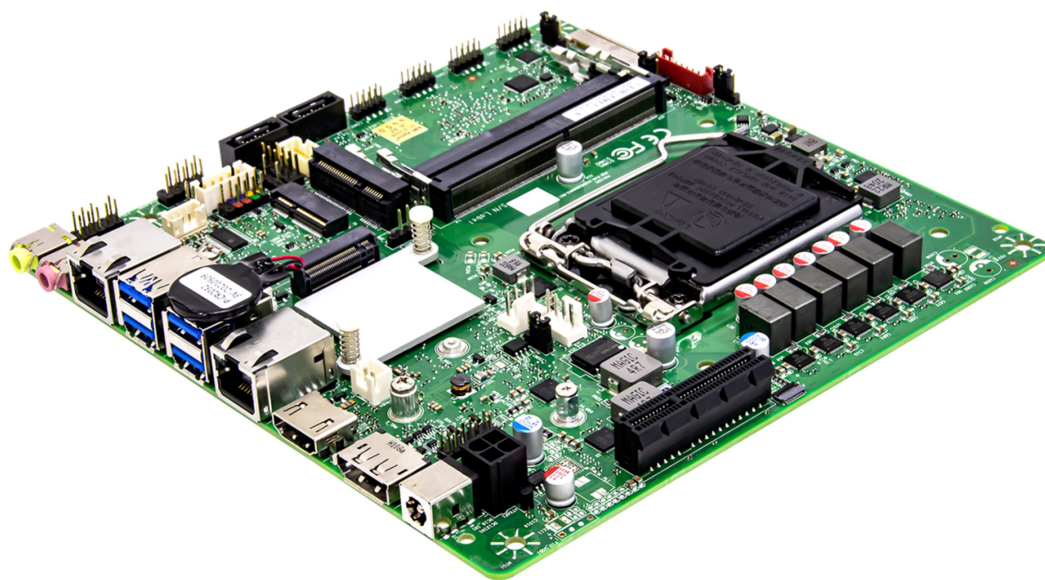


# **INS8366A**

*Intel® Comet Lake-S 10th Processor with  
H410 Chipset Mini-ITX*



## 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

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- 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 (yyyy/mm/dd)	Changes
V1.0	2022/09/01	First release

**Packing List**

Item	Description	Q'ty
1	INS8366A	1
2	CD(Driver + User's manual)	1
3	SATA Cable	1
4	SATA Power Cable	1



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



## Table of Contents

<b>Safety Information .....</b>	<b>1</b>
<i>Electrical safety .....</i>	<i>1</i>
<i>Operation safety .....</i>	<i>1</i>
<i>Statement .....</i>	<i>1</i>
<b>RoHS Compliance .....</b>	<b>2</b>
<b>Revision History .....</b>	<b>3</b>
<b>Packing List .....</b>	<b>3</b>
<b>Chapter 1 : Product Introduction .....</b>	<b>6</b>
1.1 Specifications .....	6
1.2 Block Diagram .....	7
1.3 Board Placement .....	8
<b>Chapter 2 : Jumpers and Connectors Location .....</b>	<b>8</b>
2.1 Jumpers And Connectors List .....	8
2.2 Jumper Settings .....	9
<b>Chapter 3: AMI BIOS UTILITY .....</b>	<b>14</b>
3.1 Staring .....	14
3.2 Navigation Keys .....	14
3.3 Main Page .....	15
3.4 Advance Page .....	17
3.4.1 Onboard Device .....	19
3.4.2 CPU Configuration .....	22
3.4.3 Trusted Computing .....	24
3.4.4 Super IO Configuration .....	25
3.4.5 Serial Port 1 Configuration .....	26
3.4.6 Serial Port 2 Configuration .....	27
3.4.7 Serial Port 3 Configuration .....	28
3.4.8 Serial Port 4 Configuration .....	29
3.4.9 Hardware Monitor .....	30
3.4.10 S5 RTC Wake Settings .....	31
3.4.11 Network Stack Configuration .....	32
3.4.12 NVMe Configuration .....	33
3.5 Event Logs .....	34
3.5.1 Change Smbios Event Log Settings .....	35

3.5.2 View Smbios Event Log .....	36
3.6 Security Page .....	37
3.6.1 HDD Security .....	38
3.6.2 Secure Boot .....	39
3.6.3 Key Management(Secure Boot Mode set to Custom) .....	40
3.6.4 BIOS Update .....	43
3.7 Boot Page .....	44
3.7.1 (List Boot Device Type) Drive BBS Priorities .....	47
3.8 Save & Exit Page .....	48

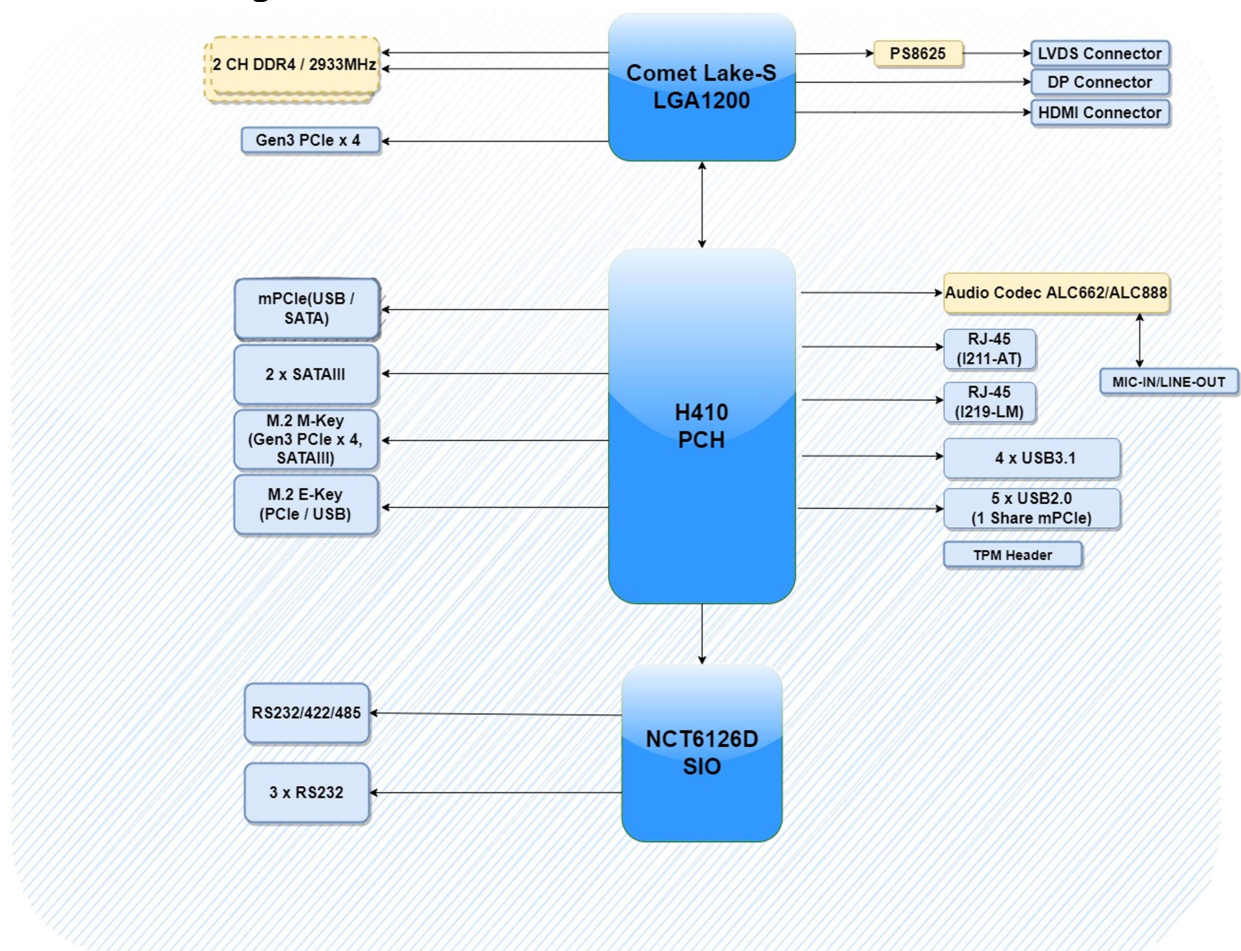
## Chapter 1 : Product Introduction

### 1.1 Specifications

Processor & System	
CPU	10th Gen Intel® Comet Lake LGA1200 Socket Processor / Core i9/i7/i5/i3 Processor, TDP 35/65W
Memory type	DDR4 2933 MHz / 2 x 260-pin SO-DIMM / Max. 64GB (Non-ECC) Horizontal
Chipset	Intel® H410
I/O Chipset	Nuvoton NCT6126D
TPM	TPM Header
H / W Monitor	Temperature Monitor, Voltage Monitor, Fan Monitor
Watchdog	1-255 sec. or 1-255 min. software programmable and can be generate system reset
Smart Fan Control	CPU FAN / System FAN
BIOS	AMI BIOS
Expansion	
M.2	1 x M.2 2242 / 2280 M key (Gen3 PCIe X4, SATAIII) 1 x M.2 2230 E key (PCIe, USB 2.0)
Mini PCIe	1 x Mini PCIe Full size (SATA/ USB)
PCIe Slot	1 x PCIe3.0 X4 slot
Display	
Chipset	Intel® HD Graphics
HDMI	Up to 4K (4096 x 2160) @30 Hz
Display Port	Up to 4K (4096 x 2304) @60 Hz
LVDS	Up to 1920 x 1200 @60 Hz
Ethernet	
Chipset	Intel® I219-LM Giga LAN + Intel® I211-AT Giga LAN
Audio	
Codec	Realtek® ALC662/ALC888
Front I/O	
USB3.1	4
Display port	1 x DP 1.2 ; 1 x HDMI 1.4
LAN	2
Audio	1 x Mic-in ; 1 x Line-out
Internal I/O	
SATAIII	2
SATA Power	1(Header)
USB	5 x USB2.0(1 x USB share mPCIe)
Display I/O	1 x LVDS 1 x Backlight connector
Audio	1 x Stereo Speaker Header
GPIO	1 x MiAPI Header (10-bit)
Serial	4 (1 x Support RS-232/422/485)
Fan	1 x 4-pin CPU Fan Connector / 1 x 4-pin System Fan Header
Power	1xAT/ATX Mode Select Jumper / 1 x 4-pin ATX Power Connector
Others	1 x Front Audio Header (Mic-in / Line-out), 1 x CMOS Jumper, 1 x panel power select header, 1 x SATA power,

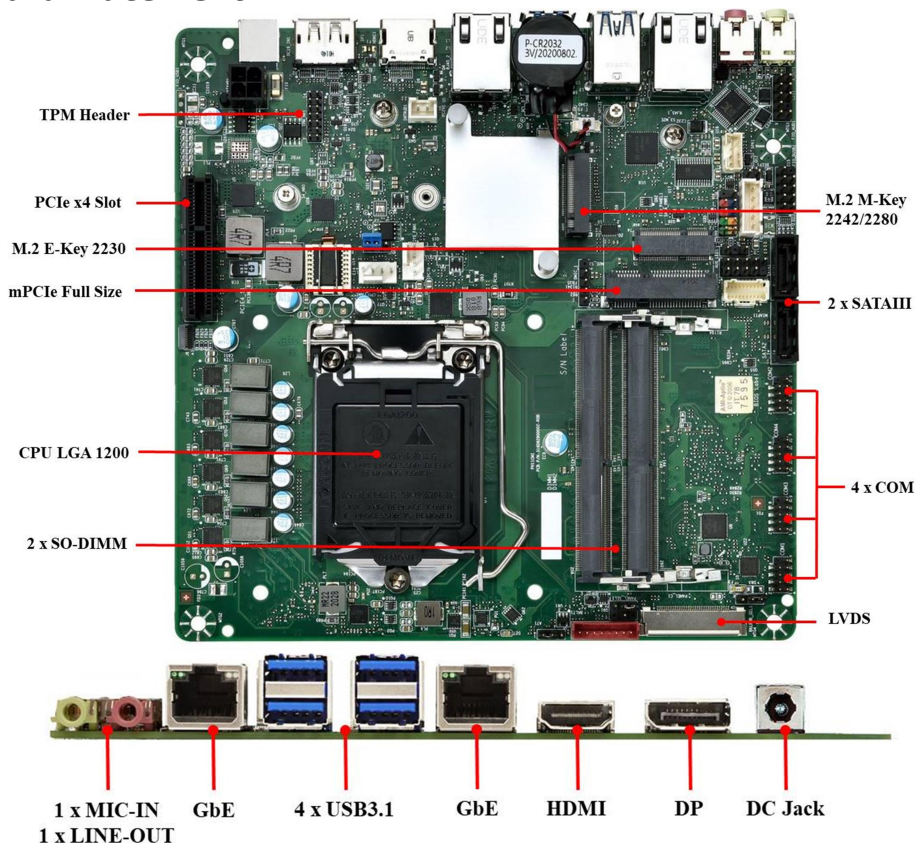
	1x buzzer header, 1x Digital MIC
<b>Mechanical and Environment</b>	
Form Factor	Mini ITX
Power Type	12V DC-IN(Optional : 19V)
Dimension	170mm x 170mm
Operating Temperature	ET : -20°C ~ 70°C UT : -40°C ~ 85°C(Option)
Storage Temperature	-40°C ~ 85°C
Relative humidity	10% to 95%, non-condensing
<b>Standard Compliance</b>	
Standard Compliance	CE/FCC
<b>OS</b>	
OS Support	Windows® 10 64-bit Linux(Support by request)

## 1.2 Block Diagram





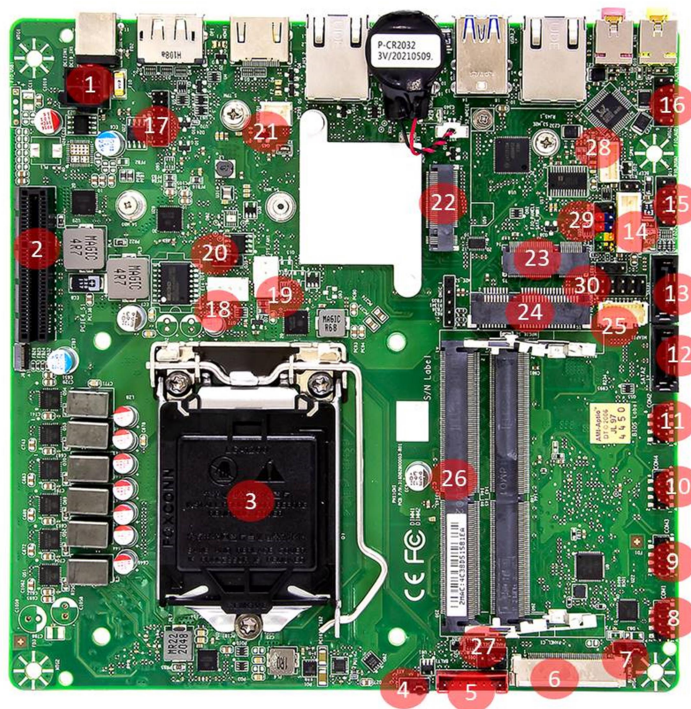
### 1.3 Board Placement



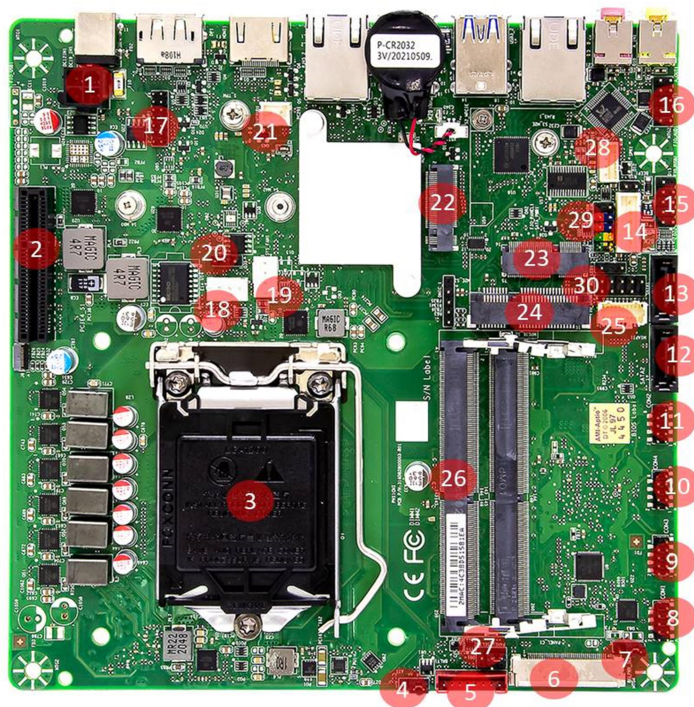
## Chapter 2 : Jumpers and Connectors Location

## 2.1 Jumpers And Connectors List

Label	Function
1	ATX 4pin
2	PCIe x4 Slot
3	LGA1200 CPU socket
4	AT/ATX jumper
5	LVDS Back Light Header
6	LVDS connector
7	LVDS Back light select
8	COM Port Header (RS232/422/485)
9	COM Port Header (RS232)
10	COM Port Header (RS232)
11	COM Port Header (RS232)
12	SATA Port



13	SATA Port
14	SATA Power Header
15	USB2.0 Header
16	Front Audio header
17	TPM Header
18	CPU FAN
19	SYS FAN
20	Clear CMOS Header
21	Intrusion header
22	M.2 2280 M key
23	M.2 2230 E key
24	Full Size mini PCIE slot
25	MiAPI Header
26	DDR4 SODIMM socket
27	Panel power select
28	Speaker Header
29	Front Panel header
30	USB2.0 Header



## 2.2 Jumper Settings

### Front Panel 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)		

**LVDS Connector**

PIN	DEFINITION
1	LVDS0_LINK3_CON_DP
2	LVDS0_LINK3_CON_DN
3	LVDS0_LINK2_CON_DP
4	LVDS0_LINK2_CON_DN
5	LVDS0_LINK1_CON_DP
6	LVDS0_LINK1_CON_DN
7	LVDS0_LINK0_CON_DP
8	LVDS0_LINK0_CON_DN
9	LVDS1_LINK3_CON_DP
10	LVDS1_LINK3_CON_DN
11	LVDS1_LINK2_CON_DP
12	LVDS1_LINK2_CON_DN
13	LVDS1_LINK1_CON_DP
14	LVDS1_LINK1_CON_DN
15	LVDS1_LINK0_CON_DP
16	LVDS1_LINK0_CON_DN
17	GND
18	3.3V/5V/12V
19	3.3V/5V/12V
20	3.3V/5V/12V
21	NC
22	VCC3
23	CABLE_ID2
24	GND
25	GND
26	LVDS0_CLK_CON_DP
27	LVDS0_CLK_CON_DN
28	GND
29	GND
30	CABLE_ID3
31	LVDS_DDC_SCL
32	CABLE_ID1
33	PS8625_BKLT_CTRL
34	LVDS1_CLK_CON_DP
35	LVDS1_CLK_CON_DN
36	NC
37	NC
38	NC
39	CABLE_ID4
40	NC

**LVDS Backlight Header**

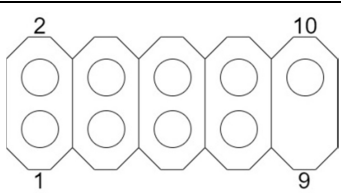
PIN	DEFINITION
1	LVDS_BKTEN_R
2	LVDS_PWM
3	BKLT_PWR (12v)
4	BKLT_PWR (12v)
5	GND
6	GND
7	BRIGHT_UP-
8	BRIGHT_DOWN-



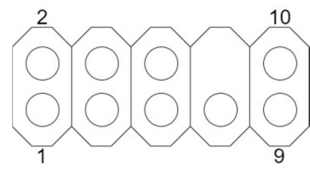


**Dual USB2.0 Header**


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


**Front Audio Header**

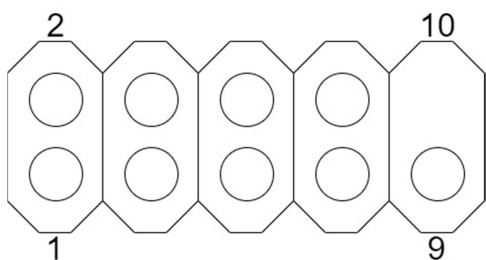
PIN	DEFINITION	PIN	DEFINITION
1	MIC	2	AUD_GND
3	MIC_BIAS	4	Presence
5	FP_OUT_R	6	AUD_SENSE_MIC_FP
7	FIO_SENSE	8	Key(no pin)
9	FP_OUT_L	10	AUD_SENSE_HP


**Speaker Header**

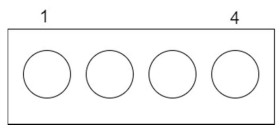
PIN	DEFINITION
1	Front_L-
2	Front_L+
3	Front_R+
4	Front_R-


**Serial Port Pin-Out**

PIN	RS232	RS422	RS485
1	DCD	TX-	DATA-
2	RXD#	TX+	DATA+
3	TXD#	RX-	NC
4	DTR	RX+	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

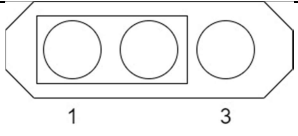
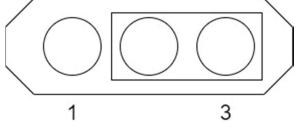

**CPU FAN Header**

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

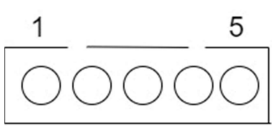




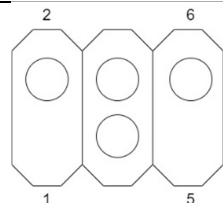
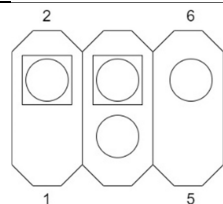
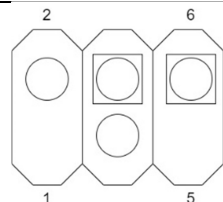
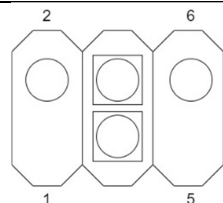
**Clear CMOS Header**

PIN	DEFINITION	
1-2	Clear CMOS	
2-3	Normal(Default)	

**SATA Power Header**

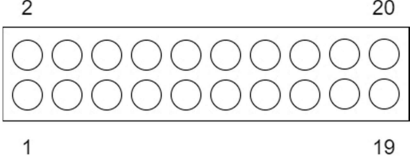
PIN	DEFINITION	
1	VCC3	
2	GND	
3	VCC	
4	GND	
5	12V	

**Panel Power Option**

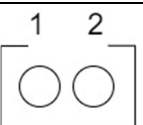
PIN	DEFINITION	PIN	DEFINITION	
1	Key(no pin)	2	VCC3	
3	+12V	4	LCD_VCC_SEL	
5	Key(no pin)	6	VCC	
3.3V				
5V(Default)				
12V				

**MiAPI Header**

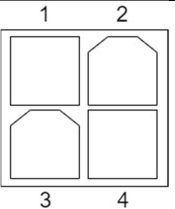
PIN	DEFINITION	PIN	DEFINITION
1	MAPI_GPIO1	2	VCC
3	MAPI_GPIO2	4	MAPI_GPIO6
5	MAPI_GPIO3	6	MAPI_GPIO7
7	MAPI_GPIO4	8	MAPI_GPIO8
9	MAPI_GPIO5	10	MAPI_GPIO9
11	WD_Time	12	MAPI_GPIO10
13	Power Button	14	SMBUS_DATA
15	UART_TX	16	SMBUS_CLK
17	UART_RX	18	5VSB
19	GND	20	N/A


**Intrusion Header**

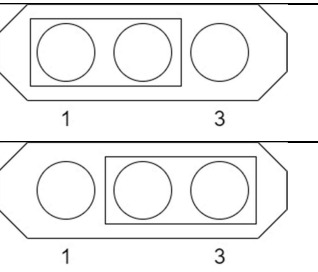
PIN	DEFINITION	PIN	DEFINITION
1	INTRUDER_N	2	GND


**ATX 4pin connector**

PIN	DEFINITION	PIN	DEFINITION
1	GND	2	GND
3	12V IN	4	12V IN


**AT/ATX Mode Jumper**

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



## 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.

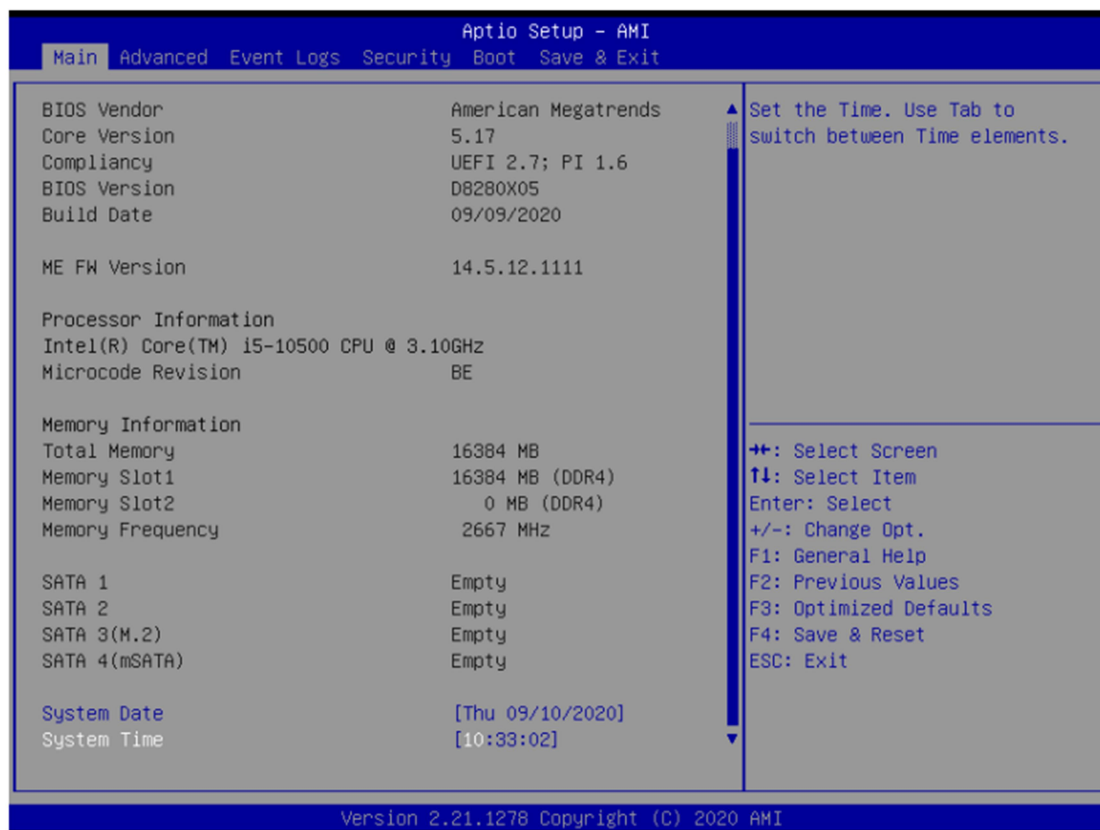
Some of the hot keys are <F1>, <F10>, <Enter>, <ESC>, and <Arrow> keys.



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.
Tab	The <Tab> key selects the setup fields.
F1	The <F1> key displays the General Help screen.
F10	The <F10> 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 Page



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	Compliance
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.

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

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

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

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

<b>Field Name</b>	<b>Memory Slot1</b>
Default Value	Display the installed memory size of slot1.
Comment	This field is not selectable. There is no help text associated with it.

<b>Field Name</b>	<b>Memory Slot2</b>
Default Value	Display the installed memory size of slot2.
Comment	This field is not selectable. There is no help text associated with it.

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

<b>Field Name</b>	<b>SATA 1</b>
Default Value	Display the installed SATA device model/size of port 1
Comment	This field is not selectable. There is no help text associated with it.

<b>Field Name</b>	<b>SATA 2</b>
Default Value	Display the installed SATA device model/size of port 2
Comment	This field is not selectable. There is no help text associated with it.

<b>Field Name</b>	<b>SATA 3(M.2)</b>
Default Value	Display the installed SATA device model/size of port 3
Comment	This field is not selectable. There is no help text associated with it.

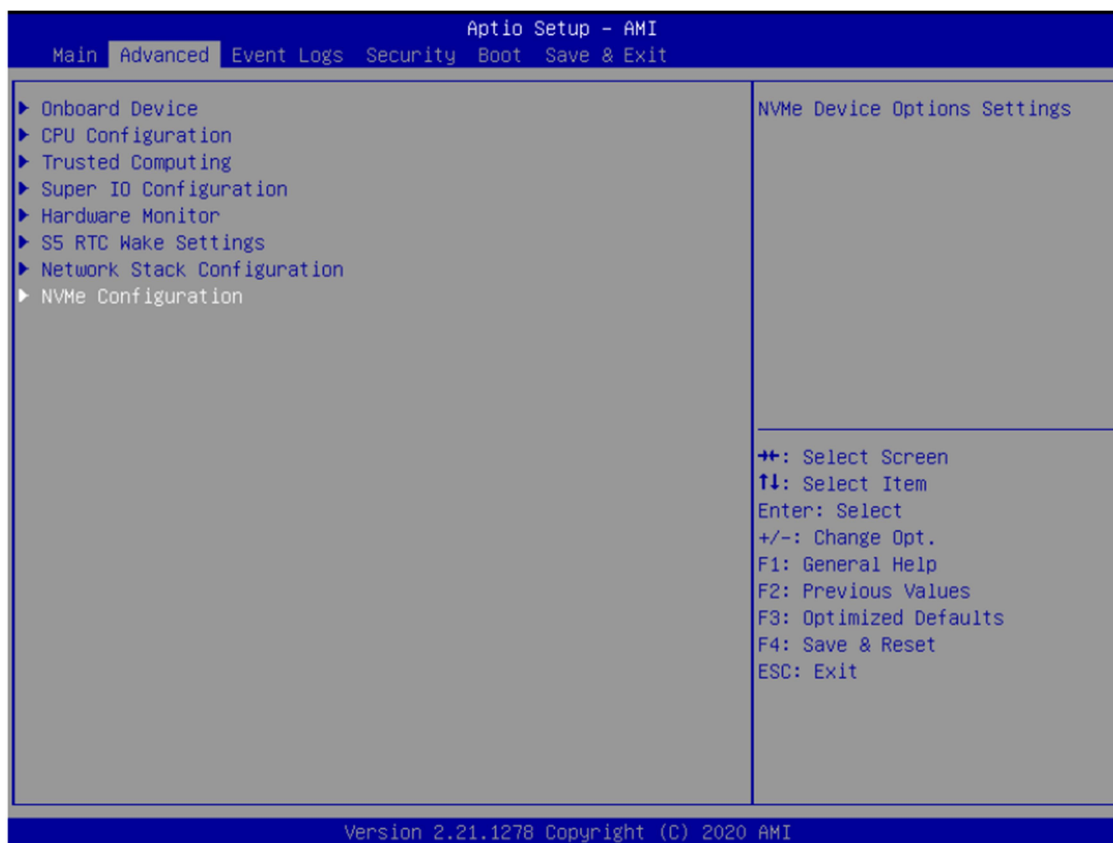
<b>Field Name</b>	<b>SATA 4(mSATA)</b>
Default Value	Display the installed SATA device model/size of port 4
Comment	This field is not selectable. There is no help text associated with it.

<b>Field Name</b>	<b>System Date</b>
-------------------	--------------------

Default Value	[Www mm/dd/yyyy]
Possible Value	Www : Mon/Tue/Wed/Thu/Fri/Sat/Sun mm : 1-12 dd : 1-31 yyyy : 1998-9999
Help	Set the Date. Use Tab to switch between Date elements. Default Rangers Year : 1998-9999 Months : 1-12 Days : Dependent on month Range of Years may vary

<b>Field Name</b>	<b>System Time</b>
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



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

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

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

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

<b>Field Name</b>	<b>Hardware Monitor</b>
Help	Monitor hardware status
Comment	Press Enter when selected to go into the associated Sub-Menu.

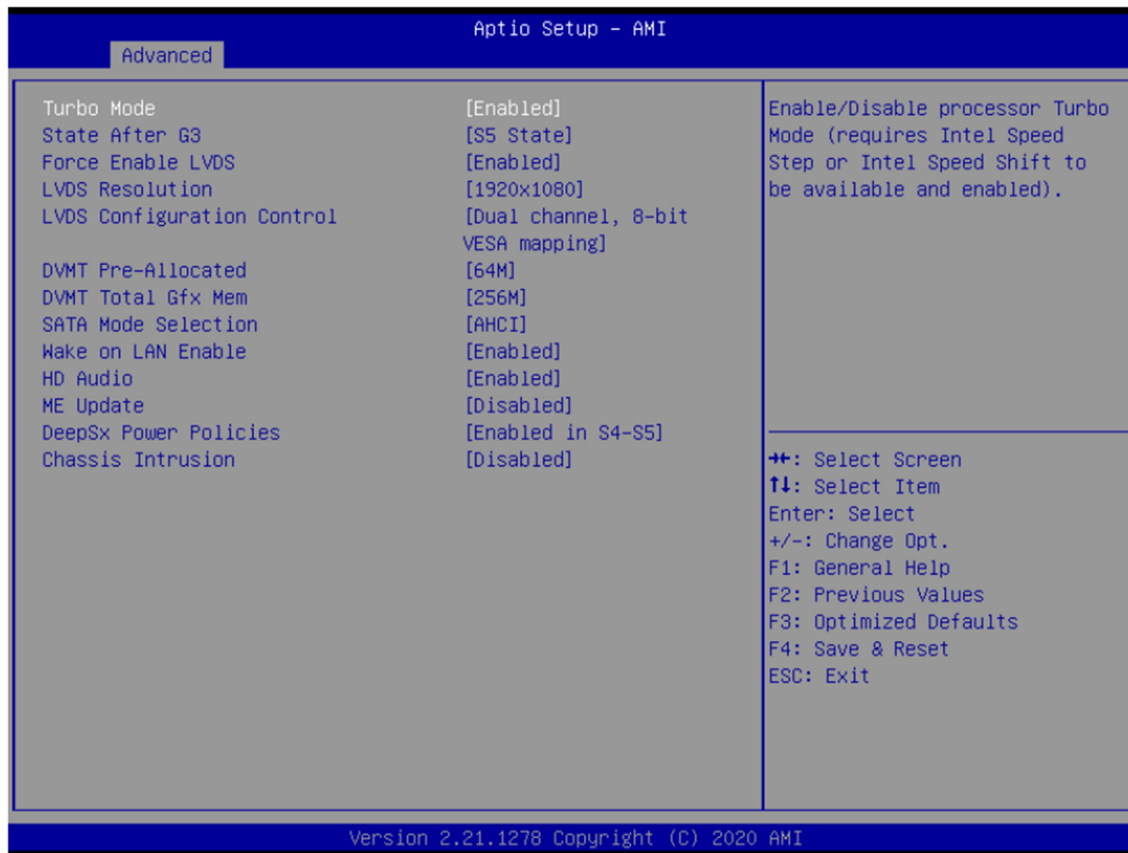
<b>Field Name</b>	<b>S5 RTC Wake Settings</b>
Help	Enable system to wake from S5 using RTC alarm
Comment	Press Enter when selected to go into the associated Sub-Menu.

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

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

<b>Field Name</b>	<b>Intel (R) Rapid Storage Technology (Suppressed if SATA Mode)</b>
Help	This formset allow the user to manage RAID volumes on the Intel(R) RAID Controller.
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	Force Enable LVDS
Default Value	[Disabled]
Possible Value	Enabled
Help	Force Enable LVDS. Enabled: Enable LVDS whether plug correct panel

Field Name	LVDS Resolution (Hide if "Force Enable LVDS" is Disabled)
Default Value	[1920x1080]
Possible Value	800x600



	1024x768 1280x1024 1366x768 1280x800 1920x1080
Help	Select LVDS panel resolution.

<b>Field Name</b>	<b>LVDS Configuration Control (Hide if "Force Enable LVDS" is Disabled)</b>
Default Value	[Dual channel, 8-bit VESA mapping]
Possible Value	Single channel, 8-bit VESA mapping Dual channel, 8-bit VESA mapping Single channel, 6-bit VESA/JEIDA mapping Dual channel, 6-bit VESA/JEIDA mapping
Help	Select LVDS link number and data mapping.

<b>Field Name</b>	<b>DVMT Pre-Allocated</b>
Default Value	[64M]
Possible Value	64M 32M/F7 36M 40M 44M 48M 52M 56M 60M
Help	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

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

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

<b>Field Name</b>	<b>Wake on LAN Enable</b>
Default Value	[Enabled]
Possible Value	Enabled Disabled

Help	Enable/Disable integrated LAN to wake the system.
------	---

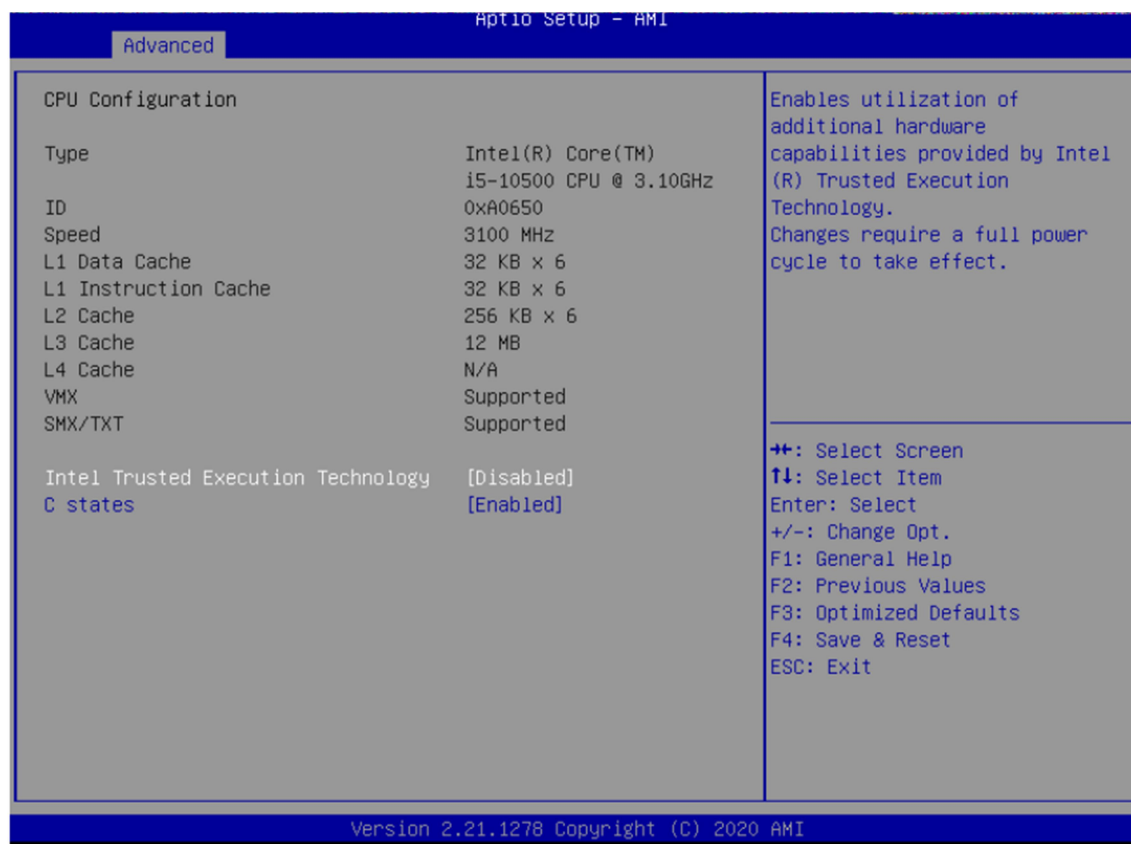
<b>Field Name</b>	<b>HD Audio</b>
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled. Enabled = HDA will be unconditionally enabled.

<b>Field Name</b>	<b>ME Update</b>
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

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

<b>Field Name</b>	<b>Chassis Intrusion</b>
Default Value	[Disabled]
Possible Value	Disabled Enabled Reset
Help	Configure Chassis Intrusion.

### 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.

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

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

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

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

<b>Field Name</b>	<b>Intel Trusted Execution Technology</b>
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enables utilization of additional hardware capabilities provided by Intel (R) Trusted Execution Technology. Changes require a full power cycle to take effect.

<b>Field Name</b>	<b>C states</b>
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.

### 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.

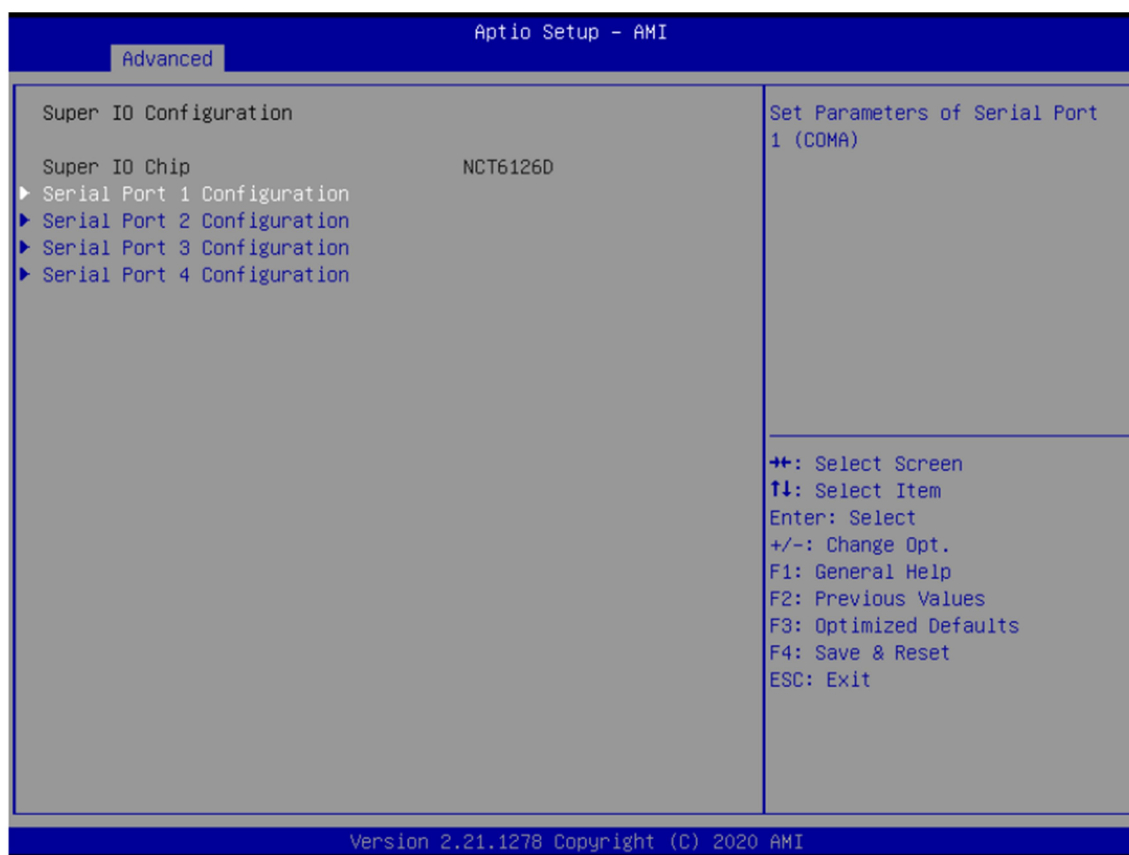
Field Name	Vendor
Default Value	TPM module vendor name.
Comment	This field is not selectable. There is no help text associated with it.

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



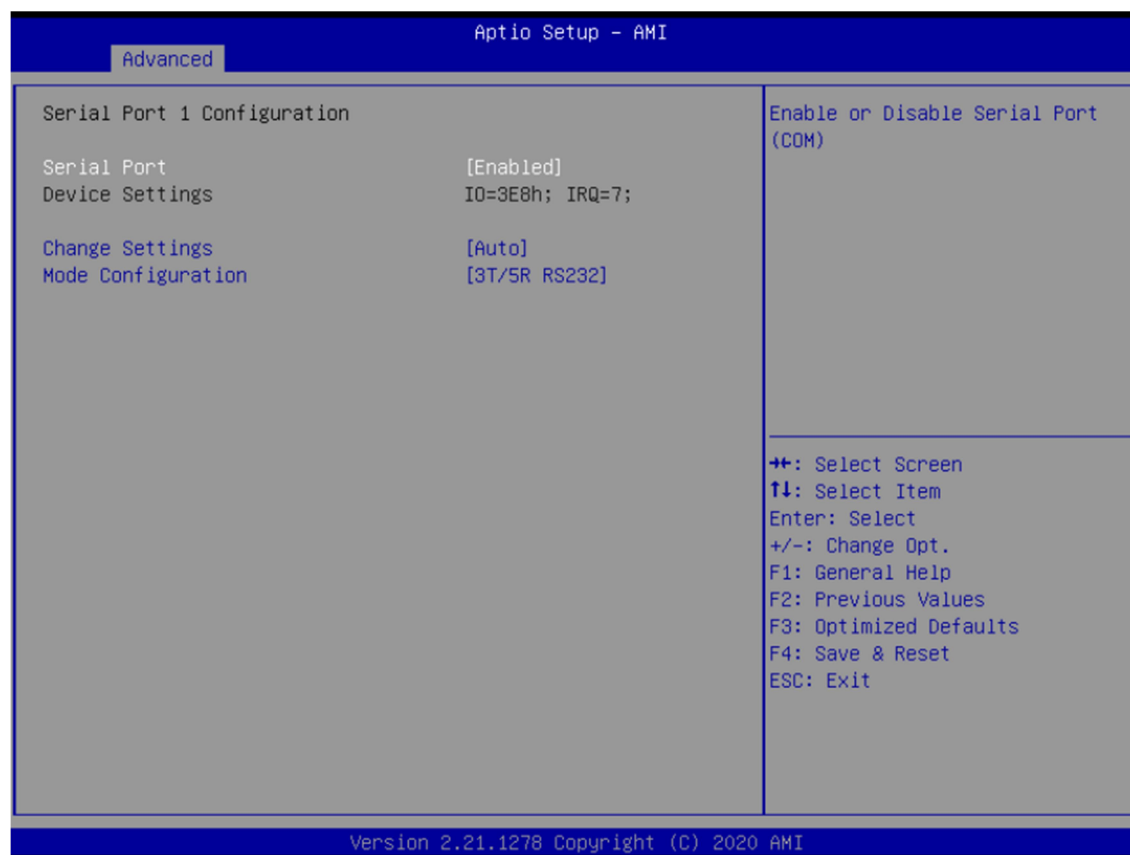
Field Name	Serial Port 1 Configuration
Help	Set Parameters of Serial Port 1 (COMA)
Comment	Press Enter when selected to go into the associated Sub-Menu.

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
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.

### 3.4.5 Serial Port 1 Configuration



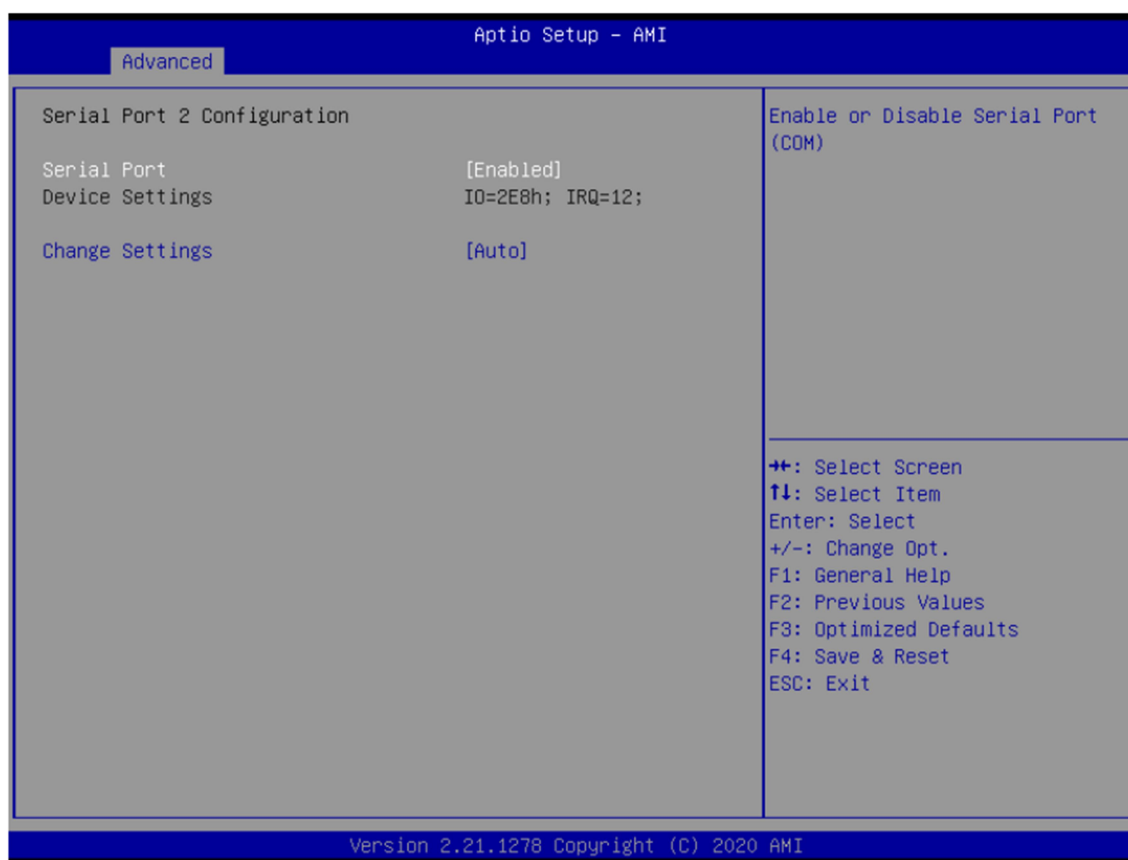
Field Name	Serial Port
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

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.

Field Name	Change Settings
Default Value	[AUTO]
Possible Value	Auto IO=3E8h; IRQ=4; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=220h; 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

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.

### 3.4.6 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.

Field Name	Change Settings
Default Value	[AUTO]



Possible Value	Auto IO=2E8h; IRQ=3; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=220h; 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

### 3.4.7 Serial Port 3 Configuration



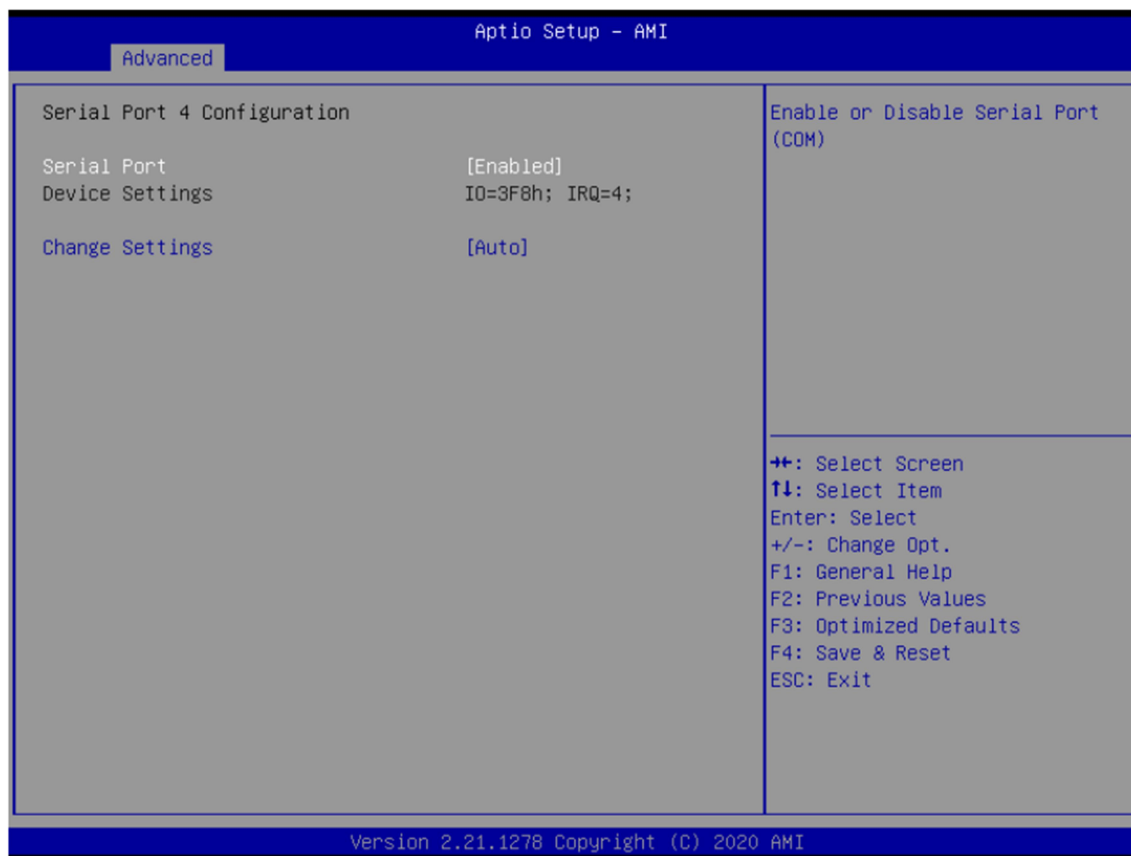
Field Name	Serial Port
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

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.

Field Name	Change Settings
Default Value	[AUTO]
Possible Value	Auto IO=220h; IRQ=5;

	IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=220h; 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

### 3.4.8 Serial Port 4 Configuration



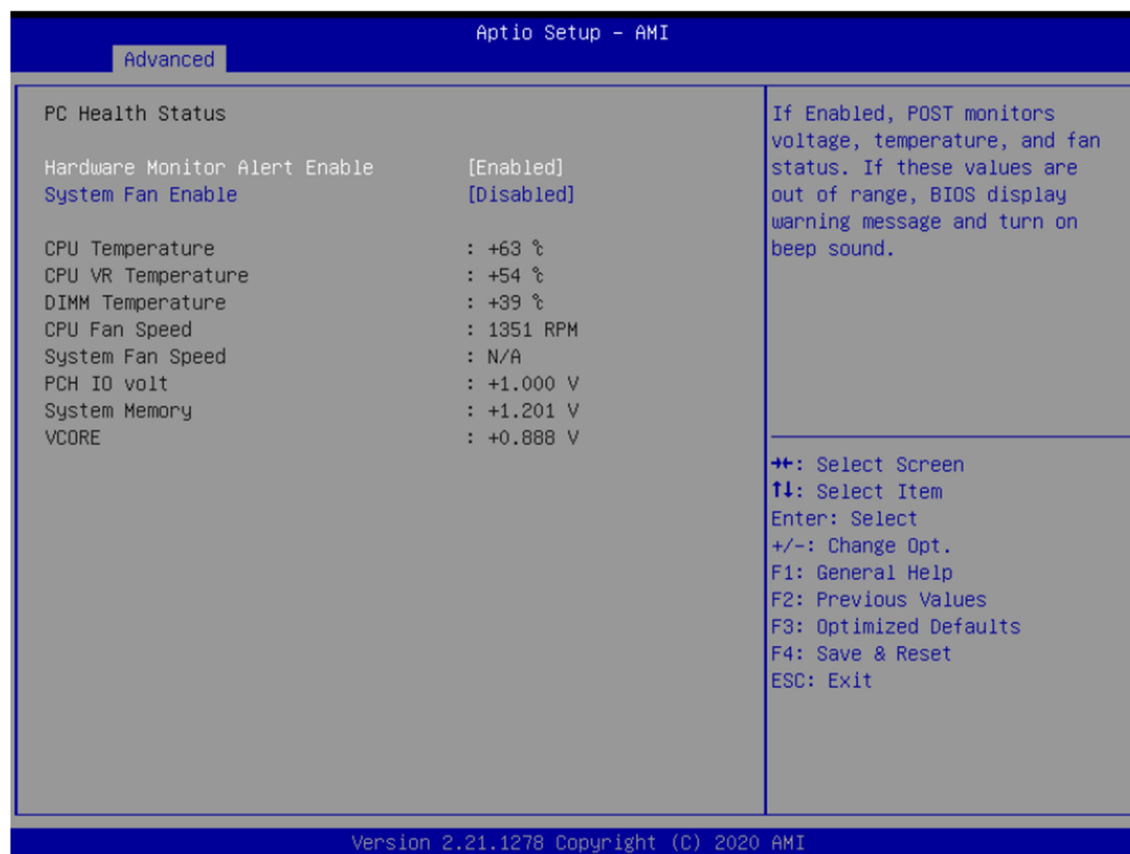
Field Name	Serial Port
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

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=3F8h; IRQ=5; 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=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

### 3.4.9 Hardware Monitor



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.

Field Name	System Fan Enable (Suppressed if Hardware Monitor Alert is Disabled)
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.

Field Name	Range
CPU Temperature	-20 ~ (By Processor Tjmax) °C
CPU VR Temperature	-20 ~ 120 °C
DIMM Temperature	-20 ~ 120 °C
CPU Fan Speed	-20 ~ 120 °C
Front Fan Speed	There are many kinds of the fan could be installed into the system, so we could only set 0 RPM for the failed fan speed, and there is also no high RPM limitation
CPU Vcore	0~1.5V
PCH IO	0.95~1.05V
System Memory	1.16~1.26V

### 3.4.10 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
------	--

<b>Field Name</b>	<b>Wake up minute(Show when Wake system from S5 set to Fixed Time)</b>
Default Value	0
Possible Value	0-59
Help	Select 0-59 For Minute

<b>Field Name</b>	<b>Wake up second(Show when Wake system from S5 set to Fixed Time)</b>
Default Value	0
Possible Value	0-59
Help	Select 0-59 For Second

### 3.4.11 Network Stack Configuration

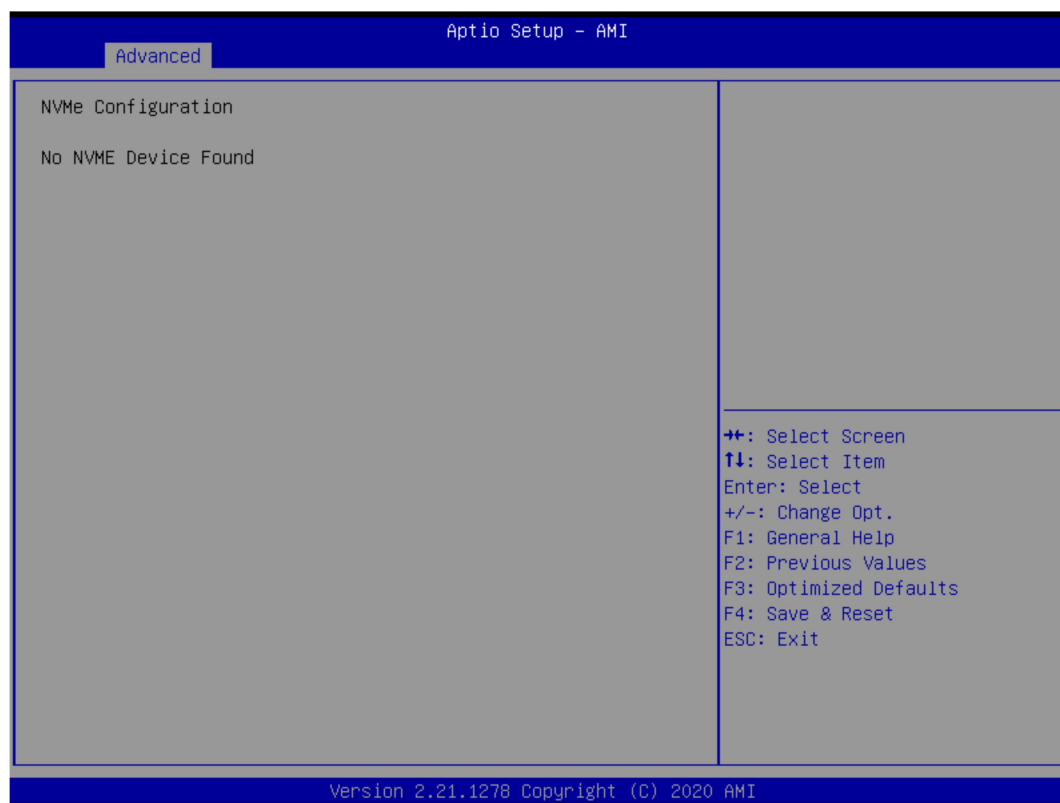


<b>Field Name</b>	<b>Network stack</b>
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable UEFI Network stack.

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.

### 3.4.12 NVMe Configuration



Field Name	Device
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

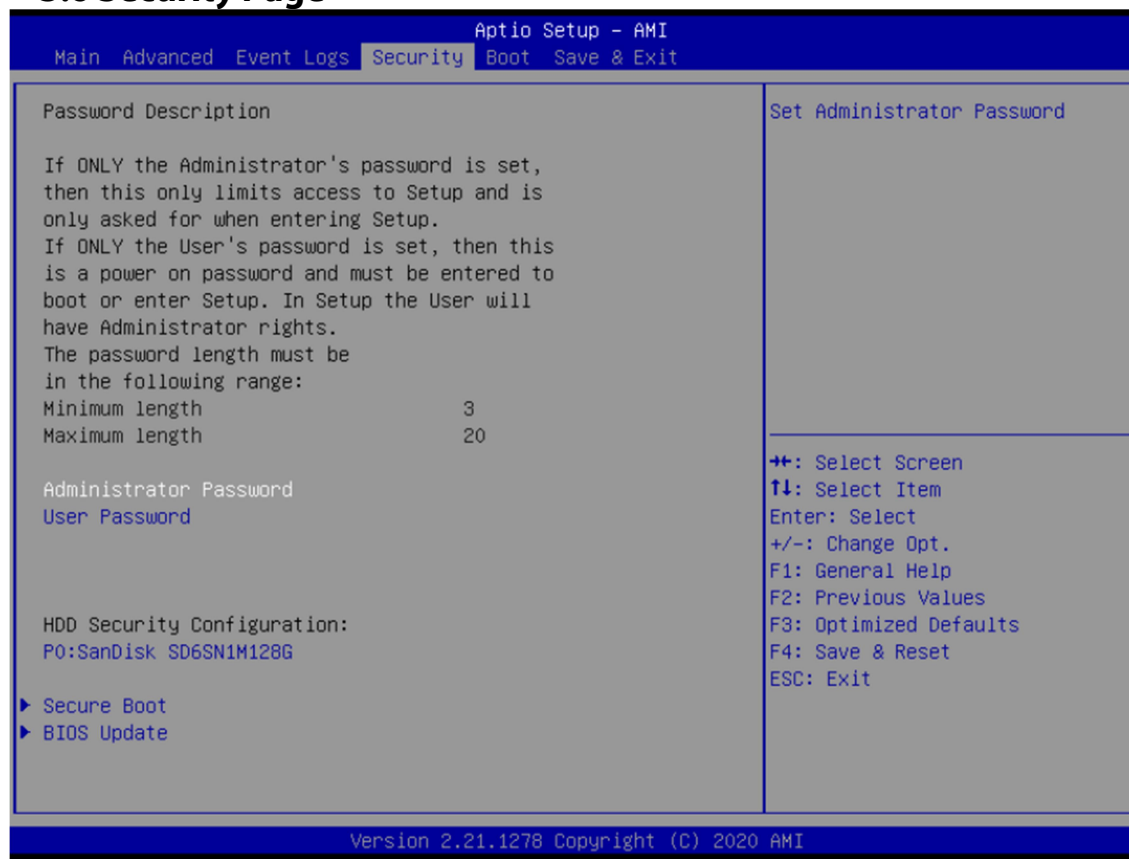


## 3.5.2 View Smbios Event Log

Aptio Setup - AMI					
Event Logs					
DATE	TIME	ERROR CODE	SEVERITY	COUNT	DESCRIPTION
09/09/20	15:21:35	Smbios 0x16	N/A	N/A	Log Area Reset and Count is applicable only for Multi-Events
09/09/20	15:21:36	Smbios 0x8D	N/A	N/A	
					++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.21.1278 Copyright (C) 2020 AMI					

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

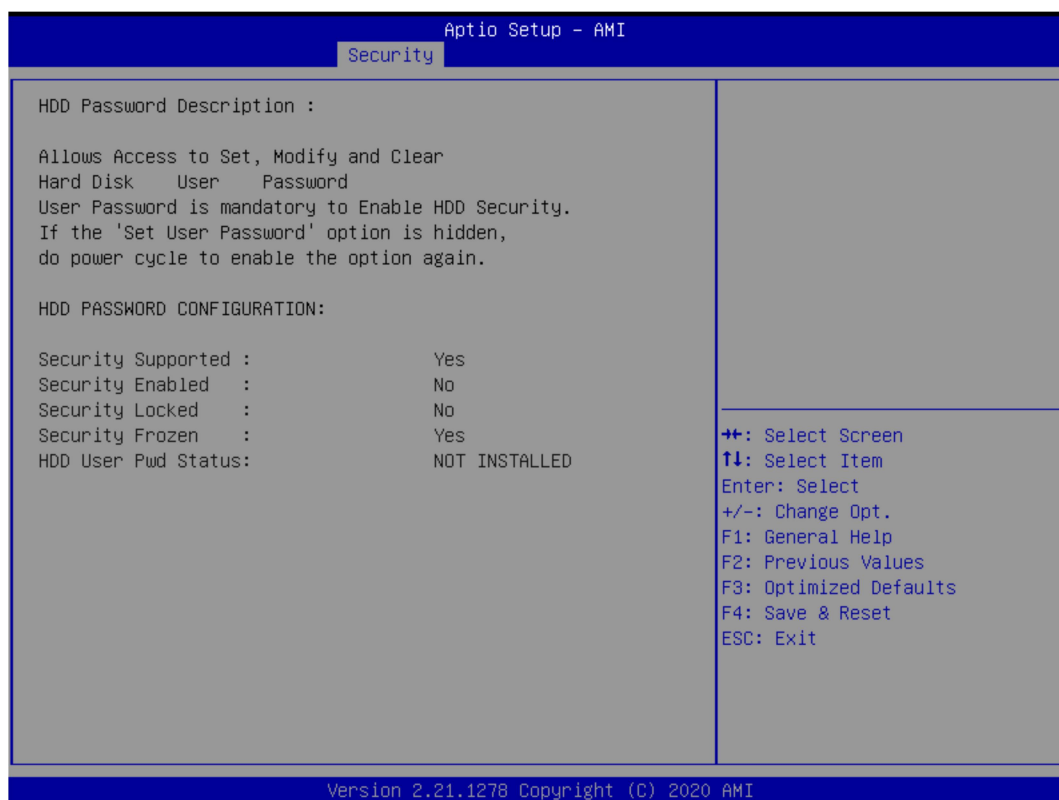
Field Name	User Password
Help	Set User Password.

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

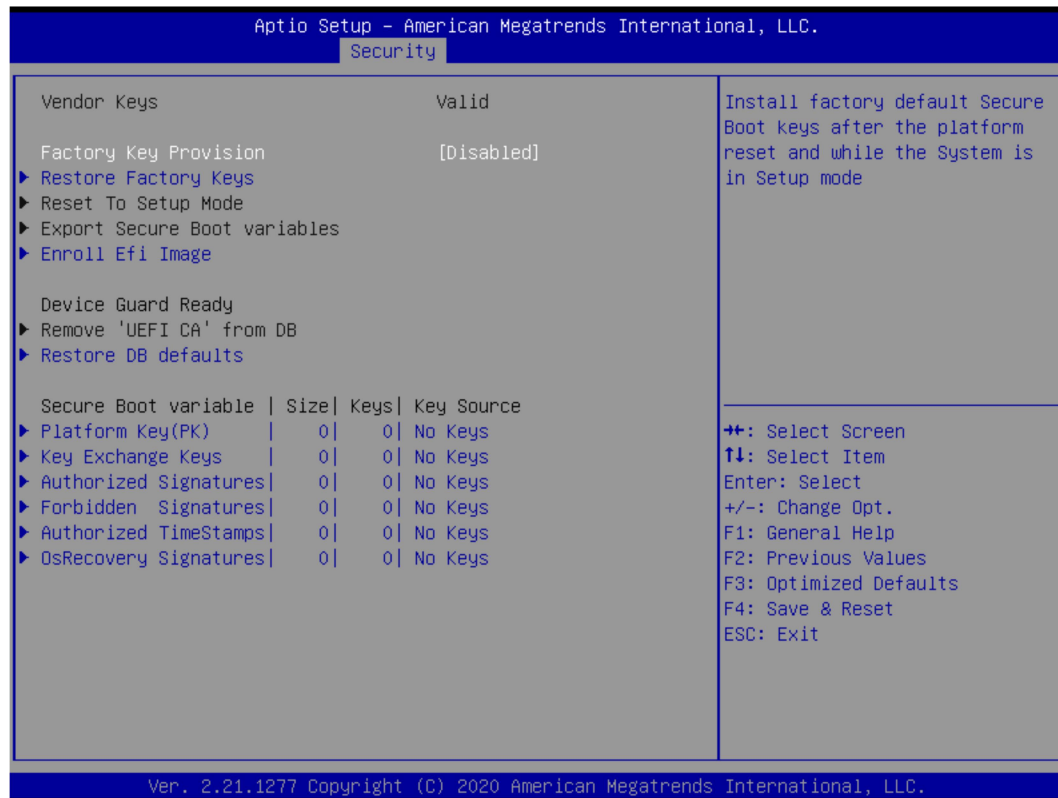
Field Name	Secure Boot Mode
Default Value	[Standard]
Possible Value	Standard Custom
Help	Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication

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
<b>Field Name</b>	<b>Key Management</b>
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)



<b>Field Name</b>	<b>Factory Key Provision</b>
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

<b>Field Name</b>	<b>Restore Factory Keys</b>
Help	Force System to User Mode. Install factory default Secure Boot key databases

<b>Field Name</b>	<b>Reset to Setup Mode</b>
Help	Delete all Secure Boot key databases from NVRAM

<b>Field Name</b>	<b>Export Secure Boot variables</b>
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.

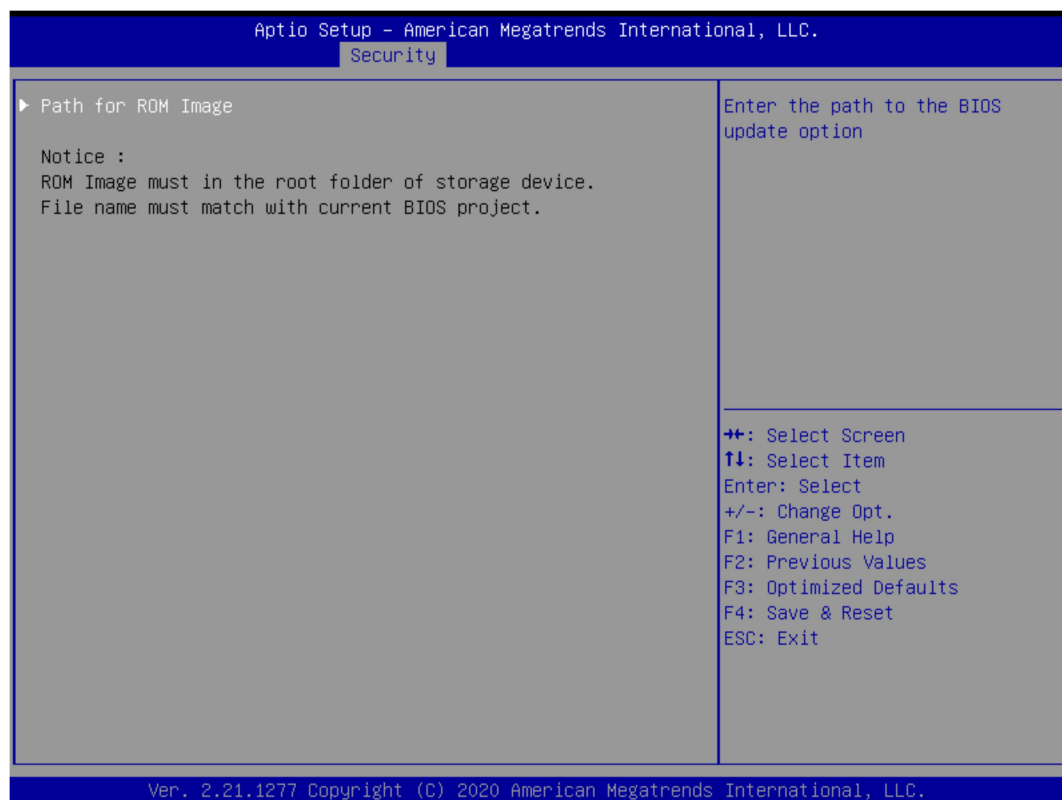
Field Name	Forbidden Signatures
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF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

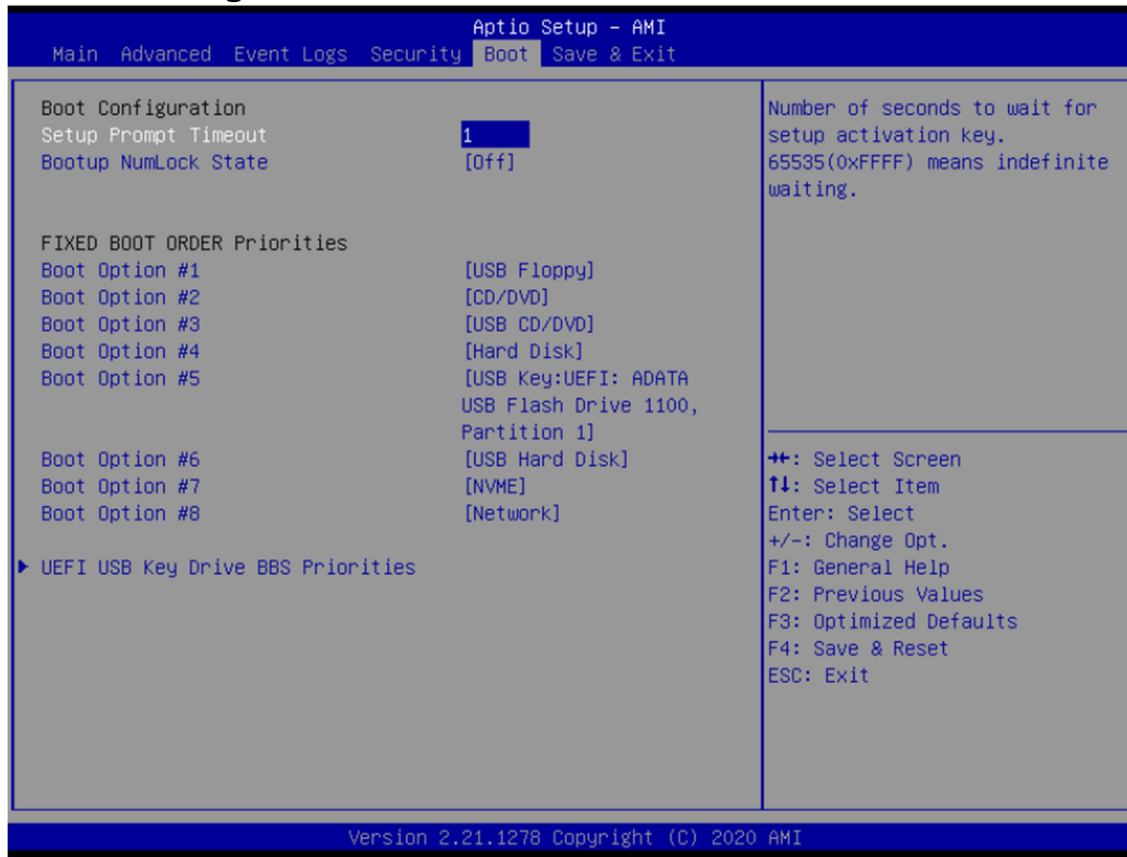


### 3.6.4 BIOS Update



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
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<b>Field Name</b>	<b>Boot Option #3</b>
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

<b>Field Name</b>	<b>Boot Option #4</b>
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

<b>Field Name</b>	<b>Boot Option #5</b>
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

<b>Field Name</b>	<b>Boot Option #6</b>
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

<b>Field Name</b>	<b>Boot Option #7</b>
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

<b>Field Name</b>	<b>Boot Option #8</b>
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

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

<b>Field Name</b>	<b>(UEFI) USB CDROM/DVD ROM Drive BBS Priorities</b>
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.