de next-V2K8

de next Board

User's Manual 3rd Ed

Last Updated: February 10, 2025

Copyright Notice

Acknowledgement

Packing List

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

Item	Quantity
de next-V2K8	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.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. 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
18. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

FCC Statement

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.

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON 主板/子板/背板 QO4-381 Rev.A2

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及其电子组件	×	○	○	○	○	○
外部信号连接器及线材	×	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○：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GB/T 26572标准规定的限量要求以下。

×：表示该有害物质的某一均质材料超出了GB/T 26572的限量要求，然而该部件仍符合欧盟指令2011/65/EU 的规范。

环保使用期限(EFUP (Environmental Friendly Use Period)) : 10年

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。

China RoHS Requirement (EN)

Name and content of hazardous substances in product

AAEON Main Board/Daughter Board/Backplane QO4-381 Rev.A2

Part Name	Hazardous Substances					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
PCB Assemblies	×	O	O	O	O	O
Connector and Cable	×	O	O	O	O	O

The table is prepared in accordance with the provisions of SJ/T 11364.

O：Indicates that said hazardous substance contained in all of the homogenous materials for this product is below the limit requirement of GB/T 26572.

×：Indicates that said hazardous substance contained in at least one of the homogenous materials used for this part is above the limit requirement of GB/T 26572. But this product still be compliance with 2011/65/EU Directive (allowed with 2011/65/EU Annex III of RoHS exemption with number 6(c),7(a),7(c)-1).

EFUP (Environment Friendly Use Period) value: 10 years

Notes: This product defined period of use is under normal condition.

Table of Contents

Chapter 1

Product Specifications

1.1 Specifications

System	
Form Factor	86mm x 55mm, Single Board Computer
CPU	AMD Ryzen™ Embedded V2000 Series Processor AMD Ryzen™ Embedded V2718 with Radeon™ Graphics (8C/16T, 1.7 GHz, 25W) AMD Ryzen™ Embedded V2516 with Radeon™ Graphics (6C/16T, 2.1 GHz, 25W)
Chipset	Integrated with AMD SoC
Memory Type	Onboard LPDDR4x 3200, up to 16GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	fTPM
RTC Battery	Lithium Battery 3V/240mAh
Dimension	3.38" x 2.17" (86mm x 55mm)
OS Support	Windows® 10 (64-bit) Ubuntu 22.04 (Kernel 5.15)

Power

Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	DC Jack Connector (Optional: 2-Pin Phoenix Connector)
Power Consumption	AMD Ryzen™ Embedded V2718, LPDDR4 16GB, 3.07A @12V, 36.84W (Typical) AMD Ryzen™ Embedded V2718, LPDDR4 16GB, 3.92A @12V, 47.04W (Max)

Display

Controller	AMD V2000 Series with Radeon™ Graphics
LVDS/eDP	eDP 1.4 x 1, up to 3840 x 2160
Display Interface	HDMI 1.4 x 1, up to 3840 x 2160 @30Hz
Multiple Display	2 Simultaneous Displays

Audio

Codec	-
Audio Interface	-
Speaker	-

External I/O

Ethernet	Realtek RTL8111, 1GbE RJ-45 x 1 Intel® I226, 2.5GbE RJ-45 x 1
USB	USB 3.2 Gen 2 x 2
Serial Port	-
Video	HDMI 1.4b x 1

Internal I/O

USB	USB 2.0 x 4 Note: USB 2.0 x 2 shared with adapter card PER-T642/PER-T643 (de next-V2K8-A11 only)
Serial Port	COM 1, COM 2 (RS-232/422/485, supports 5V/RI)
Video	eDP 1.4 x 1
SATA	SATA 6Gb/s x 1 +5V SATA Power Connector x 1
Audio	-
DIO/GPIO	GPIO 8-bit
SMBus/I2C	Optional
Touch	-
Fan	4 Pin Smart Fan
SIM	-
Front Panel	Power Button, Reset Button, Power LED, SATA LED, Buzzer

Expansion

Mini PCIe/mSATA	-
M.2	M.2 2280 M-Key x 1 (PCIe [x2] x 1 or PCIe [x1] x 2, selected by BIOS)
Others	FPC Connector x 1 (PCIe 3.0 [x4] x 1)

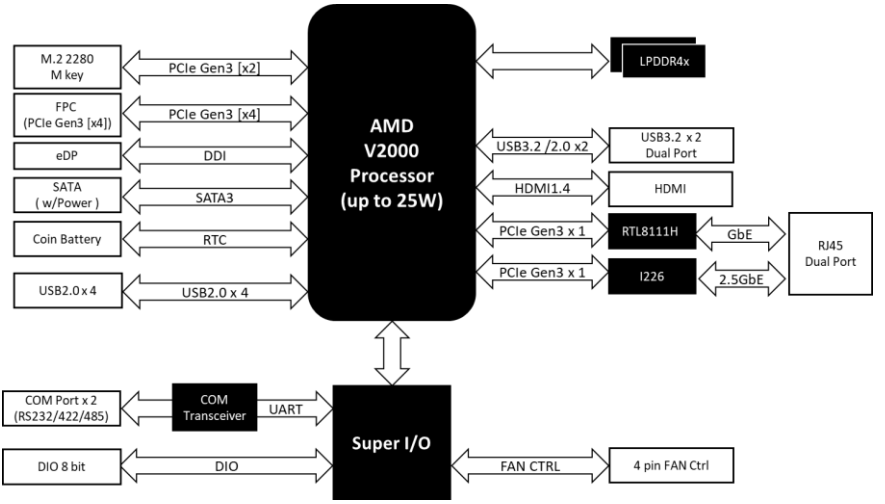
Environment & Certification

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

Environment & Certification

MTBF (Hours)	609,263
EMC	CE/FCC Class A

1.2 Block Diagram

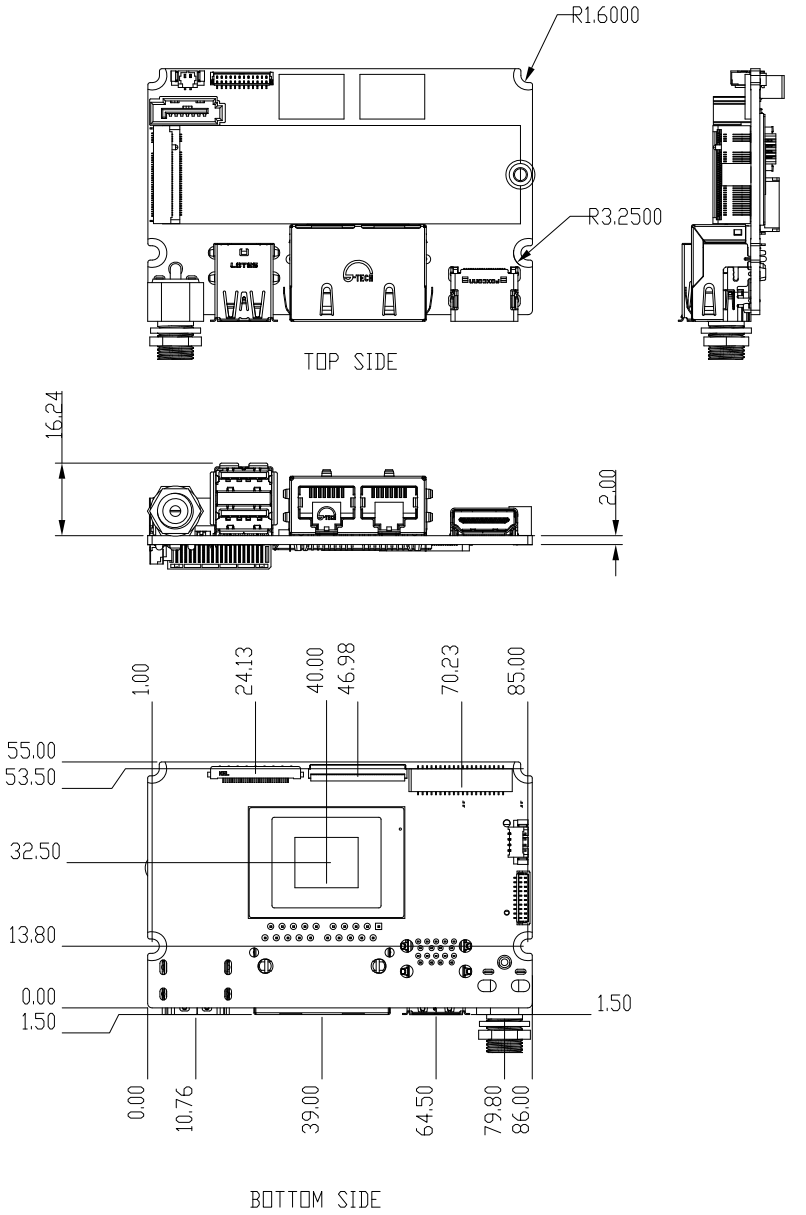


Note: Intel® I226-LM is only supported by de next-V2K8-A11.

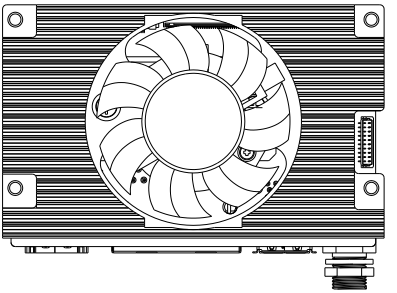
Chapter 2

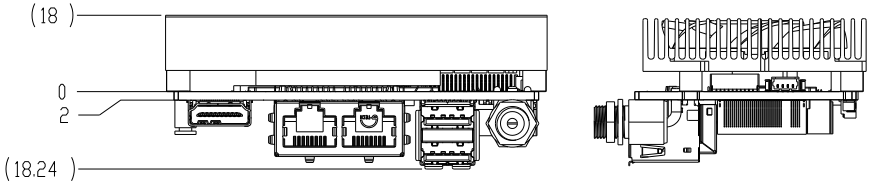
Hardware Information

2.1 Dimensions

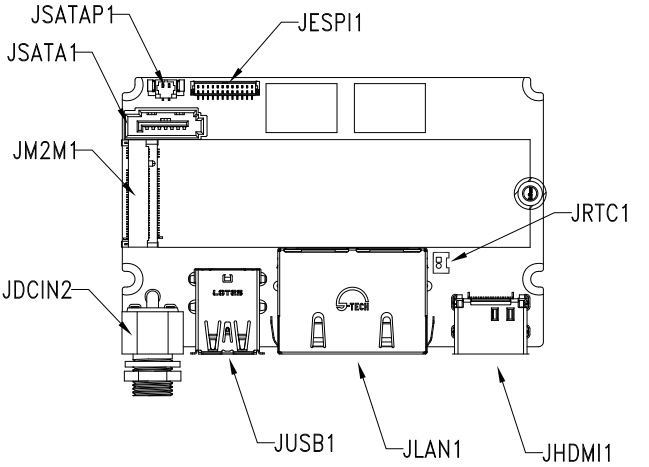


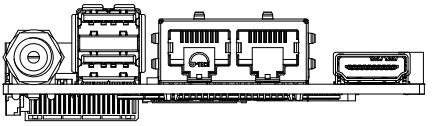
With CPU Cooler:

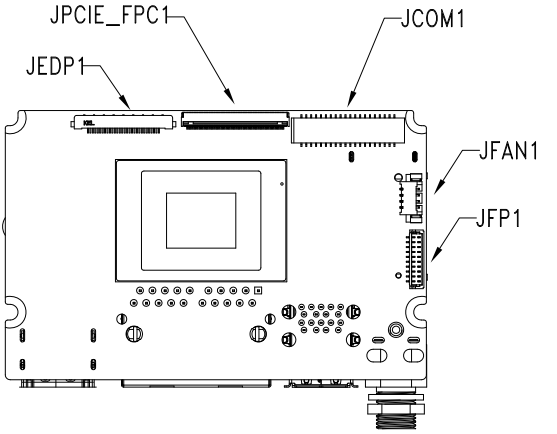




2.2 Jumpers and Connectors





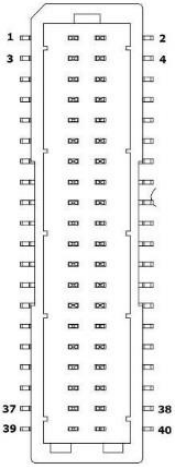


2.3 List of Connectors

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, GPIO
JDCIN2	DC In
JEDP1	eDP
JESPI1	I2C, SMBus
JFAN1	FAN
JFP1	Front Panel
JHDMI1	HDMI
JLAN1	LAN
JM2M1	M.2 2280 M-Key
JPCIE_FPC1	PCIe
JRTC1	RTC Battery
JSATA1	SATA
JSATAP1	SATA Power
JUSB1	USB 3.2 Gen 2

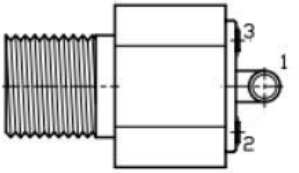
2.3.1 COM, USB 2.0, GPIO (JCOM1)



Pin	Pin Name	Signal Type	Signal Level
1	GPIO_7	I/O	5V
2	GPIO_6	I/O	5V
3	GPIO_5	I/O	5V
4	GPIO_4	I/O	5V
5	GPIO_3	I/O	5V
6	GPIO_2	I/O	5V
7	GPIO_1	I/O	5V
8	GPIO_0	I/O	5V
9	GND	GND	-
10	GND	GND	-
11	USB7_DN_CM	I/O	-
12	USB6_DN_CM	I/O	-
13	USB7_DP_CM	I/O	-
14	USB6_DP_CM	I/O	-
15	+V5A_USB2367	I/O	-

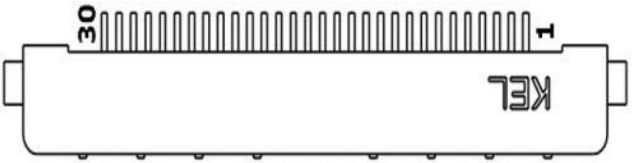
Pin	Pin Name	Signal Type	Signal Level
16	+V5A_USB2367	I/O	-
17	USB3_DN_CM	I/O	-
18	USB2_DN_CM	I/O	-
19	USB3_DP_CM	I/O	-
20	USB2_DP_CM	I/O	-
21	GND	GND	-
22	GND	GND	-
23	RI_2_CON	I/O	-
24	RI_1_CON	I/O	-
25	CTS_2_CON	I/O	-
26	CTS_1_CON	I/O	-
27	RTS_2_CON	I/O	-
28	RTS_1_CON	I/O	-
29	DSR_2_CON	I/O	-
30	DSR_1_CON	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

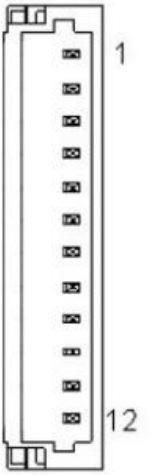
2.3.3 eDP (JEDP1)



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
11	DDI0_LANE0_DN_CH	I/O

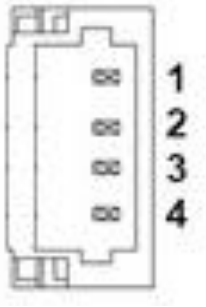
Pin	Pin Name	Signal Type
12	DDI0_LANE0_DP_CH	I/O
13	GND	GND
14	DDI0_LANE3_DN_CH	I/O
15	DDI0_LANE3_DP_CH	I/O
16	GND	GND
17	DDI0_AUX_DN_CH	I/O
18	DDI0_AUX_DP_CH	I/O
19	GND	GND
20	DDI0_BKLTCTL	I/O
21	NC	-
22	DDI0_BKLTEN	I/O
23	DDI0_HPD	I/O
24	GND	GND
25	GND	GND
26	GND	GND
27	+V12S	PWR
28	+V12S	PWR
29	+V12S	PWR
30	+V12S	PWR

2.3.4 I2C, SMBus (JESPI1)



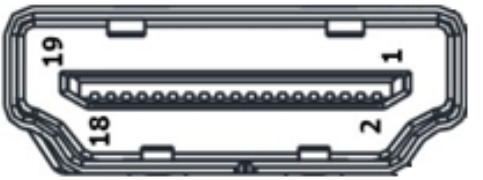
Pin	Pin Name	Signal Type
1	LAD0_ESPI1_DATA0	I/O
2	LAD0_ESPI1_DATA1	I/O
3	LAD0_ESPI1_DATA2	I/O
4	LAD0_ESPI1_DATA3	I/O
5	+V3P3S	PWR
6	LPC_FRAME#	I/O
7	I2C0_DATA_3P3S	I/O
8	GND	GND
9	I2C0_CLK_3P3S	I/O
10	SMB_DATA	I/O
11	SMB_CLK	I/O
12	SMB_ALERT#	I/O

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

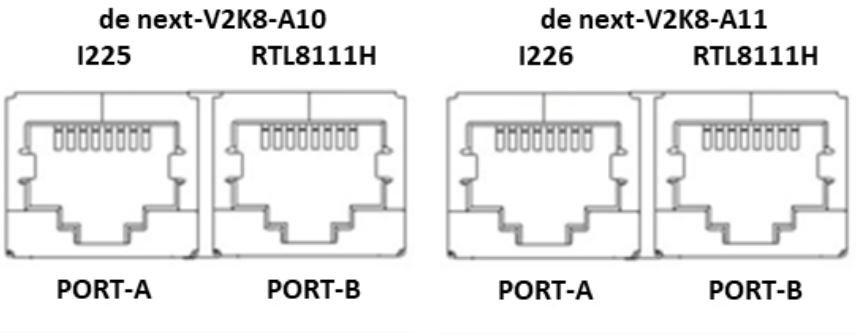
2.3.6 HDMI (JHDMI1)



Pin	Pin Name	Signal Type
1	HDMI1_D2_DP_CM	I/O
2	GND	GND
3	HDMI1_D2_DN_CM	I/O
4	HDMI1_D1_DP_CM	I/O
5	GND	GND

Pin	Pin Name	Signal Type
6	HDMI1_D1_DN_CM	I/O
7	HDMI1_D0_DP_CM	I/O
8	GND	GND
9	HDMI1_D0_DN_CM	I/O
10	HDMI1_CLK_DP_CM	I/O
11	GND	GND
12	HDMI1_CLK_DN_CM	I/O
13	NC	-
14	NC	-
15	HDMI1_SCL	I/O
16	HDMI1_SDA	I/O
17	GND	GND
18	+V5S_HDMI	PWR
19	HDMI1_HPD	I/O

2.3.7 LAN (JLAN1)



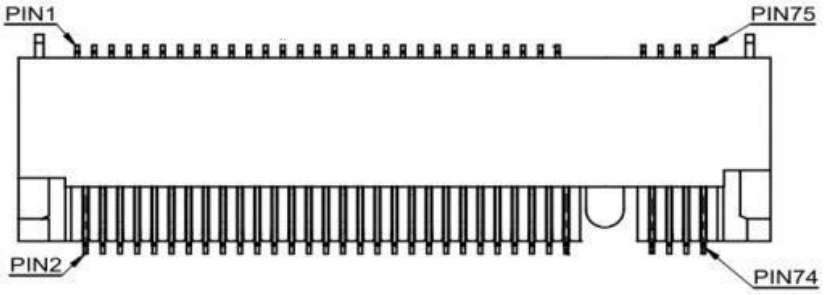
Pin	Pin Name	Signal Type
1P1	LAN2_MDI0+	I/O
1P2	LAN2_MDI0-	I/O
1P3	LAN2_MDI1+	I/O
1P4	LAN2_MDI1-	I/O
1P5	LAN2_CT	I/O
1P6	LAN2_CT	I/O
1P7	LAN2_MDI2+	I/O
1P8	LAN2_MDI2-	I/O
1P9	LAN2_MDI3+	I/O
1P10	LAN2_MDI3-	I/O
2P1	LAN1_MDI0+	I/O
2P2	LAN1_MDI0-	I/O
2P3	LAN1_MDI1+	I/O
2P4	LAN1_MDI1-	I/O
2P5	LAN1_CT	I/O
2P6	LAN1_CT	I/O
2P7	LAN1_MDI2+	I/O

Pin	Pin Name	Signal Type
2P8	LAN1_MDI2-	I/O
2P9	LAN1_MDI3+	I/O
2P10	LAN1_MDI3-	I/O

Note: de next-V2K8-A10 PORT-A: I225

Note: de next-V2K8-A11 PORT-A: I226"

2.3.8 M.2 2280 M-Key (JM2M1)



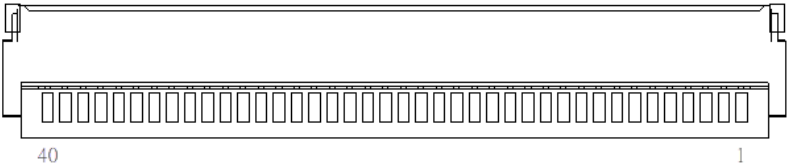
Pin	Pin Name	Signal Type
1	GND	GND
2	+V3P3S	PWR
3	GND	GND
4	+V3P3S	PWR
5	NC	-
6	CARD_PWR_EN_R	I/O
7	NC	-
8	NC	-
9	GND	GND
10	NC	-

Pin	Pin Name	Signal Type
11	NC	-
12	+V3P3S	PWR
13	NC	-
14	+V3P3S	PWR
15	GND	GND
16	+V3P3S	PWR
17	NC	-
18	+V3P3S	PWR
19	NC	-
20	NC	-
21	GND	GND
22	NC	-
23	NC	-
24	NC	-
25	NC	-
26	NC	-
27	GND	GND
28	NC	-
29	GPP_RXN9_SATA3_RXN	I/O
30	NC	-
31	GPP_RXP9_SATA3_RXP	I/O
32	NC	-
33	GND	GND
34	NC	-
35	GPP_TXN9_SATA3_TXN	I/O
36	NC	-
37	GPP_TXP9_SATA3_TXP	I/O

Pin	Pin Name	Signal Type
38	NC	-
39	GND	GND
40	M2M_SMB_CLK	I/O
41	GPP_RXN8_SATA2_RXN	I/O
42	M2M_SMB_DATA	I/O
43	GPP_RXP8_SATA2_RXP	I/O
44	NC	-
45	GND	GND
46	NC	-
47	GPP_TXN8_SATA2_TXN	I/O
48	NC	-
49	GPP_TXP8_SATA2_TXP	I/O
50	BUF_PLT_RST#	I/O
51	GND	GND
52	M2M_CLKREQ#	I/O
53	GPP_CLKN3_M2M	I/O
54	PCIE_WAKE#	I/O
55	GPP_CLKP3_M2M	I/O
56	NC	-
57	GND	GND
58	NC	-
59	NC	-
60	M2M_SSCLK	I/O
61	NC	-
62	+V3P3S	PWR
63	GND	GND
64	+V3P3S	PWR

Pin	Pin Name	Signal Type
65	GND	GND
66	+V3P3S	PWR
67	GND	GND
68	GND	GND
69	GND	GND
70	GND	GND
71	+V3P3S	PWR
72	GND	GND
73	+V3P3S	PWR
74	NC	-
75	CARD_PWR_EN_R	I/O

2.3.9 PCIe (JPCIE_FPC1)

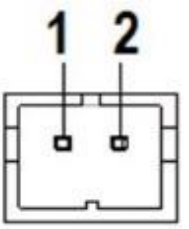


Pin	Pin Name	Signal Type	Signal Level
1	+V3P3S	PWR	+3.3V
2	+V3P3S	PWR	+3.3V
3	+V3P3S	PWR	+3.3V
4	SMB_DATA	I/O	+3.3V
5	SMB_CLK	I/O	-
6	BUF_PLT_RST#	I/O	-
7	+V3P3A	PWR	-

Pin	Pin Name	Signal Type	Signal Level
8	GND	GND	-
9	FPC_PCIE_RXP5	I/O	-
10	FPC_PCIE_RXN5	I/O	-
11	GND	GND	-
12	FPC_PCIE_RXP7	I/O	-
13	FPC_PCIE_RXN7	I/O	-
14	GND	GND	-
15	FPC_PCIE_RXP6	I/O	-
16	FPC_PCIE_RXN6	I/O	-
17	GND	GND	-
18	FPC_PCIE_RXP4	I/O	-
19	FPC_PCIE_RXN4	I/O	-
20	GND	GND	-
21	FPC_PCIE_TXN7	I/O	-
22	FPC_PCIE_TXP7	I/O	-
23	GND	GND	-
24	FPC_PCIE_TXN6	I/O	-
25	FPC_PCIE_TXP6	I/O	-
26	GND	GND	-
27	FPC_PCIE_TXN5	I/O	-
28	FPC_PCIE_TXP5	I/O	-
29	GND	GND	-
30	GPP_CLKN2_FPC	I/O	-
31	GPP_CLKP2_FPC	I/O	-
32	GND	GND	-
33	FPC_PCIE_TXN4	I/O	-
34	FPC_PCIE_TXP4	I/O	-

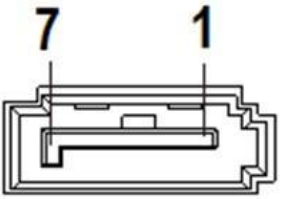
Pin	Pin Name	Signal Type	Signal Level
35	GND	GND	-
36	+V12S	PWR	-
37	+V12S	PWR	-
38	+V12S	PWR	-
39	+V12S	PWR	-
40	+V12S	PWR	-

2.3.10 RTC Battery (JRTC1)



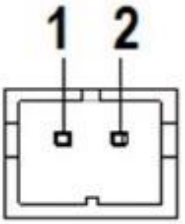
Pin	Pin Name	Signal Type
1	+VRTC_BATT	PWR
2	GND	GND

2.3.11 SATA (JSATA1)



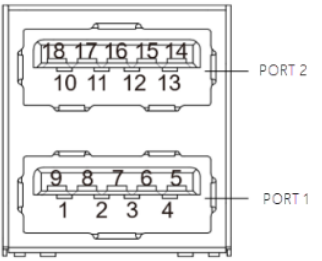
Pin	Pin Name	Signal Type
1	GND	GND
2	SATA_0_TXP	I/O
3	SATA_0_TXN	I/O
4	GND	GND
5	SATA_0_RXN	I/O
6	SATA_0_RXP	I/O
7	GND	GND

2.3.12 SATA Power (JSATAP1)



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

2.3.13 USB 3.2 (JUSB1)



Pin	Pin Name	Signal Type
1	+V5A_USB_01	PWR
2	USBD0-	I/O
3	USBD0+	I/O
4	GND	GND
5	USB3_RXN0_C	I/O
6	USB3_RXNP_C	I/O
7	GND	GND
8	USB3_TXN0_C	I/O
9	USB3_TXP0_C	I/O
10	+V5A_USB_01	PWR
11	USBD1-	I/O
12	USBD1+	I/O
13	GND	GND
14	USB3_RXN1_C	I/O
15	USB3_RXP1_C	I/O
16	GND	GND
17	USB3_TXN1_C	I/O
18	USB3_TXP1_C	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

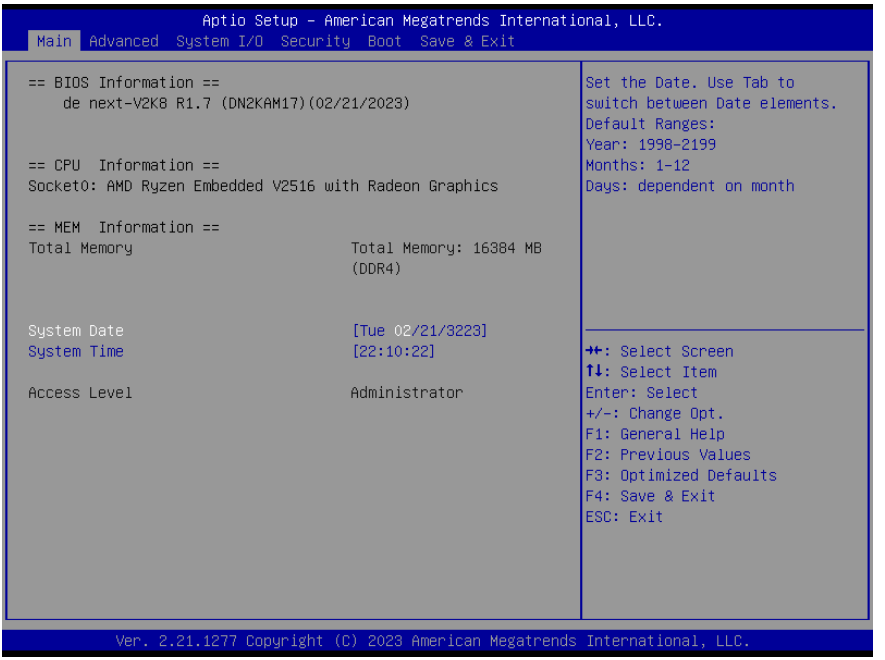
System I/O – Enable/ Disable System input and output port

Security – The setup administrator password can be set here

Boot – Enable/ Disable quiet Boot Option

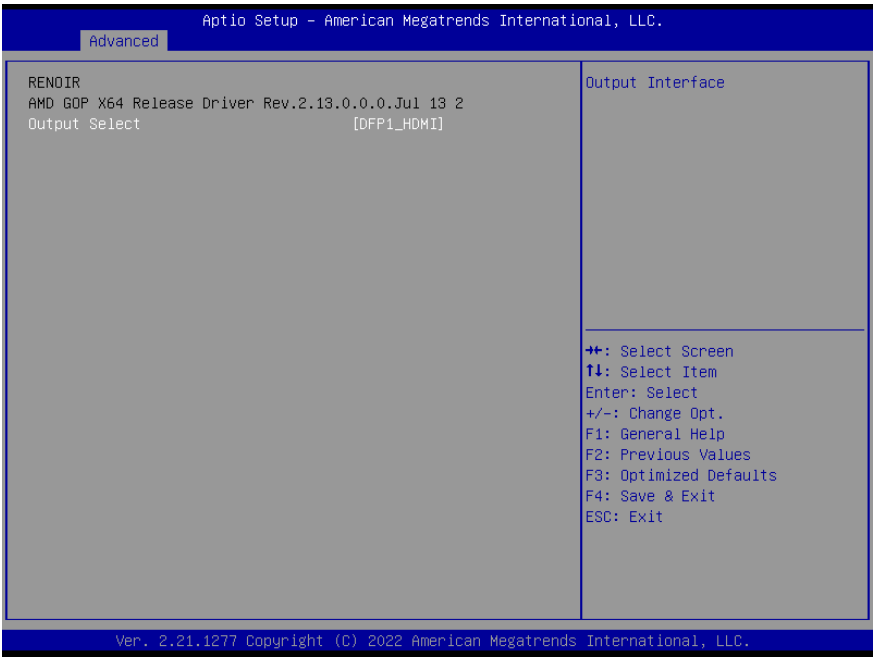
Save & Exit –Save your changes and exit the program

3.3 Setup Submenu: Main

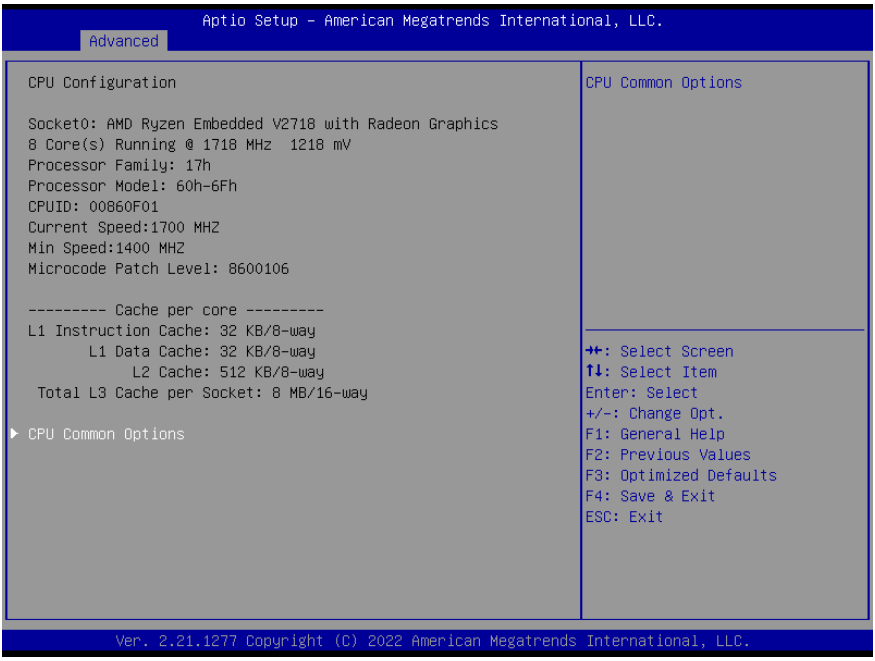


3.4 Setup Submenu: Advanced

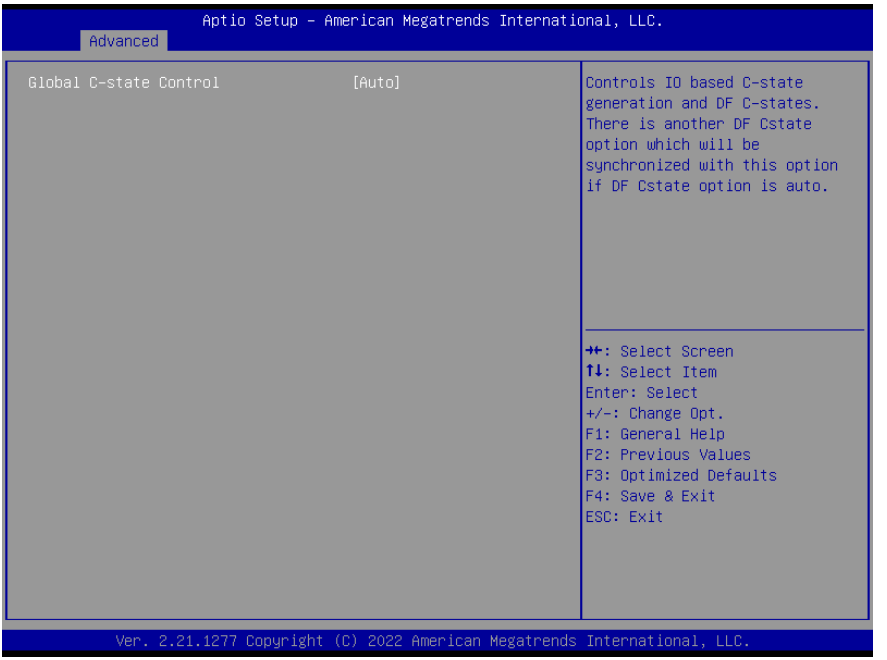
3.4.1 Graphics Configuration



3.4.2 CPU Configuration

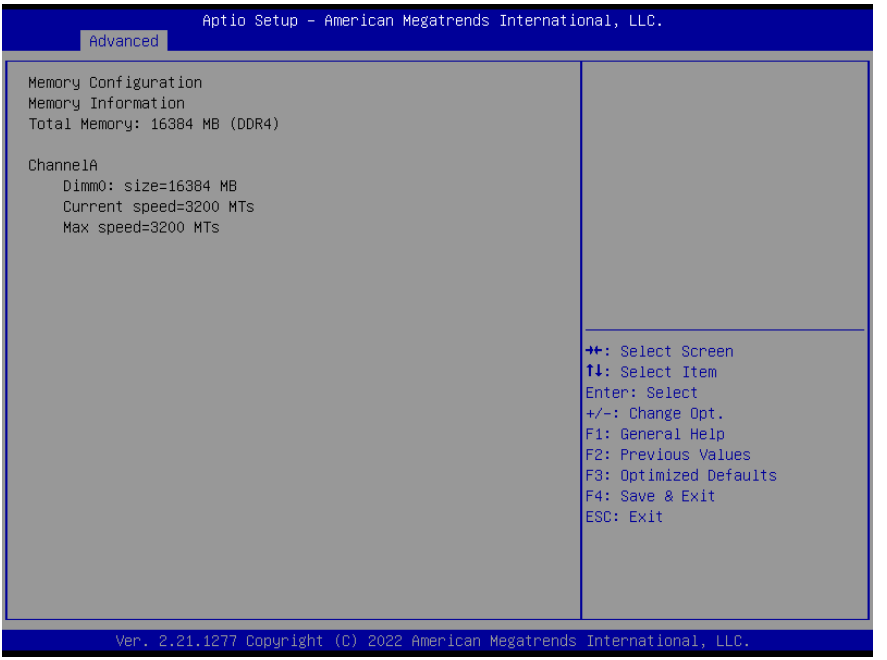


3.4.2.1 CPU Common Options

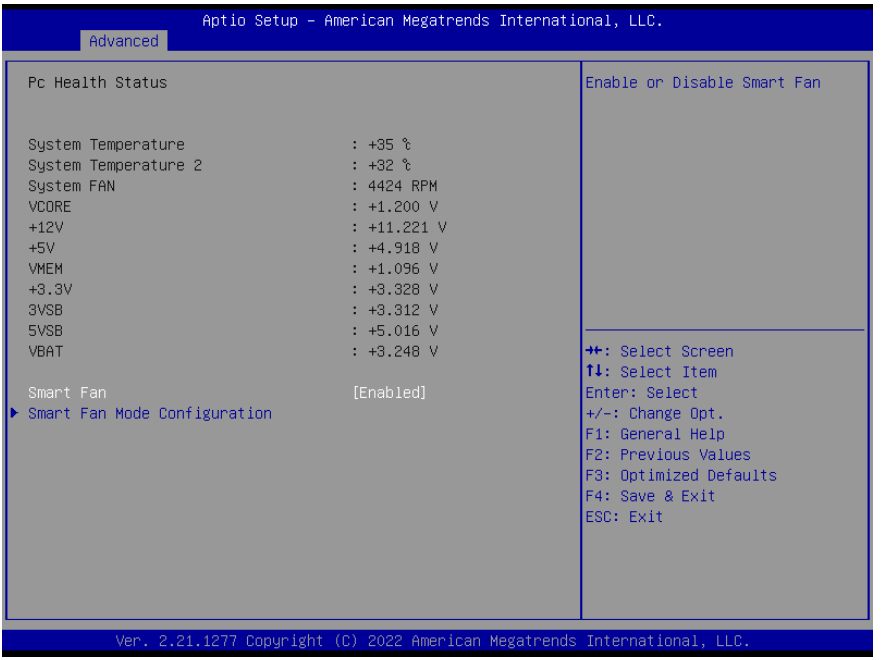


Options Summary		
Global C-state Control	Disabled	
	Enabled	
	Auto	Optimal Default
Controls IO based C-state generation and DF C-states. There is another DF C-state option which will be synchronized with this option if DF C-state option is auto.		

3.4.3 Memory Configuration

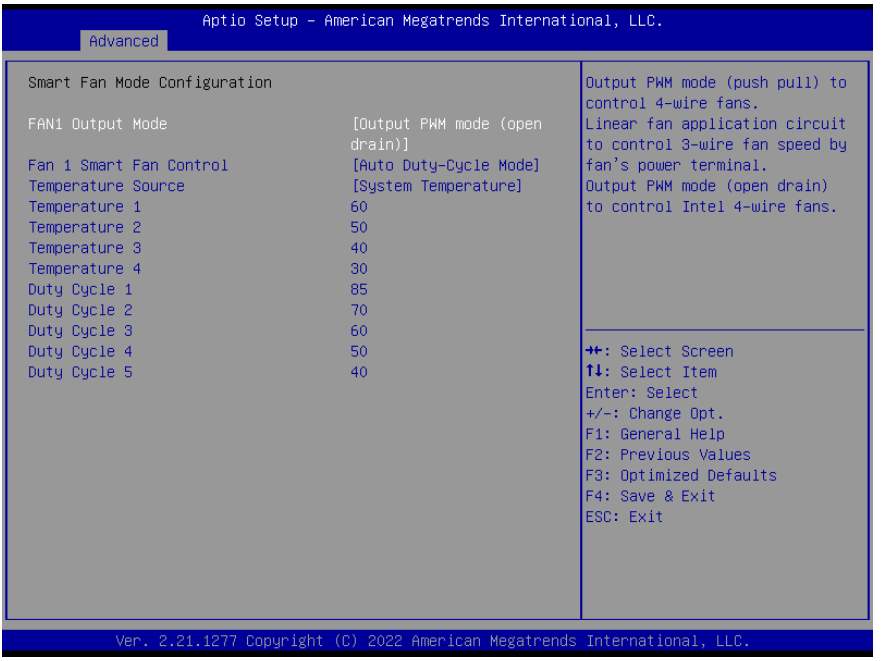


3.4.4 Hardware Monitor

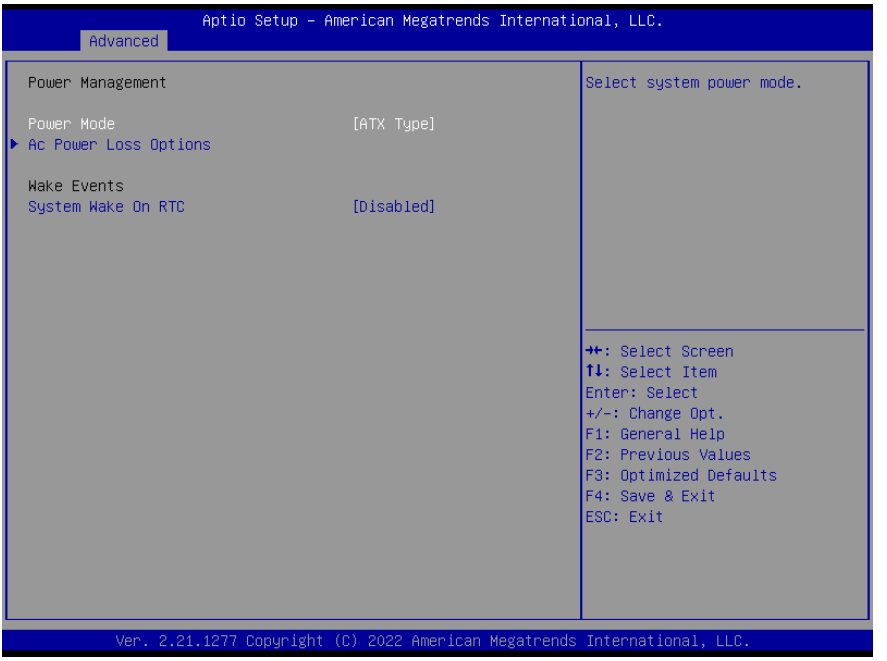


Options Summary		
Smart Fan	Disabled	
	Enabled	Optimal Default
Enable or Disable Smart Fan.		

3.4.4.1 Smart Fan Mode Configuration



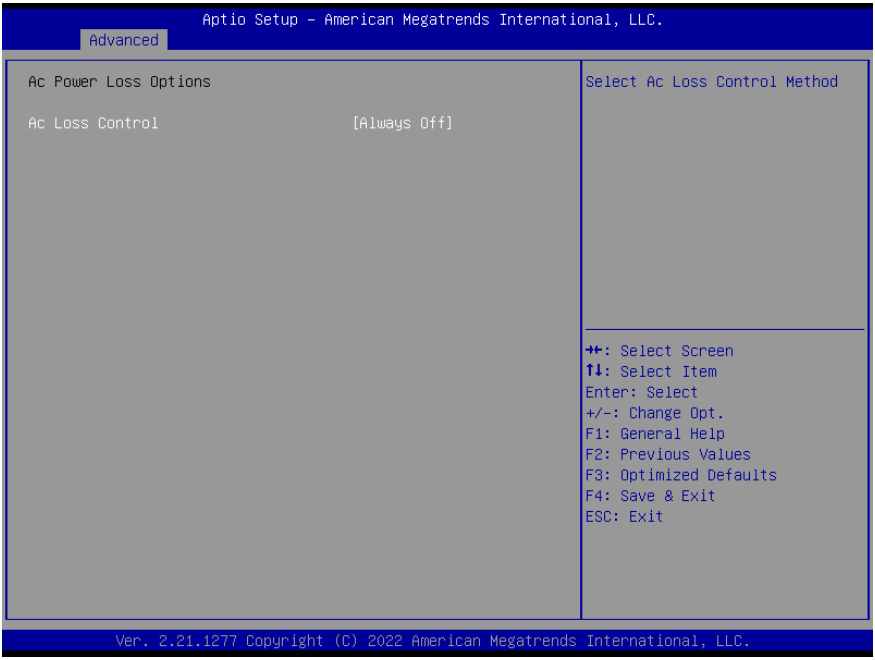
3.4.5 Power Management



Options Summary		
Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select system power mode		
System Wake On RTC	Disabled	Optimal Default
	By Date	
	By Weekday	
	Bypass	
By Date: System will wake on the day with hr: min: sec specified. By Weekday: System will wake on the enabled weekday with hr: min: sec specified. Bypass: BIOS will not control RTC wake function.		
Wake up day	0-31	For by date
Select 0 for daily system wake up, 1-31 for which day of the month that you would like the system to wake up.		
Sunday/Monday/Tuesday/	Disabled	For by weekday.

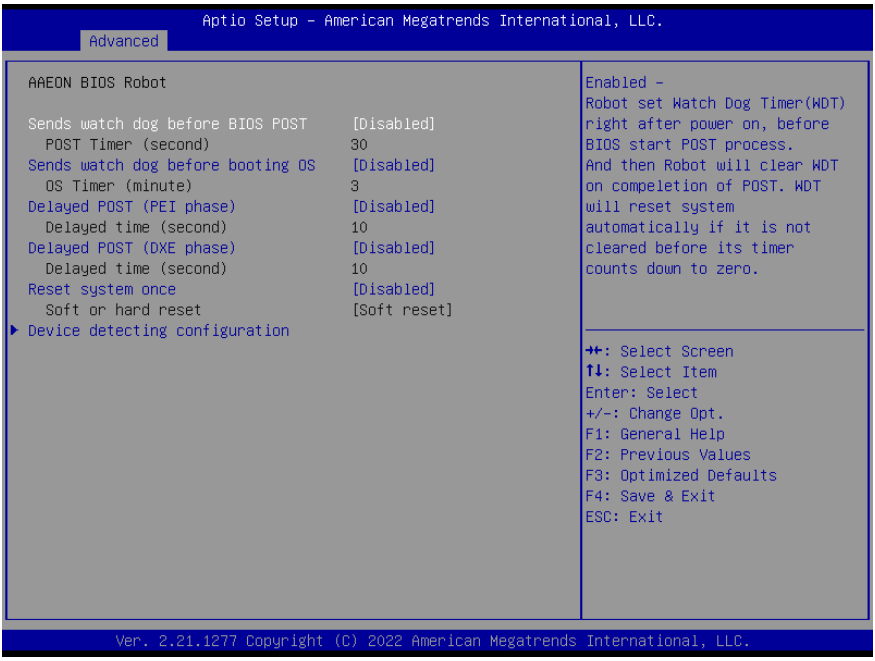
Options Summary		
Wednesday/Thursday/ Friday/Saturday	Enabled	
Enable or disable RTC wake up on weekday.		
Wake up hour	0-23	
Select 0-23. For example, enter 3 for 3am and 15 for 3pm.		
Wake up minute	0-59	
Wake up second	0-59	

3.4.5.1 AC Power Loss Options



Options Summary		
AC Loss Control	Always Off	
	Always On	Optimal Default
	Last State	
Select Ac Loss Control Method. Please note that AC Loss Control isn't supported in Auto Power Button Mode.		

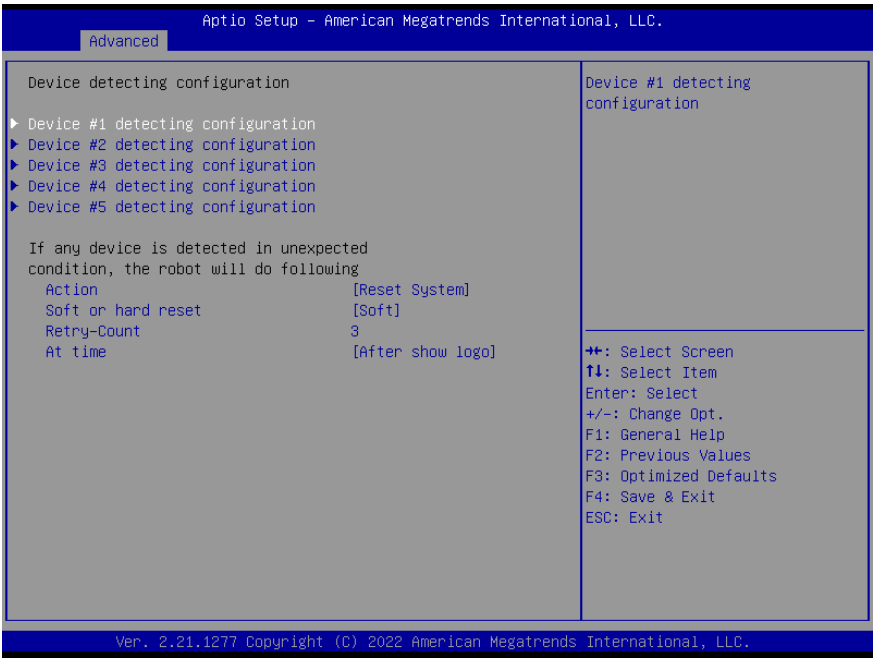
3.4.6 AAEON BIOS Robot



Options Summary		
Sends watch dog before BIOS POST	Disabled	Optimal Default
	Enabled	
Robot set Watch Dog Timer (WDT) right after power on, before BIOS start POST process. And then Robot will clear WDT on completion of POST. WDT will reset system automatically if it is not cleared before its timer counts down to zero.		
Sends watch dog before booting OS	Disabled	Optimal Default
	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.		
Delayed POST (PEI phase)	Disabled	Optimal Default
	Enabled	
Robot holds BIOS from starting POST, right after power on. This allows BIOS POST to start with stable power or start after system is physically warmed-up.		

Options Summary		
Delayed POST (DXE phase)	Disabled	Optimal Default
	Enabled	
Robot holds BIOS before POST completion. This allows BIOS POST to start with stable power or start after system is physically warmed-up.		
Reset system once	Disabled	Optimal Default
	Enabled	
Robot resets system for one time on each boot. This will send a soft or hard reset to onboard devices, thus puts devices to more stable state.		

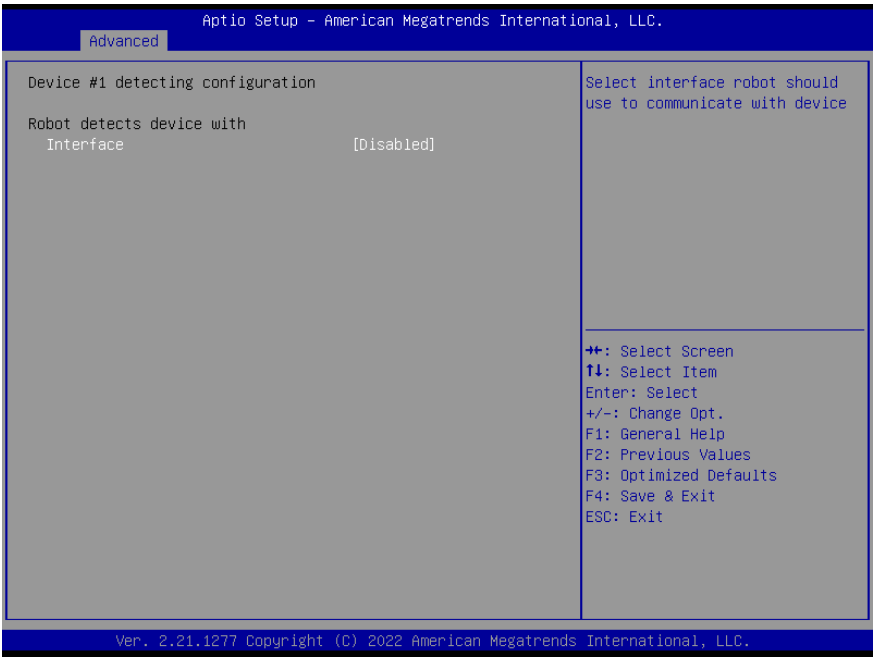
3.4.6.1 Device Detecting Configuration



Options Summary		
Action	Reset System	Optimal Default
	Hold System	
Select action that robot should do.		

Options Summary		
Soft or hard reset	Soft	Optimal Default
	Hard	
Select reset type robot should send on each boot.		
Retry-Count	3	
Robot will reset system at most counter times, and then let system continue its POST.		
At time	After show logo	Optimal Default
	Before show logo	
Select robot action time		

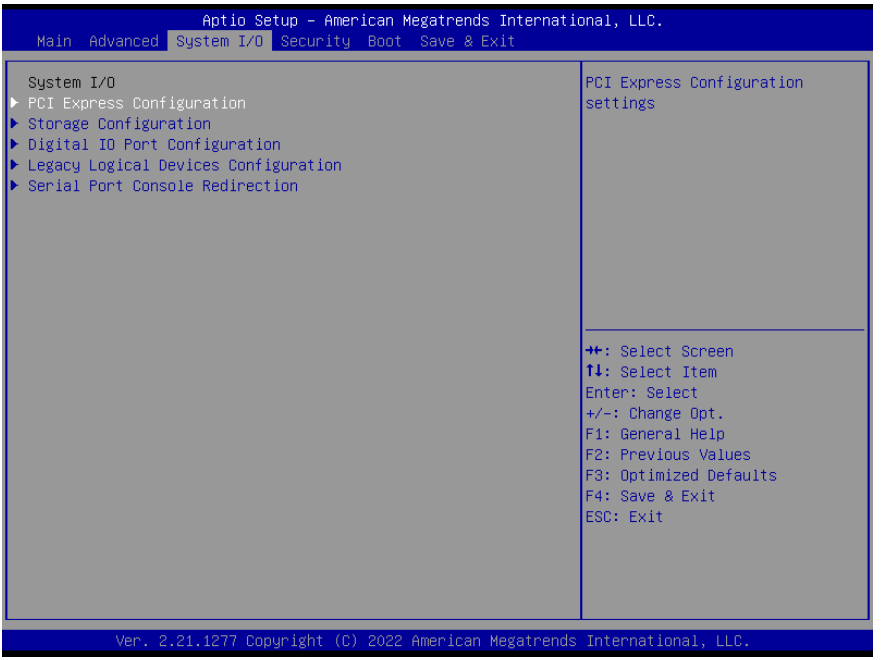
3.4.6.1.1 Device #1~5 Detecting Configuration



Options Summary		
Robot detects device with Interface	Disabled	Optimal Default
	PCI	
	DIO	
	SMBUS	
	Legacy I/O	
	Super I/O	
	MMIO	
Select interface robot should use to communication with device.		

Note: While DIO is listed as an interface option, the de next-V2K8 does not support it, so please either continue using the BIOS default or an alternative interface.

3.5 Setup Submenu: System I/O



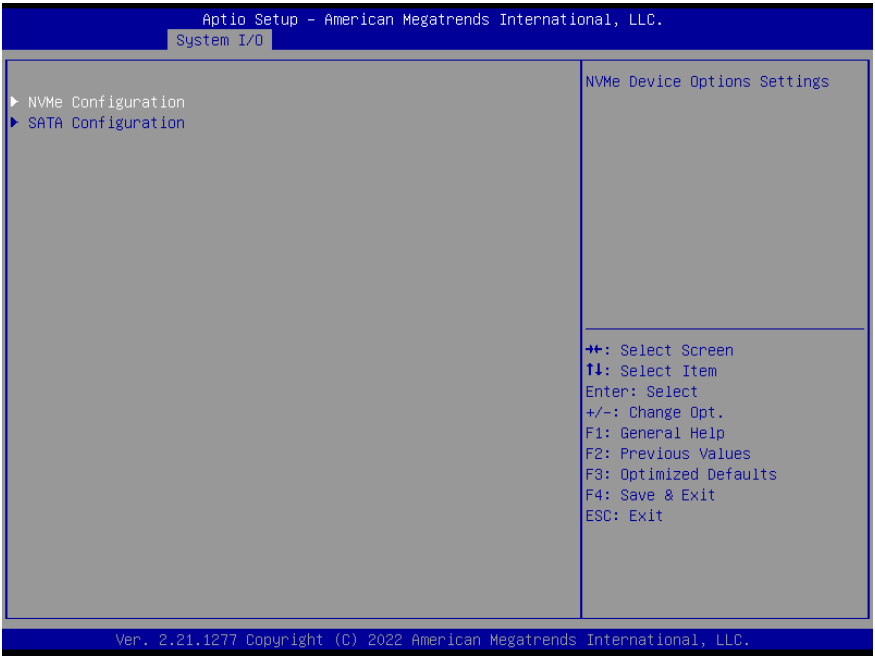
3.5.1 PCI Express Configuration

Options Summary		
Pcie Port Control	Disabled	
	Enabled	Default
Disabled: Use default CRB setting		
JM2M1 slot Configuration	PER-T642/T643	
	PCIe x2	Default
PCIe x2 used board default setting		
JM2M1	Disabled	
	Enabled	
	Auto	Default
Auto used board default setting		
LAN1	Disabled	
	Enabled	
	Auto	Default
Auto used board default setting.		

Options Summary		
LAN2	Disabled	
	Enabled	
	Auto	Default
Auto used board default setting		
FPC	Disabled	
	Enabled	
	Auto	Default
Auto used board default setting		

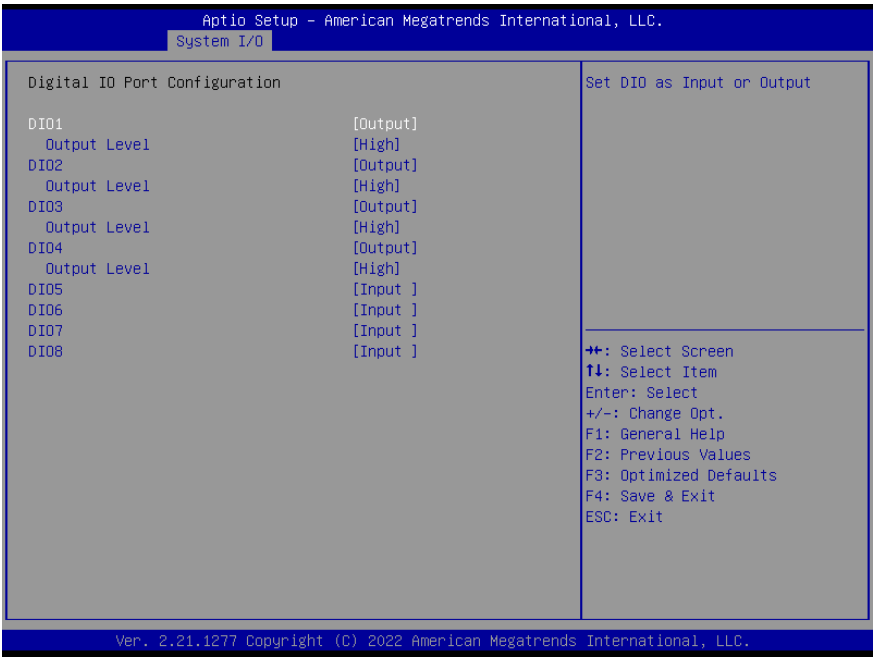
Note: PER-T642/T643 is only supported by de next-V2K8-A11.

3.5.2 Storage Configuration



3.5.2.1 NVMe Configuration

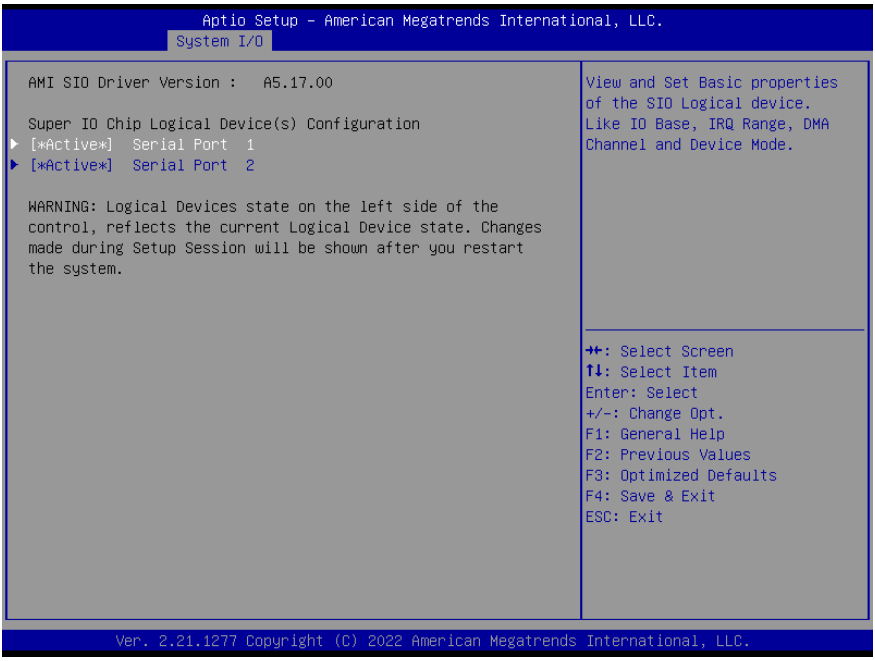
3.5.3 Digital IO Port Configuration



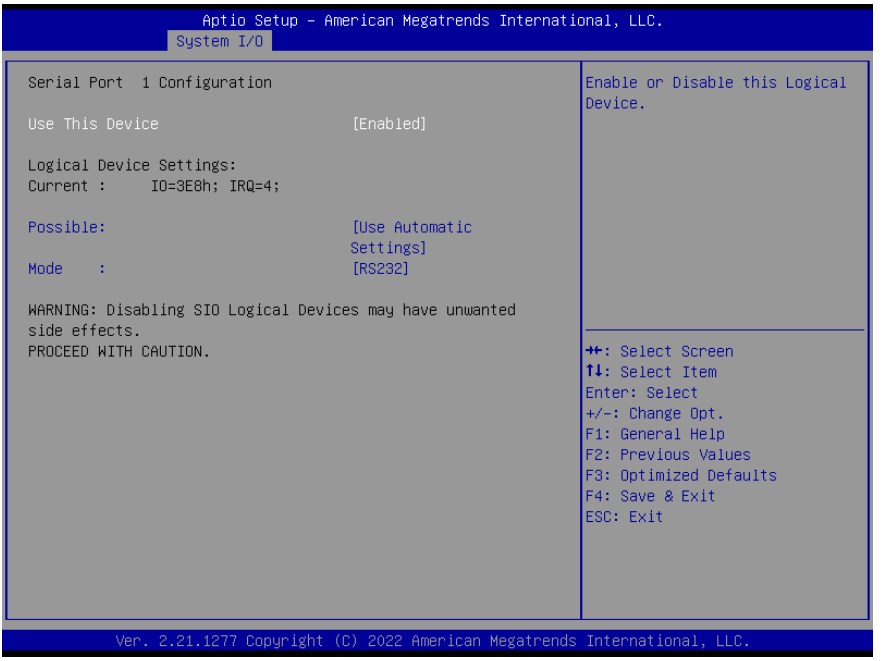
Options Summary	
DIO PORT x	Input
	Output
Set DIO as Input or Output.	
Output Level	Low
	High
Set output level when DIO pin is output.	

Note: While the de next-V2K8's contains Digital IO configuration instructions in its BIOS, the board does not support DIO functionality.

3.5.4 Legacy Logical Devices Configuration

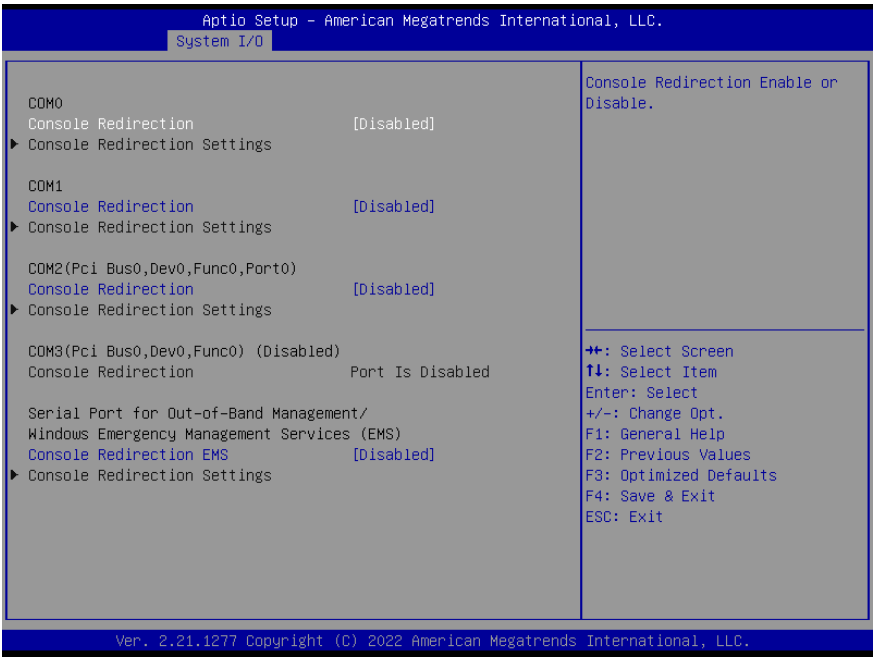


3.5.4.1 Serial Port x Configuration



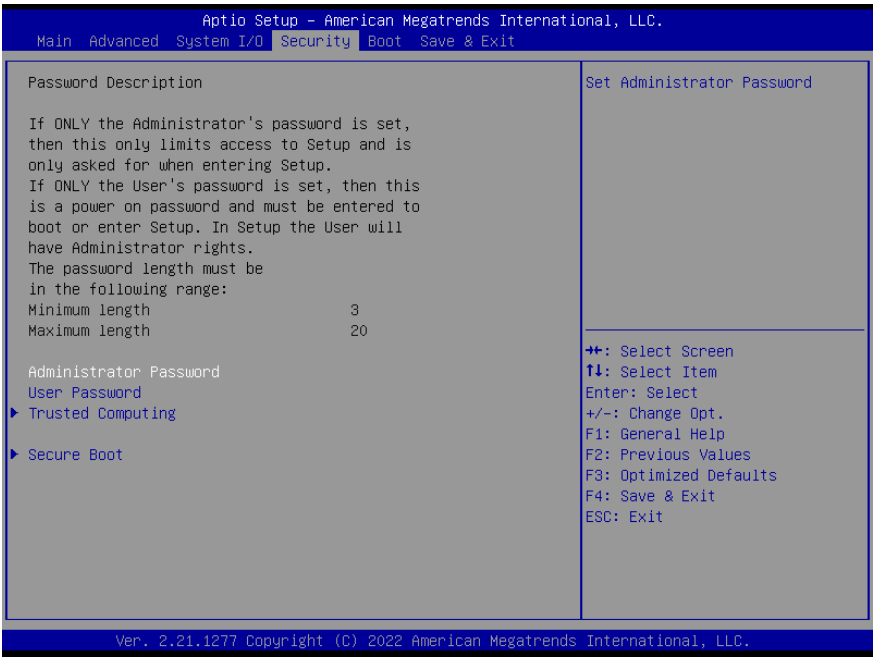
Options Summary		
Use This Device	Disabled	
	Enabled	Optimal Default
Enable or Disable this Logical Device.		
Possible	Use Automatic Settings	Optimal Default
	IO=3E8h; IRQ=4;	
	IO=2F8h; IRQ=3;	
Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.		
Mode	RS232	Optimal Default
	RS422	
	RS485	
UART RS232, 422, 485 selection.		

3.5.5 Serial Port Console Redirection



Options Summary		
COM0/1/2 Console Redirection	Disabled	Default
	Enabled	
Console Redirection Enable or Disable.		
Console Redirection EMS	Disabled	Default
	Enabled	
Serial Port for Out-of-Band Management/ Windows Emergency Management Services (EMS) Console Redirection Enable or Disable.		

3.6 Setup Submenu: Security



Change User/Supervisor Password

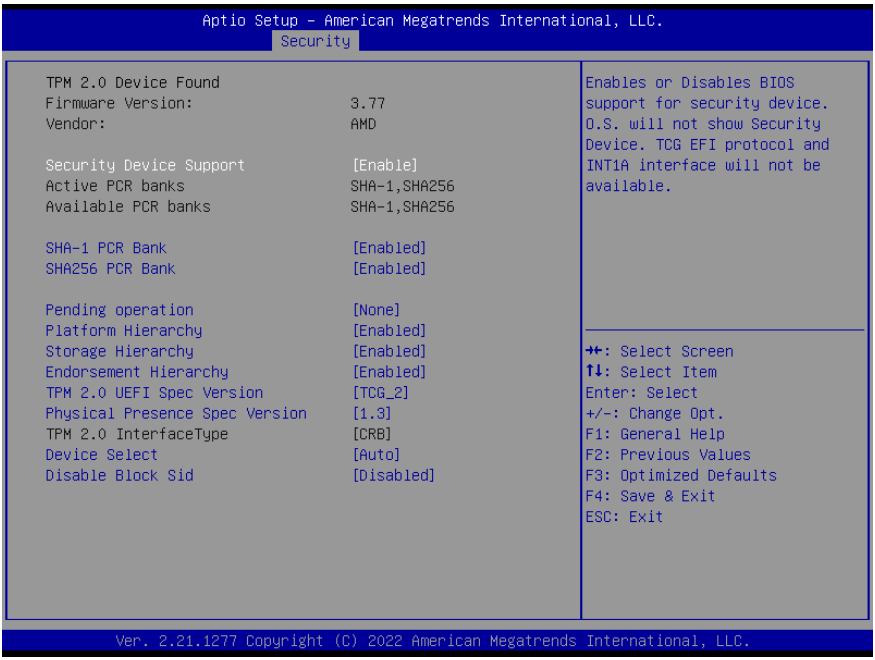
You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

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.

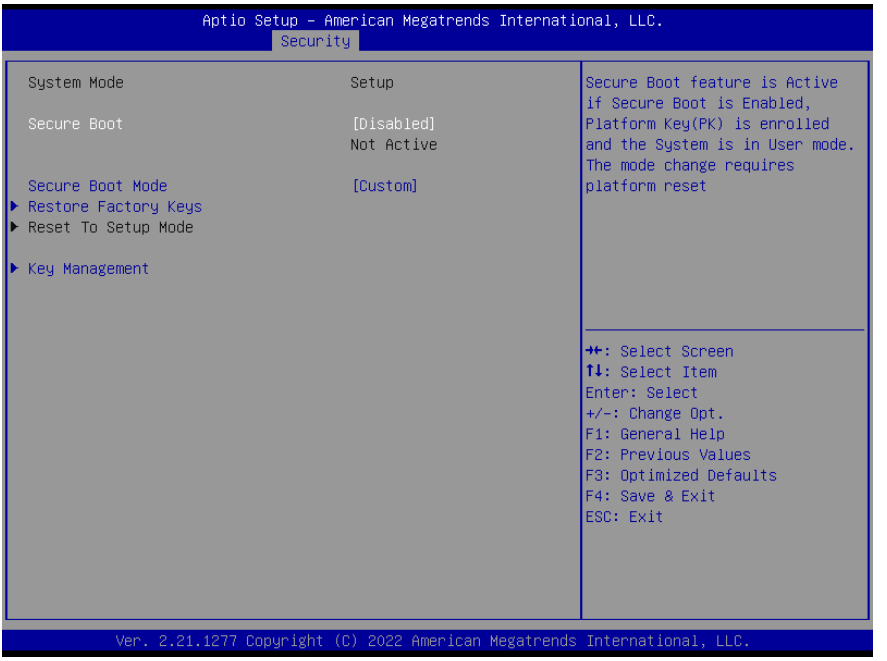
3.6.1 Trusted Computing



Options Summary		
Security Device Support	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable BIOS support for security device.		
SHA-1 PCR Bank	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SHA-1 PCR Bank.		
SHA256 PCR Bank	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SHA256 PCR Bank.		
Pending operation	None	Optimal Default,
	TPM Clear	
Schedule an operation for the security device.		
Platform Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default

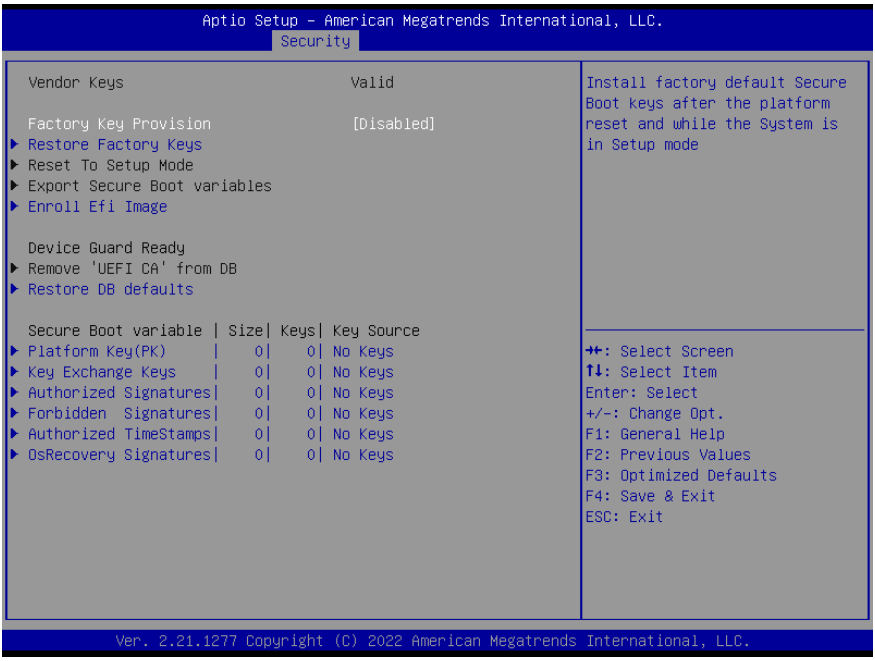
Options Summary		
Enable or Disable Platform Hierarchy.		
Storage Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Storage Hierarchy.		
Endorsement Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Endorsement Hierarchy.		
TPM2.0 UEFI Spec Version	TCG_1_2	
	TCG_2	Optimal Default
Select the TCG2 Select Version Support.		
Physical Presence Spec Version	1.2	
	1.3	Optimal Default
Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3.		
Device select	TPM 1.2	
	TPM 2.0	
	Auto	Optimal Default
Device select.		
Disable Block Sid	Enabled	
	Disabled	Optimal Default
Override to allow SID authentication in TCG Storage device.		

3.6.2 Secure Boot

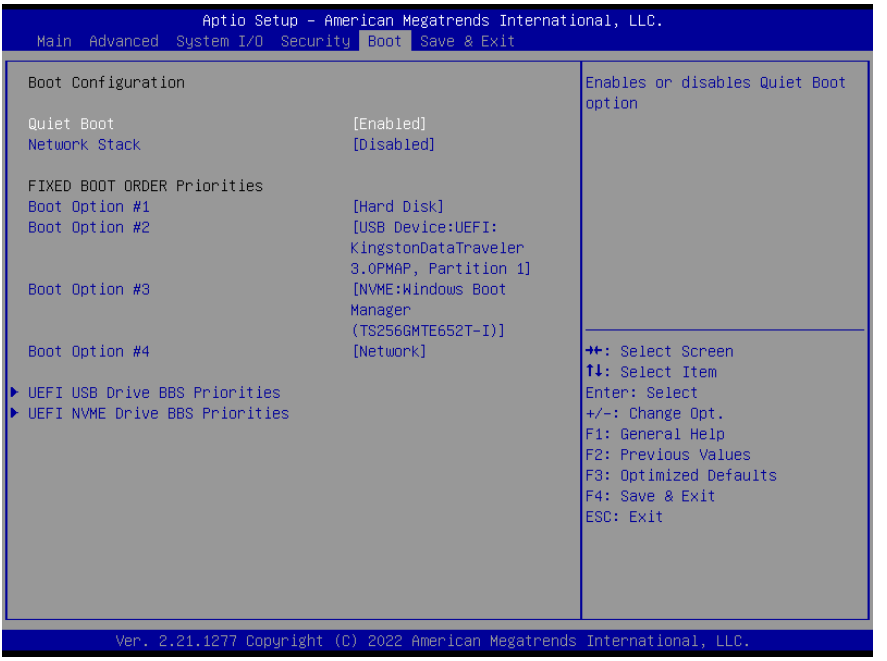


Options Summary		
Secure Boot	Disabled	Default
	Enabled	
Secure Boot feature is Active if Secure is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset.		
Secure Boot Mode	Standard	
	Custom	Default
Secure Boot mode selector.		

3.6.2.1 Key Management

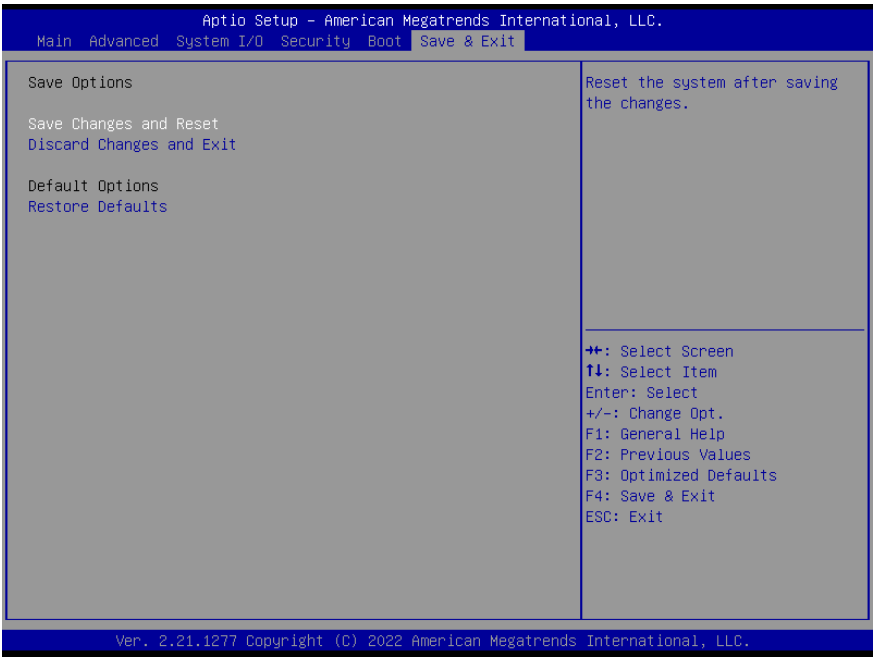


3.7 Setup Submenu: Boot



Options Summary		
Quiet Boot	Disabled	
	Enabled	Default
Enable or Disable showing boot logo.		
Network Stack	Disabled	Default
	Enabled	
Enable/Disable UEFI Network Stack.		
Boot Option #1	Hard Disk	Default
Boot Option #2	USB Device	Default
Boot Option #3	NVME	Default
Boot Option #4	Network	Default
Sets the system boot order for FIXED BOOT ORDER Priorities.		

3.8 Setup Submenu: Save & Exit



Chapter 4

Driver Installation

4.1 Driver Download/Installation

Drivers for the de next-V2K8 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-v2k8

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

Step 1 – Install Chipset Driver

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

Step 2 – Install Graphics Driver

1. Open the **Graphics Driver** folder
2. Run the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 3.1 – Install LAN Driver (Windows 10)

1. Open the **LAN Driver** folder and select **Install_Win10_10056_03222022.zip**
2. Run the **Install_Win10_10056_03222022.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 3.2 – Install LAN Driver (Intel®)

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

Step 3.2.1 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 3.2.2 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

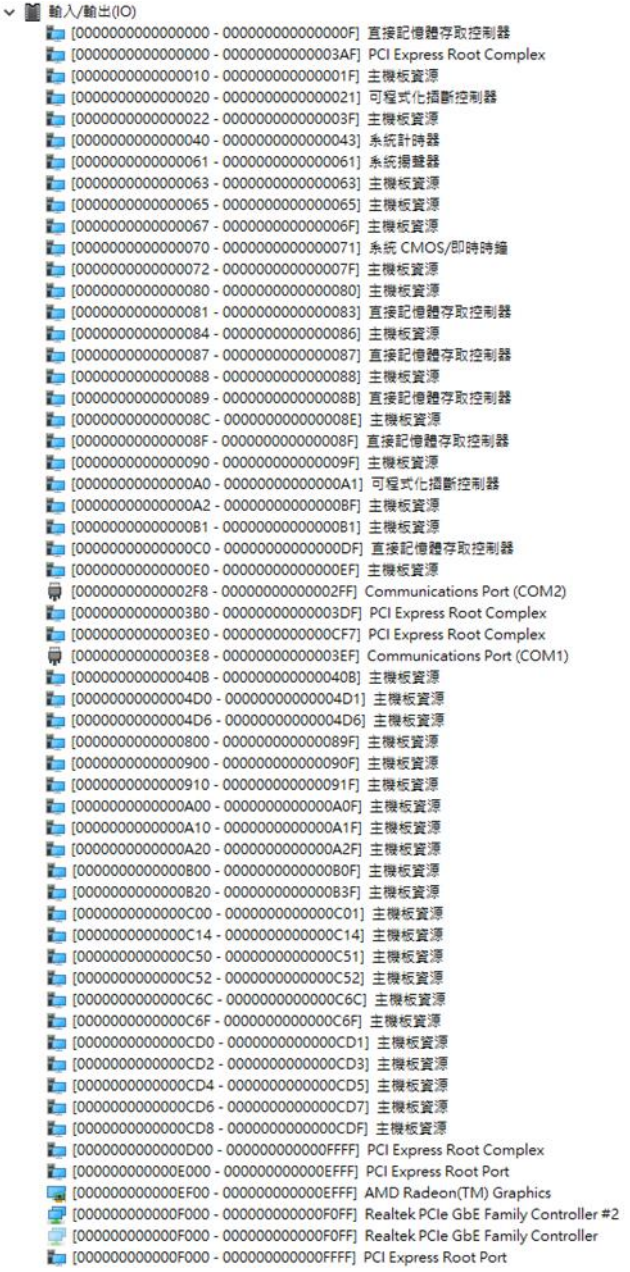
Step 4 – Install Linux Peripheral Drivers

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.

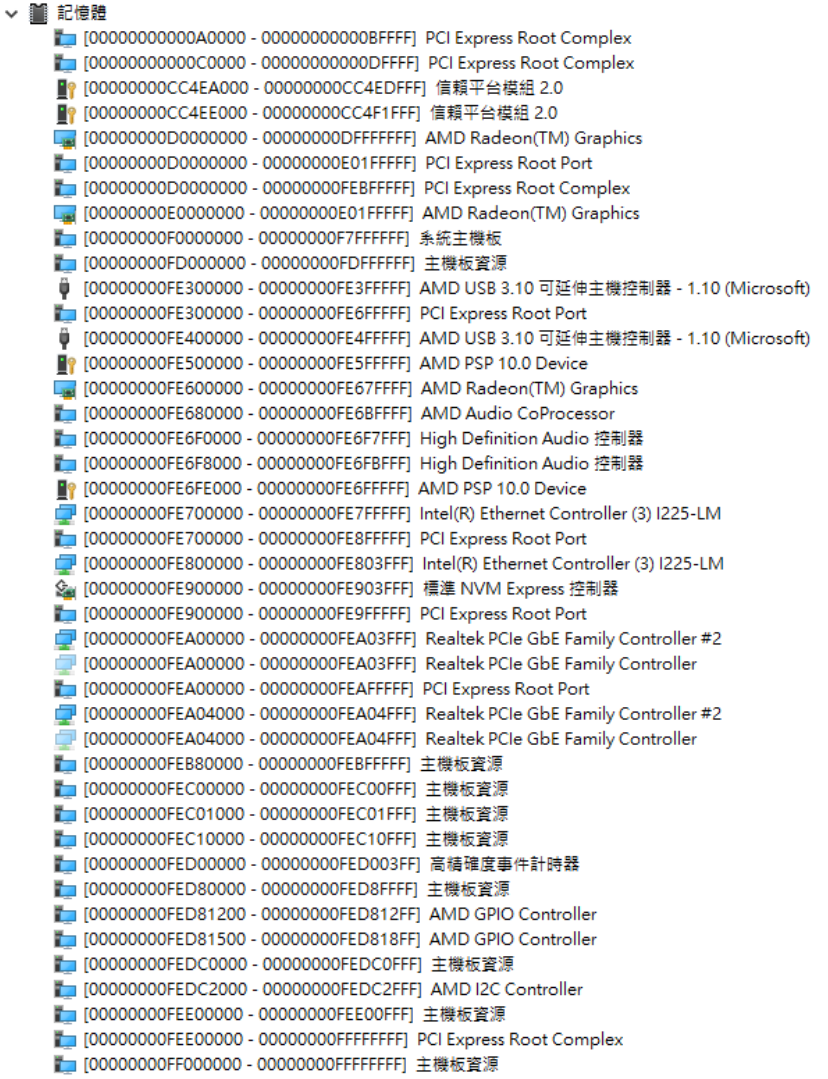
Appendix A

I/O Information

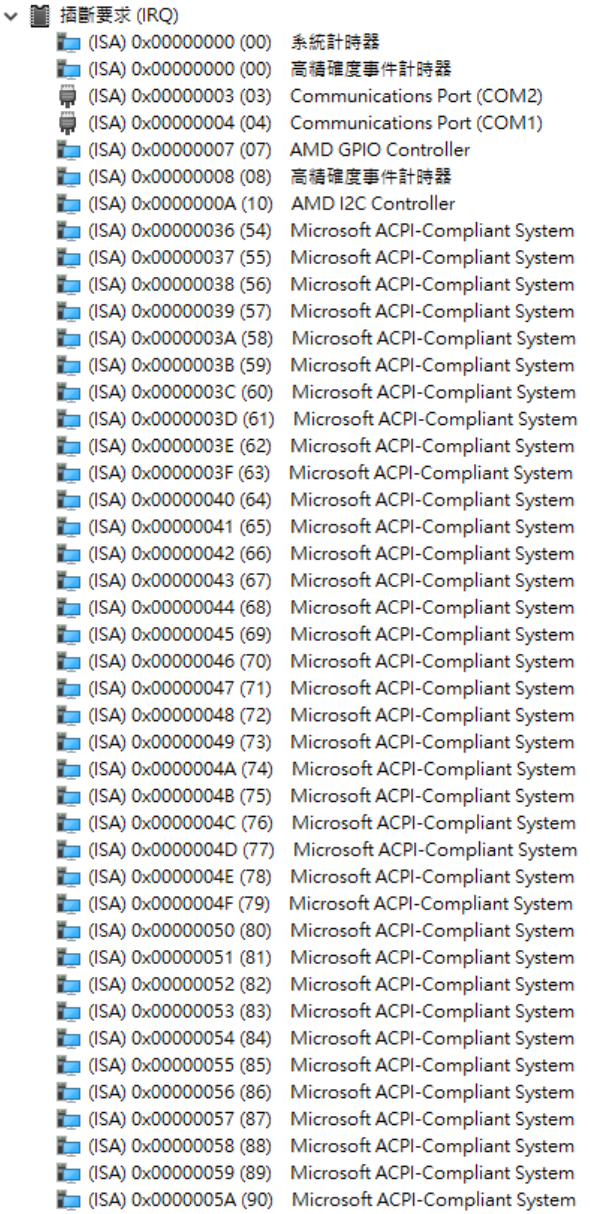
A.1 I/O Address Map



A.2 Memory Address Map



A.3 IRQ Mapping Chart



(PCI) 0xFFFFFFD2 (-46) Intel(R) Ethernet Controller (3) I225-LM
(PCI) 0xFFFFFFD3 (-45) Intel(R) Ethernet Controller (3) I225-LM
(PCI) 0xFFFFFFD4 (-44) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFD5 (-43) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFD6 (-42) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFD7 (-41) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFD8 (-40) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFD9 (-39) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFDA (-38) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFDB (-37) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFDC (-36) AMD Radeon(TM) Graphics
(PCI) 0xFFFFFFDD (-35) AMD Radeon(TM) Graphics
(PCI) 0xFFFFFFDE (-34) AMD Radeon(TM) Graphics
(PCI) 0xFFFFFFDF (-33) AMD Radeon(TM) Graphics
(PCI) 0xFFFFFFE0 (-32) Realtek PCIe GbE Family Controller #2
(PCI) 0xFFFFFFE1 (-31) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFE2 (-30) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFE3 (-29) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFE4 (-28) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFE5 (-27) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFE6 (-26) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFE7 (-25) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFE8 (-24) AMD USB 3.10 可延伸主機控制器 - 1.10 (Microsoft)
(PCI) 0xFFFFFFE9 (-23) AMD PSP 10.0 Device
(PCI) 0xFFFFFFEA (-22) AMD PSP 10.0 Device
(PCI) 0xFFFFFFEB (-21) 標準 NVM Express 控制器
(PCI) 0xFFFFFFEC (-20) 標準 NVM Express 控制器
(PCI) 0xFFFFFFED (-19) 標準 NVM Express 控制器
(PCI) 0xFFFFFFEE (-18) 標準 NVM Express 控制器
(PCI) 0xFFFFFFEF (-17) 標準 NVM Express 控制器
(PCI) 0xFFFFFFF0 (-16) 標準 NVM Express 控制器
(PCI) 0xFFFFFFF1 (-15) 標準 NVM Express 控制器
(PCI) 0xFFFFFFF2 (-14) 標準 NVM Express 控制器
(PCI) 0xFFFFFFF3 (-13) 標準 NVM Express 控制器
(PCI) 0xFFFFFFF4 (-12) 標準 NVM Express 控制器
(PCI) 0xFFFFFFF5 (-11) 標準 NVM Express 控制器
(PCI) 0xFFFFFFF6 (-10) 標準 NVM Express 控制器
(PCI) 0xFFFFFFF7 (-9) 標準 NVM Express 控制器
(PCI) 0xFFFFFFF8 (-8) 標準 NVM Express 控制器
(PCI) 0xFFFFFFF9 (-7) 標準 NVM Express 控制器
(PCI) 0xFFFFFFFA (-6) 標準 NVM Express 控制器
(PCI) 0xFFFFFFFB (-5) PCI Express Root Port
(PCI) 0xFFFFFFFC (-4) PCI Express Root Port
(PCI) 0xFFFFFFFD (-3) PCI Express Root Port
(PCI) 0xFFFFFFFE (-2) PCI Express Root Port

Appendix B

Mating Connector & Cable List

B.1 List of Mating Connectors and Cables

Conn. Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model no		
JCOM1	Conn: USB2.0 x 4 GPIO 8-bit COM x 2	JST	SHDR-40V-S-B	Cable 40-Pin, de next cable for USB2.0 x 4, COM Port x 2, GPIO 8-bit	170X000512
				Cable 40-Pin, de next cable for USB2.0 x 4, COM Port x 2, GPIO 8-bit, adaptor card connector	170X000577
JFP1	Front Panel Conn	Molex	51021-1000	Power Button Cable	170X000603
JSATA1	SATA Conn	Molex	887505318	SATA Cable, 180D.Length 20cm	1709070200
JSATAP1	SATA Power Conn	Molex	51021 0200	SATA Power Cable	170X000322
JFAN1	FAN	Molex	51021-0400	N/A	N/A
JEDP1	eDP Conn	KEL	SSL20-30S	N/A	N/A
JRTC1	RTC Battery Conn	Molex	51021-0200	Lithium Battery w/cable 90mm.	17501130

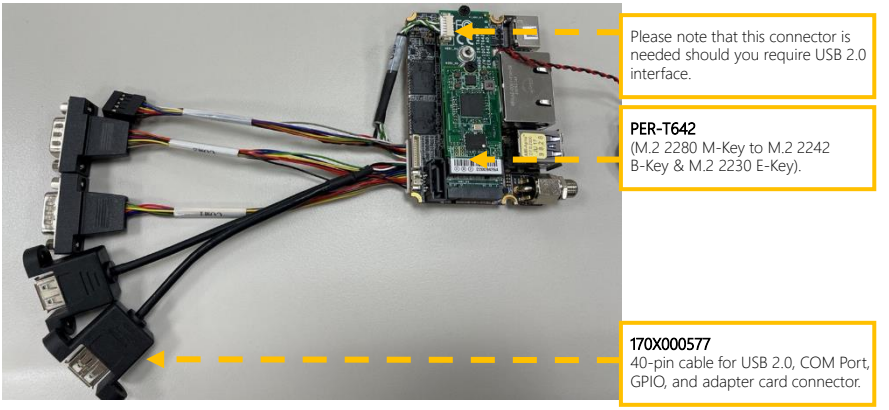
Appendix C

Peripheral Device Installation

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

Note: PER-T642 is only supported by de next-V2K8-A11.

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

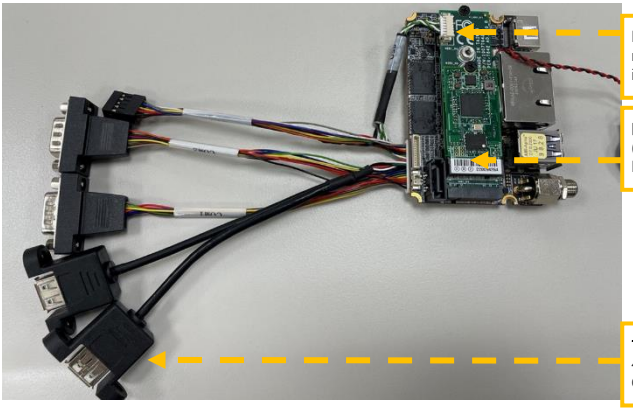

Aptio Setup – AMI
Main Advanced System I/O Security Boot Save & Exit
System I/O
PCI Express Configuration
Storage Configuration
HD Audio Configuration
Digital IO Port Configuration
Legacy Logical Devices Configuration
Serial Port Console Redirection
PCI Express Configuration settings
→←: Select Screen
↑↓: 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) 2021 AMI


Aptio Setup – AMI
System I/O
PCH PCIe Configuration
JM2M1 Port Select [PCIE Controller is one x2]
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]
PCIE Controller Selection
→←: Select Screen
↑↓: 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

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

Note: PER-T643 is only supported by de next-V2K8-A1

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

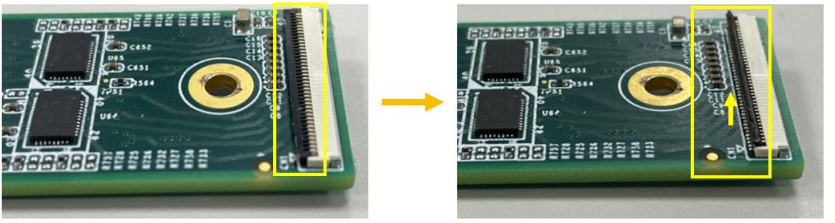

Aptio Setup – AMI
Main Advanced System I/O Security Boot Save & Exit
System I/O
PCI Express Configuration
Storage Configuration
HD Audio Configuration
Digital IO Port Configuration
Legacy Logical Devices Configuration
Serial Port Console Redirection
PCI Express Configuration settings
→←: Select Screen
↑↓: 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) 2021 AMI


Aptio Setup – AMI
System I/O
PCH PCIe Configuration
JM2M1 Port Select [PCIE Controller is one x2]
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]
PCIE Controller Selection
→←: Select Screen
↑↓: 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

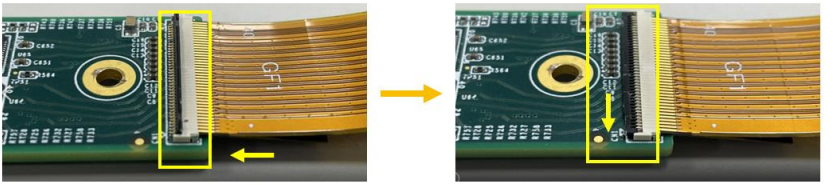
C.3 PER-R41P (PER-R41P.PCIe[x4] Adapter Kit) Installation

Note: Please follow these instructions and ensure the direction of adaptor kit corresponds to the below pictures prior to powering up de next-V2K8 board. Any installation error will cause critical damage to the de next-V2K8 board and/or adapter kit.

Step 1: Flip up the black plastic on the PER-R41P adapter card.

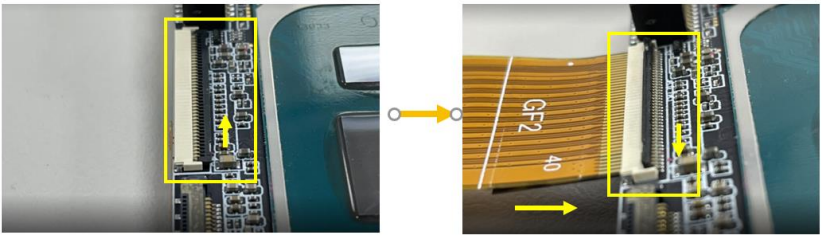


Step 2: Plug the FPC cable (GF1) into the connector, and flip down the black plastic.



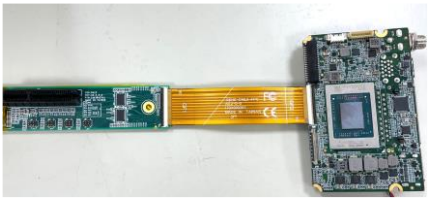
Step 3: Flip up the black plastic on the de next-V2K8 board.

Plug the FPC cable (GF2) into the connector on the de next-V2K8 board and flip down the black plastic to affix the FPC cable.

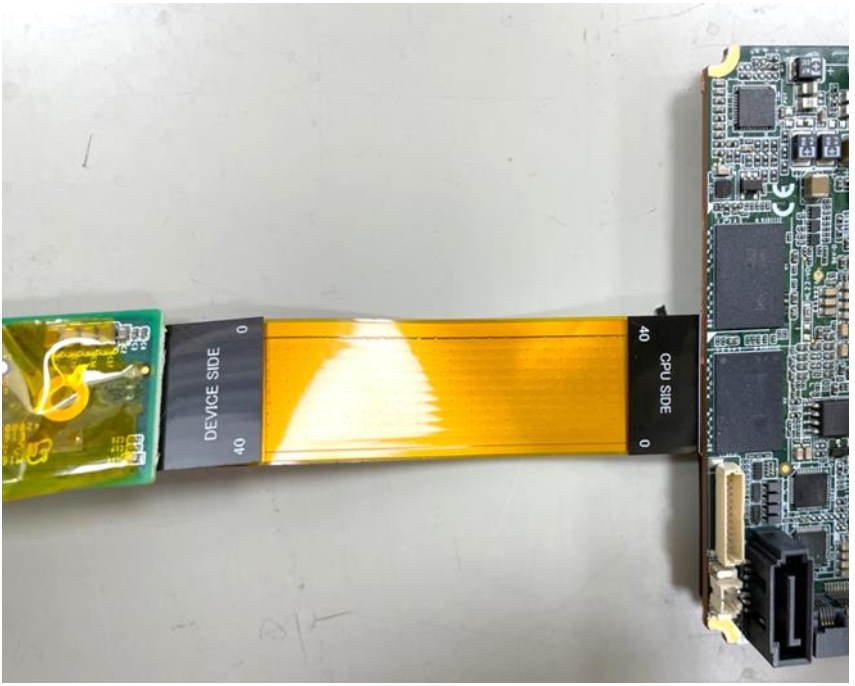


Step 4: Check the FPC Installation again before powering up the board.

(A) Top side:

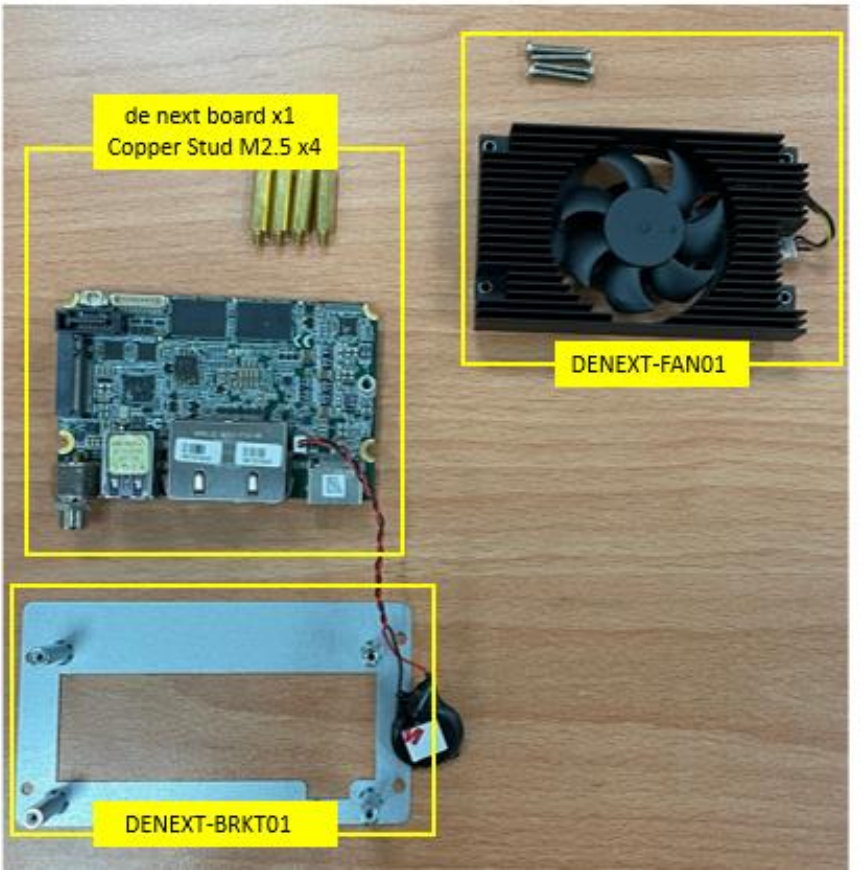


(B) Bottom Side:

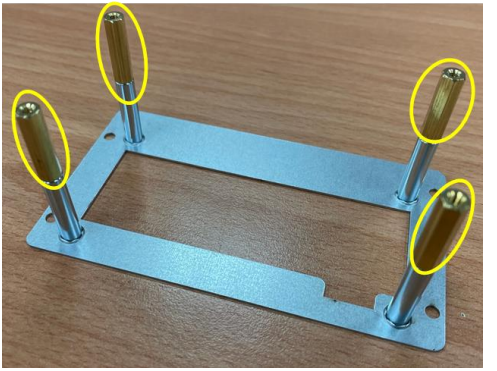


C.4 CPU Cooler Installation

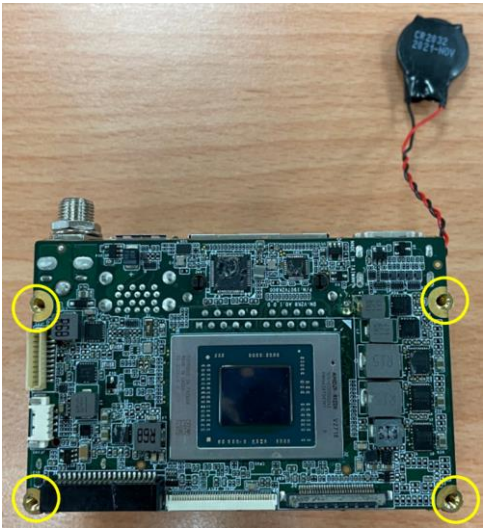
Before beginning the installation process, please ensure you have all of the necessary components, as shown below.



Step 1: Establish the board height required. If necessary, add M2.5 copper studs to the four (4) corners of the pillars.

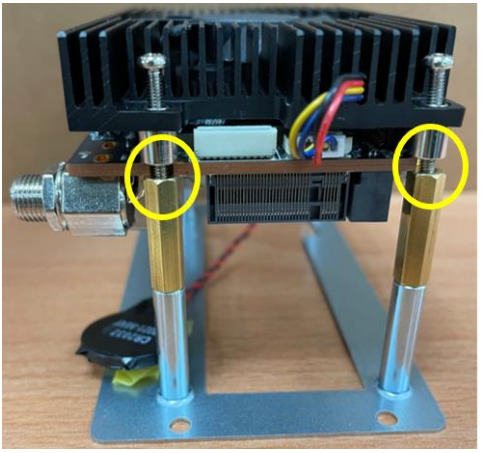


Step 2: Prepare the de next board, place the board onto the bracket and ensure the four (4) holes of the board correspond with the four (4) pillar holes of the bracket.



Step 3: Place the CPU Cooler (DENEXT-FAN01) onto the board, and make sure the four (4) holes of the CPU cooler correspond with the four (4) holes of the board.
(Please ensure the components of the board do not come into contact with the CPU fan pillars, to avoid damage to the board).

Step 4: Insert the four (4) CPU cooler screws into the four (4) holes and ensure the screws reach the pillars of the bracket.



Step 5: Repeat the steps as below and start to tighten the screws until the CPU Cooler is secure.

(Corner 1 → Corner 2 → Corner 3 → Corner 4 → Corner 1 → Corner 2 → Corner 3 → Corner 4…etc.)