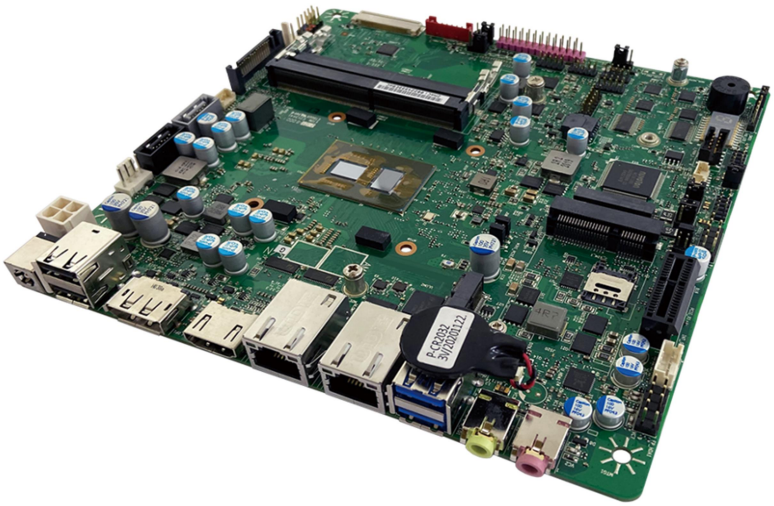
INS8324A

Intel® Elkhart Lake
J6413/N6415/N6211/N6210/x6413



Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

Statement

- All rights reserved. No part of this publication may be reproduced in any form or by any means, without prior written permission from the publisher.
- All trademarks are the properties of the respective owners.
- All product specifications are subject to change without prior notice

RoHS Compliance

Perfectron RoHS Environmental Policy and Status Update

Perfectron is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with

European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

In order to meet the RoHS compliant directives, Perfectron has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard Perfectron development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which Perfectron are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant

Revision History

Revision	Date (dd.mm.yyyy)	Changes
Version 1.0	22.03.2022	Initial Release

Packing list

Item	Description	Q'ty
1	INS8324A	1
2	CD(Drivier + User's manual)	1

If any of the above items is damaged or missing, please contact your local distributor.

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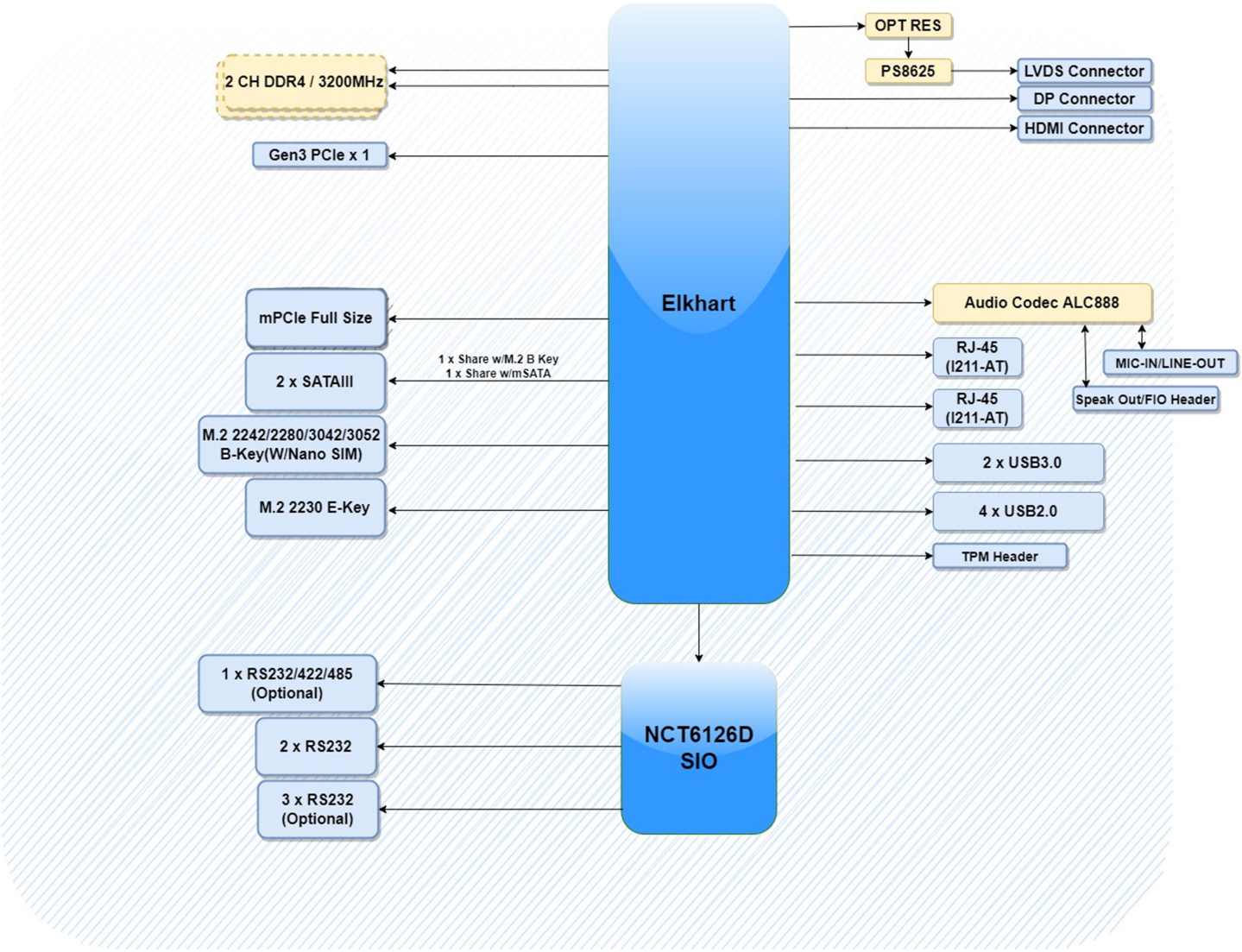
Chapter 1: Product Information

1.1 Specification

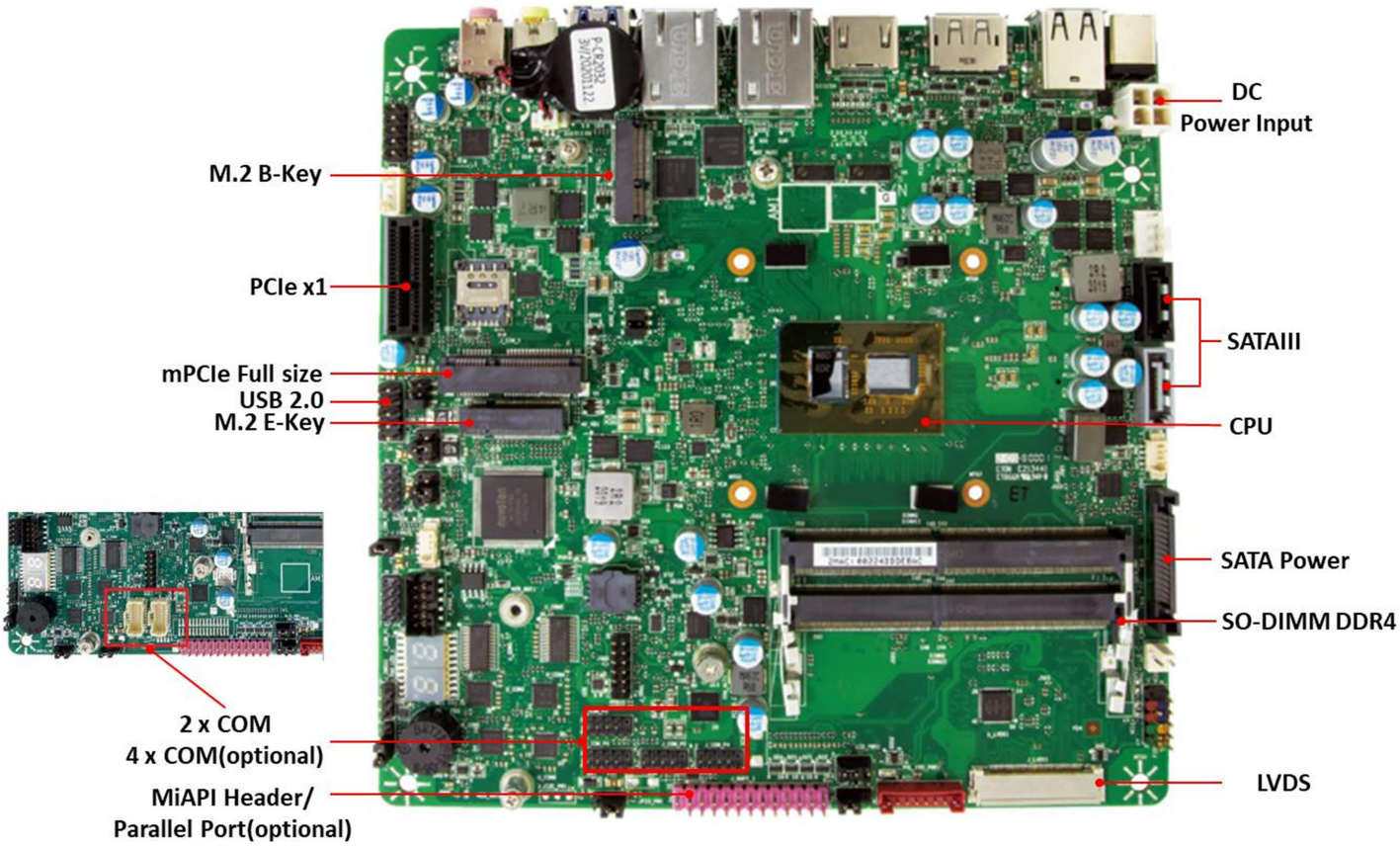
Processor & System	
CPU	Intel® Elkhart Lake : Celeron J6413 (1.5M Cache, up to 3.00 GHz , TDP 10W) Pentium N6415(1.5M Cache, up to 3.00 GHz, TDP 6.5W) Celeron N6211(1.5M Cache, up to 3.00 GHz, TDP 6.5W) Celeron N6210(1.5M Cache, up to 2.60 GHz, TDP 6.5W) Atom x6413E(1.5M Cache, up to 2.60 GHz, TDP 9W)
Memory type	DDR4 3200 MHz / 2 x 260-pin SO-DIMM / Max. 32GB (Non-ECC)
Chipset	Intel® SoC Integrated
TPM	Nuvoton NPCT750AABYX TPM2.0 (Optional)
I/O Chipset	Nuvoton NCT6126D(eSPI)
Watchdog	1-255 sec. or 1-255 min. software programmable and can be generate system reset
Expansion	
M.2	1 x M.2 3042 / 3052 / 2242 / 2260 / 2280 B key (USB2.0, SATAIII, *PCIex1) 1 x M.2 2230 E key (PCIe X1, USB2.0)
miniPCIe	1 x mPCIe Full size (USB2.0 / PCIe X1 / SATAIII)
PCIe x 1	1
Display	
Display Port	Up to 4K (4096 x 2160) @60 Hz
HDMI	Up to 4K (4096 x 2160) @60 Hz
LVDS	Up to 1920 x 1200 @60 Hz
Ethernet	
Chipset	Intel® I211AT
Audio	
Codec	Realtek® ALC888S
Front I/O	
USB	2 x USB 3.1, 2 x USB 2.0
Display I/O	1 x HDMI 1.4, 1 x DisplayPort 1.4
LAN	2 x RJ45
Audio	1 x Mic-in, 1 x Line-out
Internal I/O	
SATA	2x SATAIII(Multiplexed with M.2 and mSATA port)
USB	2 x USB 2.0 Header
Display I/O	1 x LVDS 1 x Backlight Connector
Audio I/O	1 x Speaker Header 1 x Front Audio Header (Mic-in / Line-out)
Serial Port	2 x RS232 Header (Extra 1 x RS232/422/485 Header + 3 x RS232 Header for Option, total 6 x COM)
Parallel Port	1 x MiAPI Header (Optional for Parallel Port Header)
Fan	1 x 4-pin CPU Fan Header
Power	1 x AT / ATX Mode Select Jumper / 1 x ATX 4-pin Power Connector
Others	1 x Clear CMOS Button / MiAPI: Programmable header (support 10 x GPIO,

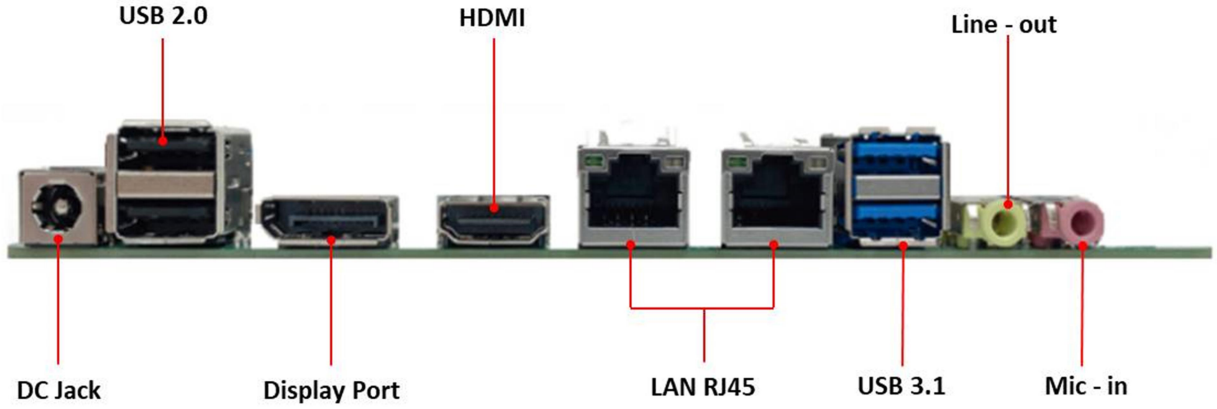
	1 x SMBUS, 1 x UART, 1 x Watchdog) with API library supported for Windows OS 1 x Buzzer / 1 x 3-pin CAN-FD Bus Header
Mechanical and Environment	
Form Factor	Mini ITX
Power Type	DC-in 8~24V/ ATX 4-pin Power Connector + DC Jack
Dimension	170 mmX 170mm
Operating Temperature	ET : -20℃ ~ 70℃ UT : -40℃ ~ 85℃
Storage Temperature	-40℃ ~ 85℃
Relative humidity	10% to 90%, non-condensing
Standard Compliance	
Standard Compliance	CE/FCC
OS	
OS Support	Windows® 10 64-bit Linux(Support by request)

1.2 Block Diagram



1.3 Board Placement

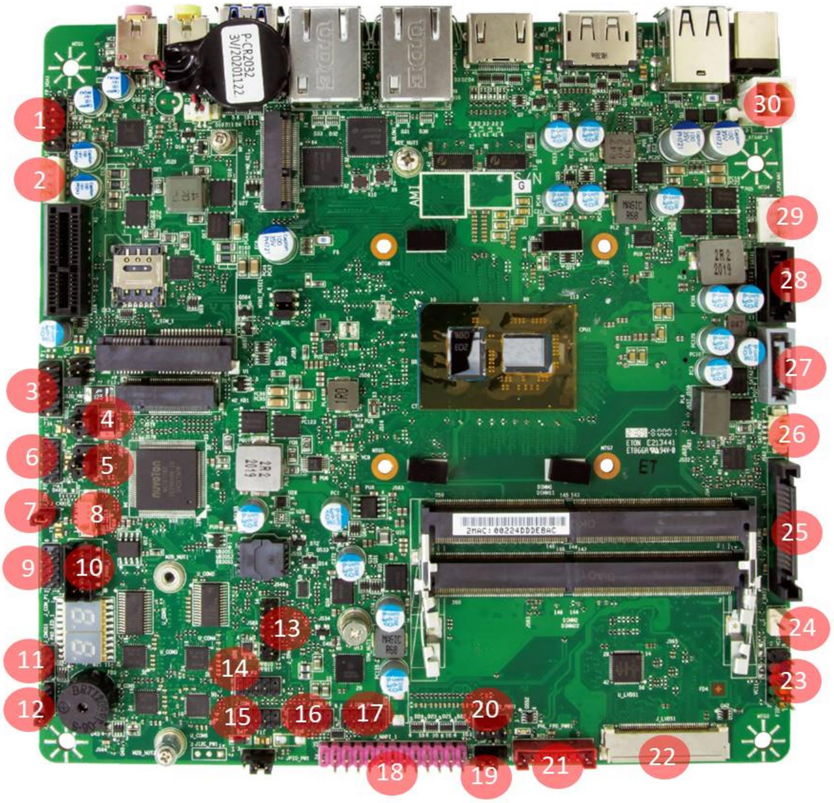




Chapter 2: Jumpers and Connectors

2.1 Jumpers And Connectors List

Label	Function
1	Front Audio Header
2	INT_SPK1
3	USB2.0 Header
4	COM2 PWR Jumper
5	COM1 PWR Jumper
6	COM2 Header
7	CAN1 Jumper
8	CAN1 connector
9	COM1 Header
10	eSPI Header
11	CMOS Jumper
12	AT/ATX Jumper
13	TPM Header
14	COM3 Header
15	COM6 Header
16	COM5 Header
17	COM4 Header
18	MiAPI Header
19	INV_PWR1
20	LCD PWR1
21	PNI_FPD_PWR1
22	LVDS Connector
23	Front I/O Header
24	2nd BAT Connector
25	SATA Power1 Connector
26	SATA Power2 Connector
27	SATA2 Connector
28	SATA1 Connector

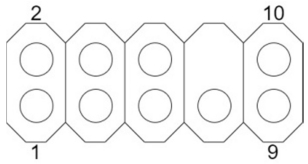


29	CPU FAN Header
30	DC Power Connector

2.2 Jumper Settings And Connector Pin Define

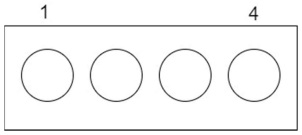
Front Audio Header

PIN	DEFINITION	PIN	DEFINITION
1	MIC2 L(Microphone 2 Left)	2	AGND(Analog Ground)
3	MIC2 R(Microphone 2 Right)	4	AVCC(Analog VCC Power)
5	FRO-R(Front Right)	6	MIC2_JD(Microphone 2 Jack Detect))
7	F_IO_SEN(Front I/O Sensor)	8	Key(no pin)
9	FRO-L(Front Left)	10	LINE2_JD(Line 2 Jack Detect)



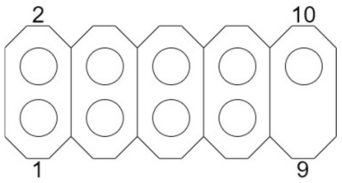
INT_SPK1

PIN	DEFINITION
1	A_GND_L
2	Front_L+
3	Front_R+
4	A_GND_R



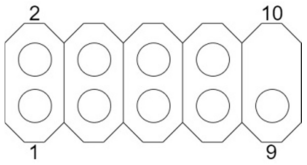
USB2.0 Header

PIN	DEFINITION	PIN	DEFINITION
1	+5V DC	2	+5V DC
3	Data (negative)	4	Data (negative)
5	Data (positive)	6	Data (positive)
7	GND	8	GND
9	Key (no pin)	10	No Connect



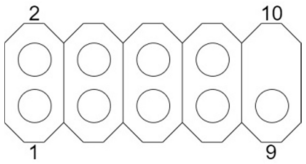
COM1/COM2 Header

PIN	DEFINITION	PIN	DEFINITION
1	DCD(Data Carrier Detect	2	RXD#(Receive Data)
3	TXD#(Transmit Data)	4	DTR(Data Terminal Ready)
5	GND	6	DSR(Data Set Ready)
7	RTS(Request To Send)	8	CTS(Clear To Send)
9	RI(Ring Indicator)	10	Key(no pin)



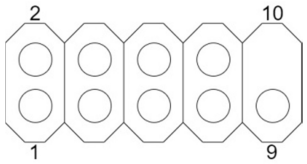
COM3~COM5 Header (Optional)

PIN	DEFINITION	PIN	DEFINITION
1	DCD	2	RXD#
3	TXD#	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	Key(no pin)



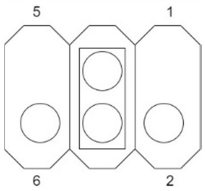
COM6 Header(Optional)

PIN	DEFINITION			PIN	DEFINITION		
	RS232	RS422	RS485		RS232	RS422	RS485
1	DCD	R(A)/T(A)	TX(B)	2	RXD#	R(B)/T(B)	TX(A)
3	TXD#	NC	RX(A)	4	DTR	NC	RX(B)
5	GND	GND	GND	6	DSR	NC	NC
7	RTS	DE#/RE	NC	8	CTS	NC	NC
9	RI	NC	NC	10	Key(no pin)	Key(no pin)	Key(no pin)



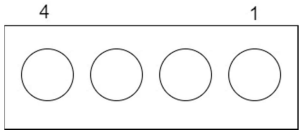
COM1/COM2 PWR Jumper

PIN	DEFINITION	PIN	DEFINITION
1	Key(no pin)	2	V_12P
3	NRI1	4	COM1_P9
5	Key(no pin)	6	V+5P



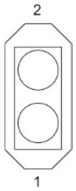
CAN1 Header

PIN	DEFINITION
1	5VSB_CAN0
2	CAN1H
3	CAN1L
4	GND



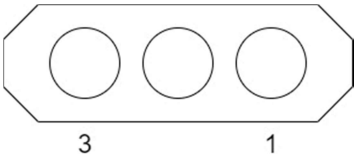
CAN1 Jumper

PIN	DEFINITION
1	CAN1L
2	CAN1H

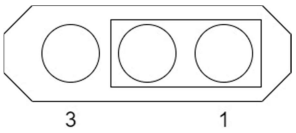
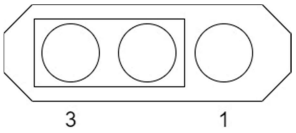


CMOS Jumper

PIN	DEFINITION
1	RTC_Clear
2	GND
3	CMOS_Clear
1-2	Clear RTC
2-3	Clear CMOS

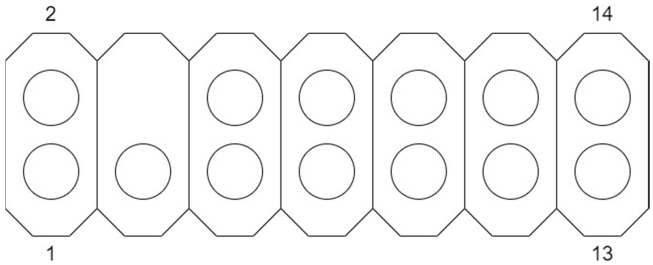


AT/ATX Jumper

PIN	DEFINITION	
1-2	AT Mode	
2-3	ATX Mode(Default)	

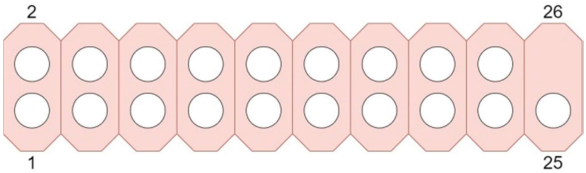
TPM Header

PIN	DEFINITION	PIN	DEFINITION
1	3VSB	2	TPM_FSPI_CS_N
3	TPM_SPI_MISO_IO1	4	Key(no pin)
5	TPM_SPI_MISO_IO0	6	TPM_RST_N
7	TPM_PIRQ_N	8	GND
9	SPI_CS0_TPM_N	10	TPM_SPI_CLK
11	N/A	12	TPM_DET_N
13	SPI_IO2_TPM_WP_N	14	3VSB



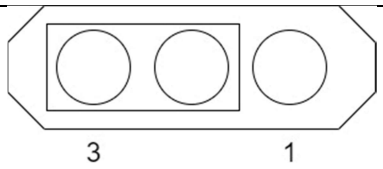
MiAPI Header

PIN	DEFINITION	PIN	DEFINITION
1	MAPI_GPIO1	2	VCC
3	MAPI_GPIO1	4	Power Button
5	MAPI_GPIO2	6	UART_TX (3.3V)
7	MAPI_GPIO3	8	UART_RX (3.3V)
9	MAPI_GPIO4	10	5VSB
11	MAPI_GPIO5	12	Watchdog Timer
13	MAPI_GPIO6	14	GND
15	MAPI_GPIO7	16	GP_H04_SIO_I2C2_SDA (3.3V)
17	MAPI_GPIO8	18	GP_H05_SIO_I2C2_SCL (3.3V)
19	MAPI_GPIO9	20	GP_D17_PSE_TGPIO41 (3.3V)
21	MAPI_GPIO10	22	GP_D18_PSE_TGPIO42 (3.3V)
23	SMB_MAIN_DATA	24	GND
25	SMB_MAIN_CLK	26	Key(no pin)



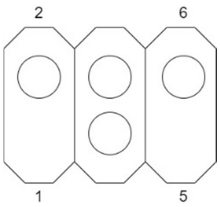
INV_PWR1

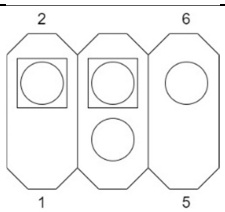
PIN	DEFINITION
1	VCC
2	BKLT_PWR
3	12V

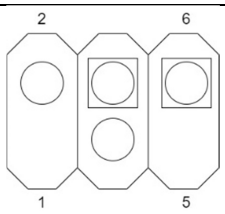
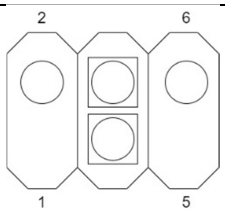


LCD PWR1

PIN	DEFINITION	PIN	DEFINITION
1	Key(no pin)	2	3.3V
3	+12V	4	LCD_VCC_SEL
5	Key(no pin)	6	5V
3.3V			

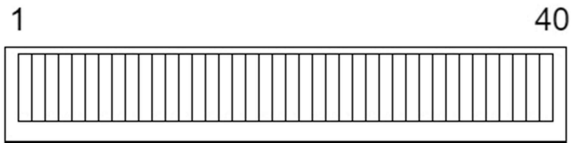




5V(Default)	
12V	

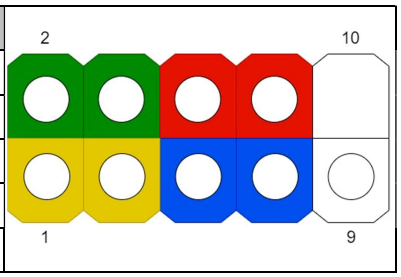
LVDS Connector

PIN	DEFINITION	PIN	DEFINITION
1	ODD_Lane3_P	21	N/C
2	ODD_Lane3_N	22	EDIE_3.3V
3	ODD_Lane2_P	23	LCD_GND
4	ODD_Lane2_N	24	LCD_GND
5	ODD_Lane1_P	25	LCD_GND
6	ODD_Lane1_N	26	ODD_CLK_P
7	ODD_Lane0_P	27	ODD_CLK_N
8	ODD_Lane0_N	28	BKLT_GND
9	EVEN_Lane3_P	29	BKLT_GND
10	EVEN_Lane3_N	30	BKLT_GND
11	EVEN_Lane2_P	31	EDIE_CLK
12	EVEN_Lane2_N	32	BKLT_Enable
13	EVEN_Lane1_P	33	BKLT_PWM_DIM
14	EVEN_Lane1_N	34	EVEN_CLK_P
15	EVEN_Lane0_P	35	EVEN_CLK_N
16	EVEN_Lane0_N	36	BKLT_PWR
17	EDIE_GND	37	BKLT_PWR
18	LCD_VCC	38	BKLT_PWR
19	LCD_VCC	39	N/C
20	LCD_VCC	40	EDID_Data



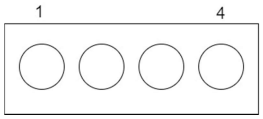
Front I/O Header

PIN	DEFINITION	PIN	DEFINITION
1	HDD_POWER_LED	2	POWER_LED_MAIN
3	HDD_LED#	4	POWER_LED_ALT
5	GND	6	POWER_SWITCH#
7	RESET_SWITCH#	8	GND
9	+5V_DC	10	KEY (no pin)



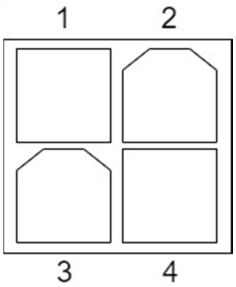
CPU FAN Header

PIN	DEFINITION
1	GND
2	+12V
3	CPU_FAN_CTRL
4	CPUFANIN



DC Power Connector

PIN	DEFINITION
1	GND
2	GND
3	Input PWR
4	Input PWR



Chapter 3: AMI BIOS UTILITY

This chapter provides users with detailed descriptions on how to set up a basic system configuration through the AMI BIOS setup utility.

3.1 Starting

To enter the setup screens, perform the following steps:

- Turn on the computer and press the <Del> key immediately.
- After the <Del> key is pressed, the main BIOS setup menu displays. Other setup screens can be accessed from the main BIOS setup menu, such as the Chipset and Power menus.

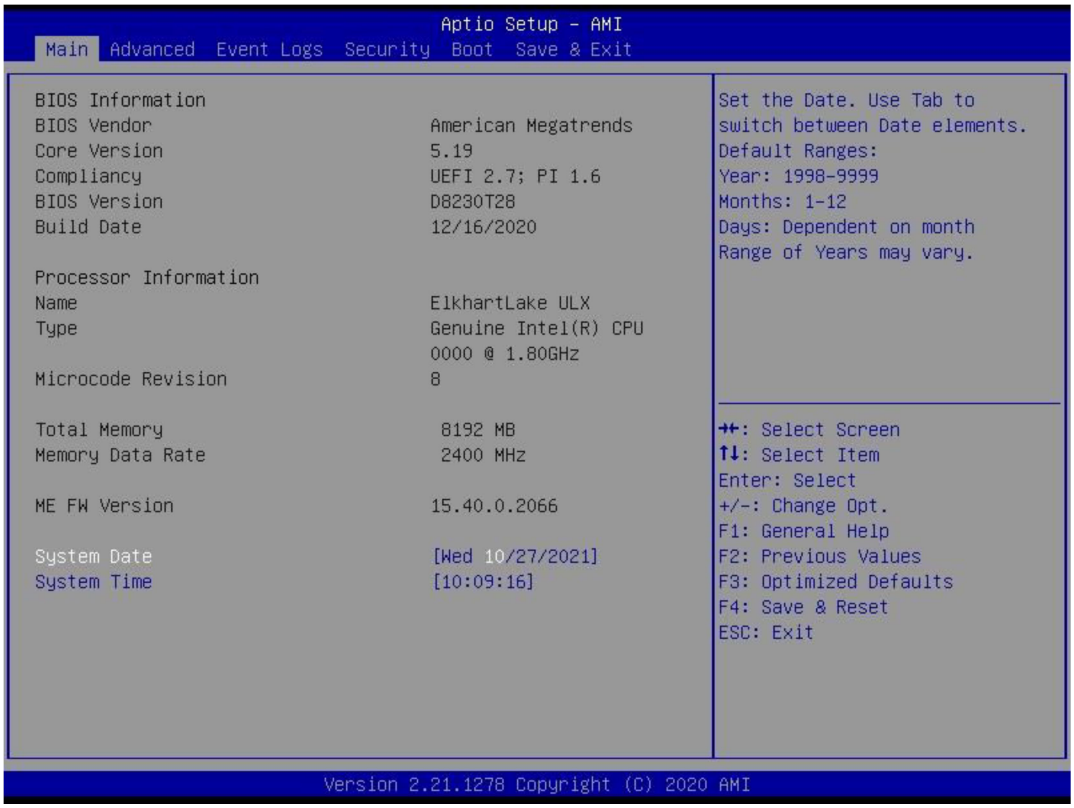
3.2 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process.
Some of the hot keys are <F1>, <F10>, <Enter>, <ESC>, and <Arrow> keys.

Some of the navigation keys may differ from one screen to another.

Left/Right	The Left and Right <Arrow> keys moves the cursor to select a menu.
Up/Down	The Up and Down <Arrow> keys moves the cursor to select a setup screen or sub-screen.
+– Plus/Minus	The Plus and Minus <Arrow> keys changes the field value of a particular setup setting.
F1	The <F1> key offer general help.
F2	The <F3> key load previous values.
F3	The <F3> key load optimized defaults.
F4	The <F4> key saves any changes made and exits the BIOS setup utility.
Esc	The <Esc> key discards any changes made and exits the BIOS setup utility.
Enter	The <Enter> key displays a sub-screen or changes a selected or highlighted option in each menu.

3.3 Main Menu



Field Name	**BIOS Vendr**
Default Value	American Megatrends
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Core Version**
Default Value	5.17
Comment	This field is not selectable. There is no help text associated with it

Field Name	**Compliancy**
Default Value	UEFI 2.7 ; PI 1.6
Comment	This field is not selectable. There is no help text associated with it

Field Name	**BIOS Version**
Default Value	Display the version of the BIOS
Comment	This field is not selectable. There is no help text associated with it

Field Name	**Build Date and Time**
Default Value	Display build date of the BIOS
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**ME FW Version**
Default Value	ME Firmware Version.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Processor Information
Default Value	Display the installed CPU brand.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Microcode Version
Default Value	Display the CPU microcode revision.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Total Memory
Default Value	Display the installed memory size.
Comment	This field is not selectable. There is no help text associated with it.

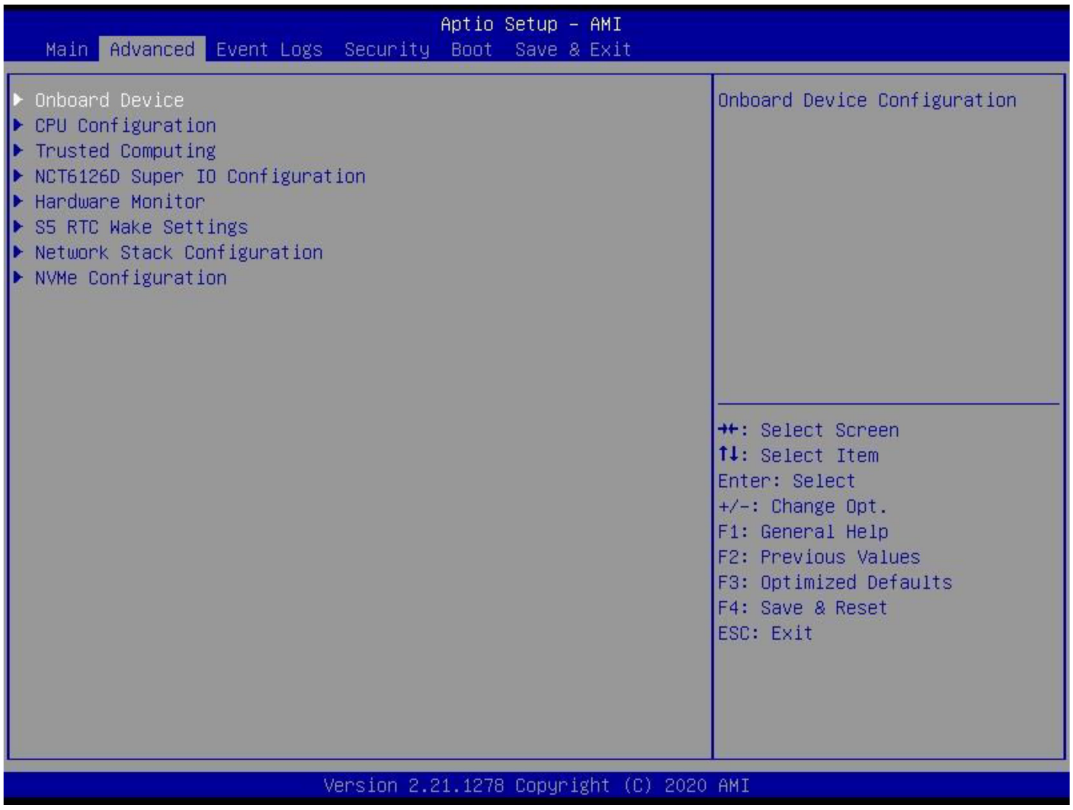
Field Name	Memory Frequency
Default Value	Display the installed memory Frequency
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Serial ATA Port 6 (M.2)
Default Value	Display the installed SATA device model/size of port ´
Comment	This field is not selectable. There is no help text associated with it.

Field Name	System Date
Default Value	[Www mm/dd/yyyy]
Possible Value	Www : Mon/Tue/Wed/Thu/Fri/Sat/Sun mm : 1-12 dd : 1-31 yyyy : 1998-2099
Help	Set the Date. Use Tab to switch between Date elements. Default Rangers Year : 1998-2099 Months : 1-12 Days : Dependent on month Range of Years may vary

Field Name	System Time
Default Value	[hh :mm :ss]
Possible Value	hh : 0-23 mm : 0-59 ss : 0-59
Help	Set the Time. Use Tab to switch between Time elements.

3.4 Advance Page



Field Name	**Onboard Device**
Help	Onboard Device Configuration
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**CPU Configuration**
Help	CPU Configuration Parameters
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Trusted Computing**
Help	Trusted Computing Settings
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Super IO Configuration**
Help	System Super IO Chip Parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

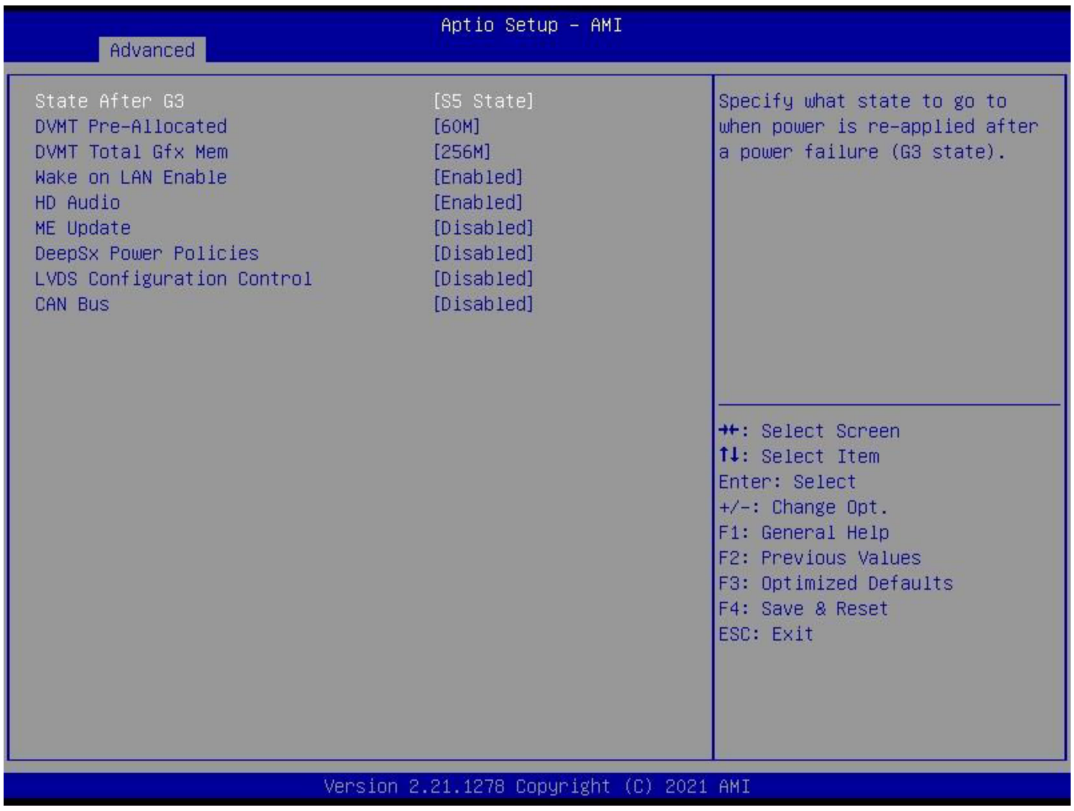
Field Name	**HW Monitor**
Help	Monitor hardware status
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**S5 RTC Wake Settings**
Help	Enable system to wake from S5 using RTC alarm
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	Network Stack Configuration
Help	Network Stack Settings.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	NVMe Configuration
Help	NVMe Device Options Settings
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.4.1 Onboard Device



Field Name	**Turbo Mode**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled).

Field Name	**State After G3**
Default Value	[S5 State]
Possible Value	S0 State
Help	Specify what state to go to when power is re-applied after a power failure

Field Name	**DVMT Pre-Allocated**
Default Value	[64M]
Possible Value	64M 32M/F7 36M 40M 44M 48M 52M

Help	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

Field Name	**DVMT Total Gfx Mem**
Default Value	[256M]
Possible Value	128M 256M MAX
Help	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

Field Name	**SATA Mode Selection**
Default Value	[AHCI]
Possible Value	AHCI / Intel RST With Intel Optane System Acceleration
Help	Determines how SATA controller(s) operate.

Field Name	**Wake on LAN Enable**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable integrated LAN to wake the system.

Field Name	**HD Audio**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled. Enabled = HDA will be unconditionally enabled.

Field Name	**ME Update**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Temporary disable Intel CSME for ME FW Update. Enabled = Intel CSME disabled after first time reboot only

Field Name	**DeepSx Power Policies**
Default Value	[Disabled]
Possible Value	Enabled in S4-S5 Disabled
Help	Configure the DeepSx Mode configuration.

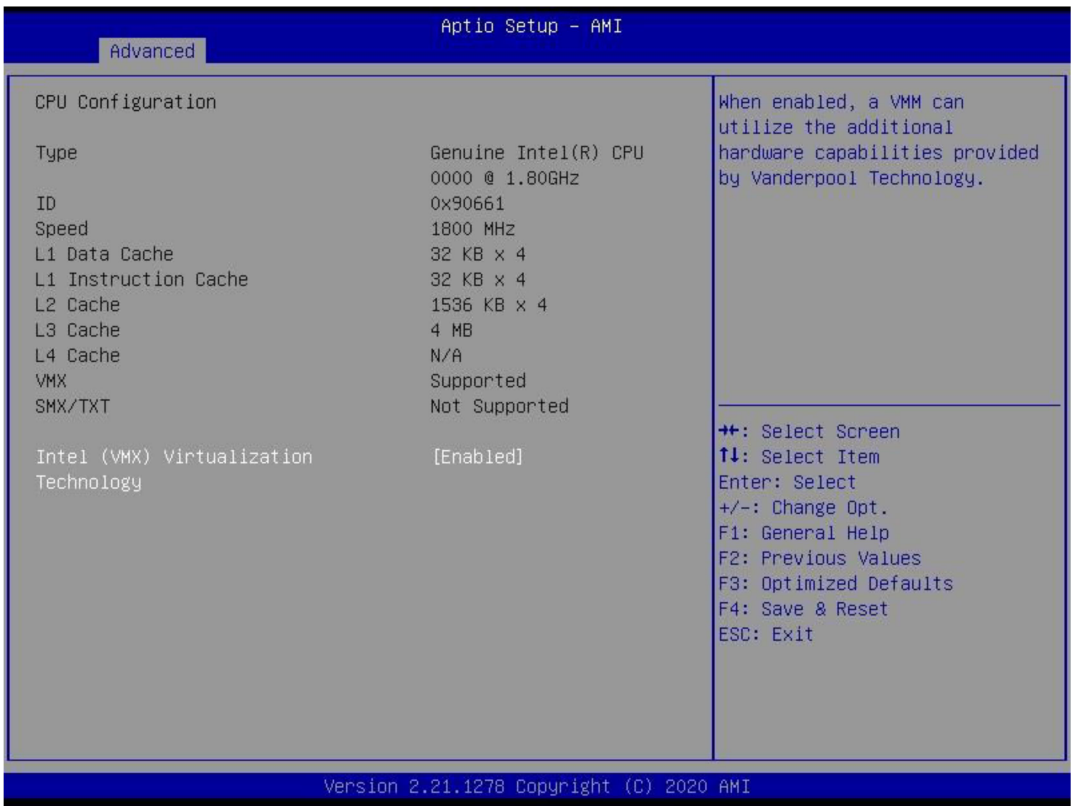
Field Name	**LVDS Configuration Control**
Default Value	[Disabled]
Possible Value	8 bit-VESA Single Channel 8 bit-VESA Dual Channel 6 bit-VESA Single Channel 6 bit-VESA Dual Channel

	8 bit-JEIDA Single Channel 8 bit-JEIDA Dual Channel Disable
Help	Sets LVDS connectivity.

Field Name	**LVDS Resolution**
Default Value	[1024x768 LVDS]
Possible Value	1024x768 LVDS 1366x768 LVDS 1920x1080 LVDS
Help	Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.

Field Name	**CAN BUS**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Enable/Disable CAN Bus

3.4.2 CPU Configuration



Field Name	**Type**
Default Value	[Intel CPU Brand String]
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**ID**
Default Value	Displays CPU Signature

Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Speed**
Default Value	Displays the CPU Speed
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**L1 Data Cache**
Default Value	L1 Data Cache Size
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**L1 Instruction Cache**
Default Value	L1 Instruction Cache Size
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**L2 Cache**
Default Value	L2 Cache Size
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**L3 Cache**
Default Value	L3 Cache Size
Comment	This field is not selectable. There is no help text associated with it.

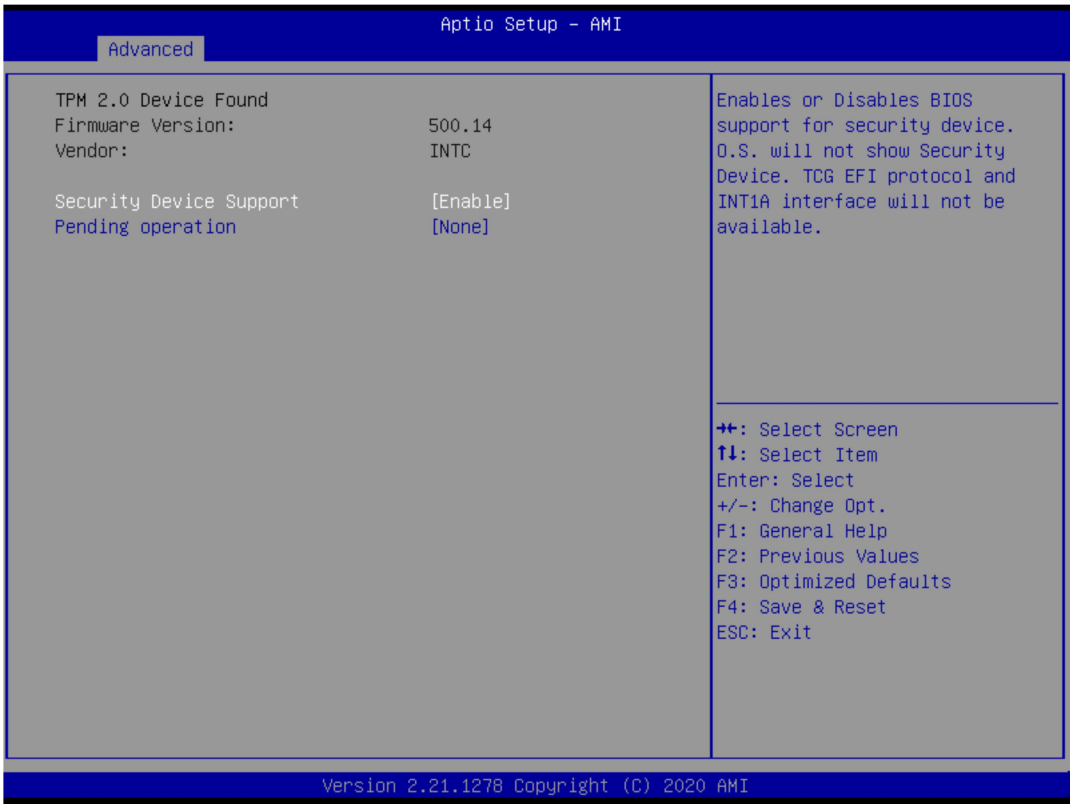
Field Name	**L4 Cache**
Default Value	L4 Cache Size
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**VXM**
Default Value	L3 Cache Size
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**SMX/TXT**
Default Value	SMX/TXT Supported or Not
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Intel (VMX) Virtualization Technology**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

3.4.3 Trusted Computing



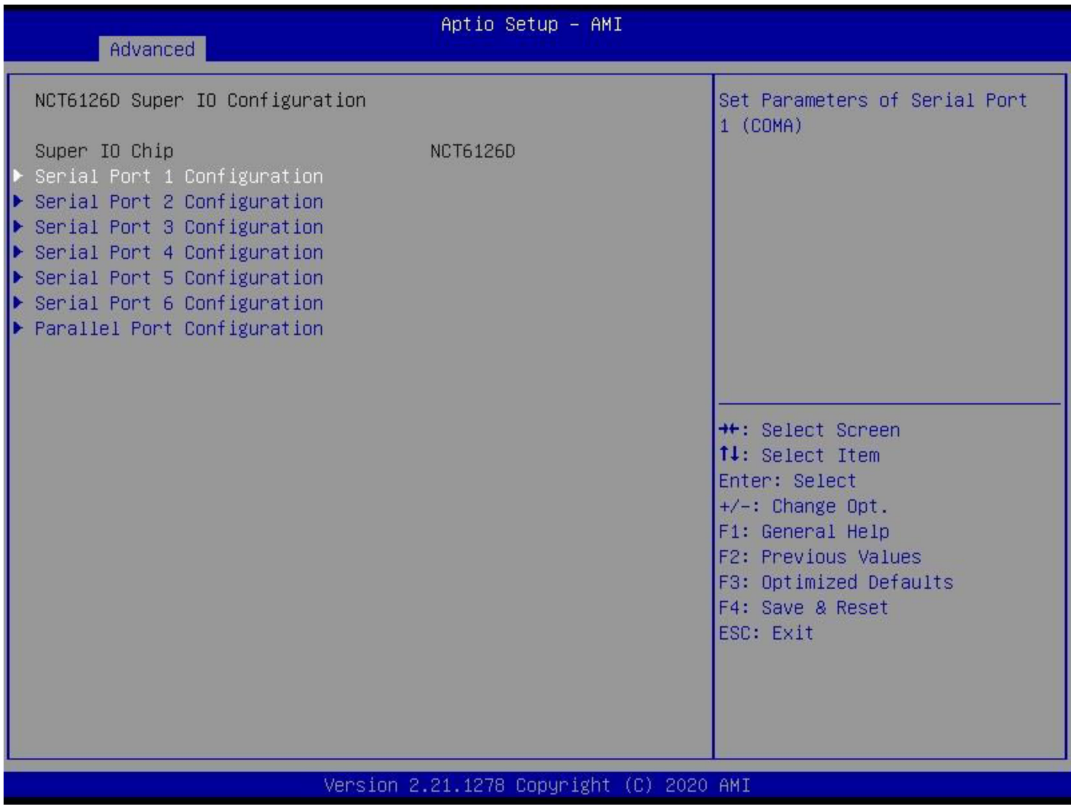
Field Name	**Firmware Version**
Default Value	TPM module version.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Vendor**
Default Value	TPM module vendor name.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Security Device Support**
Default Value	[Enable]
Possible Value	Enable Disable
Help	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

Field Name	**Pending operation**
Default Value	[None]
Possible Value	None TPM Clear
Help	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.

3.4.4 Super IO Configuration



Field Name	**Serial Port 1 Configuration**
Help	Set Parameters of Serial Port 1 (COMA)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 2 Configuration**
Help	Set Parameters of Serial Port 2 (COMB)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 3 Configuration(Gray outin Q470-Entry / H420e skus)**
Help	Set Parameters of Serial Port 3 (COMC)
Comment	Press Enter when selected to go into the associated Sub-Menu.

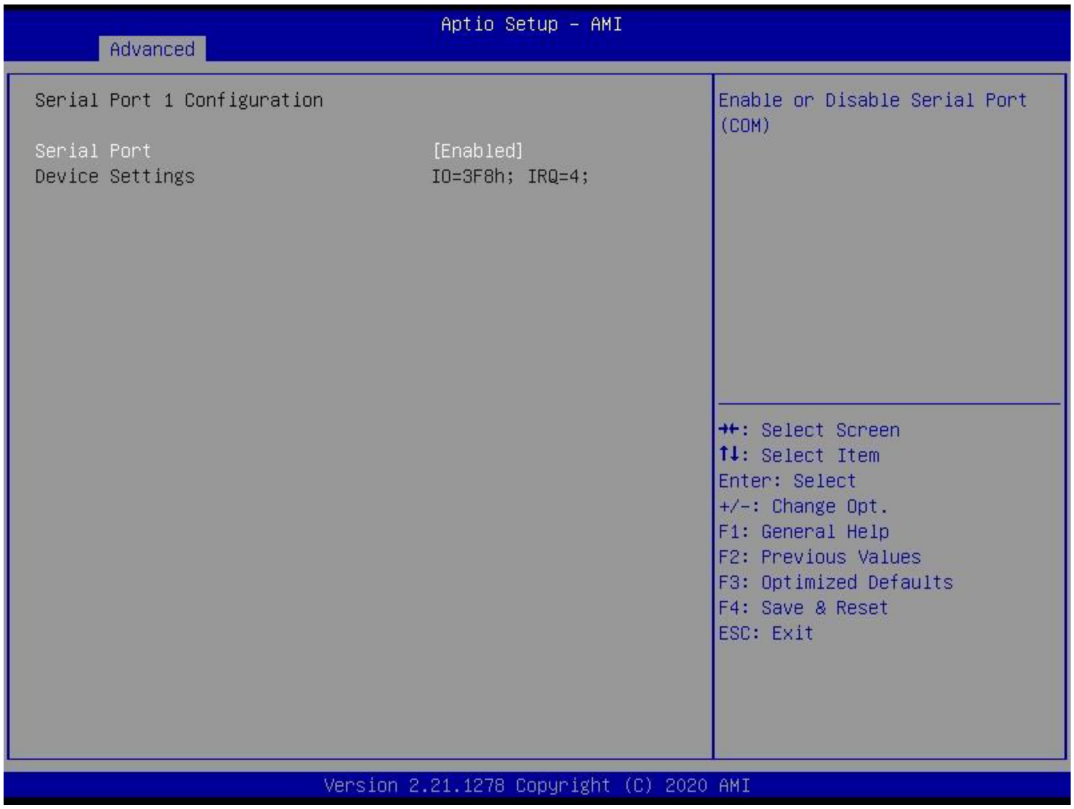
Field Name	**Serial Port 4 Configuration**
Help	Set Parameters of Serial Port 4 (COMD)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 5 Configuration**
Help	Set Parameters of Serial Port 5 (COME)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 6 Configuration**
Help	Set Parameters of Serial Port 6 (COME)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	Parallel Port Configuration
Help	Set Parameters of Parallel Port (LPT/LPTE)
Comment	Press Enter when selected to go into the associated Sub-Menu.

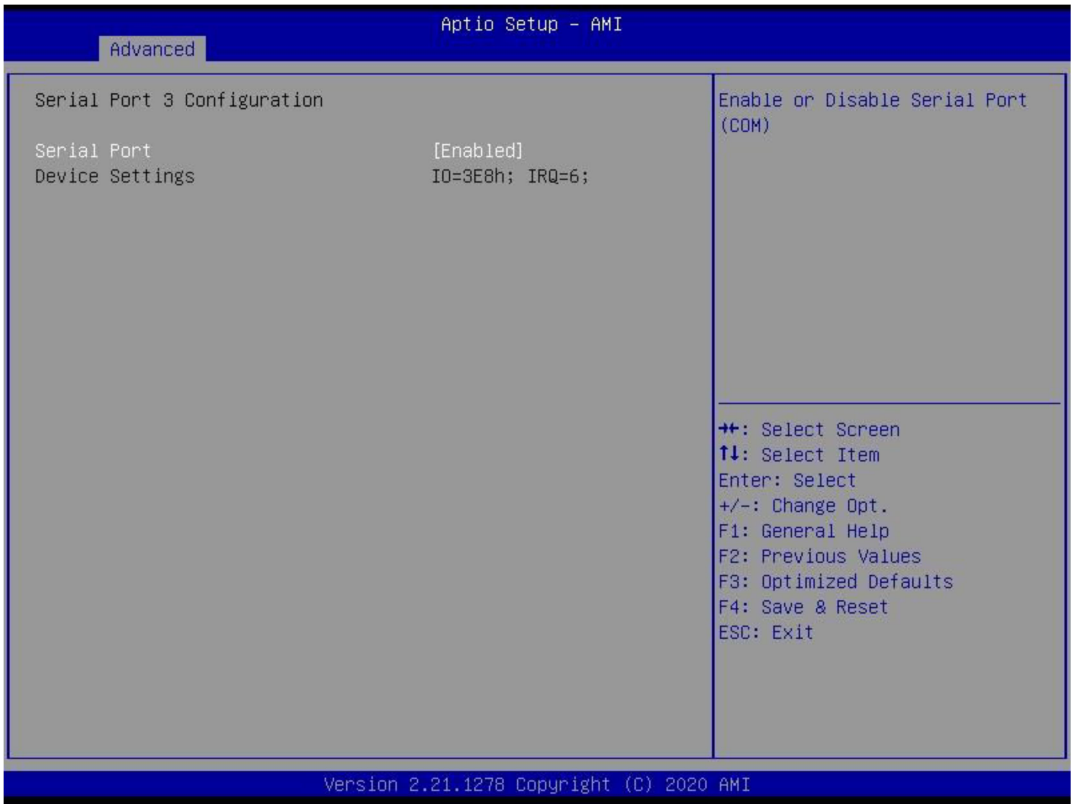
3.4.5 Serial Port 1 Configuration



Field Name	Serial Port
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	Device Settings
Default Value	Device Super IO COM1 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

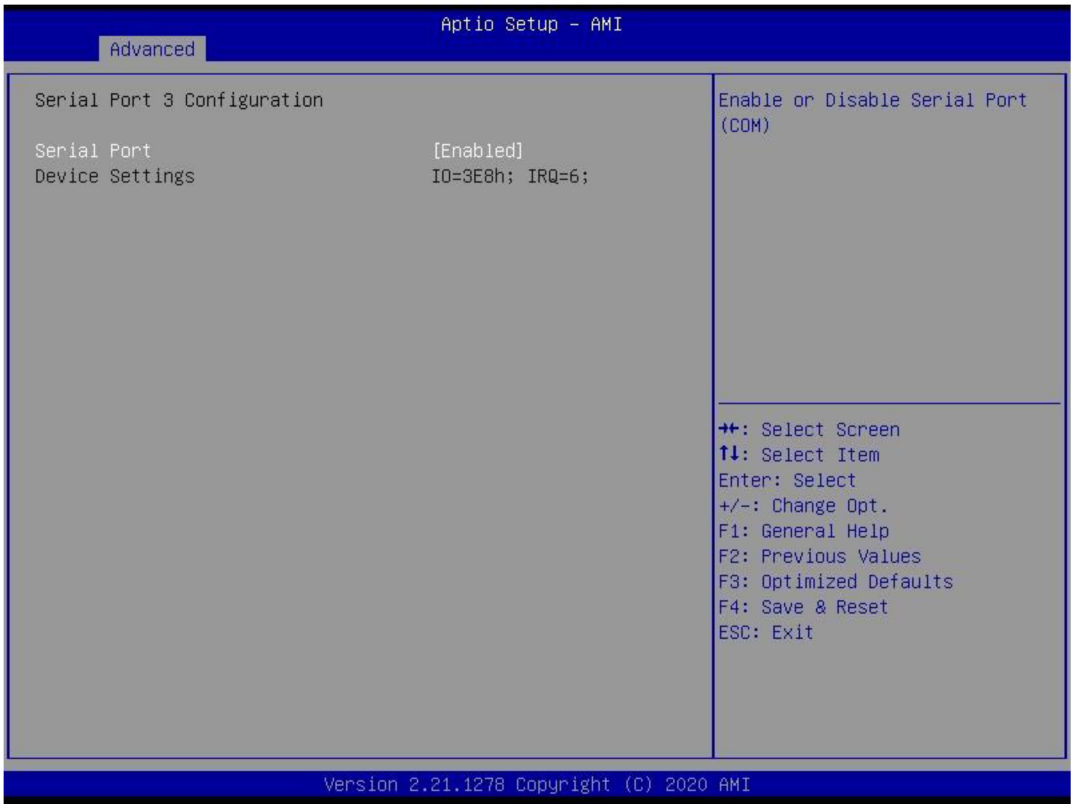
3.4.6 Serial Port 2 Configuration



Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM2 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

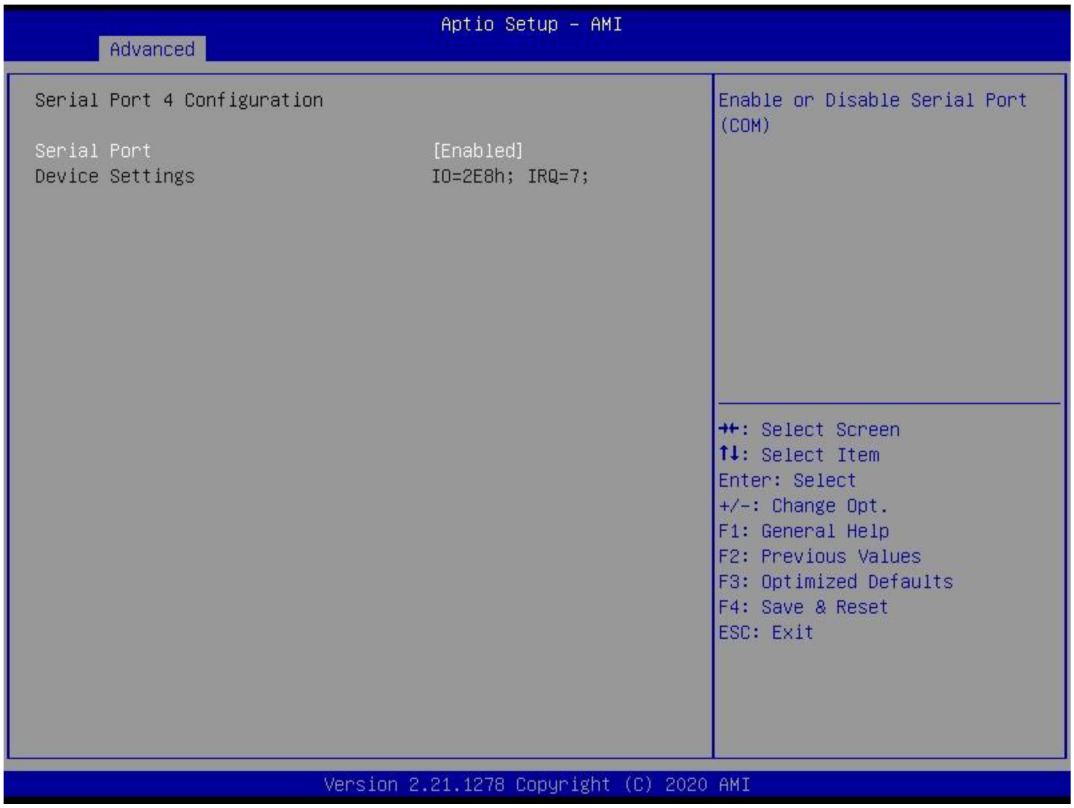
3.4.7 Serial Port 3 Configuration



Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM3 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

3.4.8 Serial Port 4 Configuration

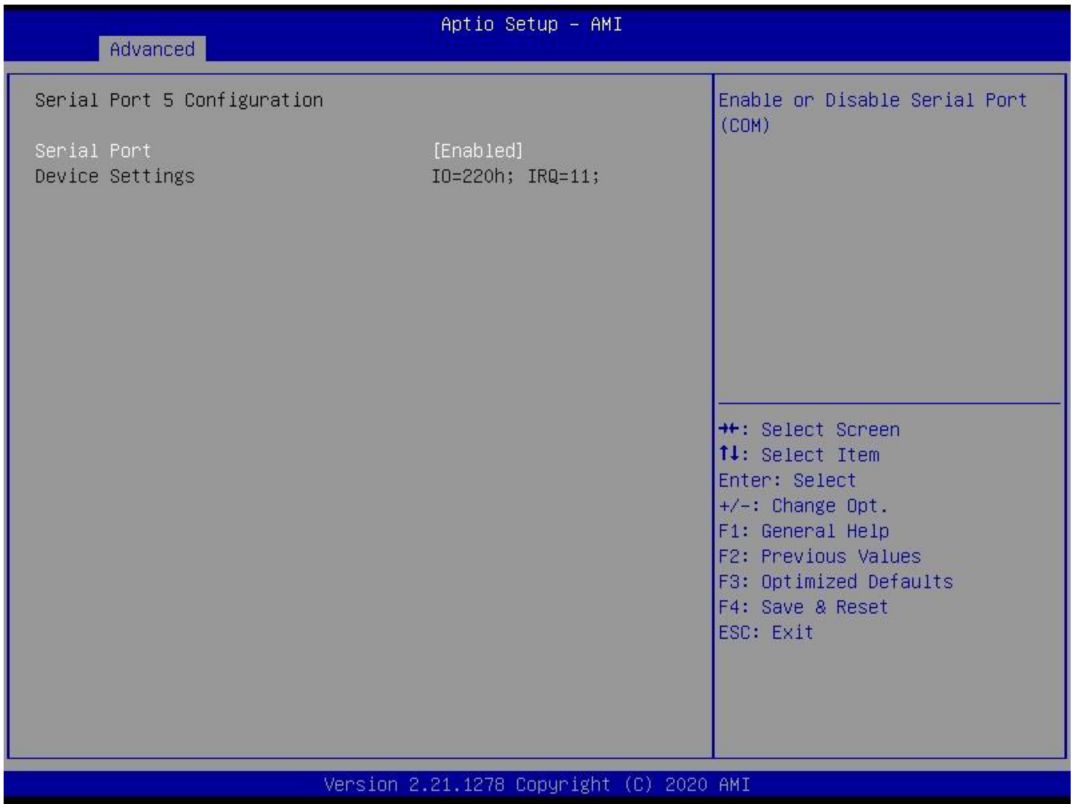


Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM4 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[AUTO]
Possible Value	Auto IO=220h; IRQ=7; IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=228h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

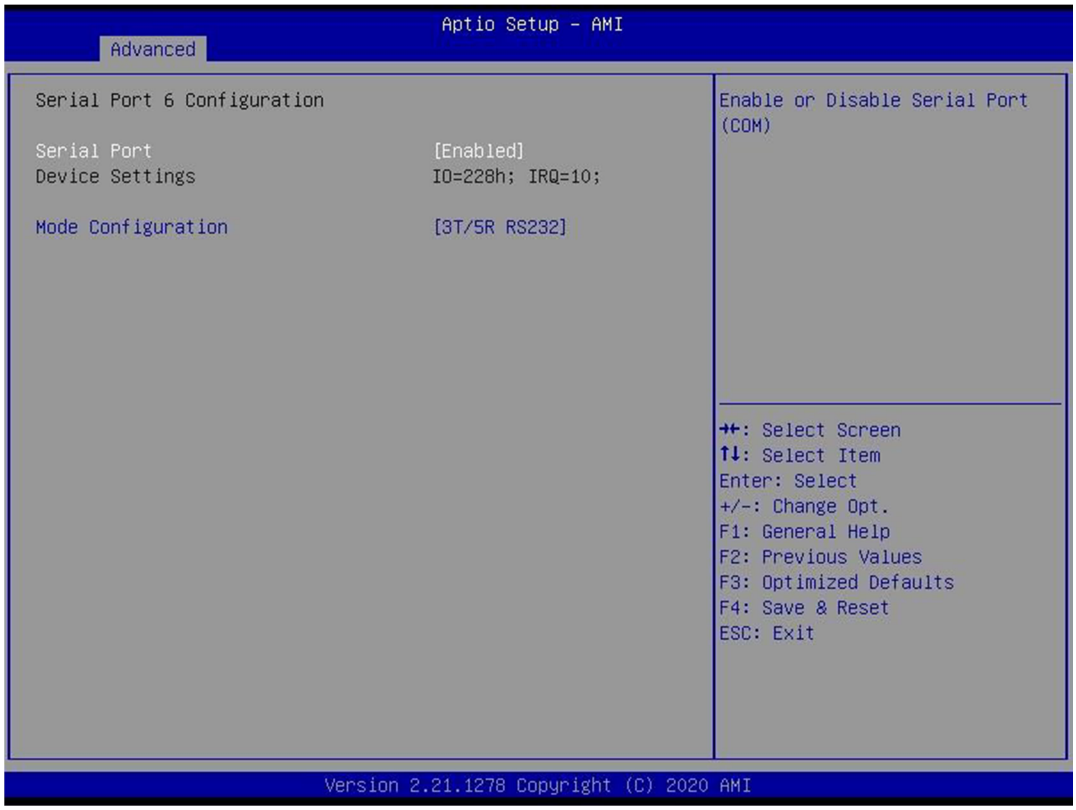
3.4.9 Serial Port 5 Configuration



Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM5 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

3.4.10 Serial Port 6 Configuration

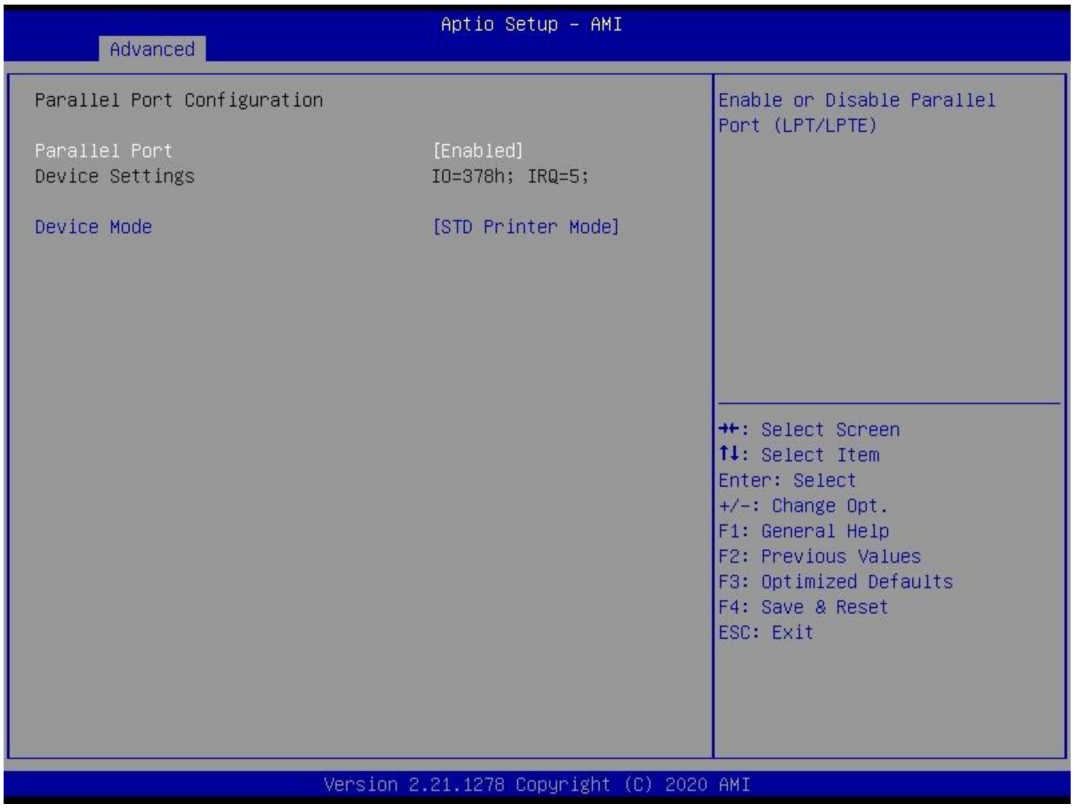


Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM6 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Mode Configuration**
Default Value	[3T/5R RS232]
Possible Value	1T/1R RS422 3T/5R RS232 1T/1R RS485 TX ENABLE Low Active 1T/1R RS422 with termination resistor 1T/1R RS485 with termination resistor TX ENABLE Low Active Disabled
Help	Configure serial port as RS232/RS422/RS485.

3.4.11 Parallet Port Configuration

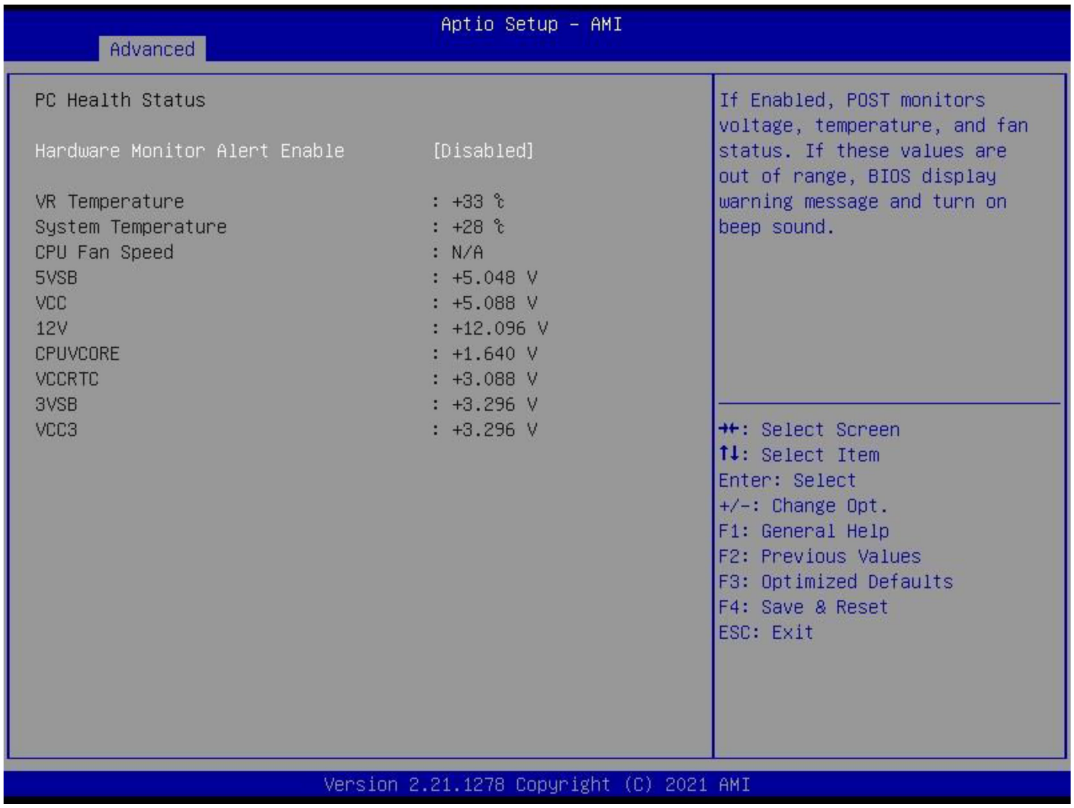


Field Name	**ParallelPort**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable ParallelPort(LPT/LPTE)

Field Name	**Device Settings**
Default Value	Device Super IO COM4 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Mode Configuration**
Default Value	[STD Printer Mode]
Possible Value	SPP Mode EPP-1.9and SPP Mode EPP-1.7 and SPP Mode ECP Mode ECP and EPP 1.9 Mode ECP and EPP 1.7 Mode
Help	Change the Printer Port mode.

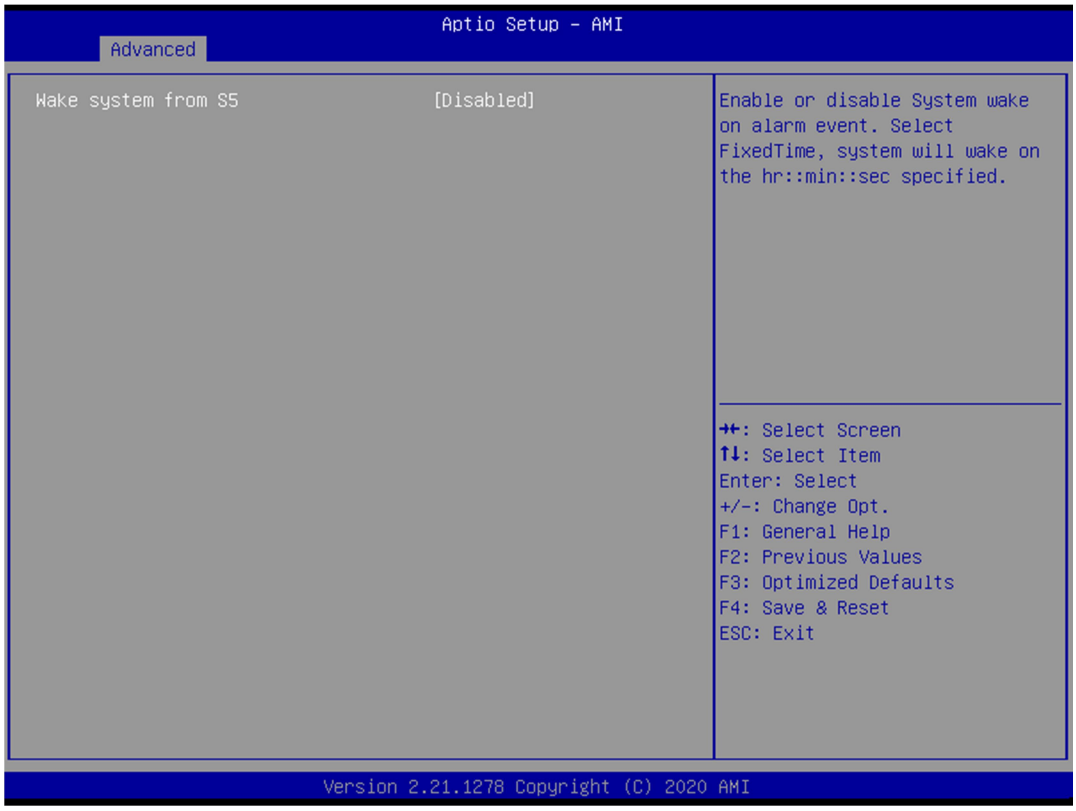
3.4.12 Hardware Monitor



Type	Range
CPU VR Temperature	-20 ~ 120 °C
System Temperature	-20 ~ 120 °C
CPU Fan Speed	There are many kinds of the fan could be installed into the syste so we could only set 0 RPM for the failed fan speed, and there is also no high RPM limitation.
5VSB	4.75V~5.25V (Pin 100 VIN0 => Vref = 1V)
VCC	4.75V~5.25V (Pin 99 VIN1 => Vref = 1V)
12V	11.4V~12.6V (Pin 98 VIN2 => Vref = 1V)
CPUVCORE	0V~2V (Pin 101 CPUCORE)
VCCRTC	2V~3.465V (Pin 74 VBAT)
3VSB	3.135V~3.465V (Pin 97 AVSB)
VCC3	3.135V~3.465V(Pin 12 3VCC)

Field Name	Hardware Monitor Alert Enable
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	If Enabled, POST monitors voltage, temperature, and fan status. If these values are out of range, BIOS display warning message and tur on beep sound.

3.4.13 S5 RTC Wake Settings



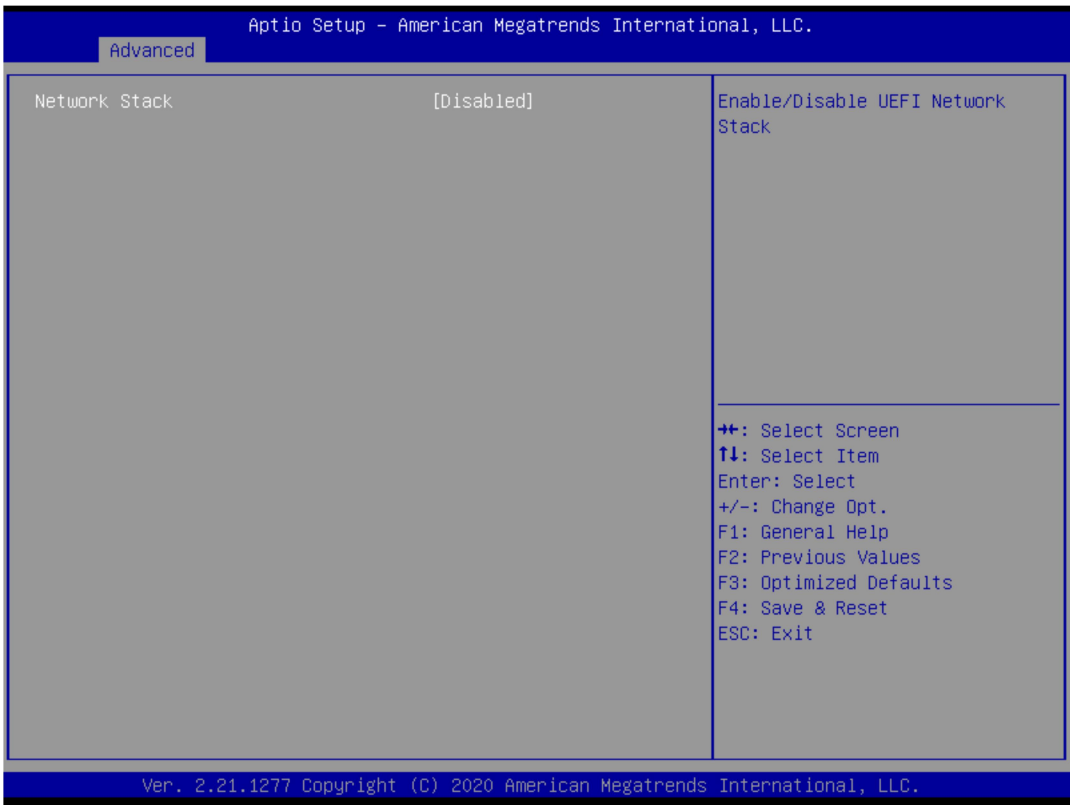
Field Name	**Wake system from S5**
Default Value	[Disabled]
Possible Value	Disabled Fixed Time
Help	Enable or disable System wake on alarm event, Select FixedTime, system will wake on the hr::min::sec specified.

Field Name	**Wake up hour(Show when Wake system from S5 set to Fixed Time)**
Default Value	0
Possible Value	0-23
Help	Select 0-23 For example enter 3 for 3am and 15 for 3pm

Field Name	**Wake up hour(Show when Wake system from S5 set to Fixed Time)**
Default Value	0
Possible Value	0-59
Help	Select 0-59 For Minute

Field Name	**Wake up hour(Show when Wake system from S5 set to Fixed Time)**
Default Value	0
Possible Value	0-59
Help	Select 0-59 For Second

3.4.14 Network Stack Configuration

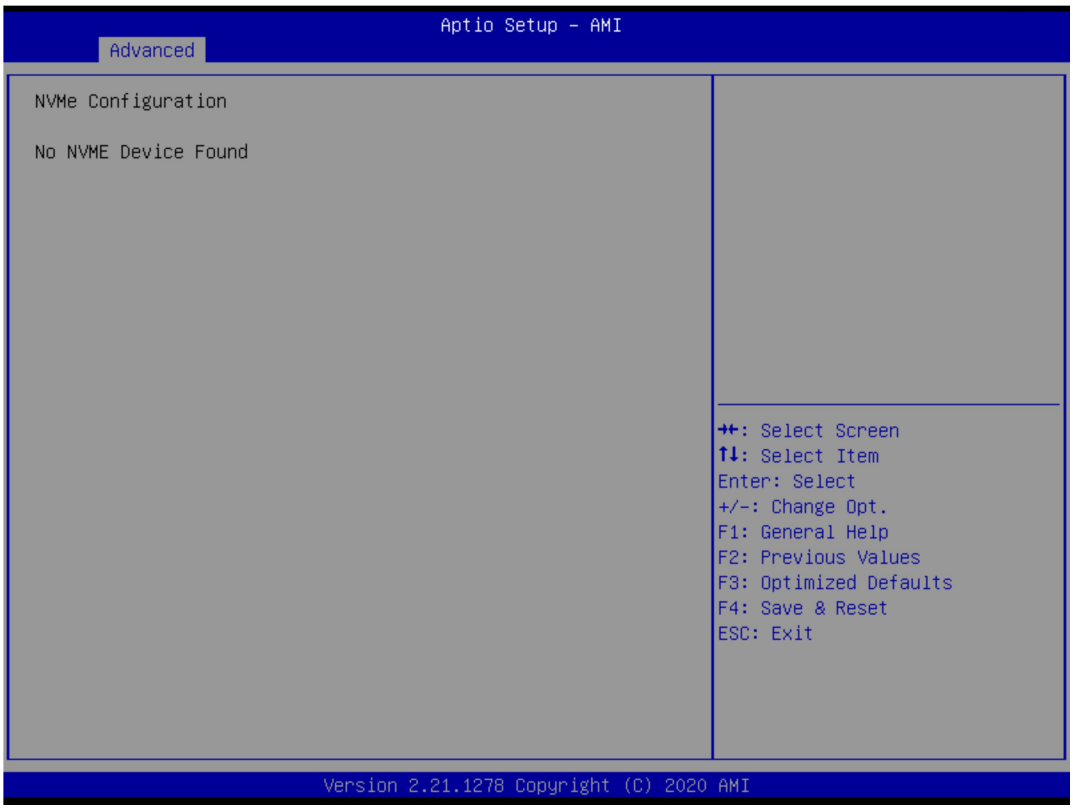


Field Name	**Network stack**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable UEFI Network stack.

Field Name	**Ipv4 PXE Support (Available when Network stack Enabled)**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot support will not be available.

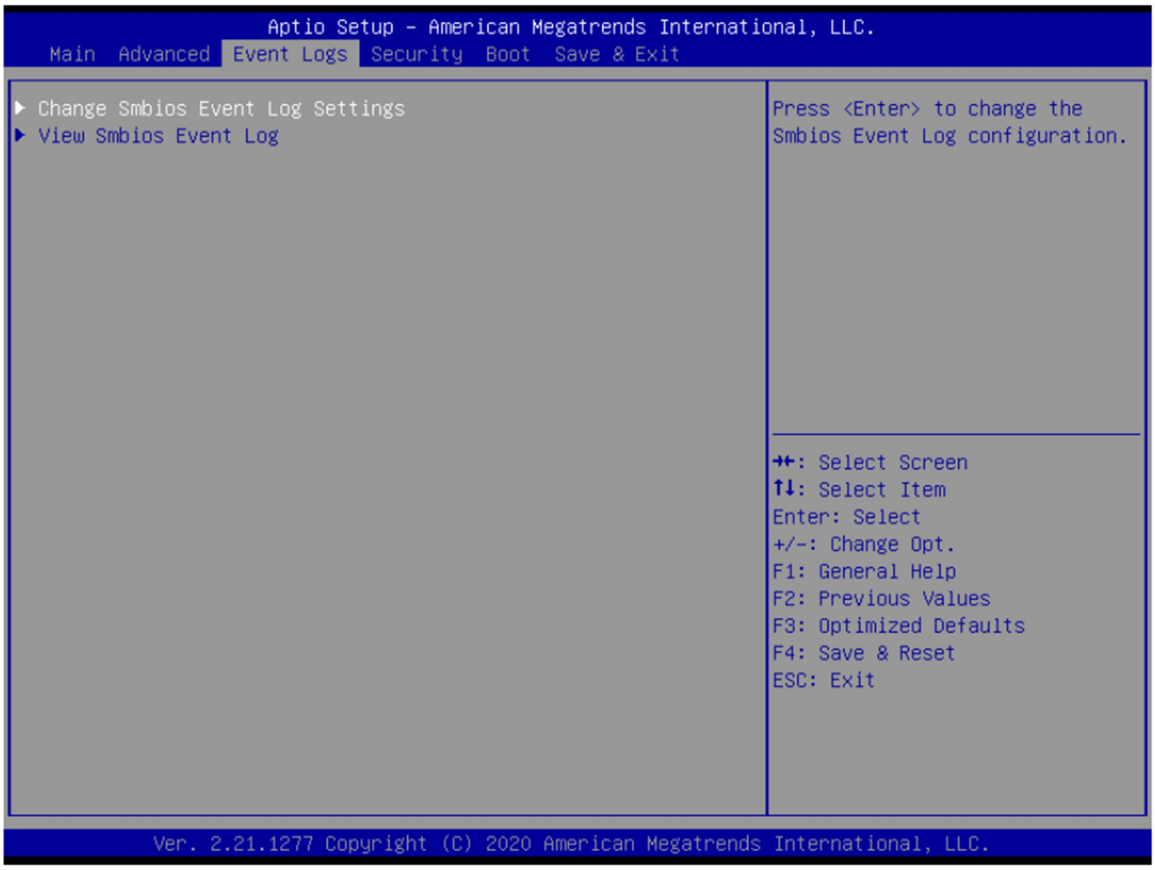
Field Name	**Ipv6 PXE Support (Available when Network stack Enabled)**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable Ipv6 PXE Boot Support. If disabled IPV6 PXE boot support will not be available.

3.4.15 NVMe Configuration



Field Name	**Ipv4 PXE Support (Available when Network stack Enabled)**
Comment	Press Enter when selected to go into the associated Sub-Menu.

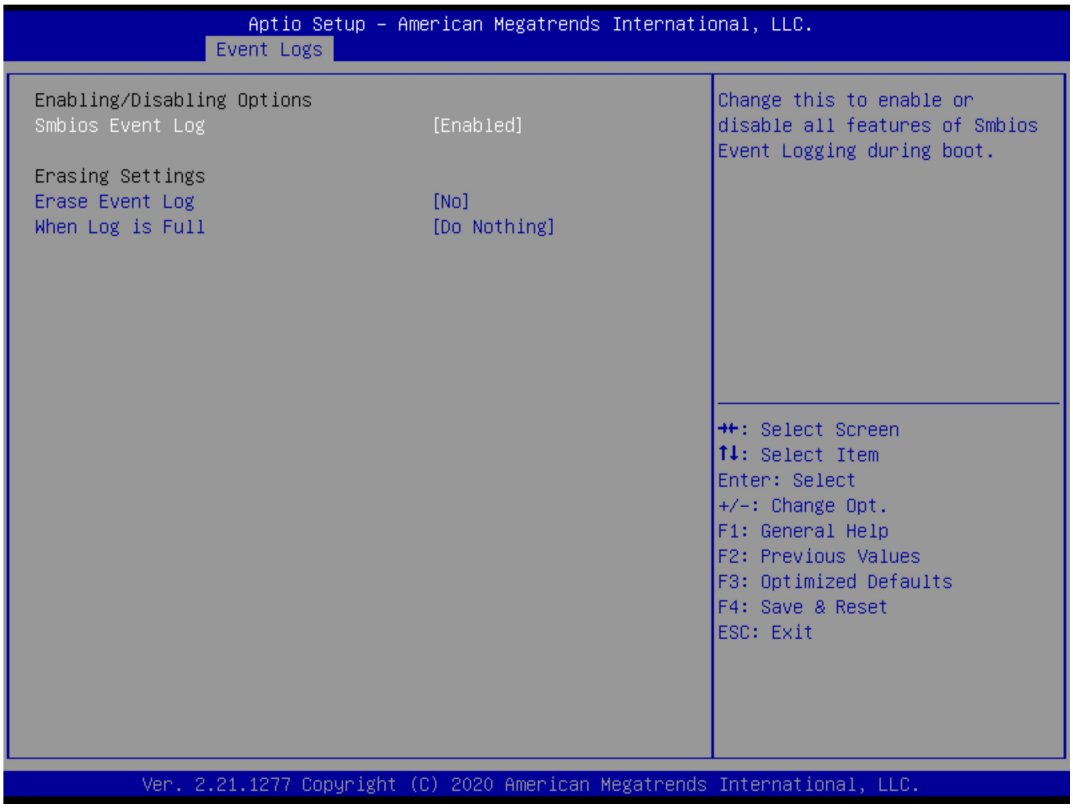
3.5 Event Logs



Field Name	Change Smbios Event Log Settings
Help	Press to change the Smbios Event Log configuration.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	View Smbios Event Log
Help	Press to view the Smbios Event Log records.
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.5.1 Change Smbios Event Log Settings

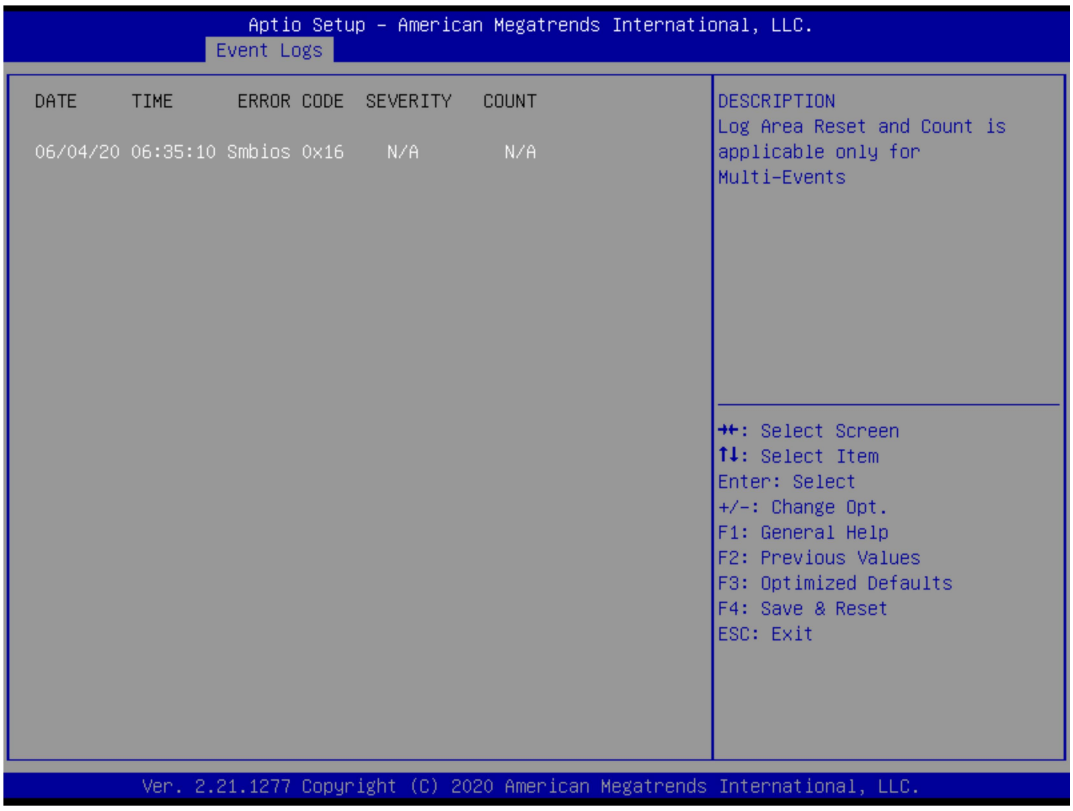


Field Name	**Smbios Event Log**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Change this to enable or disable all features of Smbios Event Logging during boot.

Field Name	**Erase Event Log**
Default Value	[No]
Possible Value	No Yes, Next reset Yes, Every reset
Help	Choose options for erasing Smbios Event Log. Erasing is done prior to any logging activation during reset.

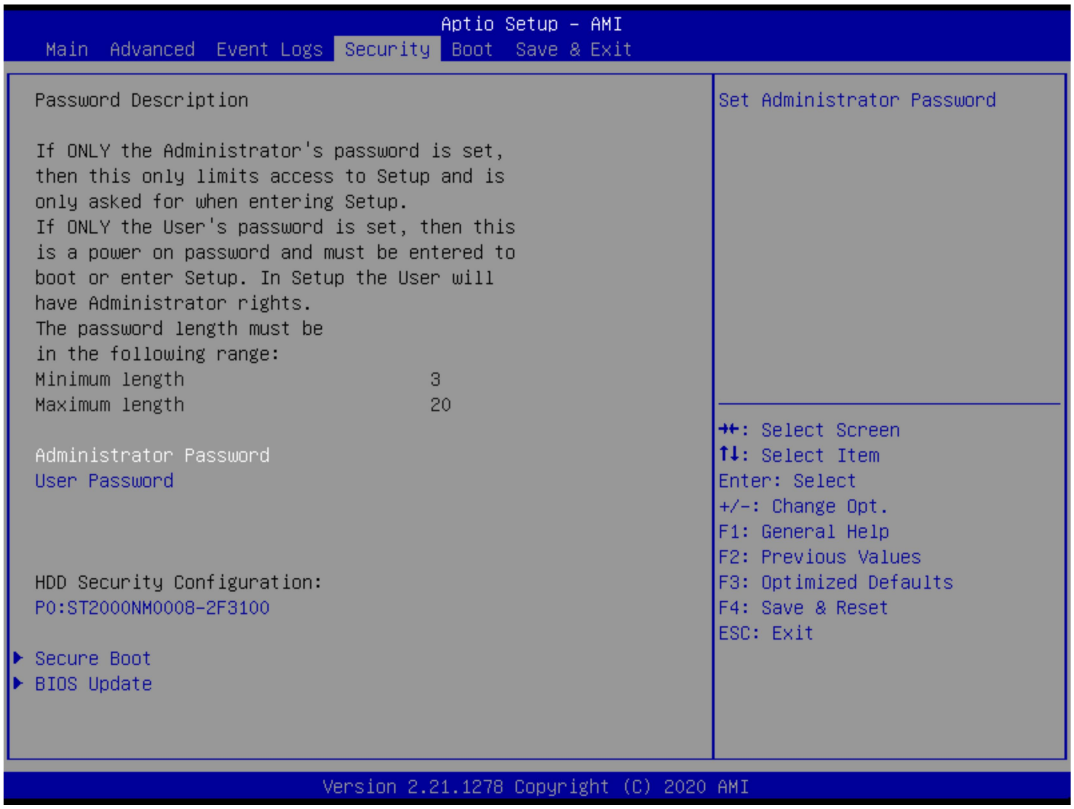
Field Name	**When Log is Full**
Default Value	[Do Nothing]
Possible Value	Do Nothing Erase Immediately
Help	Choose options for reactions to a full Smbios Event Log

3.5.2 View Smbios Event Log



Field Name	**DATE / TIME / ERROR CODE / SEVERITY / COUNT**
Default Value	MM/DD/YY HH:MM:SS Smbios 0x16 N/A N/A
Possible Value	By Events.
Help	By Events.

3.6 Security Page



Field Name	Administrator Password
Help	Set Administrator Password

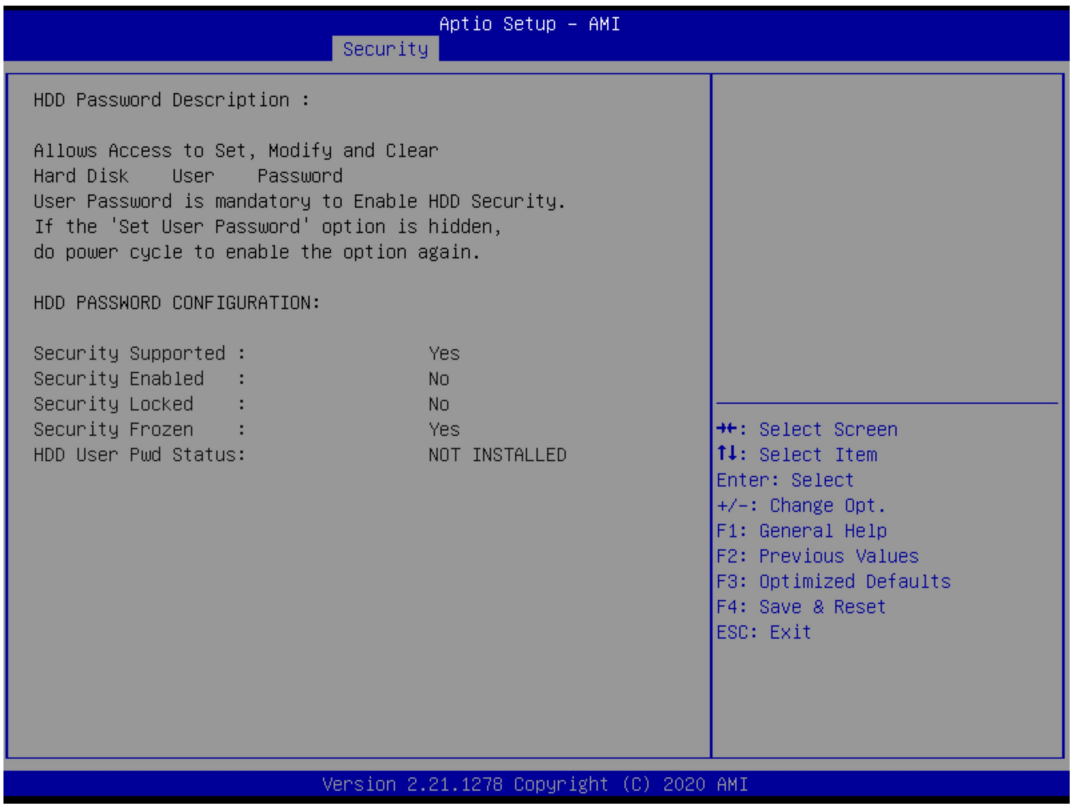
Field Name	User Password
Help	Set User Password.

Field Name	Secure Boot
Help	Set User Password.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	BIOS Update
Help	BIOS Update support
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	HDD Security drive
Help	HDD Security Configuration for selected drive
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.6.1 HDD Security



Field Name	Set User Password
Help	Set HDD User Password. *** Advisable to Power Cycle System after Setting Hard Disk Passwords ***.Discard or Save changes option in setup does not have any impact on HDD when password is set or removed. If the 'Set HDD User Password' option is hidden, do power cycle to enable the option again

3.6.2 Secure Boot

Field Name	**Secure Boot**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Secure Boot feature is Active if Secure Boot is Enabled,Platform Key(PK) is enrolled and the System is in User mode.The mode change requires platform reset

Field Name	**Secure Boot Mode**
Default Value	[Standard]
Possible Value	Standard Custom
Help	Secure Boot mode options:Standard or Custom.In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication

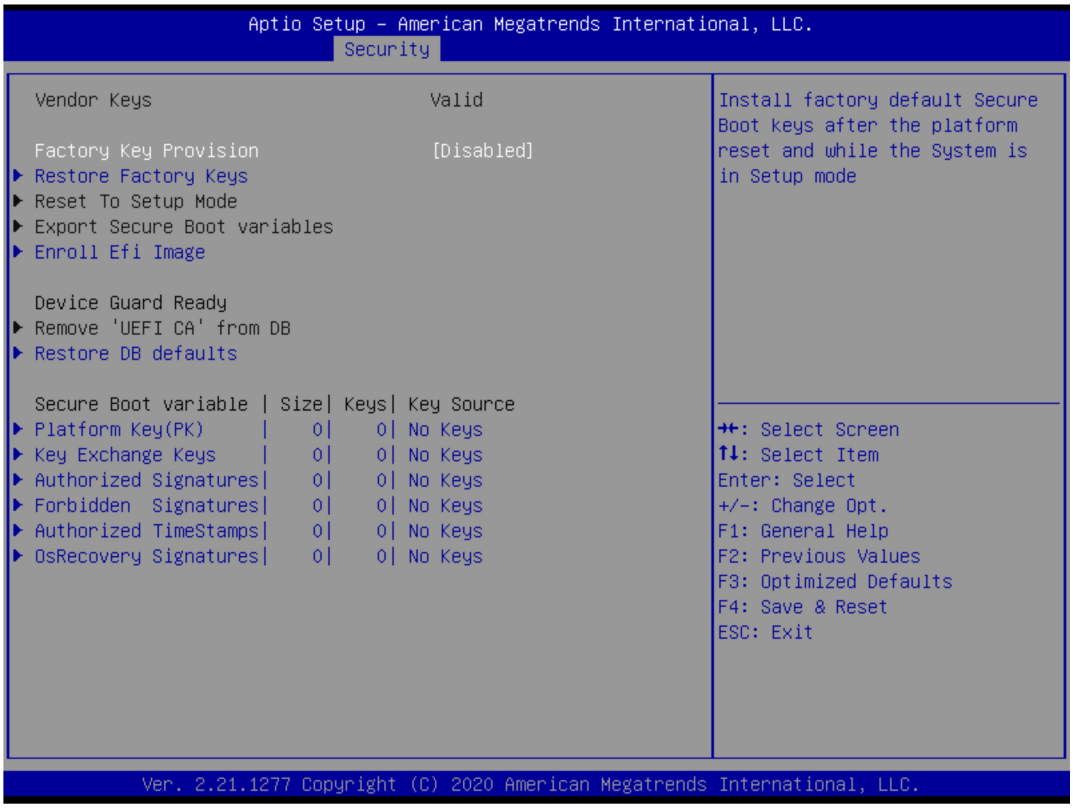
Field Name	**Restore Factory Keys**
Help	Force System to User Mode. Install factory default Secure Boot key databases

Field Name	**Reset to Setup Mode**
Help	Delete all Secure Boot key databases from NVRAM

Field Name	**Key Management**

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

3.6.3 Key Management(Secure Boot Mode set to Custom)



Field Name	**Factory Key Provision**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode

Field Name	**Restore Factory Keys**
Help	Force System to User Mode. Install factory default Secure Boot key databases

Field Name	**Reset to Setup Mode**
Help	Delete all Secure Boot key databases from NVRAM

Field Name	**Export Secure Boot variables**
Help	Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device

Field Name	**Enroll Efi Image**
Help	Allow the image to run in Secure Boot mode. Enroll SHA256 Hash

	certificate of a PE image into Authorized Signature Database (db)

Field Name	**Remove 'UEFI CA' from DB**
Help	Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db)

Field Name	**Restore DB defaults**
Help	Restore DB variable to factory defaults

Field Name	**Platform Key (PK)**
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
Comment	Press Enter when selected to go into the associated Sub-Menu "Key Management".

Field Name	**Key Exchange Keys**
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Authorized Signatures**
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source:

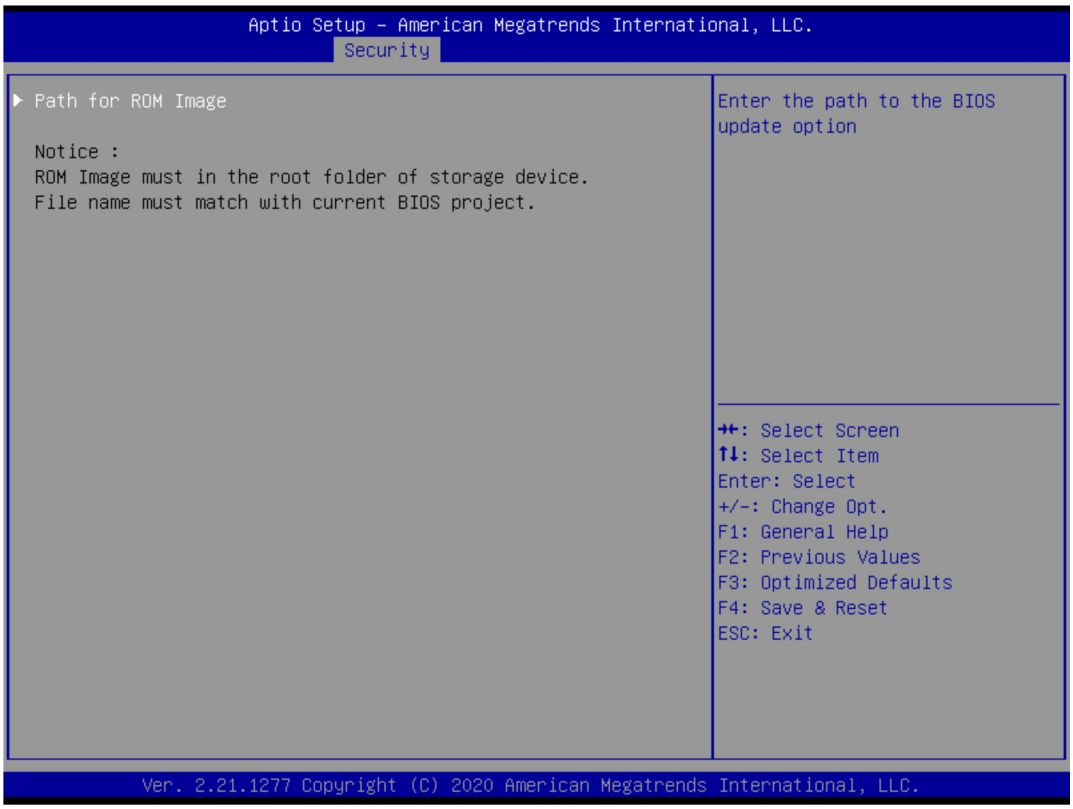
	Factory,External,Mixed
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Forbidden Signatures**
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Authorized TimeStamps**
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
Comment	Press Enter when selected to go into the associated Sub-Menu.

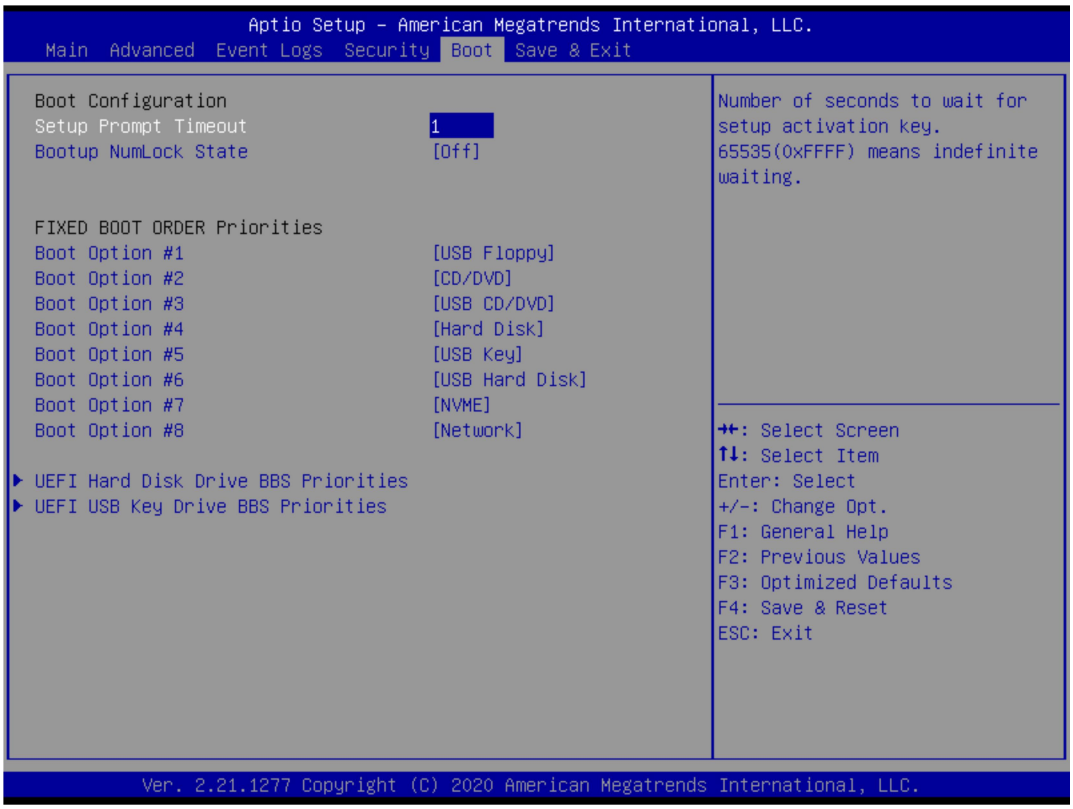
Field Name	**OsRecovery Signatures**
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory,External,Mixed
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.6.4 BIOS Update



Field Name	**Path for ROM Image**
Help	Enter the path to the Secure flash option

3.7 Boot Page



Field Name	**Setup Prompt Timeout**
Default Value	1
Possible Value	1~65535
Comment	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

Field Name	**Bootup NumLock State**
Default Value	[Off]
Possible Value	On Off
Comment	Select the keyboard NumLock state

Field Name	**Boot Option #1**
Default Value	[USB Floppy]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk , NVME, Network, Disabled
Comment	Sets the system boot order

Field Name	**Boot Option #2**
Default Value	[USB CD/DVD]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk , NVME, Network, Disabled
Comment	Sets the system boot order

Field Name	Boot Option #3
Default Value	[Hard Disk]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk , NVME, Network, Disabled
Comment	Sets the system boot order

Field Name	Boot Option #4
Default Value	[USB Key]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk , NVME, Network, Disabled
Comment	Sets the system boot order

Field Name	Boot Option #5
Default Value	[USB Hard Disk]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk , NVME, Network, Disabled
Comment	Sets the system boot order

Field Name	Boot Option #6
Default Value	[NVME]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk , NVME, Network, Disabled
Comment	Sets the system boot order

Field Name	Boot Option #7
Default Value	[Network]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk , NVME, Network, Disabled
Comment	Sets the system boot order

Field Name	Boot Option #8
Default Value	[Network]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk , NVME, Network, Disabled
Comment	Sets the system boot order

Field Name	(UEFI) USB Floppy Drive BBS Priorities
Help	Specifies the Boot Device Priority sequence from available USB Floppy Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	(UEFI) USB CDROM/DVD ROM Drive BBS Priorities
Help	Specifies the Boot Device Priority sequence from available USB CDROM/DVD Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	(UEFI) Hard Disk Drive BBS Priorities
Help	Specifies the Boot Device Priority sequence from available Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

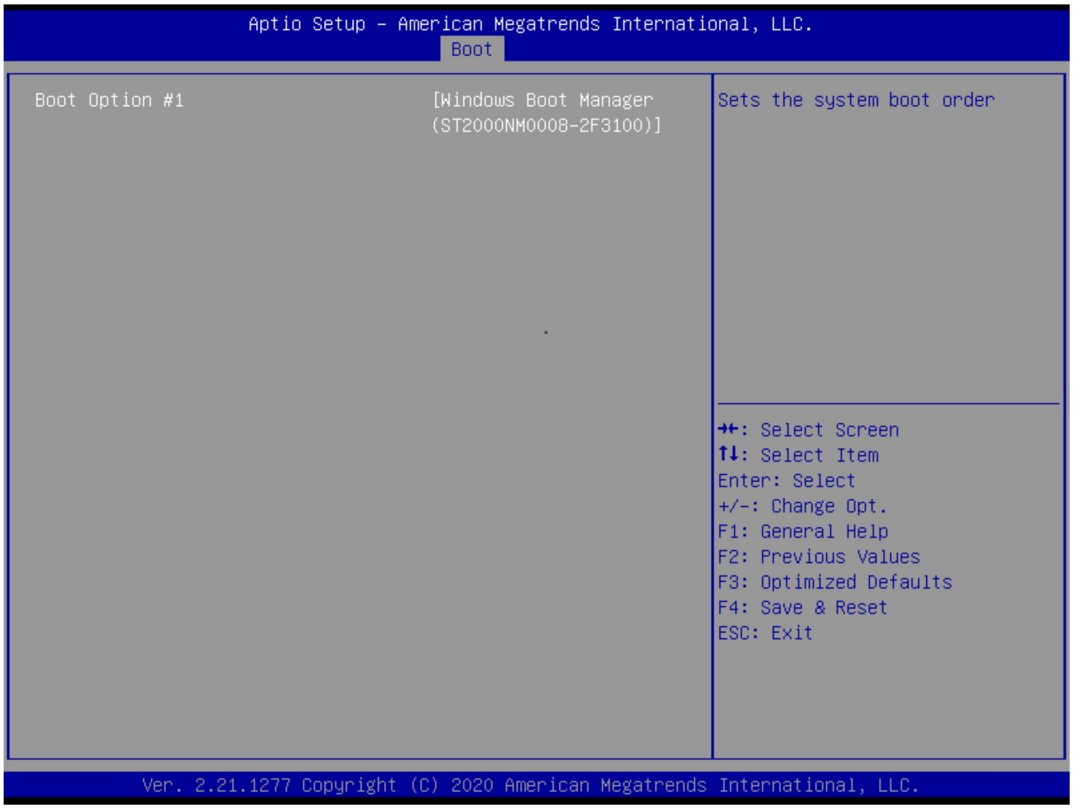
Field Name	(UEFI) USB KEY Drive BBS Priorities
Help	Specifies the Boot Device Priority sequence from available Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	(UEFI) USB Hard Disk Drive BBS Priorities
Help	Specifies the Boot Device Priority sequence from available Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	(UEFI) NVME Drive BBS Priorities
Help	Specifies the Boot Device Priority sequence from available Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

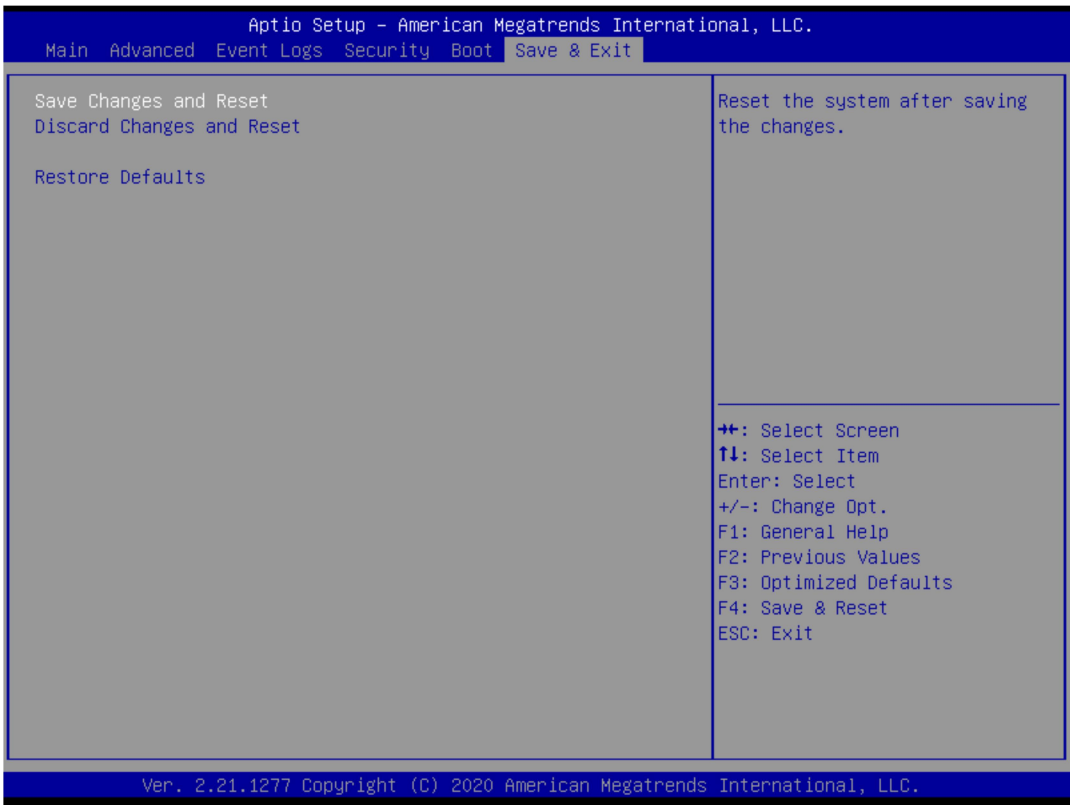
Field Name	(UEFI) NETWORK Drive BBS Priorities
Help	Specifies the Boot Device Priority sequence from available Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.7.1 (List Boot Device Type) Drive BBS Priorities



Field Name	**Boot Option #1**
Default Value	
Possible Value	Boot Device Name 1 of this type, Disable
Help	Sets the system boot order

3.8 Save & Exit Page



Field Name	Save Changes and Reset
Help	Reset the system after saving the changes.

Field Name	Discard Changes and Rest
Help	Reset system setup without saving any changes.

Field Name	Restore Defaults
Help	Restore/Load Default values for all the setup options.