NanoCOM-EHL

COM Express Module

User's Manual 1st Ed

Last Updated: October 28, 2022

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Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
● NanoCOM-EHL	1

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the AAEON.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any AC supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.

17. If any of the following situations arises, please the contact our service personnel:
    i. Damaged power cord or plug
    ii. Liquid intrusion to the device
    iii. Exposure to moisture
    iv. Device is not working as expected or in a manner as described in this manual
    v. The device is dropped or damaged
    vi. Any obvious signs of damage displayed on the device
18. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

FCC Statement

This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte.
Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur.
Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及其电子组件	X	X	O	O	O	O
外部信号连接器及线材	X	X	O	O	O	O

O：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。

备注：此产品所标示之环保使用期限，系指在一般正常使用状况下。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Main Board/ Daughter Board/ Backplane

Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	X	X	O	O	O	O
Wires & Connectors for External Connections	X	X	O	O	O	O

O：The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.

X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.

Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

Table of Contents

Chapter 1

Product Specifications

1.1 Specifications

System	
Form Factor	COM Express Mini Size, Type 10
CPU	Intel Atom® x6000E, Pentium® and Celeron® Series Processor
CPU Frequency	Up to x6425E, 2.0GHz
Chipset	SoC
Memory Type	Onboard LPDDR4
Max. Memory Capacity	16GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12 V and +5 VSB for ATX, +12V for AT
Power Supply Type	AT/ATX
Power Consumption (Typical)	1.44A@12V, full load, x6425E
Dimension (L x W)	3.31" x 2.17" (84mm x 55mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A

Display

Graphic Controller	Intel® UHD Graphics for 10th Gen Intel® Processors
Video Output	Dual Display: LVDS LCD/eDP, DDI x 1 Single Channel LVDS (18/24 bit)

I/O

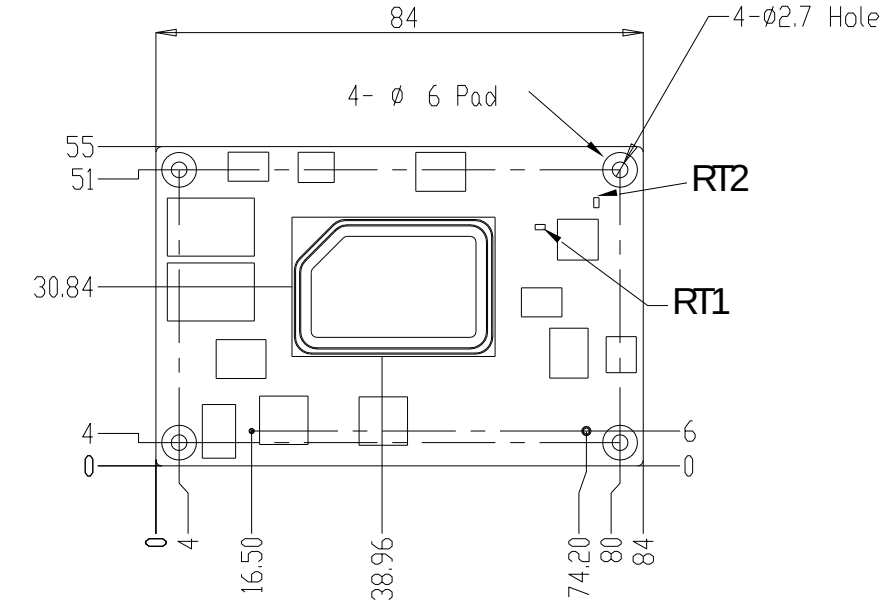
Ethernet	Intel® i226IT 2.5GbE x 1
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.2 10Gbps x 2
Serial Port	2-Wire UART (TX/RX) x 2
HDD Interface	SATA III x 2
Expansion Slot	PCIe [x1] x 4 LPC SMBus I2C
GPIO	8-bit
Onboard Storage	eMMC up to 64GB (Optional)
TPM	fTPM

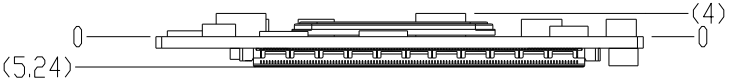
Chapter 2

Hardware Information

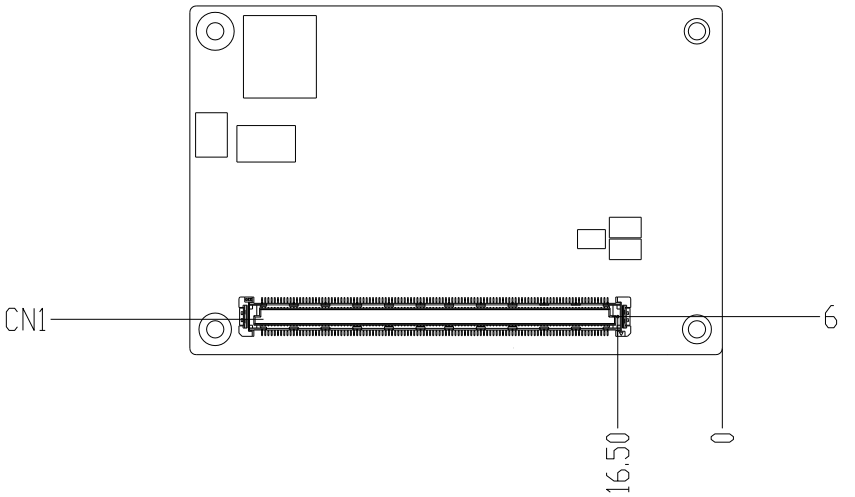
2.1 Dimensions, Jumpers and Connectors

Component Side

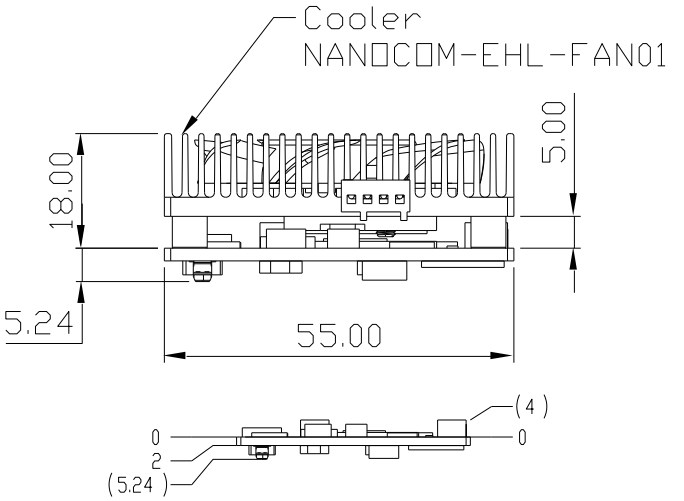




Solder Side



Thermal Solution



2.2 List of Jumpers and Connectors

Please refer to the table below for all of the board's jumpers that you can configure for your application

Label	Function
CN1	ROW A/B

2.2.1 ROW A/B Connector (CN1)

Row A		Row B	
A1	GND (FIXED)	B1	GND (FIXED)
A2	GBE0_MDI3-	B2	GBE0_ACT#
A3	GBE0_MDI3+	B3	LPC_FRAME#
A4	GBE0_LINK1000#	B4	LPC_AD0
A5	GBE0_LINK2500#	B5	LPC_AD1
A6	GBE0_MDI2-	B6	LPC_AD2
A7	GBE0_MDI2+	B7	LPC_AD3
A8	GBE0_LINK#	B8	N.C
A9	GBE0_MDI1-	B9	N.C
A10	GBE0_MDI1+	B10	LPC_CLK
A11	GND (FIXED)	B11	GND (FIXED)
A12	GBE0_MDI0-	B12	PWRBTN#
A13	GBE0_MDI0+	B13	SMB_CK
A14	N.C	B14	SMB_DAT
A15	SUS_S3#	B15	SMB_ALERT#
A16	SATA0_TX+	B16	SATA1_TX+
A17	SATA0_TX-	B17	SATA1_TX-

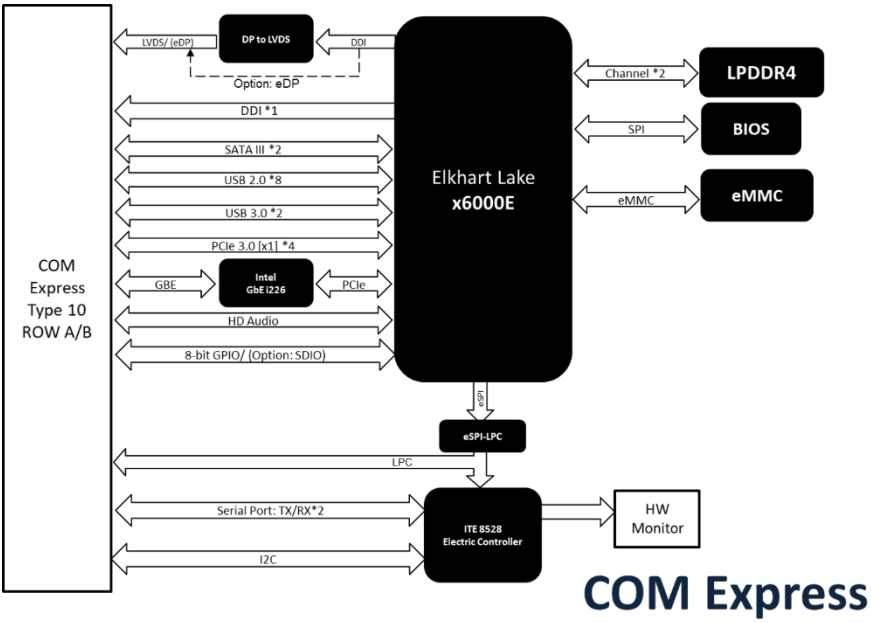
Row A		Row B	
A18	SUS_S4#	B18	SUS_STAT#
A19	SATA0_RX+	B19	SATA1_RX+
A20	SATA0_RX-	B20	SATA1_RX-
A21	GND (FIXED)	B21	GND (FIXED)
A22	USB3_RXN0	B22	USB3_TXN0
A23	USB3_RXP0	B23	USB3_TXP0
A24	SUS_S4#	B24	PWR_OK
A25	USB3_RX1_N	B25	USB3_TX1_N
A26	USB3_RX1_P	B26	USB3_TX1_P
A27	BATLOW#	B27	WDT
A28	ATA_ACT#	B28	N.C
A29	AC_SYNC	B29	AC_SDIN1
A30	AC_RST#	B30	AC_SDIN0
A31	GND (FIXED)	B31	GND (FIXED)
A32	AC_BITCLK	B32	SPKR
A33	AC_SDOUT	B33	I2C_CK
A34	BIOS_DIS0#	B34	I2C_DAT
A35	THRMTRIP#	B35	THRM#
A36	USB6-	B36	USB7-
A37	USB6+	B37	USB7+
A38	USB_6_7_OC#	B38	USB_4_5_OC#
A39	USB4-	B39	USB5-
A40	USB4+	B40	USB5+
A41	GND (FIXED)	B41	GND (FIXED)
A42	USB2-	B42	USB3-
A43	USB2+	B43	USB3+

Row A		Row B	
A44	USB_2_3_OC#	B44	USB_0_1_OC#
A45	USB0-	B45	USB1-
A46	USB0+	B46	USB1+
A47	VCC_RTC	B47	N.C
A48	N.C	B48	N.C
A49	N.C	B49	SYS_RESET#
A50	LPC_SERIRQ	B50	CB_RESET#
A51	GND (FIXED)	B51	GND (FIXED)
A52	N.C	B52	N.C
A53	N.C	B53	N.C
A54	GPI0	B54	GPO1
A55	N.C	B55	N.C
A56	N.C	B56	N.C
A57	GND	B57	GPO2
A58	PCIE_TX3+	B58	PCIE_RX3+
A59	PCIE_TX3-	B59	PCIE_RX3-
A60	GND (FIXED)	B60	GND (FIXED)
A61	PCIE_TX2+	B61	PCIE_RX2+
A62	PCIE_TX2-	B62	PCIE_RX2-
A63	GPI1	B63	GPO3
A64	PCIE_TX1+	B64	PCIE_RX1+
A65	PCIE_TX1-	B65	PCIE_RX1-
A66	GND	B66	WAKE0#
A67	GPI2	B67	WAKE1#
A68	PCIE_TX0+	B68	PCIE_RX0+
A69	PCIE_TX0-	B69	PCIE_RX0-

Row A		Row B	
A70	GND (FIXED)	B70	GND (FIXED)
A71	LVDS_A0+(EDP_TX2_P)	B71	DDI0_PAIR0+
A72	LVDS_A0-(EDP_TX2_N)	B72	DDI0_PAIR0-
A73	LVDS_A1+(EDP_TX1_P)	B73	DDI0_PAIR1+
A74	LVDS_A1-(EDP_TX1_N)	B74	DDI0_PAIR1-
A75	LVDS_A2+(EDP_TX0_P)	B75	DDI0_PAIR2+
A76	LVDS_A2-(EDP_TX0_N)	B76	DDI0_PAIR2-
A77	LVDS_VDD_EN(EDP_VDDEN_3_3)	B77	N.C
A78	LVDS_A3+	B78	N.C
A79	LVDS_A3-	B79	LVDS_BKLD_EN(EDP_BKLTEN_3_3)
A80	GND (FIXED)	B80	GND (FIXED)
A81	LVDS_A_CK+(EDP_TX3_P)	B81	DDI0_PAIR3+
A82	LVDS_A_CK-(EDP_TX3_N)	B82	DDI0_PAIR3-
A83	LVDS_I2C_CK(EDP_AUXP)	B83	LVDS_BKLT_CTRL
A84	LVDS_I2C_DAT(EDP_AUXN)	B84	VCC_5V_SBY
A85	GPI3	B85	VCC_5V_SBY
A86	EC_KBRST#	B86	VCC_5V_SBY
A87	DDI0_HPD_3.3S(eDP use)	B87	VCC_5V_SBY
A88	PCIE0_CK_REF+	B88	BISO_DIS1#
A89	PCIE0_CK_REF-	B89	DDI0_HPD
A90	GND (FIXED)	B90	GND (FIXED)
A91	SPI_POWER	B91	N.C
A92	SPI_MISO	B92	N.C
A93	GPO0	B93	N.C
A94	SPI_CLK	B94	N.C
A95	SPI_MOSI	B95	DDI0_DDC_AUX_SEL

Row A		Row B	
A96	GND	B96	N.C
A97	TYPE10#	B97	SPI_CS#
A98	RS1_TX	B98	DDI0_CTRL_CLK
A99	RS1_RX	B99	DDI0_CTRL_DATA
A100	GND (FIXED)	B100	GND (FIXED)
A101	RS2_TX	B101	FAN_PWMOUT
A102	RS2_RX	B102	FAN_TACHIN
A103	LID#	B103	SLEEP#
A104	VCC_12V	B104	VCC_12V
A105	VCC_12V	B105	VCC_12V
A106	VCC_12V	B106	VCC_12V
A107	VCC_12V	B107	VCC_12V
A108	VCC_12V	B108	VCC_12V
A109	VCC_12V	B109	VCC_12V
A110	GND (FIXED)	B110	GND (FIXED)

2.3 Function Block

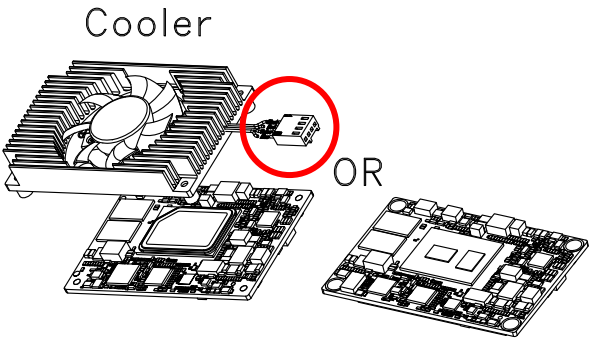


2.4 Thermal Solution Installation

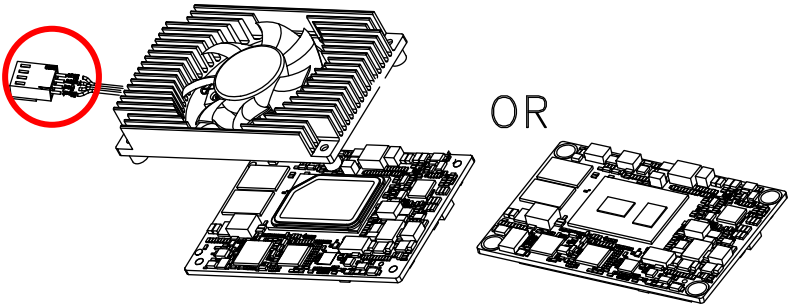
2.4.1 Fan Assembly

When installing the fan, ensure the connector cable is aligned as shown below.

Correct Orientation:



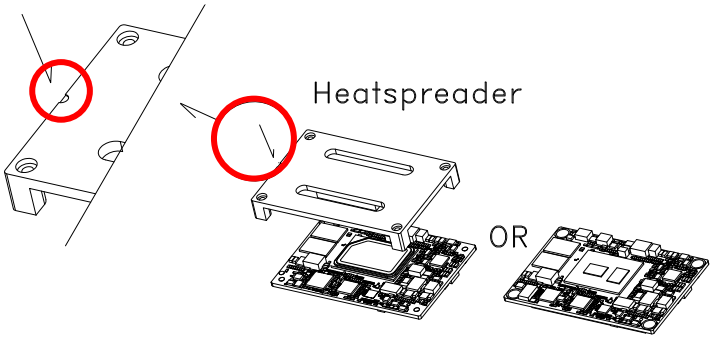
Incorrect Orientation:



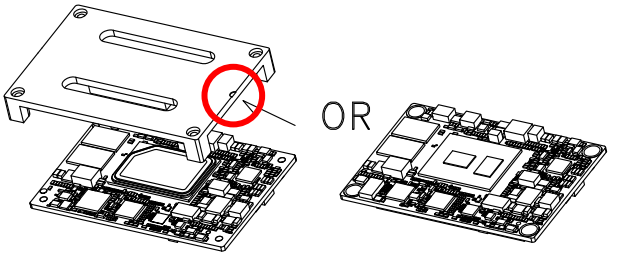
2.4.2 Heatspreader Assembly

When installing the heatspreader, ensure the cover screw aligns with the carrier board screw, as shown below.

Correct Orientation:



Incorrect Orientation:



Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

The board uses certain routines to perform testing and initialization. If an error, fatal or non-fatal, is encountered, a few short beeps or an error message will be outputted. The board can usually continue the boot up sequence with non-fatal errors.

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory. If they do not match, an error message will be outputted, in which case you will need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

- You are starting your system for the first time
- You have changed your system's hardware
- The CMOS memory has lost power and the configuration information is erased

The system's CMOS memory uses a backup battery for data retention, which is to be replaced once emptied

3.2 AMI BIOS Setup

The AMI BIOS ROM has a pre-installed Setup program that allows users to modify basic system configurations, which is stored in the battery-backed CMOS RAM and BIOS NVRAM so that the information is retained when the power is turned off.

To enter BIOS Setup, press <Del> or <F2> immediately while your computer is powering up.

The function for each interface can be found below.

Main – Date and time can be set here. Press <Tab> to switch between date elements

Advanced – For BIOS standard features

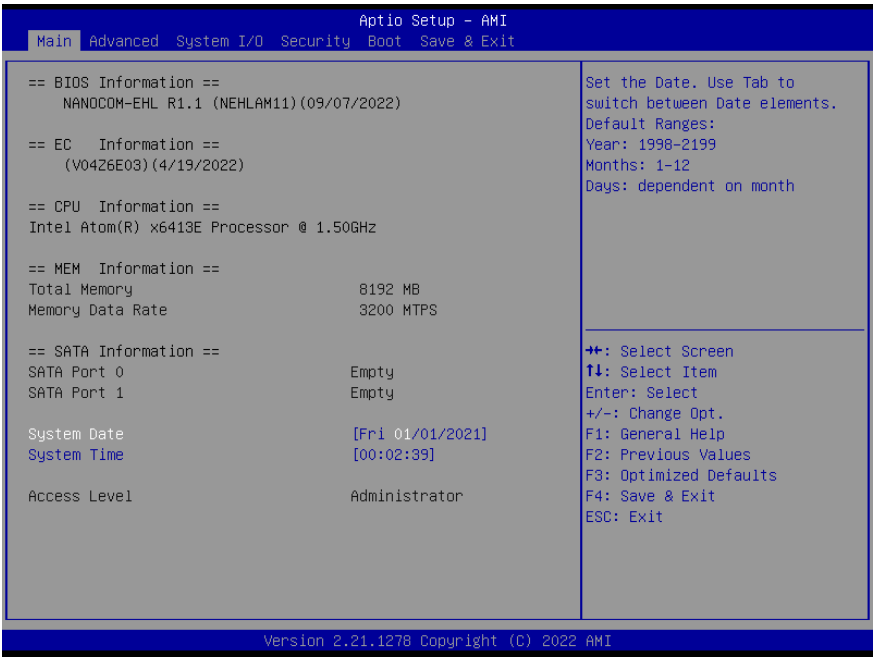
System I/O – For hosting bridge parameters

Security – The setup administrator password can be set here

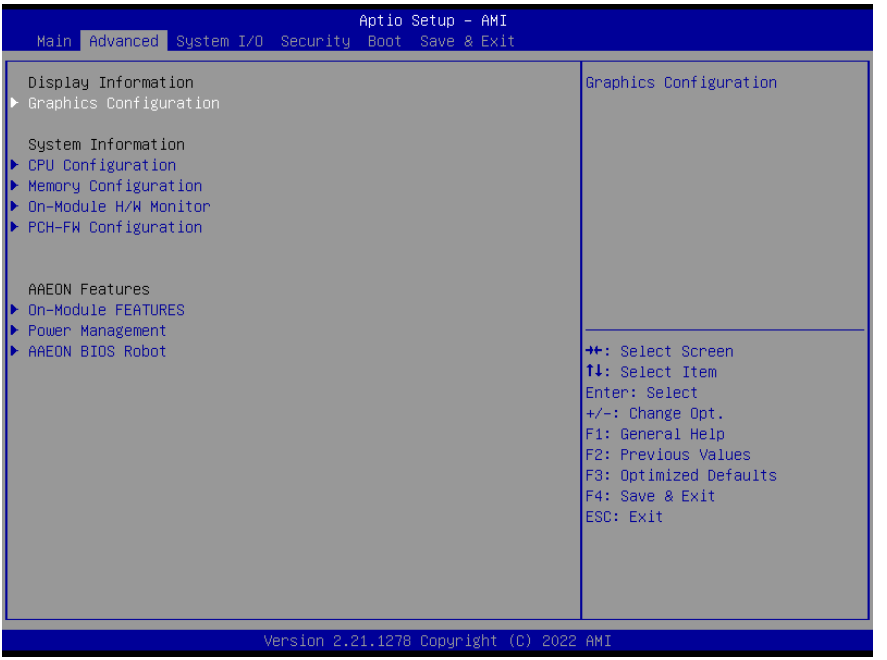
Boot – Enable/ Disable Boot Option

Save & Exit –Save your changes and exit the program

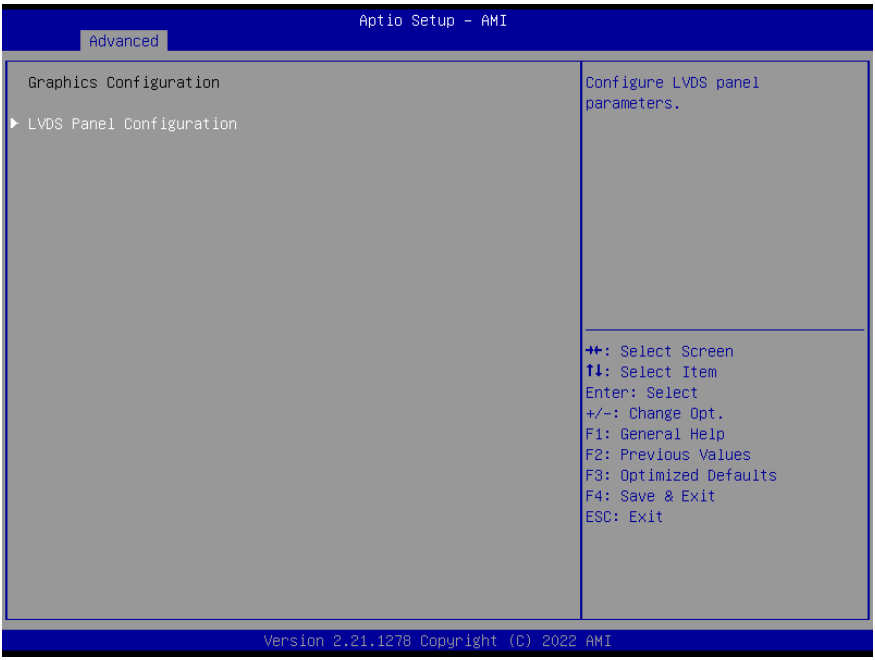
3.3 Setup Submenu: Main



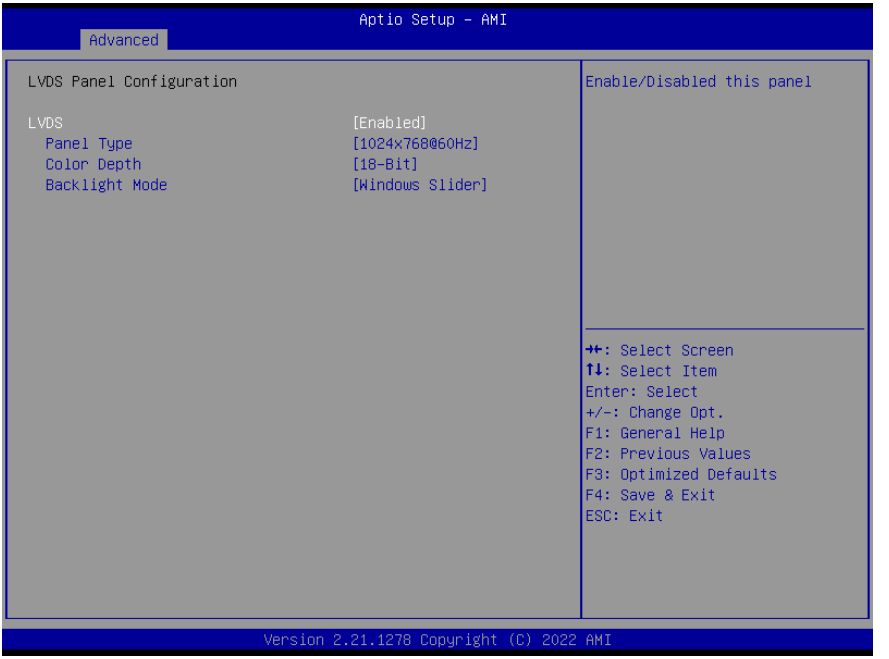
3.4 Setup Submenu: Advanced



3.4.1 Graphics Configuration



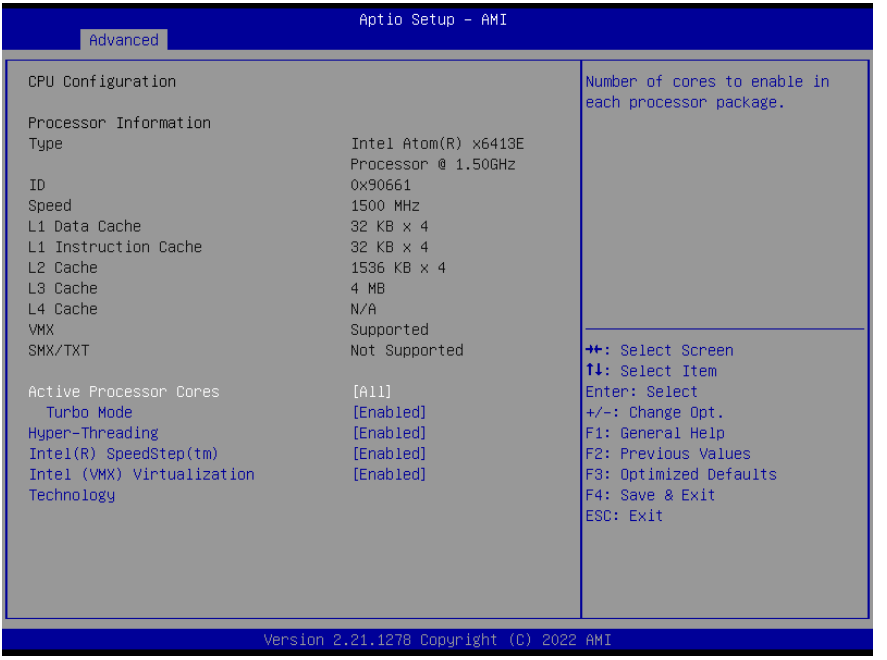
3.4.1.1 LVDS Panel Configuration



Options Summary		
LVDS	Disabled	
	Enabled	Default
Enable/Disable LVDS.		
Panel Type	640x480@60Hz	
	800x480@60Hz	
	800x600@60Hz	
	1024x600@60Hz	
	1024x768@60Hz	Default
	1280x768@60Hz	
	1280x800@60Hz	
	1280x1024@60Hz	
	1366x768@60Hz	
	1440x900@60Hz	
	1600x1200@60Hz	
	1920x1080@60Hz	
	1920x1200@60Hz	

Select LCD panel used by internal graphics device by selecting the appropriate setup item.		
Color Depth	18-Bit	Default
	24-Bit	
	36-Bit	
	48-Bit	
Select panel type		
Backlight Mode	Windows Slider	Default
Select backlight control signal type		

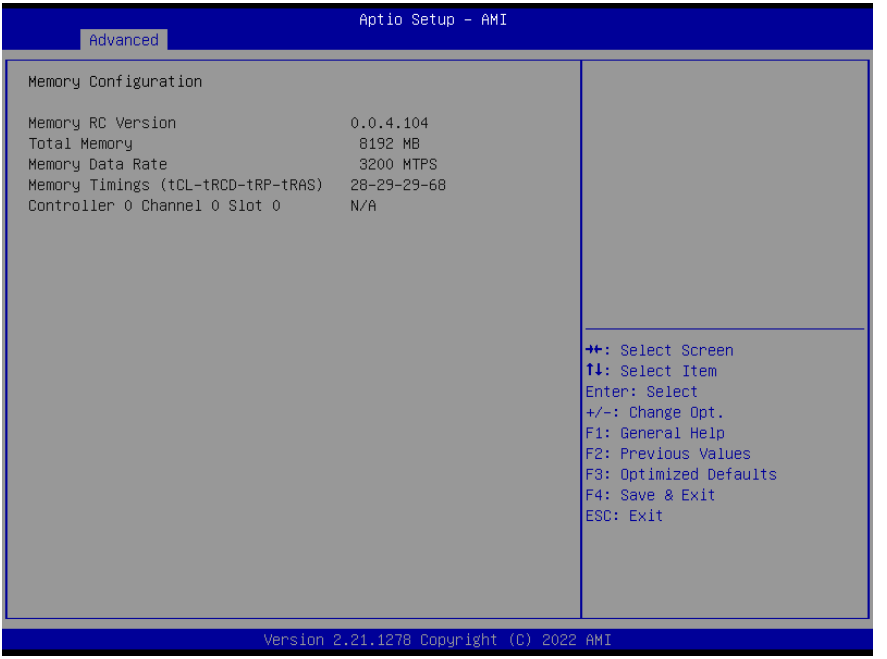
3.4.2 CPU Configuration



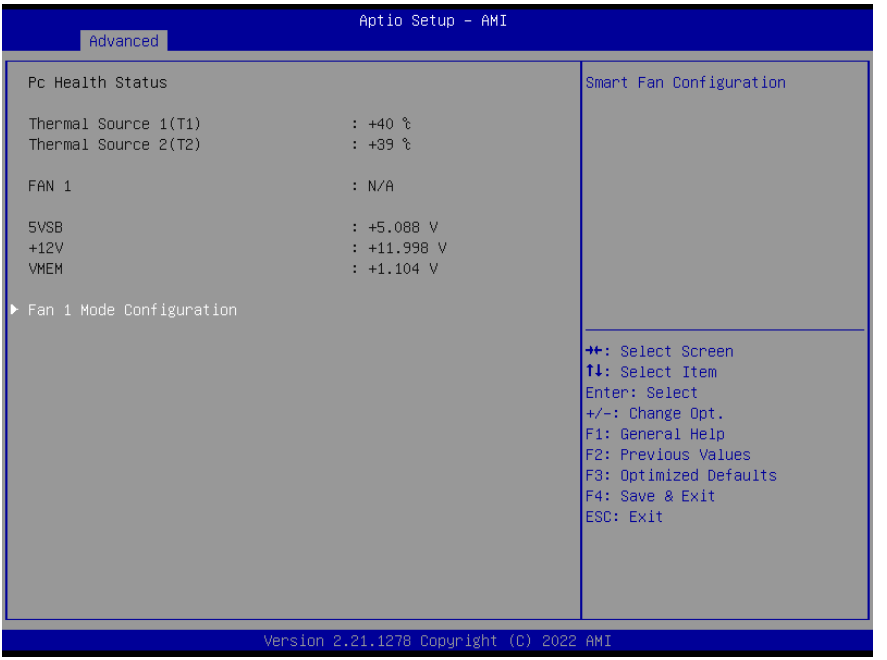
Options Summary		
Active Processor Cores	All	Default
	1	
	2	
	3	
Number of cores to enable in each processor package.		

Options Summary		
Turbo Mode	Disabled	
	Enabled	**Default**
Enabled/Disable processor Turbo Mode (requires EMTTM enabled too).		
Hyper-Threading	Disabled	
	Enabled	**Default**
Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).		
Intel® SpeedStep™	Disabled	
	Enabled	Default
Allows more than two frequency ranges to be supported.		
Intel (VMX) Virtualization Technology	Disabled	
	Enabled	Default
VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.		

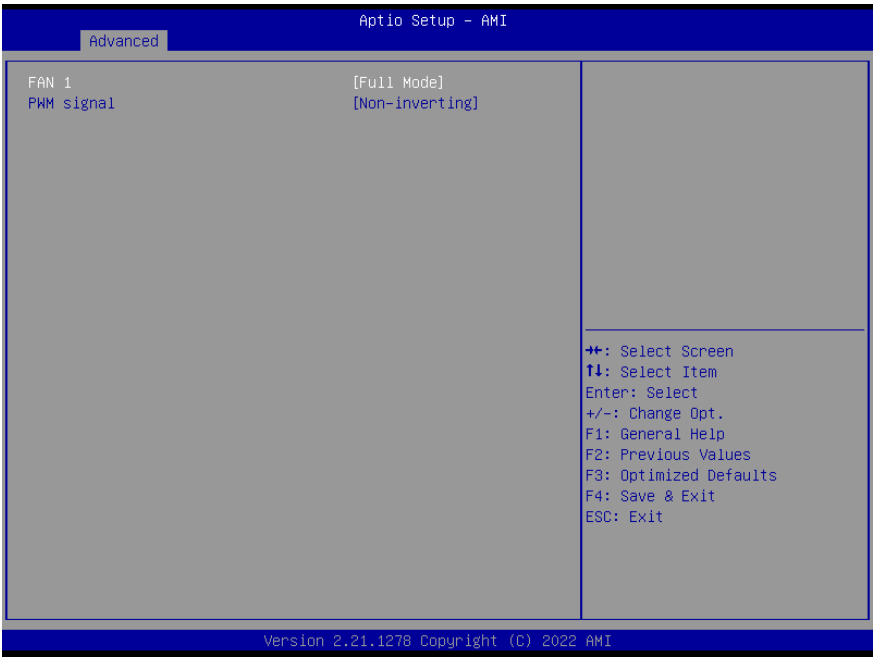
3.4.3 Memory Configuration



3.4.4 On-Module Hardware Monitor

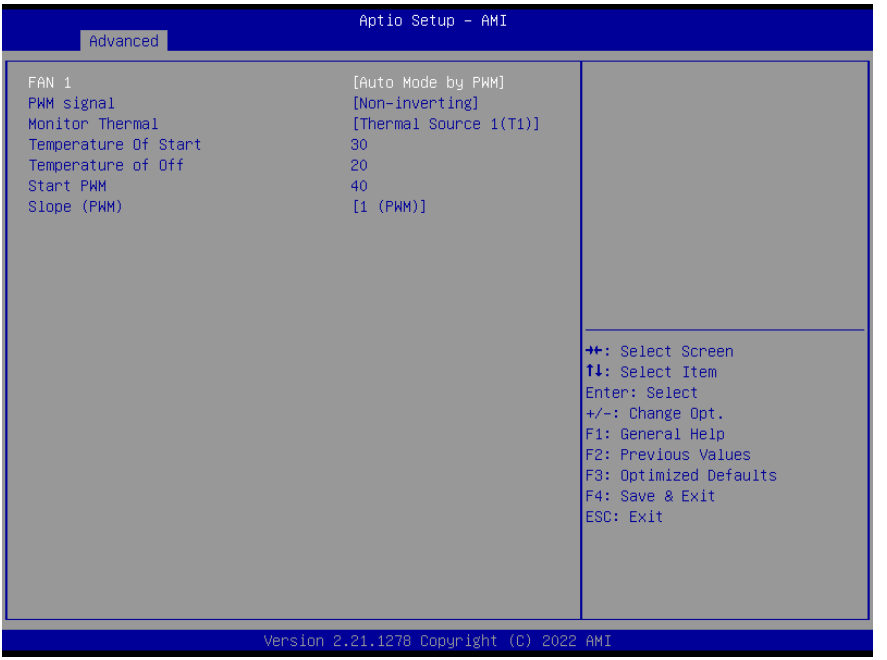


3.4.4.1 Fan 1 Mode Configuration: Full Mode

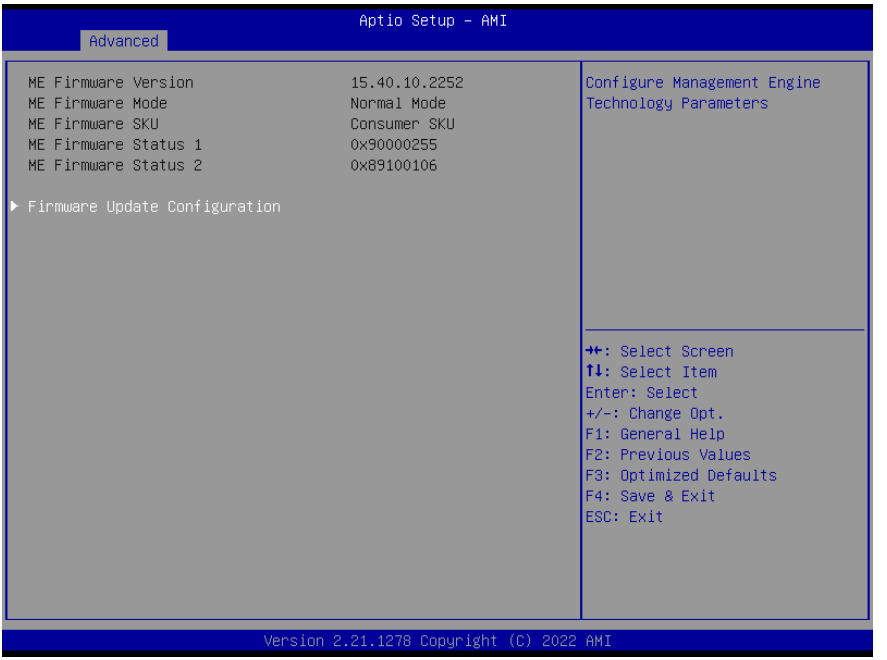


3.4.4.2 Fan 1 Mode Configuration: Manual Mode by PWM

3.4.4.3 Fan 1 Mode Configuration: Auto Mode by PWM



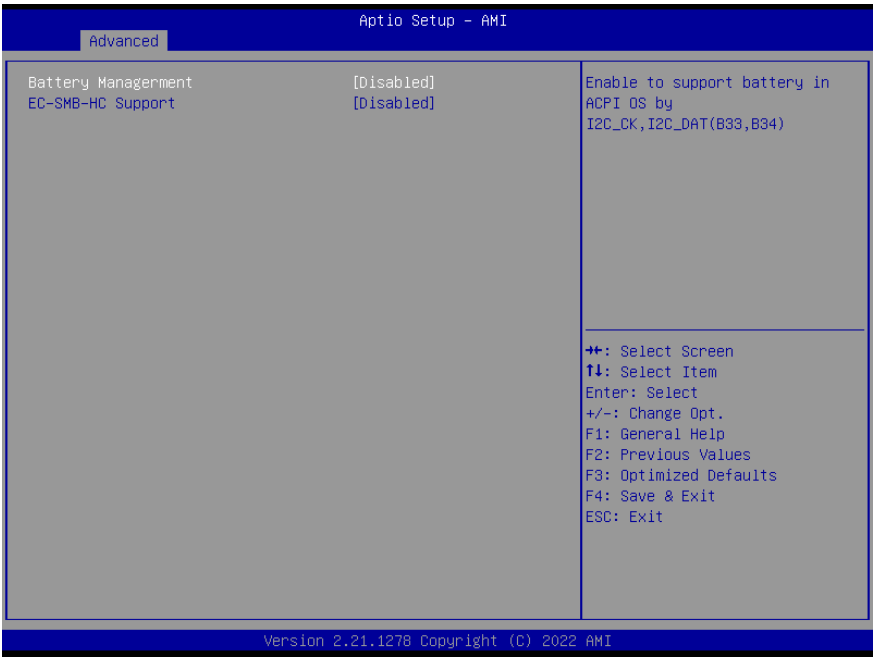
3.4.5 PCH-FW Configuration



3.4.5.1 Firmware Update Configuration

Options Summary		
Me FW Image Re-Flash	Disabled	Default
	Enabled	
Enable/Disable Me FW Image Re-Flash function.		
FW Update	Disabled	
	Enabled	Default
Enable/Disable ME FW Update function.		

3.4.6 On-Module Features



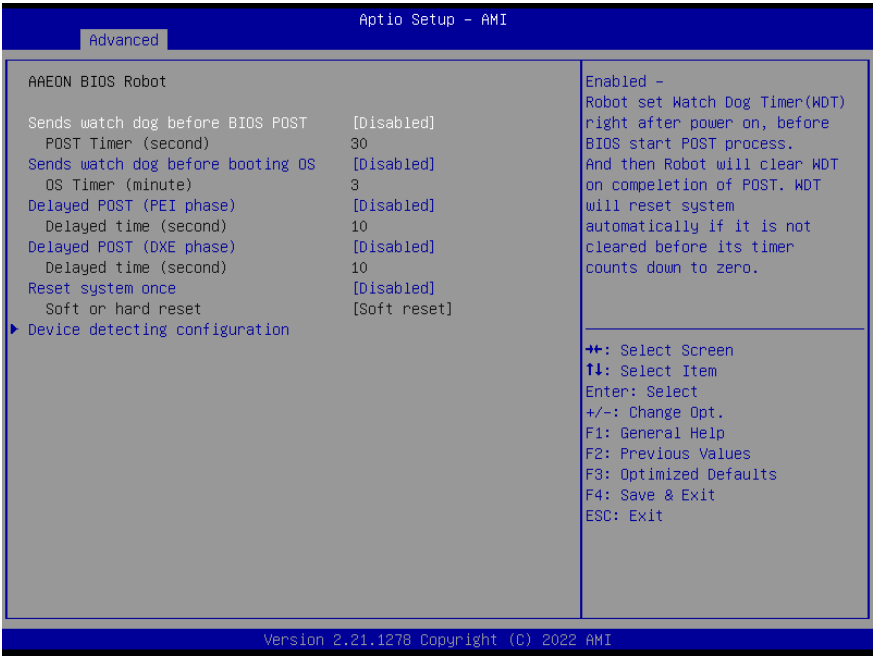
Options Summary		
Battery Management	Disabled	Optimal Default, Failsafe Default
	One Battery	
Enable to support battery in ACPI OS by I2C_CK, I2C_DAT		
EC-SMB-HC Support	Disabled	Optimal Default, Failsafe Default
	Enabled	
SMBus Host Controller Interface via Embedded Controller		

3.4.7 Power Management

Options Summary		
Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select system power mode		
Restore AC Power Loss	Last State	Optimal Default
	Always On	
	Always Off	
Set Power Loss State		
RTC wake system from S5	Disabled	Default
	Fixed Time	
	Dynamic Time	
	Bypass	
Fixed Time: System will wake on the hr: min: sec specified. Dynamic Time: System will wake on the current time + Increase minute(s). Bypass: BIOS will not control RTC wake function during system shutdown.		
Wake up day	0-31	For by date
Select 0 for daily system wake up, 1-31 for which day of the month that you would like		

Options Summary		
the system to wake up		
Wake up hour	0-23	
Select 0-23. For example, enter 3 for 3am and 15 for 3pm		
Wake up minute	0-59	
Wake up second	0-59	

3.4.8 AAEON BIOS Robot



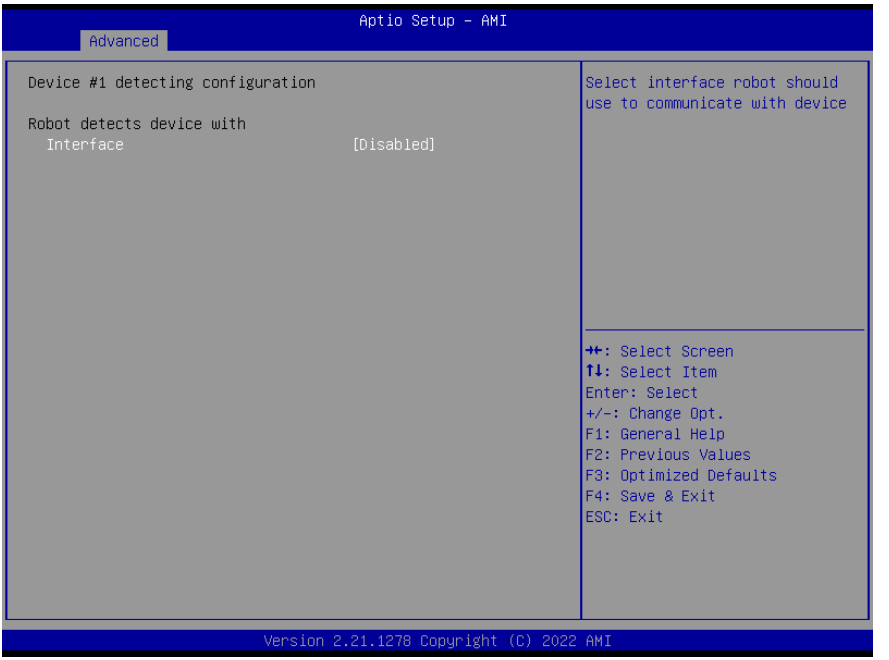
Options Summary		
Sends watch dog before BIOS POST	Disabled	Optimal Default
	Enabled	
Robot set Watch Dog Timer (WDT) right after power on, before BIOS start POST process. And then Robot will clear WDT on completion of POST. WDT will reset system automatically if it is not cleared before its timer counts down to zero.		
Sends watch dog before booting OS	Disabled	Optimal Default
	Enabled	

Options Summary		
Robot set Watch Dog Timer (WDT) after POST completion, before BIOS transfer control to OS. WARNING: Before enabling this function, a program in OS must be in responsible for clearing WDT. Also, this function should be disabled if OS is going to update itself.		
Delayed POST (PEI phase)	Disabled	Optimal Default
	Enabled	
Robot holds BIOS from starting POST, right after power on. This allows BIOS POST to start with stable power or start after system is physically warmed-up.		
Delayed POST (DXE phase)	Disabled	Optimal Default
	Enabled	
Robot holds BIOS before POST completion. This allows BIOS POST to start with stable power or start after system is physically warmed-up.		
Reset system once	Disabled	Optimal Default
	Enabled	
Robot resets system for one time on each boot. This will send a soft or hard reset to onboard devices, thus puts devices to more stable state.		

3.4.8.1 Device Detecting Configuration

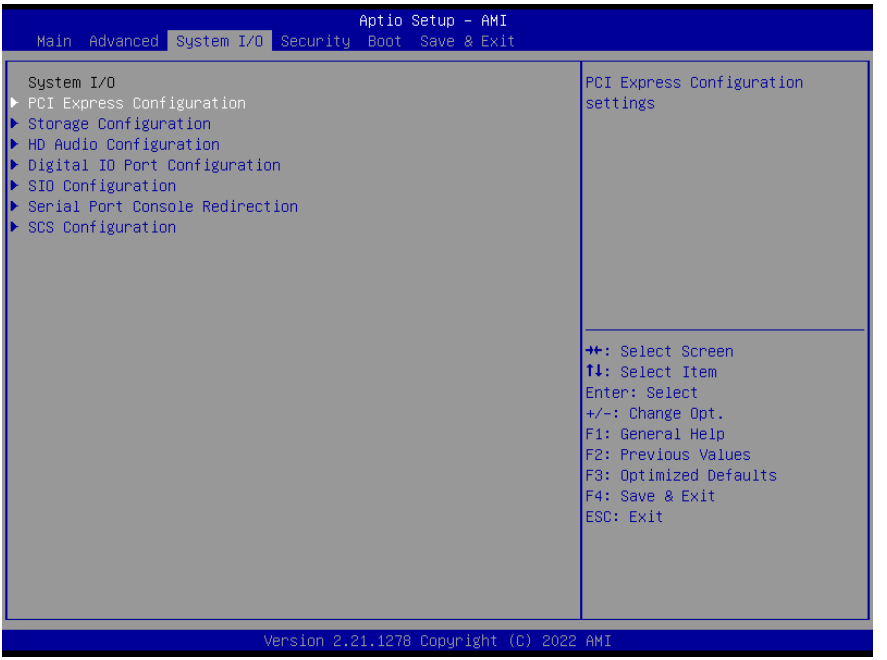
Options Summary		
Action	Reset System	Optimal Default
	Hold System	
Select action that robot should do.		
Soft or hard reset	Soft	Optimal Default
	Hard	
Select reset type robot should send on each boot.		
Retry-Count	3	
Robot will reset system at most counter times, and then let system continue its POST.		
At time	After show logo	Optimal Default
	Before show logo	
Select robot action time		

3.4.8.1.1 Device #1~5 Detecting Configuration

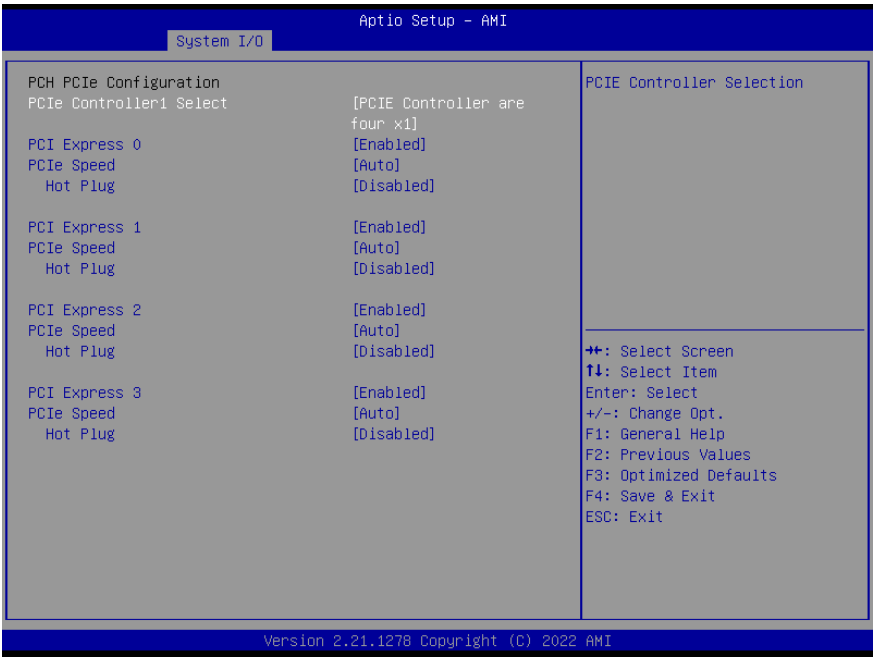


Options Summary		
Robot detects device with Interface	Disabled	Optimal Default
	PCI	
	DIO	
	SMBUS	
	Legacy I/O	
	Super I/O	
	MMIO	
Select interface robot should use to communication with device		

3.5 Setup Submenu: System I/O

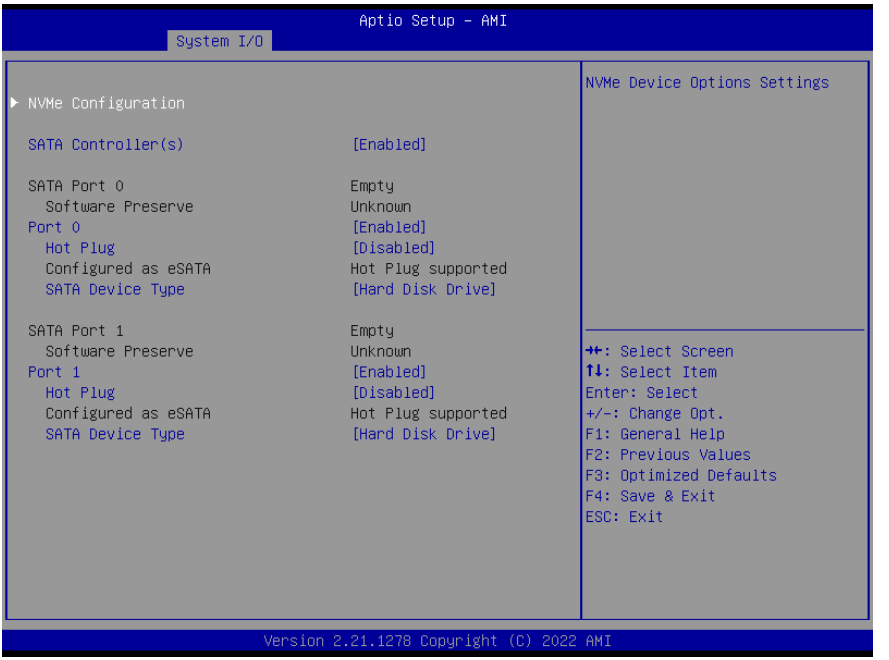


3.5.1 PCI Express Configuration



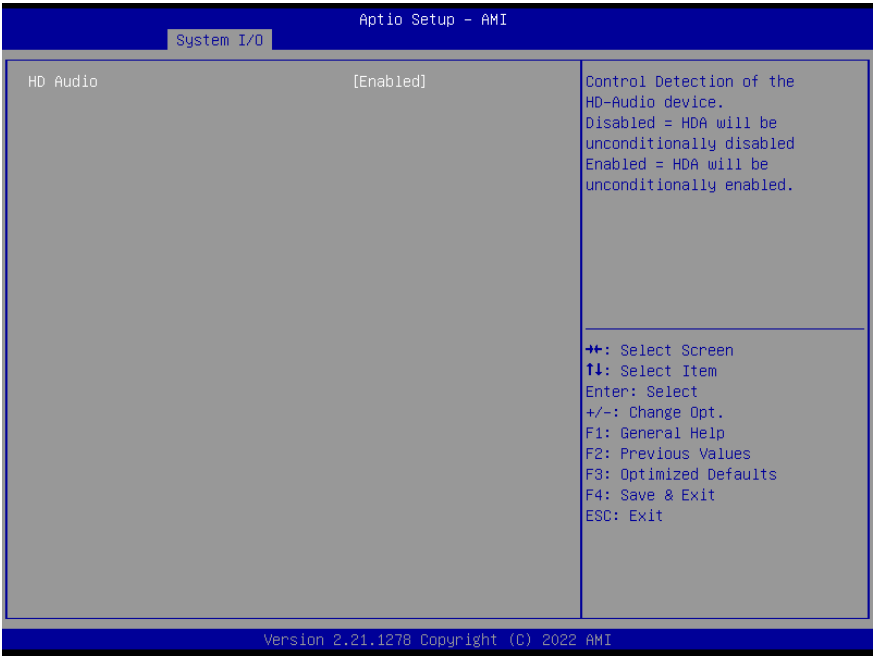
Options Summary		
PCIe Controller1 Select	PCIE Controller are four x1	Default
	PCIE Controller are one x2 and two x1	
	PCIE Controller are two x2	
	PCIE Controller is one x4	
PCIE Controller Selection		
PCI Express 0/1/2/3	Disabled	
	Enabled	Default
Control the PCI Express Root Port		
PCIe Speed	Auto	Default
	Gen1	
	Gen2	
	Gen3	
Configure PCIe Speed.		
Hot Plug	Disabled	Default
	Enabled	
PCI Express Hot Plug Enable/Disable.		

3.5.2 Storage Configuration



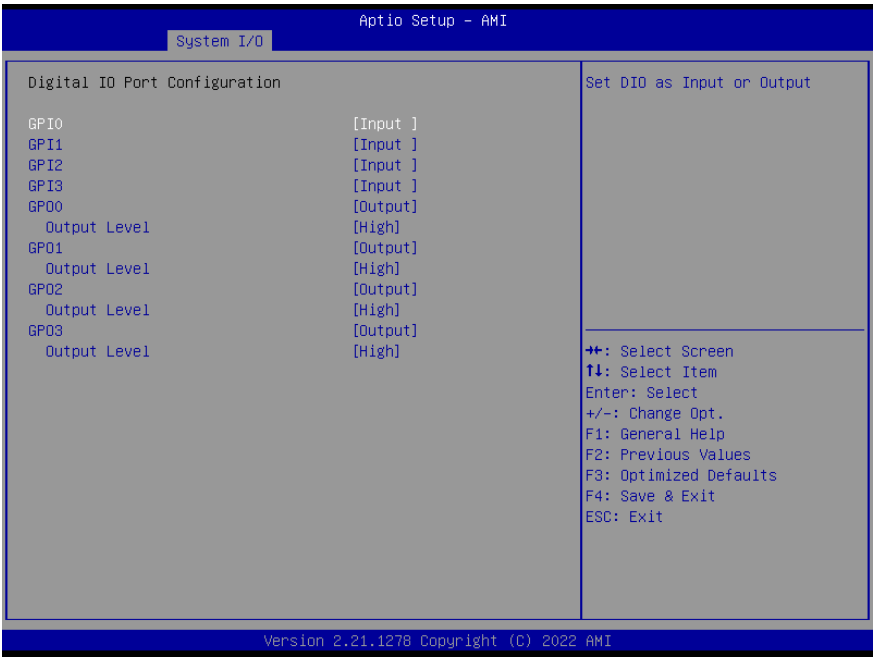
Options Summary		
SATA Controller(s)	Enabled	Optimal Default
	Disabled	
Enable/Disable SATA device.		
Port x	Disabled	
	Enabled	Optimal Default
Enable or Disable SATA Port		
Hot Plug	Disabled	Optimal Default,
	Enabled	
Designates this port as Hot Pluggable		
SATA Device Type	Hard Disk Drive	Default
	Solid State Drive	
Identify the SATA port is connected to Solid State Drive or Hard Disk Drive		

3.5.3 HD Audio Configuration



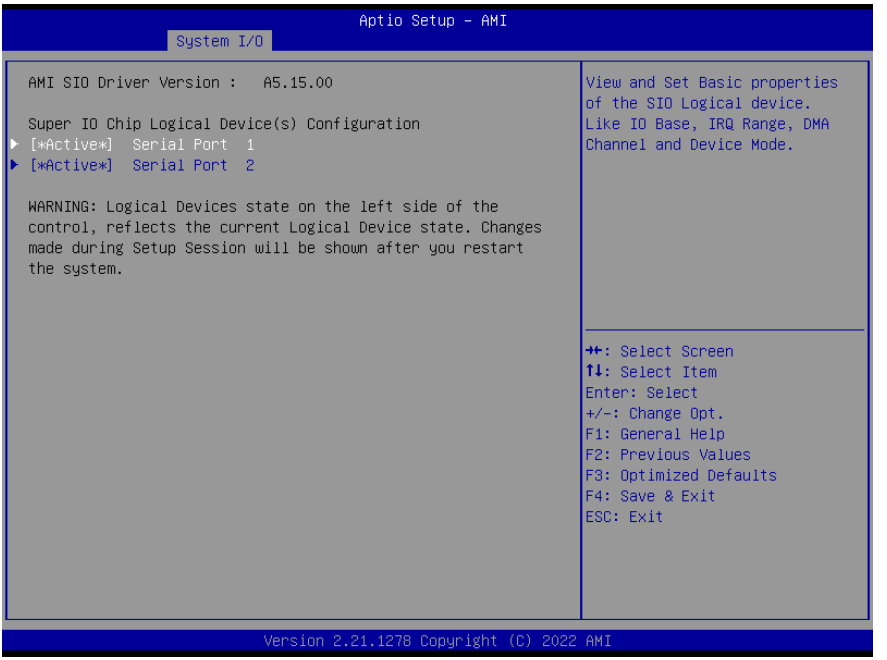
Options Summary		
HD Audio	Disabled	
	Enabled	Optimal Default
Control Detection of the HD-Audio device.		

3.5.4 Digital IO Port Configuration

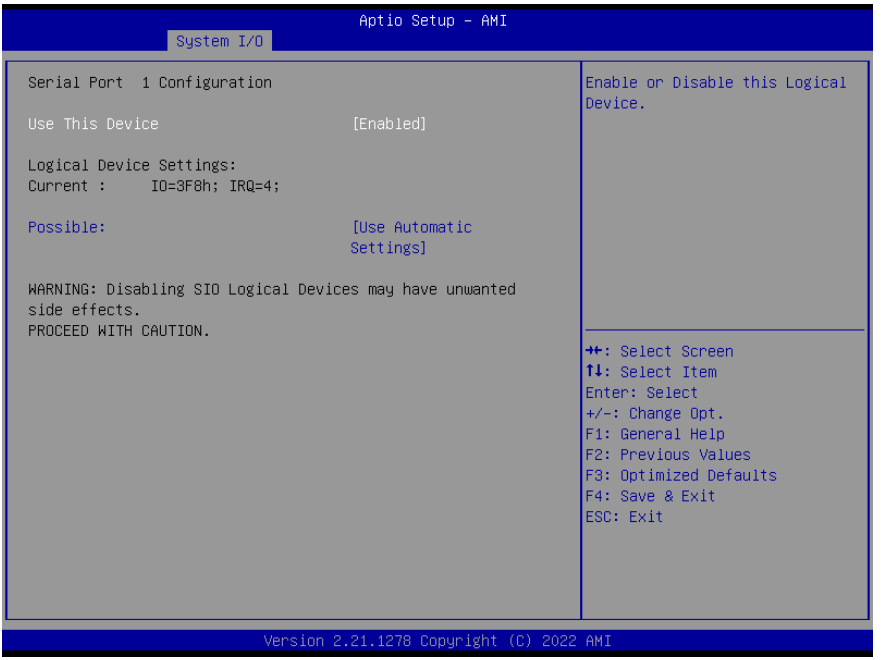


Options Summary		
GPI0/1/2/3 GPO0/1/2/3	Input Output	
Set DIO as Input or Output		
Output Level	Low High	
Set output level when DIO pin is output		

3.5.5 SIO Configuration

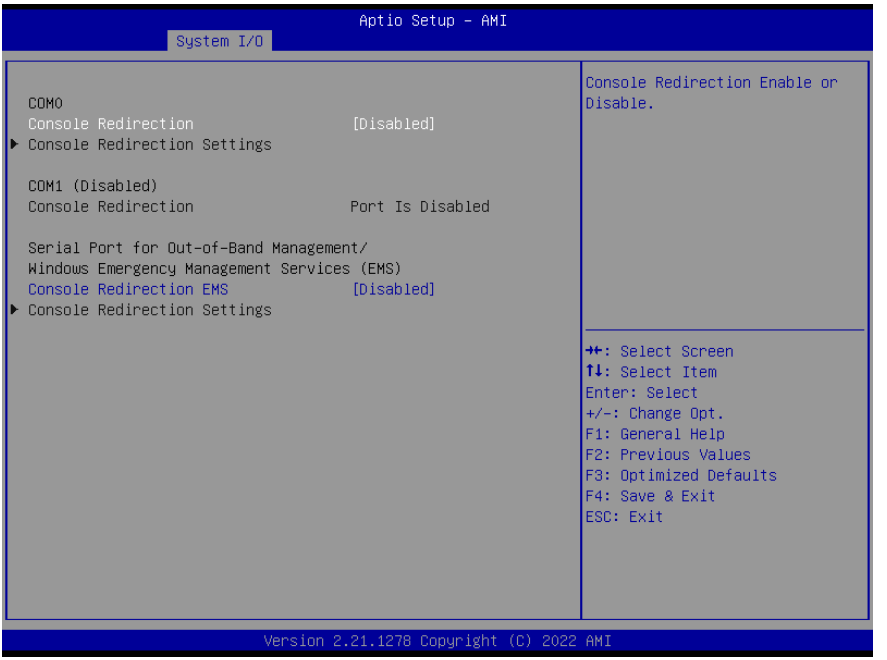


3.5.5.1 Serial Port x Configuration



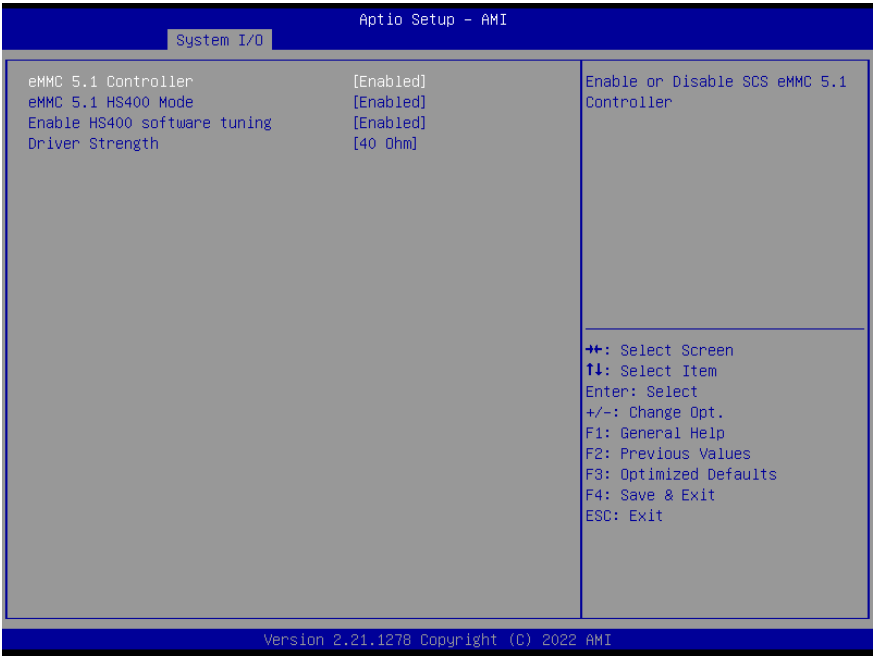
Options Summary		
Use This Device	Disabled	
	Enabled	Optimal Default
Enable or Disable this Logical Device.		
Possible	Use Automatic Settings	Optimal Default
	IO=3F8h; IRQ=4;	
	IO=2C8h; IRQ=11;	
Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.		

3.5.6 Serial Port Console Configuration



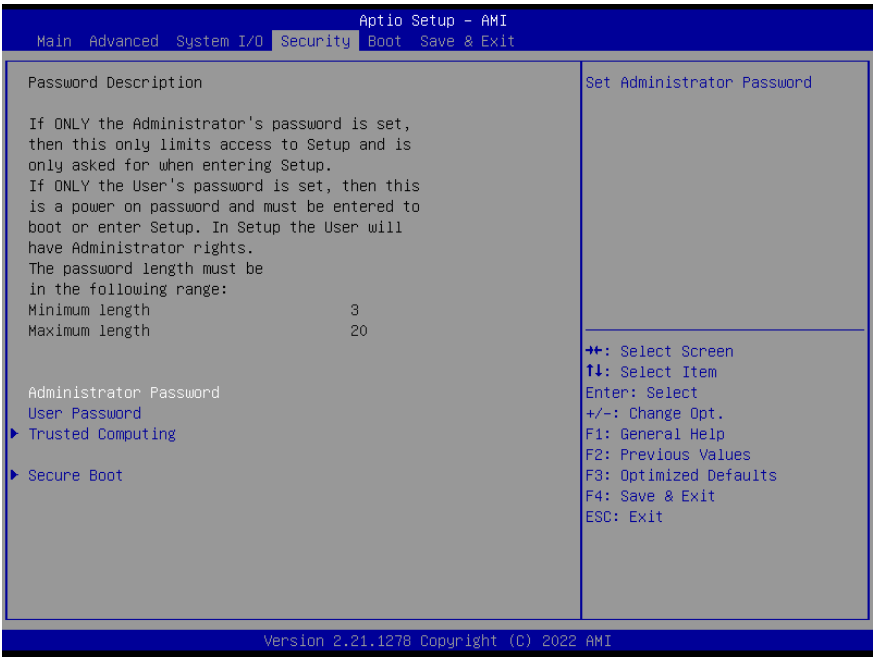
Options Summary		
COM0 Console Redirection	Disabled	Default
	Enabled	
Console Redirection Enable or Disable.		
Console Redirection EMS	Disabled	Default
	Enabled	
Serial Port for Out-of-Band Management/ Windows Emergency Management Services (EMS) Console Redirection Enable or Disable		

3.5.7 SCS Configuration



Options Summary		
eMMC 5.1 Controller	Disabled	
	Enabled	Default
Enable or Disable SCS eMMC 5.1 Controller		
eMMC 5.1 HS400 Mode	Disabled	
	Enabled	Default
Enable or Disable SCS eMMC 5.1 HS400 Mode		
Enable HS400 software tuning	Disabled	
	Enabled	Default
Software tuning should improve eMMC HS400 stability at the expense of boot time		
Driver Strength	33 Ohm	
	40 Ohm	**Default**
	50 Ohm	
Sets I/O driver strength		

3.6 Setup Submenu: Security



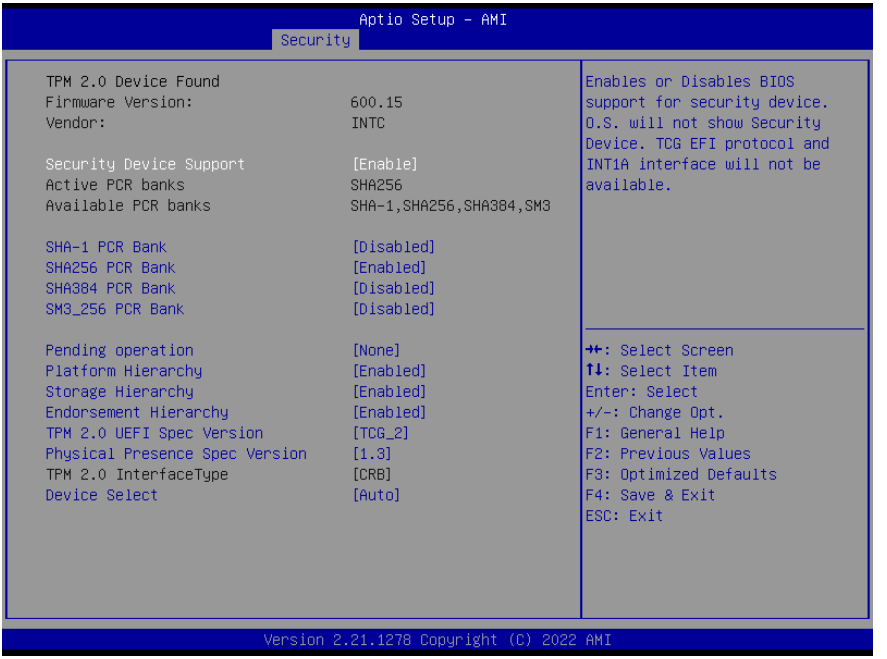
Change User/Administrator Password

You can set a User Password once an Administrator Password is set. The password will be required during boot up, or when the user enters the Setup utility. Please Note that a User Password does not provide access to many of the features in the Setup utility. Select the password you wish to set, press Enter to open a dialog box to enter your password (you can enter no more than six letters or numbers). Press Enter to confirm your entry, after which you will be prompted to retype your password for a final confirmation. Press Enter again after you have retyped it correctly.

Removing the Password

Select the password you want to remove and enter the current password. At the next dialog box press Enter to disable password protection.

3.6.1 Trusted Computing



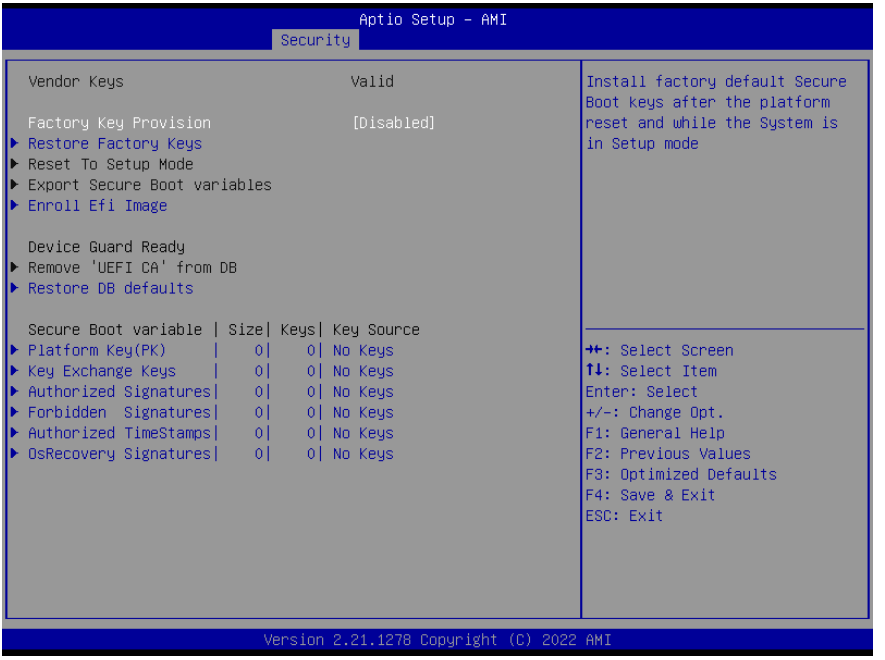
Options Summary		
Security Device Support	Disabled	
	Enabled	Default
Enable or Disable BIOS support for security device.		
SHA-1 PCR Bank	Disabled	Default
	Enabled	
Enable or Disable SHA-1 PCR Bank.		
SHA256 PCR Bank	Disabled	
	Enabled	Default
Enable or Disable SHA256 PCR Bank.		
SHA384 PCR Bank	Disabled	Default
	Enabled	
Enable or Disable SHA384 PCR Bank.		
SM3_256 PCR Bank	Disabled	Default
	Enabled	
Enable or Disable SM3_256 PCR Bank.		

Options Summary		
Pending operation	None	Default
	TPM Clear	
Schedule an operation for the security device.		
Platform Hierarchy	Disabled	
	Enabled	Default
Enable or Disable Platform Hierarchy		
Storage Hierarchy	Disabled	
	Enabled	Default
Enable or Disable Storage Hierarchy		
Endorsement Hierarchy	Disabled	
	Enabled	Default
Enable or Disable Endorsement Hierarchy		
TPM2.0 UEFI Spec Version	TCG_1_2	
	TCG_2	Default
Select the TCG2 Select Version Support		
Physical Presence Spec Version	1.2	
	1.3	Optimal Default
Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3.		
Device select	TPM 1.2	
	TPM 2.0	
	Auto	**Optimal Default**
Device select		

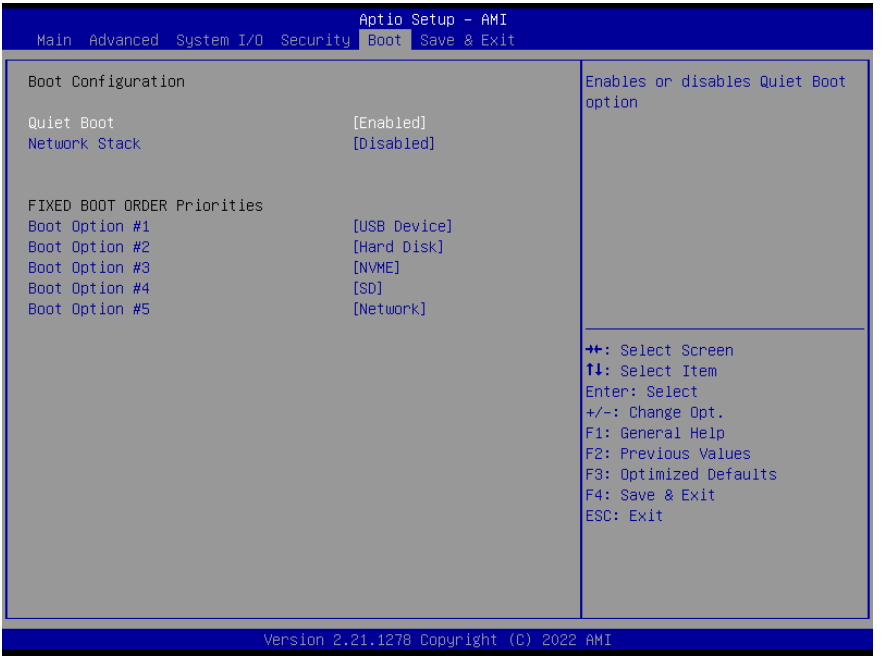
3.6.2 Secure Boot

Options Summary		
Secure Boot	Disabled	Default
	Enabled	
Secure Boot feature is Active if Secure is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset.		
Secure Boot Mode	Standard	
	Custom	Default
Secure Boot mode selector		

3.6.2.1 Key Management

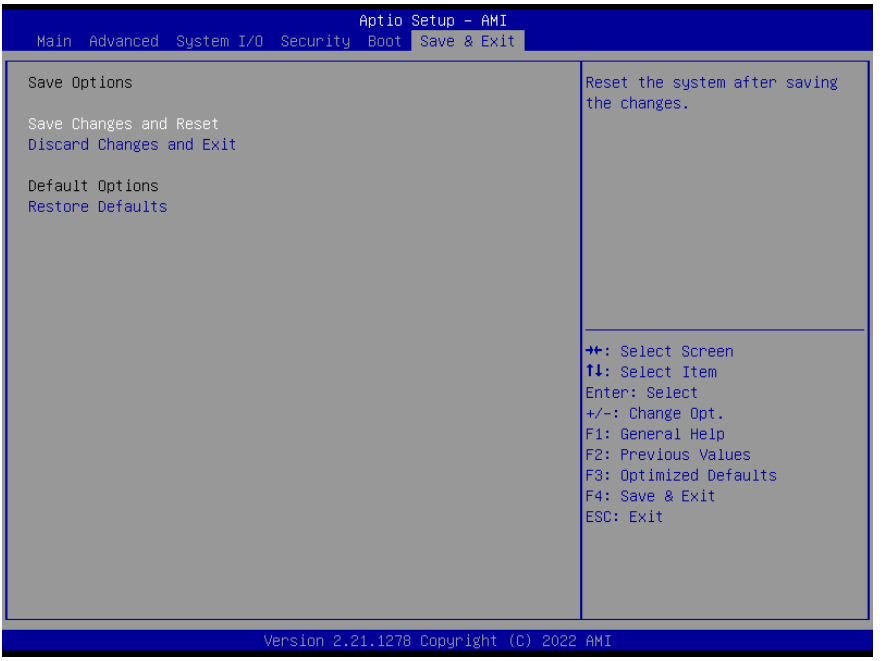


3.7 Setup Submenu: Boot



Options Summary		
Quiet Boot	Disabled	
	Enabled	**Default**
Enable or Disable showing boot logo.		
Network Stack	Disabled	Default
	Enabled	
Enable/Disable UEFI Network Stack		
Boot Option #1	USB Device	Default
Boot Option #2	Hard Disk	Default
Boot Option #3	NVME	Default
Boot Option #4	SD	Default
Boot Option #5	Network	Default
Sets the system boot order for FIXED BOOT ORDER Priorities		

3.8 Setup Submenu: Save & Exit



Chapter 4

Drivers Installation

4.1 Driver Download and Installation

Drivers for the NANOCOM-EHL can be downloaded from the product page on the AAEON website by following this link:

https://www.aaeon.com/en/

Download the driver(s) you need and follow the steps below to install them.

Step 1 – Install Chipset Drivers

1. Open the **Chipset Driver** folder
2. Run the **SetupChipset.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

Step 2 – Install Graphics Driver

1. Open the **Graphics Driver** folder.
2. Run the **igxpin.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 3 – Install LAN Drivers*

Note: The download package has been split into a driver package and an Intel® PROSet package. The driver package must be installed prior to installing the Intel® PROSet package.

LAN Driver Installation:

1. Open the **LAN Drivers** folder
2. Run the **Wired_driver_27.3_x64.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

Intel® PROSet Installation:

1. Open the **LAN Drivers** folder
2. Run the **Wired_PROSet_27.3_x64.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

Step 4 – Install ME Drivers

1. Open the **ME Drivers** folder
2. Run the **SetupME.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

Step 5 – Install Audio Drivers

1. Open the **Audio Drivers** folder
2. Run the **Setup.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

Step 6 – Install Serial I/O Drivers

1. Open the **Serial IO Drivers** followed by the folder for the drivers you want to install
2. Follow the instructions in the **.inf** files to install drivers

Step 7 – Install Intel® PSE Drivers (Optional)

1. Open the **Intel® PSE Drivers** folder followed by the folder for the drivers you want to install
2. Follow the instructions in the **.inf** files to install drivers

Step 8 – Install Intel® Peripheral Drivers

1. Open **Intel® Peripheral Drivers** folder followed by the folder for the drivers you want to install
2. Follow the instructions in the **.inf** files to install drivers

Appendix A

I/O Information

A.1 I/O Address Map

- Input/output (IO)
  - [0000000000000000 - 0000000000000CF7] PCI Express Root Complex
  - [0000000000000020 - 0000000000000021] Programmable interrupt controller
  - [0000000000000024 - 0000000000000025] Programmable interrupt controller
  - [0000000000000028 - 0000000000000029] Programmable interrupt controller
  - [000000000000002C - 000000000000002D] Programmable interrupt controller
  - [000000000000002E - 000000000000002F] Motherboard resources
  - [0000000000000030 - 0000000000000031] Programmable interrupt controller
  - [0000000000000034 - 0000000000000035] Programmable interrupt controller
  - [0000000000000038 - 0000000000000039] Programmable interrupt controller
  - [000000000000003C - 000000000000003D] Programmable interrupt controller
  - [0000000000000040 - 0000000000000043] System timer
  - [000000000000004E - 000000000000004F] Motherboard resources
  - [0000000000000050 - 0000000000000053] System timer
  - [0000000000000061 - 0000000000000061] Motherboard resources
  - [0000000000000063 - 0000000000000063] Motherboard resources
  - [0000000000000065 - 0000000000000065] Motherboard resources
  - [0000000000000067 - 0000000000000067] Motherboard resources
  - [0000000000000068 - 0000000000000068] Microsoft ACPI-Compliant Embedded Controller
  - [000000000000006C - 000000000000006C] Microsoft ACPI-Compliant Embedded Controller
  - [0000000000000070 - 0000000000000070] Motherboard resources
  - [0000000000000080 - 0000000000000080] Motherboard resources
  - [0000000000000092 - 0000000000000092] Motherboard resources
  - [00000000000000A0 - 00000000000000A1] Programmable interrupt controller
  - [00000000000000A4 - 00000000000000A5] Programmable interrupt controller
  - [00000000000000A8 - 00000000000000A9] Programmable interrupt controller
  - [00000000000000AC - 00000000000000AD] Programmable interrupt controller
  - [00000000000000B0 - 00000000000000B1] Programmable interrupt controller
  - [00000000000000B2 - 00000000000000B3] Motherboard resources
  - [00000000000000B4 - 00000000000000B5] Programmable interrupt controller
  - [00000000000000B8 - 00000000000000B9] Programmable interrupt controller
  - [00000000000000BC - 00000000000000BD] Programmable interrupt controller
  - [00000000000002F8 - 00000000000002FF] Communications Port (COM2)
  - [00000000000003F8 - 00000000000003FF] Communications Port (COM1)
  - [00000000000004D0 - 00000000000004D1] Programmable interrupt controller
  - [0000000000000680 - 000000000000069F] Motherboard resources
  - [0000000000000D00 - 000000000000FFFF] PCI Express Root Complex
  - [000000000000164E - 000000000000164F] Motherboard resources
  - [0000000000001800 - 000000000000187E] Motherboard resources
  - [0000000000001854 - 0000000000001857] Motherboard resources
  - [0000000000002000 - 000000000000207E] Motherboard resources
  - [0000000000003000 - 000000000000303F] Microsoft Basic Display Adapter
  - [0000000000003060 - 000000000000307F] Standard SATA AHCI Controller
  - [0000000000003080 - 0000000000003083] Standard SATA AHCI Controller
  - [0000000000003090 - 0000000000003097] Standard SATA AHCI Controller
  - [000000000000EFA0 - 000000000000EFBF] Intel(R) SMBus Controller - 4B23

A.2 Memory Address Map

- Memory
  - [00000000000A0000 - 00000000000BFFFF] PCI Express Root Complex
  - [000000007FC00000 - 000000007FCFFFFF] Intel(R) Ethernet Controller I226-IT
  - [000000007FC00000 - 000000007FDFFFFF] Intel(R) PCI Express Root Port #6 - 4B3E
  - [000000007FC00000 - 00000000BFFFFFFF] PCI Express Root Complex
  - [000000007FD00000 - 000000007FD03FFF] Intel(R) Ethernet Controller I226-IT
  - [000000007FE00000 - 000000007FE01FFF] Standard SATA AHCI Controller
  - [000000007FE02000 - 000000007FE027FF] Standard SATA AHCI Controller
  - [000000007FE03000 - 000000007FE030FF] Standard SATA AHCI Controller
  - [00000000C0000000 - 00000000CFFFFFFF] Motherboard resources
  - [00000000FD000000 - 00000000FD68FFFF] Motherboard resources
  - [00000000FD6B0000 - 00000000FD6CFFFF] Motherboard resources
  - [00000000FD6F0000 - 00000000FDFFFFFF] Motherboard resources
  - [00000000FE000000 - 00000000FE01FFFF] Motherboard resources
  - [00000000FE010000 - 00000000FE010FFF] Intel(R) SPI (flash) Controller - 4B24
  - [00000000FE032000 - 00000000FE032FFF] Motherboard resources
  - [00000000FE033000 - 00000000FE033FFF] Motherboard resources
  - [00000000FE200000 - 00000000FE7FFFFF] Motherboard resources
  - [00000000FEC80000 - 00000000FECFFFFF] Motherboard resources
  - [00000000FED00000 - 00000000FED003FF] High precision event timer
  - [00000000FED20000 - 00000000FED7FFFF] Motherboard resources
  - [00000000FED40000 - 00000000FED44FFF] Trusted Platform Module 2.0
  - [00000000FED45000 - 00000000FED8FFFF] Motherboard resources
  - [00000000FED90000 - 00000000FED93FFF] Motherboard resources
  - [00000000FEDA0000 - 00000000FEDA0FFF] Motherboard resources
  - [00000000FEDA1000 - 00000000FEDA1FFF] Motherboard resources
  - [00000000FEE00000 - 00000000FEEFFFFF] Motherboard resources
  - [00000000FF000000 - 00000000FFFFFFFF] Motherboard resources
  - [0000004000000000 - 000000400FFFFFFF] Microsoft Basic Display Adapter
  - [0000006000000000 - 0000006000FFFFFF] Microsoft Basic Display Adapter
  - [0000006001100000 - 000000600110FFFF] Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
  - [0000006001118000 - 00000060011180FF] Intel(R) SMBus Controller - 4B23
  - [000000600111B000 - 000000600111BFFF] Intel SD Host Controller
  - [0000007FFFEF9000 - 0000007FFFEF9FFF] Intel(R) Serial IO I2C Host Controller - 4B45
  - [0000007FFFEFA000 - 0000007FFFEFAFFF] Intel(R) Serial IO I2C Host Controller - 4B44
  - [0000007FFFEFB000 - 0000007FFFEFBFFF] Intel(R) Management Engine Interface #1
  - [0000007FFFEFC000 - 0000007FFFEFFFFF] High Definition Audio Controller
  - [0000007FFFF00000 - 0000007FFFFFFFFF] High Definition Audio Controller

A.3 IRQ Mapping Chart