

MITAC Thin Mini-ITX Board PH12ADI Product Guide

Thin Mini-ITX Board Features

This chapter briefly describes the features of Thin Mini-ITX Board PH12ADI. Below to summarizes the major features of the Desktop Board.

Feature Summary

TABLE: MİTAC THIN MINI-ITX BOARD PH12ADI FEATURES

MECHANICAL	
FORM FACTOR	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)
SYSTEM	
PROCESSOR	12th Gen Intel® Alder Lake LGA1700 Socket Processor / Core i9/i7/i5/i3 Processor / TDP 65W
CHIPSET	Intel® H610 / Q670 (Q670 support RAID 0,1,5,10)
MEMORY	DDR5 4800 MHz, 2 x 262-pin SO-DIMM, Max. 64GB (Non-ECC) Horizontal
GRAPHICS	Intel® UHD Graphics 770
ETHERNET	Intel® I219-LM Giga LAN + Intel® I225V 2.5Giga LAN
AUDIO	Realtek® ACL888 Co-Lay ALC897
I/O CHIPSET	Nuvoton NCT6126D(eSPI)
TPM	TPM Header / (support optional TPM module board NPCT750)
EXPANSION SLOT	1x PCIe3.0 x4 slot 1x M.2 2242 / 2280 M key (PCIe3.0 X4, SATAIII) 1x M.2 2230 E key (PCIe X1, USB2.0, SMBus, CNVi) 1x M.2 3042 B key (USB2.0, PCIe3.0 X1, SATAIII)
BIOS	256 Mbit SPI, AMI BIOS
H/W MONITOR	Temperature Monitor, Voltage Monitor, Fan Monitor
WATCHDOG TIMER	1~255 Steps by Software Program
SMART FAN CONTROL	CPU Fan / System Fan
GRAPHICS	
VGA	-
DVI	-
HDMI	Up to 4K (4096 x 2160) @30 Hz

DISPLAYPORT	Up to 4K (4096 x 2304) @60 Hz
2rd DisplarPort	-
LVDS	Up to 1920 x 1200 @60 Hz
eDP(Optional)	Up to 4K (4096 x 2304) @60 Hz

REAR I/O

USB	4 x USB3.2 Gen1 (H610E) 4 x USB3.2 Gen2 (Q670E)
DISPLAY I/O	1 x HDMI , 1 x DisplayPort
AUDIO I/O	1 x Mic-in ,1 x Line-out
LAN I/O	2 x RJ-45
SERIAL PORT	-
PS/2 PORT	-
OTHERS	DC-in 12V (2.5 mm / ID, 5.5 mm / OD) / DC-in 19V (5.1 mm / ID, 7.4 mm / OD)

INTERNAL CONNECTORS

STORAGE	2 x SATAIII
USB	H610 & Q670: 5 x USB 2.0 (1 x USB share M.2 B) / Q670: 2 x USB 3.2
DISPLAY I/O	1 x LVDS (*Optional eDP SKU available), 1 x Backlight Connector
SERIAL PORT	1 x RS232 / 1 x RS232 / 422 / 485
PARALLEL PORT	-
GPIO	1 x MiAPI Header (Programmable)
FAN	1 x 4-pin CPU Fan Connector, 1 x 4-pin System Fan Connector
POWER	1 x AT / ATX Mode Select Jumper / 1 x 4-pin ATX Power Connector
OTHERS	1 x CMOS Jumper / 1 x Front Audio Header (Mic-in & Line-out) / 1 x panel power select header / 1x buzzer header / 1x Digital MIC / 1 x FIO header / 1 x intrusion switch header

POWER REQUIREMENT

POWER INPUT

DC-in 12V (2.5 mm / ID, 5.5 mm / OD) / ATX 4-pin 12V /
DC-in 19V (5.1 mm / ID, 7.4 mm / OD) / ATX 4-pin 19V

ENVIRONMENTAL**OPERATING****TEMPERATURE**

0 ~ 60°C (32 ~140°F)

STORAGE TEMPERATURE -40 ~ 85°C (-40 ~185°F)

OPERATING HUMIDITY 10% ~ 95% R / H, non-condensing

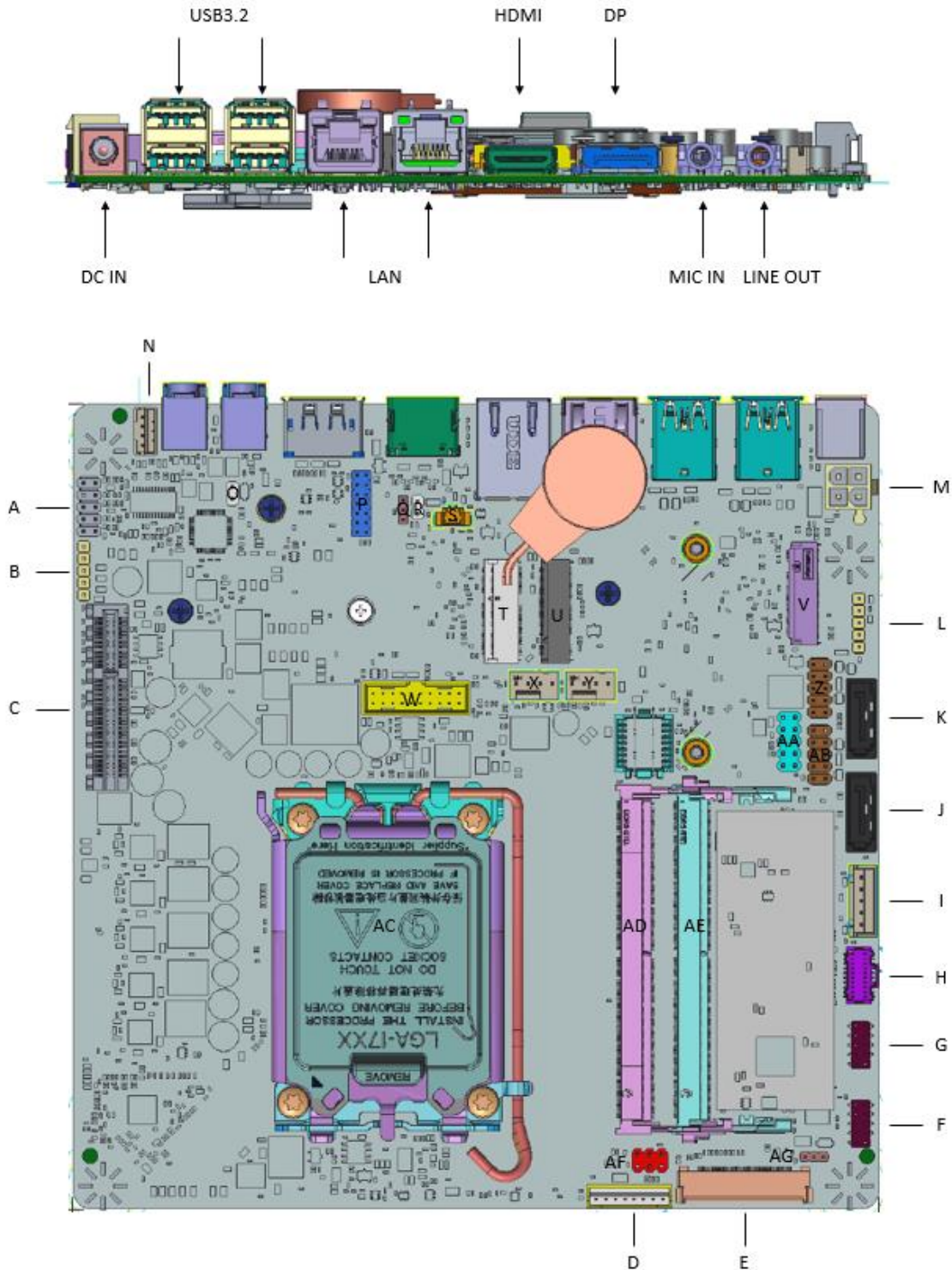
CERTIFICATION CE & FCC Class B

TABLE 1. MITAC DESKTOP BOARD PH12ADI FEATURES

Note: please install I219 LAN driver into OS image on PXE server before using PXE installation function

Desktop Board Components

Figure 1 shows the approximate location of the major components on the top side of MITAC Desktop Board PH12ADI.



Item	Description
A	Front Panel Audio Header
B	DMIC Header
C	PCIEx4
D	LVDS Backlight Header
E	LVDS/eDP Connector
F	Serial Port Header(COM1)
G	Serial Port Header(COM2)
H	MiAPI Header
I	SATA Power Header
J	SATA
K	SATA
L	USB2.0 Header
M	ATX 4pin
N	Speaker Header
O	Buzzer Header
P	TPM Header
Q	Clear CMOS Header
R	Intruder Header
S	RTC Battery Header
T	M.2 E Key

U	M.2 M Key
V	M.2 B Key
W	USB3.0 Header
X	System FAN Header
Y	CPU FAN Header
Z	USB2.0 Header
AA	Front Panel Header
AB	USB2.0 Header
AC	LGA 1700 CPU Socket
AD	DDR5 SODIMM Socket
AE	DDR5 SODIMM Socket
AF	Panel Power Option
AG	AT/ATX Mode Selection

TABLE 2. MITAC DESKTOP BOARD PH12ADI COMPONENTS (SHOWN IN FIGURE 1)

Processor

The board supports 12th generation Intel Core processors. Other processors may be supported in the future. This board supports processors with a maximum wattage of 65 W Thermal Design Power (TDP).

NOTE

This board has specific requirements for providing power to the processor. Additional power required will depend on configurations chosen by the integrator.

System Memory

NOTE

To be fully compliant with all applicable DDR SDRAM memory specifications, the board should be populated with DIMMs that support the Serial Presence Detect (SPD) data structure. This allows the BIOS to read the SPD data and program the chipset to accurately configure memory settings for optimum performance. If non-SPD memory is installed, the BIOS will attempt to correctly configure the memory settings, but performance and reliability may be impacted or the DIMMs may not function under the determined frequency.

The Desktop Board has two 262-pin DDR5 SO-DIMM sockets with gold-plated contacts.

Connecting to the Internal Headers and Connectors

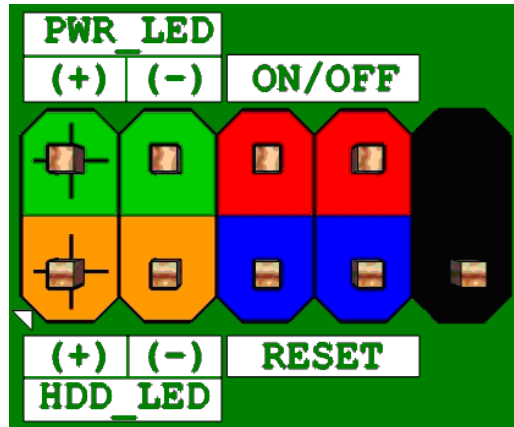


Figure 1: Front Panel Connector

Pin	Signal Name	Description	Pin	Signal Name	Description
1	HDD_POWER_LED	Pull-up resistor (330 ohm) to +5V	2	POWER_LED_MAIN	[Out] Front panel LED (Green)
3	HDD_LED#	[Out] Hard disk activity LED	4	POWER_LED_ALT	[Out] Front panel LED (Yellow)
5	GROUND	Ground	6	POWER_SWITCH#	Power button
7	RESET_SWITCH#	Reset switch	8	GROUND	Ground
9	+5V_DC	Power	10	KEY	No pin

Table 1: Front Panel Connector signals

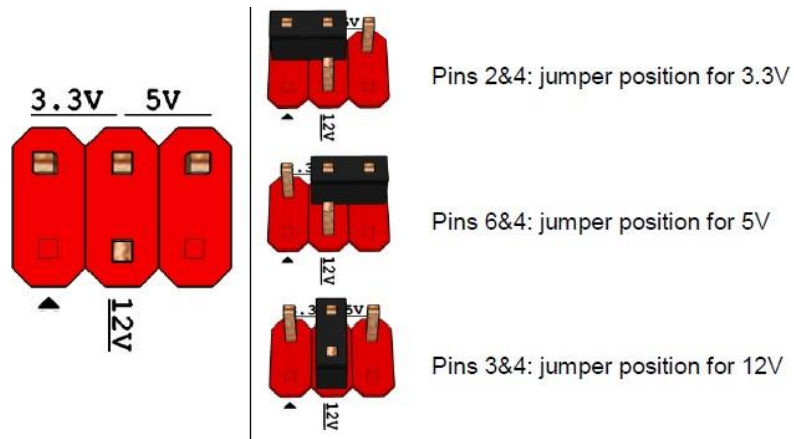


Figure 2: Panel Power Header

Pin	Signal Name	Description
1	Key	No pin
2	3.3V	3.3V option (default)
3	12V	12V option
4	LCD_VCC	Send voltage to connector
5	Key	No pin
6	5V	5V option

Table 2: Panel Power Header signals

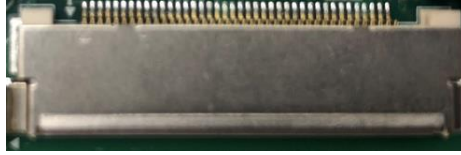


Figure 3: LVDS Connector

ACES / maker P/N : 88341-4001

LVDS(40pin)			
Pin	Net Name	Pin	Net Name
1	LVDS0_LINK3_CON_DP	21	NC
2	LVDS0_LINK3_CON_DN	22	VCC3
3	LVDS0_LINK2_CON_DP	23	CABLE_ID2
4	LVDS0_LINK2_CON_DN	24	GND
5	LVDS0_LINK1_CON_DP	25	GND
6	LVDS0_LINK1_CON_DN	26	LVDS0_CLK_CON_DP
7	LVDS0_LINK0_CON_DP	27	LVDS0_CLK_CON_DN
8	LVDS0_LINK0_CON_DN	28	GND
9	LVDS1_LINK3_CON_DP	29	GND
10	LVDS1_LINK3_CON_DN	30	CABLE_ID3
11	LVDS1_LINK2_CON_DP	31	LVDS_DDC_SCL
12	LVDS1_LINK2_CON_DN	32	CABLE_ID1
13	LVDS1_LINK1_CON_DP	33	CH7513_BKLT_CTRL
14	LVDS1_LINK1_CON_DN	34	LVDS1_CLK_CON_DP
15	LVDS1_LINK0_CON_DP	35	LVDS1_CLK_CON_DN
16	LVDS1_LINK0_CON_DN	36	NC
17	GND	37	NC
18	PANEL_PWR	38	NC
19	PANEL_PWR	39	CABLE_ID4
20	PANEL_PWR	40	NC

Table 3: 40-pin LVDS Connector signals

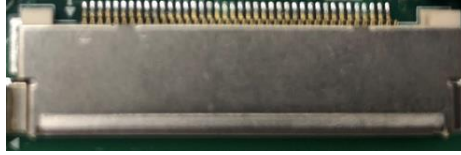


Figure 4: eDP Connector

ACES / maker P/N : 88341-4001

eDP(40pin)			
Pin	Net Name	Pin	Net Name
1	NC	21	PANEL_PWR
2	GND	22	NC
3	EDP_CPU_3-	23	CABLE_ID2
4	EDP_CPU_3+	24	GND
5	GND	25	GND
6	EDP_CPU_2-	26	GND
7	EDP_CPU_2+	27	eDP_HPDET
8	GND	28	GND
9	EDP_1-_CONN	29	GND
10	EDP_1+_CONN	30	CABLE_ID3
11	GND	31	GND
12	EDP_0-_CONN	32	BKLT_EN
13	EDP_0+_CONN	33	EDP_BKLT_CTRL
14	GND	34	NC
15	EDP_AUX+_CONN	35	NC
16	EDP_AUX-_CONN	36	BKLT_PWR
17	GND	37	BKLT_PWR
18	PANEL_PWR	38	BKLT_PWR
19	PANEL_PWR	39	NC
20	PANEL_PWR	40	NC

Table 4: 40-pin eDP Connector signals



Figure 5: LVDS Inverter Power Header

Joint tech / maker P/N: A2001WV-F-08PNLNT1NY7G

Pin	Signal Name	Description
1	LVDS_BKTEN_R	Backlight enable
2	LVDS_PWM	Backlight PWM control
3	BKLT_PWR (12v)	Inverter power
4	BKLT_PWR (12v)	Inverter power
5	GND	Ground
6	GND	Ground
7	BRIGHT_UP-	BRIGHTNESS UP
8	BRIGHT_DOWN-	BRIGHTNESS DOWN

Table 5: LVDS Inverter Power Header signals

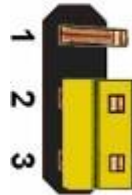


Figure 6: AT/ATX Mode Header

Pin	Description
1-2	AT Mode
2-3	ATX Mode

Table 6: AT/ATX Mode Header signals



Figure 7: FP Audio Header

Pin	Signal Name	Description
1	MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	MIC_BIAS	Microphone power / additional MIC input for stereo microphone support
4	Presence	Active low signal that signals bios that an audio dongle is connected to the analog header
5	FP_OUT_R	Right channel audio signal to front panel
6	AUD_SENSE_MIC_FP	Front panel microphone jack detect (short to pin7 to enable)
7	FIO_SENSE	Front panel detect pin
8	Key	No pin
9	FP_OUT_L	Left channel audio signal to front panel
10	AUD_SENSE_HP	Front panel headphone jack detect (shore to pin7 to enable)

Table 7: FP Audio Header signals



Figure 8: DMIC Header

Pin	Signal Name
1	3V3
2	DMIC_DATA
3	Ground
4	DMIC_CLK
5	Key (no pin)

Table 8: DMIC Header signals

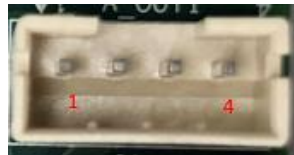


Figure 9: Speaker Header

Pin	Signal Name
1	LOUT-
2	LOUT+
3	ROUT+
4	ROUT-

Table 9: Speaker Header signals



Figure 10: USB2.0 Header

Pin	Signal Name
1	5V_USB
2	Data (negative)
3	Data (positive)
4	Ground
5	Key (no pin)

Table 10 USB 2.0 Header signals

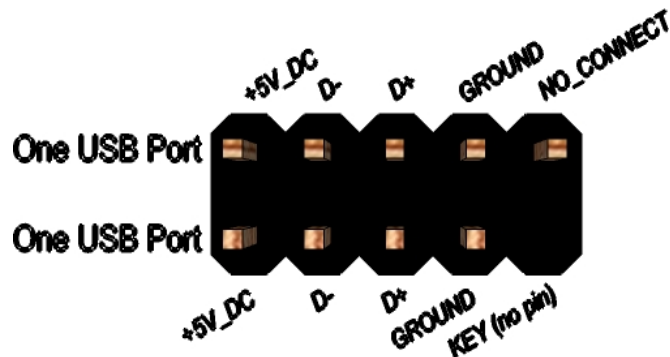


Figure 11: Dual USB2.0 Header

Pin	Signal Name	Pin	Signal Name
1	5V_USB	2	5V_USB
3	Data (negative)	4	Data (negative)
5	Data (positive)	6	Data (positive)
7	Ground	8	Ground
9	Key (no pin)	10	No Connect

Table 11 Dual USB 2.0 Header signals



Figure 12: Dual USB3.0 Header

Pin	Signal Name	Pin	Signal Name
1	5V_USB	20	Key (no pin)
2	SSRX-	19	5V_USB
3	SSRX+	18	SSRX-
4	Ground	17	SSRX+
5	SSTX-	16	Ground
6	SSTX+	15	SSTX-
7	Ground	14	SSTX+
8	D-	13	Ground
9	D+	12	D-
10	NC	11	D+

Table 12 Dual USB 3.0 Header signals

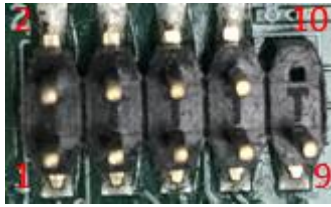


Figure 13: Serial Port Header (COM1)

	RS232	RS-422	RS-485
Pin	Signal Name	Signal Name	Signal Name
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
10	Key(no pin)	NC	NC

Table 13 Serial Port Header signals (COM1)



Figure 14: Serial Port Header (COM2)

	RS232	RS-422	RS-485
Pin	Signal Name	Signal Name	Signal Name
1	DCD	NC	NC
2	RXD#	NC	NC
3	TXD#	NC	NC
4	DTR	NC	NC
5	GND	NC	NC
6	DSR	NC	NC
7	RTS	NC	NC

8	CTS	NC	NC
9	RI	NC	NC
10	Key(no pin)	NC	NC

Table 14 Serial Port Header signals (COM2)

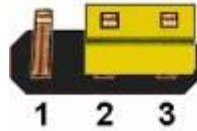


Figure 15: CMOS Clear Header

Pin	Description
1-2	Clear CMOS
2-3	Normal

Table 15: CMOS Clear Behavior

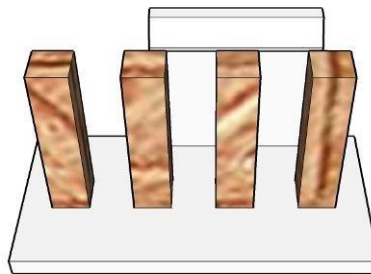


Figure 16: Fan Header

Pin	Signal Name
1	Ground
2	+12V
3	CPU_FAN_TACH
4	CPU_FAN_CTRL

Table 16: Fan Header signals

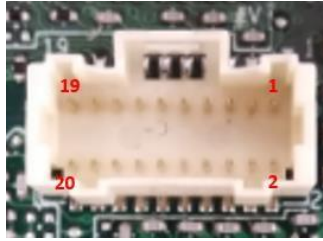


Figure 17: MiAPI Header

Pin	Signal Name	Pin	Signal Name
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	NA

Table 17: MiAPI Header signals



Figure 18: TPM Header

Pin	Signal Name	Pin	Signal Name
1	VCC3_TPM	2	TPM_CS
3	TPM_MISO	4	Key (no pin)
5	TPM_MOSI	6	PLTRST_N
7	TPM_PRIQ_N	8	Ground
9	NC	10	TPM_CLK
11	NC	12	TPM_DET
13	NC	14	VSB_3V3

Table 18: TPM Header signals

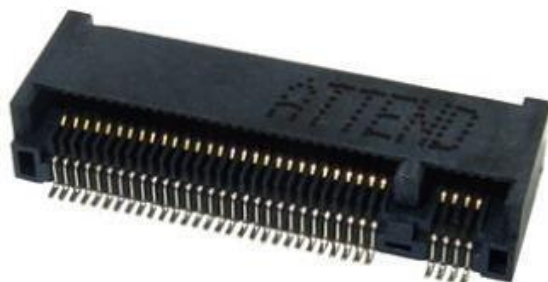


Figure 19: M.2 M key slot For Storage

74	3.3Vaux	GND	75
72	3.3Vaux	GND	73
70	3.3Vaux	GND	71
68	SUSCLK(32kHz)(O)(0/3.3V)	PEDET(OC-PCIe/GND-SATA)	69
	ConnectorKey	N/C	67
	ConnectorKey	ConnectorKey	
	ConnectorKey	ConnectorKey	
	ConnectorKey	ConnectorKey	
58	N/C	ConnectorKey	
56	N/C	GND	57
54	PEWAKE#(IO){0/3.3V}or N/C	REFCLKP	55
52	CLKREQ#(IO){0/3.3V}orN/C	REFCLKN	53
50	PERST#(O){0/3.3V}orN/C	GND	51
48	N/C	PETp0/SATA-A+	49
46	N/C	PETn0/SATA-A-	47
44	N/C	GND	45
42	N/C	PERp0/SATA-B-	43
40	N/C	PERn0/SATA-B+	41
38	DEVSLP(O){0/3.3V}	GND	39
36	N/C	PETp1	37
34	N/C	PETn1	35
32	N/C	GND	33
30	N/C	PERp1	31
28	N/C	PERn1	29
26	N/C	GND	27
24	N/C	PETp2	25

22	N/C	PETn2	23
20	N/C	GND	21
18	3.3Vaux	PERp2	19
16	3.3Vaux	PERn2	17
14	3.3Vaux	GND	15
12	3.3Vaux	PETp3	13
10	DAS/DSS#(l){OD}	PETn3	11
8	N/C	GND	9
6	N/C	PERp3	7
4	3.3Vaux	PERn3	5
2	3.3Vaux	GND	3
		GND	1

Table 19: M.2 M key slot For Storage signals

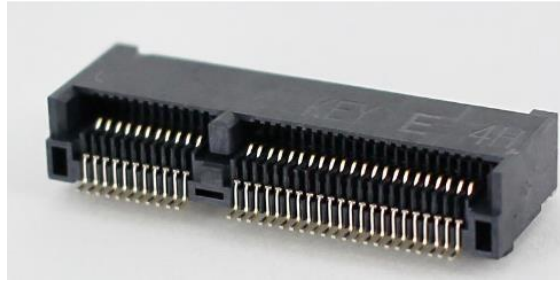


Figure 20: M.2 E key slot For wireless

	Standard M.2 Key E	LcP Signals	LcP Signals	Standard M.2 Key E	
			GND		75
74	+V3P3A		WT_CLKP	REFCLKN1	73
72	+V3P3A		WT_CLKN	REFCLKP1	71
70	PEWake1# (IO)(0/3.3V)				69
68	CLKREQ1# (IO)(0/3.3V)		GND		67
66	PERST1# (O)(0/3.3V)		WT_D0P	PERn1	65
64	RESERVED	REFCLK0 (I)(1V@38.4MHz)	WT_D0N	PERp1	63
62	ALERT# (I)(0/1.8)	A4WP_IRQ#			61
60	I2C_CLK (O)(0/1.8V)	A4WP_I2C_CLK	WT_D1P	PETn1	59
58	I2C_DATA (IO)(0/1.8)	A4WP_I2C_DATA	WT_D1N	PETp1	57
56	W_DISABLE1# (O)(0/3.3V)		GND		55
54	W_DISABLE2# (O)(0/3.3V)		PEWake0# (IO)(0/3.3V)		53
52	PERST0# (O)(0/3.3V)		CLKREQ0# (IO)(0/3.3V)		51
50	SUSCLK(32kHz) (O)(0/3.3V)	C_P32K (3.3V Tolerant)	GND		49
48	COEX_TXD (O)(0/1.8V)		REFCLKN0		47
46	COEX_RXD (O)(0/1.8V)		REFCLKP0		45
44	COEX3 (IO)(0/1.8V)		GND		43
42	CLink CLK		PERn0		41
40	CLink DATA		PERp0		39
38	CLink RESET (O)(0/3.3V)		GND		37
36	LPSS UART RTS (O)(0/1.8V) / BRI_DT (MUX'd in PCH/SoC)		PETn0		35
34	LPSS UART CTS (I)(0/1.8V) / RGI_RSP (MUX'd in PCH/SoC)		PETp0		33
32	LPSS UART Tx (O)(0/1.8V) / RGI_DT (MUX'd in PCH/SoC)		GND		
E	Connector Key		Connector Key		E
	Connector Key		Connector Key		
	Connector Key		Connector Key		
	Connector Key		Connector Key		
22	LPSS UART Rx (I)(0/1.8V) / BRI_RSP (MUX'd in PCH/SoC)		WGR_CLKP	SDIO Reset#(O)(0/1.8V)	23
20	UART Wake# (I)(0/3.3V)		WGR_CLKN	SDIO Wake#(I)(0/1.8V)	21
18	GND	GND/LNA_EN (LcP Production)	GND	SDIO DAT3(IO)(0/1.8V)	19
16	LED2# (I)(OD)		WGR_D0P	SDIO DAT2(IO)(0/1.8V)	17
14	PCM_OUT (O)(0/1.8V) / CLKREQ0 (MUX'd in PCH/SoC)		WGR_D0N	SDIO DAT1(IO)(0/1.8V)	15
12	PCM_IN (I)(0/1.8V)		GND	SDIO DAT0(IO)(0/1.8V)	13
10	PCM_SYNC (O)(0/1.8V) / RF_RESET_B (MUX'd in PCH/SoC)		WGR_D1P	SDIO CMD(IO)(0/1.8V)	11
8	PCM_CLK (O)(0/1.8V)		WGR_D1N	SDIO CLK(O)(0/1.8V)	9
6	LED1# (I)(OD)		GND		7
4	+V3P3A		USB_D-		5
2	+V3P3A		USB_D+		3
			GND		1

Table 20: M.2 E key slot For wireless signals



Figure 21: SATA Header

Pin	Signal Name	Description
1	GND	Ground
2	SATAHDR_TXP0_C	SATA DATA Transmit(positive)
3	SATAHDR_TXN0_C	SATA DATA Transmit(negative)
4	GND	Ground
5	SATAHDR_RXN0_C	SATA DATA Receive(negative)
6	SATAHDR_RXP0_C	SATA DATA Receive(positive)
7	GND	Ground

Table 21: SATA Header signals



Figure 22: SATA Power Header

Pin	Signal Name
1	3V3
2	Ground
3	5V
4	Ground
5	12V

Table 22: SATA Power Header signals

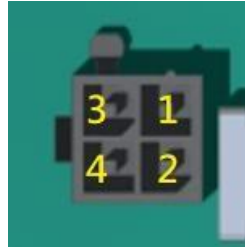
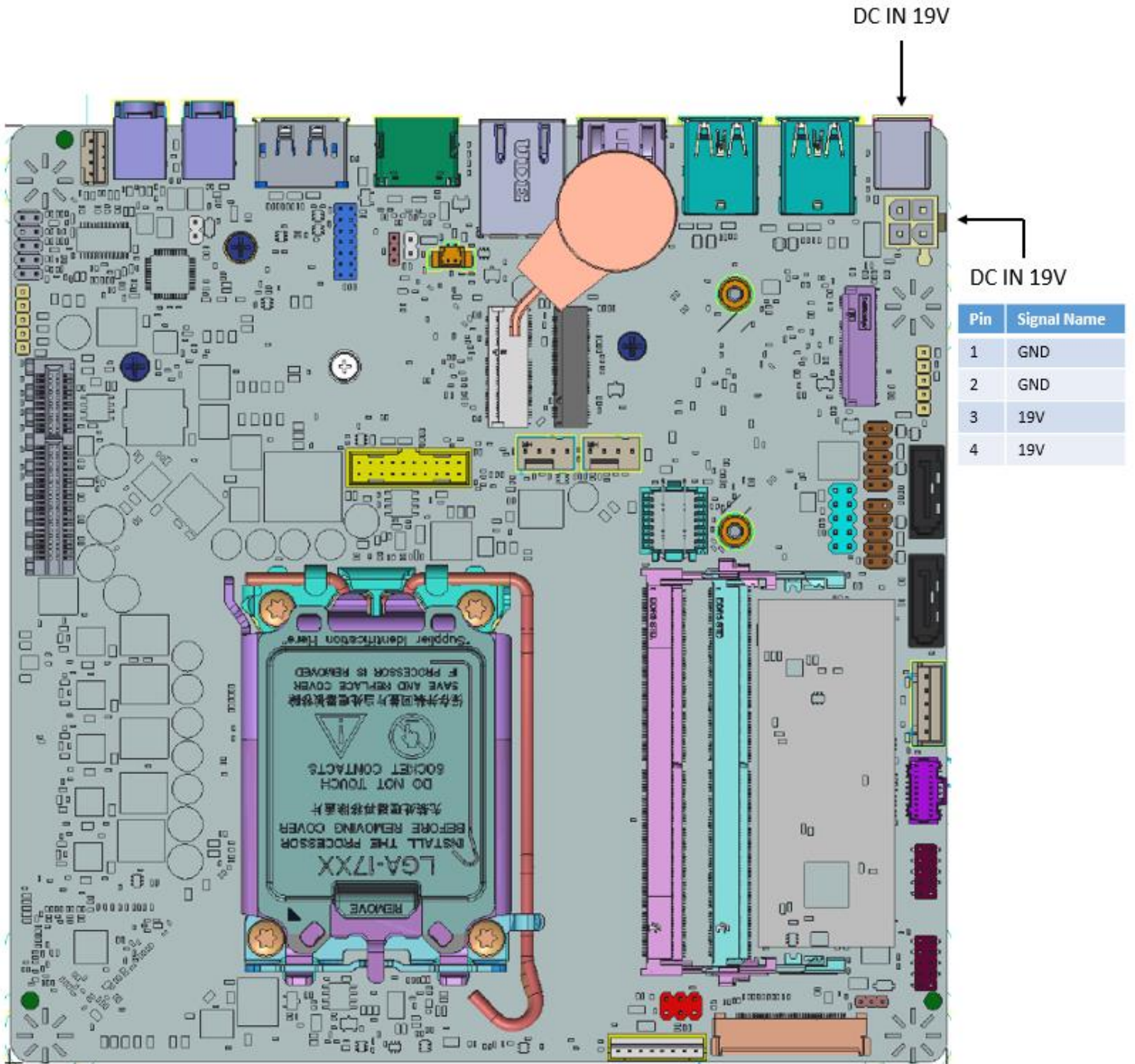


Figure 23: Power Supply Connector

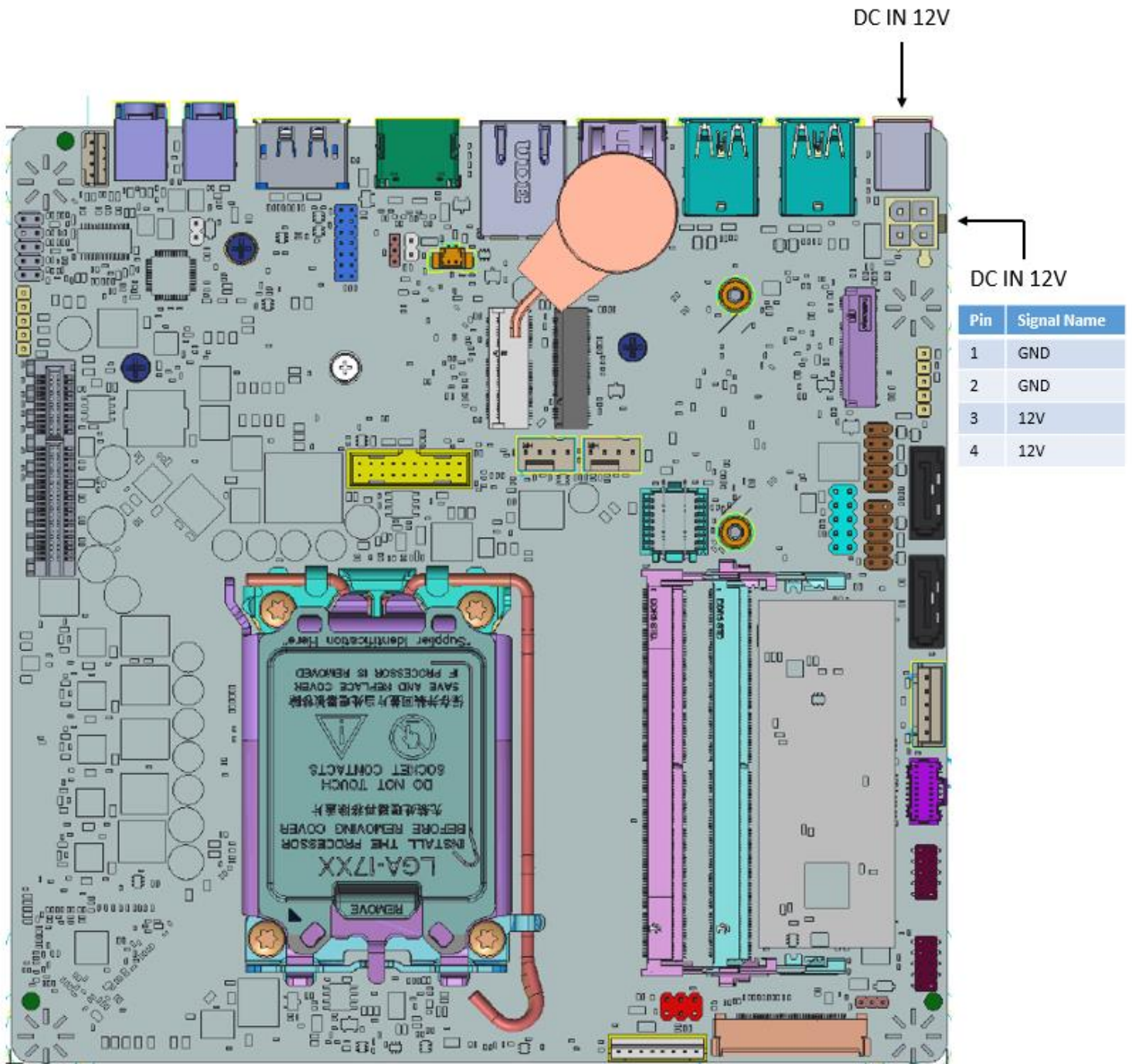
Pin	Signal Name
1	GND
2	GND
3	12V or 19V DC in
4	12V or 19V DC in

Table 23: Power Supply Connector signals

Single 19V Operation



Single 12V Operation



MITAC Desktop Board PH12ADI

BIOS Specification

1. Main Page

Aptio Setup - AMI

Main | Advanced | Security | Boot | Save & Exit | Event Logs

BIOS Information		Set the Date. Use Tab to switch between Date elements. Default Ranges: Year: 1900-9999 Months: 1-12 Days: Dependent on month Range of Years may vary.
BIOS Vendor	American Megatrends	
Core Version	5.25	
Compliancy	UEFI 2.8; PI 1.7	
BIOS Version	D8520X07	
Build Date	05/03/2022	
ME FW Version	16.0.15.1735	
Processor Information		
Intel(R) Pentium(R) Gold G7400TE		
Microcode Revision	1E	
Total Memory	8192 MB	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Memory Slot1	0 MB (DDR4)	
Memory Slot2	0 MB (DDR4)	
Memory Frequency	2133 MHz	
Serial ATA Port 4	Empty	
Serial ATA Port 5	Empty	
Serial ATA Port 6	Empty	
Serial ATA Port 7	Empty	
System Date	[Sat 01/21/2023]	
System Time	[11:18:18]	

Version 2.22.1284 Copyright (C) 2022 AMI

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

Field Name	Core Version
Default Value	5.24
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Compliancy
Default Value	UEFI 2.8 ; 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
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
Value	ME Firmware Version.
Comment	This field is not selectable. There is no help text associated with it.

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

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

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

Field Name	Memory Slot1
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
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
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 4
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	Serial ATA Port 5
Value	Display the installed SATA device model/size of port 5.
Comment	This field is not selectable. There is no help text associated with it.

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

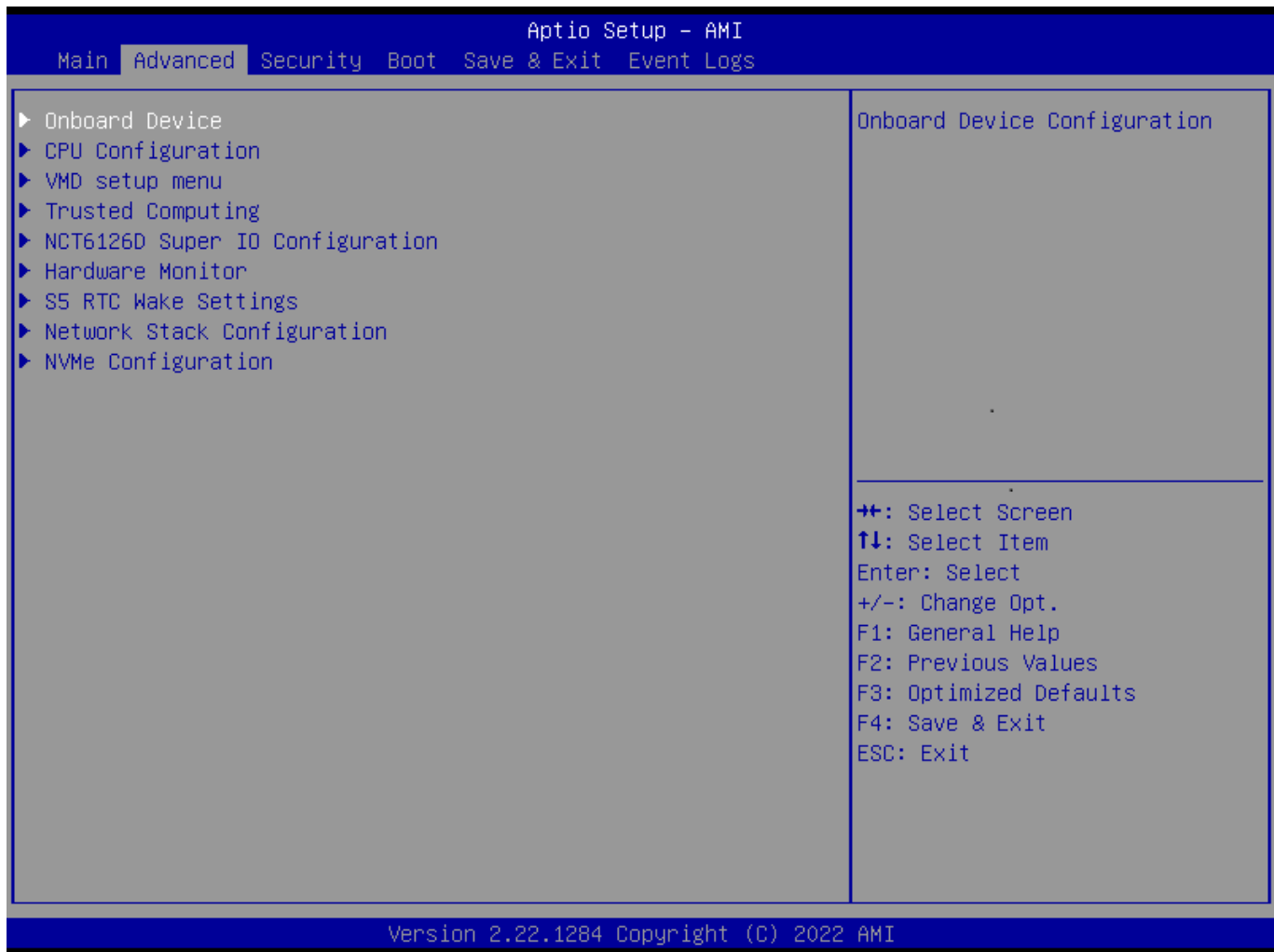
Field Name	Serial ATA Port 7
Value	Display the installed SATA device model/size of port 7.
Comment	This field is not selectable. There is no help text associated with it.

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 : 1900-9999
Help	Set the Date. Use Tab to switch between Date elements. Default Ranges: Year : 1900-9999 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.

2. Advanced 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	VMD setup menu
Help	VMD setup menu
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.

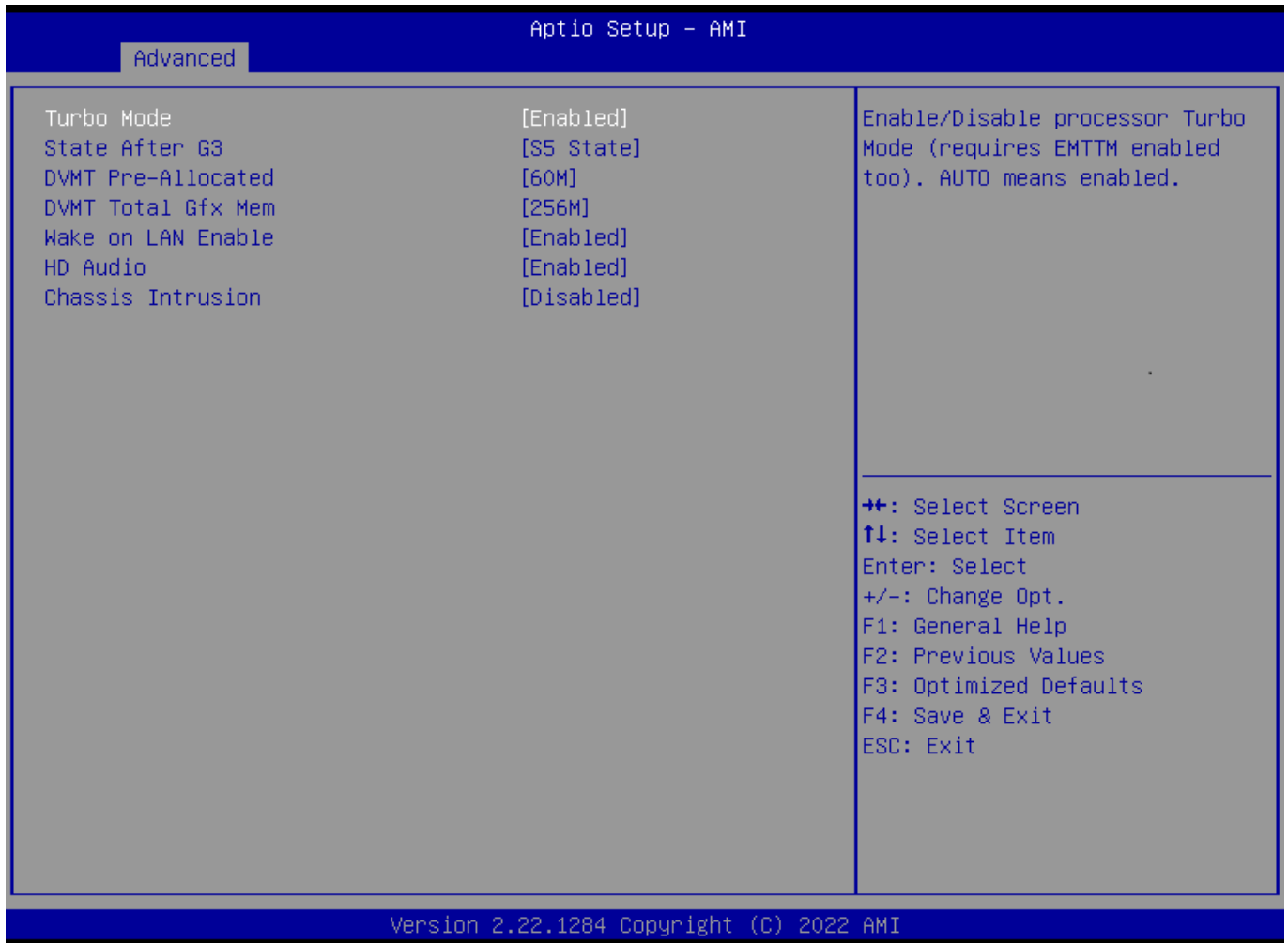
Field Name	NCT6126D Super IO Configuration
Help	System Super IO Chip Parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	Hardware Monitor
Help	Monitor hardware status
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.

2.1 Onboard Device



Field Name	DVT 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.

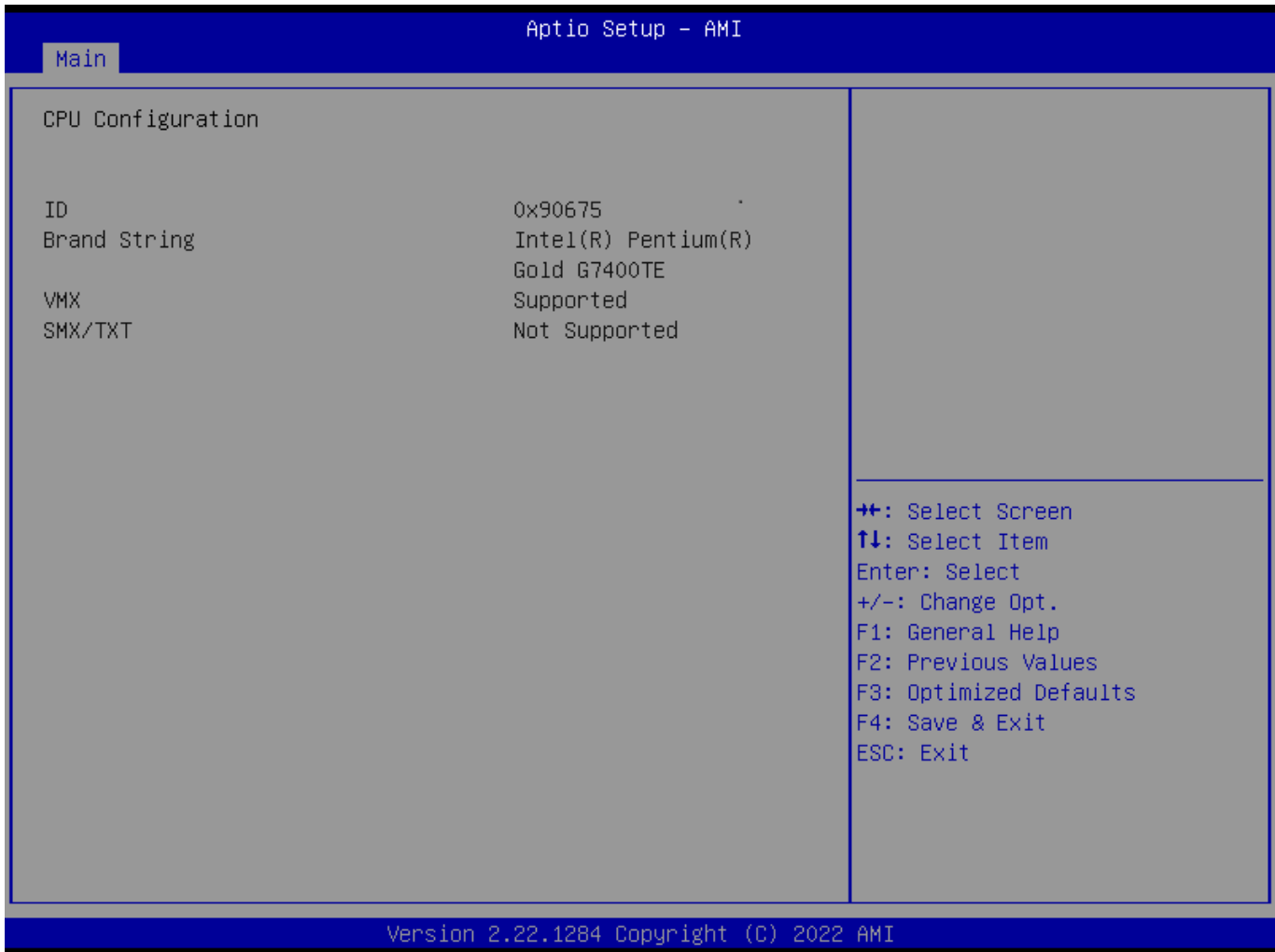
Field Name	Wake on LAN Enable
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable integrated LAN to wake the system.

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	Chassis Intrusion
Default Value	[Disabled]
Possible Value	Disabled Enabled Reset
Help	Configure Chassis Intrusion.

2.2 CPU Configuration



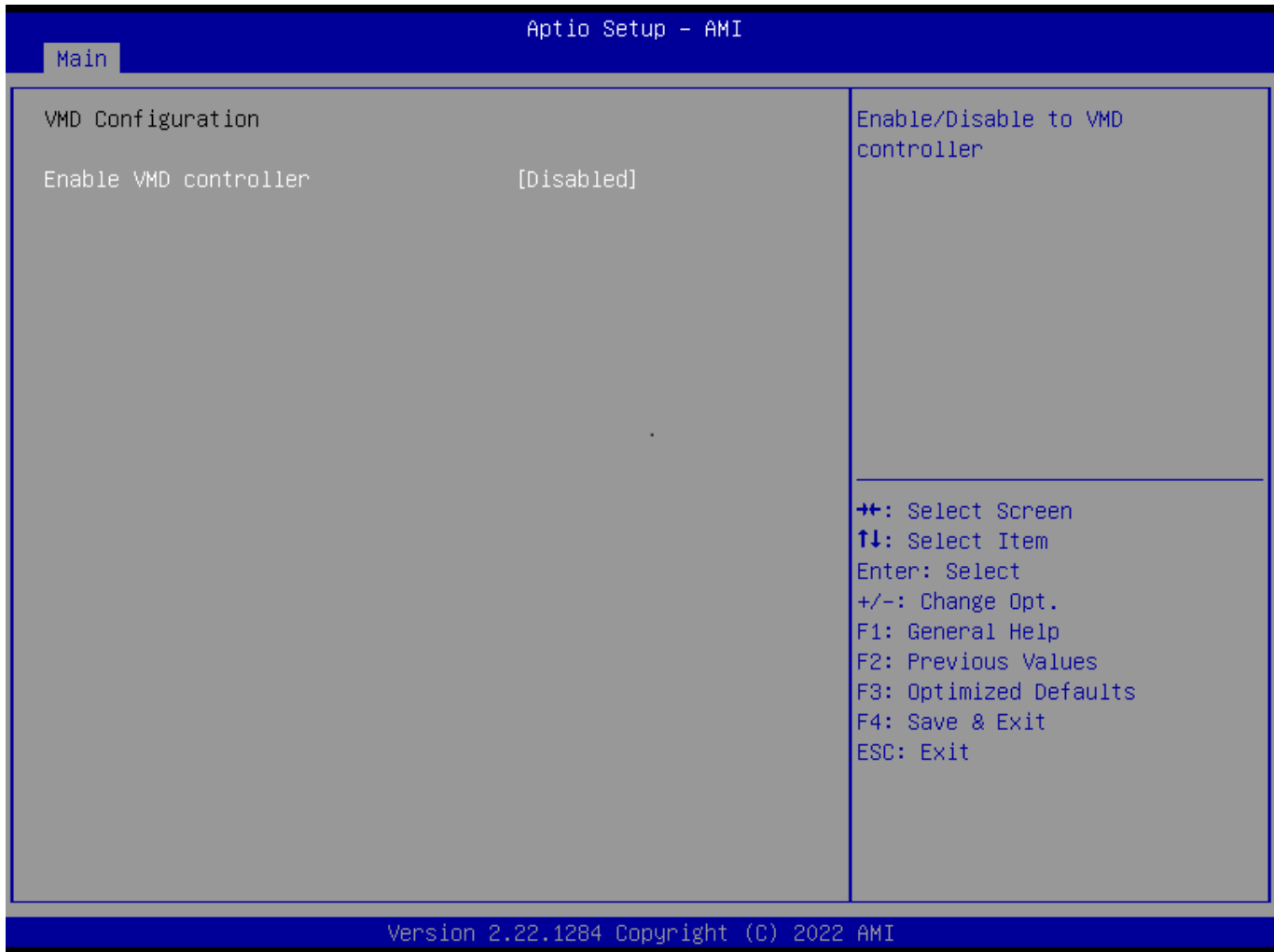
Field Name	ID
Default Value	Displays CPU Signature
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Brand String
Default Value	Displays the CPU brand string
Comment	This field is not selectable. There is no help text associated with it.

Field Name	VMX
Default Value	VMX Supported or Not
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.

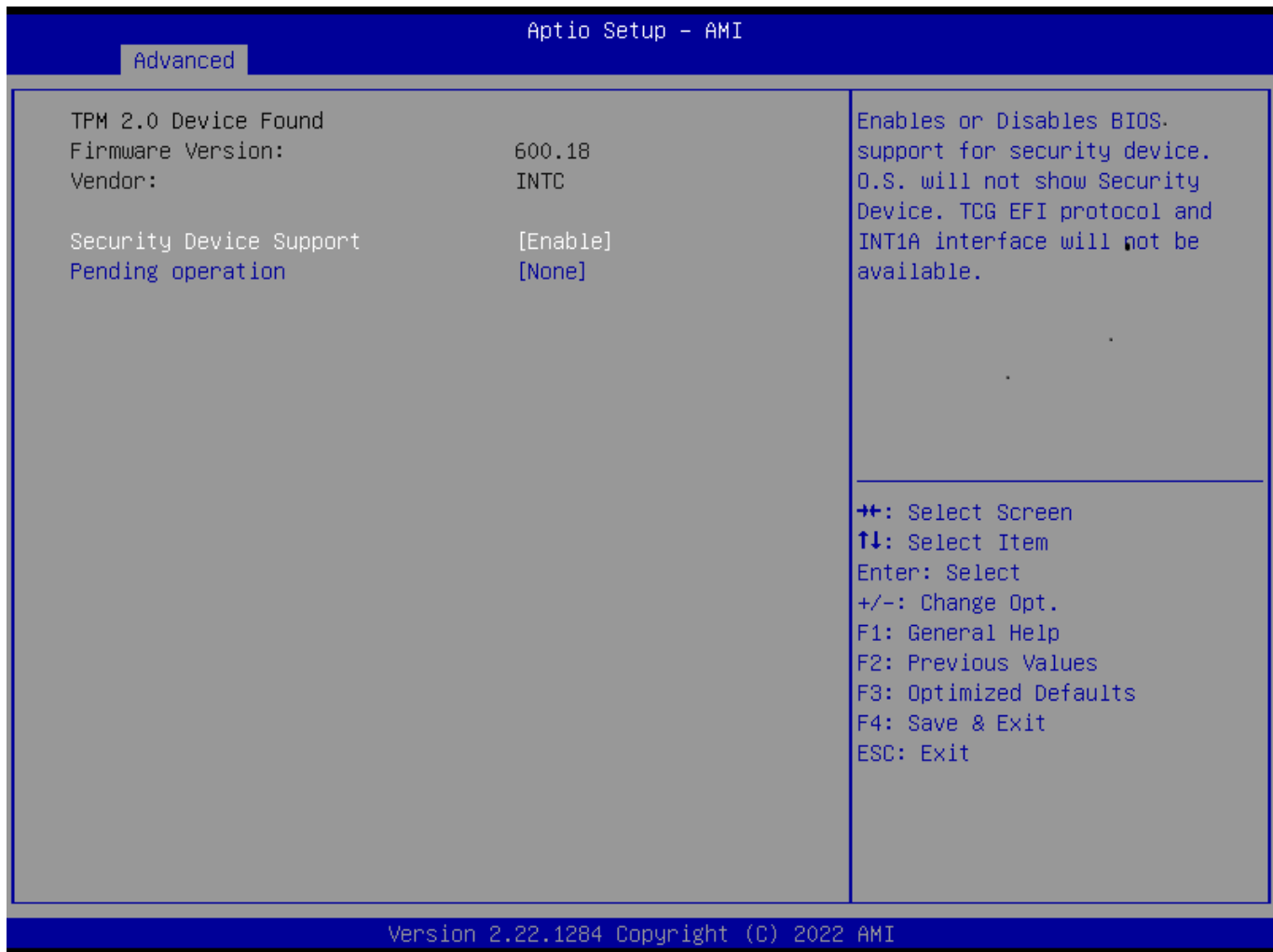
2.3 VMD setup menu



Field Name	VMD Configuration
Default Value	VMD Configuration.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	Enable VMD controller
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable to VMD controller.

2.4 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.

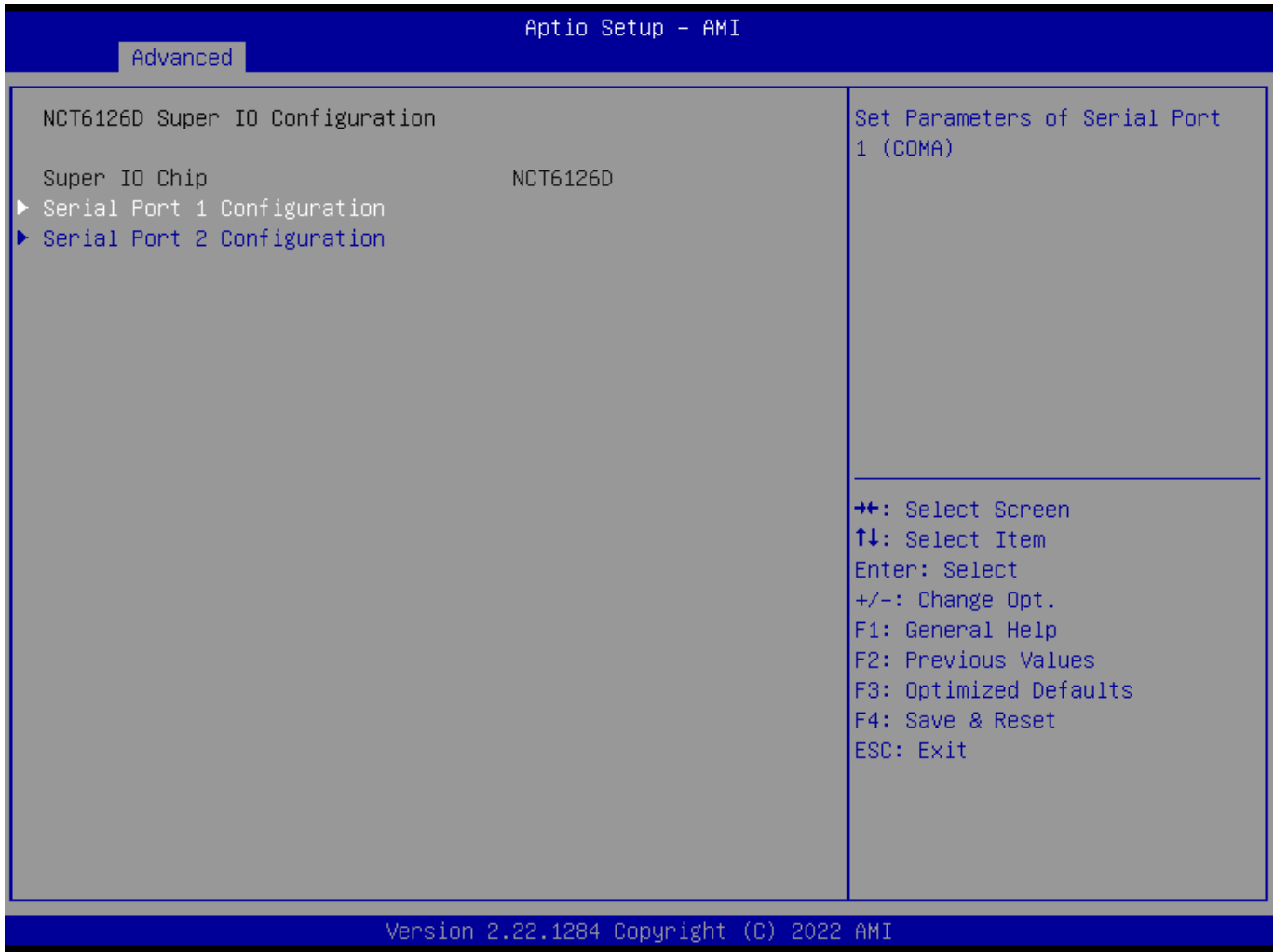
Field Name	Vender
Default Value	TPM module vender name.
Comment	This field is not selectable. There is no help text associated with it.

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.

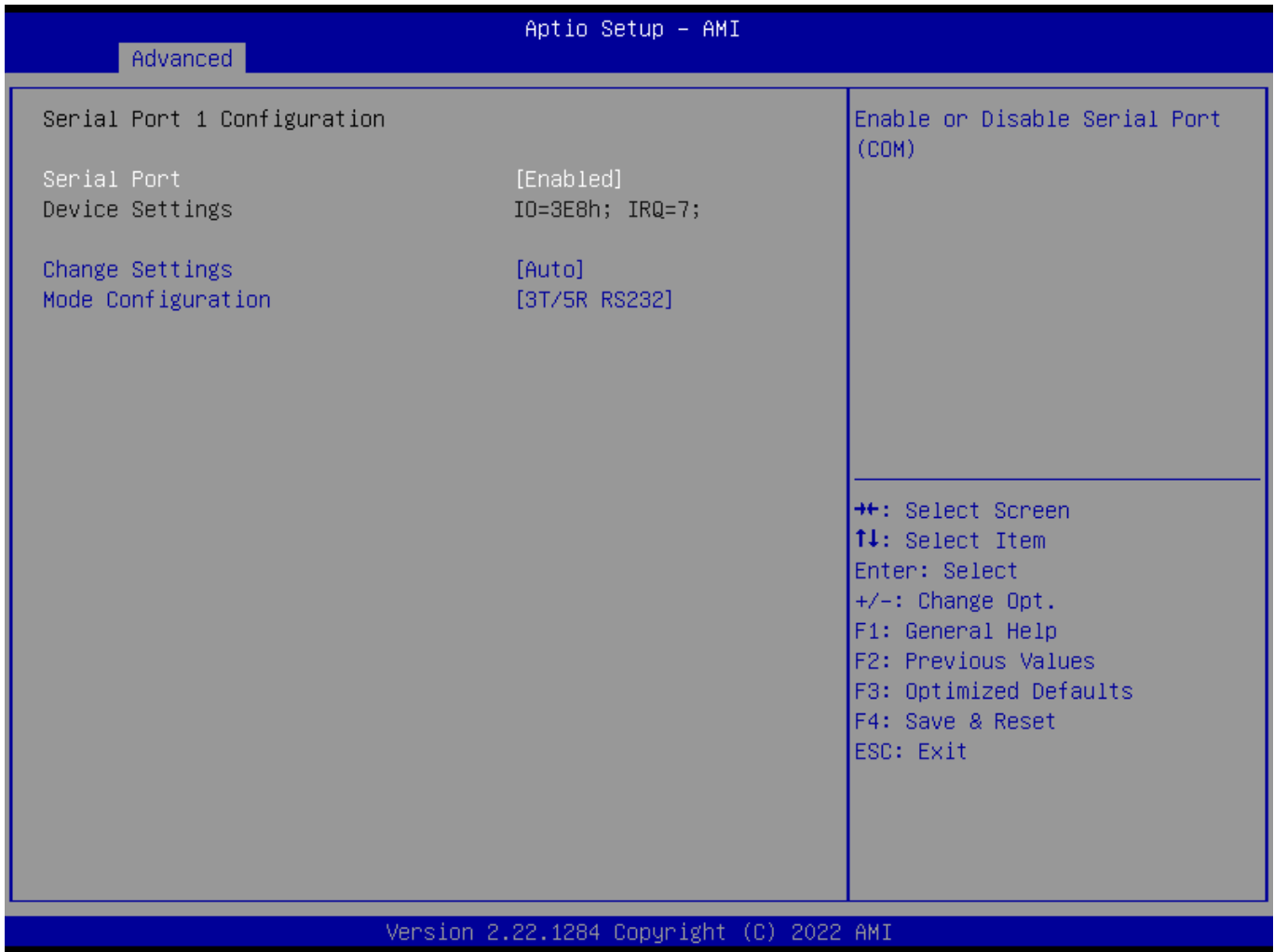
2.5 Super IO Configuration



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 1 (COMB)
Comment	Press Enter when selected to go into the associated Sub-Menu.

2.5.1 Serial Port 1 Configuration



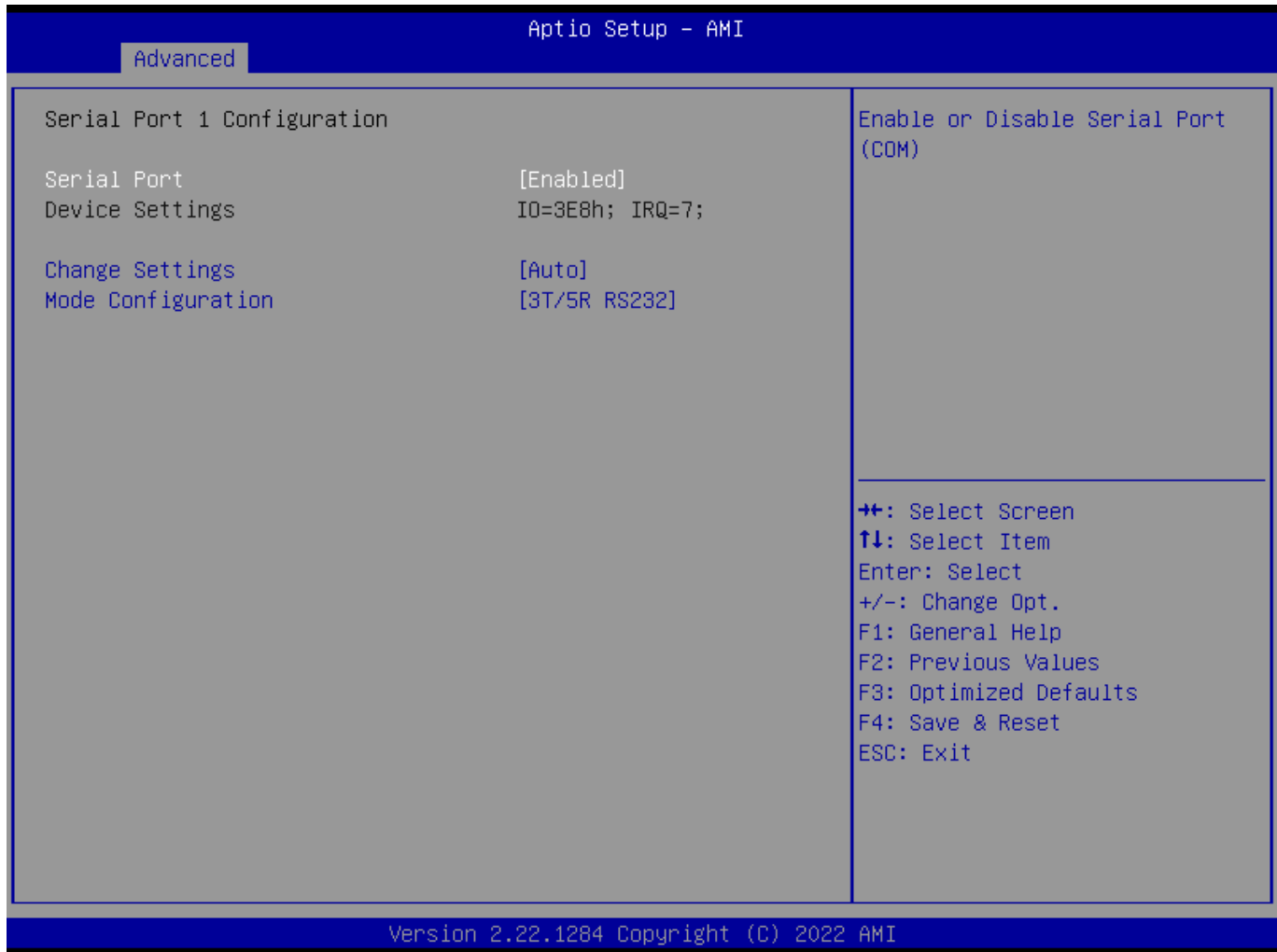
Field Name	Serial Port
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

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=7; 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.

2.5.2 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=7; 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

2.6 Hardware Monitor

Aptio Setup - AMI

Advanced

PC Health Status		If Enabled, POST monitors voltage, temperature, and fan status. If these values are out of range, BIOS display warning message and turn on beep sound.
Hardware Monitor Alert Enable	[Disabled]	
CPU Temperature	: +43 ℃	
CPU VR Temperature	: +37 ℃	
DIMM Temperature	: +32 ℃	
CPU Fan Speed	: 1014 RPM	
System Fan Speed	: N/A	
CPU_CORE_MON (CPUVCORE)	: +0.880 V	
V_1P05_SB_MON (ATX5VSB/VIN0)	: +1.056 V	
VDD2_MON (AUXTIN/VIN2)	: +1.201 V	
V_1P05_PROC (VTT)	: +1.056 V	
		⇧⇩: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

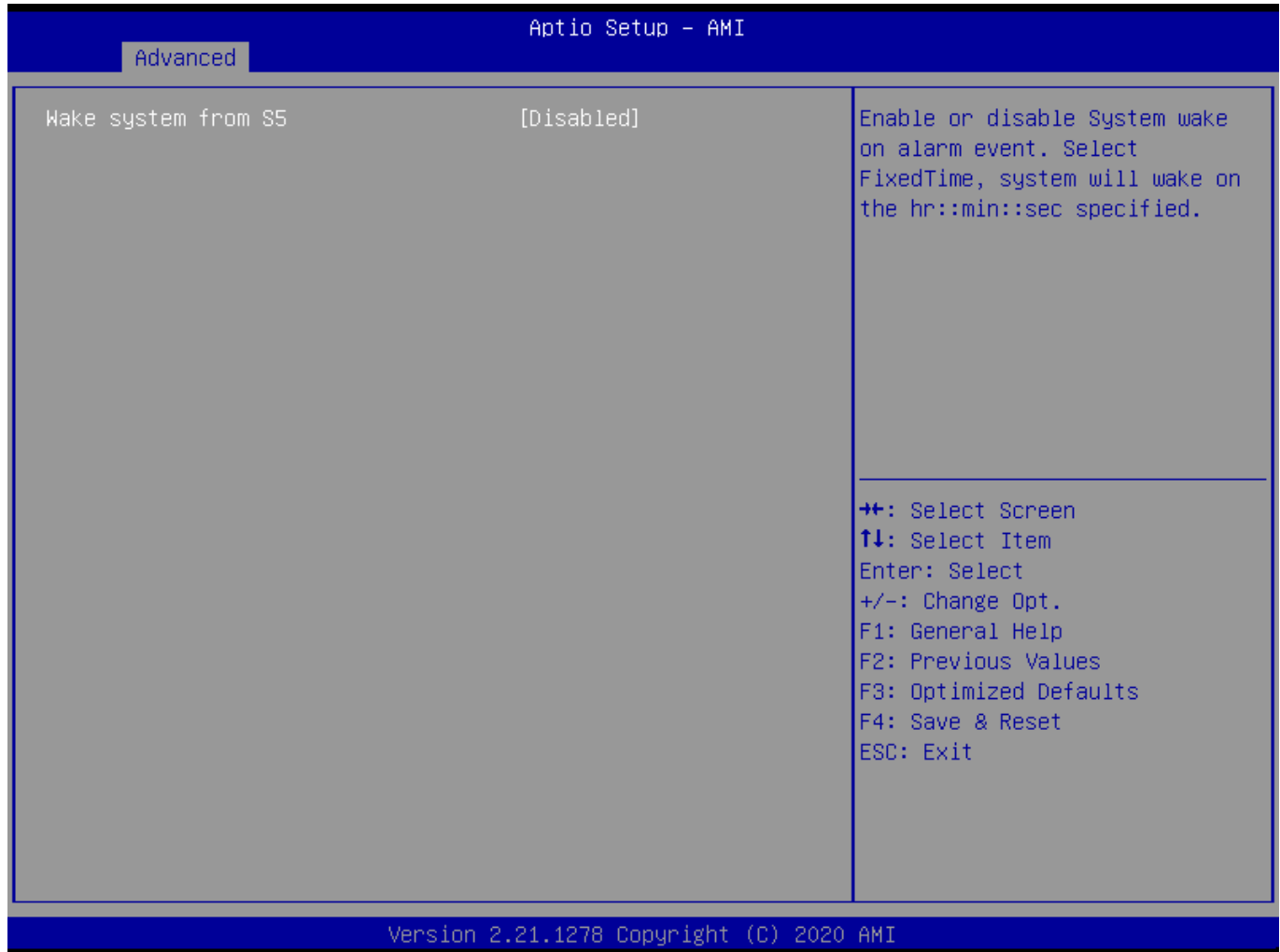
Version 2.22.1284 Copyright (C) 2022 AMI

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 system, 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	0~1.72V
V_1P05_SB	0.9975~1.1025V
VDD2	1.045~1.155V
V_1P05_PROC	0.9975~1.1025V

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 turn 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 system fan status. If this values is out of range, BIOS display warning message and turn on beep sound.

2.7 S5 RTC Wake Settings



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

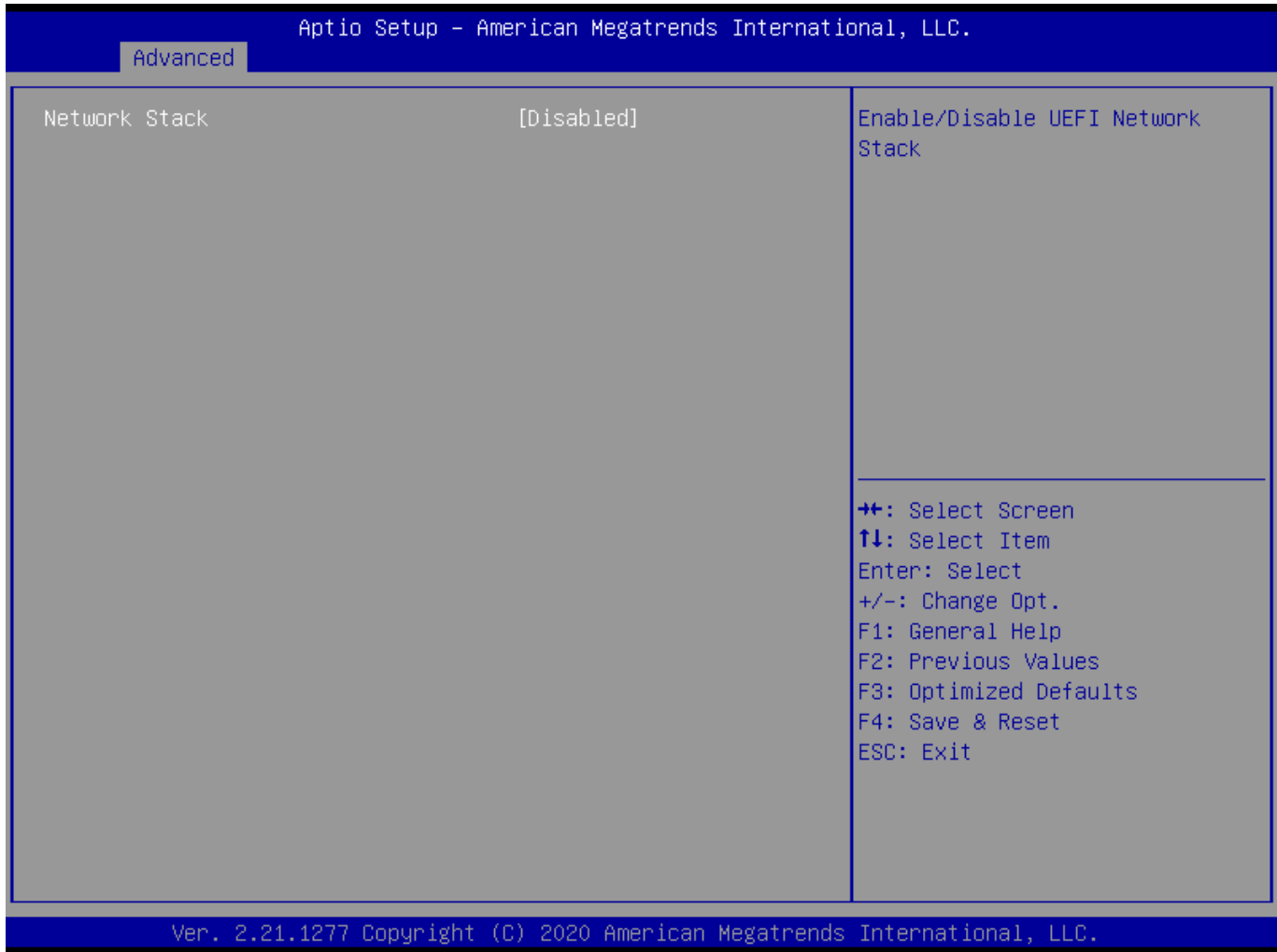
Field Name	Wake up hour(Show when Wake system from S5 set to Fixed Time)
Default Value	0

Possible Value	0-23
Help	Select 0-23 For example enter 3 for 3am and 15 for 3pm

Field Name	Wake up minute(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 second(Show when Wake system from S5 set to Fixed Time)
Default Value	0
Possible Value	0 - 59
Help	Select 0 – 59 for Second

2.8 Network Stack Configuration

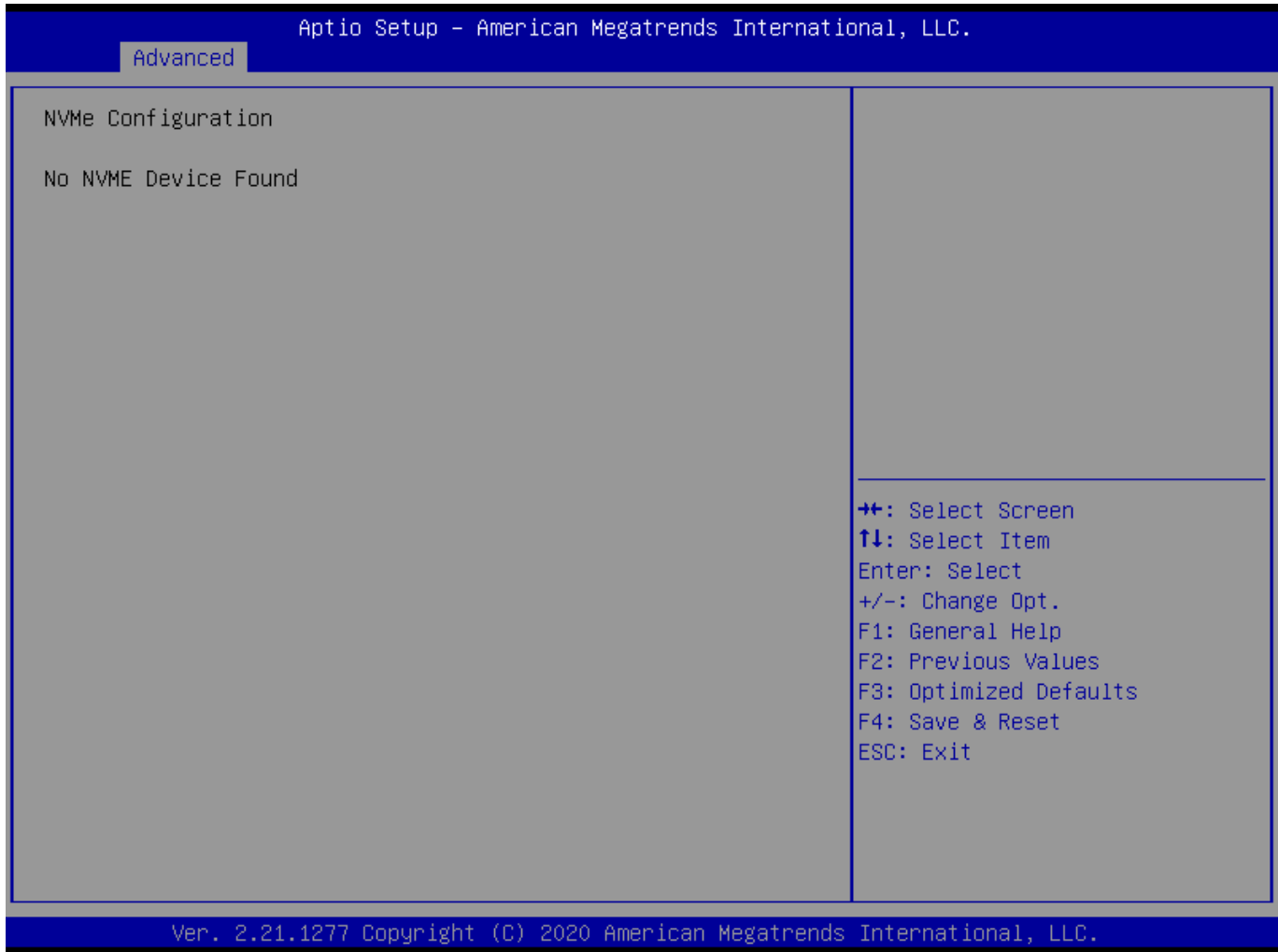


Field Name	Network stack
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable UEFI Network stack.

Field Name	Ipv4 PXE Support (Available when Network stack Enabled)
Default Value	[Disabled]
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	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable Ipv6 PXE Boot Support. If disabled IPV6 PXE boot support will not be available.

2.9 NVMe Configuration



Field Name	(Device)
Comment	Press Enter when selected to go into the associated Sub-Menu.

3. Security Page

Field Name	Administrator Password
Help	Set Administrator Password

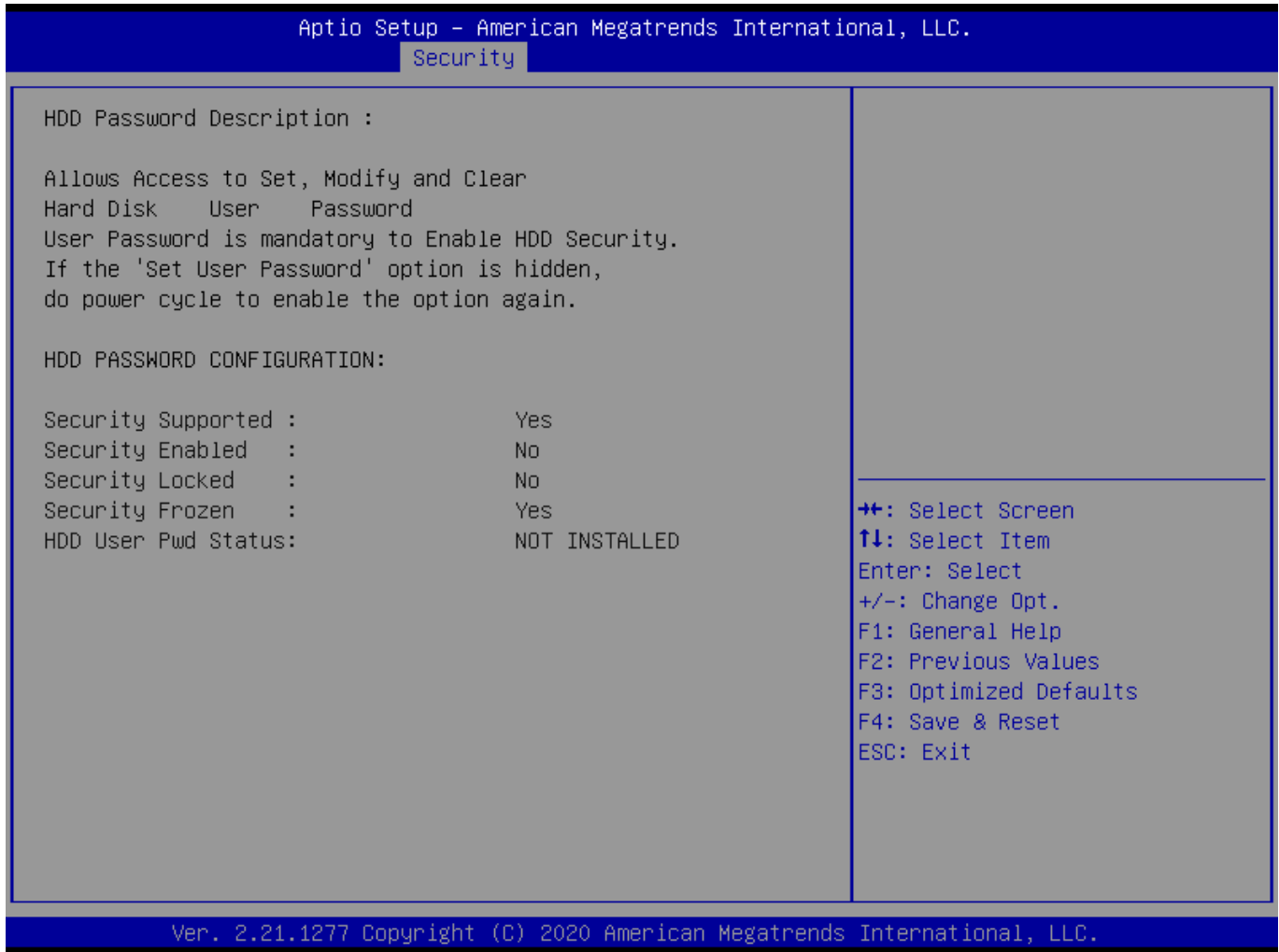
Field Name	User Password
Help	Set User Password.

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

Field Name	Secure Boot
Help	Secure Boot Configuration
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.

3.1 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

3.2 Secure Boot



Field Name	Secure Boot
Default Value	[Disabled]
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	[Custom]
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

	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.

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)

4. Boot Page

Aptio Setup - American Megatrends International, LLC.

Main Advanced Event Logs Security **Boot** Save & Exit

<p>Boot Configuration</p> <p>Setup Prompt Timeout 1</p> <p>Bootup NumLock State [Off]</p> <p>FIXED BOOT ORDER Priorities</p> <p>Boot Option #1 [USB Floppy]</p> <p>Boot Option #2 [CD/DVD]</p> <p>Boot Option #3 [USB CD/DVD]</p> <p>Boot Option #4 [Hard Disk]</p> <p>Boot Option #5 [USB Key]</p> <p>Boot Option #6 [USB Hard Disk]</p> <p>Boot Option #7 [NVME]</p> <p>Boot Option #8 [Network]</p> <p>▶ UEFI Hard Disk Drive BBS Priorities</p> <p>▶ UEFI USB Key Drive BBS Priorities</p>	<p>Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.</p> <hr/> <p>↔: Select Screen</p> <p>↑↓: Select Item</p> <p>Enter: Select</p> <p>+/-: Change Opt.</p> <p>F1: General Help</p> <p>F2: Previous Values</p> <p>F3: Optimized Defaults</p> <p>F4: Save & Reset</p> <p>ESC: Exit</p>
---	--

Ver. 2.21.1277 Copyright (C) 2020 American Megatrends International, LLC.

Field Name	Setup Prompt Timeout
Default Value	1
Possible Value	1~65535
Help	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
Help	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
Help	Sets the system boot order

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

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

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

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

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

Field Name	Boot Option #7
Default Value	[NVME]
Possible Value	USB Floppy, CD/DVD, USB CD/DVD, Hard Disk , USB Key, USB Hard Disk , NVME, Network, Disabled
Help	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
Help	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) CDROM/DVD ROM Drive BBS Priorities
Help	Specifies the Boot Device Priority sequence from available CDROM/DVD 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.

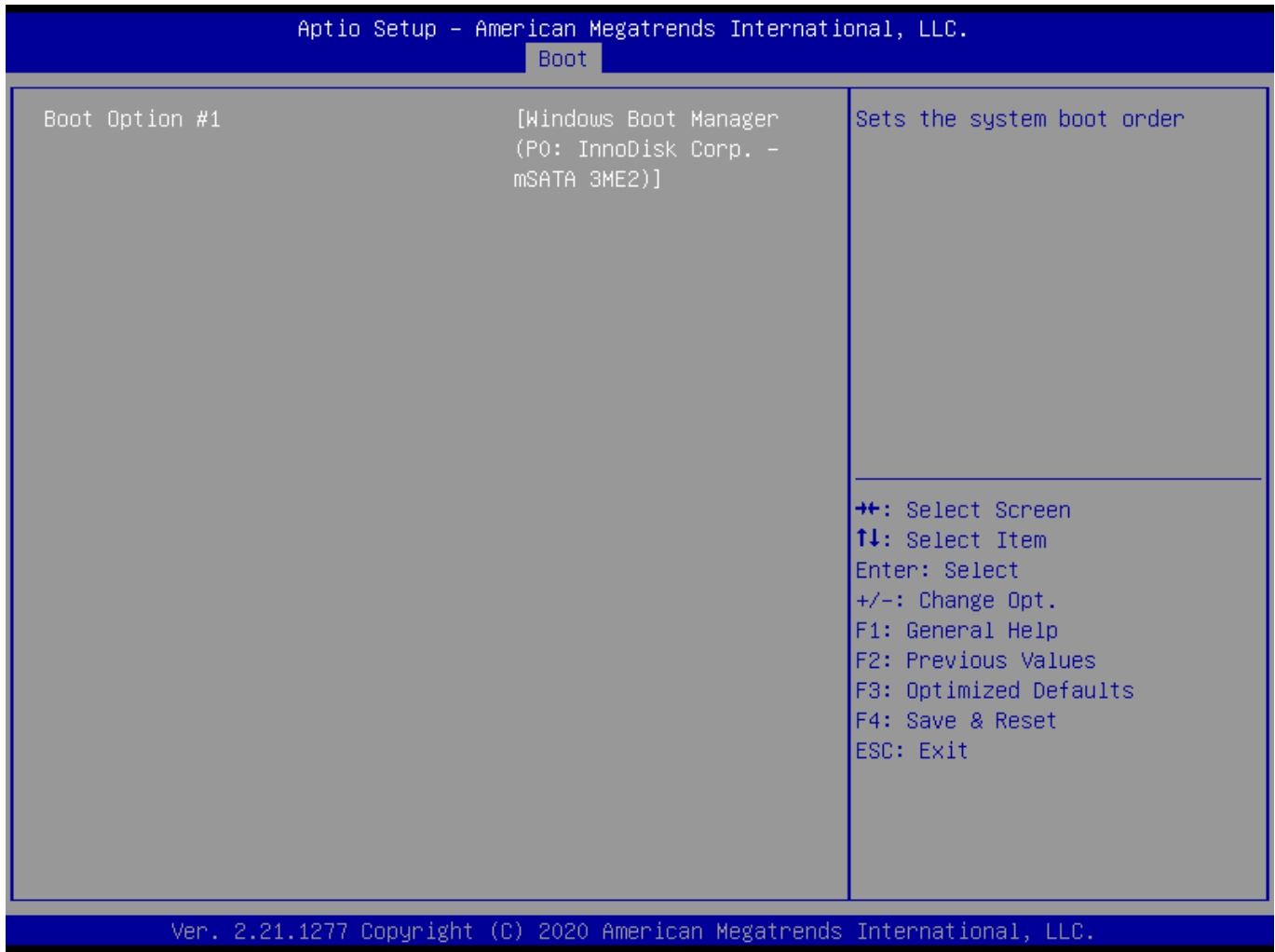
Field Name	(UEFI) USB KEY Drive BBS Priorities
Help	Specifies the Boot Device Priority sequence from available USB Key Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

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

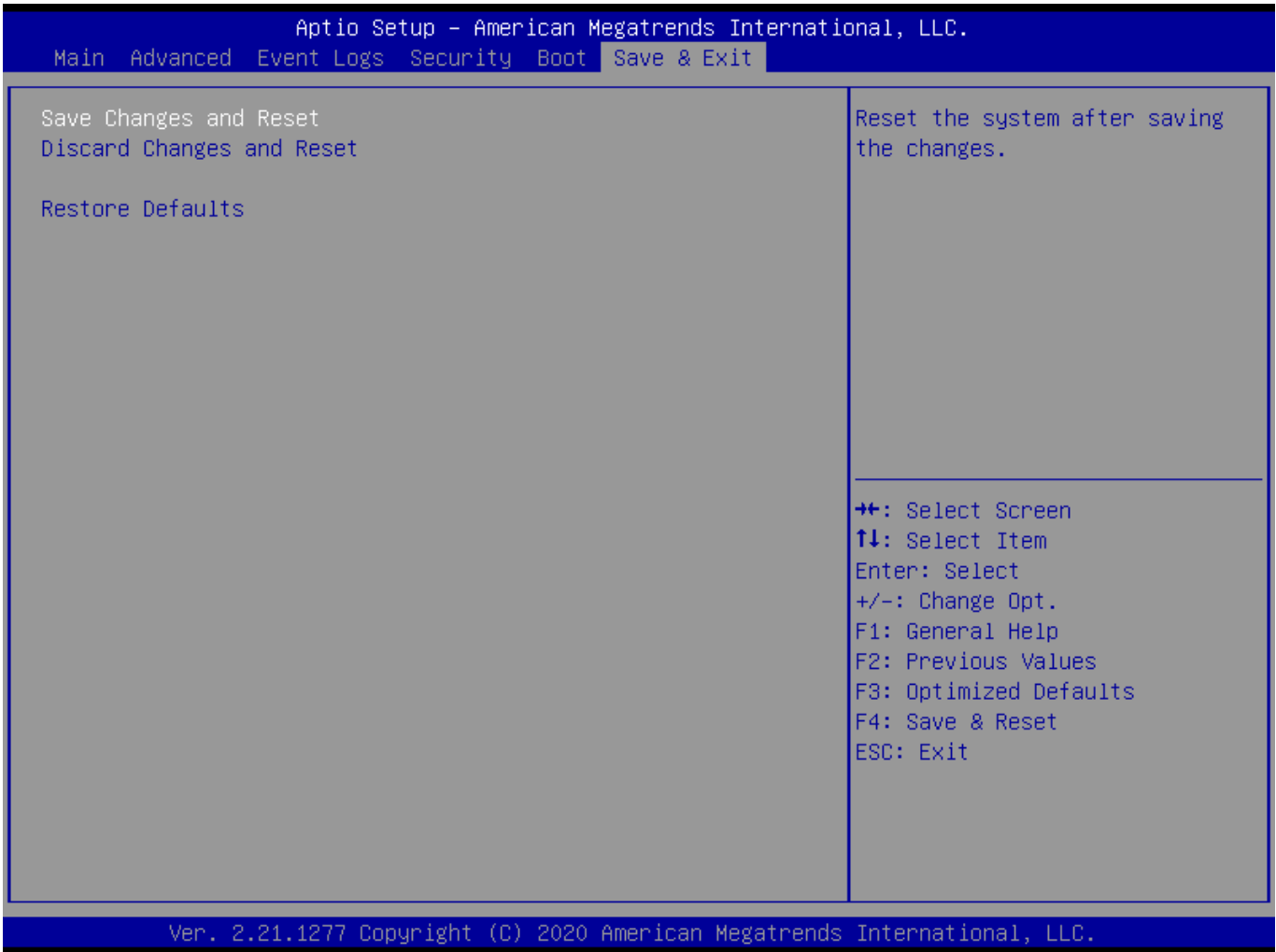
Field Name	(UEFI) NETWORK Drive BBS Priorities
Help	Specifies the Boot Device Priority sequence from available NETWORK Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

4.1 (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

5. 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.

6. Event Logs



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

6.1 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 feature 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	Whea Log is Full
Default Value	[Do Nothing]
Possible Value	Do Nothing Erase Immediately
Help	Choose options for reactions to a full Smbios Event Log.

6.2 View Smbios Event Log

Aptio Setup - AMI

Event Logs

DATE	TIME	ERROR CODE	SEVERITY	COUNT	DESCRIPTION
06/04/20	06:35:10	Smbios 0x16	N/A	N/A	Log Area Reset and Count is applicable only for Multi-Events

++: 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.