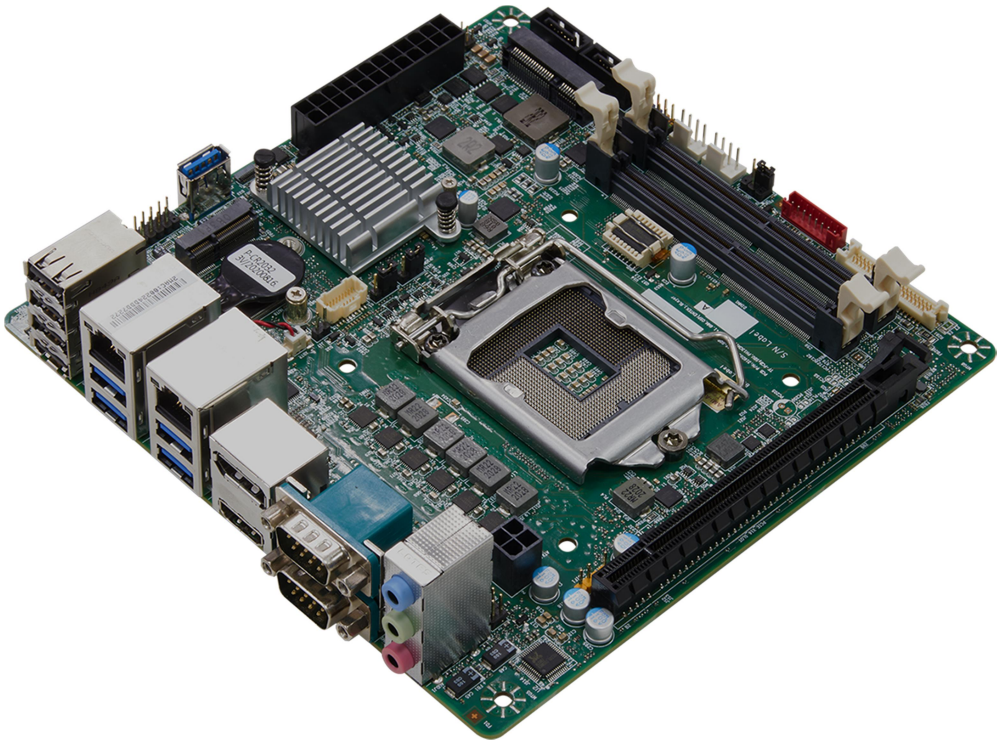
INS8370A

Intel® Comet Lake-S 10th Processor with Q470E/H420E 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

- 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	2022/03/10	First release

Packing List

Item	Description	Q'ty
1	INS8370A	1
2	CD(Drivier + User's manual)	1
3	Power Cable	1

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

Table of Contents

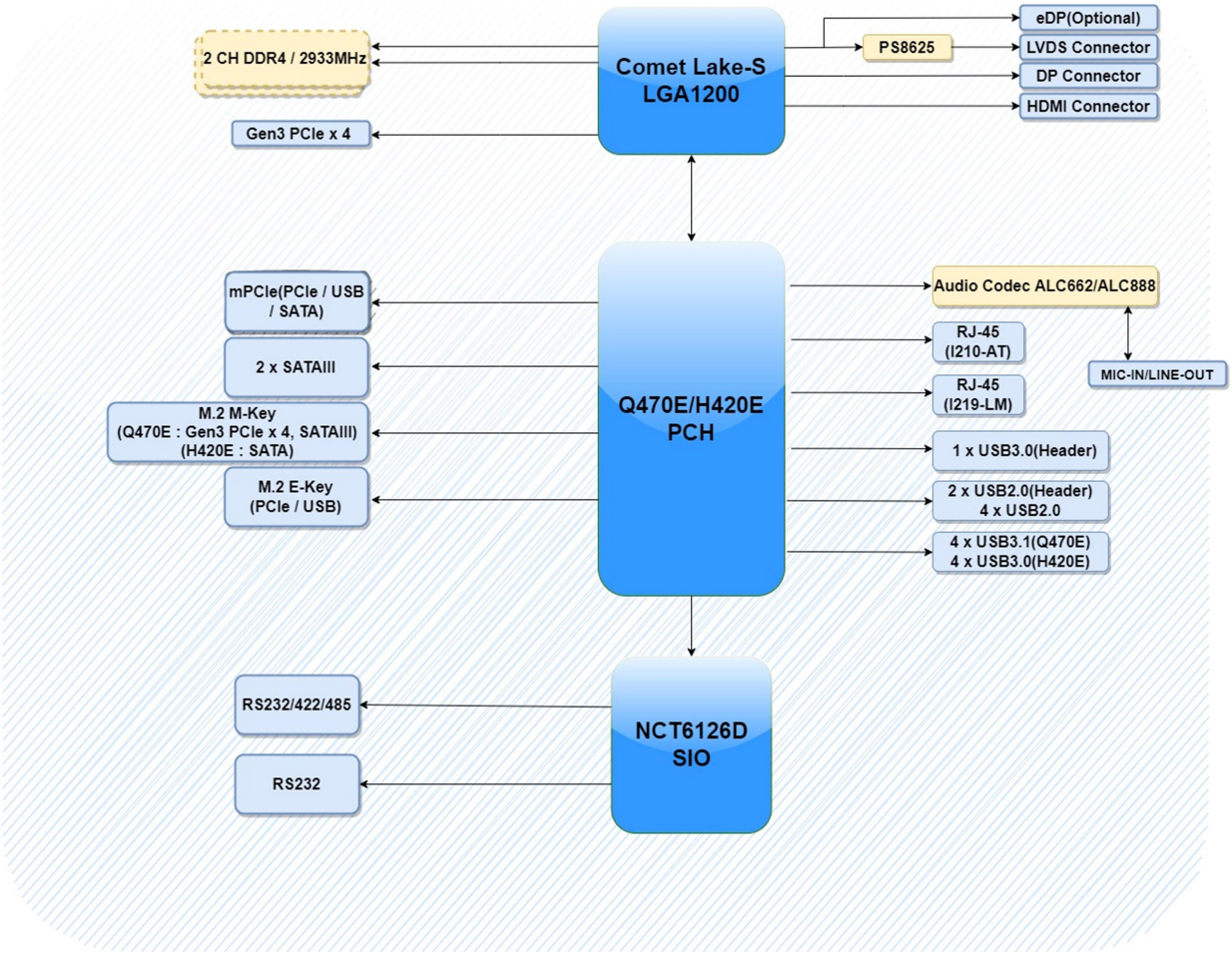
Chapter 1 : Product Introduction

1.1 Specifications

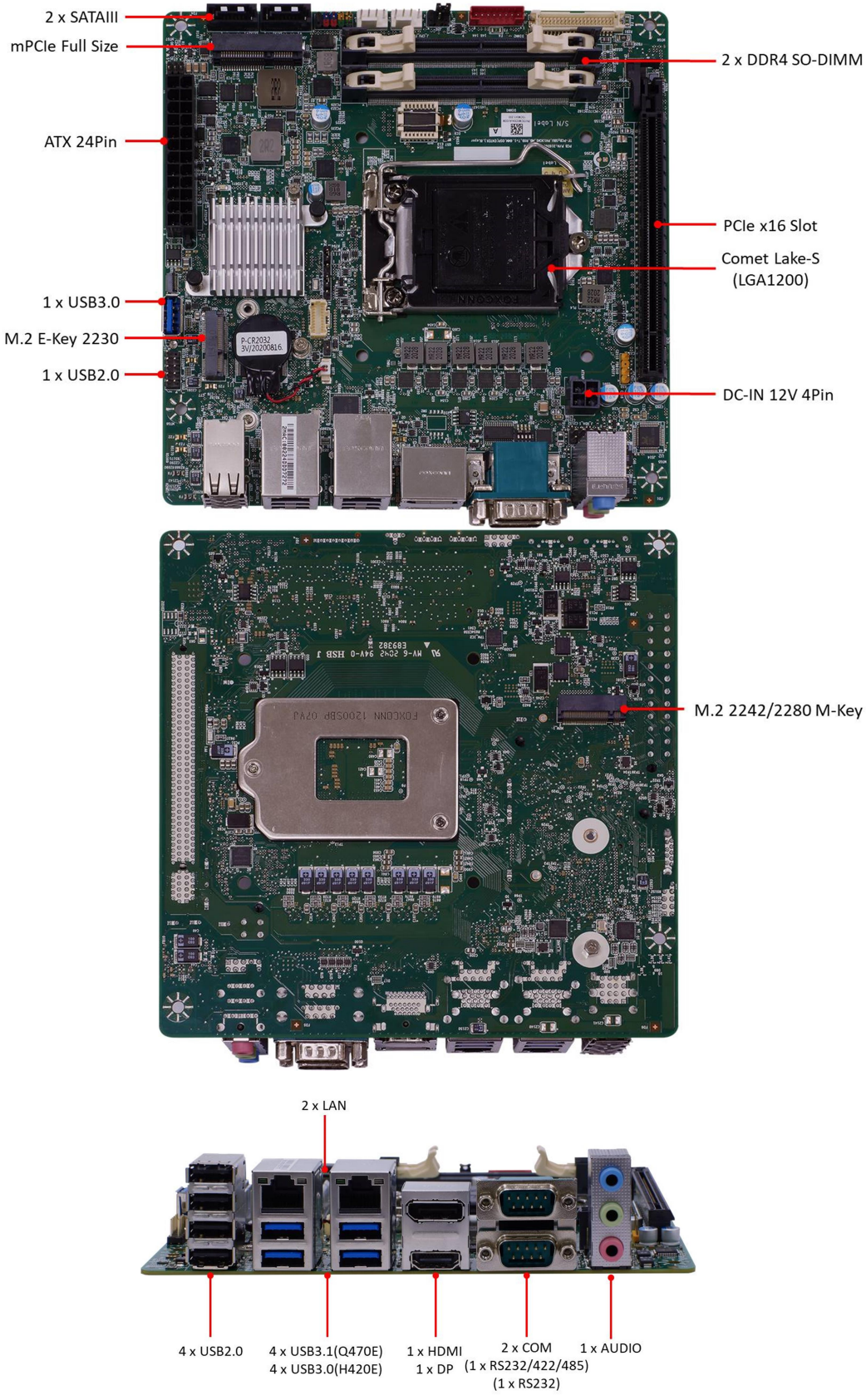
System	
CPU	10th Gen Intel® Comet Lake LGA1200 Socket Processor / 10core TDP Max 35W / 8ccore TDP 65W / (ATX support 6core 95W)
System Memory	DDR4 2933/2666/2400MHz / 2 x 260-pin SO-DIMM / Max. 64 GB (Non-ECC)
Chipset	Intel® Q470E (Support RAID 0 / 1 / 5, VPro) / colay H420E
Graphic	Intel® HD Graphics
I/O Chipset	Nuvoton NCT6126D(eSPI)
TPM	Nuvoton NPCT750AAAYX TPM2.0 (Optional)
BIOS	AMI BIOS / 256 Mbit SPI
H/W Monitor	Temperature Monitor / Voltage Monitor / Fan Monitor
Watchdog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan / System Fan
Expansion	
M.2	1 x M.2 2230 E key(PCIe / USB)/ M.2 2242 / 2280 M key (PCIeX4, SATA)
Mini PCie	1 x Mini PCIe Full size (PCIe / USB / SATA)
PCIe Slot	1 x PCIe 3.0 X16 slot
Display	
HDMI	Up to 4K (4096 x 2160) @30 Hz
Displayport	Up to 4K (4096 x 2304) @60 Hz
LVDS	Up to 1920 x 1200 @60 Hz
eDP (Option)	Up to 4K (4096 x 2304) @60 Hz
Ethernet	
Chipset	Intel® I219-LM Giga LAN + Intel® I210-AT Giga LAN
Audio	
Codec	Realtek® ALC662 / ALC888
Rear I/O	
USB	4 x USB 2.0 / 4 x USB 3.1 (Q470E) ; 4 x USB3.0(H420E)
Display I/O	1 x HDMI 1.4 / 1 x DisplayPort 1.2
Audio I/O	1 x Mic-in / 1 x Line-out / 1 x Line-in

Lan I/O	2 x RJ-45
Serial port	2 x RS232 (one support RS422,/485)
Internal I/O	
Storage	2 x SATAIII
USB	1 x USB 3.0 / 2 x USB 2.0
Display I/O	1 x LVDS (*Optional eDP SKU available) / 1 x Backlight Connector
GPIO	1 x MiAPI Header (Programmable. Support 10-bit GPIO)
Fan	1 x 4-pin CPU Fan Header / 1 x 4-pin System Fan Header
Power	1 x ATX Power Connector / 1 x AT / ATX Mode Select Jumper / ATX 12V Power Connector (24-pin + 4-pin)
Others	1 x CMOS Jumper / 1 x Front Audio Header (Mic-in & Line-out) / 1 x panel power select header / 1x buzzer header / 1 x SPDIF
Mechanical and environmental	
Form Factor	Mini ITX
Power Type	ATX 24-pin + 4-pin / 12V DC (3pin terminal connector via cable by connecting to A
Dimension	170 mm x 170mm
Operating Temp.	ET : -20 ~ 70°C UT : -40 ~ 85°C
Storage Temp.	-40 ~ 85°C
Relative humidity	10% ~ 95% R/H (Non-condensing)
Standard Compliance	
Standart Compliance	CE / FCC
OS	
OS Support	Windows®10 64-bit Linux(Support by request)

1.2 Block Diagram



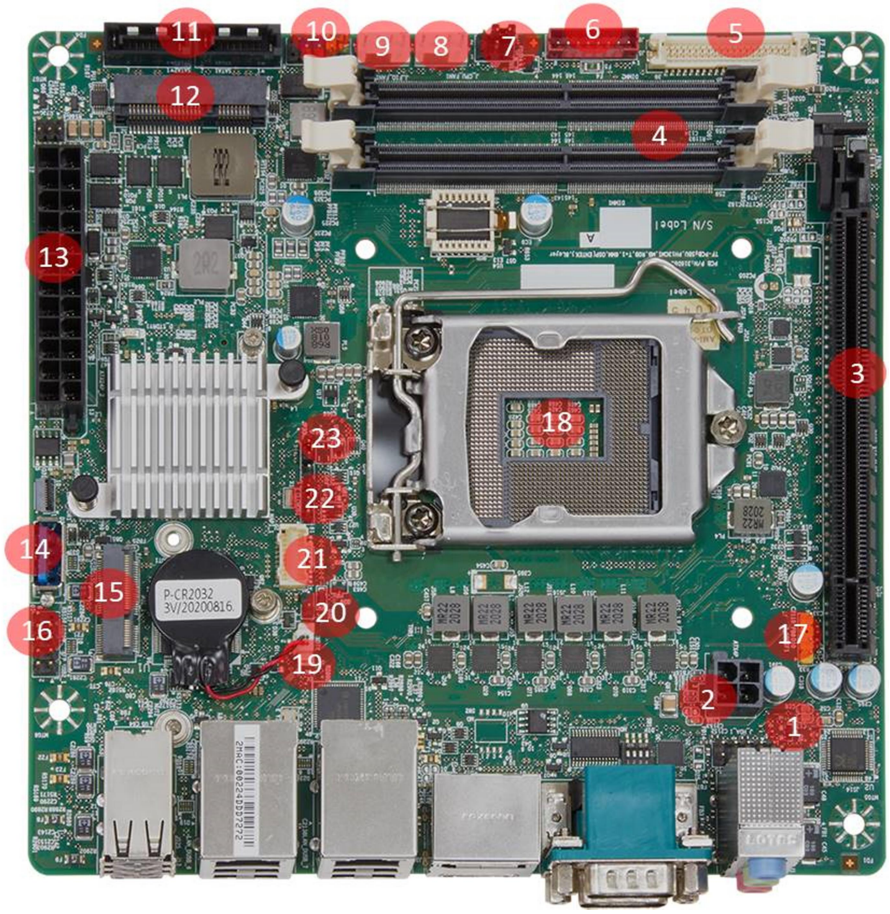
1.3 Board Placement



Chapter 2 : Jumpers and Connectors Loacation

2.1 Jumpers And Connectors List

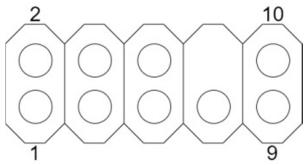
Label	Function
1	Front Audio Header
2	ATX 4pin
3	PCIe x16 Slot
4	DDR4 SO-DIMM Socket
5	LVDS/eDP Connector
6	LVDS Backlight Header
7	Panel Power Option
8	CPU Fan Header
9	System Fan Header
10	Front Pane Header
11	SATA Port
12	Full Size Mini PCIe Slot
13	ATX 24Pin
14	USB3.0 Connector
15	M.2 2230 E-Key
16	USB2.0 Header
17	SPDIF Header
18	CPU Socket
19	RTC Battery header
20	Buzzer Header
21	MiAPI Header
22	Clear CMOS Header
23	AT/ATX Mode Jumper



2.2 Jumper Settings

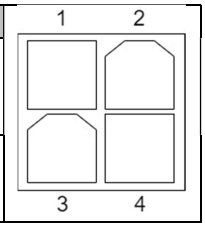
Front Audio Header

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



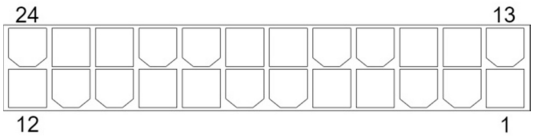
ATX 4pin 12V For CPU

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



ATX 24pin

PIN	DEFINITION	PIN	DEFINITION
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON (low asserted)
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWR_OK(high asserted)	20	-5V (not used)
9	+5V Aux	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND



For single 12V operation both connector 24pin and 4pin are required!

24pin ATX connector :

1. Pin8, 14, 16(NC) must NOT be used in single 12V mode
2. Pin9, 10 , 11 are responsible for the operating mode
3. Pin9: Leave open or connect to 12V. Don't connect to GND

All four +12V$_{in}$ pins must be connected to the +12V supply source.
Both GND pins (4-pin conn.) & two GND pins (24-pin connector) must be connected to the supply source.

Important Note (Single 12V mode):

The "output" pins (3.3V$_{out}$, 5V$_{out}$, 12V$_{out}$) provide power for drives or extra devices.
Maximum "output" power ratings:

+3.3V$_{out}$: max. 4A = combined output current of 3.3V PCIe x16 and 3.3V$_{out}$ pins (1, 2, 12, 13)
+5V$_{out}$: max. 9A = combined output current of all USB ports and +5V$_{out}$ pins (4, 6, 21, 22, 23)
+12V$_{out}$: max. 6A depends on output power of single 12V PSU! (12V$_{out}$ = pin 20)
If the mainboard is off no output voltages are available on the 24 pin ATX connector

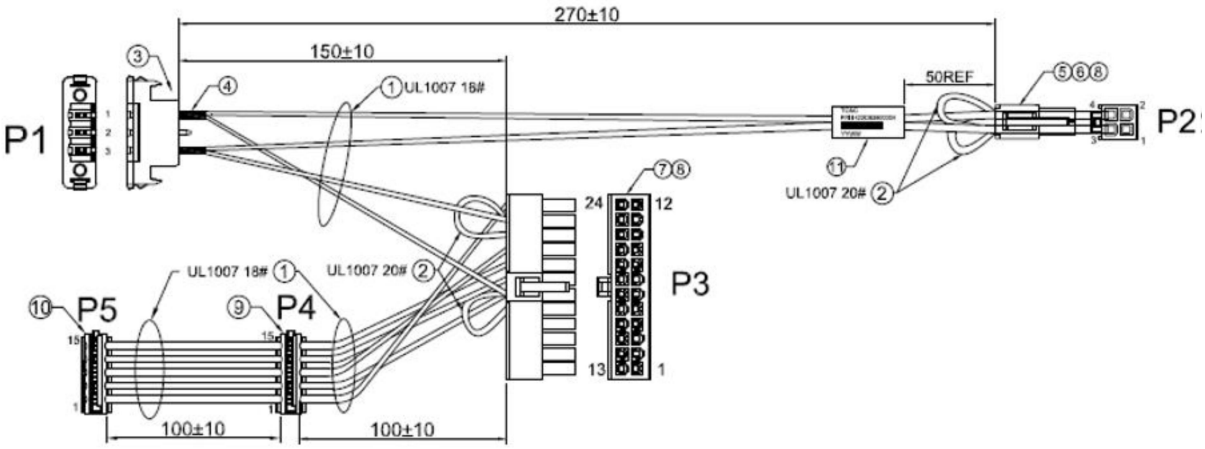
Note: Each single pin of both connectors is capable of max. 8A!

All pins of the 4-pin connector must be used due to peak current in Turbo Mode.

Requirement for Single 12V operation:
IF PIN10 and PIN11 = 12V
&
PIN 9 = open or 12V
only then the mainboard is in Single 12V operating mode.

Single 12V Operation – Cabling Notes

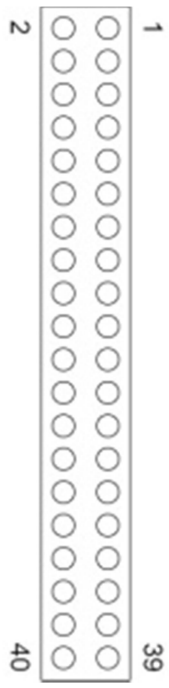
Please use MiTAC suggest cable (3pin terminal connector to 24p ATX + 4pin ATX + SATA power convert cable (422D83800004)) for single 12V operation. Cable drawing as below:



P1: 3pin terminal connector (Pin1:12v; Pin2:NC; Pin3:GND) for 12V input
P2: 4pin 12V connector for CPU power
P3: 24pin ATX connector
P4: SATA Power
P5: SATA Power

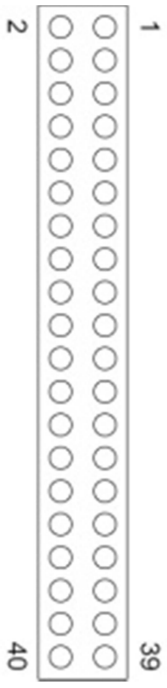
LVDS Connector

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



eDP Connector(Optional)

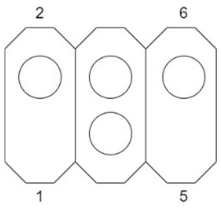
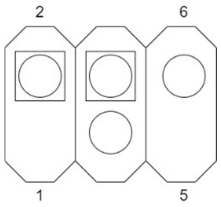
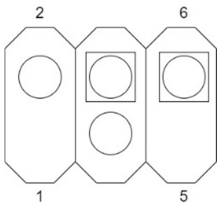
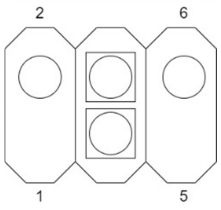
PIN	DEFINITION	PIN	DEFINITION
1	VCC3	2	Panel Power
3	VCC3	4	Panel Power
5	EDP_CPU_AUXN	6	EDP_CPU_AUXP
7	GND (CABLE_ID1)	8	HPD
9	eDP1_DP	10	eDP0_DP
11	eDP1_DN	12	eDP0_DN
13	GND	14	GND
15	eDP3_DP	16	eDP2_DP
17	eDP3_DN	18	eDP2_DN
19	GND	20	GND
21	PCH_BL_EN	22	PCH_BACKLIGHT_PWM
23	NC	24	NC
25	GND	26	GND
27	NC	28	NC
29	NC	30	NC
31	GND	32	GND
33	NC	34	NC
35	NC	36	NC
37	GND	38	GND
39	+12V	40	+12V



LVDS Backlight Header

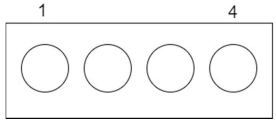
PIN	DEFINITION
1	LVDS_BKTEN_R
2	LVDS_PWM
3	BKLT_PWR (12v)
4	BKLT_PWR (12v)
5	GND
6	GND
7	BRIGHT_UP-
8	BRIGHT_DOWN-

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				

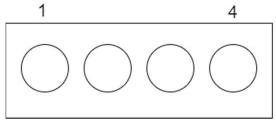
CPU FAN Header

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



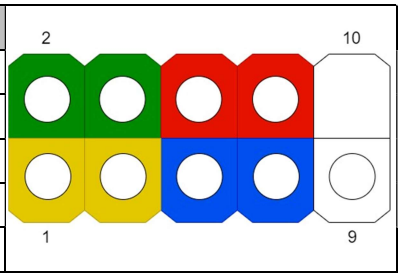
System FAN Header

PIN	DEFINITION
1	GND
2	+12V
3	System_FAN_TACH
4	System _FAN_CTRL



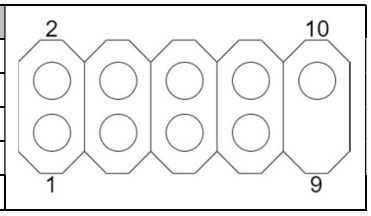
Front Panel Header

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)



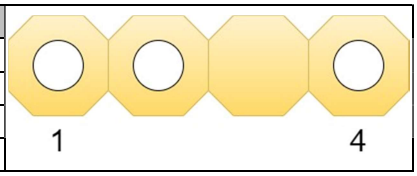
USB2.0 Header

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



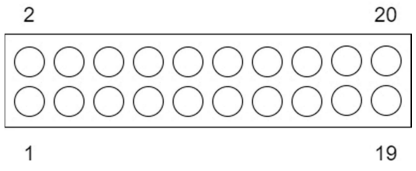
SPDIF Header

PIN	DEFINITION
1	GND
2	SPDIF-OUT
3	N/A
4	Power(5V)

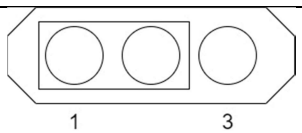
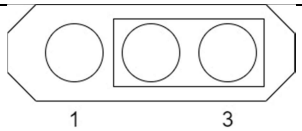


MiAPI Header

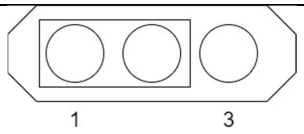
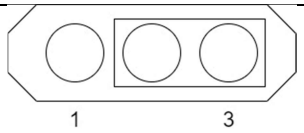
PIN	DEFINITION	PIN	DEFINITION
1	MAPI_GPIO1	2	VCC
3	MAPI_GPIO2	4	MAPI_GPIO6
5	MAPI_GPIO3	6	MAPI_GPIO7
7	MAPI_GPIO4	8	MAPI_GPIO8
9	MAPI_GPIO5	10	MAPI_GPIO9
11	WD_Time	12	MAPI_GPIO10
13	Power Button	14	SMBUS_DATA
15	UART_TX	16	SMBUS_CLK
17	UART_RX	18	5VSB
19	GND	20	N/A



Clear CMOS Header

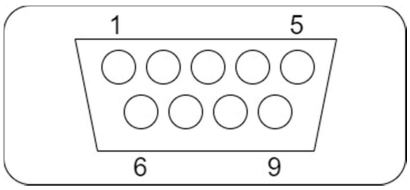
PIN	DEFINITION	
1-2	Clear CMOS	
2-3	Normal(Default)	

AT/ATX Mode Jumper

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

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



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 Staring

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.

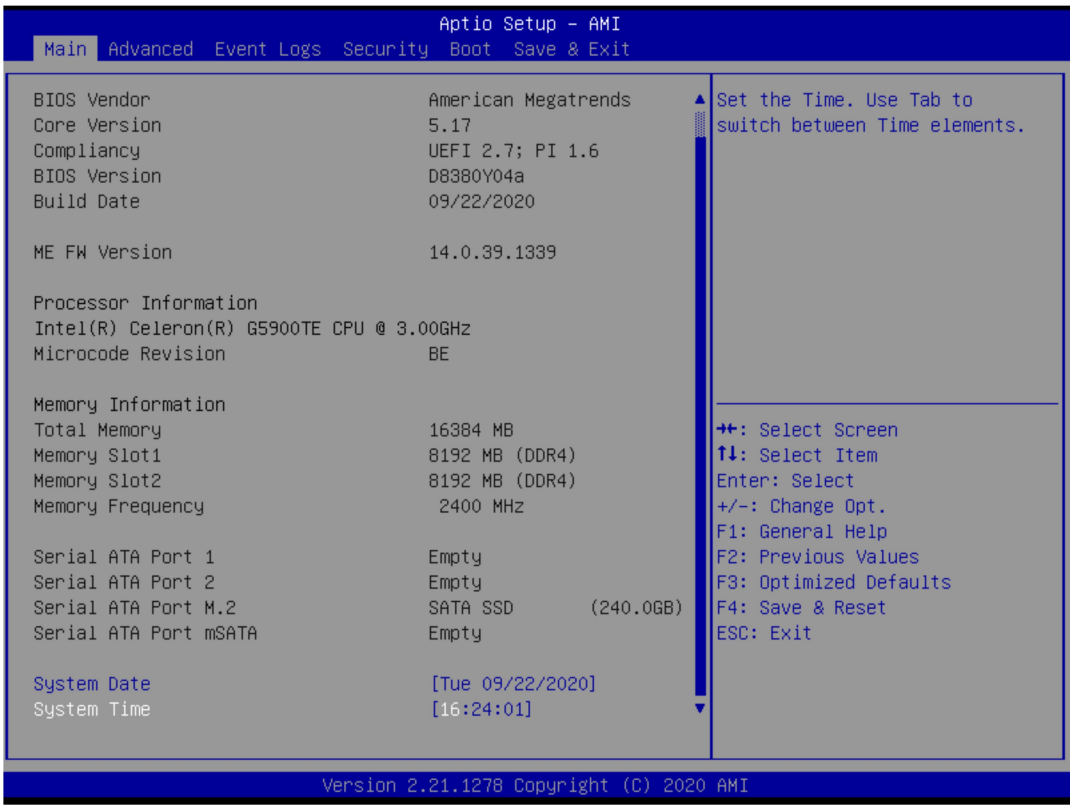
3.2 Navigation Keys

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	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 Slot1
Default Value	Display the installed memory size of slot1.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Memory Slot2
Default Value	Display the installed memory size of slot2.
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 1
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.

Field Name	Serial ATA Port 2
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.

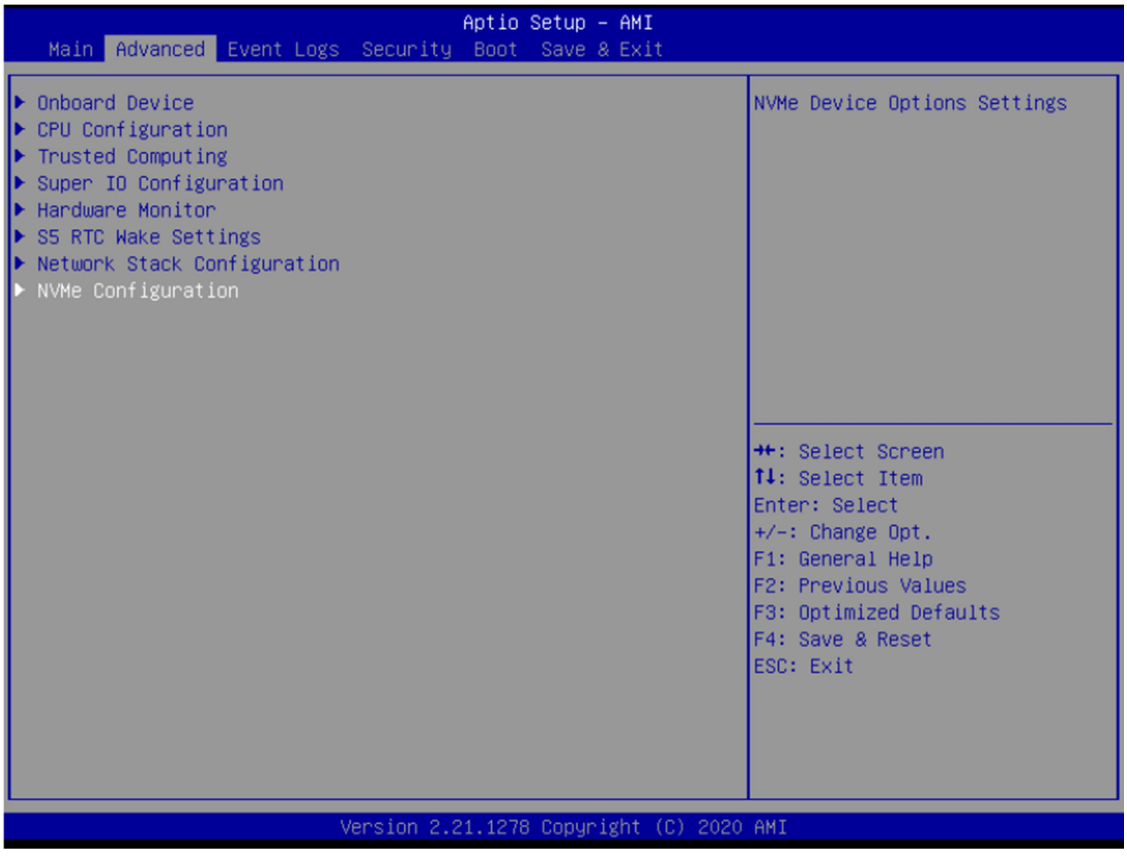
Field Name	Serial ATA Port M.2
Default Value	Display the installed SATA device model/size of port 3
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Serial ATA Port mSATA
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.

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.

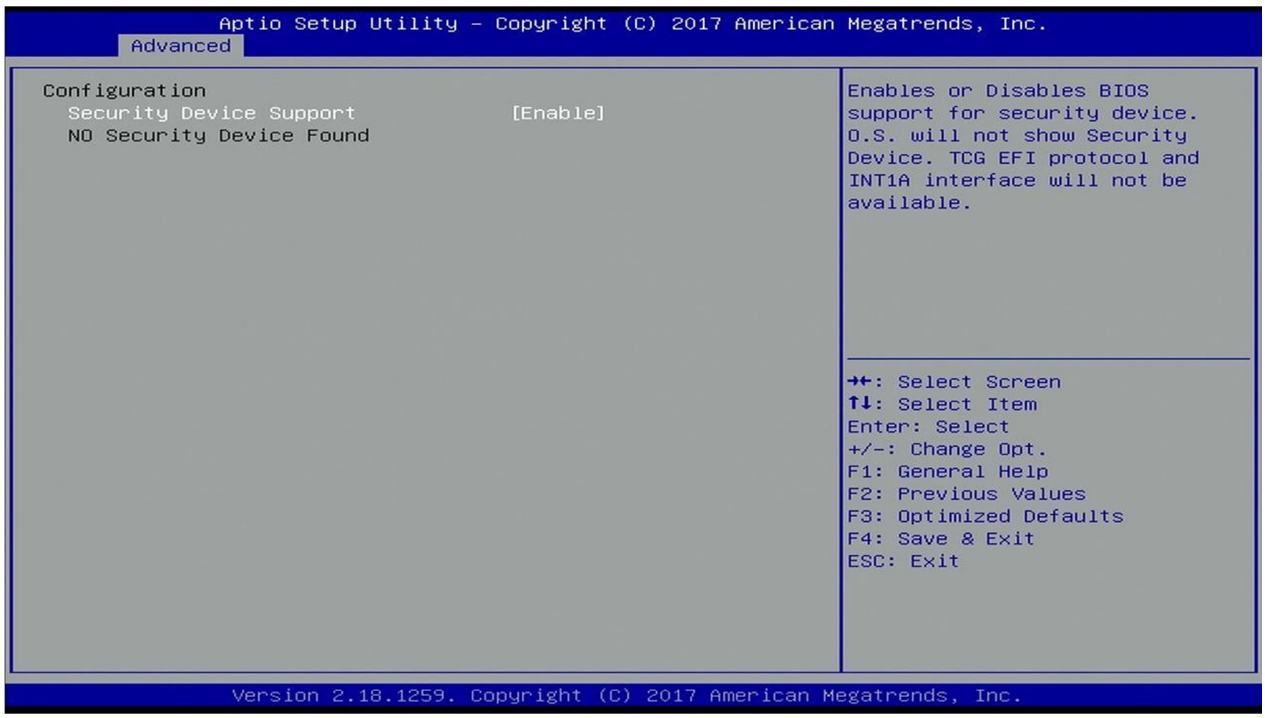
Field Name	S5 RTC Wake Settings
Help	Enable system to wake from S5 using RTC alarm
Comment	Press Enter when selected to go into the associated Sub-Menu.

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.

Field Name	Intel (R) Rapid Storage Technology (Suppressed if SATA Mode)
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	**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	**PCIe Storage Dev On Port 9 (Available when SATA Mode Selection set to "Intel RST Premium With Intel Optane System Acceleration")**
Default Value	[Not RST Controlled]
Possible Value	Not RST Controlled / RST Controlled
Help	Enable/Disable RST Pcie Storage Remapping.

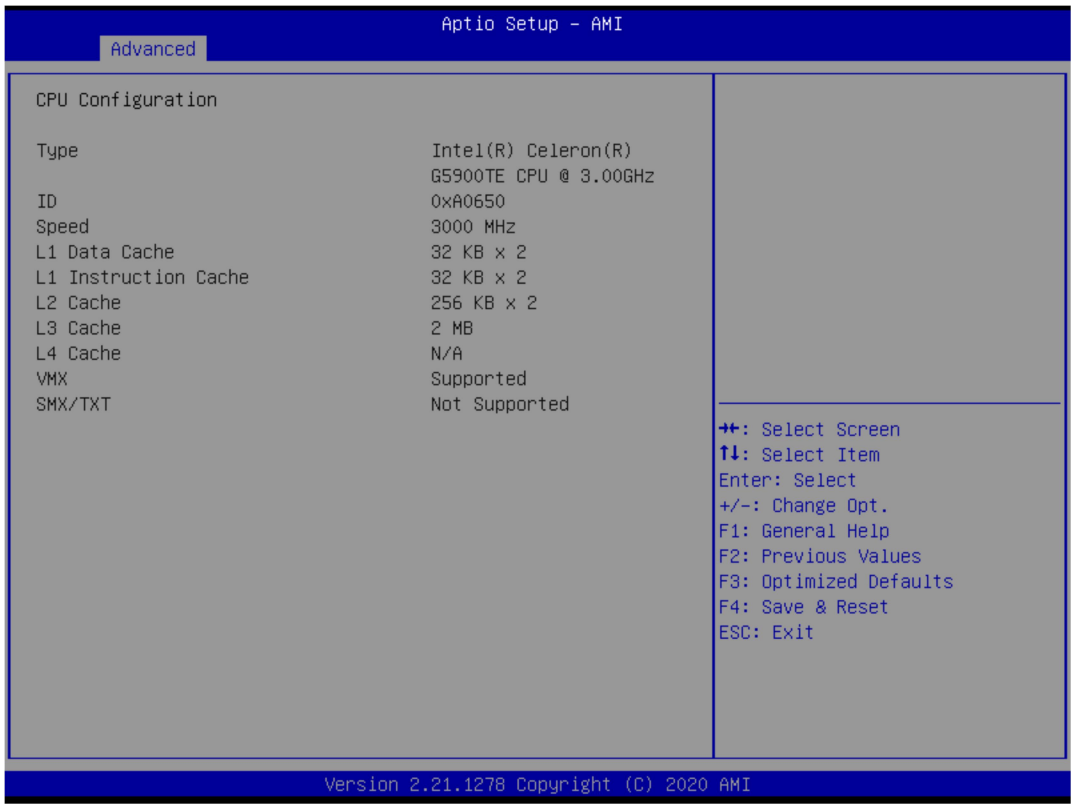
Field Name	**Wake on LAN Enable**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable integrated LAN to wake the system.

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.

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.

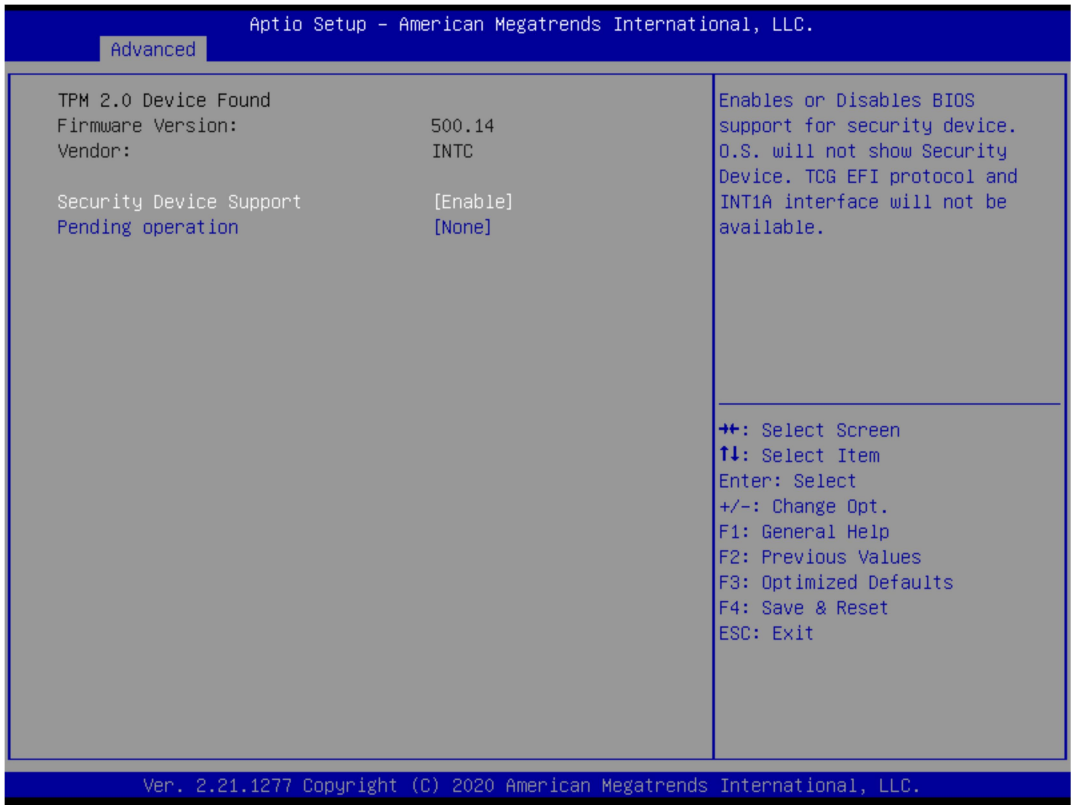
Field Name	L3 Cache
Default Value	L3 Cache Size
Comment	This field is not selectable. There is no help text associated with it.

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.

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.

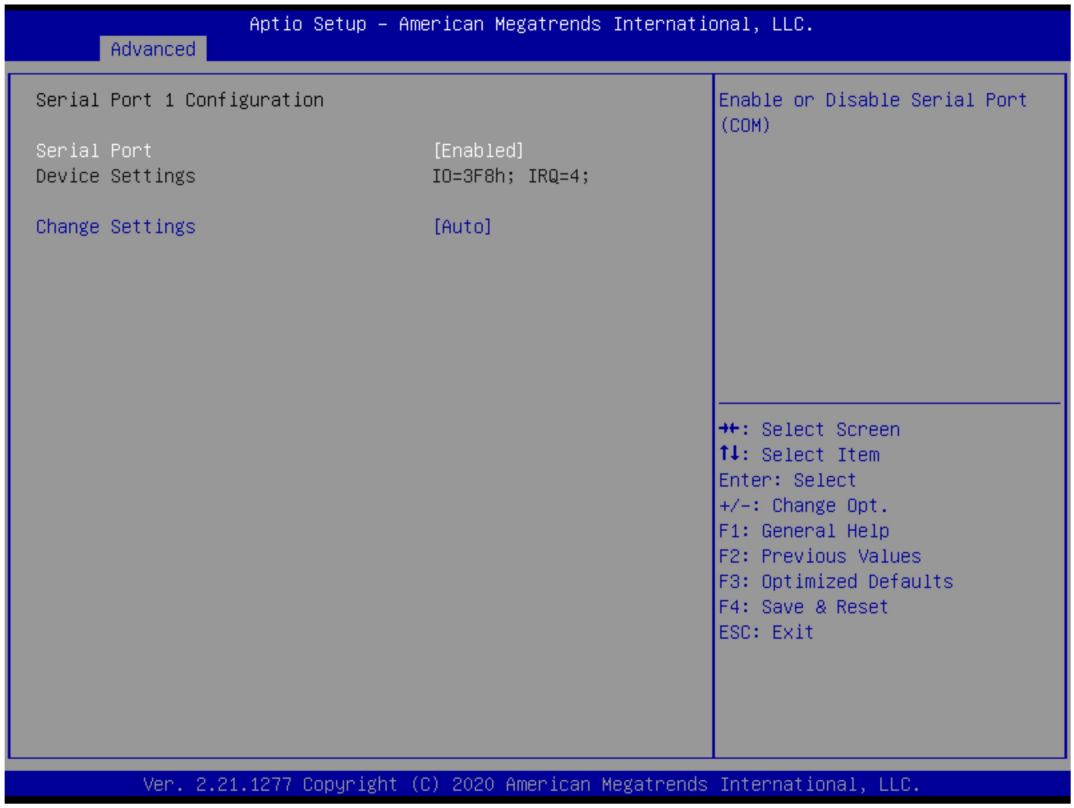
Field Name	**Pending operation**
Default Value	[None]
Possible Value	None TPM Clear
Help	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.

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.

3.4.5 Serial Port 1 Configuration

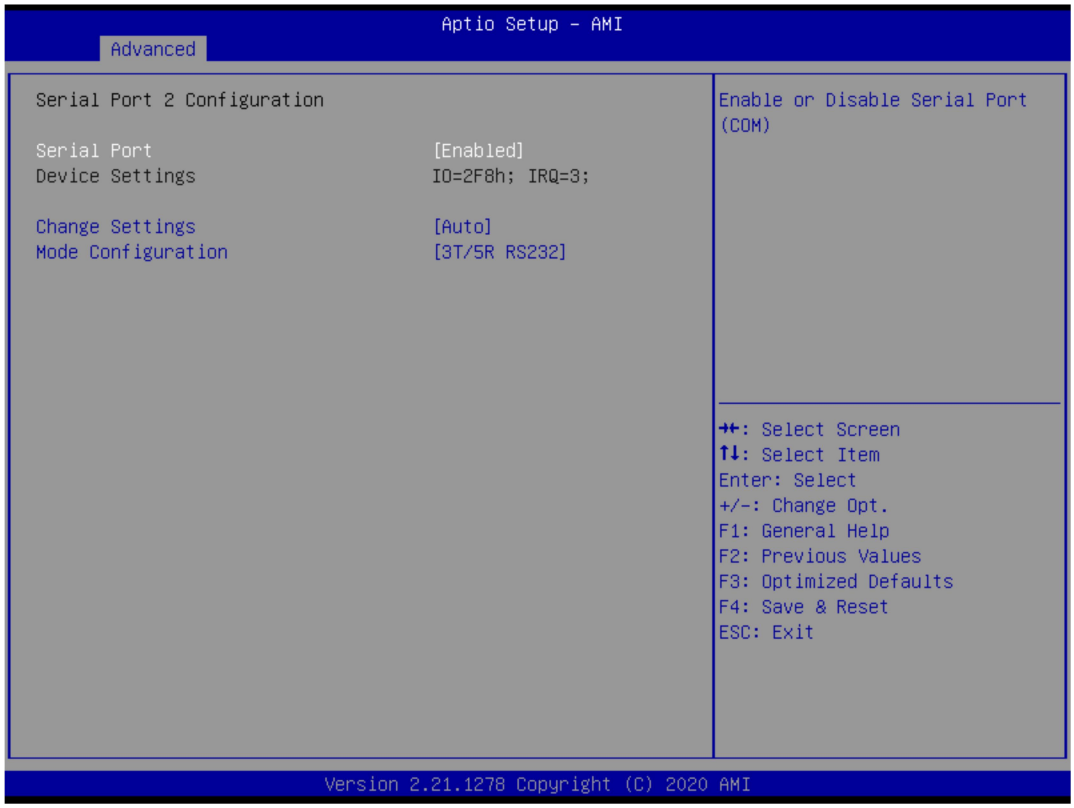


Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

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

3.4.6 Serial Port 2 Configuration



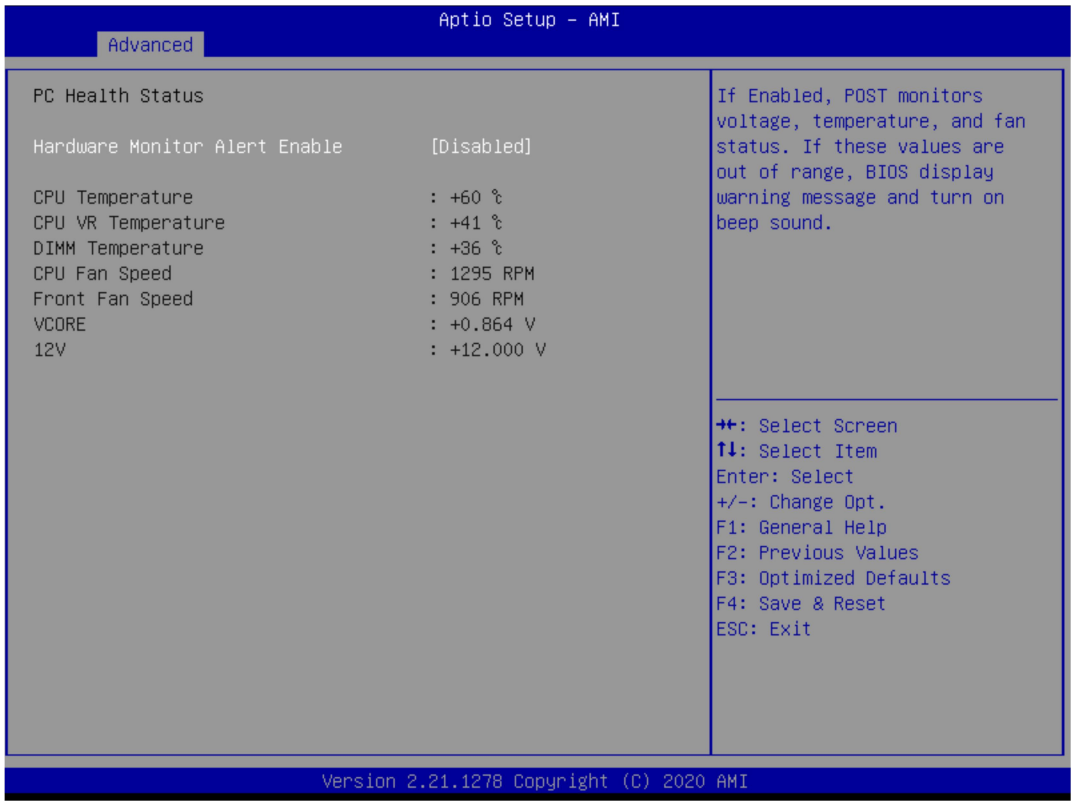
Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

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=2F8h; IRQ=3; 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=2E8h; 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	Select an optimal settings for Super IO Device

3.4.7 Hardware Monitor

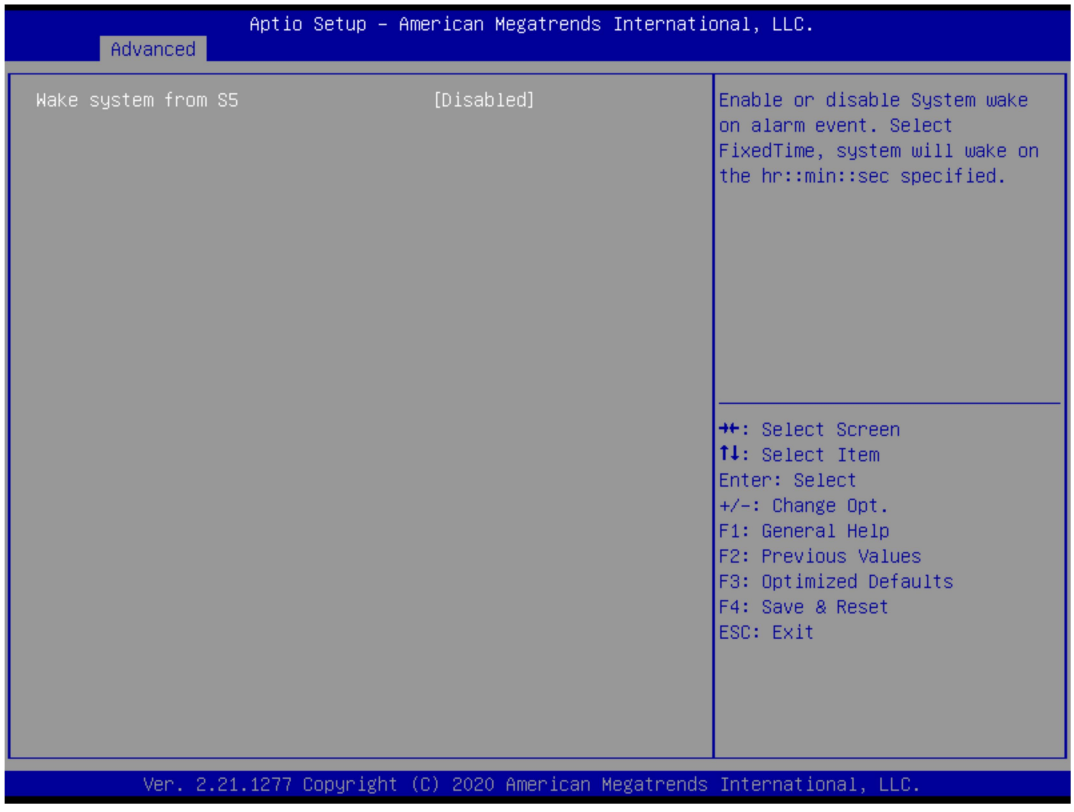


Type	Range
CPU Temperature	-20 ~ (By Processor Tjmax) °C
CPU VR Temperature	-20 ~ 120 °C
DIMM Temperature	-20 ~ 120 °C
CPU Fan Speed	There are many kinds of the fan could be installed into the syste so we could only set 0 RPM for the failed fan speed, and there is also no high RPM limitation.
Front Fan Speed	
CPU Vcore	0 ~1.52V
12V	11.4 ~ 12.6V

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.

3.4.8 RTC Wake Settings



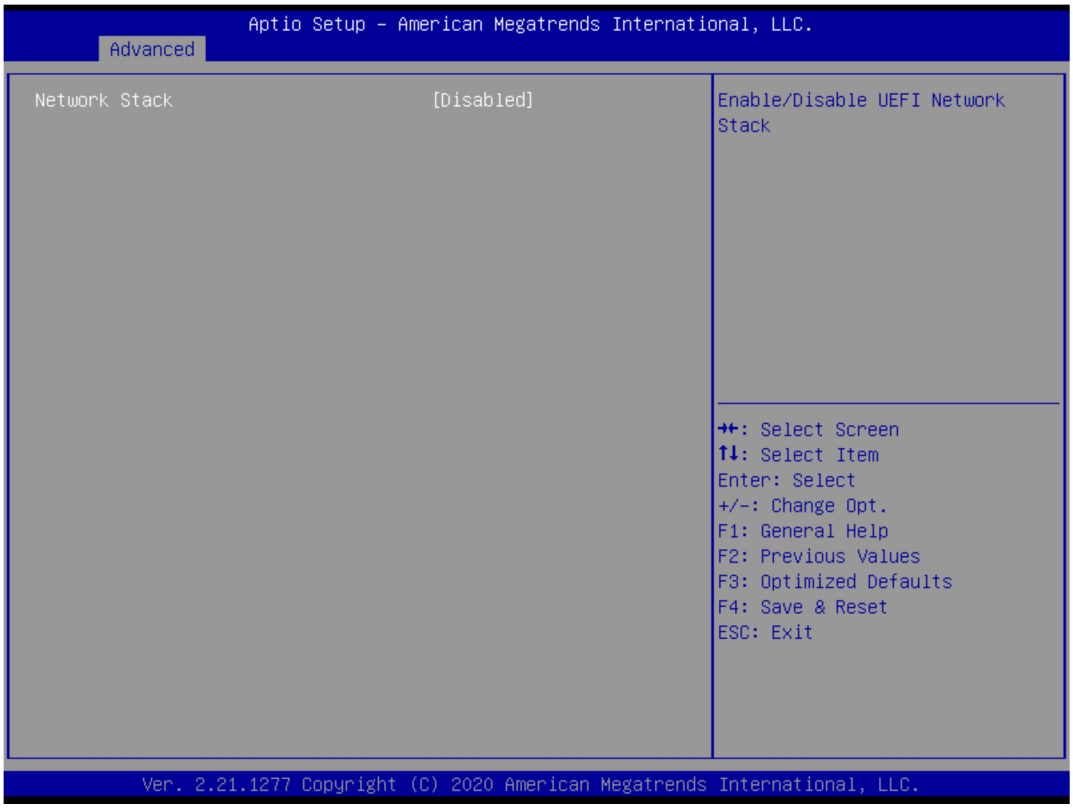
Field Name	Wake system from S5
Default Value	[Disabled]
Possible Value	Disabled Fixed Time
Help	Enable or disable System wake on alarm event, Select FixedTime, system will wake on the hr::min::sec specified.

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

3.4.9 Network Stack Configuration

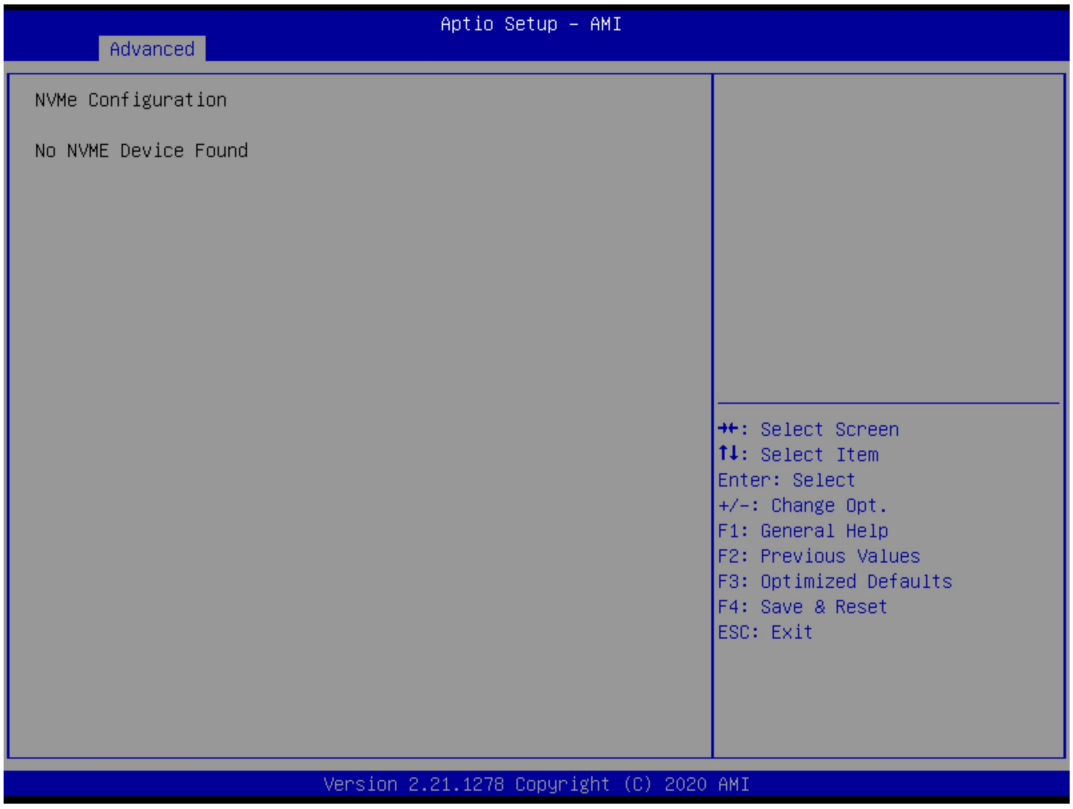


Field Name	Network stack
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable UEFI Network stack.

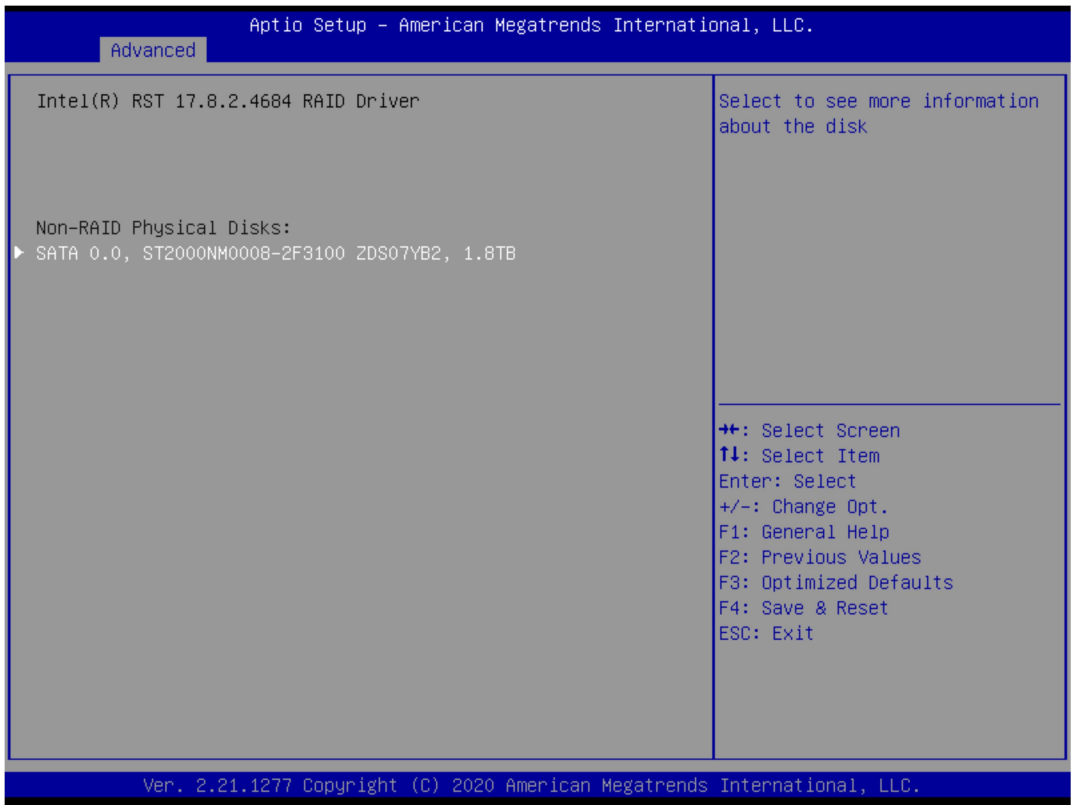
Field Name	Ipv4 PXE Support (Available when Network stack Enabled)
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot support will not be available.

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.

3.4.10 NVMe Configuration



3.4.11 Intel® Rapid Storage Technology

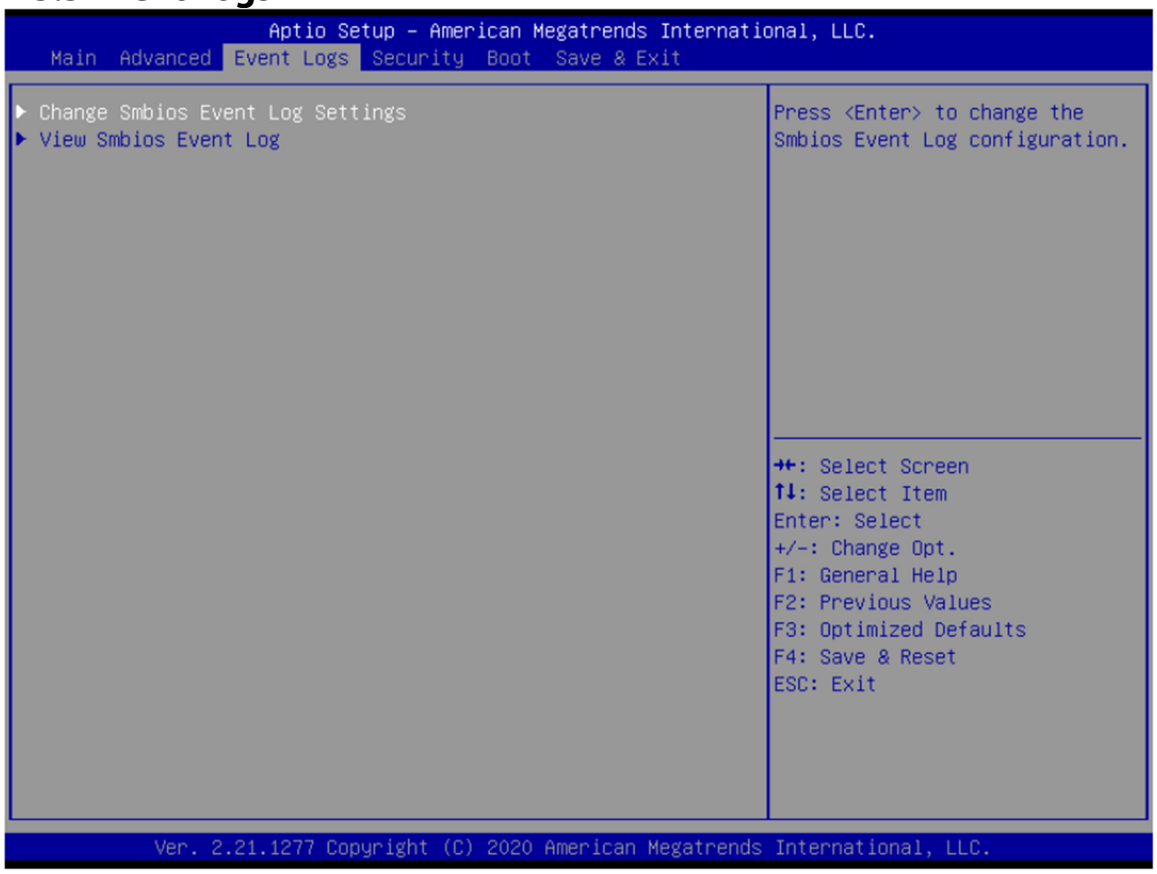


Field Name	Create RAID Volume
Help	This page allows you to create a RAID volume

Field Name	Raid Volume
Help	Select to see more information about the RAID Volume.

Field Name	Non-RAID Physical Disks:
Help	Select to see more information about the disk.

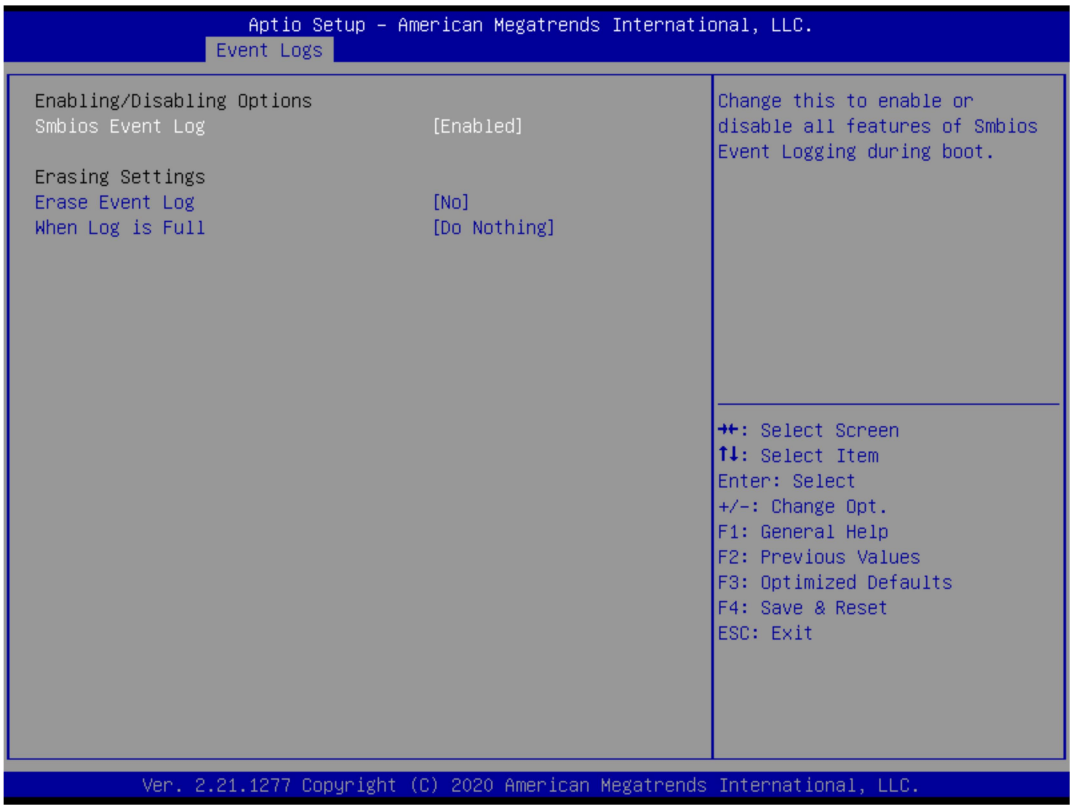
3.5 Event Logs



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

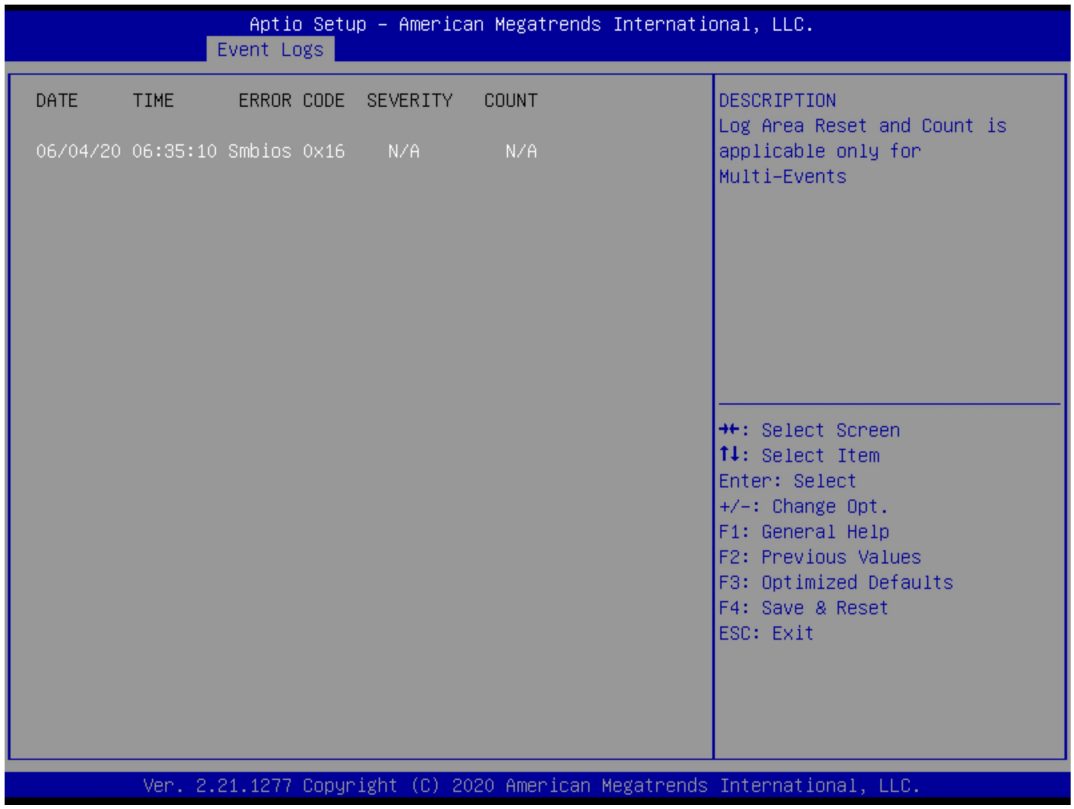


Field Name	**Smbios Event Log**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Change this to enable or disable all features of Smbios Event Logging during boot.

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.

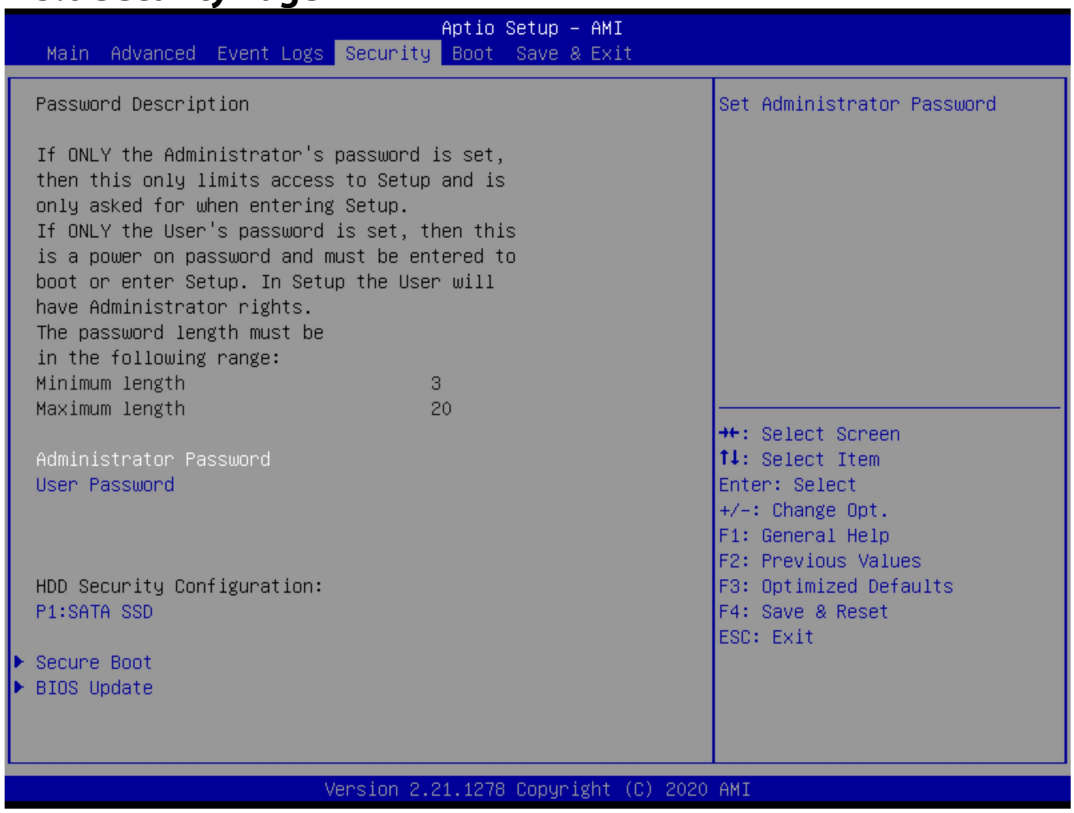
Field Name	**When Log is Full**
Default Value	[Do Nothing]
Possible Value	Do Nothing Erase Immediately
Help	Choose options for reactions to a full Smbios Event Log

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

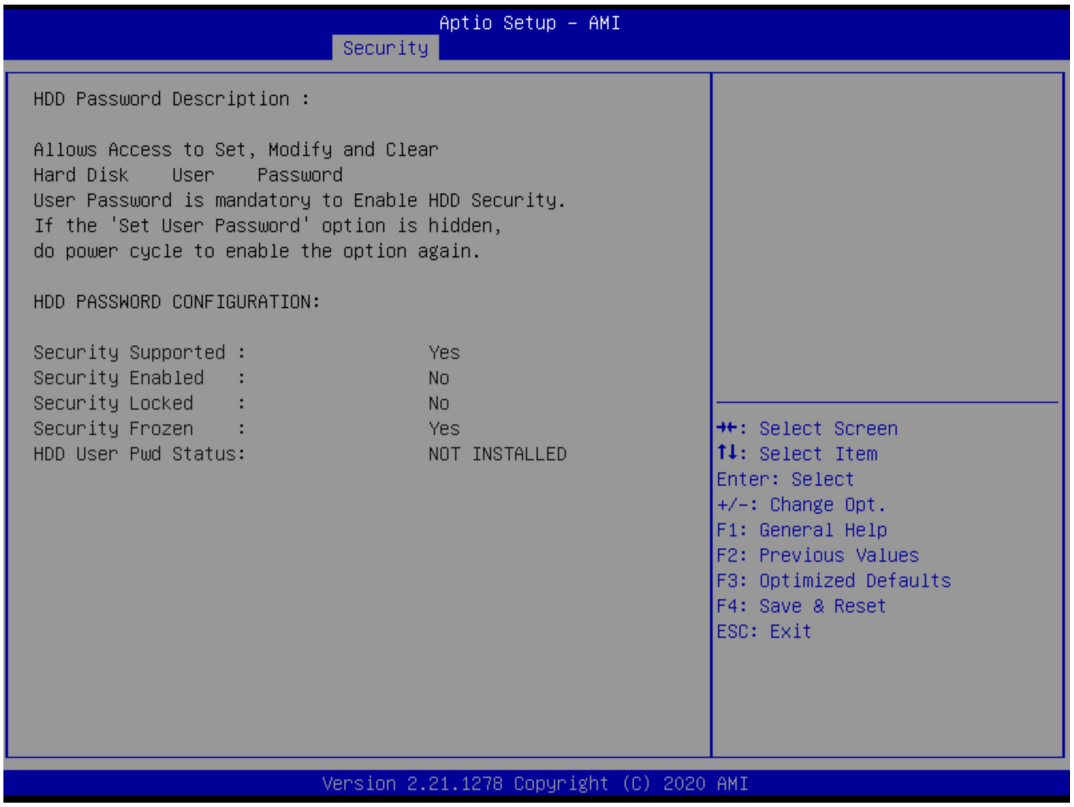
Field Name	User Password
Help	Set User Password.

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

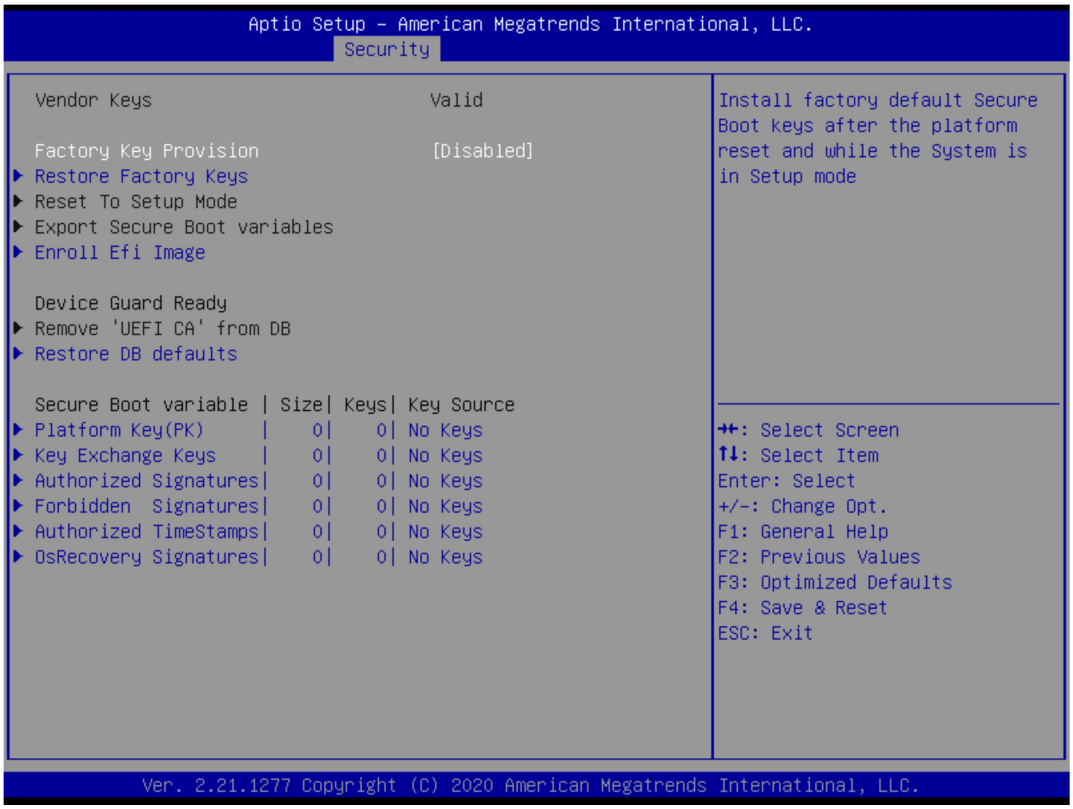
Field Name	**Secure Boot Mode**
Default Value	[Standard]
Possible Value	Standard Custom
Help	Secure Boot mode options:Standard or Custom.In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication

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)

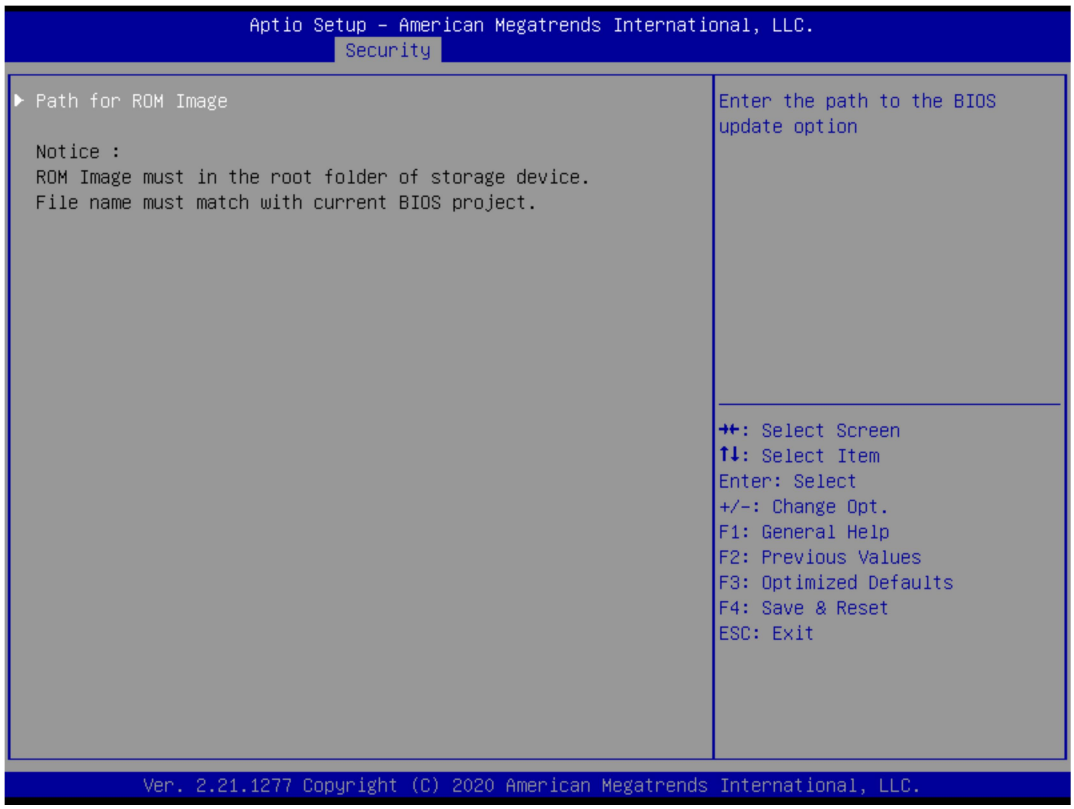
	Key Source: Factory,External,Mixed
Comment	Press Enter when selected to go into the associated Sub-Menu.

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.

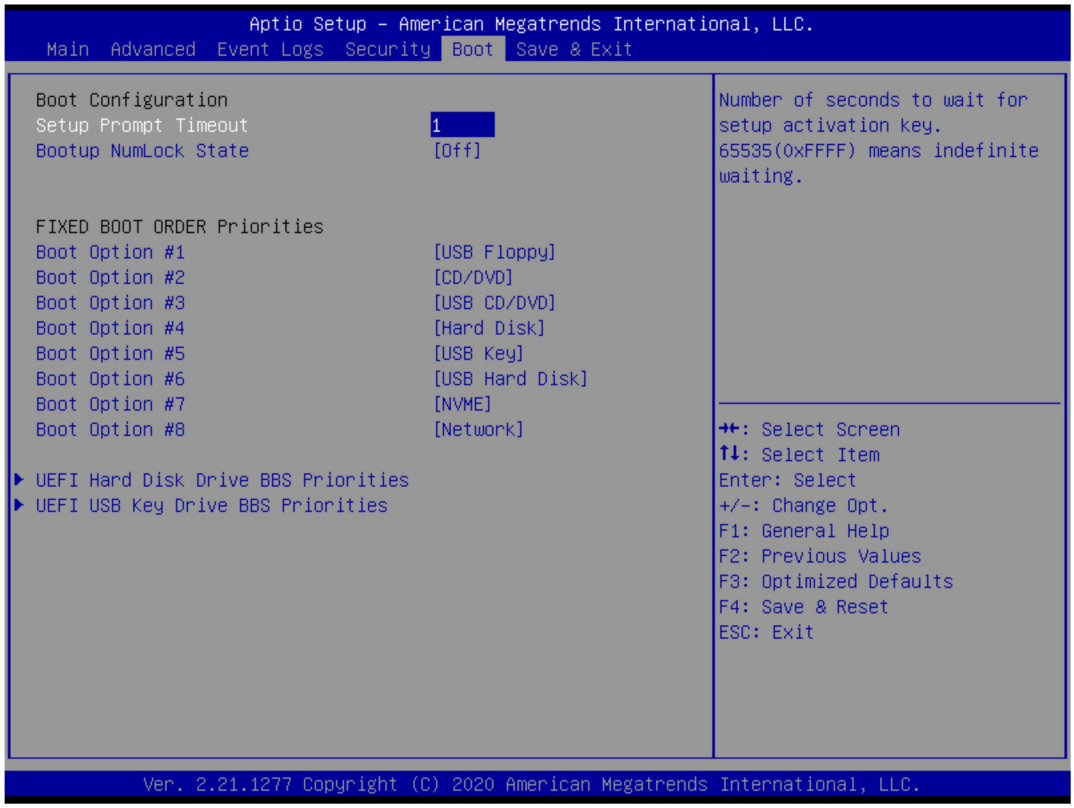
Field Name	**OsRecovery Signatures**
Default Value	Size:0, Keys:0, Key source: No Keys
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF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

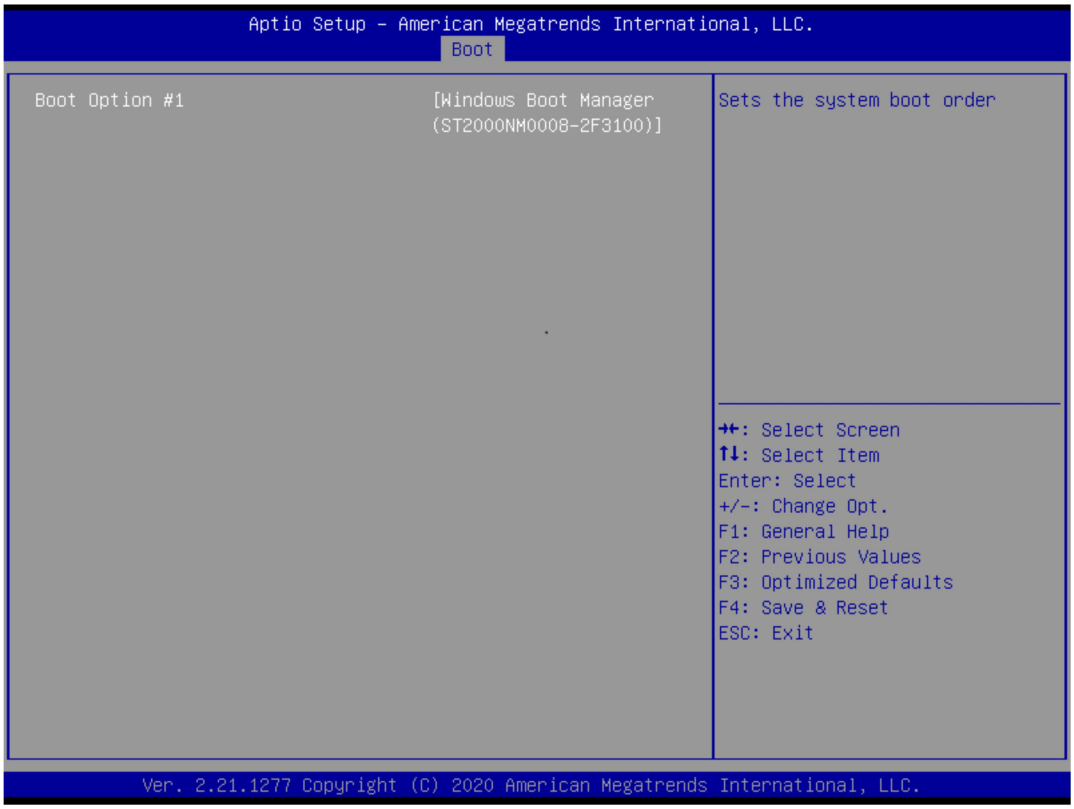
Field Name	(UEFI) USB KEY Drive BBS Priorities
Help	Specifies the Boot Device Priority sequence from available Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

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.

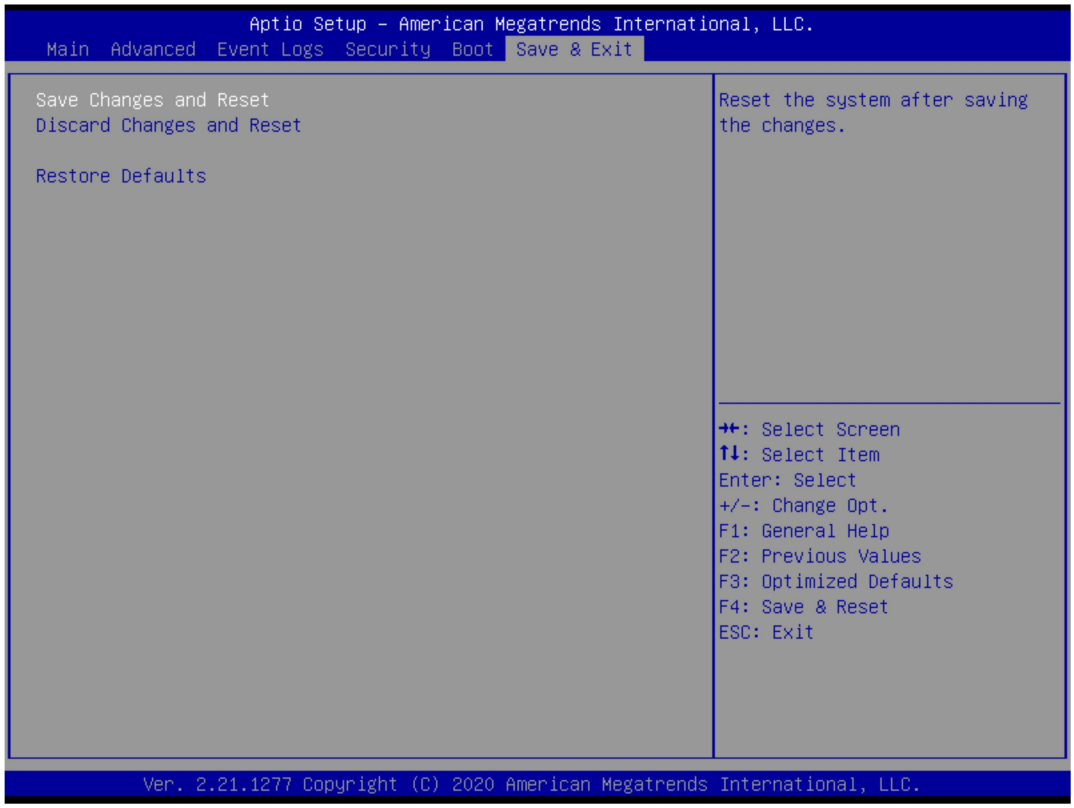
Field Name	(UEFI) NETWORK Drive BBS Priorities
Help	Specifies the Boot Device Priority sequence from available Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

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.