

# de next-TGU8

de next Board

User's Manual 1st Ed

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#### Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
de next-TGU8	1
Copper Stud.M2.5	4

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

#### About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the product page at AAEON.com for the latest version of this document.

#### Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

- 1. All cautions and warnings on the device should be noted.
- 2. Make sure the power source matches the power rating of the device.
- Position the power cord so that people cannot step on it. Do not place anything over the power cord.
- Always completely disconnect the power before working on the system's hardware.
- No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
- 6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
- 7. Always disconnect this device from any AC supply before cleaning.
- 8. While cleaning, use a damp cloth instead of liquid or spray detergents.
- 9. Make sure the device is installed near a power outlet and is easily accessible.
- 10. Keep this device away from humidity.
- 11. Place the device on a solid surface during installation to prevent falls
- 12. Do not cover the openings on the device to ensure optimal heat dissipation.
- 13. Watch out for high temperatures when the system is running.
- 14. Do not touch the heat sink or heat spreader when the system is running
- 15. Never pour any liquid into the openings. This could cause fire or electric shock.
- 16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.

- 17. If any of the following situations arises, please the contact our service personnel:
  - i. Damaged power cord or plug
  - ii. Liquid intrusion to the device
  - iii. Exposure to moisture
  - iv. Device is not working as expected or in a manner as described in this manual
  - v. The device is dropped or damaged
  - vi. Any obvious signs of damage displayed on the device

# DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.



This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

#### Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

#### Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte. Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur. Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage. 产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

	有毒有害物质或元素					
部件名称	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚
	(Pb)	(Hg)	(Cd)	(Cr(VI))	(PBB)	(PBDE)
印刷电路板		x x	0	0	0	0
及其电子组件	x					
外部信号						0
连接器及线材	x	х	0	0	0	0
Э:表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。						
X:表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006标准规定的限量要求。						

备注:此产品所标示之环保使用期限,系指在一般正常使用状况下。

#### Poisonous or Hazardous Substances or Elements in Products

AAEON Main Board/ Daughter Board/ Backplane

	Poisonous or Hazardous Substances or Elements					
Component	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	х	Х	0	0	0	0
Wires & Connectors for External Connections	Х	х	0	0	0	0

O: The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.

X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.

Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

# Table of Contents

Chapte	er 1 - Pro	duct Specifications	1		
1.1	Sp	Specifications			
1.2	1.2 Block Diagram				
Chapte	er 2 – Ha	ardware Information	6		
2.1	1 Dir	mensions	7		
2.2	2 Jur	mpers and Connectors	9		
2.3	3 Lis	t of Connectors	10		
	2.3.1	COM, USB 2.0, DIO (JCOM1)	11		
	2.3.2	DC In (JDCIN2)	13		
	2.3.3	eDP (JEDP1)	13		
	2.3.4	I2C, SMBus (JESPI1)	15		
	2.3.5	FAN (JFAN1)	16		
	2.3.6	Front Panel (JFP1)	16		
2.3.7		HDMI (JHDMI1)	17		
2.3.8		LAN (JLAN1)	18		
	2.3.9	M.2 2280 M-Key (JM2M1)	20		
	2.3.10	PCIe (JPCIE_FPC1)	23		
	2.3.11	RTC Battery (JRTC1)	25		
	2.3.12	SATA (JSATA1)	25		
	2.3.13	SATA Power (JSATAP1)	26		
	2.3.14	USB 3.2 (JUSB1)	26		
Chapte	er 3 - AM	/I BIOS Setup	28		
3.1	1 Sys	stem Test and Initialization	29		
3.2	2 AN	MI BIOS Setup			
3.3	3 Se <sup>-</sup>	tup Submenu: Main	31		
3.4	4 Se <sup>-</sup>	tup Submenu: Advanced			

	3.4.1	Graphics Configuration	33
	3.4.2	CPU Configuration	34
	3.4.3	Memory Configuration	35
	3.4.4	On-Module H/W Monitor	36
	3.4.4.1	Smart Fan Mode Configuration	37
	3.4.4.2	Auto RPM Mode	39
	3.4.4.3	8 Manual Duty Mode	40
	3.4.4.4	Manual RPM Mode	41
	3.4.5	PCH-FW Configuration	42
	3.4.5.1	Firmware Update Configuration	43
	3.4.6	Power Management	44
	3.4.6.1	RTC Wake System from S5 (Fixed Time)	45
	3.4.6.2	RTC Wake System from S5 (Dynamic Time)	46
	3.4.7	AAEON BIOS Robot	47
3	.5 Setu	p Submenu: System I/O	49
	3.5.1	PCI Express Configuration	50
	3.5.2	Storage Configuration	53
	3.5.2.1	NVMe Configuration	54
	3.5.3	HD Audio Configuration	55
	3.5.4	Digital IO Port Configuration	56
	3.5.5	Legacy Logical Devices Configuration	57
	3.5.5.1	Serial Port 1	58
	3.5.5.2	Serial Port 2	59
	3.5.6	Serial Port Console Redirection	60
	3.5.6.1	COM0 Console Redirection Settings	61
	3.5.6.2	2 COM1 Console Redirection Settings	63
	3.5.6.3	Console Redirection Settings	65
3	.6 Setu	p Submenu: Security	67

Preface

3.6	6.1 Trust	ted Computing	68
3.6	6.2 Secu	Jre Boot	70
	3.6.2.1	Key Management	71
3.7	Setup Sul	omenu: Boot	72
3.8	Setup Sul	omenu: Save & Exit	73
Chapter 4	1 – Driver Ins	tallation	74
4.1	Driver Do	wnload/Installation	75
Appendix	A - I/O Infoi	rmation	
A.1	I/O Addre	ess Map	78
A.2	Memory	Address Map	79
A.3	Large Me	mory Address Map	
A.4	IRQ Mapp	ping Chart	81
Appendix	a B − List of M	lating Connectors	
B.1	List of Ma	iting Connectors and Cables	91
Appendix	C –Peripher	al Device Installation	
C.1	PER-T642	2 Installation (M.2 2280 M-Key to 2242 B-Key & 2230 E-K	ey) 93
C.2	PER-T643	Installation (M.2 2280 M-Key to 2242 B-Key/3052 B-Key	<i>י</i> )95
C.3	PER-R41P	' Installation (PER-R41P.PCIe[x4] Adapter Kit)	97

# Chapter 1

Product Specifications

# 1.1 Specifications

System	
Form Factor	86mm x 55mm, Single board computer
CPU	Onboard 11th Gen. Intel® Core™ Processor
	i7-1185G7E (4C/8T, 1.80GHz, up to 4.40GHz)
	i5-1145G7E (4C/8T, 1.50GHz, up to 4.10GHz)
	i3-1115G4E (2C/4T, 2.20GHz, up to 3.90GHz)
CPU TDP	15W (TDP up to 28W)
Chipset	Integrated with Intel® SoC
Memory Type	Onboard LPDDR4x, 3733MT/s, up to 16GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	fTPM
RTC battery	Lithium Battery 3V/240mAh
Dimension (L x W)	3.38" x 2.17" (86mm x 55mm)

# Power

Power Requirement	+12V DC in
Power Supply Type	AT/ATX (AT mode as default)
Connector	DC Jack
Power Consumption	i7-1185G7E + LPDDR4x 16GB: 12V@ 12V@7A,
	84W (Peak during full loading)
	i7-1185G7E + LPDDR4x 16GB: 12V@4.58A,
	55W (steady state during full loading)

	Display	
$\sim$	Controller	Intel® UHD Graphics for 11th Gen Intel®
		Processors
ext B	LVDS/EDP	eDP only, up to 3840 x 2160 Resolution
	Display Interface	eDP x 1
		HDMI 1.4b x 1

Dicol

	HDMI 1.4b x 1
Multiple Display	Up to 2 Simultaneous Displays
Audio	
Codec	—
Audio Interface	_

Speaker

External I/O	
Ethernet	Intel® i219LM, 10/100/1000Base, RJ-45 x 1
	Intel® i225LM, 10/100/2500Base, RJ-45 x 1
USB	USB 3.2 Gen 2 x 2 (Type A)
Serial Port	_
Video	HDMI 1.4b x 1

Internal I/O	
USB	USB 2.0 x 4 (pin header)
	Note: USB 2.0 x 2 shared with adapter card
Serial Port	COM Port x 2 (RS232/422/485 pin header)
Video	eDP x 1
SATA	SATA III x 1
	+5V SATA Power Connector x 1

Internal I/O	
Audio	_
DIO/GPIO	8-Bit (pin header)
SMBus/I2C	Optional
Touch	_
Fan	Smart Fan x 1
SIM	_
Front Panel	HDD LED, PWR LED, Power Button, Buzzer,
	Reset

# Others

# Expansion Mini PCle/MSATA

 Mini PCle/MSATA
 —

 M.2
 M.2 2280 M-Key x 1 (PCle [x2])

 Others
 —

Environment & Certification	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	594,420
EMC	CE/FCC Class A

#### 1.2 Block Diagram



Chapter 1 – Product Specifications

# Chapter 2

Hardware Information







TOP SIDE





#### With CPU Cooler:







#### 2.2 Jumpers and Connectors



Chapter 2 – Hardware Information

#### List of Connectors 2.3

Please refer to the table below for all of the board's connectors that you can configure for your application

Label	Function
JCOM1	COM, USB 2.0, DIO
JDCIN1	DC In
JEDP1	eDP
JESPI1	I2C, SMBus
JFAN1	FAN
JFP1	Front Panel
JHDMI1	HDMI
JLAN1	LAN
JM2M1	М.2 2280 М-Кеу
JPCIE_FPC1	PCIe
JRTC1	RTC Battery
JSATA1	SATA
JSATAP1	SATA Power
JUSB1	USB 3.2 Gen 2

### 2.3.1 COM, USB 2.0, DIO (JCOM1)



Pin	Pin Name	Signal Type	Signal Level
1	DIO_7	I/O	3.3V
2	DIO_6	I/O	3.3V
3	DIO_5	I/O	3.3V
4	DIO_4	I/O	3.3V
5	DIO_3	I/O	3.3V
6	DIO_2	I/O	3.3V
7	DIO_1	I/O	3.3V
8	DIO_0	I/O	3.3V
9	GND	GND	-
10	GND	GND	-
11	USB2_6_DN_CM	I/O	-
12	USB2_5_DN_CM	I/O	-
13	USB2_6_DP_CM	I/O	-
14	USB2_5_DP_CM	1/0	-

Pin	Pin Name	Signal Type	Signal Level
15	+V5A_USB3456	I/O	-
16	+V5A_USB3456	I/O	-
17	USB2_4_DN_CM	I/O	-
18	USB2_3_DN_CM	I/O	-
19	USB2_4_DP_CM	I/O	-
20	USB2_3_DP_CM	I/O	-
21	GND	GND	-
22	GND	GND	-
23	RI_2_CON	I/O	-
24	RI_1_CON	I/O	-
25	CTS_2_CON	I/O	-
26	CTS_1_CON	I/O	-
27	RTS_2_CON	I/O	-
28	RTS_1_CON	I/O	-
29	DSR_2_CON	I/O	-
30	DSR_1_CON	I/O	-
31	DTR_2_CON	I/O	-
32	DTR_1_CON	I/O	-
33	TX_2_CON	I/O	-
34	TX_1_CON	I/O	-
35	RX_2_CON	I/O	-
36	RX_1_CON	I/O	-
37	DCD_2_CON	I/O	-
38	DCD_1_CON	I/O	-
39	+V5S	PWR	-
40	GND	GND	-

# 2.3.2 DC In (JDCIN2)

Pin	Pin Name	Signal Type
1	+VIN	PWR
2	GND	GND

# 2.3.3 eDP (JEDP1)



Pin	Pin Name	Signal Type
1	+VDD_EDP	PWR
2	+VDD_EDP	PWR
3	GND	GND
4	GND	GND
5	DDI0_LANE2_DN_CH	I/O
6	DDI0_LANE2_DP_CH	I/O
7	GND	GND
8	DDI0_LANE1_DN_CH	I/O
9	DDI0_LANE1_DP_CH	I/O
10	GND	GND

Pin	Pin Name	Signal Type
11	DDIO_LANEO_DN_CH	I/O
12	DDIO_LANE0_DP_CH	I/O
13	GND	GND
14	DDI0_LANE3_DN_CH	I/O
15	DDI0_LANE3_DP_CH	I/O
16	GND	GND
17	DDI0_AUX_DN_CH	Ι/Ο
18	DDI0_AUX_DP_CH	I/O
19	GND	GND
20	DDI0_BKLTCTL	Ι/Ο
21	NC	-
22	DDI0_BKLTEN	I/O
23	DDI0_HPD	I/O
24	GND	GND
25	GND	GND
26	GND	GND
27	+V12S	PWR
28	+V12S	PWR
29	+V12S	PWR
30	+V12S	PWR

### 2.3.4 I2C, SMBus (JESPI1)



Pin	Pin Name	Signal Type
1	ESPI_IO0_EC_R	I/O
2	ESPI_IO1_EC_R	I/O
3	ESPI_IO2_EC_R	I/O
4	ESPI_IO3_EC_R	I/O
5	+V3P3S	PWR
6	ESPI_CS_EC_R_N	I/O
7	JESP1_I2C_SDA	1/0
8	GND	GND
9	JESP1_I2C_SCL	1/0
10	JESP1_SMB_SDA	I/O
11	JESP1_SMB_SCL	I/O
12	SMBALERT#	1/0

#### 2.3.5 FAN (JFAN1)



Pin	Pin Name	Signal Type
1	GND	GND
2	+V12S	PWR
3	FAN_1_TAC_CON	I/O
4	FAN_1_CTL_CON	I/O

### 2.3.6 Front Panel (JFP1)



Pin	Pin Name	Signal Type
'1	GND	GND
2	EXT_PWRBTN#	Ι/Ο
3	PCH_SATA_LED_N	Ι/Ο
4	V3P3S_FP1	POWER
5	FP_BUZZER	Ι/Ο
6	V5S_FP1	POWER

Pin	Pin Name	Signal Type
7	GND	GND
8	V3P3S_FP2	POWER
9	GND	GND
10	HWRST#	I/O

# 2.3.7 HDMI (JHDMI1)



Pin	Pin Name	Signal Type	
1	HDMI1_D2_DP_CM	Ι/Ο	
2	GND	GND	
3	HDMI1_D2_DN_CM	Ι/Ο	
4	HDMI1_D1_DP_CM	Ι/Ο	
5	GND	GND	
6	HDMI1_D1_DN_CM	Ι/Ο	
7	HDMI1_D0_DP_CM	Ι/Ο	
8	GND	GND	
9	HDMI1_D0_DN_CM	Ι/Ο	
10	HDMI1_CLK_DP_CM	I/O	
11	GND	GND	
12	HDMI1_CLK_DN_CM	1/0	
13	NC		
14	NC	-	

Pin	Pin Name	Signal Type
15	HDMI1_SCL	Ι/Ο
16	HDMI1_SDA	Ι/Ο
17	GND	GND
18	+V5S_HDMI	PWR
19	HDMI1_HPD	Ι/Ο

# 2.3.8 LAN (JLAN1)



Pin	Pin Name	Signal Type	
1P1	LAN2_MDIOP	Ι/Ο	
1P2	LAN2_MDION	I/O	
1P3	LAN2_MDI1P	Ι/Ο	
1P4	LAN2_MDI1N	Ι/Ο	
1P5	LAN2_CT	Ι/Ο	
1P6	LAN2_CT	Ι/Ο	
1P7	LAN2_MDI2P	Ι/Ο	
1P8	LAN2_MDI2N	Ι/Ο	
1P9	LAN2_MDI3P	Ι/Ο	
1P10	LAN2_MDI3N	Ι/Ο	
2P1	LAN1_MDIOP	Ι/Ο	
2P2	LAN1_MDION	Ι/Ο	
2P3	LAN1_MDI1P	Ι/Ο	

de next Board

Pin	Pin Name	Signal Type
2P4	LAN1_MDI1N	I/O
2P5	LAN1_CT	I/O
2P6	LAN1_CT	I/O
2P7	LAN1_MDI2P	I/O
2P8	LAN1_MDI2N	I/O
2P9	LAN1_MDI3P	I/O
2P10	LAN1_MDI3N	I/O



Pin	Pin Name	Signal Type	
1	GND	GND	
2	+V3P3S	PWR	
3	GND	GND	
4	+V3P3S	PWR	
5	NC	-	
6	CARD_PWR_EN_R	Ι/Ο	
7	NC	-	
8	NC	-	
9	GND	GND	
10	NC	-	
11	NC	-	
12	+V3P3S	PWR	
13	NC	-	
14	+V3P3S	PWR	
15	GND	GND	
16	+V3P3S	PWR	
17	NC	-	
18	+V3P3S	PWR	
19	NC	-	

Pin	Pin Name	Signal Type	
20	NC	-	
21	GND	GND	
22	NC	-	
23	NC	-	
24	NC	-	
25	NC	-	
26	NC	-	
27	GND	GND	
28	NC	-	
29	PCIE4_1_RXN	I/O	
30	NC	-	
31	PCIE4_1_RXP	I/O	
32	NC	-	
33	GND	GND	
34	NC	-	
35	PCIE4_1_TXN_M2	I/O	
36	NC	-	
37	PCIE4_1_TXP_M2	I/O	
38	NC	-	
39	GND	GND	
40	M2M_SMB_CLK	Ι/Ο	
41	PCIE4_0_RXN	I/O	
42	M2M_SMB_DATA	I/O	
43	PCIE4_0_RXP	I/O	
44	NC	-	
45	GND	GND	

Pin	Pin Name	Signal Type	
46	NC	-	
47	PCIE4_0_TXN_M2	I/O	
48	NC	-	
49	PCIE4_0_TXP_M2	Ι/Ο	
50	BUF_PLT_RST#	I/O	
51	GND	GND	
52	NC	I/O	
53	PCIE_0_CLK_DN	I/O	
54	PCIE_WAKE#	I/O	
55	PCIE_0_CLK_DP	I/O	
56	NC	-	
57	GND	GND	
58	NC	-	
59	NC	-	
67	NC	-	
68	M2M_SSCLK	I/O	
69	NC	-	
70	+V3P3S	PWR	
71	GND	GND	
72	+V3P3S	PWR	
73	GND	GND	
74	+V3P3S	PWR	
75	GND	GND	

# 2.3.10 PCIe (JPCIE\_FPC1)



Pin	Pin Name	Signal Type	Signal Level
1	+V3P3S	PWR	+3.3V
2	+V3P3S	PWR	+3.3V
3	+V3P3S	PWR	+3.3V
4	SMB_DATA	I/O	+3.3V
5	SMB_CLK	I/O	-
6	BUF_PLT_RST#	I/O	-
7	+V3P3A	PWR	-
8	GND	GND	-
9	PCIE7_RXP	I/O	-
10	PCIE7_RXN	I/O	-
11	GND	GND	-
12	PCIE5_RXP	I/O	-
13	PCIE5_RXN	I/O	-
14	GND	GND	-
15	PCIE6_RXP	I/O	-
16	PCIE6_RXN	I/O	-
17	GND	GND	-
18	PCIE8_RXP	I/O	-
19	PCIE8_RXN	I/O	-
20	GND	GND	-
Pin	Pin Name	Signal Type	Signal Level
-----	---------------	-------------	--------------
21	PCIE5_TXN_C	I/O	-
22	PCIE5_TXP_C	I/O	-
23	GND	GND	-
24	PCIE6_TXN_C	I/O	-
25	PCIE6_TXP_C	I/O	-
26	GND	GND	-
27	PCIE7_TXN_C	I/O	-
28	PCIE7_TXP_C	I/O	-
29	GND	GND	-
30	PCIE_5_CLK_DN	I/O	-
31	PCIE_5_CLK_DP	I/O	-
32	GND	GND	-
33	PCIE8_TXN_C	I/O	-
34	PCIE8_TXP_C	I/O	-
35	GND	GND	-
36	+V12S	PWR	-
37	+V12S	PWR	-
38	+V12S	PWR	-
39	+V12S	PWR	-
40	+V12S	PWR	-

## 2.3.11 RTC Battery (JRTC1)

Pin	Pin Name	Signal Type
1	+VRTC_BATT	PWR
1	GND	GND

2

## 2.3.12 SATA (JSATA1)



Pin	Pin Name	Signal Type
1	GND	GND
2	SATA_0_TXP	I/O
3	SATA_0_TXN	Ι/Ο
4	GND	GND
5	SATA_0_RXN	Ι/Ο
6	SATA_0_RXP	I/O
7	GND	GND

#### 2.3.13 SATA Power (JSATAP1)



Pin	Pin Name	Signal Type
1	+V5S	PWR
2	GND	GND

# 2.3.14 USB 3.2 (JUSB1)



Pin	Pin Name	Signal Type
1	+V5A_USB12	PWR
2	USB2_1_DN_CM	Ι/Ο
3	USB2_1_DP_CM	Ι/Ο
4	GND	GND
5	USB31_1_RXN_CM	Ι/Ο
6	USB31_1_RXP_CM	Ι/Ο
7	GND	GND
8	USB31_1_TXN_CM	Ι/Ο
9	USB31_1_TXP_CM	Ι/Ο

Pin	Pin Name	Signal Type
10	+V5A_USB12	PWR
11	USB2_2_DN_CM	I/O
12	USB2_2_DP_CM	I/O
13	GND	GND
14	USB31_2_RXN_CM	I/O
15	USB31_2_RXP_CM	I/O
16	GND	GND
17	USB31_2_TXN_CM	I/O
18	USB31_2_TXP_CM	I/O

# Chapter 3

AMI BIOS Setup

#### 3.1 System Test and Initialization

The board uses certain routines to perform testing and initialization. If an error, fatal or non-fatal, is encountered, a few short beeps or an error message will be outputted. The board can usually continue the boot up sequence with non-fatal errors.

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory. If they do not match, an error message will be outputted, in which case you will need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

- You are starting your system for the first time
- You have changed your system's hardware
- The CMOS memory has lost power and the configuration information is erased

The system's CMOS memory uses a backup battery for data retention, which is to be replaced once emptied.

#### 3.2 AMI BIOS Setup

The AMI BIOS ROM has a pre-installed Setup program that allows users to modify basic system configurations, which is stored in the battery-backed CMOS RAM and BIOS NVRAM so that the information is retained when the power is turned off.

To enter BIOS Setup, press <Del> or <F2> immediately while your computer is powering up.

The function for each interface can be found below.

Main – Date and time can be set here. Press <Tab> to switch between date elements

Advanced – Enable/ Disable boot option for legacy network devices

System I/O - Enable/ Disable System input and output port

Boot - Enable/ Disable quiet Boot Option

Security - The setup administrator password can be set here

Save & Exit – Save your changes and exit the program

# 3.3 Setup Submenu: Main

Main Advanced System I/O Securit	Aptio Setup – AMI y Boot Save & Exit	
== BIOS Information == DeNext-TGU8 R1.0 (DTG8AM10)(04/2	2/2022)	Set the Date. Use Tab to switch between Date elements. Default Ranges: Year: 1998–2199
== CPU Information == 11th Gen Intel(R) Core(TM) i5–1145G7E @ 2.60GHz		Months: 1–12 Days: dependent on month
== MEM Information == Total Memory Memory Speed	16384 MB 3733 MT/s	
== SATA Information == Serial ATA Port 0	M500IT_MTFDDAK (120.0GB)	
System Date System Time	[Fri 04/29/2022] [09:42:00]	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Oct.
Access Level	Administrator	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
llensien 0	04 4070 0-mm (abt (0) 0000	

#### 3.4 Setup Submenu: Advanced



# 3.4.1 Graphics Configuration

	Antio Setu	n - AMT
Advanced	hptio octu	
Graphics Configura	tion	Select VBT for GOP Driver
VBT Select		
		++: Select Screen
		↑↓: Select Item Enter: Select
		+/−: Change Upt. F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit FSC: Evit
		LUGA LAIT
	Version 2.21.1278 Cop	yright (C) 2022 AMI
Options Summary		
VBT Select	eDP On	Optimal Default, Failsafe Default
	eDP Off	

Select VBT for GOP Driver

# 3.4.2 CPU Configuration

Advanced	Aptio Setup — AMI	
CPU Configuration		Number of cores to enable in
Type ID Speed L1 Data Cache L1 Instruction Cache L2 Cache L3 Cache L4 Cache VMX SMX/TXT Active Processor Cores Turbo Mode Hyper-Threading Intel(R) SpeedStep(tm) Intel(VMX) Virtualization Technology	11th Gen Intel(R) Core(TM) i5-1145G7E @ 2.60GHz 0x806C1 2600 MHz 48 KB × 4 32 KB × 4 1280 KB × 4 8 MB N/A Supported Supported [A11] [Enabled] [Enabled] [Enabled] [Enabled]	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Options Summary				
Active Processor	All	Optimal Default, Failsafe Default		
Cores	1			
	2			
	3			
Number of cores to	o enable in each processor packag	le.		
Turbo Mode	Disabled			
	Enabled	Optimal Default, Failsafe Default		
Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means				
enabled				
Hyper-Threading	Disabled			
	Enabled	Optimal Default, Failsafe Default		
Enable or Disable Hyper-Threading Technology.				
Intel(R)	Disabled			
SpeedStep(tm)	Enabled	Optimal Default, Failsafe Default		
Allows more than two frequency ranges to be supported.				

<b>Options Summary</b>			
Intel (VMX)	Disabled		
Technology	Enabled	Optimal Default, Failsafe Default	
When enabled, a VMM can utilize the additional hardware capabilities provided by			
Vanderpool Technology.			

# 3.4.3 Memory Configuration

Advanced	Aptio Setup – AMI	
navancea		
Memory Configuration		
Memory RC Version Total Memory Memory Speed Memory Timings (tCL-tRCD-tRP-tRAS) Controller 0 Channel 0 Slot 0 In-Band ECC Support	2.0.2.0 16384 MB 3733 MT/s 32–34–34–79 Populated & Enabled [Disabled]	
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2	2.21.1278 Copyright (C) 2022	AMI

# 3.4.4 On-Module H/W Monitor

Advanced	Aptio Setup – AMI	
Advanced       Pc Health Status       System Temperature T1       System Famperature T2       CPU(PECI) Temperature       System FAN       VCORE       +12V       +5V       VMEM       +3.3V       3VSB       SVSB       VBAT       Smart Fan       Smart Fan Mode Configuration	: +29 % : +27 % : +39 % : 3856 RPM : +1.280 V : +5.171 V : +5.171 V : +3.344 V : +3.344 V : +3.344 V : +3.072 V [Enabled]	Enable or Disable Smart Fan ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Versio	on 2.21.1278 Copyright (	C) 2022 AMI
Options Summary		

Options Summar	у	
Smart Fan	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable	e Smart Fan	

# 3.4.4.1 Smart Fan Mode Configuration

	Aptio Setup – AMI	
Advanced		
Smart Fan Mode Configuration		Output PWM mode (push pull) to control 4-wire fans.
FAN1 Output Mode Fan 1 Smart Fan Control Temperature Source Temperature 1 Temperature 2 Temperature 3 Temperature 4 Dutu Cuele 1	[Output PWM mode (open drain)] [Auto Duty-Cycle Mode] [System Temperature T1] 60 50 40 30 85	Linear fan application circuit to control 3-wire fan speed by fan's power terminal. Output PWM mode (open drain) to control Intel 4-wire fans.
Duty Cycle 1 Duty Cycle 2 Duty Cycle 3 Duty Cycle 4 Duty Cycle 5	85 70 60 50 40	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

<b>Options Summary</b>			
FAN 1 Output	Output PWM mode (open drain) Optimal Default, Failsafe Default		
Mode	Linear Fan Application		
	Output PWM mode (push pull)		
Output PWM mod	e (push pull) to control 4-wires fan	IS.	
Linear fan applicati	ion circuit to control 3 wire fan spe	ed by fan's power terminal.	
Output PWM mod	e (open drain) to control Intel 4-wi	ire fans.	
Fan 1 Smart Fan	Manual RPM Mode		
Control	Manual Duty Mode		
	Auto RPM Mode		
	Auto Duty-Cycle Mode Optimal Default, Failsafe Defau		
Select output PWN	Select output PWM of inverting or non-inverting signal.		
Temperature	CPU(PECI) Temperature		
Source	System Temperature T1	Optimal Default, Failsafe Default	
	System Temperature T2		
Select the monitor	ed temperature source for this fan.		

<b>Options Summary</b>		
Temperature 1	60	Optimal Default, Failsafe Default
Temperature 2	50	Optimal Default, Failsafe Default
Temperature 3	40	Optimal Default, Failsafe Default
Temperature 4	30	Optimal Default, Failsafe Default
Duty Cycle 1	85	Optimal Default, Failsafe Default
Duty Cycle 2	70	Optimal Default, Failsafe Default
Duty Cycle 3	60	Optimal Default, Failsafe Default
Duty Cycle 4	50	Optimal Default, Failsafe Default
Duty Cycle 5	40	Optimal Default, Failsafe Default
Auto fan speed co	ntrol. Fan speed will follow differer	It temperature by different duty
cycle 1-100		

# 3.4.4.2 Auto RPM Mode

Advanced	Aptio Setup – AMI	
Smart Fan Mode Configuration		Smart Fan Mode Select
Smart Fan Mode Configuration FAN1 Output Mode Fan 1 Smart Fan Control Temperature Source Temperature 1 Temperature 2 Temperature 3 Temperature 4 RPM Percentage 1 RPM Percentage 2 RPM Percentage 3 RPM Percentage 4 RPM Percentage 5	[Output PWM mode (open drain)] [Auto RPM Mode] [System Temperature Ti] 60 50 40 30 85 70 60 50 40	Smart Fan Mode Select ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Versior	n 2.21.1278 Copyright (C) 202	2 AMI

Options Summary		
RPM Percentage 1	85	Optimal Default, Failsafe Default
RPM Percentage 2	70	Optimal Default, Failsafe Default
RPM Percentage 3	60	Optimal Default, Failsafe Default
RPM Percentage 4	50	Optimal Default, Failsafe Default
RPM Percentage 5	40	Optimal Default, Failsafe Default
Auto fan speed control. Fan speed will follow different temperature by different RPM		
1-100		

# 3.4.4.3 Manual Duty Mode

Advanced	Aptio Setup – AMI	
Smart Fan Mode Configuration		Smart Fan Mode Select
FANI Output Mode Fan 1 Smart Fan Control Manual Duty Mode	[Dutput PWH mode (open drain)] [Manual Duty Mode] 60	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version	2.21.1278 Copyright (C) 2022	2 AMI
Options Summary		

Manual Duty Mode	60	Optimal Default, Failsafe Default
Manual mode fan co	ontrol, user can write expected du	ty cycle (PWM fan type) 1-100

## 3.4.4.4 Manual RPM Mode

Advanced	Aptio Setup — AMI	
Smart Fan Mode Configuration		Manual mode fan control, user
FAN1 Output Mode	[Output PWM mode (open drain)]	500-10000
Fan 1 Smart Fan Control Manual RPM Mode	[Manual RPM Mode] <mark>3000</mark>	
		++: Select Screen ↑↓: Select Item
		Enter: Select +/-: Change Opt. E1: Cenenal Help
		F2: Previous Values F3: Dotimized Defaults
		F4: Save & Exit ESC: Exit
Version 2.21.1278 Copyright (C) 2022 AMI		
Options Summary		

Manual RPM Mode	3000	Opti	imal Default, Failsafe Default
Manual mode fan co	ontrol, user can write expected RP	М со	ount 500-10000

# 3.4.5 PCH-FW Configuration

Advanced	Aptio Setup — AMI	
ME Firmware Version	15.0.23.1706	Configure Management Engine Technology Parameters
▶ Firmware Update Configuration		
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2	.21.1278 Copyright (C) 2021	AMI

#### 3.4.5.1 Firmware Update Configuration



IMe FW Image	Disabled	Optimal Default, Fallsafe Default
Re-Flash	Enabled	
Enable/Disable Me FW Image Re-Flash function.		
FW Update	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable ME FW Update function.		

## 3.4.6 Power Management

Advanced	Aptio Setup – AMI	
Power Management		Select system power mode.
Power Mode Restore AC Power Loss	[ATX Type] [Always On]	
Wake Events RTC wake system from S5	[Disabled]	
		++: Select Screen 14: Select Item Enter: Select
		+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Evit
		ESC: Exit

Options Summary			
Power Mode	АТХ Туре	Optimal Default, Failsafe Default	
	АТ Туре		
Select system power	r mode.		
Restore AC Power	Last State		
Loss	Always On	Optimal Default, Failsafe Default	
	Always Off		
Restore AC Power L	oss: To decide the behavior after s	system power cut then resupply.	
Note: The COMS ba	ttery must present.		
Note: "Restore AC Power Loss - Last State" only supports ATX Mode.			
RTC wake system	Disabled	Optimal Default, Failsafe Default	
from S5	Fixed Time		
	Dynamic Time		
	Bypass		
Fixed Time: System will wake on the hr::min::sec specified.			
Dynamic Time: System will wake on the current time + Increase minute(s).			
Bypass: BIOS will not control RTC wake function during system shutdown			

## 3.4.6.1 RTC Wake System from S5 (Fixed Time)

	Aptio Setup – AM:	I
Advanced		
Power Management		Fixed Time: System will wake on the hr::min::sec
Power Mode Restore AC Power Loss	[ATX Type] [Always On]	specified./n Dynamic Time: System will wake on the current time + Increase
Wake Events		minute(s)./n Bypass: BIOS will
RTC wake system from S5		not control RTC wake function
Wake up day	0	during system shutdown
Wake up minute	0	
Wake up second	õ	
		14: Select Item
		Enter: Select
		+/−: Change Opt.
		F1: General Help
		F2: Previous values
		F4: Save & Exit
		ESC: Exit
Ver	sion 2.21.1278 Copyright	(C) 2022 AMI
Options Summary		
Wake up day 0		Optimal Default, Failsafe Default
Select 0 for daily system wak	e up, 1-31 for which d	ay of the month that you would like
the system to wake up		
Wake up hour 0		Optimal Default, Failsafe Default
Select 0-23 For example ente	er 3 for 3am and 15 fo	or 3pm
Wake up minute 0		Optimal Default, Failsafe Default
0-59		
Wake up second 0		Optimal Default, Failsafe Default

de next Boar

Chapter 3 – AMI BIOS Setup

0-59

# 3.4.6.2 RTC Wake System from S5 (Dynamic Time)

Advanced		Aptio Setup – AMI	
Power Management			Fixed Time: System will wake
Power Mode Restore AC Power Los	S	(ATX Type) (Always On)	on the nr::min::sec specified./n Dynamic Time: System will wake on the current time + Increase
Wake Events RTC wake system from Wake up minute inc	S5 rease	[Dynamic Time] 1	minute(s)./n Bypass: BIOS will not control RTC wake function during system shutdown
			<pre>#: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
	Version 2	.21.1278 Copyright (C)	2022 AMI
Options Summary			
Wake up minute increase	1		Optimal Default, Failsafe Default
1-5			

# 3.4.7 AAEON BIOS Robot

Advanced	Aptio Setup – AMI	
Advanced AAEON BIOS Robot Sends watch dog before BIOS POST POST Timer (second) Sends watch dog before booting OS OS Timer (minute) Delayed POST (PEI phase) Delayed POST (DXE phase) Delayed time (second) Delayed time (second)	[Disabled] 30 [Disabled] 3 [Disabled] 10 [Disabled] 10	Enabled - Robot set Watch Dog Timer(WDT) right after power on, before BIDS start PDST process. And then Robot will clear WDT on compeletion of POST. WDT will reset system automatically if it is not cleared before its timer counts down to zero.
Reset system once Soft or hard reset	[Disabled] [Soft reset]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

Options Summary				
Sends watch dog	Disabled	Optimal Default, Failsafe Default		
before BIOS POST	Enabled			
Enabled - Robot set	Watch Dog Timer (WDT) right aft	er power on, before BIOS start		
POST process. And t	hen Robot will clear WDT on com	pletion of POST. WDT will reset		
system automatically	if it is not cleared before its time	r counts down to zero.		
POST Timer	30	Ontimal Default Eailsafe Default		
(Second)	50	Optimal Delault, Talisale Delault		
Timer count set to Watch Dog Timer for POST. WARNING: Do not set to a value equal				
or shorter than normal POST time, otherwise system may never complete POST unless				
clearing BIOS setting	s. More than 2x normal POST tim	e is suggested.		
Sends watch dog	Disabled	Optimal Default, Failsafe Default		
before booting OS	Enabled			
Enabled - Robot set Watch Dog Timer (WDT) after POST completion before BIOS				
transfer control to OS. Warning: Before enabling this function, a program in OS must				
be in responsible for clearing WDT. Also, this function should be disabled if OS is going				
to update itself.	to update itself.			

Options Summary		
OS Timer (minute)	3	Optimal Default, Failsafe Default
Timer count set to V	Vatch Dog Timer for OS loading.	
Delayed POST	Disabled	Optimal Default, Failsafe Default
(PEI phase)	Enabled	
Enabled - Robot hol	lds BIOS from starting POST, right	after power on. This allows BIOS
POST to start with st	table power or start after system is	s physically warmed-up.
Note: Robot does th	is before 'Send watch dog'.	1
Delayed	10	Ontimal Default, Failsafe Default
time(second)		
Period of time for Robot to hold BIOS from POST.		
Delayed POST	Disabled	Optimal Default, Failsafe Default
(DXE phase)	Enabled	
Enabled - Robot hol	lds BIOS before POST completion	. This allows BIOS POST to start
with stable power or	r start after system is physically wa	armed-up.
Note: Robot does th	his after 'Sends watch dog before	BIOS POST'.
Delayed	10	Ontimal Default Failsafe Default
time(second)		
Period of time for Ro	obot to hold BIOS from POST.	1
Reset system once	Disabled	Optimal Default, Failsafe Default
Reset system once	Enabled	
Enabled - Robot res	ets system for one time on each b	boot. This will send a soft or hand
reset to onboard de	vices, thus puts devices to more s	table state.
Coft or bard reset	Soft reset	Optimal Default, Failsafe Default
	Hard reset	
Select reset type rob	oot should send on each boot.	

# 3.5 Setup Submenu: System I/O

Aptio Setup – AMI Main Advanced <mark>System I∕O</mark> Security Boot Save & Exit	
System I/O P POI Express Configuration Storage Configuration HD Audio Configuration Digital ID Port Configuration Legacy Logical Devices Configuration Serial Port Console Redirection	PCI Express Configuration settings ++: Select Screen 14: Select Item Enter: Select
	<pre>+/-: Unange upt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
version 2.21.1276 Copyright (C) 2021	HUT

# 3.5.1 PCI Express Configuration

	Aptio Setup – AMI	
System I/O		
PCH PCIe Configuration		PCIE Controller Selection
JM2M1 Port Select		
JM2M1 Port-1	[Enabled]	
PCIe Speed	[Auto]	
Hot Plug	[Disabled]	
JPCIE_FPC1 Port	[Enabled]	
PCIe Speed	[Auto]	
Hot Plug	[Disabled]	
I225 LAN Port	[Enabled]	
PCIe Speed	[Auto]	
		↔+: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Change Upt.
		F1: General Help
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Options Summary		
JM2M1 Port Select	PCIE Controller are two x1	
	PCIE Controller is one x2	Optimal Default, Failsafe Default
PCIE Controller Sele	ction	
IN 42N 41 Dort 1	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control the PCI Exp	ress Root Port.	
PCIe Speed	Auto	Optimal Default, Failsafe Default
	Gen1	
	Gen2	
	Gen3	
Configure PCIe Spe	ed	
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
PCI Express Hot Plug	g Enable/Disable	
JPCIE_FPC1 Port	Disabled	Optimal Default, Failsafe Default
	Enabled	

Options Summary				
Control the PCI Exp	Control the PCI Express Root Port.			
	Auto	Optimal Default, Failsafe Default		
DCIa Speed	Gen1			
PCIe speed	Gen2			
	Gen3			
Configure PCIe Spe	eed			
List Dive	Disabled	Optimal Default, Failsafe Default		
HOLPIUG	Enabled			
PCI Express Hot Plug Enable/Disable				
	Disabled			
1225 LAN POR	Enabled	Optimal Default, Failsafe Default		
Control the PCI Exp	press Root Port.			
	Auto	Optimal Default, Failsafe Default		
PCIe Speed	Gen1a			
	Gen2			
	Gen3			
Configure PCIe Speed				

3	System I/O	Aptio Setup – AMI		
PCH PCIe Configure JM2M1 Port Select JM2M1 Port-1 PCIe Speed Hot Plug JM2M1 Port-2 PCIe Speed Hot Plug JPCIE_FPC1 Port PCIe Speed Hot Plug I225 LAN Port PCIe Speed	ation	[PCIE Controller are two x1] [Enabled] [Auto] [Disabled] [Enabled] [Auto] [Disabled] [Enabled] [Cisabled] [Enabled] [Auto]		PCIE Controller Selection ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	Version :	2.21.1278 Copyright (C	) 2022	AMI
Outiene Courses				
Options Summary	/			
JM2M1 Port-2	Disabled		0.	
	Enabled		Op	limai Default, Falisale Default
	press Root Por	l.	0-	timal Default Failcofe Default
PCIe speed	Auto Con1		Op	limai Delauil, Falisale Delauil
	Geni		-	
	Genz		-	
Configure DClo Gr	Gens			
Conligure PCIe Sp	Disabled		0.0	tional Default Failante Default
HOL Plug			Up	umai Detault, Falisate Detault
		bla		
PCI Express hot Plug Enable/Disable				

# 3.5.2 Storage Configuration

System I/O	Aptio Setup – AMI	
Enable VMD controller	[Disabled]	Enable/Disable to VMD controller
▶ NVMe Configuration		
SATA Controller(s)	[Enabled]	
Serial ATA Port O Software Preserve Port O Hot Plug Configured as eSATA SATA Device Type	M500IT_MTFDDAK (120.0GB) SUPPORTED [Enabled] [Disabled] Hot Plug supported [Hard Disk Drive]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

Options Summary				
Enable VMD	Disabled	Optimal Default, Failsafe Default		
Controller	Enabled			
Enable/Disable to VI	MD controller			
SATA Controller(s)	Enabled	Optimal Default, Failsafe Default		
	Disabled			
Enable/Disable SATA	Device.			
Port 0	Disabled			
	Enabled	Optimal Default, Failsafe Default		
Enable or Disable SA	ATA Port			
Hot Plug	Disabled	Optimal Default, Failsafe Default		
	Enabled			
Designates this port as Hot Pluggable				
SATA Device Type	Hard Disk Drive	Optimal Default, Failsafe Default		
	Solid State Drive			
Identify the SATA port is connected to Solid State Drive or Hard Disk Drive				

# 3.5.2.1 NVMe Configuration

Aptio Setup - AMI System I/D	
NVMe Configuration	
No NVME Device Found	
	<pre>++: Select Screen tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.21.1278 Copyright (C) 2022	AMI

# 3.5.3 HD Audio Configuration

	Aptio Setup – AM	I
Sys	tem I/O	
HD Audio	[Enabled]	Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled.
		<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
	Version 2.21.1278 Copyright	(C) 2021 AMI
Options Summary		
HD Audio	Disabled	

	HD Audio	Disabled	
		Enabled	Optimal Default, Failsafe Default
	Control Detection of the HD-Audio device.		
	Disabled = HAD will be unconditionally disabled		
Enabled = HAD will be unconditionally enabled.			

#### 3.5.4 Digital IO Port Configuration



Options Summary				
DIO 1-4	Output	Optimal Default, Failsafe Default		
	Input			
Set DIO as Input or	Output			
DIO 5-8	Output			
	Input	Optimal Default, Failsafe Default		
Set DIO as Input or Output				
Output Level	High	Optimal Default, Failsafe Default		
	Low			
Set output level when DIO pin is output				

# 3.5.5 Legacy Logical Devices Configuration

Aptio Setup - AMI System I/O	
AMI SIO Driver Version : A5.16.00 Super IO Chip Logical Device(s) Configuration (*Active*) Serial Port 1 (*Active*) Serial Port 2 WARNING: Logical Devices state on the left side of the control, reflects the current Logical Device state. Changes made during Setup Session will be shown after you restart the system.	View and Set Basic properties of the SIO Logical device. Like IO Base, IRQ Range, DMA Channel and Device Mode.
	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>
Version 2.21.1278 Copyright (C) 2021	AMI

# 3.5.5.1 Serial Port 1

System I/O	Aptio Setup – AMI	
Serial Port 1 Configuration		Enable or Disable this Logical
Use This Device		Device.
Logical Device Settings: Current : IO=3F8h; IRQ=4;		
Possible:	[Use Automatic Settings]	
Mode :	[RS232]	
WARNING: Disabling SIO Logical Devic side effects.	ces may have unwanted	
PROCEED WITH CAUTION.		↔: Select Screen ↑↓: Select Item
		Enter: Select
		F1: General Help
		F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit
		ESU: EXIL

Options Summary				
Use This Device	Disabled			
	Enabled	Optimal Default, Failsafe Default		
Enable or Disable th	is Logical Device.			
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default		
	IO=3F8h; IRQ=4;			
	IO=2F8h; IRQ=3;			
Allows the user to change the device resource settings. New settings will be reflected				
on this setup page a	after system restarts.			
Mode:	RS232	Optimal Default, Failsafe Default		
	RS422			
	RS485			
UART RS232, 422, 485 selection				

# 3.5.5.2 Serial Port 2

System I/O	Aptio Setup – AMI	
Serial Port 2 Configuration		Enable or Disable this Logical
Use This Device		
Logical Device Settings: Current : IO=2F8h; IRQ=3;		
Possible:	[Use Automatic Settings] [Recept]	
WARNING: Disabling SIO Logical Devic side effects. PROCEED WITH CAUTION.	uses may have unwanted	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</pre>

Options Summary		
Use This Device	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	10=2F8h; IRQ=3;	
	IO=3F8h; IRQ=4;	
Allows the user to change the device resource settings. New settings will be reflected		
on this setup page after system restarts.		
Mode:	RS232	Optimal Default, Failsafe Default
	RS422	
	RS485	
UART RS232, 422, 485 selection		
## 3.5.6 Serial Port Console Redirection

Aptio Setup – AMI System I/O	
COMO Console Redirection [Disabled] ▶ Console Redirection Settings	Console Redirection Enable or Disable.
COM1 Console Redirection [Disabled] Console Redirection Settings	
COM2(Pci Bus0,Dev0,Func0) (Disabled) Console Redirection Port Is Disabled	
Serial Port for Out-of-Band Management/ Windows Emergency Management Services (EMS) Console Redirection EMS [Disabled] Console Redirection Settings	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Options Summary		
COM0 Console	Disabled	Optimal Default, Failsafe Default
Redirection	Enabled	
Console Redirection	Enable or Disable	
COM1 Console	Disabled	Optimal Default, Failsafe Default
Redirection	Enabled	
Console Redirection Enable or Disable		
Console	Disabled	Optimal Default, Failsafe Default
Redirection EMS	Enabled	
Console Redirection	Enable or Disable	

## 3.5.6.1 COM0 Console Redirection Settings



#### Version 2.21.1278 Copyright (C) 2022 AMI

Options Summary		
Terminal Type	VT100	
	VT100+	
	VT-UTF8	Optimal Default, Failsafe Default
	ANSI	
Emulation:		
ANSI: Extenc	led ASCII char set.	
VT100: ASCII	char set.	
VT100Plus: E	xtends VT100 to support color, fur	nction keys.
VT-UTF8: Us	es UTF8 encoding to map Unicode	e chars onto 1 or more bytes.
Bits per second	9600	
	19200	
	38400	
	57600	
	115200	Optimal Default, Failsafe Default
Selects serial port transmission speed. The speed must be matched on the other side.		
Long or noisy lines i	may require lower speeds.	

<b>Options Summary</b>			
Data Bits	7		
	8	Optimal Default, Failsafe Default	
Data Bits			
Parity	None	Optimal Default, Failsafe Default	
	Even		
	Odd		
	Mark		
	Space		
A parity bit can be s	sent with the data bits to detect sc	me transmission errors.	
Even: parity bit is 0	if the num of 1's in the data bits is	even.	
Odd: parity bit is 0 i	f num of 1's in the data bits is odd		
Mark: parity bit is al	ways 1.		
Space: Parity bit is a	Ilways 0.		
Mark and Space Par	rity do not allow for error detectio	n. They can be used as an	
additional data bit	1		
Stop Bits	1	Optimal Default, Failsafe Default	
	2		
Stop bits indicate th	e end of a serial data packet. (A s	tart bit indicates the beginning).	
The standard setting	g is 1 stop bit. Communication with	n slow devices may require more	
than 1 stop bit.			
Flow Control	None	Optimal Default, Failsafe Default	
	Hardware RTS/CTS		
Flow control can pre	event data loss from buffer overflo	ow. When sending data, if the	
receiving buffers are	e full, a 'stop' signal can be sent to	stop the data flow. Once the	
buffers are empty, a	a 'start' signal can be sent to re-sta	art the flow. Hardware flow control	
uses two wires to se	end start/stop signals.		
VI-UIF8 Combo	Disabled		
Key Support	Enabled	Optimal Default, Failsate Default	
Enable VI-UIF8 Co	mbination Key Support for ANSI/\	/1100 terminals	
Recorder Mode	Disabled	Optimal Default, Failsafe Default	
	Enabled		
On this mode enab	led only text will be sent. This is to	capture Terminal data.	
Resolution 100x31	Disabled	Optimal Default, Failsafe Default	
	Enabled		
Enables or disables	Enables or disables extended terminal resolution		
Putty KeyPad		Optimal Default, Failsafe Default	
	XTERMR6		
	SCO		
	ESCN		

Options Summary

VT400

Select FunctionKey and KeyPad on Putty.

## 3.5.6.2 COM1 Console Redirection Settings

	Law 7/0	Aptio Setup – AMI	
COM1 Console Redirection S Terminal Type Bits per second Data Bits Parity Stop Bits Flow Control VT-UTF8 Combo Key Sug Recorder Mode Resolution 100x31 Dutty Korded	Settings	[ANSI] [115200] [8] [None] [1] [None] [Enabled] [Disabled] [Disabled] [Disabled]	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100Plus: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Putty keyPad	Version 2	.21.1278 Copyright (C)	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit 2022 AMI
Options Summary			
Terminal Type	VT100 VT100+ VT-UTF8 ANSI		Optimal Default, Failsafe Default
Emulation: ANSI: Extend VT100: ASCII VT100Plus: E VT-UTF8: Uses UTF8	led ASCII char char set. xtends VT100 3 encoding to	set. to support color, fur map Unicode chars	nction keys. onto 1 or more bytes.
bits per second	9600 19200		

Options Summary			
	38400		
	57600		
	115200	Optimal Default, Failsafe Default	
Selects serial port tr	ansmission speed. The speed mus	st be matched on the other side.	
Long or noisy lines I	may require lower speeds.		
Data Bits	7		
	8	Optimal Default, Failsafe Default	
Data Bits			
Parity	None	Optimal Default, Failsafe Default	
	Even		
	Odd		
	Mark		
	Space		
A parity bit can be s	sent with the data bits to detect so	me transmission errors.	
Even: parity bit is 0 i	if the num of 1's in the data bits is	even.	
Odd: parity bit is 0 i	f num of 1's in the data bits is odd		
Mark: parity bit is al	ways 1.		
Space: Parity bit is a	Ilways 0.		
Mark and Space Par	rity do not allow for error detectio	n. They can be used as an	
additional data bit			
Stop Bits	1	Optimal Default, Failsafe Default	
	2		
Stop bits indicate th	e end of a serial data packet. (A st	tart bit indicates the beginning).	
The standard setting is 1 stop bit. Communication with slow devices may require more			
than 1 stop bit.	1		
Flow Control	None	Optimal Default, Failsafe Default	
	Hardware RTS/CTS		
Flow control can pre	event data loss from buffer overflo	ow. When sending data, if the	
receiving buffers are	e full, a 'stop' signal can be sent to	stop the data flow. Once the	
buffers are empty, a	a 'start' signal can be sent to re-sta	art the flow. Hardware flow control	
uses two wires to se	uses two wires to send start/stop signals.		
VT-UTF8 Combo	Disabled		
Key Support	Enabled	Optimal Default, Failsafe Default	
Enable VT-UTF8 Co	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals		
Recorder Mode	Disabled	Optimal Default, Failsafe Default	
	Enabled		
On this mode enabled only text will be sent. This is to capture Terminal data.			
Resolution 100x31	Disabled	Optimal Default, Failsafe Default	
	Enabled		
Enables or disables	extended terminal resolution		

<b>Options Summa</b>	ry	
Putty KeyPad	VT100	Optimal Default, Failsafe Default
	LINUX	
	XTERMR6	
	SC0	
	ESCN	
	VT400	
Select FunctionK	ev and KevPad on Putty.	

## 3.5.6.3 Console Redirection Settings

Sy	Aptio Setup – AMI stem I/O	
Out-of-Band Mgmt Po Terminal Type EMS Bits per second EMS Flow Control EMS Data Bits EMS Parity EMS Stop Bits EMS	rt [COMO] [VT-UTF8] [115200] [Nane] 8 None 1	Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.
		++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
-	Version 2.21.1278 Copyright	(C) 2022 AMI
Options Summary		
Out-of-Band	COM0	Optimal Default, Failsafe Default
Mgmt Port	COM1	
	COM2(Pci Bus0, Dev0, Func0) (Disabled)	
Microsoft Windows	s Emergency Management Servi	ices (EMS) allows for remote
management of a	Windows Server OS through a s	serial port.
Terminal Type	VT100	

<b>Options Summary</b>			
EMS	VT100Plus		
	VT-UTF8	Optimal Default, Failsafe Default	
	ANSI		
VT-UTF8 is the pre	ferred terminal type for out-of-ba	and management. The next best	
choice is VT100+ a	nd then VT100. See above, in Con	sole Redirection Settings page, for	
more Help with Te	rminal Type/Emulation.		
Bits per second	9600		
EMS	19200		
	57600		
	115200	Optimal Default, Failsafe Default	
Selects serial port t	Selects serial port transmission speed. The speed must be matched on the other side.		
Long or noisy lines	may require lower speeds.		
Flow Control EMS	None	Optimal Default, Failsafe Default	
	Hardware RTS/CTS		
	Software Xon/Xoff		
Flow control can prevent data loss from buffer overflow. When sending data, if the			
receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the			
buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow contro			
uses two wires to send start/stop signals.			

Chapter 3 – AMI BIOS Setup

### 3.6 Setup Submenu: Security

Main Advanced System I/O	Aptio Setup – Security Boot Save &	AMI Exit
Password Description		Set Administrator Password
If ONLY the Administrator's then this only limits access only asked for when entering If ONLY the User's password is a power on password and o boot or enter Setup. In Setu have Administrator rights. The password length must be in the following range: Minimum length	password is set, s to Setup and is g Setup. is set, then this nust be entered to up the User will 3	
Maximum length Administrator Password User Password ▶ Trusted Computing	20	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help
▶ Secure Boot		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	/ersion 2.21.1278 Copyri	;ht (C) 2021 AMI

#### Change User/Supervisor Password

You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

If you highlight these items and press Enter, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

#### Removing the Password

Highlight this item and type in the current password. At the next dialog box press

Enter to disable password protection.

## 3.6.1 Trusted Computing

Securi	Aptio Setup – AMI ty	
TPM 2.0 Device Found Firmware Version: Vendor: Security Device Support Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank SHA384 PCR Bank SM3 256 PCR Bank	600.7 INTC [Enable] SHA256 SHA-1,SHA256,SHA384,SM3 [Disabled] [Enabled] [Disabled] [Disabled]	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.
Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TPM 2.0 UEFI Spec Version Physical Presence Spec Version TPM 2.0 InterfaceType Device Select	[None] [Enabled] [Enabled] [TGG_2] [1.3] [CRB] [Auto]	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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Options Summary	Options Summary			
Security Device	Disable			
Support	Enable	Optimal Default, Failsafe Default		
Enables or Disables	BIOS support for security device.			
O.S. will not show Se	ecurity Device. TGU EFI protocol a	and INT1A interface will not be		
available.				
SHA-1 PCR Bank	Disabled	Optimal Default, Failsafe Default		
	Enabled			
Enable or Disable Sł	HA-1 PCR Bank			
SHA256 PCR Bank	Disabled			
	Enabled	Optimal Default, Failsafe Default		
Enable or Disable SHA256 PCR Bank				
SHA384 PCR Bank	Disabled	Optimal Default, Failsafe Default		
	Enabled			
Enable or Disable SHA384 PCR Bank				
SM3_256 PCR Bank	Disabled	Optimal Default, Failsafe Default		
	Enabled			
Enable or Disable SM3-256 PCR Bank				

Options Summary					
Pending operation	None	Optimal Default, Failsafe Default			
	TPM Clear				
Schedule an Operat	tion for the Security Device. Note:	Your Computer will reboot			
during restart in ord	er to change State of Security De	vice.			
Platform Hierarchy	Disabled				
	Enabled	Optimal Default, Failsafe Default			
Enable or Disable P	latform Hierarchy				
Storage Hierarchy	Disabled				
	Enabled	Optimal Default, Failsafe Default			
Enable or Disable St	torage Hierarchy				
Endorsement	Disabled				
Hierarchy	Enabled	Optimal Default, Failsafe Default			
Enable or Disable E	ndorsement Hierarchy				
TPM 2.0 UEFI Spec	TCG_1_2				
Version	TCG_2	Optimal Default, Failsafe Default			
Select the TCG2 Spec Version Support,					
TCG_1_2: The Compatible mode for Win8/Win10,					
TCG_2: Support new	v TCG2 protocol and event forma	t for win10 or later			
Physical Presence	1.2				
Spec Version	1.3	Optimal Default, Failsafe Default			
Select to Tell O.S. to	support PPI Spec Version 1.2 or 1	1.3. Note some HCK tests might			
not support 1.3.					
Device Select	TPM 1.2				
	TPM 2.0				
	Auto	Optimal Default, Failsafe Default			
TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0					
devices, Auto will support both with the default set to TPM 2.0 devices if not fount,					
TPM 1.2 devices will be enumerated.					

### 3.6.2 Secure Boot



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Options Summary					
Secure Boot	Disabled	Optimal Default, Failsafe Default			
	Enabled				
Secure Boot feature	is Active if Secure Boot is Enabled	l, Platform Key (PK) is enrolled			
and the System is in	and the System is in User mode. The mode change requires platform reset				
Secure Boot Mode	Standard				
	Custom	Optimal Default, Failsafe Default			
Secure Boot Mode of	Custom options: Standard or Custom.	Optimal Default, Failsafe Default			
Secure Boot Mode o In Custom mode, Se	Custom options: Standard or Custom. ecure Boot Policy variables can be	Optimal Default, Failsate Default configured by a physically			
Secure Boot Mode of In Custom mode, Se present user withour	Custom options: Standard or Custom. ccure Boot Policy variables can be t full authentication.	Optimal Default, Failsate Default			
Secure Boot Mode of In Custom mode, Se present user withou <b>Restore Factory</b>	Custom options: Standard or Custom. ecure Boot Policy variables can be t full authentication. Force system to user mode. Insta	Optimal Default, Failsate Default configured by a physically Il factory default Secure Boot key			

#### 3.6.2.1 Key Management



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Options Summary				
Factory Key	Disabled	Optimal Default, Failsafe Default		
Provision	Enabled			
Install factory default Secure Boot Keys after the platform reset and while the Syster				
in Setup mode				
Restore Factory	Force system to user mode. Install factory default Secure Boot key			
Keys	databases.			
Enroll EFI Image	Allow the image to run in Secure Boot mode. Enroll SHA256 Hash			
	of a PE image into Authorized Signature Database (db).			
Restore DB defaults	re DB defaults Restore DB variable to factory defaults.			
Platform Key (PK)	Enroll Factory Defaults or load ce	rtificates from a file:		
Key Exchange Keys	1. Public Key Certificate:			
Authorized	a) EFI_SIGNATURE_LIST			
Signatures	b) EFI_CERT_X509 (DER)			
Forbidden	c) EFI_CERT_RSA2048 (bin)			
Signatures	d) EFI_CERT_SHAXXX			

Options Summary				
Authorized	2. Authenticated UEFI Variable			
TimeStamps	3. EFI PE/COFF Image (SHA256)			
OSRecovery	KEY Source:			
Signatures	Factory, External, Mixed			

## 3.7 Setup Submenu: Boot

Main Advanced Sys	tem I/O Security	Aptio Setup - AMI Boot Save & Exit	
Boot Configuration			Enable/Disable UEFI Network
Quiet Boot Network Stack		[Enabled] [Disabled]	Slduk
FIXED BOOT ORDER Pri Boot Option #1 Boot Option #2 Boot Option #3 Boot Option #4 • UEFI Hard Disk Drive • UEFI USB Drive BBS P	orities BBS Priorities riorities	[Hard Disk:Windows Boot Manager (PO: M500IT_MTFDDAK120MBD)] [USB Device:UEFI: USB Flash Disk 1100, Partition 1] [Network]	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	Version 2.	21.1278 Copyright (C)	2022 AMI
Options Summary			
Quiet Boot	Disabled		
	Enabled		Optimal Default, Failsafe Default
Enables or Disables	Quiet Boot op	tion.	
Network Stack	Disabled		Optimal Default, Failsafe Default
	Enabled		
Enable/Disable UEFI	Network Stack	<	

## 3.8 Setup Submenu: Save & Exit

Aptio Setup – AMI Main Advanced System I/O Security Boot <mark>Save &amp; Exit</mark>	
Save Options	Reset the system after saving the changes
Save Changes and Reset Discard Changes and Exit	the changes.
Default Options Restore Defaults	
	↔+: Select Screen ↑↓: Select Item
	r/er: select +/−: Change Opt. F1: General Help
	F2: Previous Values F3: Optimized Defaults
	ESC: Exit
Version 2,21,1278 Copyright (C) 2021	AMI

## Chapter 4

Driver Installation

### 4.1 Driver Download/Installation

Drivers for the de next-TGU8 can be downloaded from the product page on the AAEON website by following this link:

https://www.aaeon.com/en/p/embedded-single-board-computers-denext-tgu8

Download the driver(s) you need and follow the steps below to install them.

#### Step 1 – Install Chipset Drivers

- 1. Open the **Chipset** folder
- 2. Run the SetupChipset.exe in the folder
- 3. Follow the instructions
- 4. Drivers will be installed automatically

#### Step 2 - Install Graphics Drivers

- 1. Open the Intel Graphics folder
- 2. Run the igxpin.exe file in the folder
- 3. Follow the instructions
- 4. Drivers will be installed automatically

#### Step 3 – Install LAN Driver

Note: You must install Intel Ethernet device drivers before you can install Intel® PROSet.

#### Step 3.1 Intel Ethernet Device Drivers

- 1. Open the Intel LAN folder
- 2. Run the Wired\_driver\_26.3\_x64.exe file in the folder
- 3. Follow the instructions
- 4. Drivers will be installed automatically

#### Step 3.2 Intel® PROSet Drivers

- 1. Open the Intel LAN folder
- 2. Run the Wired\_PROSet\_26.3\_x64.exe file in the folder
- 3. Follow the instructions
- 4. Drivers will be installed automatically

#### Step 4 – Install Linux Peripheral Drivers

- 1. Open the Linux Driver-Peripheral folder
- 2. Follow the instructions given for I2C, SMBus, and WMI Linux driver packages.
- 3. Follow the instructions to install the drivers manually.

#### Step 5 – Install ME & TXE Driver Drivers

- 1. Open the ME & TXE folder
- 1. in the **Management Engine Interface** and **Active Management Technology** subfolders to install the drivers manually.

#### Step 6 – Install Windows 10 Peripheral Drivers

- 1. Open the Peripheral Drivers folder
- 2. Run the FintekSerial.exe file in the folder
- 3. Follow the instructions
- 4. Drivers will be installed automatically

#### Step 7 – Install RAID Drivers

- 1. Open the RAID Driver folder
- 2. Follow the instructions given in the **InstallStep.txt** file to install the drivers manually.

# Appendix A

I/O Information

## A.1 I/O Address Map

#### 🗂 Device Manager

<u>File Action View H</u>elp

🗢 🔿   📰   😰 🗊   🔛	
V 🗄 DESKTOP-EEPPL5T	
✓ Input/output (IO)	
Tap [00000000000000 - 00000000000000000000	ot Complex
to 000000000000000000000000000000000000	interrupt controller
🏣 [000000000000024 - 0000000000000025] Programmable	interrupt controller
🏣 [000000000000028 - 0000000000000029] Programmable	interrupt controller
togrammabl [000000000000002C - 000000000000002D] Programmabl	e interrupt controller
🏣 [00000000000002E - 00000000000002F] Motherboard r	esources
🏣 [0000000000000030 - 000000000000031] Programmable	interrupt controller
🏣 [000000000000034 - 000000000000035] Programmable	interrupt controller
🏣 [000000000000038 - 000000000000039] Programmable	interrupt controller
🏣 [00000000000003C - 00000000000003D] Programmabl	e interrupt controller
🏣 [000000000000040 - 00000000000043] System timer	
🏣 [00000000000004E - 0000000000004F] Motherboard r	esources
🏣 [000000000000050 - 00000000000053] System timer	
🏣 [000000000000061 - 000000000000061] Motherboard r	esources
🏣 [00000000000063 - 00000000000063] Motherboard r	esources
🏣 [000000000000065 - 00000000000065] Motherboard r	esources
🏣 [000000000000067 - 00000000000067] Motherboard r	esources
🏣 [0000000000000070 - 0000000000000070] Motherboard r	esources
🏣 [000000000000080 - 000000000000080] Motherboard r	esources
🏣 [000000000000092 - 00000000000092] Motherboard r	esources
🏣 [000000000000000 - 0000000000000000000	e interrupt controller
🏣 [0000000000000A4 - 000000000000A5] Programmabl	e interrupt controller
🏣 [0000000000000A8 - 000000000000A9] Programmabl	e interrupt controller
🏣 [0000000000000AC - 000000000000AD] Programmab	le interrupt controller
🏣 [000000000000080 - 0000000000081] Programmable	e interrupt controller
🏣 [000000000000082 - 0000000000083] Motherboard (	resources
🏣 [0000000000000B4 - 00000000000B5] Programmable	e interrupt controller
togrammable [0000000000000088 - 000000000000089]	e interrupt controller
🏣 [0000000000000BC - 00000000000BD] Programmab	le interrupt controller
[0000000000002F8 - 00000000002FF] Fintek Commu	inications Port (COM2)
[000000000003F8 - 0000000003FF] Fintek Commu	inications Port (COM1)
🏣 [0000000000004D0 - 000000000004D1] Programmabl	e interrupt controller
🏣 [000000000000680 - 0000000000069F] Motherboard r	esources
🏣 [0000000000000000 - 00000000000000 F] Motherboard	resources
🏣 [000000000000A10 - 00000000000A1F] Motherboard	resources
totherboard [000000000000000000000000000000000000	resources
🏣 [0000000000000000 - 0000000000FFFF] PCI Express Ro	ot Complex
🏣 [00000000000164E - 00000000000164F] Motherboard r	esources
🏣 [000000000001800 - 000000000018FE] Motherboard r	esources
🏣 [000000000001854 - 00000000001857] Motherboard r	esources
🏣 [0000000000002000 - 0000000000020FE] Motherboard r	esources
🌆 [000000000003000 - 0000000000303F] Intel(R) Iris(R) 🗸	(e Graphics
📷 [0000000000003060 - 00000000000307F] Standard SATA	AHCI Controller
📷 [0000000000003080 - 000000000003083] Standard SATA	AHCI Controller
📷 [0000000000003090 - 000000000003097] Standard SATA	AHCI Controller
🏣 [00000000000EFA0 - 0000000000EFBF] Intel(R) SMBus	s - A0A3
[000000000000000000000000000000000000	Management Technology - SOL (COM3)

## A.2 Memory Address Map

å D	evic	- Man	ager		-
			View	l le le	
File	A	tion	view	нар	-
<hr/>		34	?	P	
× 1	- D	ESKTO	P-EEPPL	т	
3		Inpu	ut/output	(IO)	
3	) 🎽	Inte	rrupt req	iest (IRQ)	
3		Larg	je Memo	у	
`	/ 🎽	Mer	mory		
			[00000000	000A0000 - 0000000000BFFFF] PCI Express Root Complex	
		-	[00000000	4F400000 - 000000004F4FFFFF] Intel(R) Ethernet Controller (3) I225-LM	
			[00000000	4F400000 - 000000004F5FFFFF] Intel(R) PCI Express Root Port #10 - A0B1	
			[00000000	4F400000 - 00000000BFFFFFFF] PCI Express Root Complex	
			[00000000	4F500000 - 000000004F503FFF] Intel(R) Ethernet Controller (3) I225-LM	
		-	[00000000	4F620000 - 000000004F621FFF] Standard SATA AHCI Controller	
		-	[00000000	4F622000 - 000000004F6227FF] Standard SATA AHCI Controller	
		-	[00000000	4F623000 - 000000004F6230FF] Standard SATA AHCI Controller	
		<b>P</b>	[00000000	BFFDF000 - 00000000BFFDFFFF] Intel(R) Active Management Technology - SOL (COM3)	
			[00000000	BFFE0000 - 0000000BFFFFFFF] Intel(R) Ethernet Connection (13) I219-LM	
			[00000000	C0000000 - 0000000CFFFFFFF] Motherboard resources	
			[00000000	FD000000 - 0000000FD68FFFF] Motherboard resources	
			[00000000	FD690000 - 0000000FD69FFFF] Intel(R) GPIO Controller - 34C5	
			[00000000	FD6A0000 - 0000000FD6AFFFF] Intel(R) GPIO Controller - 34C5	
			[00000000	FD6B0000 - 0000000FD6CFFFF] Motherboard resources	
			[00000000	FD6D0000 - 0000000FD6DFFFF] Intel(R) GPIO Controller - 34C5	
			[00000000	FD6E0000 - 0000000FD6EFFFF] Intel(R) GPIO Controller - 34C5	
			[00000000	FD6F0000 - 0000000FDFFFFFFJ Motherboard resources	
			00000000	FE000000 - 0000000FE01FFFFJ Motherboard resources	
			000000000000000000000000000000000000000	FE010000 - 00000000FE010FFF] Intel(R) SPI (flash) Controller - A0A4	
				FE04C000 - 00000000FE04FFFF] Motherboard resources	
				FE050000 - 00000000FE0AFFFF] Motherboard resources	
				FEUDUUUU - UUUUUUUUFEUFFFF] Motherboard resources	
				FE200000 - 00000000FE7FFFFF Motherboard resources	
				FED00000 - 00000000FED7FEFF High precision event timer	
			000000000000000000000000000000000000000	FED20000 - 00000000EED/FFFFJ Workerbodra resources	
		<b>1</b>	000000000000000000000000000000000000000	FED40000 - 00000000FED44FFF] Trusted Platform Module 2.0	
			000000000000000000000000000000000000000	EED00000 - 0000000EED02EEE1 Motherboard resources	
			000000000000000000000000000000000000000	EEDA0000 - 0000000EEDA0EEEI Motherboard resources	
			000000000000000000000000000000000000000	EEDA1000 - 00000000 EDA0111 Motherboard resources	
			000000000000000000000000000000000000000	EEDC0000 - 00000000EEDC7EEE1 Motherboard resources	
			000000000000000000000000000000000000000	EFE00000 - 00000000EFEFEFE1 Motherboard resources	
			000000000000000000000000000000000000000	FE000000 - 00000000EFEFEFE1 Motherboard resources	
			[00000040	00000000 - 000000400FFFFFFF1 Intel/R) Iris/R) Xe Granhics	
			00000060	00000000 - 0000006000FFFFFF1 Intel(R) Iris(R) Xe Graphics	
		ő	00000060	01100000 - 000000600110FFFF1 Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)	
		<b>L</b>	00000060	01118000 - 00000060011180FF1 Intel(R) SMBus - A0A3	
			00000071	FFEFB000 - 0000007FFFEFBFFF1 Intel(R) Management Engine Interface #1	
			0000007	FFEFC000 - 0000007FFFEFFFFF High Definition Audio Controller	
			00000076	FFF00000 - 0000007FFFFFFFFF High Definition Audio Controller	

## A.3 Large Memory Address Map

📇 Device Manager
File Action View Help
V 🛃 DESKTOP-EEPPL5T
> 📗 Input/output (IO)
> 📗 Interrupt request (IRQ)
🗸 🎬 Large Memory
[000000400000000 - 0000007FFFFFFFF] PCI Express Root Complex

## A.4 IRQ Mapping Chart

📇 Device Manager				
File Action View Help				
✓				
> 📔 Input/output (IO)				
Interrupt request (IRQ)				
Ten (ISA) 0x00000000 (00)	System timer			
(ISA) 0x00000003 (03)	Fintek Communications Port (COM2)			
(ISA) 0x0000004 (04)	Fintek Communications Port (COM1)			
[ISA] 0x000000E (14)	Intel(R) GPIO Controller - 34C5			
tin (ISA) 0x00000036 (54)	Microsoft ACPI-Compliant System			
Table (ISA) 0x00000037 (55)	Microsoft ACPI-Compliant System			
Ten (ISA) 0x0000038 (56)	Microsoft ACPI-Compliant System			
🏣 (ISA) 0x00000039 (57)	Microsoft ACPI-Compliant System			
Table (ISA) 0x000003A (58)	Microsoft ACPI-Compliant System			
(ISA) 0x000003B (59)	Microsoft ACPI-Compliant System			
(ISA) 0x000003C (60)	Microsoft ACPI-Compliant System			
(ISA) 0x000003D (61)	Microsoft ACPI-Compliant System			
(ISA) 0x000003E (62)	Microsoft ACPI-Compliant System			
(ISA) 0x000003F (63)	Microsoft ACPI-Compliant System			
(ISA) 0x00000040 (64)	Microsoft ACPI-Compliant System			
(ISA) 0x00000041 (65)	Microsoft ACPI-Compliant System			
(ISA) 0x00000042 (66)	Microsoft ACPI-Compliant System			
(ISA) 0x0000043 (67)	Microsoft ACPI-Compliant System			
(ISA) 0x00000044 (68)	Microsoft ACPI-Compliant System			
(ISA) 0x00000045 (69)	Microsoft ACPI-Compliant System			
(ISA) 0x00000046 (70)	Microsoft ACPI-Compliant System			
(ISA) 0x00000047 (71)	Microsoft ACPI-Compliant System			
(ISA) 0x00000048 (72)	Microsoft ACPI-Compliant System			
(ISA) 0x00000049 (73)	Microsoft ACPI-Compliant System			
(ISA) 0x0000004A (74)	Microsoft ACPI-Compliant System			
(ISA) 0x0000004B (75)	Microsoft ACPI-Compliant System			
(ISA) 0x0000004C (70)	Microsoft ACPI-Compliant System			
(ISA) 0x0000004E (78)	Microsoft ACPI-Compliant System			
(ISA) 0x000004E (79)	Microsoft ACPI-Compliant System			
	Microsoft ACPI-Compliant System			
(ISA) 0x00000051 (81)	Microsoft ACPI-Compliant System			
[ISA) 0x00000052 (82)	Microsoft ACPI-Compliant System			
(ISA) 0x00000053 (83)	Microsoft ACPI-Compliant System			
(ISA) 0x00000054 (84)	Microsoft ACPI-Compliant System			
(ISA) 0x00000055 (85)	Microsoft ACPI-Compliant System			
Tan (ISA) 0x00000056 (86)	Microsoft ACPI-Compliant System			
(ISA) 0x00000057 (87)	Microsoft ACPI-Compliant System			
ISA) 0x00000058 (88)	Microsoft ACPI-Compliant System			
Table (ISA) 0x00000059 (89)	Microsoft ACPI-Compliant System			
[ (ISA) 0x0000005A (90)	Microsoft ACPI-Compliant System			
E (ISA) 0x000005B (91)	Microsoft ACPI-Compliant System			
ISA) 0x000005C (92)	Microsoft ACPI-Compliant System			
ISA) 0x0000005D (93)	Microsoft ACPI-Compliant System			
ISA) 0x0000005E (94)	Microsoft ACPI-Compliant System			
[ (ISA) 0x0000005F (95)	Microsoft ACPI-Compliant System			
ISA) 0x0000060 (96)	Microsoft ACPI-Compliant System			
(ISA) 0x0000061 (97)	Microsoft ACPI-Compliant System			
IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Microsoft ACPI-Compliant System			

#### 🛔 Device Manager

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e>   [	1	?	•	P		
		(ISA)	0x00	000062	(98)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000063	(99)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000064	(100)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000065	(101)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000066	(102)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000067	(103)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000068	(104)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000069	(105)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00006A	(106)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00006B	(107)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00006C	(108)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00006D	(109)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00006E	(110)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00006F	(111)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000070	(112)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000071	(113)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000072	(114)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000073	(115)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000074	(116)	Microsoft ACPI-Compliant System
	Ŀ.	(ISA)	0x00	000075	(117)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000076	(118)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000077	(119)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000078	(120)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000079	(121)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00007A	(122)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00007B	(123)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00007C	(124)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000070	(125)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00007E	(120)	Microsoft ACPI-Compliant System
			0x00	00007F	(127)	Microsoft ACPI-Compliant System
	2		0,000	000000	(120)	Microsoft ACPI-Compliant System
	2	(ISA)	0,000	000001	(120)	Microsoft ACPI-Compliant System
	2	(ISA)	0,00	000002	(130)	Microsoft ACPI-Compliant System
	2	(ISA)	0x00	000084	(132)	Microsoft ACPI-Compliant System
	1	(ISA)	0x00	000085	(133)	Microsoft ACPI-Compliant System
	Ē.	(ISA)	0x00	000086	(134)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000087	(135)	Microsoft ACPI-Compliant System
		(ISA)	0x00	880000	(136)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000089	(137)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00008A	(138)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00008B	(139)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00008C	(140)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00008D	(141)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00008E	(142)	Microsoft ACPI-Compliant System
		(ISA)	0x00	00008F	(143)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000090	(144)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000091	(145)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000092	(146)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000093	(147)	Microsoft ACPI-Compliant System
	1	(ISA)	0x00	000094	(148)	Microsoft ACPI-Compliant System
		(ISA)	0x00	000095	(149)	Microsoft ACPI-Compliant System

#### 🛃 Device Manager

File Action View Help	
(=	
E ((5A) 0-0000005 (140)	Missourft ACDI Consuliant System
(ISA) 0x00000095 (149)	Microsoft ACPI-Compliant System
(ISA) 0x00000000 (IS0)	Microsoft ACPI-Compliant System
(ISA) 0x00000097 (IST)	Microsoft ACPI-Compliant System
(ISA) 0x0000098 (IS2)	Microsoft ACPI-Compliant System
(ISA) 0x0000099 (153)	Microsoft ACPI-Compliant System
(ISA) 0x000009A (154)	Microsoft ACPI-Compliant System
(ISA) 0x000009B (133)	Microsoft ACPI-Compliant System
(ISA) 0x000009C (150)	Microsoft ACPI-Compliant System
(ISA) 0x000009D (157)	Microsoft ACPI-Compliant System
(ISA) 0x0000005E (150)	Microsoft ACPI-Compliant System
(ISA) 0x0000009F (ISB)	Microsoft ACPI-Compliant System
(ISA) 0x000000A0 (100)	Microsoft ACPI-Compliant System
(ISA) 0x000000A1 (101)	Microsoft ACPI-Compliant System
(ISA) 0x000000A2 (102)	Microsoft ACPI-Compliant System
(ISA) 0x000000A3 (103)	Microsoft ACPI-Compliant System
(ISA) 0x000000A4 (104)	Microsoft ACPI-Compliant System
(ISA) 0x000000A6 (165)	Microsoft ACPI-Compliant System
(ISA) 0x000000A0 (100)	Microsoft ACPI-Compliant System
(ISA) 0x000000A8 (168)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
[ISA] 0x00000ΔΔ (170)	Microsoft ACPI-Compliant System
(ISA) 0x00000ΔB (171)	Microsoft ACPI-Compliant System
[ISA] 0x00000ΔC (172)	Microsoft ACPI-Compliant System
(ISA) 0x000000AD (173)	Microsoft ACPI-Compliant System
(ISA) 0x000000AE (174)	Microsoft ACPI-Compliant System
(ISA) 0x000000AF (175)	Microsoft ACPI-Compliant System
(ISA) 0x000000B0 (176)	Microsoft ACPI-Compliant System
(ISA) 0x000000B1 (177)	Microsoft ACPI-Compliant System
Text (ISA) 0x00000B2 (178)	Microsoft ACPI-Compliant System
Text (ISA) 0x000000B3 (179)	Microsoft ACPI-Compliant System
Text (ISA) 0x000000B4 (180)	Microsoft ACPI-Compliant System
Text (ISA) 0x000000B5 (181)	Microsoft ACPI-Compliant System
Text (ISA) 0x000000B6 (182)	Microsoft ACPI-Compliant System
Text (ISA) 0x000000B7 (183)	Microsoft ACPI-Compliant System
ISA) 0x000000B8 (184)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x000000B9 (185)	Microsoft ACPI-Compliant System
Text (ISA) 0x00000BA (186)	Microsoft ACPI-Compliant System
E (ISA) 0x00000BB (187)	Microsoft ACPI-Compliant System
(ISA) 0x00000BC (188)	Microsoft ACPI-Compliant System
[ISA) 0x00000BD (189)	Microsoft ACPI-Compliant System
(ISA) 0x000000BE (190)	Microsoft ACPI-Compliant System
(ISA) 0x000000BF (191)	Microsoft ACPI-Compliant System
(ISA) 0x000000C0 (192)	Microsoft ACPI-Compliant System
(ISA) 0x000000C1 (193)	Misseeft ACPI-Compliant System
(ISA) 0X000000C2 (194)	Microsoft ACPI-Compliant System
(ISA) 0x000000C3 (195)	Microsoft ACPI-Compliant System
(ISA) 0x000000C4 (190)	Microsoft ACPI-Compliant System
[ISA] 0x00000005 (197)	Microsoft ACPI-Compliant System
(ISA) 0x000000C7 (199)	Microsoft ACPI-Compliant System
[ISA] 0x000000C8 (200)	Microsoft ACPI-Compliant System

#### 占 Device Manager

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File	Action	View	Help

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Tal (ISA) 0x000000C8 (200)	Microsoft ACPI-Compliant System
Tal (ISA) 0x000000C9 (201)	Microsoft ACPI-Compliant System
Ta (ISA) 0x000000CA (202)	Microsoft ACPI-Compliant System
(ISA) 0x000000CB (203)	Microsoft ACPI-Compliant System
(ISA) 0x000000CC (204)	Microsoft ACPI-Compliant System
(ISA) 0x00000100 (256)	Microsoft ACPI-Compliant System
(ISA) 0x00000101 (257)	Microsoft ACPI-Compliant System
Text (ISA) 0x00000102 (258)	Microsoft ACPI-Compliant System
(ISA) 0x00000103 (259)	Microsoft ACPI-Compliant System
Langle (ISA) 0x00000104 (260)	Microsoft ACPI-Compliant System
(ISA) 0x00000105 (261)	Microsoft ACPI-Compliant System
뻱 (ISA) 0x00000106 (262)	Microsoft ACPI-Compliant System
뻱 (ISA) 0x00000107 (263)	Microsoft ACPI-Compliant System
Text (ISA) 0x00000108 (264)	Microsoft ACPI-Compliant System
Text (ISA) 0x00000109 (265)	Microsoft ACPI-Compliant System
Text (ISA) 0x0000010A (266)	Microsoft ACPI-Compliant System
뻱 (ISA) 0x0000010B (267)	Microsoft ACPI-Compliant System
tisA) 0x0000010C (268)	Microsoft ACPI-Compliant System
tisA) 0x0000010D (269)	Microsoft ACPI-Compliant System
뻱 (ISA) 0x0000010E (270)	Microsoft ACPI-Compliant System
Text (ISA) 0x0000010F (271)	Microsoft ACPI-Compliant System
뻱 (ISA) 0x00000110 (272)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000111 (273)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000112 (274)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000113 (275)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000114 (276)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000115 (277)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000116 (278)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000117 (279)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000118 (280)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x00000119 (281)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x0000011A (282)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x0000011B (283)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x0000011C (284)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x0000011D (285)	Microsoft ACPI-Compliant System
🏣 (ISA) 0x0000011E (286)	Microsoft ACPI-Compliant System
Text (ISA) 0x0000011F (287)	Microsoft ACPI-Compliant System
E (ISA) 0x00000120 (288)	Microsoft ACPI-Compliant System
E (ISA) 0x00000121 (289)	Microsoft ACPI-Compliant System
E (ISA) 0x00000122 (290)	Microsoft ACPI-Compliant System
E (ISA) 0x00000123 (291)	Microsoft ACPI-Compliant System
E (ISA) 0x00000124 (292)	Microsoft ACPI-Compliant System
E (ISA) 0x00000125 (293)	Microsoft ACPI-Compliant System
(ISA) 0x00000126 (294)	Microsoft ACPI-Compliant System
(ISA) 0x00000127 (295)	Microsoft ACPI-Compliant System
(ISA) 0x00000128 (296)	Microsoft ACPI-Compliant System
(ISA) 0x00000129 (297)	Microsoft ACPI-Compliant System
(ISA) 0x0000012A (298)	Microsoft ACPI-Compliant System
(ISA) 0x0000012B (299)	Microsoft ACPI-Compliant System
(ISA) 0x0000012C (300)	Microsoft ACPI-Compliant System
(ISA) 0x0000012D (301)	Microsoft ACPI-Compliant System
(ISA) 0x0000012E (302)	Microsoft ACPI-Compliant System

#### 📇 Device Manager

File Action View Help	
🖕 🔿 📅 🔽 🖬 💯	
(ISA) 0x0000012E (302)	Microsoft ACPI-Compliant System
(ISA) 0x0000012F (303)	Microsoft ACPI-Compliant System
(ISA) 0x00000130 (304)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x00000132 (306)	Microsoft ACPI-Compliant System
(ISA) 0x00000133 (307)	Microsoft ACPI-Compliant System
(ISA) 0x00000134 (308)	Microsoft ACPI-Compliant System
(ISA) 0x00000135 (309)	Microsoft ACPI-Compliant System
(ISA) 0x00000136 (310)	Microsoft ACPI-Compliant System
(ISA) 0x00000137 (311)	Microsoft ACPI-Compliant System
(ISA) 0x00000138 (312)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x0000013A (314)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x0000013C (316)	Microsoft ACPI-Compliant System
(ISA) 0x0000013D (317)	Microsoft ACPI-Compliant System
(ISA) 0x0000013E (318)	Microsoft ACPI-Compliant System
(ISA) 0x0000013F (319)	Microsoft ACPI-Compliant System
(ISA) 0x00000140 (320)	Microsoft ACPI-Compliant System
(ISA) 0x00000141 (321)	Microsoft ACPI-Compliant System
(ISA) 0x00000142 (322)	Microsoft ACPI-Compliant System
(ISA) 0x00000143 (323)	Microsoft ACPI-Compliant System
(ISA) 0x00000144 (324)	Microsoft ACPI-Compliant System
(ISA) 0x00000145 (325)	Microsoft ACPI-Compliant System
(ISA) 0x00000146 (326)	Microsoft ACPI-Compliant System
(ISA) 0x00000147 (327)	Microsoft ACPI-Compliant System
(ISA) 0x00000148 (328)	Microsoft ACPI-Compliant System
(ISA) 0x00000149 (329)	Microsoft ACPI-Compliant System
(ISA) 0x0000014A (330)	Microsoft ACPI-Compliant System
(ISA) 0x0000014B (SS1)	Microsoft ACPI-Compliant System
(ISA) 0x0000014C (332)	Microsoft ACPI-Compliant System
(ISA) 0x0000014D (333)	Microsoft ACPI-Compliant System
(ISA) 0x0000014E (334)	Microsoft ACPI-Compliant System
(ISA) 0x00000141 (335)	Microsoft ACPI-Compliant System
(ISA) 0x00000150 (330)	Microsoft ACPI-Compliant System
(ISA) 0x00000157 (337)	Microsoft ACPI-Compliant System
(ISA) 0x00000152 (339)	Microsoft ACPI-Compliant System
(ISA) 0x00000154 (340)	Microsoft ACPI-Compliant System
(ISA) 0x00000155 (341)	Microsoft ACPI-Compliant System
(ISA) 0x00000156 (342)	Microsoft ACPI-Compliant System
(ISA) 0x00000157 (343)	Microsoft ACPI-Compliant System
(ISA) 0x00000158 (344)	Microsoft ACPI-Compliant System
(ISA) 0x00000159 (345)	Microsoft ACPI-Compliant System
(ISA) 0x0000015A (346)	Microsoft ACPI-Compliant System
(ISA) 0x0000015B (347)	Microsoft ACPI-Compliant System
(ISA) 0x0000015C (348)	Microsoft ACPI-Compliant System
(ISA) 0x0000015D (349)	Microsoft ACPI-Compliant System
(ISA) 0x0000015E (350)	Microsoft ACPI-Compliant System
(ISA) 0x0000015F (351)	Microsoft ACPI-Compliant System
(ISA) 0x00000160 (352)	Microsoft ACPI-Compliant System
(ISA) 0x00000161 (353)	Microsoft ACPI-Compliant System

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File	Action	View	Help

	1	?		2		
		(ISA)	0x000	00161	(353)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00162	(354)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00163	(355)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00164	(356)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00165	(357)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00166	(358)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00167	(359)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00168	(360)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00169	(361)	Microsoft ACPI-Compliant System
		(ISA)	0x000	0016A	(362)	Microsoft ACPI-Compliant System
		(ISA)	0x000	0016B	(363)	Microsoft ACPI-Compliant System
		(ISA)	0x000	0016C	(364)	Microsoft ACPI-Compliant System
		(ISA)	0x000	0016D	(365)	Microsoft ACPI-Compliant System
		(ISA)	0x000	0016E	(366)	Microsoft ACPI-Compliant System
		(ISA)	0x000	0016F	(367)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00170	(368)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00171	(369)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00172	(370)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00173	(371)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00174	(372)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00175	(373)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00176	(374)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00177	(375)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00178	(376)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00179	(377)	Microsoft ACPI-Compliant System
		(ISA)	0x000	0017A	(378)	Microsoft ACPI-Compliant System
	2	(ISA)	0x000	0017B	(379)	Microsoft ACPI-Compliant System
	-	(ISA)	0x000	0017C	(380)	Microsoft ACPI-Compliant System
	-	(ISA)	0x000	0017D	(381)	Microsoft ACPI-Compliant System
	-	(ISA)	0x000	0017E	(382)	Microsoft ACPI-Compliant System
		(ISA)	0x000	0017F	(383)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00180	(384)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00181	(385)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00182	(380)	Microsoft ACPI-Compliant System
			0x000	00103	(200)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00104	(200)	Microsoft ACPI-Compliant System
	2		0,000	00185	(305)	Microsoft ACPI-Compliant System
	2		0,000	00100	(301)	Microsoft ACPI-Compliant System
	2	(ISA)	0x000	00188	(392)	Microsoft ACPI-Compliant System
	E.	(ISA)	0,000	00189	(393)	Microsoft ACPI-Compliant System
	Ē.	(ISA)	0,000	00184	(394)	Microsoft ACPI-Compliant System
	Ē	(ISA)	0x000	0018B	(395)	Microsoft ACPI-Compliant System
	Ē.	(ISA)	0x000	0018C	(396)	Microsoft ACPI-Compliant System
	Ē	(ISA)	0x000	0018D	(397)	Microsoft ACPI-Compliant System
	Ē	(ISA)	0x000	0018E	(398)	Microsoft ACPI-Compliant System
		(ISA)	0x000	0018F	(399)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00190	(400)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00191	(401)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00192	(402)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00193	(403)	Microsoft ACPI-Compliant System
		(ISA)	0x000	00194	(404)	Microsoft ACPI-Compliant System

#### 📇 Device Manager

File Action View Help	
(ISA) 0x00000194 (404)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x00000196 (406)	Microsoft ACPI-Compliant System
(ISA) 0x00000197 (407)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x00000199 (409)	Microsoft ACPI-Compliant System
(ISA) 0x0000019A (410)	Microsoft ACPI-Compliant System
(ISA) 0x0000019B (411)	Microsoft ACPI-Compliant System
(ISA) 0x0000019C (412)	Microsoft ACPI-Compliant System
(ISA) 0x0000019D (413)	Microsoft ACPI-Compliant System
(ISA) 0x0000019E (414)	Microsoft ACPI-Compliant System
(ISA) 0x0000019F (415)	Microsoft ACPI-Compliant System
(ISA) 0x000001A0 (416)	Microsoft ACPI-Compliant System
(ISA) 0x000001A1 (417)	Microsoft ACPI-Compliant System
(ISA) 0x000001A2 (418)	Microsoft ACPI-Compliant System
(ISA) 0x000001A3 (419)	Microsoft ACPI-Compliant System
(ISA) 0x000001A4 (420)	Microsoft ACPI-Compliant System
(ISA) 0x000001A5 (421)	Microsoft ACPI-Compliant System
(ISA) 0x000001A6 (422)	Microsoft ACPI-Compliant System
(ISA) 0x000001A7 (423)	Microsoft ACPI-Compliant System
(ISA) 0x000001A8 (424)	Microsoft ACPI-Compliant System
(ISA) 0x000001A9 (425)	Microsoft ACPI-Compliant System
(ISA) 0x000001AA (426)	Microsoft ACPI-Compliant System
(ISA) 0x000001AB (427)	Microsoft ACPI-Compliant System
(ISA) 0x000001AC (428)	Microsoft ACPI-Compliant System
(ISA) 0x000001AD (429)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x000001AF (431)	Microsoft ACPI-Compliant System
(ISA) 0x000001B0 (432)	Microsoft ACPI-Compliant System
(ISA) 0x000001B1 (433)	Microsoft ACPI-Compliant System
(ISA) 0x000001B2 (434)	Microsoft ACPI-Compliant System
(ISA) 0x000001B3 (435)	Microsoft ACPI-Compliant System
(ISA) 0x000001B4 (430)	Microsoft ACPI-Compliant System
(ISA) 0x000001B5 (437)	Microsoft ACPI-Compliant System
(ISA) 0x000001B0 (438)	Microsoft ACPI-Compliant System
(ISA) 0x000001B7 (439)	Microsoft ACPI-Compliant System
(ISA) 0.000001B8 (440)	Microsoft ACPI-Compliant System
(ISA) 0:000001B9 (441)	Microsoft ACPI-Compliant System
(ISA) 0x000001BA (442)	Microsoft ACPI-Compliant System
(ISA) 0x000001BD (443)	Microsoft ACPI-Compliant System
(ISA) 0:000001BC (444)	Microsoft ACPI-Compliant System
(ISA) 0x000001BD (445)	Microsoft ACPI-Compliant System
(ISA) 0x000001BE (440)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x000001C3 (451)	Microsoft ACPI-Compliant System
(ISA) 0x000001C4 (452)	Microsoft ACPI-Compliant System
(ISA) 0x000001C6 (453)	Microsoft ACPI-Compliant System
(ISA) 0x000001C7 (455)	Microsoft ACPI-Compliant System

#### 🗂 Device Manager

File Action	View	/ Help	
🗇 🄿 🛛 📷	?	<b>1</b>	
	(ISA) 0	x000001C7 (455)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001C8 (456)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001C9 (457)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001CA (458)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001CB (459)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001CC (460)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001CD (461)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001CE (462)	Microsoft ACPI-Compliant System
<b>i</b>	(ISA) 0	x000001CF (463)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001D0 (464)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001D1 (465)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001D2 (466)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001D3 (467)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001D4 (468)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001D5 (469)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001D6 (470)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001D7 (471)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001D8 (472)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001D9 (473)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001DA (474)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001DB (475)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001DC (476)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001DD (477)	Microsoft ACPI-Compliant System
1	(ISA) 0	x000001DE (478)	Microsoft ACPI-Compliant System
1	(ISA) 0	x000001DF (479)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001E0 (480)	Microsoft ACPI-Compliant System
	(ISA) 0.	x000001E1 (461)	Microsoft ACPI-Compliant System
1	(ISA) 0. (ISA) 0	x000001E2 (462)	Microsoft ACPI-Compliant System
	(ISA) 0. (ISA) 0	x000001E3 (463)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001E4 (484)	Microsoft ACPI-Compliant System
		x000001E5 (485)	Microsoft ACPI-Compliant System
	(ISA) 0	v000001E7 (487)	Microsoft ACPI-Compliant System
	(ISA) 0	v000001E8 (488)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001E9 (489)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001EA (490)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001FB (491)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001EC (492)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001ED (493)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001EE (494)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001EF (495)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001F0 (496)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001F1 (497)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001F2 (498)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001F3 (499)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001F4 (500)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001F5 (501)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001F6 (502)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001F7 (503)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001F8 (504)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001F9 (505)	Microsoft ACPI-Compliant System
	(ISA) 0	x000001FA (506)	Microsoft ACPI-Compliant System

ኪ (ISA) 0x	000001FA (506)	Microsoft ACPI-Compliant System
ኪ (ISA) 🕅	000001FB (507)	Microsoft ACPI-Compliant System
ኪ (ISA) 0x	000001FC (508)	Microsoft ACPI-Compliant System
tin (ISA) 📩	000001FD (509)	Microsoft ACPI-Compliant System
ኪ (ISA) 0x	000001FE (510)	Microsoft ACPI-Compliant System
ኪ (ISA) 0x	000001FF (511)	Microsoft ACPI-Compliant System
ኪ (PCI) 0x	00000010 (16)	High Definition Audio Controller
(PCI) 0x	00000013 (19)	Intel(R) Active Management Technology - SOL (COM3)
ኪ (PCI) 0x	FFFFFF3 (-13)	Intel(R) Management Engine Interface #1
营 (PCI) 0x	FFFFFFF4 (-12)	Intel(R) Ethernet Connection (13) I219-LM
🚍 (PCI) 0x	FFFFFF5 (-11)	Intel(R) Ethernet Controller (3) I225-LM
营 (PCI) 0x	FFFFFF6 (-10)	Intel(R) Ethernet Controller (3) I225-LM
🚍 (PCI) 0x	FFFFFFF7 (-9)	Intel(R) Ethernet Controller (3) I225-LM
营 (PCI) 0x	FFFFFF8 (-8)	Intel(R) Ethernet Controller (3) I225-LM
🚍 (PCI) 0x	FFFFFF9 (-7)	Intel(R) Ethernet Controller (3) I225-LM
🕎 (PCI) 0x	FFFFFFA (-6)	Intel(R) Iris(R) Xe Graphics
🏺 (PCI) 0x	FFFFFFB (-5)	Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
📹 (PCI) 0x	FFFFFFC (-4)	Standard SATA AHCI Controller
ኪ (PCI) 0x	FFFFFFD (-3)	Intel(R) PCI Express Root Port #9 - A0B0
tox (PCI) 🖿	FFFFFFFE (-2)	Intel(R) PCI Express Root Port #10 - A0B1

## Appendix B

List of Mating Connectors

## B.1 List of Mating Connectors and Cables

Con.	Function	Mating	Connector	Available Cable	Cable P/N
Label	runction	Vendor	Model no		
JCOM1	Connector: USB2.0 x 4 DIO 8 bit COM x 2	Aces	50246- 04001-001	Cable 40Pin, de next cable for USB2.0 x 4, COM Port x 2, DIO 8 bit	170X000512
JCOM1	Connector: USB2.0 x 4 DIO 8 bit COM x 2	Aces	50246-04001 -001	Cable 40Pin,de next cable for USB 2.0 x 2, COM Port x 2, DIO 8 bit, adaptor card connector	170X000577
JFP1	Front Panel Connector	CATCH	1204-700- 10SMR	Power Button Cable	
JSATA1	SATA Connector	Molex	887505318	SATA Cable, 180D.Length 20cm	1709070200
JSATAP1	SATA Power Connector	Molex	51021-0200	SATA Power Cable	170X000322

# Appendix C

Peripheral Device Installation

## C.1 PER-T642 Installation (M.2 2280 M-Key to 2242 B-Key & 2230 E-Key)

Step 1: Cable & Adapter Card Installation.



Step 2: Check the BIOS setup option as "M2M1 Port as "PCIE Controller is two x1".

JM2M1 Port	PCIE Controller are two x1	
Select	PCIE Controller is one x2	Optimal Default, Failsafe Default

System 1/0 • PCI Express Configuration • HO Audio Configuration • Digital ID Port Configuration • Legacy Logical Devices Configurati • Serial Port Console Redirection	DU	PCI Express Configuration settings ++: Select Screen T1: Select Item Enter: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version	2.21.1278 Copyright (C) 200	21 AMI
	Aptio Setup - AMI	
System I/O	Aptio Setup - AMI	
System I/O	Aptio Setup - AMI	PCIF Controller Selection
System I/O PCH PCIe Configuration JH2H1 Fort Select	Aptio Setup - AMI [PCIE Controller is	PCIE Controller Selection
System 1/0 PCH PCIe Configuration JM2H1 Port Select	Aptio Setup - AMI (PCIE Controller is one x2) (forblot)	PCIE Controller Selection
System I/O PCH PCIe Configuration JM2M1 Port Select JM2M1 Port-1 PCIe Speed	Aptio Setup - AMI [PCIE Controller is one x2] [Enabled] [Auto]	PCIE Controller Selection
System I/O PCH PCIe Configuration JM2H1 Port Select JM2H1 Port-1 PCIe Speed Hot Plug	Aptio Setup - AMI [PDIE Controller is one x2] [Ensbled] [Auto] [Disabled]	PCIE Controller Selection
System 1/0 PCH PCIe Configuration JH2H1 Port Select JH2H1 Port-1 PCIe Speed Hot Plug JPCIE FPC1 Port	Aptio Setup - AMI [PCIE Controller is one x2] [Ensbled] [Auto] [Disabled] [Ensbled]	PCIE Controller Selection
System 1/0 PCH PCIe Configuration JM2M1 Port Select JM2M1 Port-1 PCIe Speed Hot Plug JPCIE_FPC1 Port PCIe Speed	Aptio Setup - AMI [PCIE Controller is one x2] [Enabled] [Auto] [Disabled] [Enabled] [Auto]	PCIE Controller Selection
System 1/0 PCH PCIe Configuration JM2M1 Port-Select JM2M1 Port-1 PCIe Speed Hot Plug JPCIE_FPC1 Port PCIe Speed Hot Plug	Aptio Setup - AMI [PCIE Controller is one x2] [Enabled] [Auto] [Disabled] [Enabled] [Auto] [Disabled]	PCIE Controller Selection
System 1/0 PCH PCIe Configuration JM2M1 Port Select JM2M1 Port-1 PCIe Speed Hot Plug JPCIE_FPC1 Port PCIe Speed Hot Plug I225 LAN Port	Aptio Setup - AMI [PCIE Controller is one x2] [Enabled] [Auto] [Disabled] [Enabled] [Auto] [Disabled] [Enabled]	PCIE Controller Selection
System 1/0 PCH PCIe Configuration JM2M1 Port Select JM2M1 Port-1 PCIe Speed Hot Plug JPCIE_FPC1 Port PCIe Speed Hot Plug I225 LAN Port PCIE Speed	Aptio Setup - AMI [PCIE Controller is one x2] [Enabled] [Auto] [Enabled] [Auto] [Disabled] [Enabled] [Enabled] [Auto]	PCIE Controller Selection
System 1/0 PCH PCIe Configuration JH2H1 Port Select JM2H1 Port-1 PCIe Speed Hot Plug JPCIE_FPC1 Port PCIe Speed Hot Plug 1225 LAN Port PCIe Speed	Aptio Setup - AMI [PCIE Controller is one x2] [Enabled] [Auto] [Disabled] [Enabled] [Auto] [Enabled] [Enabled] [Auto]	PCIE Controller Selection ++: Select Screen 14: Select Item
System 1/0 PCH PCIE Configuration JH2H1 Port Select JM2H1 Port-1 PCIE Speed Hot Plug JPCIE_FPC1 Port PCIE Speed Hot Plug 1225 LAN Port PCIE Speed	Aptio Setup - AMI [PDIE Controller is one x2] [Enabled] [Auto] [Disabled] [Enabled] [Disabled] [Enabled] [Enabled] [Auto]	PCIE Controller Selection  ++: Select Screen 14: Select Item Enter: Select
System 1/0 PCH PCIE Configuration JH2H1 Port Select JM2H1 Port-1 PCIE Speed Hot Plug JPCIE_FPC1 Port PCIE Speed Hot Plug 1225 LAN Port PCIE Speed	Aptio Setup - AMI [PDIE Controller is one x2] [Enabled] [Auto] [Disabled] [Enabled] [Auto] [Disabled] [Enabled] [Auto] [Auto]	PCIE Controller Selection ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help
System 1/0 PCH PCIe Configuration JH2HI Port Select JM2HI Port-1 PCIe Speed Hot Plug JPCIE_FPC1 Port PCIE Speed Hot Plug I225 LAN Port PCIe Speed	Aptio Setup - AMI [PDIE Controller is one x2] [Enabled] [Auto] [Disabled] [Enabled] [Auto] [Disabled] [Enabled] [Auto]	PCIE Controller Selection ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values
System 1/0 PCH PCIe Configuration JM2M1 Port Select JM2M1 Port-1 PCIe Speed Hot Plug JPCIE_FPC1 Port PCIe Speed Hot Plug 1225 LAN Port PCIe Speed	Aptio Setup - AMI [PDIE Controller is one x2] [Enabled] [Auto] [Disabled] [Enabled] [Auto] [Disabled] [Enabled] [Auto]	PCIE Controller Selection ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit
System 1/0 PCH PCIe Configuration JM2M1 Port-1 PCIe Speed Hot Plug JPCIE_FPC1 Port PCIe Speed Hot Plug 1225 LAN Port PCIe Speed	Aptio Setup - AMI [PCIE Controller is one x2] [Enabled] [Auto] [Disabled] [Enabled] [Auto] [Disabled] [Enabled] [Auto]	PCIE Controller Selection ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
System 1/0 PCH PCIe Configuration JM2M1 Port-1 PCIe Speed Hot Plug JPCIE_FPC1 Port PCIe Speed Hot Plug 1225 LAN Port PCIe Speed	Aptio Setup - AMI [PCIE Controller is one x2] [Enabled] [Auto] [Disabled] [Enabled] [Enabled] [Enabled] [Enabled] [Auto]	PCIE Controller Selection ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
System 1/0 PCH PCIe Configuration JM2M1 Port-1 PCIe Speed Hot Plug JPCIE_FPC1 Port PCIe Speed Hot Plug 1225 LAN Port PCIe Speed	Aptio Setup - AMI [PCIE Controller is one x2] [Enabled] [Auto] [Disabled] [Enabled] [Auto] [Disabled] [Enabled] [Auto]	PCIE Controller Selection ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
System 1/0 PCH PCIe Configuration JM2M1 Port-1 PCIe Speed Hot Plug JPCIE_FPC1 Port PCIe Speed Hot Plug 1225 LAN Port PCIe Speed	Aptio Setup - AMI [PCIE Controller is one x2] [Enabled] [Auto] [Disabled] [Enabled] [Auto] [Disabled] [Enabled] [Auto]	PCIE Controller Selection ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
System 1/0 PCH PCIe Configuration JM2H1 Port Select JM2H1 Port-1 PCIe Speed Hot Plug JPCIE_FPC1 Port PCIe Speed Hot Plug I225 LAN Port PCIe Speed	Aptio Setup - AMI [PCIE Controller is one x2] [Enabled] [Auto] [Disabled] [Enabled] [Auto] [Disabled] [Enabled] [Auto] [Auto] 2.21, 1278 Converget (0, 200	PCIE Controller Selection ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt, F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit 2: AMI

Aptio Setup - AMI

Appendix C – Peripheral Device Installation

## C.2 PER-T643 Installation (M.2 2280 M-Key to 2242 B-Key/3052 B-Key)

#### Step 1: Cable & Adapter Card Installation



Step 2: Check the BIOS setup option as "M2M1 Port as "PCIE Controller is two x1"

JM2M1 Port Select	PCIE Controller are two x1	
	PCIE Controller is one x2	Optimal Default, Failsafe Default
Aptio Setup – AMI Main Advanced System 1/0 Security Boot Save & Exit		
---	--	
nation n	PCI Express Configuration settings	
	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
sion 2.21.1278 Copyright (C) 2	021 AMI	
Aptio Setup - AMI		
[PCIE Controller is one x2] [Enabled] [Auto] [Disabled]	PCIE Controller Selection	
[Enabled] [Auto] [Disabled]		
[Enabled] [Auto]	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt.	
	ecurity Boot Save & Exit ration n sion 2.21.1278 Copyright (C) 2 Aptio Setup - AMI [PCIE Controller is one x2] [Enabled] [Auto] [Disabled] [Auto] [Disabled] [Enabled] [Auto] [Disabled] [Auto] [Disabled] [Auto]	

## C.3 PER-R41P Installation (PER-R41P.PCIe[x4] Adapter Kit)

**Note:** Please follow the directions and ensure the direction of the adaptor kit corresponds to the pictures below prior to powering up your de next-TGU8 board. Any installation error will cause critical damage to both the board and adapter kit.

Step 1: Flip up the black plastic on the right-hand edge of the PER-R41P adapter card.



Step 2: Plug the FPC cable (GF1) into the connector, and return the black plastic to its original position.



## Step 3: First, flip up the black plastic on your de next-TGU8 board.

Next, plug the FPC cable (GF2) into the connector on your de next-TGU8 board and return the black plastic to its original position on the board to affix the FPC cable.



Step 4: Ensure the FPC cable installation outcome resembles the picture below, then power up the board.

## Top Side:



## Bottom Side:

