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.	
Intel® Speed Shift Technology	Enabled Disabled	Enable/Disable Intel speed shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states	
Turbo Mode	Enabled Disabled		
iew/Configure Turbo Options			
Energy Efficient P-state	Enabled Disabled		
Package Power Limit MSR Lock	Disabled		
Power Limit 1 Override	Disabled Enabled		
Power Limit 2 Override	Enabled Disabled		
Energy Efficient Turbo	Auto Disabled Enabled		
C States	Disabled		

3.2.2 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.

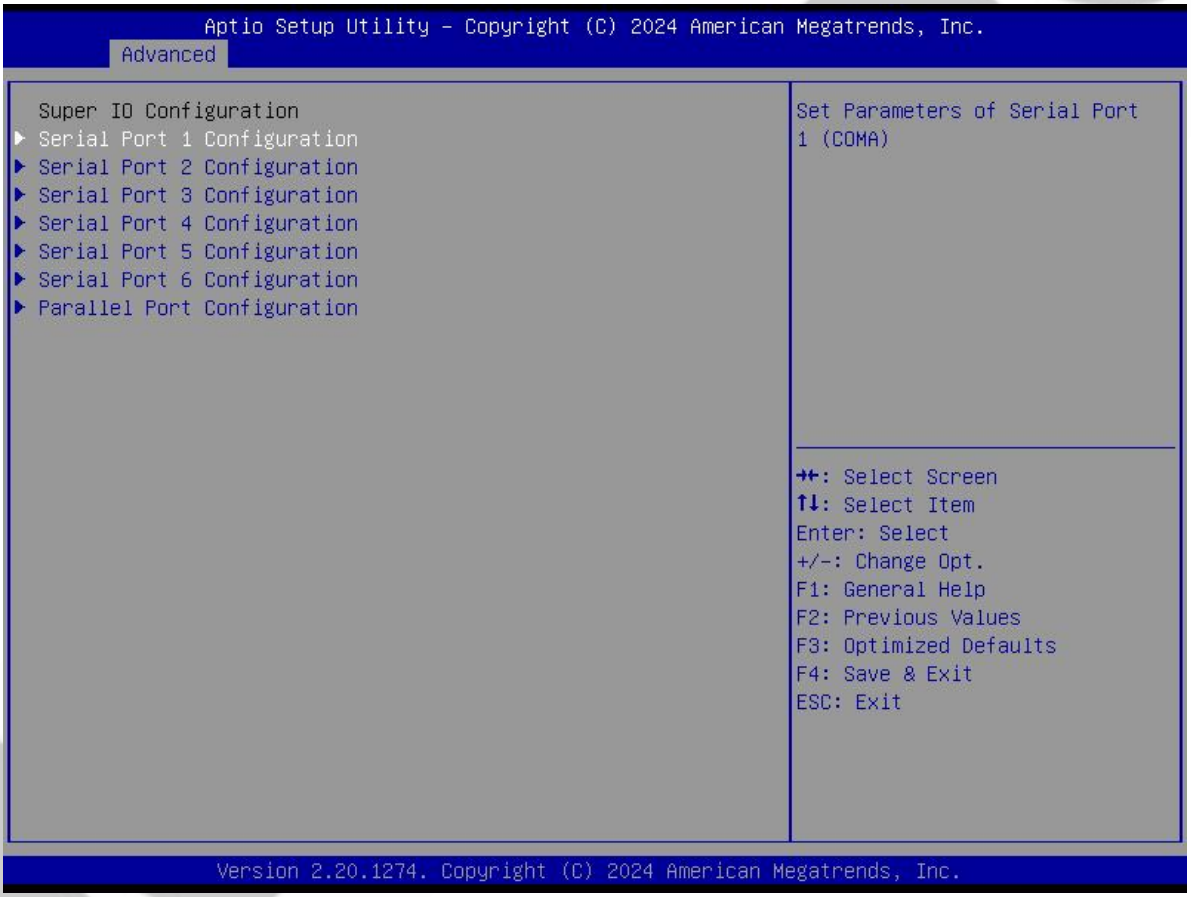
3.2.3 ACPI Settings Screen

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.

3.2.4 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***.

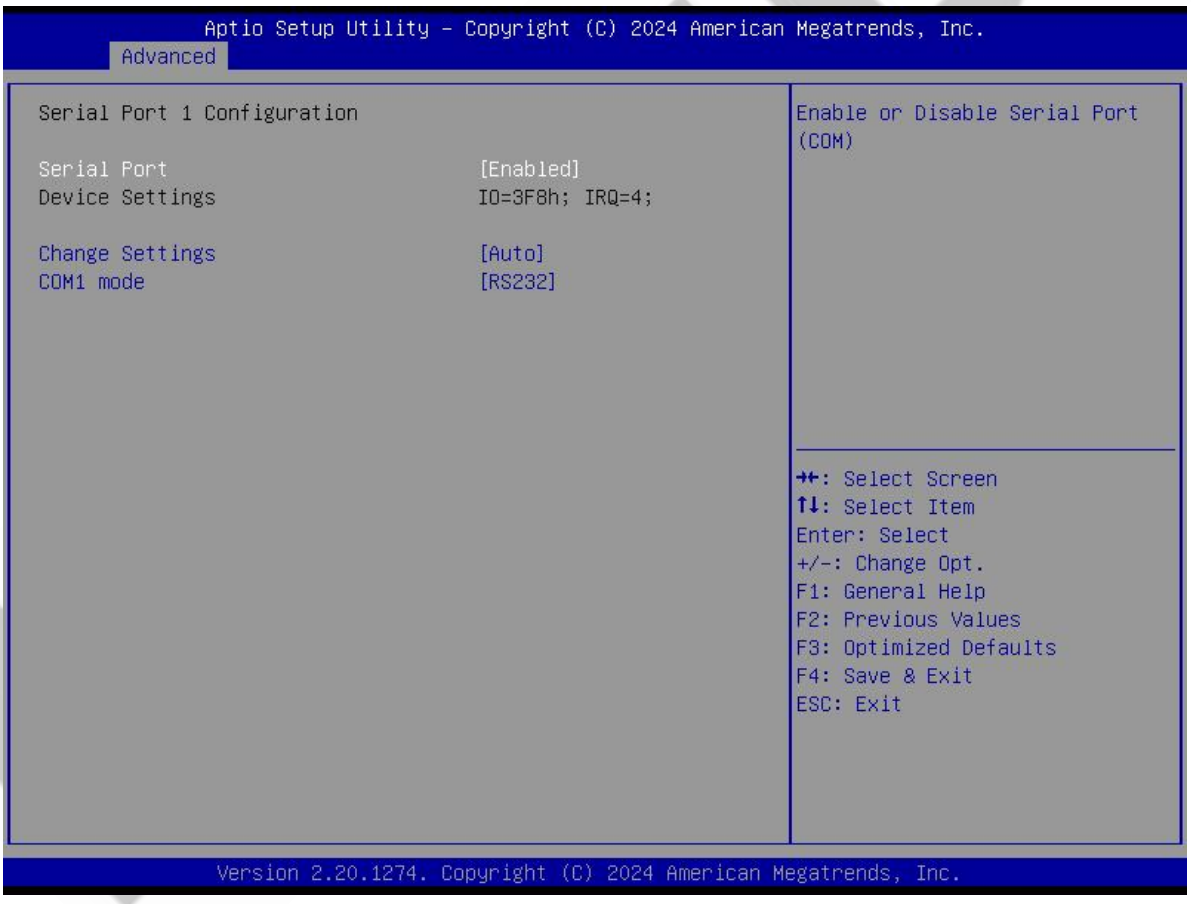


Setup Item	Options	Help Text	Comments
Super IO Configuration			
Serial Port 1 Configuration			Set Parameters of Serial Port 1 (COM1).
Serial Port 2 Configuration			Set Parameters of Serial Port 2 (COM2).
Serial Port 3 Configuration			Set Parameters of Serial Port 3 (COM3).
Serial Port 4 Configuration			Set Parameters of Serial Port 4 (COM4).
Serial Port 5 Configuration			Set Parameters of Serial Port 5

Setup Item	Options	Help Text	Comments
			(COM5).
Serial Port 6 Configuration			Set Parameters of Serial Port 6 (COM6).
Parallel port Configuration			

3.2.4.1 Serial PortX Configuration

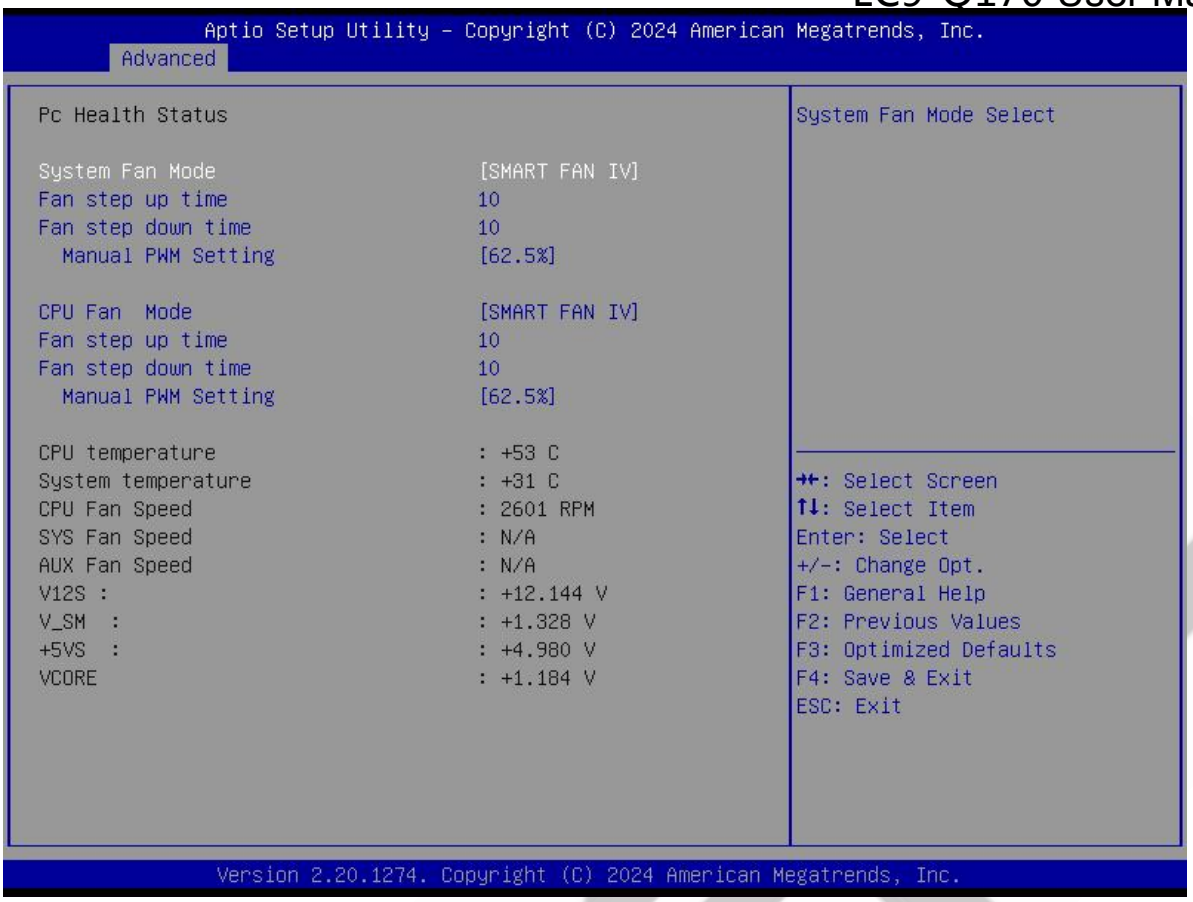
The Super IO Configuration screen allows the user to view the super IO information, and to enable or disable serial port options. To access this screen from the Advanced screen, choose ***Advanced-> Super IO Configuration->Serial PortX Configuration***.



Setup Item	Options	Help Text	Comments
Serial PortX Configuration			
Serial Port	Enabled Disabled	Enable or Disable Serial Port (COM).	
Device Settings			
Chang Settings	Auto		
COM1 mode	RS232		

3.2.5 Hardware Monitor

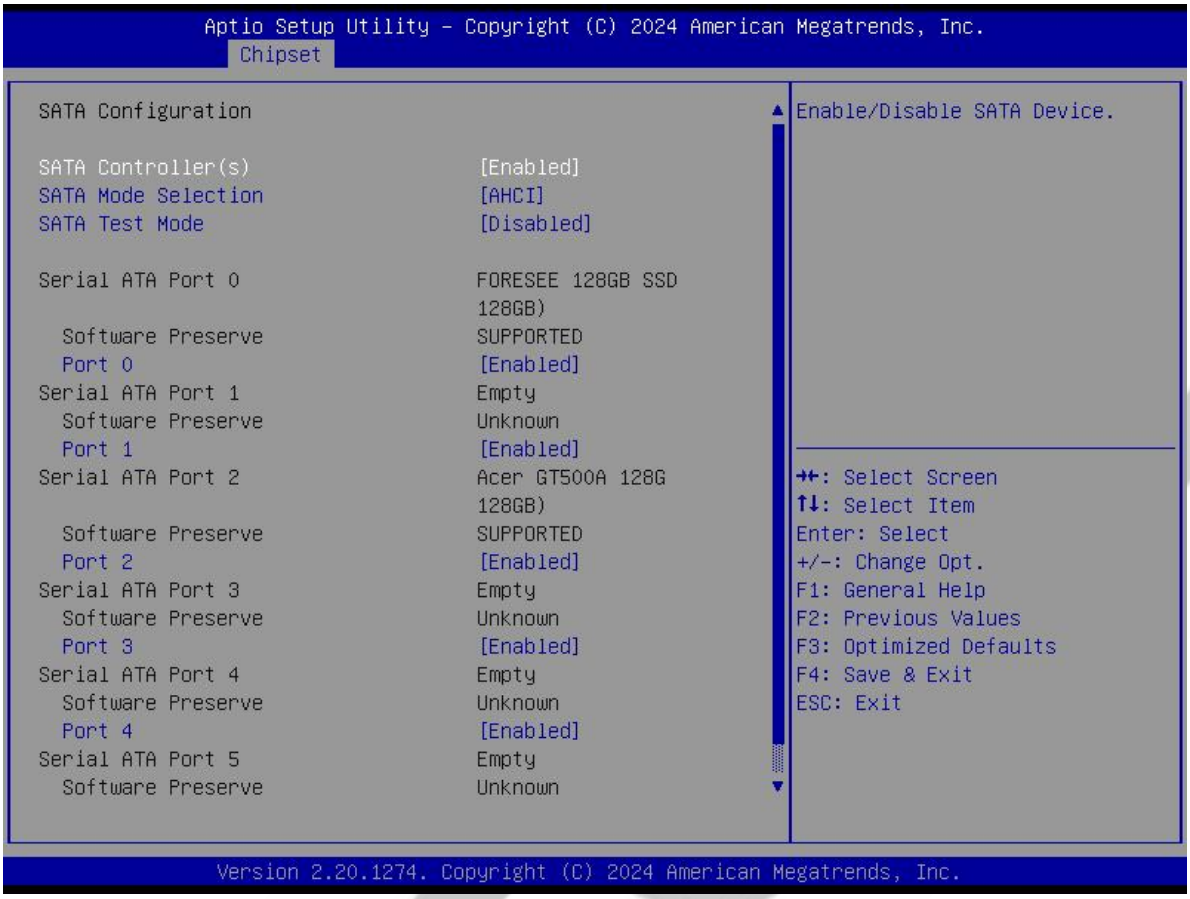
The hardware monitor screen allows the user to view the hardware information. To access this screen from the Advanced screen, choose ***Advanced-> Hardware Monitor***.



Setup Item	Options	Help Text	Comments
PC Health Status			
System Fan Mode	Manual mode Thermal Cruise Speed Cruise SMART FAN IV	System Fan mode select.	When Manual mode selected, Manual PWM Setting shows to set FAN PWM Duty.
Fan step up time			
Fan step down time			
Manual PWM Setting	0%-100%		
CPU Fan Mode	Manual mode Thermal Cruise Speed Cruise SMART FAN IV	CPU Fan mode select.	When Manual mode selected, Manual PWM Setting shows to set FAN PWM Duty.
Fan step up time			
Fan step down time			
Manual PWM Setting	0%-100%		

3.2.6 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***.

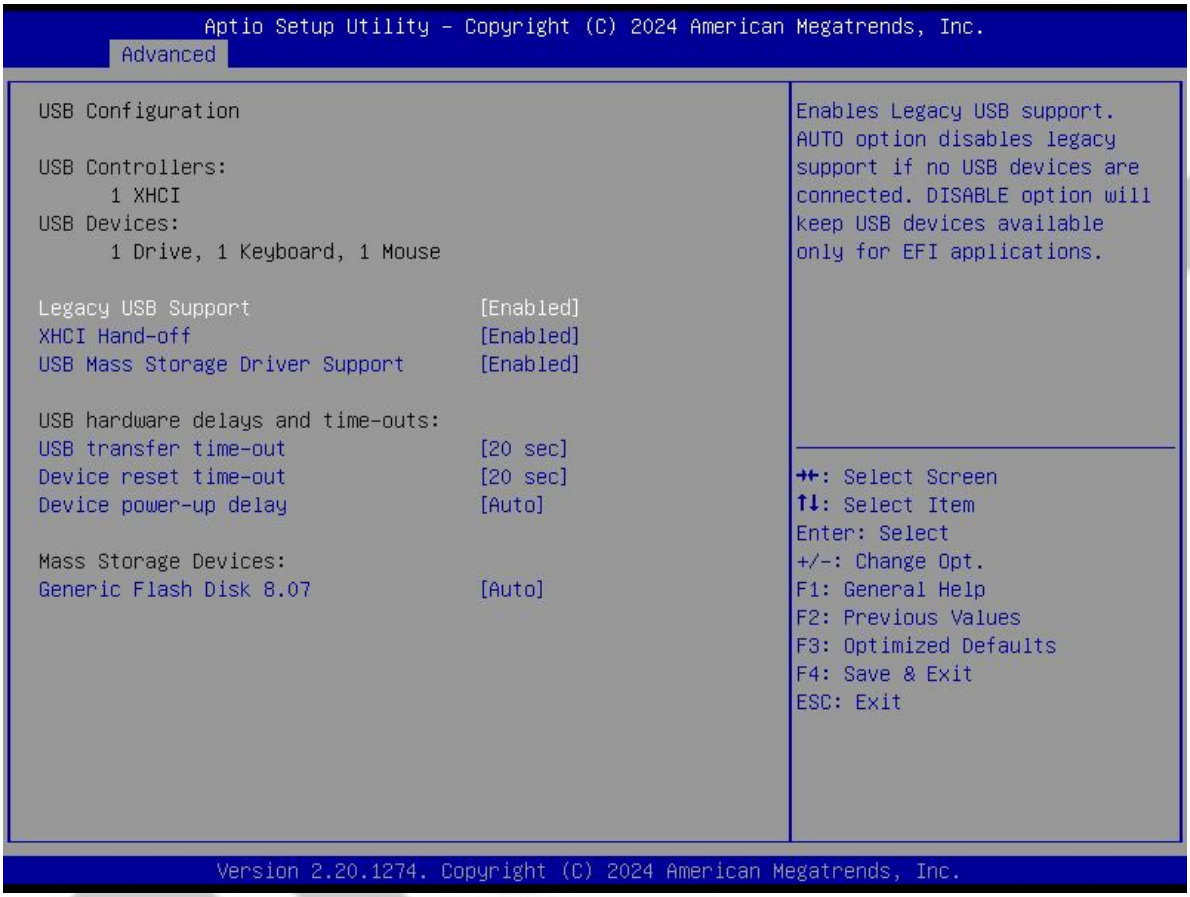


Setup Item	Options	Help Text	Comments
SATA Configuration			
SATA Controller(s)	Enabled Disabled	Enable/Disable SATA Device.	
SATA Mode Selection	AHCI Mode	Select AHCI.	
SATA Test Mode	Disabled		
Serial ATA Port 0			Show HDD information connected.
Serial ATA Port 1			
Serial ATA Port 2			

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

3.2.7 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***.

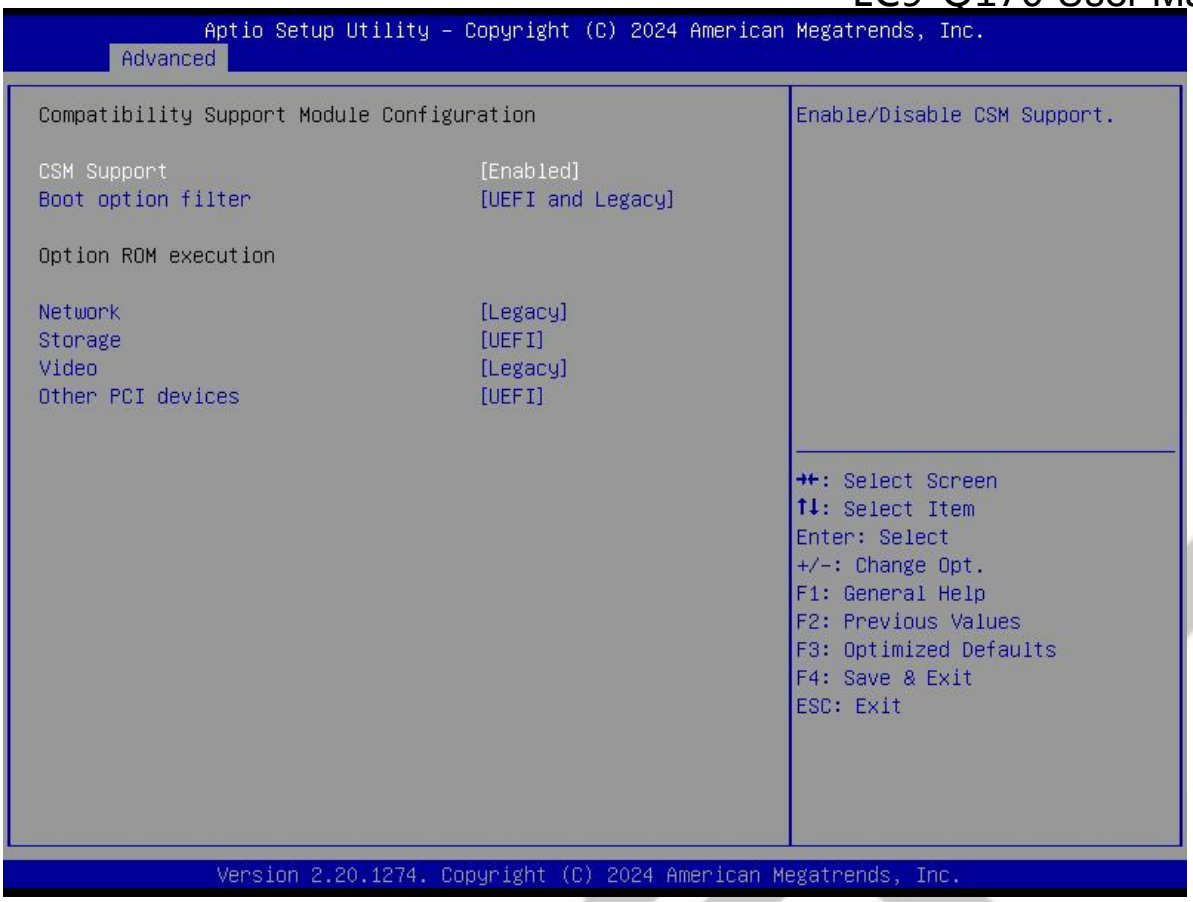


Setup Item	Options	Help Text	Comments
USB Configuration			
Legacy USB Support	Enabled Disabled	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.	
XHCI Hand-off	Enabled Disabled	This 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.	
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.	
Mass Storage Device			
Generic Flash Disk 8.07	Auto		

3.2.8 CSM Configuration

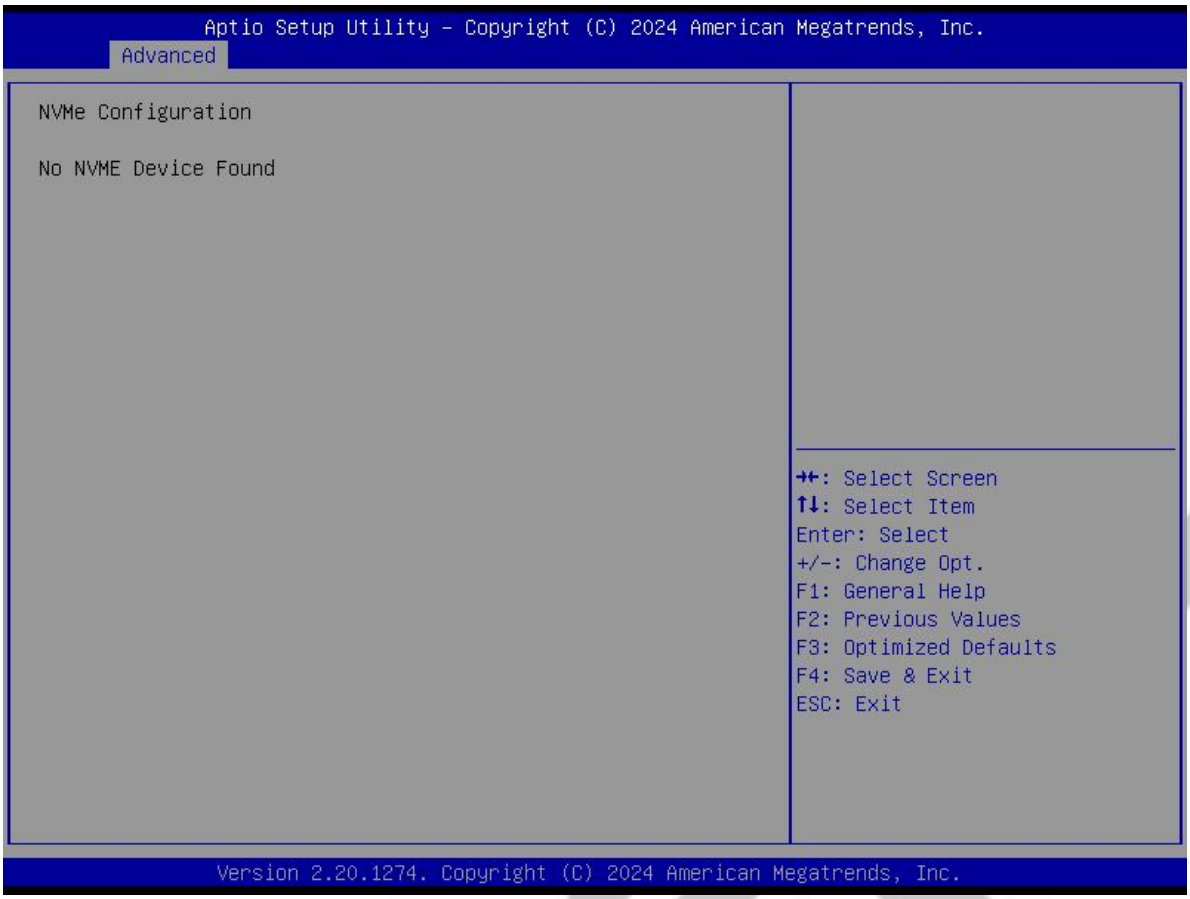
The CSM Configuration screen allows the user to view the CSM information, and to enable or disable CSM options. To access this screen from the Main screen, choose ***Advanced > CSM Configuration***.



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.	
Other PCI devices	Legacy UEFI Do not lunch	Determines OpROM execution policy for devices other than Network,Storage or video.	

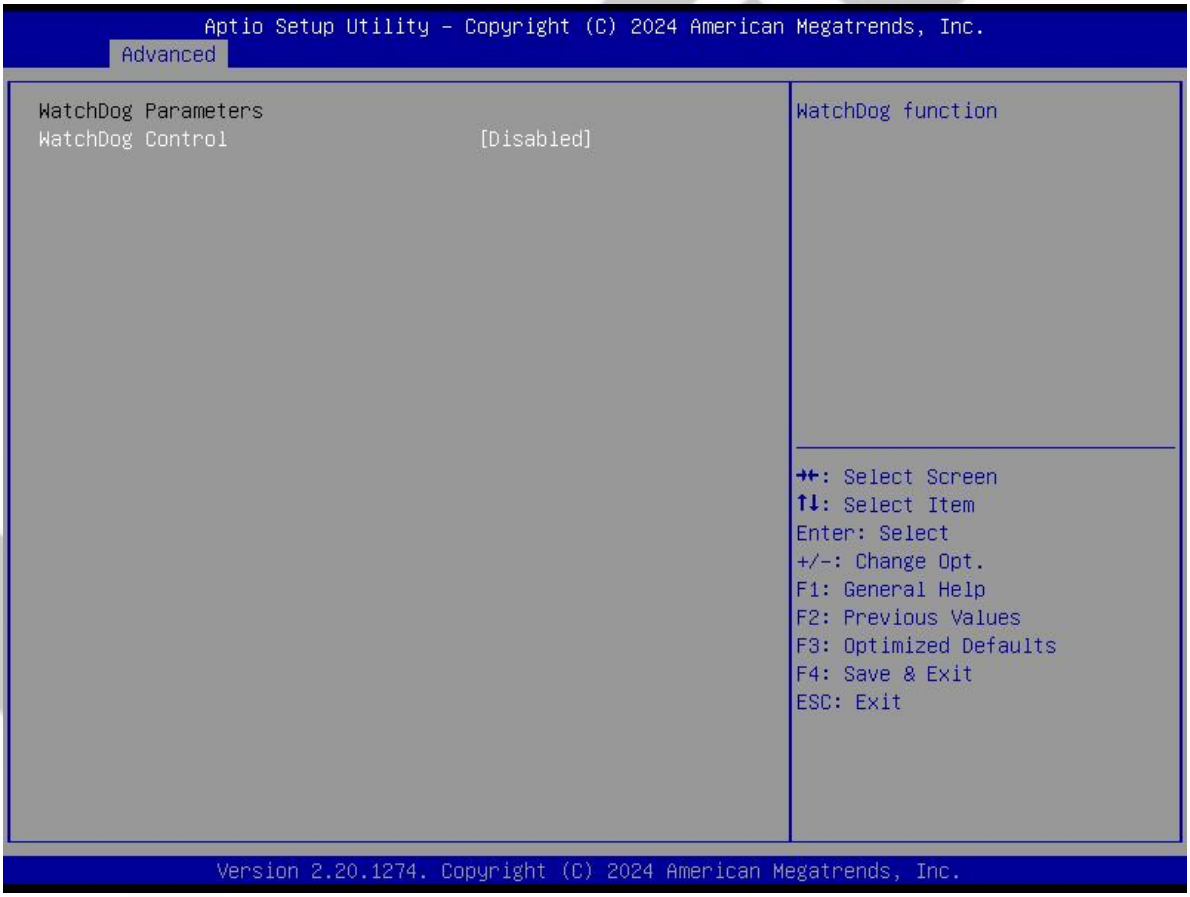
3.2.9 NVMe Configuration

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***.


Aptio Setup Utility – Copyright (C) 2024 American Megatrends, Inc.
Advanced
NVMe Configuration
No NVME Device Found
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1274. Copyright (C) 2024 American Megatrends, Inc.

3.2.10 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 Configuration			
WatchDog Control	Disabled Enabled		WatchDog function.

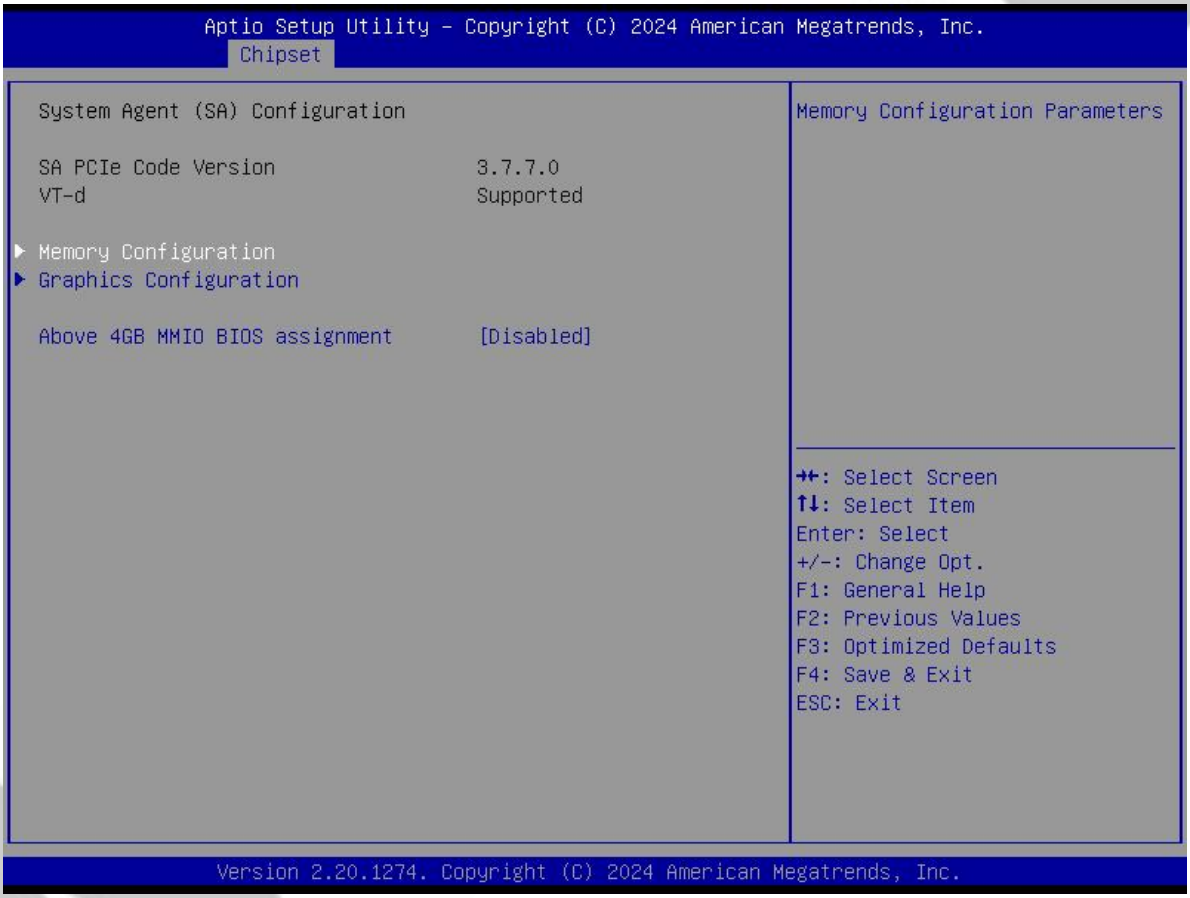
3.3 Chipset Screen

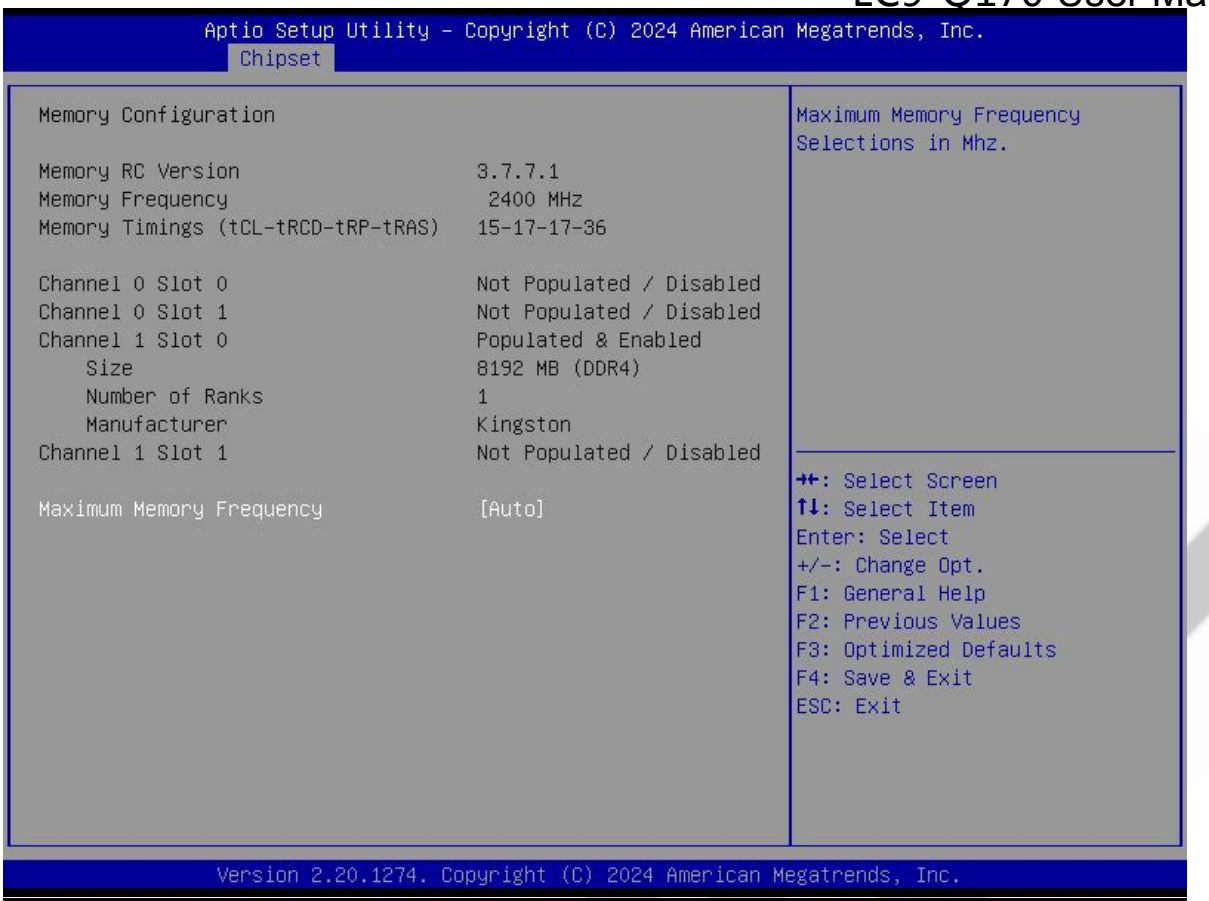
The Chipset screen provides an access point to configure SA Configuration and PCH-IO configuration. To access this screen from the Main screen, press the right arrow until the Chipset screen is chosen.

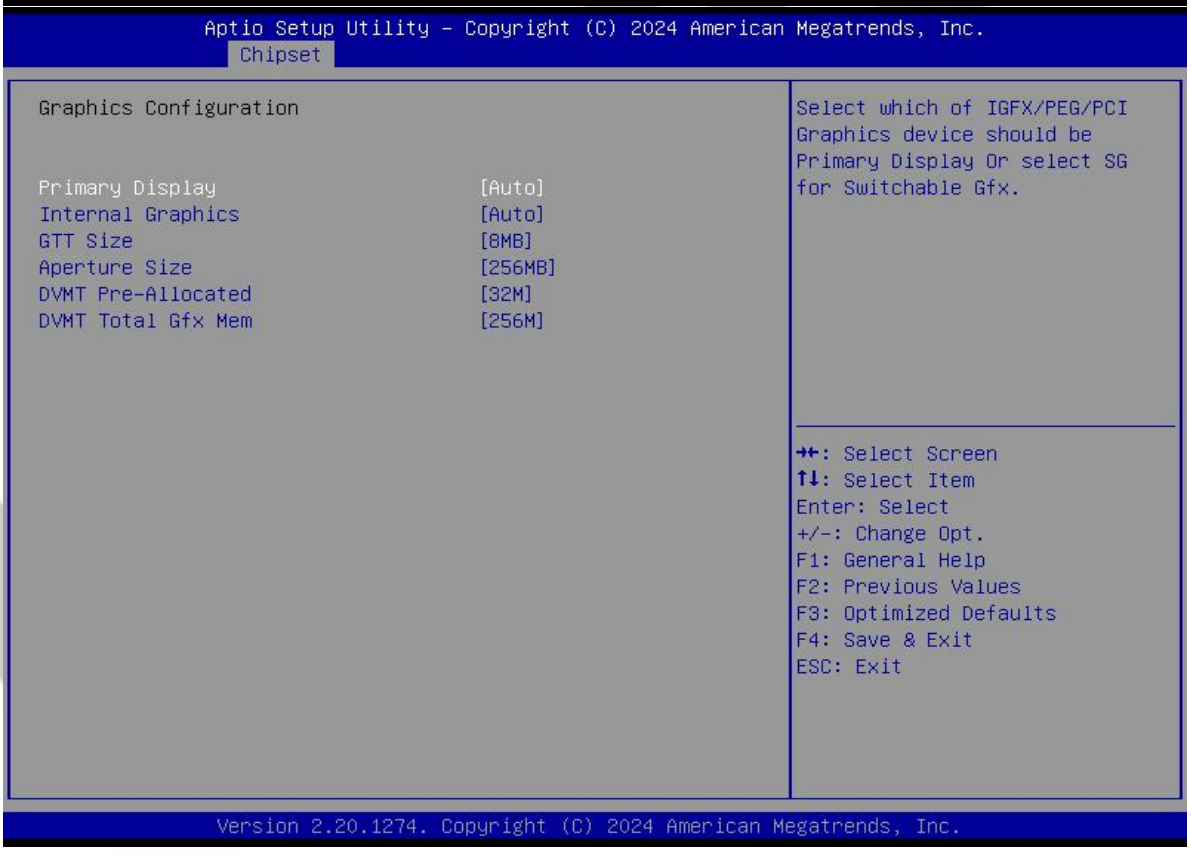
Setup Item	Options	Help Text	Comments
Chipset Screen			
System Agent (SA) Configuration		System Agent (SA) Parameters.	
PCH-IO Configuration		PCH Parameters.	

3.3.1 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***.





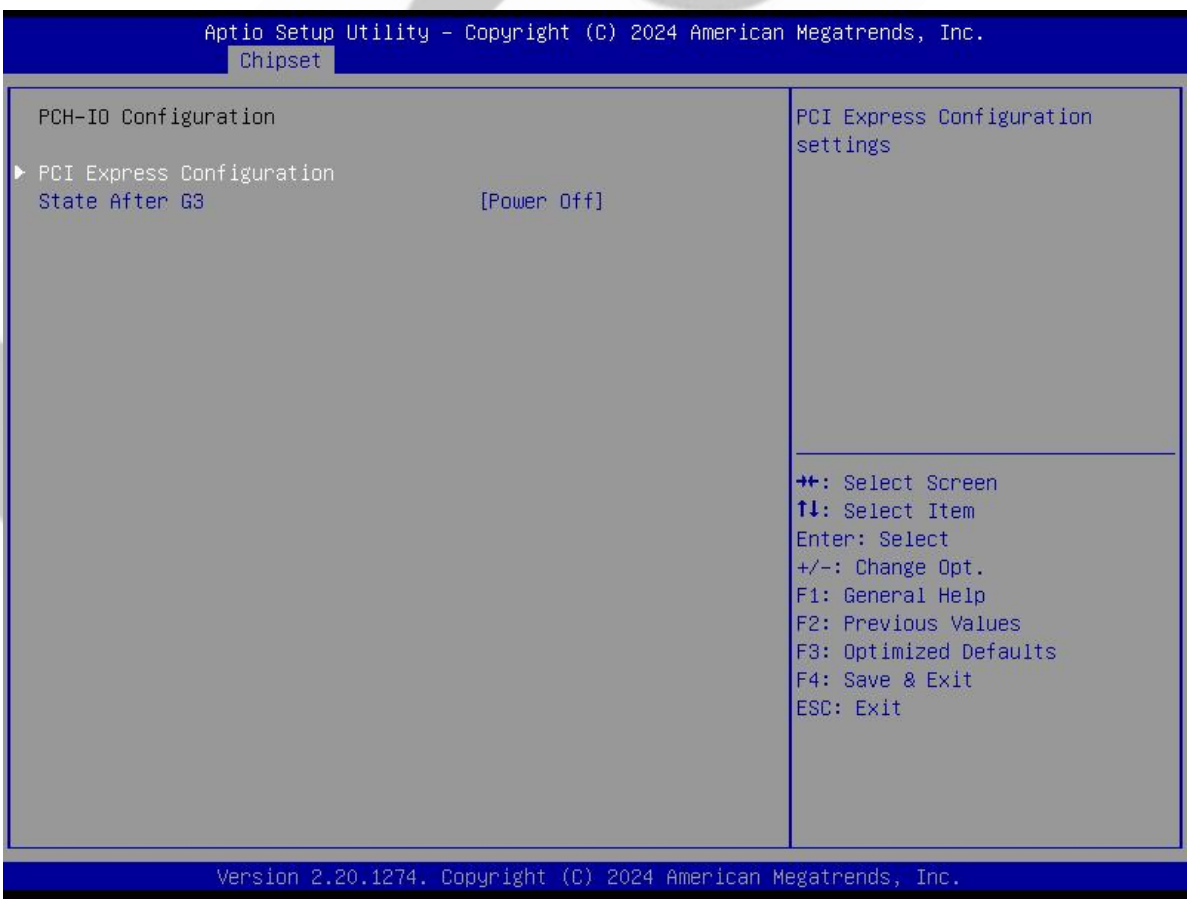


Setup Item	Options	Help Text	Comments
System Agent (SA) Configuration			
Memory Configuration			
Memory Information		Show Memory information.	
Maximum Memory Frequency	Auto 1067-4133		

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.	
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	0M-60M		
DVMT Total Gfx Mem	128M 256M MAX	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.	

3.3.2 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***.

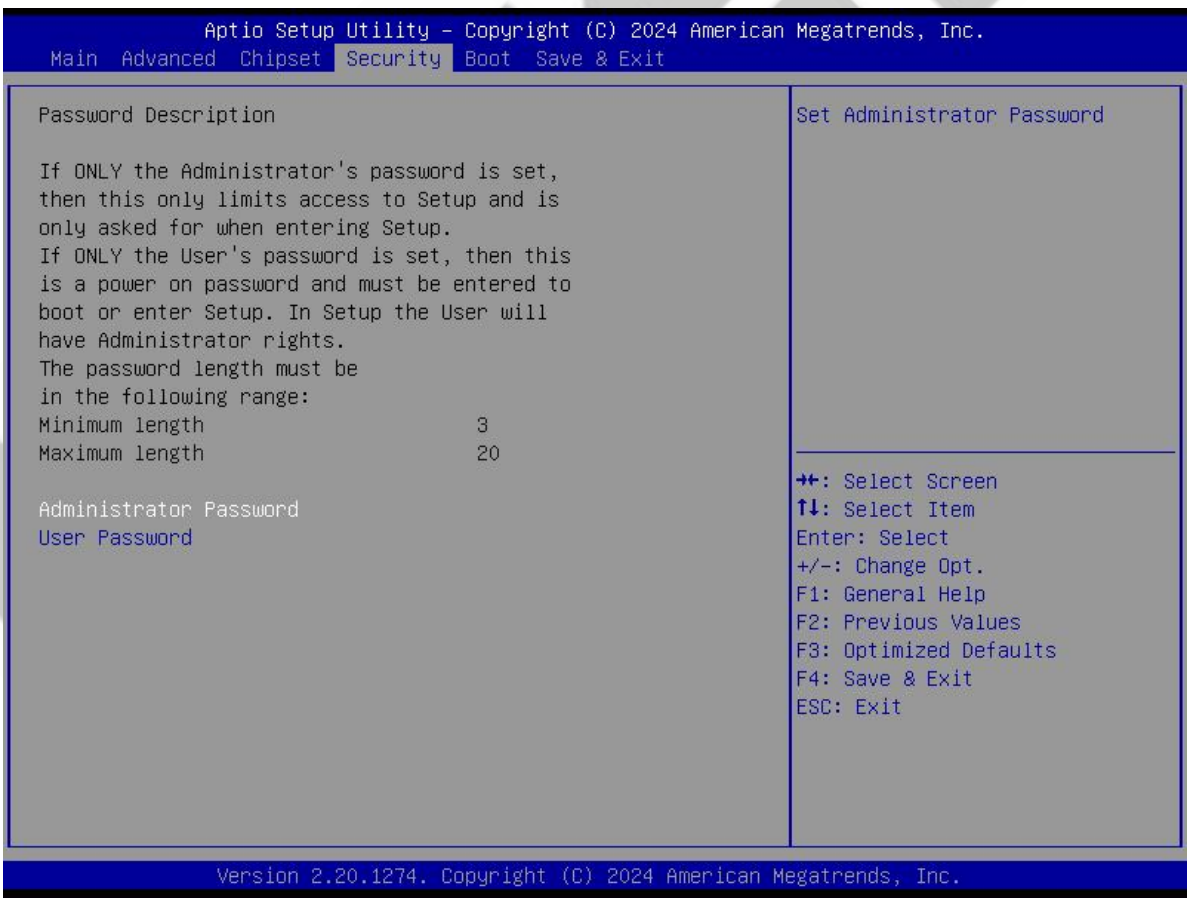


Setup Item	Options	Help Text	Comments

PCH-IO Configuration			
PCI Express Configuration			
State After G3	Power On Power off	Select AC power state when power is re-applied after a power failure.	

3.4 Security

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

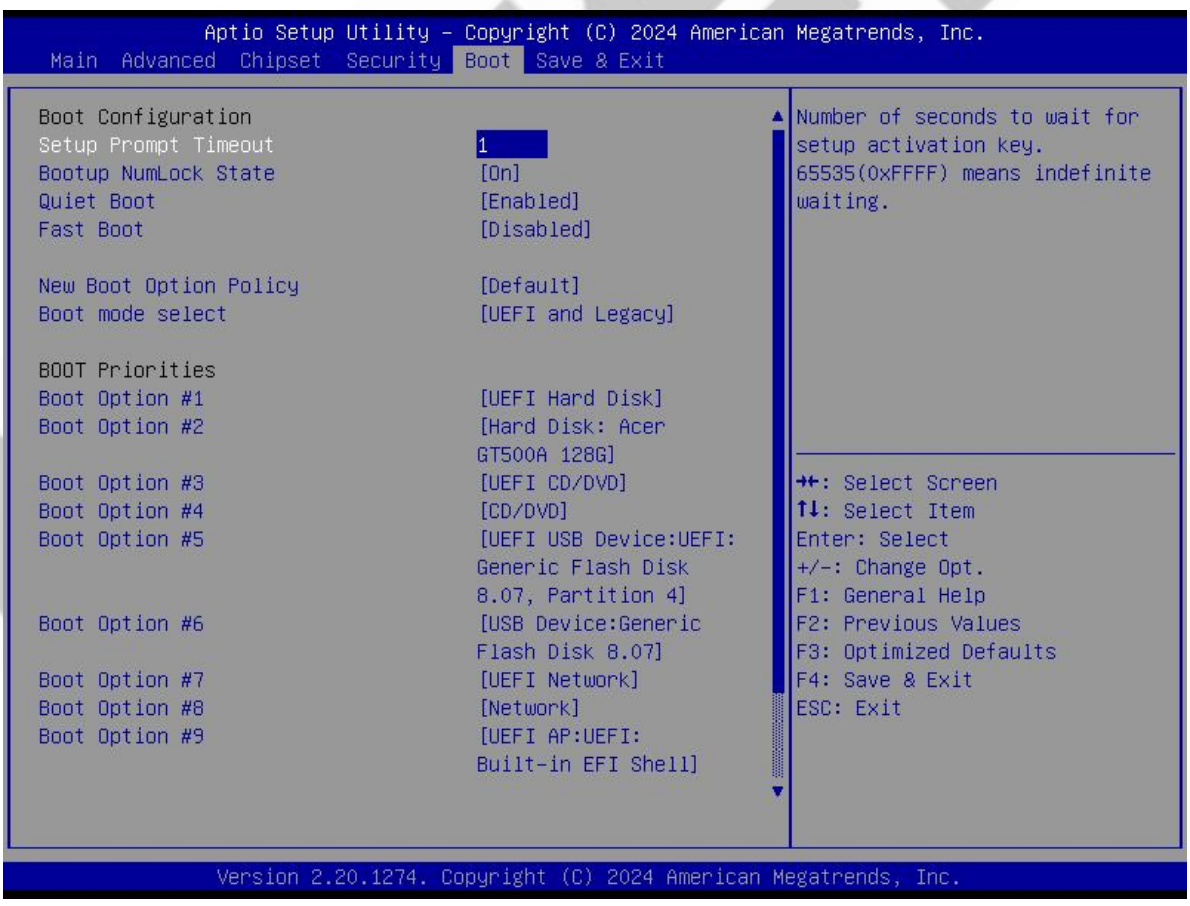


Setup Item	Options	Help Text	Comments
Security			
Administrator Password		Set Administrator Password.	

User Password		Set User Password.	

3.5 Boot Screen

The Boot screen displays any bootable media encountered during POST, and allows the user to configure.

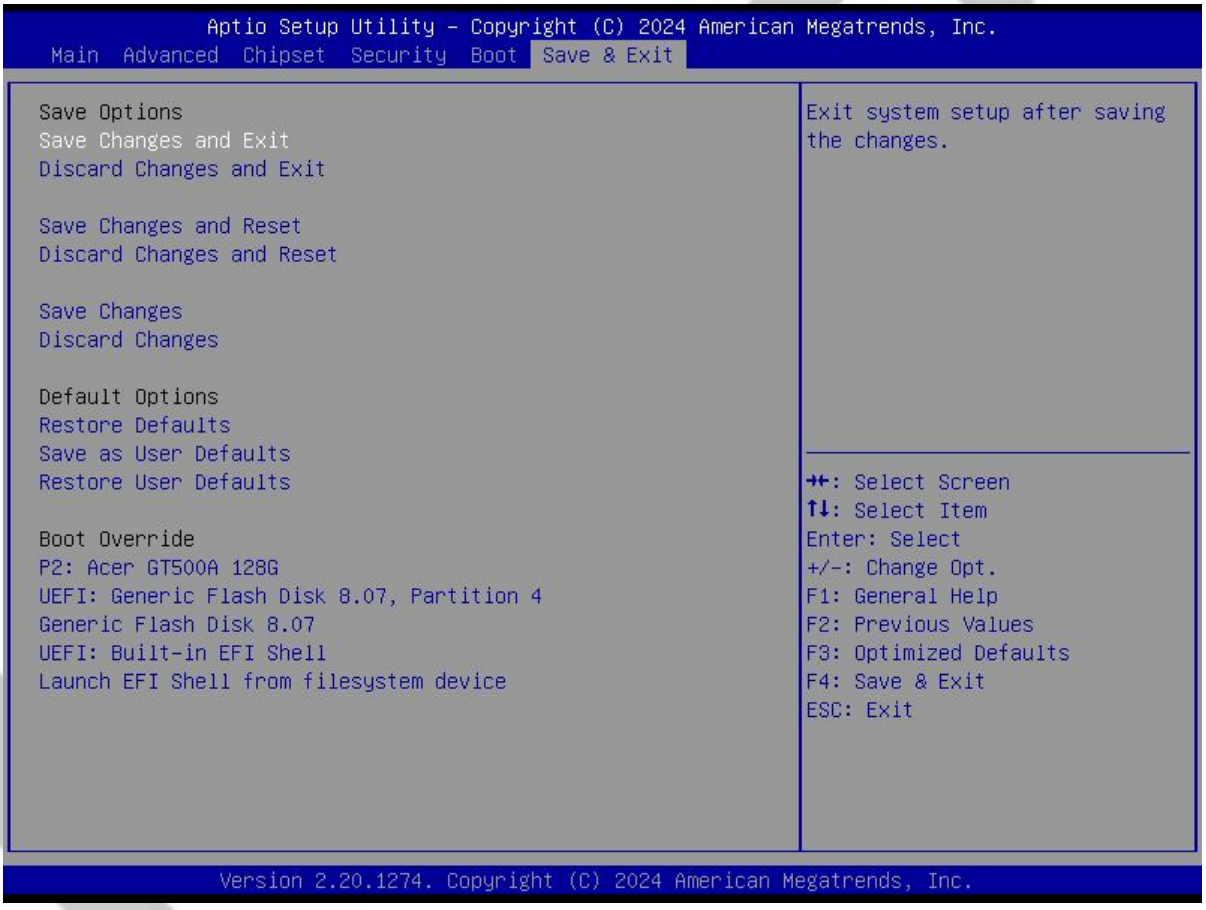


Setup Item	Options	Help Text	Comments
Boot Configuration			
Setup Prompt Timeout	1~65535	Number of seconds to	Setup Prompt Timeout.

Setup Item	Options	Help Text	Comments
		wait for setup activation key.65535(0xFFFF) means indefinite waiting.	
Bootup NumLock State	On off	Select the keyboard Number state.	Bootup NumLock State.
Quiet Boot	Disabled Enabled	Enables or disables Quiet Boot option.	Quiet Boot.
Fast Boot	Disabled Enabled		
New Boot Option Policy	Default Place First Place Last		
Boot mode select	UEFI and Legacy LEGACY UEFI		Select boot mode LEGACY/UEFI
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.	
Driver Option Priorities			
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

3.6 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			
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.	

Setup Item	Options	Help Text	Comments
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.	
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.

附录

附一：Watchdog 编程指引

Watchdog 参考代码(ASM)

可以操作端口来实现对看门狗的操作。可以通过对相应端口写数据来操作端口，实现 Watchdog Timer 的不同功能。

```
void main()
intindexp = 0x2e,datap = 0x2f;

outportb(indexp,0x87);

outportb(indexp,0x01);//unlock
outportb(indexp,0x55);
outportb(indexp,0x55);

outportb(indexp,0x07);
outportb(datap,0x07);

outportb(indexp,0x72);
outportb(datap,0xc0);//set second
/*outportb(datap,0x40);set minute*/

outportb(indexp,0x73);
outportb(datap,0x03);//set 3 seconds

outportb(indexp,0x02);
outportb(datap,0x02);//lock
}
```

附二：术语表

ACPI 高级配置和电源管理

ACPI 规范允许操作系统控制计算机及其附加设备的大部份电能。

BIOS 基本输入/输出系统

是在 PC 中包含所有的输入/输出控制代码界面的软件。它在系统启动时进行硬件检测，开始操作系统的运作，在操作系统和硬件之间提供一个界面。BIOS 是存储在一个只读存储器芯片内。

BUS 总线

在计算机系统中，不同部件之间交换数据的通道，是一组硬件线路。我们所指的 BUS 通常是 CPU 和主内存元件内部的局部线路。

Chipset 芯片组

是为执行一个或多个相关功能而设计的集成芯片。我们指的是由南桥和北桥组成的系统级芯片组，他决定了主板的架构和主要功能。

CMOS 互补金属

氧化物半导体。是一种被广泛应用的半导体类型。它具有高速、低功耗的特点。我们指的 CMOS 是在主板上的 CMOS RAM 中预留的一部份空间，用来保存日期、时间、系统信息和系统参数设定信息等。

COM 串口

一种通用的串行通信接口，一般采用标准 DB9 公头接口连接方式。

DIMM 双列直插式内存模块

是一个带有内存芯片组的小电路板。提供 64bit 的内存总线宽度。

DRAM 动态随机存取存储器

是一个普通计算机的通用内存类型。通常用一个晶体管和一个电容来存储一个位。随着技术的发展，DRAM 的类型和规格已经在计算机应用中变得越来越多样化。例如现在常用的就有 SDRAM、DDR SDRAM 和 RDRAM。

i2c

Inter-Integrated Circuit 总线是一种由 PHILIPS 公司开发的两线式串行总线，用于连接微控制器及其外围设备。

LAN 局域网络接口

一个小区域内相互关联的计算机组成的一个计算机网络，一般是在一个企事业单位或一栋建筑物。局域网一般由服务器、工作站、一些通信链接组成，一个终端可以通过电线访问数据和设备的任何地方，许多用户可以共享昂贵的设备和资源。

LED 发光二极管

一种半导体设备，当电流流过时它会被点亮，通常用来把信息非常直观的表示出来，例如表示电源已经导通或硬盘驱动器正在工作等。

PnP 即插即用

允许 PC 对外接设备进行自动配置，不用用户手动操作系统就可以自己工作的一种规格。为实现这个特点，BIOS 支持 PnP 和一个 PnP 扩展卡都是必需的。

POST 上电自检

在启动系统期间，BIOS 会对系统执行一个连续的检测操作，包括检测 RAM，键盘，硬盘驱动器等，看它们是否正确连接和是否正常工作。

PS/2

由 IBM 发展的一种键盘和鼠标连接的接口规范。PS/2 是一个仅有 6PIN 的 DIN 接口，也可以用以连接其他的设备，比如调制解调器。

USB 通用串行总线

一种适合低速外围设备的硬件接口，一般用来连接键盘、鼠标等。一台 PC 最多可以连接 127 个 USB 设备，提供一个 12Mbit/s 的传输带宽；USB 支持热插拔和多数据流功能即在系统工作时可以插入 USB 设备，系统可以自动识别并让插入的设备正常。