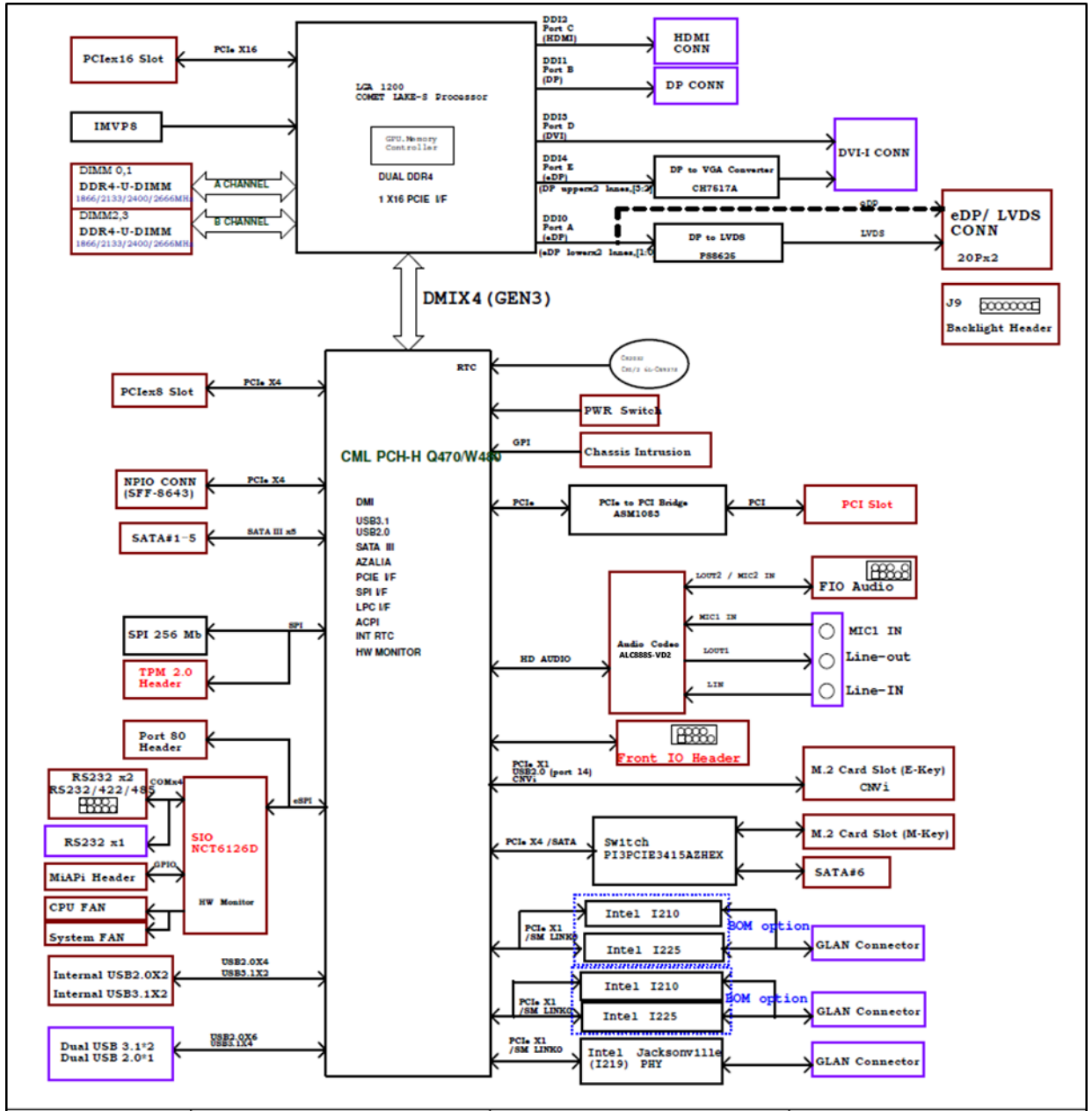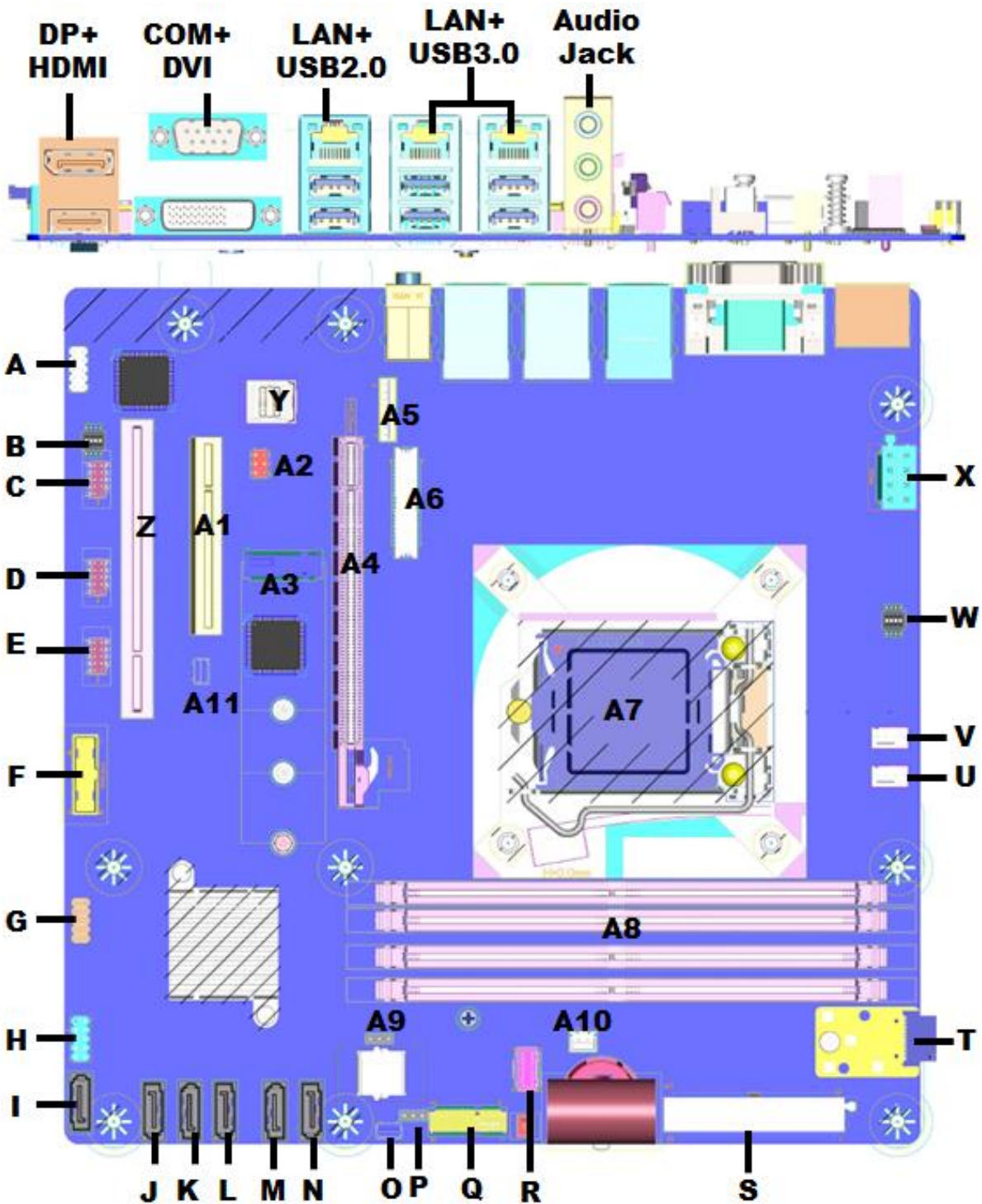# MITAC Industrial MB PH10CMU Product Guide

1. Block Diagram

Remark:
The M.2 2280 M-key slot s with PCIe x4 lanes. If for using Intel Optane Memory H-series module (by 2 split PCIe x2), additional ME update is needed so as to support it.

2. Board placement

DP+ HDMI   COM+ DVI   LAN+ USB2.0   LAN+ USB3.0   Audio Jack

A
B
C
D
E
F
G
H
I

Z   A1   A2   A3   A4   A5   A6   A11

Y

A7

A8

A9   A10

J   K   L   M   N   O   P   Q   R   S   T

X
W
V
U

| Conn	Description	Conn	Description
A	Front Audio Header	T	TPM Header
B	COM3 Termination Resistor Switch	U	System FAN Header
C	RS232/RS422/RS485 Header	V	CPU FAN Header
D	RS232 Header	W	PCI Express Bifurcation Switch
E	RS232 Header	X	8pin ATX Power Source Connector
F	Dual USB3.0 Header	Y	NPIO Header(PCIEX4)
G	Dual USB2.0 Header	Z	PCI Slot
H	Front I/O Header	A1	PCIEX8 slot (PCIEX4)
I	SATA Header	A2	Panel Power Option
J	SATA Header	A3	M.2 KEY M Connector
K	SATA Header	A4	PCIe X16 Slot
L	SATA Header	A5	LVDS Backlight Header
M	SATA Header	A6	LVDS / eDP Connector
N	SATA Header(optional with M.2 SATA)	A7	CPU Socket
O	SPI Programing Header(Debug)	A8	DDR4 Memory
P	AT/ATX Mode Selection Header	A9	CMOS Reset Header
Q	M.2 KEY E Connector	A10	Intrusion Header
R	MiAPI Header	A11	Debug Header
S	24pin ATX Power Source Connector		

3. Connector & Header Pin Definition

A	J_HDA_1	Front Audio Header
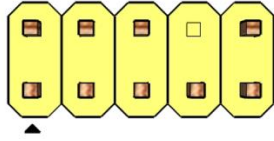
Pin	Signal name	Description
1	MIC	Front panel microphone input signal (biased when supporting stereo microphone)
2	AUD_GND	Ground used by analog audio circuits
3	MIC_BIAS	Microphone power / additional MIC input for stereo microphone support
4	PRESENCE#	Active low signal that signals BIOS that an Intel® HD Audio dongle is connected to the analog header. PRESENCE# = 0 when an Intel® HD Audio dongle is connected.
5	FP_OUT_R	Right channel audio signal to front panel (headphone drive capable)
6	AUD_GND	Ground used by analog audio circuits
7	RESERVED	Reserved
8	KEY	No pin
9	FP_OUT_L	Left channel audio signal to front panel (headphone drive capable)
10	AUD_GND	Ground used by analog audio circuits

B	SW1	COM3 Termination Resistor Switch
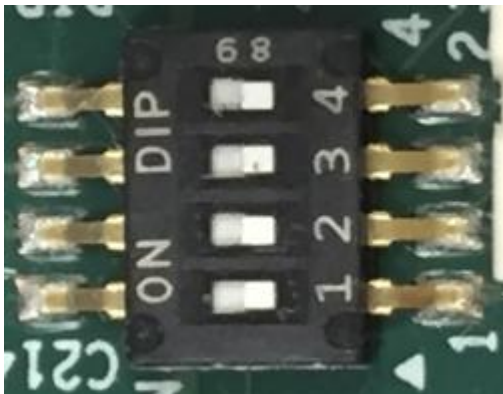
Pin	Net name
1	NRX3
2	NDCD3
3	NTX3
4	NDTR3

ON:PULL HIGH, OFF:NC

Termination mode,
1. RS422 PULL H/L in RX/DCD
2. RS485 PULL H/L in RX/DCD and TX/DTR

C	COM3	RS232/RS422/RS485 Header
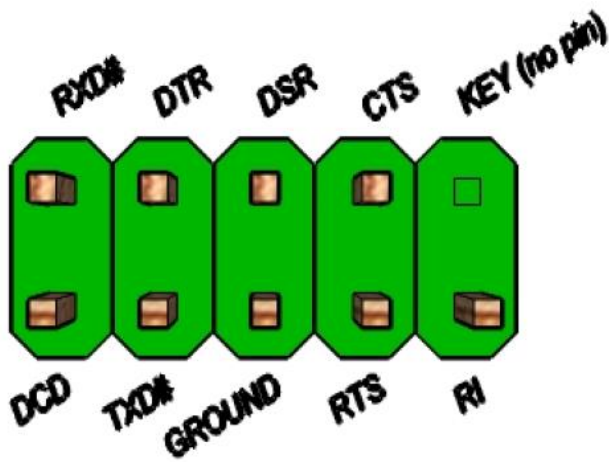
Pin	Signal	Pin	Signal
1	DCD (Data Carrier Detect)	2	RXD# (Receive Data)
3	TXD# (Transmit Data)	4	DTR (Data Terminal Ready)
5	Ground	6	DSR (Data Set Ready)
7	RTS (Request To Send)	8	CTS (Clear To Send)
9	RI (Ring Indicator)	10	Key (no pin)

D,E	COM1,COM2	RS232 Header
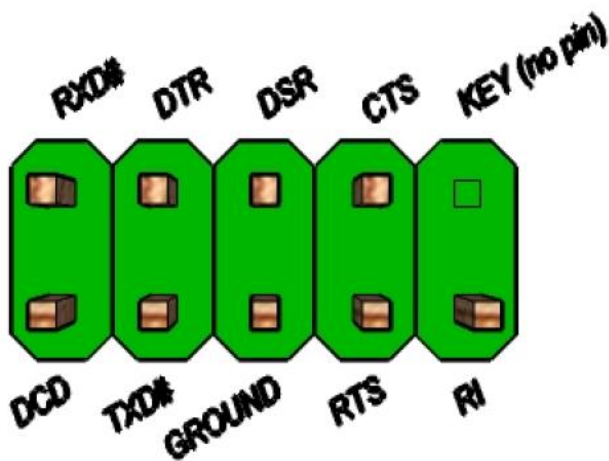
Pin	Signal	Pin	Signal
1	DCD (Data Carrier Detect)	2	RXD# (Receive Data)
3	TXD# (Transmit Data)	4	DTR (Data Terminal Ready)
5	Ground	6	DSR (Data Set Ready)
7	RTS (Request To Send)	8	CTS (Clear To Send)
9	RI (Ring Indicator)	10	Key (no pin)

F	FP_USB3_1	Dual USB3.0 Header

Pin	Signal	Pin	Signal
1	+5V DC		Key (no pin)
2	3.0 Data (negative)	19	+5V DC
3	3.0 Data (positive)	18	3.0 Data (negative)
4	Ground	17	3.0 Data (positive)
5	3.0 Data (negative)	16	Ground
6	3.0 Data (positive)	15	3.0 Data (negative)
7	Ground	14	3.0 Data (positive)
8	2.0 Data (negative)	13	Ground
9	2.0 Data (positive)	12	2.0 Data (negative)
10	No Connect	11	2.0 Data (positive)

G	FP_USB2_1	Dual USB2.0 Header
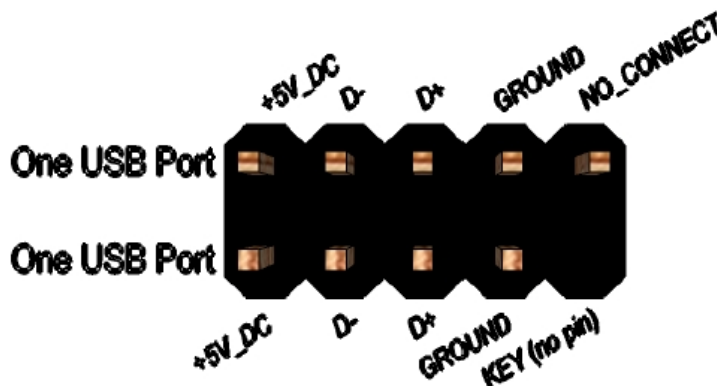
Pin	Signal	Pin	Signal
1	5V_USB	2	5V_USB
3	Data (negative)	4	Data (negative)
5	Data (positive)	6	Data (positive)
7	Ground	8	Ground
9	Key (no pin)	10	No Connect

H	J_FIO	Front I/O Header
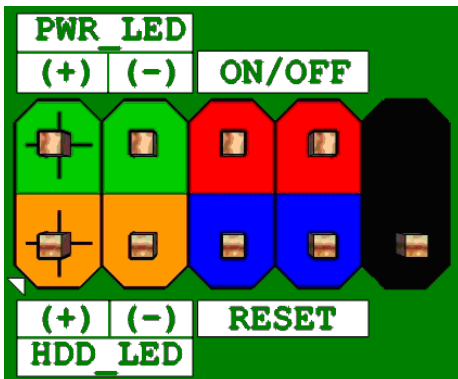
Pin	Signal Name	Description	Pin	Signal Name	Description
1	HDD_POWER_LED	Pull-up resistor (750ohm) to +5V	2	POWER_LED_MAIN	[Out] Front panel LED (main color)
3	HDD_LED#	[Out] Hard disk activity LED	4	POWER_LED_ALT	[Out] Front panel LED (alt color)
5	GROUND	Ground	6	POWER_SWITCH#	[In] Power switch
7	RESET_SWITCH#	[In] Reset switch	8	GROUND	Ground
9	+5V_DC	Power	10	KEY	No pin

I~N	SATA1~6	SATA Header
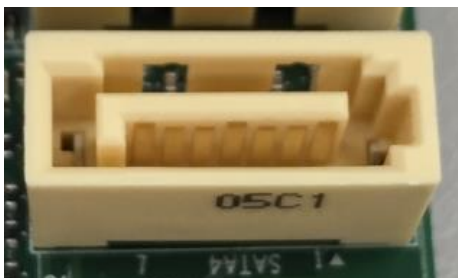
Pin	Signal Name	Description
1	GND	Ground
2	SATAHDR_TXP0_C	SATA DATA Transmit (positive)
3	SATAHDR_TXN0_C	SATA DATA Transmit (negative)
4	GND	Ground
5	SATAHDR_RXN0_C	SATA DATA Receive (negative)
6	SATAHDR_RXP0_C	SATA DATA Receive (positive)
7	GND	Ground
GND1	GND	Ground
GND2	GND	Ground

O	SPI_HDR1	SPI Programing Header(Debug)

Pin	Signal Name
1	GND
2	P_Flash(3.3V)
3	NC
4	ROMWREN0_N
5	SPI_MOSI_FLASH
6	SPI_MISO_FLASH
7	SPI_CLK_FLSH
8	SPI_CS0_N_FLASH
9	NC
10	NC

P	JPSON1	AT/ATX Mode Selection Header

Pins 1&2: jumper position for AT Mode

Pins 2&3: NON-AT Mode

AT/ATX Mode selection

1-2	AT Mode
2-3	NON-AT Mode

Q	M2E_1	M.2 KEY E Connector
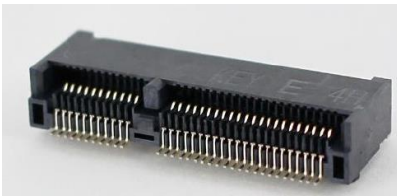
	Standard M.2 Key E	LcP Signals	LcP Signals	Standard M.2 Key E	
			GND		75
74	+V3P3A		WT_CLKP	REFCLKN1	73
72	+V3P3A		WT_CLKN	REFCLKP1	71
70	PEWake 1# (IO)(0/3.3V)		GND		69
68	CLKREQ1# (IO)(0/3.3V)		WT_D0P	PERn1	67
66	PERST1# (O)(0/3.3V)		WT_D0N	PERp1	65
64	RESERVED	REFCLK0 (I)(1V @38.4MHz)	GND		63
62	ALERT# (I)(0/1.8)	A4WP_IRQ#	WT_D1P	PETn1	61
60	I2C_CLK (O)(0/1.8V)	A4WP_I2C_CLK	WT_D1N	PETp1	59
58	I2C_DATA (IO)(0/1.8V)	A4WP_I2C_DATA	GND		57
56	W_DISABLE1# (O)(0/3.3V)		PEWake0# (IO)(0/3.3V)		55
54	W_DISABLE2# (O)(0/3.3V)		CLKREQ0# (IO)(0/3.3V)		53
52	PERST0# (O)(0/3.3V)		GND		51
50	SUSCLK(32kHz) (O)(0/3.3V)	C_P32K (3.3V Tolerant)	REFCLKN0		49
48	COEX_TXD (O)(0/1.8V)		REFCLKP0		47
46	COEX_RXD (O)(0/1.8V)		GND		45
44	COEX3 (IO)(0/1.8V)		PERn0		43
42	CLink CLK		PERp0		41
40	CLink DATA		GND		39
38	CLink RESET (O)(0/3.3V)		PETn0		37
36	LPSS UART RTS (O)(0/1.8V)	/ BRI_DT (MUX'd in PCH/SoC)	PETp0		35
34	LPSS UART CTS (I)(0/1.8V)	/ RGI_RSP (MUX'd in PCH/SoC)	GND		33
32	LPSS UART Tx (O)(0/1.8V)	/ RGI_DT (MUX'd in PCH/SoC)			
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 (OI)(0/1.8V)	/RF_RESET_B (MUX'd in PCH/SoC)	WGR_D1P	SDIO CMD(IO)(0/1.8V)	11
8	PCM_CLK (OI)(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

R	J_MAPI_1	MiAPI Header
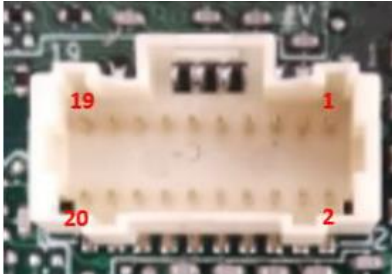
Pin	Net name	Pin	Net name
1	MAPI_GPIO1	2	VCC
3	MAPI_GPIO2	4	MAPI_GPIO6
5	MAPI_GPIO3	6	MAPI_GPIO7
7	MAPI_GPIO4	8	MAPI_GPIO8
9	MAPI_GPIO5	10	MAPI_GPIO9
11	WD_Time	12	MAPI_GPIO10
13	Power Button	14	SMBUS_DATA
15	UART_TX	16	SMBUS_CLK
17	UART_RX	18	5VSB
19	GND	20	NA

T	J48	TPM Header

Pin	Net name	Pin	Net name
1	VCC3_TPM	2	TPM_CS2
3	TPM_MISO	4	Key (no pin)
5	TPM_MOSI	6	PLTRST_N
7	PRIQ_N	8	GND
9	NC	10	SPI_CLK
11	NC	12	TPM_DET

| 13 | NC | 14 | VSB_3V3 |

| U~V | J_CPU_FAN1, J_FIO_FAN1 | FAN Header |
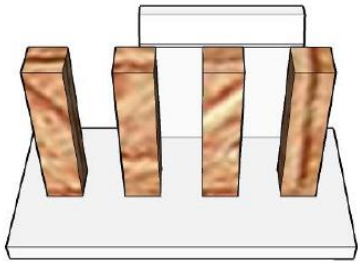
Pin	Signal
1	Ground
2	+12V
3	CPU_FAN_TACH
4	CPU_FAN_CTRL

| W | SW2 | PCI Express Bifurcation Switch |

Pin	Net name
1	CFG5
2	CFG6
3	NC
4	NC
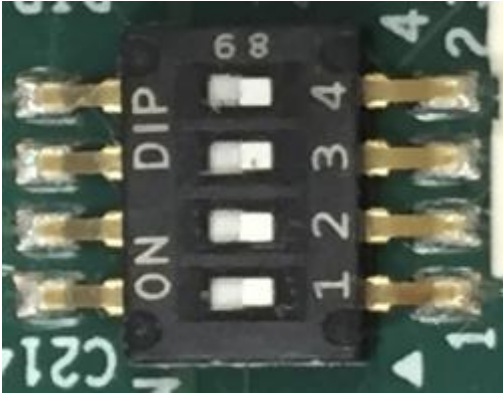
ON:PULL LOW, OFF:NC

```
CFG[6:5]: PCI Express Bifurcation
          - 00 = 1 x8, 2 x4 PCI Express
          - 01 = reserved
          - 10 = 2 x8 PCI Express
          - 11 = 1 x16 PCI Express (Default)
```

Y	PCIE_X4_NPIO	NPIO Header(PCIEX4)
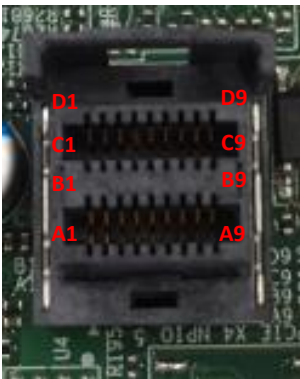
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A1	REFCLK+	B1	PERST#	C1	VCC 3.3V	D1	SMDAT
A2	REFCLK+	B2	CLKREQ#	C2	N.C	D2	SMCLK
A3	GND	B3	GND	C3	GND	D3	GND
A4	PERp1	B4	PERp0	C4	PETp1	D4	PETp0
A5	PERn1	B5	PERn0	C5	PETn1	D5	PETn0
A6	GND	B6	GND	C6	GND	D6	GND
A7	PERp3	B7	PERp2	C7	PETp3	D7	PETp2
A8	PERn3	B8	PERn2	C8	PETn3	D8	PETn2
A9	GND	B9	GND	C9	GND	D9	GND

A2	J20	Panel Power Option
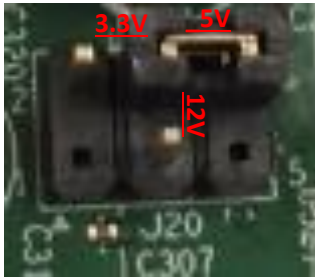
Pins 2&4: jumper position for 3.3V

Pins 6&4: jumper position for 5V

Pins 3&4: jumper position for 12V

Pin	Net name	Pin	Net name
1	Key (no pin)	2	VCC3
3	+12V	4	LCD_VCC_SEL
5	Key (no pin)	6	VCC

A3	M2M_1	M.2 KEY M Connector
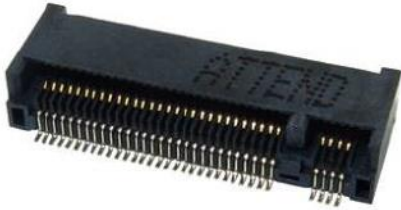
Pin	Signal	Signal	Pin
74	3.3Vaux	GND	75
72	3.3Vaux	GND	73
70	3.3Vaux	GND	71
68	SUSCLK(32kHz) (O)(0/3.3V)	PEDET (OC-PCIe/GND-SATA)	69
		N/C	67
	Key	Key	
	Key	Key	
	Key	Key	
	Key	Key	
58	N/C	GND	57
56	N/C	REFCLKP	55
54	PEWake# (IO)(0/3.3V) or N/C	REFCLKN	53
52	CLKREQ# (IO)(0/3.3V) or N/C	GND	51
50	PERST# (O)(0/3.3V) or N/C	PERp0/SATA-A+	49
48	N/C	PERn0/SATA-A-	47
46	N/C	GND	45
44	N/C	PETp0/SATA-B-	43
42	N/C	PETn0/SATA-B+	41
40	N/C	GND	39
38	DEVSLP (O)(0/3.3V)	PERp1	37
36	N/C	PERn1	35
34	N/C	GND	33
32	N/C	PETp1	31
30	N/C	PETn1	29
28	N/C	GND	27
26	N/C	N/C	25
24	N/C	N/C	23
22	N/C	GND	21
20	N/C	N/C	19
18	3.3Vaux	N/C	17
16	3.3Vaux	GND	15
14	3.3Vaux	N/C	13
12	3.3Vaux	N/C	11
10	DAS/DSS# (I)(OD)	GND	9
8	N/C	N/C	7
6	N/C	N/C	5
4	3.3Vaux	GND	3
2	3.3Vaux	GND	1

A5	J9	LVDS Backlight Header

Pin	Net name
1	BKLT_EN
2	BKLT_CTRL
3	BKLT_PWR
4	BKLT_PWR
5	GND
6	GND
7	BRIGHT_UP
8	BRIGHT_DOWN

A6	J5	*LVDS /eDP Connector*
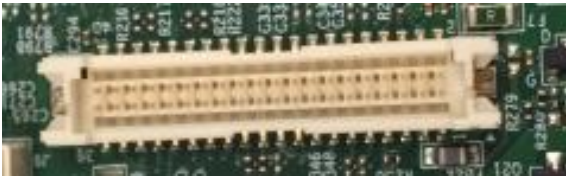
The connector is used for LVDS/eDP, it could select by BOM option.

40-pin LVDS connector pin-out

Pin	Signal	Description
1	VCC3	VCC
2	3.3V/5V/12V	Selectable LCD power output
3	VCC3	VCC
4	3.3V/5V/12V	Selectable LCD power output
5	LVDS_DDC_SCL	LVDS_DDC_SCL
6	LVDS_DDC_SDA	LVDS_DDC_SDA
7	CABLE_ID1	VCC (reserve for MiTAC AIO CABLE_ID1, low enable)
8	GND	Ground
9	TB0P	LVDS Channel A diff data output - positive
10	TA0P	LVDS Channel A diff data output - positive
11	TB0N	LVDS Channel A diff data output - negative
12	TA0N	LVDS Channel A diff data output - negative
13	GND	Ground
14	GND	Ground
15	TD0P	LVDS Channel A diff data output - positive
16	TC0P	LVDS Channel A diff data output - positive
17	TD0N	LVDS Channel A diff data output - negative

18	TC0N	LVDS Channel A diff data output - negative
19	GND	Ground
20	GND	Ground
21	TB1P	LVDS Channel B diff data output-positive
22	TA1P	LVDS Channel B diff data output-positive
23	TB1N	LVDS Channel B diff data output-negative
24	TA1N	LVDS Channel B diff data output-negative
25	GND	Ground
26	GND	Ground
27	TD1P	LVDS Channel B diff data output-positive
28	TC1P	LVDS Channel B diff data output-positive
29	TD1N	LVDS Channel B diff data output-negative
30	TC1N	LVDS Channel B diff data output-negative
31	GND	Ground
32	GND	Ground
33	TCK1P	LVDS Channel B diff data output - positive
34	TCK0P	LVDS Channel A diff data output - positive
35	TCK1N	LVDS Channel B diff data output - negative
36	TCK0N	LVDS Channel A diff data output - negative
37	GND	Ground
38	GND	Ground
39	NC	NC (reserve for MiTAC selectable BKLT power output)
40	NC	NC (reserve for MiTAC selectable BKLT power output)

40-pin eDP connector pin-out

Pin	Signal	Description
1	VCC3	VCC
2	3.3V/5V/12V	Selectable LCD power output
3	VCC3	VCC
4	3.3V/5V/12V	Selectable LCD power output
5	EDP_CPU_AUX-	Aux channel
6	EDP_CPU_AUX+	Aux channel
7	CABLE_ID1	VCC (reserve for MiTAC AIO CABLE_ID1, low enable)
8	HPDET	Hot plug detection

9	EDP_CPU_1+	MAIN LINK
10	EDP_CPU_0+	MAIN LINK
11	EDP_CPU_1-	MAIN LINK
12	EDP_CPU_0-	MAIN LINK
13	GND	Ground
14	GND	Ground
15	NC	NC
16	NC	NC
17	NC	NC
18	NC	NC
19	GND	Ground
20	GND	Ground
21	BKLT_EN	BKLT_EN
22	PCH_BACKLIGHT_PWM	PCH_BACKLIGHT_PWM
23	NC	NC
24	NC	NC
25	GND	Ground
26	GND	Ground
27	NC	NC
28	NC	NC
29	NC	NC
30	NC	NC
31	GND	Ground
32	GND	Ground
33	NC	NC
34	NC	NC
35	NC	NC
36	NC	NC

37	GND	Ground
38	GND	Ground
39	BKLT_PWR	Selectable BKLT power output (12V)
40	BKLT_PWR	Selectable BKLT power output (12V)

A9	CLCMOS1	CMOS Reset Header

Pins 1&2: jumper position for CMOS Reset

Pins 2&3: Normal

CMOS Clear

1-2	Clear CMOS
2-3	Normal

A10	INTRUD_1	Intrusion Switch Header
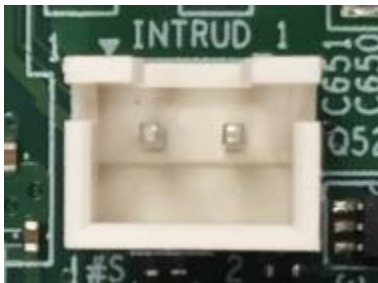
Pin	Net name
1	INTRUDER_N
2	GND

A11	eSPI_HDR1	Debug Header

Pin	Signal Name
1	GND
2	ESPI_RST_N
3	ESPI_CLK
4	ESPI_CS0_N
5	LAD_ESPI_IO_3
6	LAD_ESPI_IO_2
7	LAD_ESPI_IO_1
8	LAD_ESPI_IO_0
9	VCC3
10	3VSB

MITAC Industrial MB PH10CMU
BIOS Set-up Menu

1. Main Page

```
                          Aptio Setup – AMI
   Main  Advanced  Event Logs  Security  Boot  Save & Exit

  BIOS Information                                                    ▲
  BIOS Vendor                    American Megatrends
  Core Version                   5.17
  Compliancy                     UEFI 2.7; PI 1.6
  BIOS Version                   D8210X10
  Build Date                     09/11/2020

  ME FW Version                  14.0.39.1339


  Processor Information
  Intel(R) Core(TM) i7-10700E CPU @ 2.90GHz
  Microcode Revision             CA


  Memory Information                                      →←: Select Screen
  Total Memory                   16384 MB                 ↑↓: Select Item
  Memory Slot1                   16384 MB (DDR4)          Enter: Select
  Memory Slot2                       0 MB (DDR4)          +/–: Change Opt.
  Memory Slot3                       0 MB (DDR4)          F1: General Help
  Memory Slot4                       0 MB (DDR4)          F2: Previous Values
  Memory Frequency                2667 MHz                F3: Optimized Defaults
                                                          F4: Save & Reset
  Serial ATA Port 1              Empty                    ESC: Exit
  Serial ATA Port 2              Empty
  Serial ATA Port 3              Empty
  Serial ATA Port 4              Empty                     ▼


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```
                        Aptio Setup - AMI
   Main  Advanced  Event Logs  Security  Boot  Save & Exit

 Build Date                      09/11/2020        ▲ | Set the Time. Use Tab to
                                                     | switch between Time elements.
 ME FW Version                   14.0.39.1339        |
                                                     |
 Processor Information                               |
 Intel(R) Core(TM) i7-10700E CPU @ 2.90GHz           |
 Microcode Revision              CA                  |
                                                     |
 Memory Information                                  |
 Total Memory                    16384 MB            |
 Memory Slot1                    16384 MB (DDR4)     |
 Memory Slot2                        0 MB (DDR4)     |
 Memory Slot3                        0 MB (DDR4)     |
 Memory Slot4                        0 MB (DDR4)     |
 Memory Frequency                2667 MHz            | _____
                                                     |
 Serial ATA Port 1               Empty               | →←: Select Screen
 Serial ATA Port 2               Empty               | ↑↓: Select Item
 Serial ATA Port 3               Empty               | Enter: Select
 Serial ATA Port 4               Empty               | +/-: Change Opt.
 Serial ATA Port 5               Empty               | F1: General Help
 Serial ATA Port 6(M.2)          Empty               | F2: Previous Values
                                                     | F3: Optimized Defaults
 System Date                     [Wed 09/16/2020]    | F4: Save & Reset
 System Time                     [11:37:22]        ▼ | ESC: Exit

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```

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	5.17
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**
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 Slot3**
Value	Display the installed memory size of slot3.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Memory Slot4**
Value	Display the installed memory size of slot4.
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 1**
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**
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 3**
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 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 (M.2)**
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	**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 : 1998-9999
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.

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

```
                          Aptio Setup - AMI
      Main  Advanced  Event Logs  Security  Boot  Save & Exit

   ▶ Onboard Device                              Onboard Device Configuration
   ▶ CPU Configuration
   ▶ Trusted Computing
   ▶ Super IO Configuration
   ▶ Hardware Monitor
   ▶ S5 RTC Wake Settings
   ▶ Network Stack Configuration
   ▶ NVMe Configuration

   ▶ Intel(R) Rapid Storage Technology


                                               →←: Select Screen
                                               ↑↓: Select Item
                                               Enter: Select
                                               +/-: Change Opt.
                                               F1: General Help
                                               F2: Previous Values
                                               F3: Optimized Defaults
                                               F4: Save & Reset
                                               ESC: Exit




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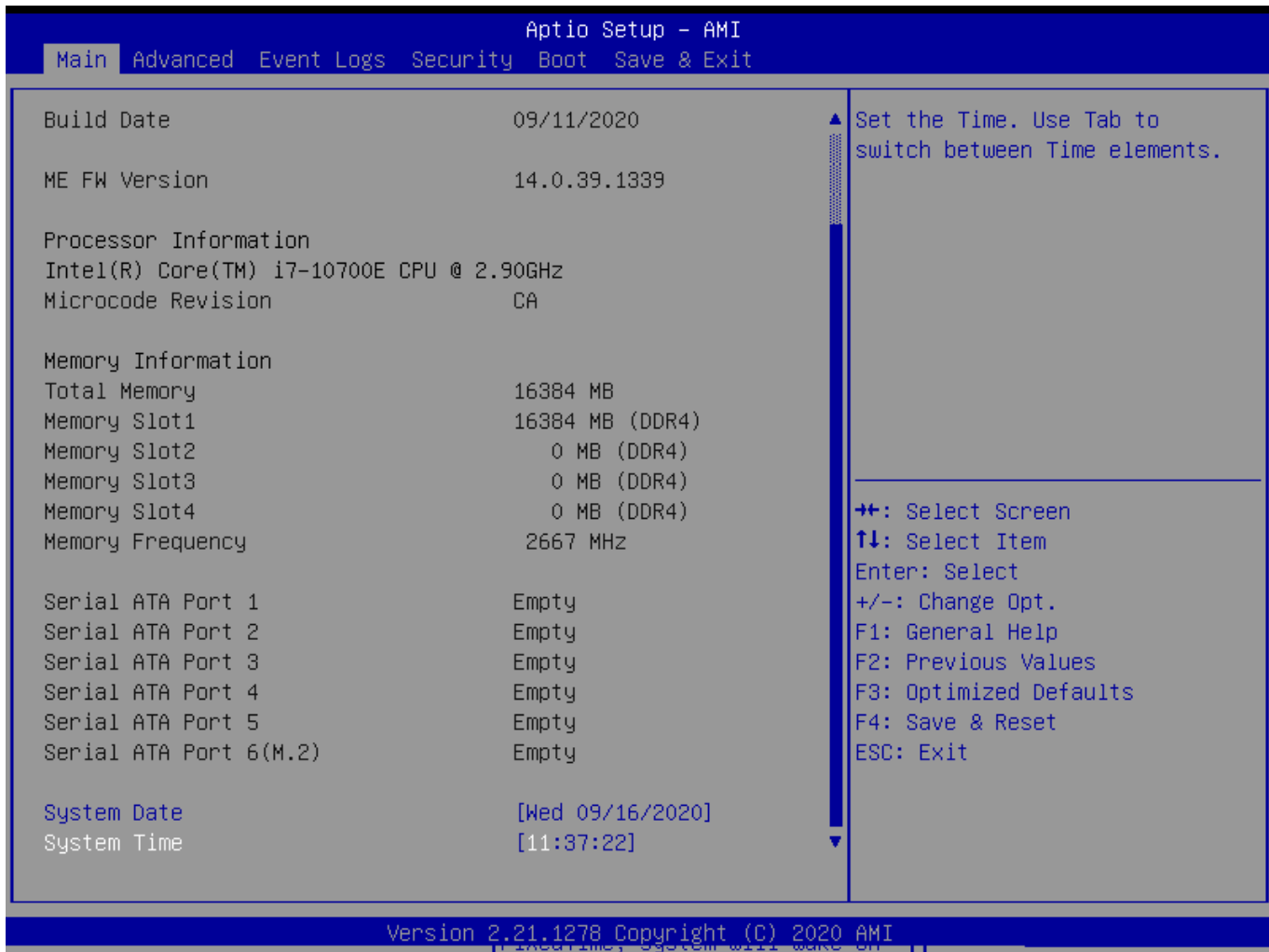
Field Name	**Onboard Device**
Help	Onboard Device Configuration.
Comment	Press Enter when selected to go into the associated Sub-Menu.

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	**NCT6116D 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 Selection is AHCI)**
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.

Onboard Device

```
                        Aptio Setup - AMI
 ┌────────────┐
 │  Advanced  │
 └────────────┘

 Turbo Mode                    [Enabled]          Enable/Disable processor Turbo
 State After G3                [S5 State]          Mode (requires Intel Speed
 DVMT Pre-Allocated            [64M]               Step or Intel Speed Shift to
 DVMT Total Gfx Mem            [256M]              be available and enabled).
 SATA Mode Selection           [AHCI]
 Wake on LAN Enable            [Enabled]
 HD Audio                      [Enabled]
 ME Update                     [Disabled]
 DeepSx Power Policies         [Disabled]
 Chassis Intrusion             [Disabled]
 LCD Panel Type                [Auto Detect]
                                                  ────────────────────────────

                                                  ↔: Select Screen
                                                  ↑↓: Select Item
                                                  Enter: Select
                                                  +/-: Change Opt.
                                                  F1: General Help
                                                  F2: Previous Values
                                                  F3: Optimized Defaults
                                                  F4: Save & Reset
                                                  ESC: Exit




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```

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 S5 State
Help	Specify what state to go to when power is re-applied after a power failure (G3 state).

Field Name	DVT Pre-Allocated
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.

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	**SATA Mode Selection**
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")**
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.

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

Field Name	**LCD Panel Type**
Default Value	[Auto Detect]
Possible Value	Auto Detect
	800x480 eDP
Help	Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.

CPU Configuration

```
                              Aptio Setup - AMI
    Advanced

 CPU Configuration                                            Enables utilization of
                                                              additional hardware
 Type                          Intel(R) Core(TM)              capabilities provided by Intel
                               i5-10500 CPU @ 3.10GHz         (R) Trusted Execution
 ID                            0xA0650                        Technology.
 Speed                         3100 MHz                       Changes require a full power
 L1 Data Cache                 32 KB x 6                      cycle to take effect.
 L1 Instruction Cache          32 KB x 6
 L2 Cache                      256 KB x 6
 L3 Cache                      12 MB
 L4 Cache                      N/A
 VMX                           Supported
 SMX/TXT                       Supported
                                                              →←: Select Screen
 Intel Trusted Execution Technology   [Disabled]              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Opt.
                                                              F1: General Help
                                                              F2: Previous Values
                                                              F3: Optimized Defaults
                                                              F4: Save & Reset
                                                              ESC: Exit


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```

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	**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.

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

2.3 Trusted Computing

```
                          Aptio Setup - AMI
 ┌─────────────┐
 │  Advanced   │
 ├─────────────┴──────────────────────────────────┬──────────────────────────┐
 │                                                 │ Enables or Disables BIOS │
 │  TPM 2.0 Device Found                           │ support for security     │
 │  Firmware Version:            500.14            │ device. O.S. will not    │
 │  Vendor:                      INTC              │ show Security Device.    │
 │                                                 │ TCG EFI protocol and     │
 │  Security Device Support      [Enable]          │ INT1A interface will not │
 │  Pending operation            [None]            │ be available.            │
 │                                                 │                          │
 │                                                 │                          │
 │                                                 │                          │
 │                                                 │                          │
 │                                                 │ ↔: Select Screen         │
 │                                                 │ ↑↓: Select Item          │
 │                                                 │ Enter: Select            │
 │                                                 │ +/-: Change Opt.         │
 │                                                 │ F1: General Help         │
 │                                                 │ F2: Previous Values      │
 │                                                 │ F3: Optimized Defaults   │
 │                                                 │ F4: Save & Reset         │
 │                                                 │ ESC: Exit                │
 │                                                 │                          │
 │                                                 │                          │
 │                                                 │                          │
 └─────────────────────────────────────────────────┴──────────────────────────┘
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```

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.

Super IO Configuration

```
                            Aptio Setup - AMI
 ┌────────────┐
 │  Advanced  │
 └────────────┘─────────────────────────────────────────────────────────────
  Super IO Configuration                            │ Set Parameters of Serial Port
                                                     │ 1 (COMA)
  Super IO Chip                       NCT6126D       │
▶ Serial Port 1 Configuration                        │
▶ Serial Port 2 Configuration                        │
▶ Serial Port 3 Configuration                        │
▶ Serial Port 4 Configuration                        │
                                                     │
                                                     │
                                                     │
                                                     │
                                                     │────────────────────────
                                                     │ →←: Select Screen
                                                     │ ↑↓: Select Item
                                                     │ Enter: Select
                                                     │ +/-: Change Opt.
                                                     │ F1: General Help
                                                     │ F2: Previous Values
                                                     │ F3: Optimized Defaults
                                                     │ F4: Save & Reset
                                                     │ ESC: Exit
                                                     │
                                                     │
                                                     │
 ─────────────────────────────────────────────────────────────────────────────
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```

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

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

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

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

Serial Port 1 Configuration

```
                          Aptio Setup - AMI
   Advanced

Serial Port 1 Configuration                          Enable or Disable Serial Port
                                                     (COM)
Serial Port                     [Enabled]
Device Settings                 IO=3F8h; IRQ=4;

Change Settings                 [Auto]



                                                     ++: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Reset
                                                     ESC: Exit




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```

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

Serial Port 2 Configuration

```
                              Aptio Setup - AMI
   Advanced

 Serial Port 2 Configuration                                 Enable or Disable Serial Port
                                                             (COM)
 Serial Port                          [Enabled]
 Device Settings                      IO=2F8h; IRQ=3;

 Change Settings                      [Auto]




                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Reset
                                                             ESC: Exit




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```

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

Serial Port 3 Configuration

```
                              Aptio Setup - AMI
    Advanced

Serial Port 3 Configuration                             Enable or Disable Serial Port
                                                        (COM)
Serial Port                      [Enabled]
Device Settings                  IO=3E8h; IRQ=7;

Change Settings                  [Auto]
Mode Configuration               [3T/5R RS232]


                                                        →←: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Reset
                                                        ESC: Exit


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```

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=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.

Serial Port 4 Configuration

```
                              Aptio Setup – AMI
     Advanced

   Serial Port 4 Configuration                              Enable or Disable Serial Port
                                                            (COM)
   Serial Port                       [Enabled]
   Device Settings                   IO=228h; IRQ=7;

   Change Settings                   [Auto]






                                                            ⇥⇤: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Reset
                                                            ESC: Exit




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```

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

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

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto
	IO=220h; IRQ=7;
	IO=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

Hardware Monitor

```
                              Aptio Setup – AMI
     Advanced

 PC Health Status                                           If Enabled, POST monitors
                                                            voltage, temperature, and fan
 Hardware Monitor Alert Enable        [Enabled]             status. If these values are
 System Fan Enable                    [Disabled]            out of range, BIOS display
                                                            warning message and turn on
 CPU Temperature              : +46 ℃                       beep sound.
 CPU VR Temperature           : +32 ℃
 DIMM Temperature             : +29 ℃
 CPU Fan Speed                : 1652 RPM
 Front Fan Speed              : N/A
 VCORE                        : +0.896 V
 3VSB                         : +3.311 V
 VBAT                         : +3.072 V                    →←: Select Screen
 12V                          : +12.288 V                   ↑↓: Select Item
 VCCST                        : +1.048 V                    Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Reset
                                                            ESC: Exit



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```

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	0~1.52V
3VSB	3.135~3.465V
VBAT	2.6~3.3V
12V	11.4~12.6V
VCCST	1.029~1.071V

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.

S5 RTC Wake Settings

```
                              Aptio Setup - AMI
   Advanced

   Wake system from S5              [Disabled]              Enable or disable System wake
                                                            on alarm event. Select
                                                            FixedTime, system will wake on
                                                            the hr::min::sec specified.




                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F3: Optimized Defaults
                                                            F4: Save & Reset
                                                            ESC: Exit



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```

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

Network Stack Configuration

```
                              Aptio Setup – AMI
 ┌────────────┐
 │  Advanced  │
 └────────────┘

  Network Stack                    [Disabled]            Enable/Disable UEFI Network
                                                          Stack




                                                          ──────────────────────────
                                                          →←: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Reset
                                                          ESC: Exit




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```

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.

NVMe Configuration

```
                              Aptio Setup – AMI
      Advanced

  NVMe Configuration

  No NVME Device Found
                                                          ↔: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Opt.
                                                          F1: General Help
                                                          F2: Previous Values
                                                          F3: Optimized Defaults
                                                          F4: Save & Reset
                                                          ESC: Exit



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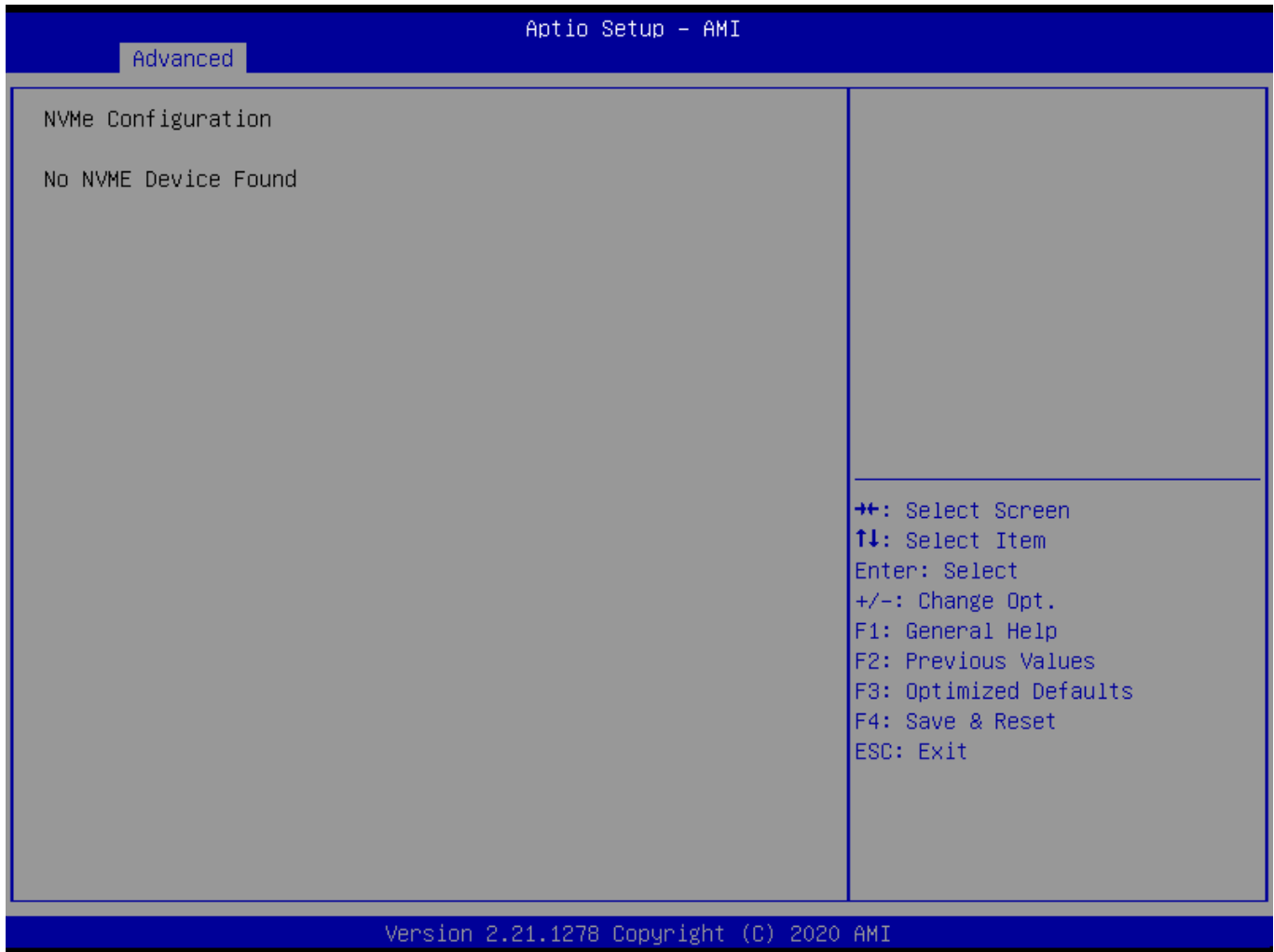
Field Name	(Device)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Intel (R) Rapid Storage Technology

```
                        Aptio Setup – AMI
   ┌─────────────┐
   │  Advanced   │
   └─────────────┘
┌──────────────────────────────────────────────┬──────────────────────────────┐
│ Intel(R) RST 17.8.2.4684 RAID Driver          │ Select to see more information│
│                                                │ about the disk                │
│                                                │                               │
│                                                │                               │
│ Non-RAID Physical Disks:                       │                               │
│▶ SATA 0.0, ST2000NM0008-2F3100 ZDS07YB2, 1.8TB │                               │
│                                                │                               │
│                                                │                               │
│                                                │                               │
│                                                │                               │
│                                                ├──────────────────────────────│
│                                                │ →←: Select Screen             │
│                                                │ ↑↓: Select Item               │
│                                                │ Enter: Select                 │
│                                                │ +/-: Change Opt.              │
│                                                │ F1: General Help              │
│                                                │ F2: Previous Values           │
│                                                │ F3: Optimized Defaults        │
│                                                │ F4: Save & Reset              │
│                                                │ ESC: Exit                     │
│                                                │                               │
└──────────────────────────────────────────────┴──────────────────────────────┘
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```

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. Event Logs

```
                            Aptio Setup - AMI
     Main   Advanced   Event Logs   Security   Boot   Save & Exit
 ┌────────────────────────────────────────────────┬───────────────────────────┐
 │ ▶ Change Smbios Event Log Settings              │ Press <Enter> to change the│
 │ ▶ View Smbios Event Log                         │ Smbios Event Log configu-  │
 │                                                 │ ration.                    │
 │                                                 │                            │
 │                                                 │                            │
 │                                                 │                            │
 │                                                 │                            │
 │                                                 │                            │
 │                                                 │                            │
 │                                                 │ ─────────────────────────  │
 │                                                 │                            │
 │                                                 │ →←: Select Screen          │
 │                                                 │ ↑↓: Select Item            │
 │                                                 │ Enter: Select              │
 │                                                 │ +/-: Change Opt.           │
 │                                                 │ F1: General Help           │
 │                                                 │ F2: Previous Values        │
 │                                                 │ F3: Optimized Defaults     │
 │                                                 │ F4: Save & Reset           │
 │                                                 │ ESC: Exit                  │
 │                                                 │                            │
 │                                                 │                            │
 └────────────────────────────────────────────────┴───────────────────────────┘
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```

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.

Change Smbios Event Log Settings

```
                          Aptio Setup - AMI
       Event Logs

 Enabling/Disabling Options                          Change this to enable or
 Smbios Event Log                   [Enabled]        disable all features of Smbios
                                                     Event Logging during boot.
 Erasing Settings
 Erase Event Log                    [No]
 When Log is Full                   [Do Nothing]


                                                     →←: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Opt.
                                                     F1: General Help
                                                     F2: Previous Values
                                                     F3: Optimized Defaults
                                                     F4: Save & Reset
                                                     ESC: Exit




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```

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

View Smbios Event Log

```
                              Aptio Setup – AMI
         Event Logs

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



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```

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.

4. Security Page

```
                              Aptio Setup - AMI
     Main  Advanced  Event Logs  Security  Boot  Save & Exit

   Password Description                          Set Administrator Password

   If ONLY the Administrator's password is set,
   then this only limits access to Setup and is
   only asked for when entering Setup.
   If ONLY the User's password is set, then this
   is a power on password and must be entered to
   boot or enter Setup. In Setup the User will
   have Administrator rights.
   The password length must be
   in the following range:
   Minimum length                     3
   Maximum length                     20

   Administrator Password                        →←: Select Screen
   User Password                                 ↑↓: Select Item
                                                 Enter: Select
                                                 +/-: Change Opt.
                                                 F1: General Help
   HDD Security Configuration:                   F2: Previous Values
   P0:ST2000NM0008-2F3100                         F3: Optimized Defaults
                                                 F4: Save & Reset
 ▶ Secure Boot                                   ESC: Exit
 ▶ BIOS Update



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```

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.

HDD Security

```
                          Aptio Setup - AMI
                    Security

 HDD Password Description :

 Allows Access to Set, Modify and Clear
 Hard Disk    User    Password
 User Password is mandatory to Enable HDD Security.
 If the 'Set User Password' option is hidden,
 do power cycle to enable the option again.

 HDD PASSWORD CONFIGURATION:

 Security Supported :              Yes
 Security Enabled   :              No
 Security Locked    :              No
 Security Frozen    :              Yes          →←: Select Screen
 HDD User Pwd Status:              NOT INSTALLED  ↑↓: Select Item
                                                 Enter: Select
                                                 +/-: Change Opt.
                                                 F1: General Help
                                                 F2: Previous Values
                                                 F3: Optimized Defaults
                                                 F4: Save & Reset
                                                 ESC: Exit

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```

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 impac 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

Secure Boot

```
                           Aptio Setup - AMI
                 ┌──────────┐
                 │ Security │
                 └──────────┘
┌─────────────────────────────────────────────────┬─────────────────────────────┐
│                                                   │                             │
│  System Mode                    Setup             │  Secure Boot feature is Active
│                                                   │  if Secure Boot is Enabled,
│  Secure Boot                    [Enabled]         │  Platform Key(PK) is enrolled
│                                 Not Active         │  and the System is in User mode.
│                                                   │  The mode change requires
│  Secure Boot Mode               [Standard]        │  platform reset
│ ▶ Restore Factory Keys                            │
│ ▶ Reset To Setup Mode                             │
│                                                   │
│ ▶ Key Management                                  │
│                                                   │  ──────────────────────────
│                                                   │  →←: Select Screen
│                                                   │  ↑↓: Select Item
│                                                   │  Enter: Select
│                                                   │  +/-: Change Opt.
│                                                   │  F1: General Help
│                                                   │  F2: Previous Values
│                                                   │  F3: Optimized Defaults
│                                                   │  F4: Save & Reset
│                                                   │  ESC: Exit
│                                                   │
└─────────────────────────────────────────────────┴─────────────────────────────┘
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```

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

Key Management

```
                              Aptio Setup - AMI
                         Security

   Vendor Keys                        Valid                    Install factory default Secure
                                                               Boot keys after the platform
   Factory Key Provision            [Disabled]                 reset and while the System is
 ▶ Restore Factory Keys                                        in Setup mode
 ▶ Reset To Setup Mode
 ▶ Export Secure Boot variables
 ▶ Enroll Efi Image

   Device Guard Ready
 ▶ Remove 'UEFI CA' from DB
 ▶ Restore DB defaults

   Secure Boot variable | Size| Keys| Key Source
 ▶ Platform Key(PK)      |    0|    0| No Keys                  →←: Select Screen
 ▶ Key Exchange Keys     |    0|    0| No Keys                  ↑↓: Select Item
 ▶ Authorized Signatures |    0|    0| No Keys                  Enter: Select
 ▶ Forbidden  Signatures |    0|    0| No Keys                  +/-: Change Opt.
 ▶ Authorized TimeStamps |    0|    0| No Keys                  F1: General Help
 ▶ OsRecovery Signatures |    0|    0| No Keys                  F2: Previous Values
                                                               F3: Optimized Defaults
                                                               F4: Save & Reset
                                                               ESC: Exit



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```

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 i 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.

BIOS Update

```
                         Aptio Setup – AMI
                  Security

 ▶ Path for ROM Image                              Enter the path to the BIOS
                                                   update option
   Notice :
   ROM Image must in the root folder of storage device.
   File name must match with current BIOS project.




                                                   ↔: Select Screen
                                                   ↑↓: Select Item
                                                   Enter: Select
                                                   +/-: Change Opt.
                                                   F1: General Help
                                                   F2: Previous Values
                                                   F3: Optimized Defaults
                                                   F4: Save & Reset
                                                   ESC: Exit


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```

Field Name	**Path for ROM Image**
Help	Enter the path to the BIOS update option

5. Boot Page

```
                           Aptio Setup – AMI
     Main  Advanced  Event Logs  Security  Boot  Save & Exit

   Boot Configuration                                    Number of seconds to wait for
   Setup Prompt Timeout              1                    setup activation key.
   Bootup NumLock State              [Off]                65535(0xFFFF) means indefinite
                                                          waiting.

   FIXED BOOT ORDER Priorities
   Boot Option #1                    [USB Floppy]
   Boot Option #2                    [CD/DVD]
   Boot Option #3                    [USB CD/DVD]
   Boot Option #4                    [Hard Disk]
   Boot Option #5                    [USB Key]
   Boot Option #6                    [USB Hard Disk]
   Boot Option #7                    [NVME]
   Boot Option #8                    [Network]          ++: Select Screen
                                                        ↑↓: Select Item
 ▶ UEFI Hard Disk Drive BBS Priorities                 Enter: Select
 ▶ UEFI USB Key Drive BBS Priorities                   +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Reset
                                                        ESC: Exit




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```

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 UEFI 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 UEFI 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 UEFI 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 UEFI 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 UEFI 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 UEFI 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 UEFI 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 UEFI NETWORK Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

(List Boot Device Type) Drive BBS Priorities

```
                              Aptio Setup - AMI
                                    Boot

 Boot Option #1                  [Windows Boot Manager          Sets the system boot order
                                 (ST2000NM0008-2F3100)]


                                                               →←: Select Screen
                                                               ↑↓: Select Item
                                                               Enter: Select
                                                               +/-: Change Opt.
                                                               F1: General Help
                                                               F2: Previous Values
                                                               F3: Optimized Defaults
                                                               F4: Save & Reset
                                                               ESC: Exit



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```

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

6. Save & Exit Page

```
                        Aptio Setup - AMI
   Main   Advanced   Event Logs   Security   Boot   Save & Exit

 Save Changes and Reset                            Reset the system after saving
 Discard Changes and Reset                         the changes.

 Restore Defaults



                                                   ↔: Select Screen
                                                   ↑↓: Select Item
                                                   Enter: Select
                                                   +/-: Change Opt.
                                                   F1: General Help
                                                   F2: Previous Values
                                                   F3: Optimized Defaults
                                                   F4: Save & Reset
                                                   ESC: Exit



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```

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.

Quick Troubleshooting Guide

Troubleshooting

1.1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below but still problems, please contact us to apply RMA or more technical support.

First Check:

1. Check that the power connector is connected to your power supply.
2. Check that no short circuits exist between the motherboard and chassis.
3. Disconnect all cables from the motherboard, including those for the keyboard and mouse.
4. Remove all add-on cards.
5. Install a heatsink and connect the power to the motherboard. Make sure that the heatsink is fully seated. Check all jumper settings as well.

If No Power:

1. Check that no short circuits exist between the motherboard and the chassis.
2. Verify that all jumpers are set to their default positions, especially CMOS jumper..
3. Turn the power switch on and off to test the system.
4. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

If No Video:

1. If the power is on but you have no video, remove all the add-on cards and cables to test.
2. Check the beep code, you may listen 5 beeps during POST, please check your display cable or graphics card is seat well.
   It may also relate to CPU, please try to replace CPU to test

DXE Beep Codes	
# of Beeps	Description
1	Invalid password
4	Some of the Architectural Protocols are not available
5	No Console Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Reset protocol is not available
8	Platform PCI resource requirements cannot be met

3. It may also relate to DIMM, please refer to below "Memory Error" to debug DIMM
4. Clear CMOS to test.

If Memory Errors:

1. Confirm that the DIMM modules are properly and fully installed.
2. Confirm that you are using the correct memory.   In addition, it is recommended that you use the same memory type and speed for all DIMMs in the system.
3. Check for bad DIMM modules or slots by swapping modules between slots and noting the results.
4. Check the beep code, you may listen 3 beeps during POST, please try to replace DIMM to test.

POST BIOS Beep Codes	
Number of Beeps	Description
1	Memory refresh timer error.
3	Base memory read/write test error
6	8042 Gate A20 test error (cannot switch to protected mode)
7	General exception error (processor exception interrupt error)
8	Display memory error (system video adapter)

If Losing the BIOS Setup Configuration:

1. Make sure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information.
2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.
3. If the above steps do not fix the setup configuration problem, contact us to apply RMA.

If The System Become Unstable During or After OS Installation:

1. Memory support: Make sure that the memory modules are supported by testing the modules using memtest86 or a similar utility.
2. HDD support: Make sure that all hard disk drives (HDDs) work properly. Replace the bad HDDs with good ones.
3. Heatsink: Check that the heatsink is installed properly
4. Adequate power supply: Make sure that the power supply provides adequate power to the system. Make sure that all power connectors are connected.
5. Proper software support: Make sure that the correct drivers are used.

If The System Becomes Unstable Before or During OS Installation:

1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as CD/DVD and CD/DVD-ROM.
2. Cable connection: Check to make sure that all cables are connected and working properly.

3. Minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use the minimum configuration (but with a CPU and a memory module installed) to identify the trouble areas.Identify bad components by isolating them: If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly.
4. Replace a bad component with a good one.
5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.
6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is
7. good and the old system has problems.

1.2 Battery Removal and Installation

Battery Removal

To remove the battery, follow the steps below:

1. Power off your system and unplug your power cable.
2. Remove the battery cable at the BT1 connector on the board.
3. Remove the battery.

Battery Installation

1. Unplug the power cord.
2. Connect the battery cable into the battery connector (BT1) and push it down until you hear a click to ensure that the cable is securely locked.
3. Use the foam tape on the back side of the battery to secure the battery to a flat surface on the bottom of the motherboard or proper location in the system. DO NOT place the battery on the heat sink.