

# QBiP-N97A

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3.5" SBC Boards

## Copyright Notice

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# Packing List

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

Item	Quantity
QBiP-N97A	1
SATA power cable	1

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



## About this Document

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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 [GIGAIPC.com](http://GIGAIPC.com) for the latest version of this document.

# Safety Precautions

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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

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### **Warning!**



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  
GIGAIPC Main Board/ Daughter Board/ Backplane

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	○	○	○	○	○	○

○: 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。

## China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products  
GIGAIPC Main Board/ Daughter Board/ Backplane

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

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

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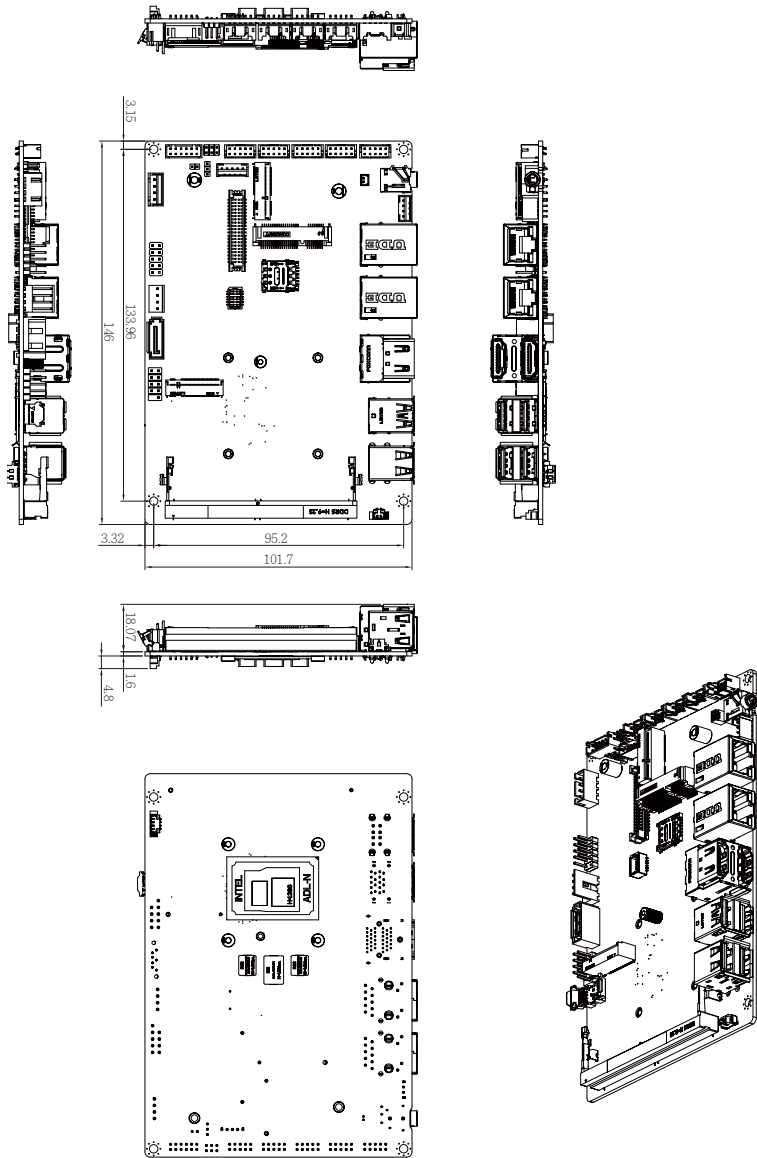


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# Chapter 1

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## Chapter 1 - Product Specifications QBiP-N97A



## 1.1 Specifications- QBiP-N97A

Motherboard	QBiP-N97A
Form Factor	3.5" SBC 146W x 101.7D (mm)
CPU	Intel Processor N97 Intel 7, 4 cores, up to 3.60 GHz TDP 12W
Socket	1 x FCBGA1264
Memory	1 x DDR5 SO-DIMM socket, Max. Capacity 16 GB Support Single Channel DDR5 4800 MHz memory modules
Ethernet	2 x 2.5GbE LAN Ports (Intel® I225V)
Video	Integrated Graphics Processor - Intel® UHD Graphics support: 2 x HDMI 2.0 port, supporting a maximum resolution of 4096x2160 @60Hz 1 x LVDS port, supporting a maximum resolution of 1920x1200 @60Hz  (3 independent display outputs)
Audio	Realtek® ALC897
Storage	1 x SATA 6Gb/s Port
Expansion Slots	1 x 2280 M.2 M-Key (PCIe x2) 1 x 2230 M.2 E-Key 1 x Full-size mini PCIe with SIM slot
Internal I/O	1 x 4-pin box power connector (DC in +12V~36VDC) 1 x SATA Power header 1 x CPU fan header 1 x Front panel header 1 x Front panel audio header 1 x 2W Speaker out header 2 x USB 2.0 headers 1 x COM header (RS-232/422/485 & RI/5V/12V) 1 x COM header (RS-232/422/485) 2 x COM headers (RS-232) 1 x Backlight Control header 1 x AT/ATX mode select jumper 1 x GPIO (8-bits) & SMBus header 1 x Buzzer header

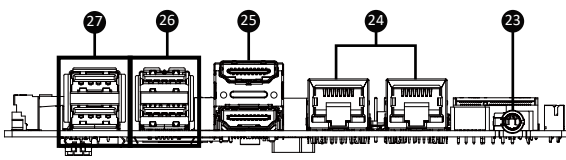
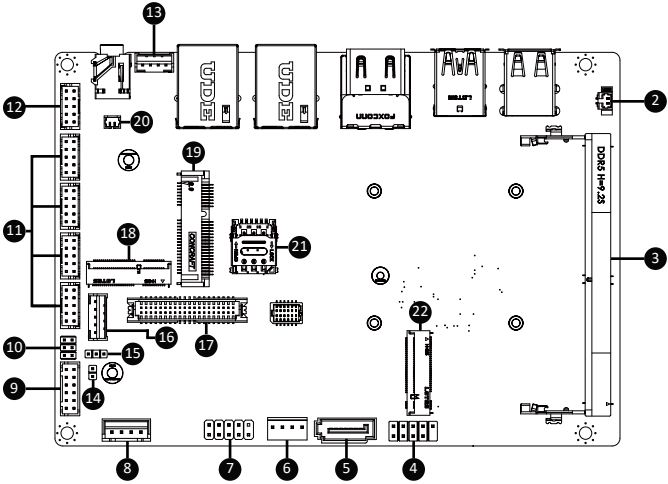
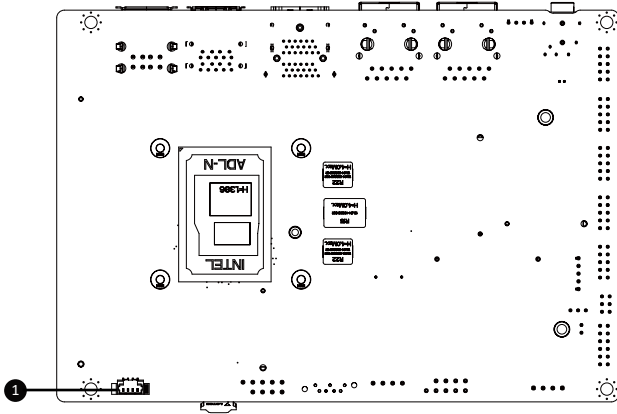
Motherboard	QBIP-N97A
Rear I/O	1 x Headphone Jack 2 x HDMI 2 x RJ45 LAN Ports 2 x USB 3.2 Gen 2x1 2 x USB 2.0
TPM	Onboard TPM 2.0 security chip INFINEON SLB9670VQ2.0
OS Compatibility	Windows 10/11 (x64)
Operating Properties	Operating temperature: 0°C to 60°C Operating humidity: 0-90% (non-condensing) Non-operating temperature: -40°C to 85°C Non-operating humidity: 0%-95% (non-condensing)

# Chapter 2

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## Chapter 2 – Hardware Information

# 2.1 Jumpers and Connectors



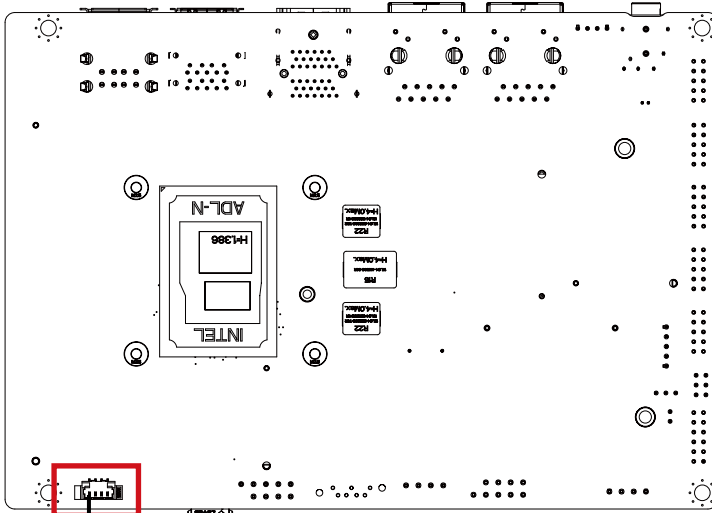
No	Code	Description
1	FAN	FAN connector
2	BATTERY	Battery cable connector
3	SODIMMA	DDR5 SO-DIMM socket
4	FUSB20	USB 2.0 header
5	SATA0	SATA 6Gb/s connector
6	SATAPW	SATA power connector
7	SYS_PANEL	Front panel header
8	DC_IN	DC IN 1x4pin power connector
9	GPIO_CNT	General Purpose input/output header
10	JCOM1	RI# pin RI#/5V/12V Select jumper for COM1 port
11	COM1 COM2 COM3 COM4	Serial port header COM1 : RS-232/422/485 & RI/5V/12V COM2 : RS-232/422/485 COM3, COM4 : RS-232
12	FP_AUDIO	Front panel audio header
13	SPKR	Speaker out connector
14	ME	ME Disable jumper
15	AT_CN	AT/ATX mode select jumper
16	BKL_CN	Backlight Control connector
17	LVDS	LVDS connector
18	M2E	M.2 slot, 2230 E-key
19	MPCIE	Mini-PCIe slot
20	BUZZER	Buzzer header
21	SIM_CARD	3G/4G SIM Slot



No	Code	Description
22	M2M	M.2 slot, 2280 M-key
23	HP	Line out connector
24	LAN1, LAN2	LAN connector
25	HDMI_21	HDMI connector
26	USB32	USB 3.2 Gen 2x1 connector
27	USB2	USB 2.0 connector

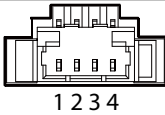
## 2.2.1 FAN (FAN connector)

1



Pin 1

CPU/System FAN



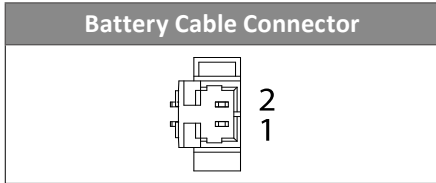
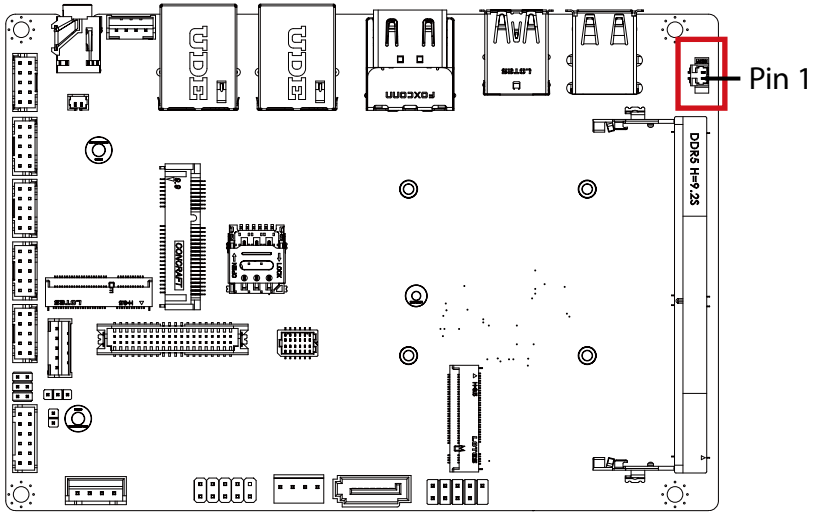
Connector PN	Vendor
85205-0470N	ACES
A1250WV-S-04PC	JOINT-TECH

Connector type
1x4pin header, pitch 1.25mm

Pin No.	Definition
1	GND
2	12V
3	Detect
4	Speed Control

## 2.2.2 BATTERY

2

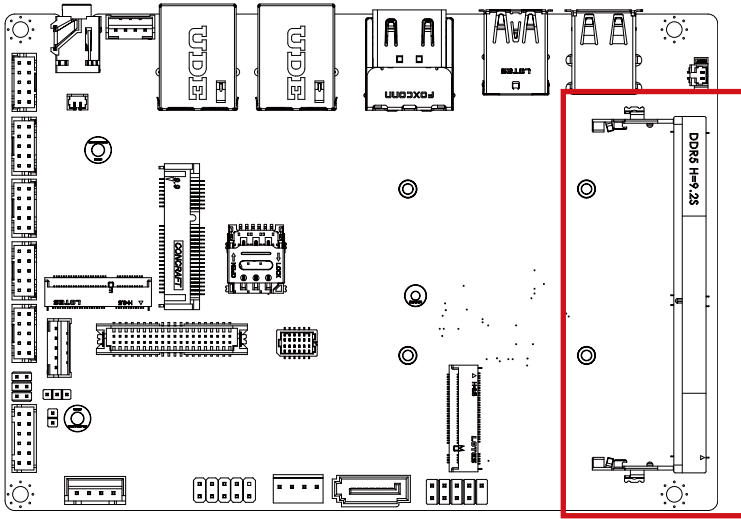


Pin No.	Definition
1	3V
2	GND

Connector PN	Vendor
85205-0270L	ACES
A1250WV-S-02PC	JOINT-TECH
Connector type	
1x2pin header, pitch 1.25mm	

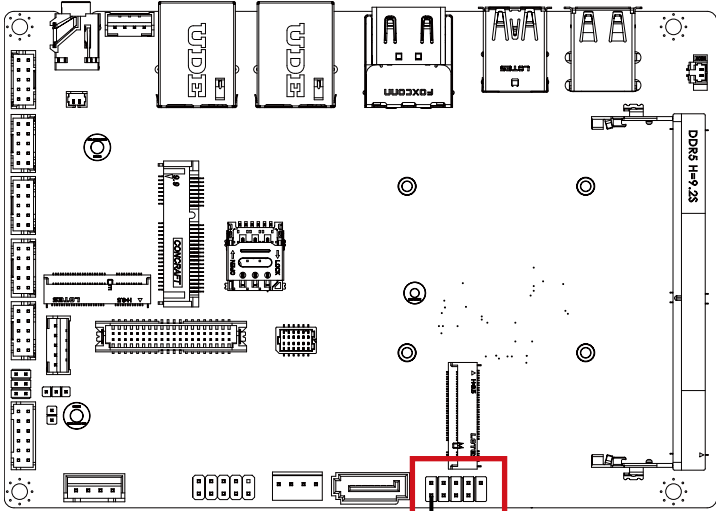
## 2.2.3 SODIMMA (DDR5 SO-DIMM socket)

3



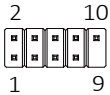
## 2.2.4 FUSB20 (USB 2.0 header)

4



Pin 1

USB 2.0 Header



Connector PN

210-92-05GB04

PH10R53BAZ009

Vendor

PINREX

HORNGTONG

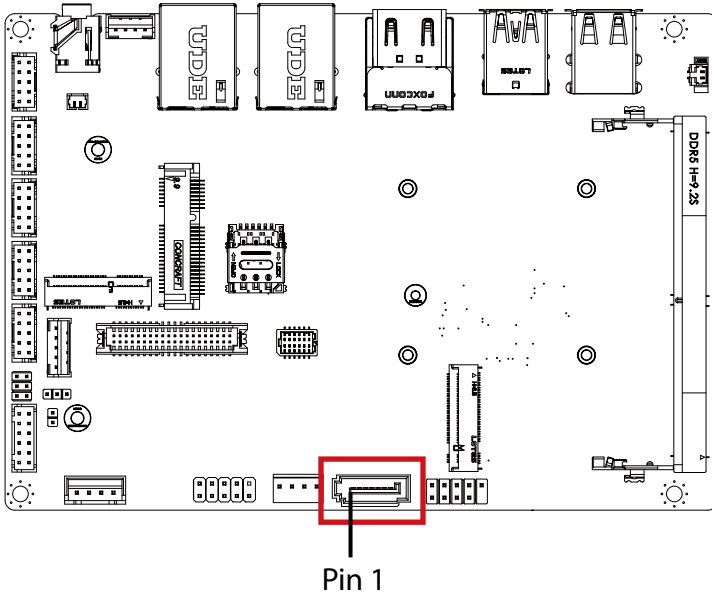
Connector type

2x5pin header, pitch 2.54mm

Pin No.	Definition
1	5V
2	5V
3	D2n
4	D1n
5	D2p
6	D1p
7	GND
8	GND
9	No Pin
10	No Connect

## 2.2.5 SATA0 (SATA 6Gb/s Connector)

5



SATA 6Gb/s Connector



Connector PN

WAT3M-07A1G3BU4W

ABA-SAT-054-S15

Vendor

WINWIN

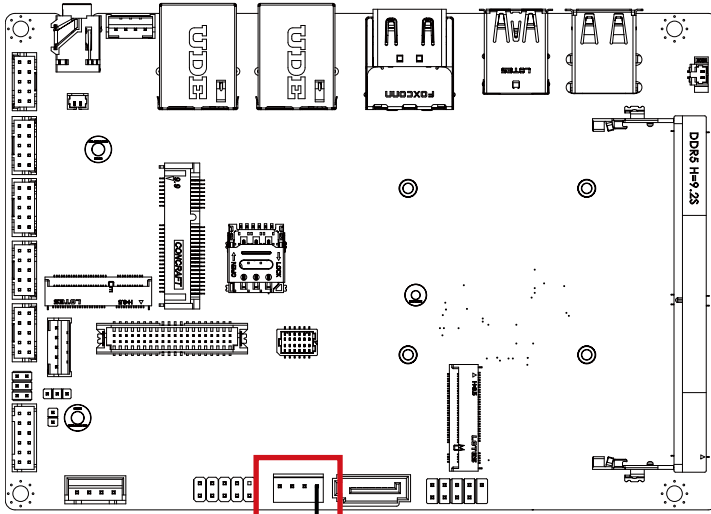
LOTES

Pin No. Definition

Pin No.	Definition
1	GND
2	TXp
3	TXn
4	GND
5	RXn
6	RXp
7	GND

## 2.2.6 SATAPW (SATA power connector)

6



Pin 1

### Hard Disk Power Connector



### Connector PN

743-91-045W00

### Vendor

PINREX

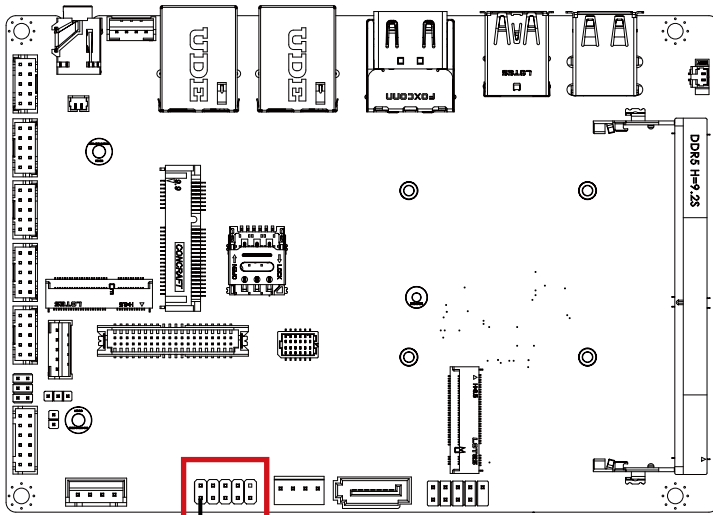
### Connector type

1x4pin header, pitch 2.54mm

Pin No.	Definition
1	12V
2	GND
3	GND
4	5V

## 2.2.7 SYS\_PANEL (Front panel header)

7



Pin 1

### System Panel Header



### Connector PN

210-92-05GW5W

### Vendor

PINREX

### Connector type

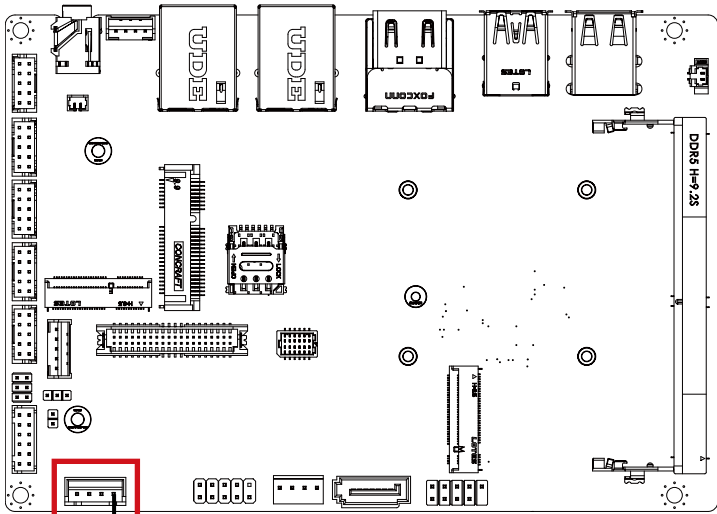
2x5pin header, pitch 2.54mm

Pin No.	Definition
1	HDD LED_p
2	Power LED_p
3	HDD LED_n
4	Power LED_n
5	GND
6	Power button_p
7	Reset Button
8	Power button_n
9	No Connect
10	No Pin

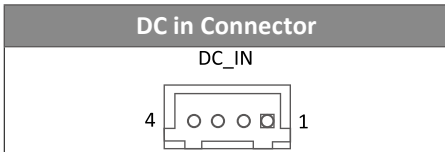


## 2.2.8 DC\_IN (DC IN 1x4pin power connector)

8



Pin 1



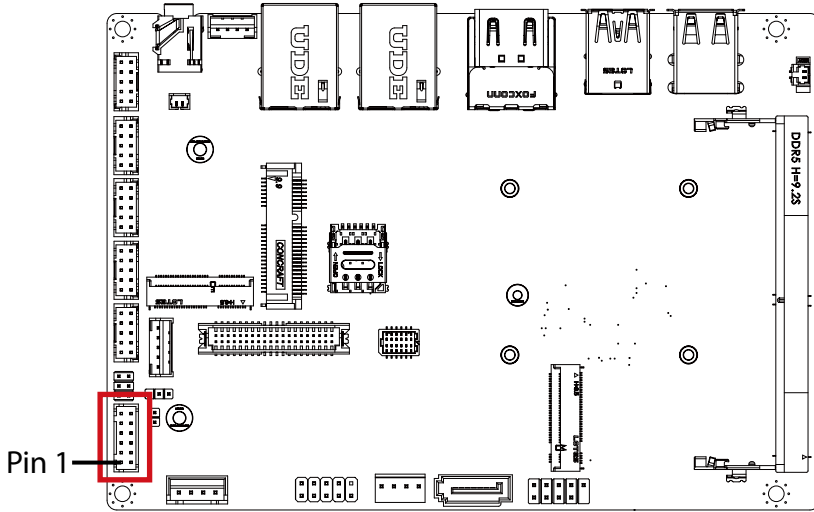
Connector PN	Vendor
753-81-04TW00	PINREX

Connector type
1x4pin header, pitch 2.5mm

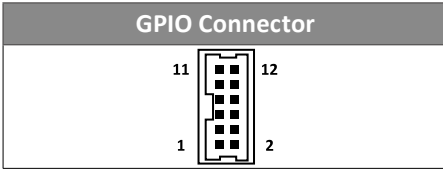
Pin No.	Definition
1	GND
2	DC in
3	DC in
4	GND

## 2.2.9 GPIO\_CNT (General Purpose input/output header)

9



Pin 1



Pin No.	Definition
1	GPIO-output_1
2	GPIO-input_1
3	GPIO-output_2
4	GPIO-input_2
5	GPIO-output_3
6	GPIO-input_3
7	GPIO-output_4
8	GPIO-input_4
9	SMBus Clock
10	SMBus DATA

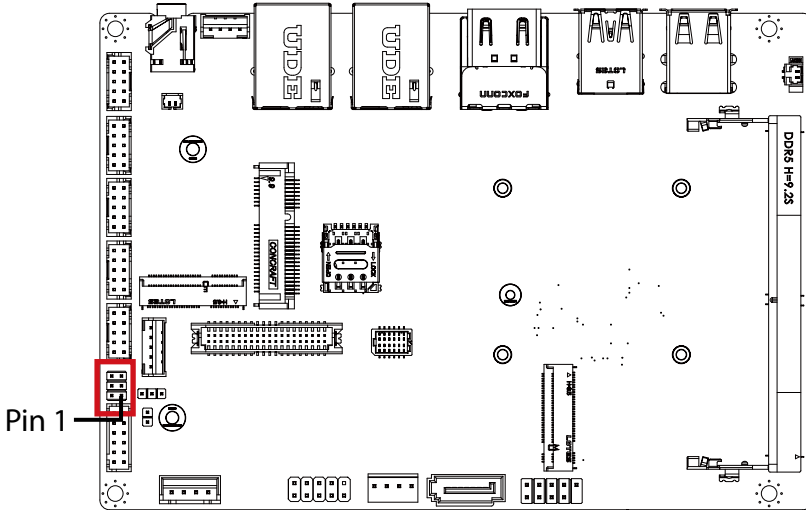
Pin No.	Definition
11	5V
12	GND

Connector PN	Vendor
725-81-12TW00	PINREX

Connector type
2x6pin header, pitch 2.0mm

## 2.2.10 JCOM1 (RI# pin RI#/5V/12V Select jumper for COM1 Port)

10

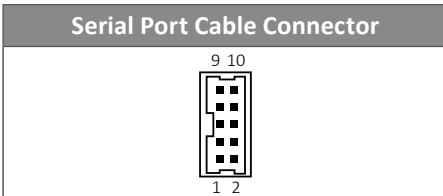
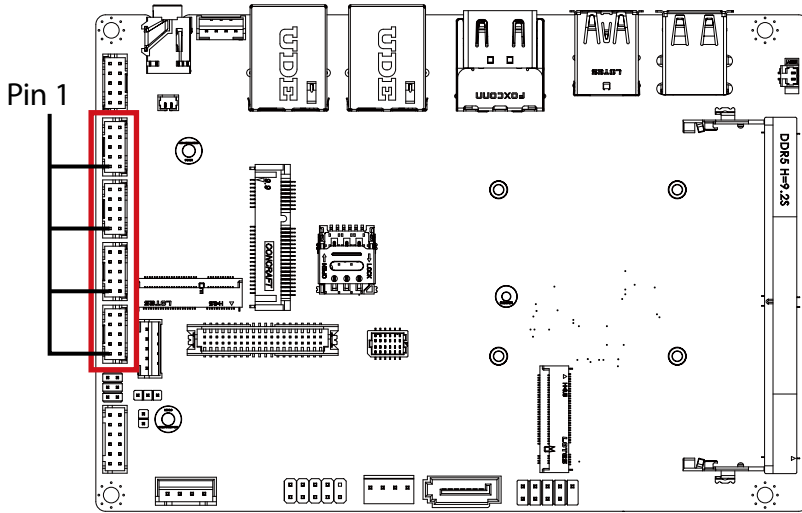


JCOM1 Jumper Select	
<p>6 5 2 1</p>	<p>1-2 Close: 5V (Power COM)</p>
<p>6 5 2 1</p>	<p>3-4 Close: RI (Stand COM)</p>
<p>6 5 2 1</p>	<p>5-6 Close: 12V (Power COM)</p>

Connector PN	Vendor
220-97-03GB01	PINREX
PH06N53BAZ000	HORNGTONG
Connector type	
2x3pin header, pitch 2.0mm	

## 2.2.11 COM1, COM2, COM3, COM4 (Serial port header)

11



Connector PN	Vendor
725-81-10TW00	PINREX

Connector type
2x5pin header, pitch 2.0mm

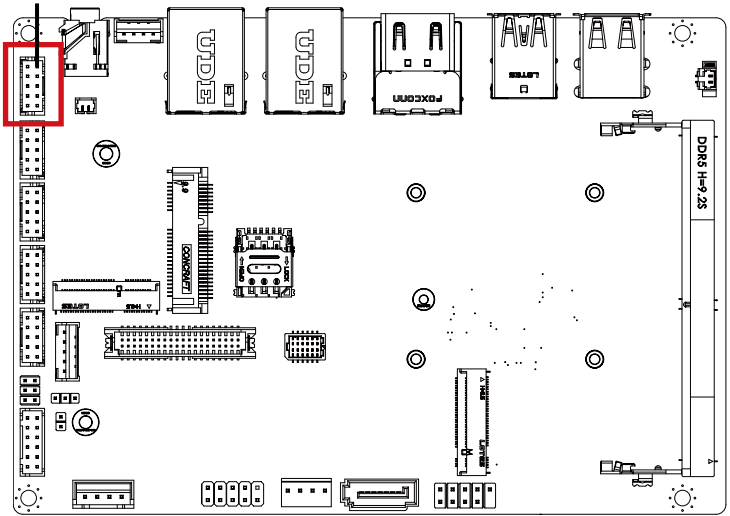
Pin No.	RS-232	RS-422 Full Duplex	RS-485 Half Duplex
1	RXD	TXD+	D+
2	DCD	TXD-	D-
3	DTR	RXD-	-
4	TXD	RXD+	-
5	DSR	-	-
6	GND	-	-
7	CTS	-	-
8	RTS	-	-
9	No Connect	-	-
10	Ri/5V/12V	-	-

**Note :**  
 COM1 : Support RS-232/422/485 & Ri/5V/12V  
 For Ri/5V/12V jumper setting, please see P. 29  
 COM2 : Support RS-232/422/485  
 COM3, COM4 : Support RS-232 only

## 2.2.12 FP\_AUDIO (Front panel audio header)

12

Pin 1



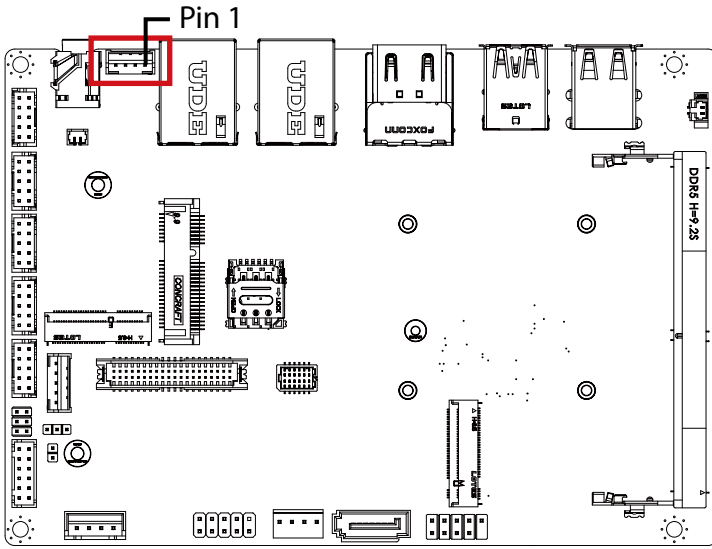
Front panel audio Connector	

Connector PN	Vendor
725-81-10TW00	PINREX
Connector type	
2x5pin header, pitch 2.0mm	

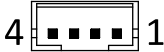
Pin No.	Definition
1	MIC-LEFT
2	GND
3	MIC-RIGHT
4	Detect
5	LINE-RIGHT
6	GND
7	JACKSENCE Detect
8	NC
9	LINE-LEFT
10	GND

## 2.2.13 SPKR (Speaker out connector)

13



Speaker out connector



Connector PN

A2001WV-04P146

Vendor

JOINT-TECH

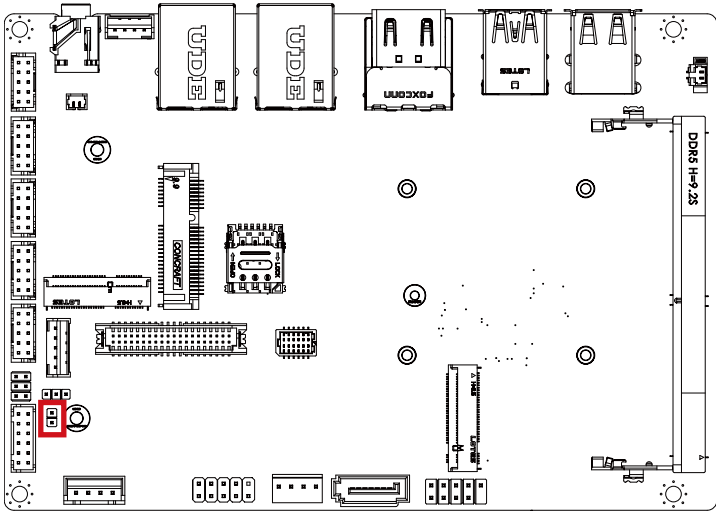
Connector type

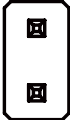
1x4pin header, pitch 2.0mm



Pin No.	Definition
1	Speaker Out L+
2	Speaker Out L-
3	Speaker Out R-
4	Speaker Out R+

## 2.2.14 ME (ME Disable jumper)

14



ME Disable Connector	
	

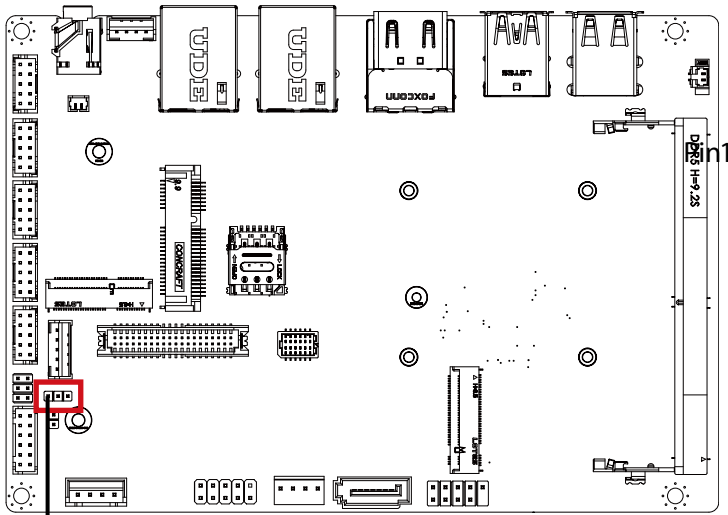
ME Disable jumper	
	Enable (Default setting)
	Disable

Connector PN	Vendor
220-96-02GBK1	PINREX

Connector type
1x2pin header, pitch 2.0mm


## 2.2.15 AT\_CN (AT/ATX mode select jumper)

15



Pin 1

### AT/ATX mode select jumper

1  3	1-2 Close : AT mode.
	2-3 Close : ATX mode. (Default setting)

### Connector PN

220-96-03GB01

### Vendor

PINREX

### Connector type

1x3pin header, pitch 2.0mm

### Pin No.

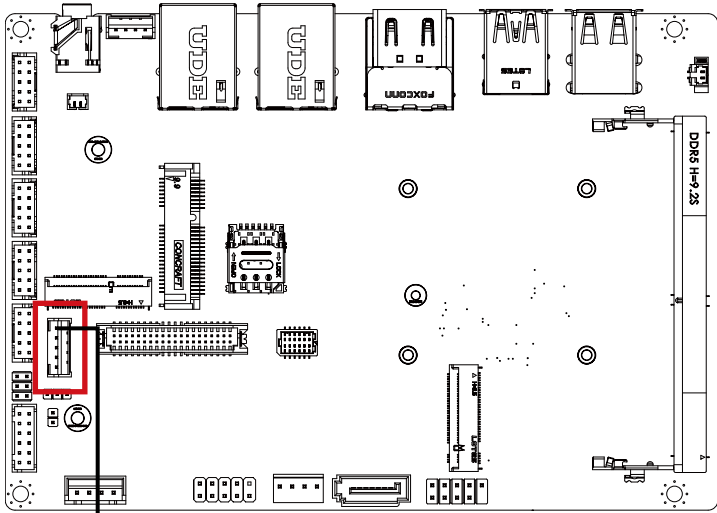
### Definition

1	AT MODE
2	Detect
3	ATX MODE



## 2.2.16 BKL\_CN (Backlight Control connector)

16



Pin 1

### Backlight Control connector



### Connector PN

721-81-05TW00

### Vendor

PINREX

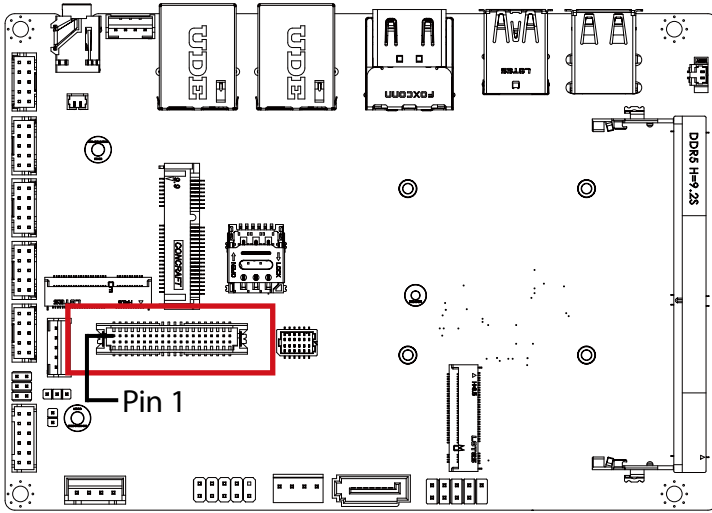
### Connector type

1x5pin header, pitch 2.0mm

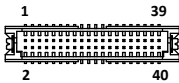
Pin No.	Definition
1	5V (optional 12V)
2	PWM
3	Backlight Enable
4	GND
5	12V

## 2.2.17 LVDS (LVDS connector)

17



LVDS Connector



Pin No.	Definition	Pin No.	Definition
17	A3-	37	GND
18	A2-	38	GND
19	GND	39	12V
20	GND	40	12V

For each model support LVDS function.  
But below model no need to add.  
A0~A3 is odd channel 0~3, A4~A7 is even channel.

Pin No.	Definition	Pin No.	Definition
1	3.3V	21	A5+
2	5V	22	A4+
3	3.3V	23	A5-
4	5V	24	A4-
5	SPE0	25	GND
6	SPE0	26	GND
7	GND	27	A7+
8	GND	28	A6+
9	A1+	29	A7-
10	A0+	30	A6-
11	A1-	31	GND
12	A0-	32	GND
13	GND	33	CLK2+
14	GND	34	CLK1+
15	A3+	35	CLK2-
16	A2+	36	CLK1-

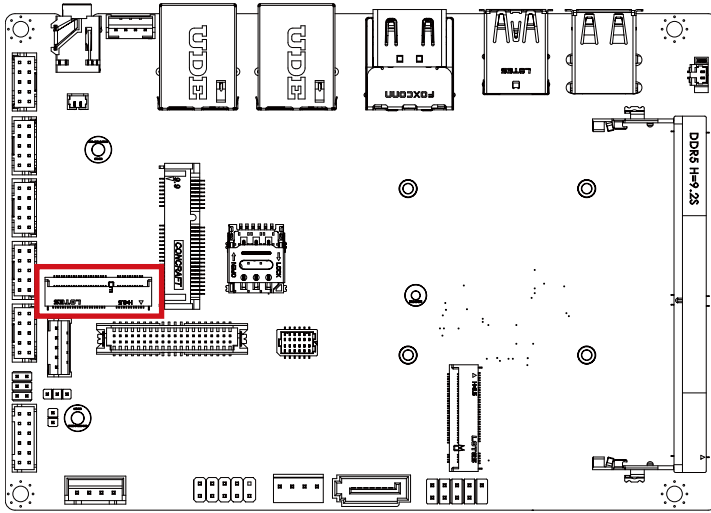
Connector PN	Vendor
712-76-40GWE0	PINREX
A1252WV-SF-2X20PD01	JOINT-TECH

Connector type
2x20pin header, pitch 1.25mm

**Note: \*The LVDS output connector of the unit is only intended to be connected to an UL/IEC/EN approval equipment with fire enclosure.**

## 2.2.18 M2E (M.2 slot, 2230 E-key)

18



**M.2 E Key Connector**

74  
75

2  
1

Pin No.	Definition	Pin No.	Definition
1	GND	2	3V
3	USB_Dp	4	3V
5	USB_Dn	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	NC		

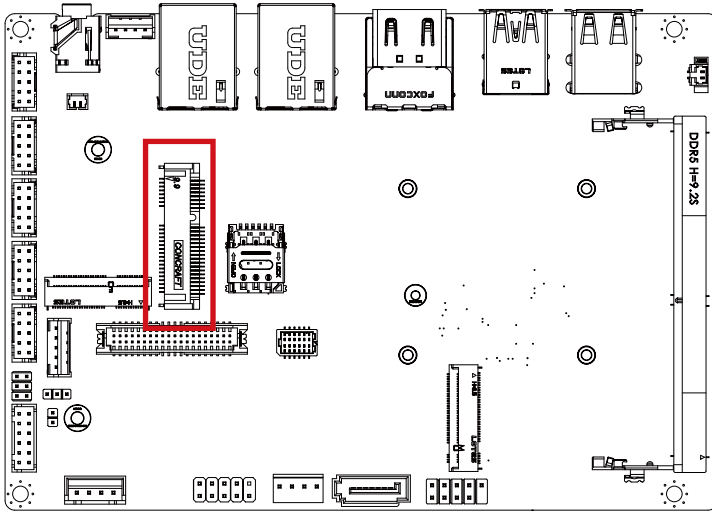
Pin No.	Definition	Pin No.	Definition
33	GND	32	NC
35	PCIe1 TXp	34	NC
37	PCIe1 TXn	36	NC
39	GND	38	NC

41	PCIe1 RXp	40	NC
43	PCIe1 RXn	42	NC
45	GND	44	NC
47	CLK_Dp	46	NC
49	CLK_Dn	48	NC
51	GND	50	SUSCLK
53	CLK_REQ	52	PCIe_RST
55	PCIe_WAKE	54	BT_Disable
57	GND	56	WLAN_DISABLE
59	NC	58	NC
61	NC	60	NC
63	GND	62	NC
65	NC	64	NC
67	NC	66	PE Reset
69	GND	68	NC
71	NC	70	NC
73	NC	72	3V
75	GND	74	3V

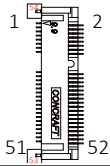
Connector PN	Vendor
APCI0095-P002A	LOTES
80152-8521	BELLWETHER
2E0BC21-S85BE-LH	FOXCONN

## 2.2.19 MPCIE (Mini PCIe slot)

19



Mini PCIe Connector



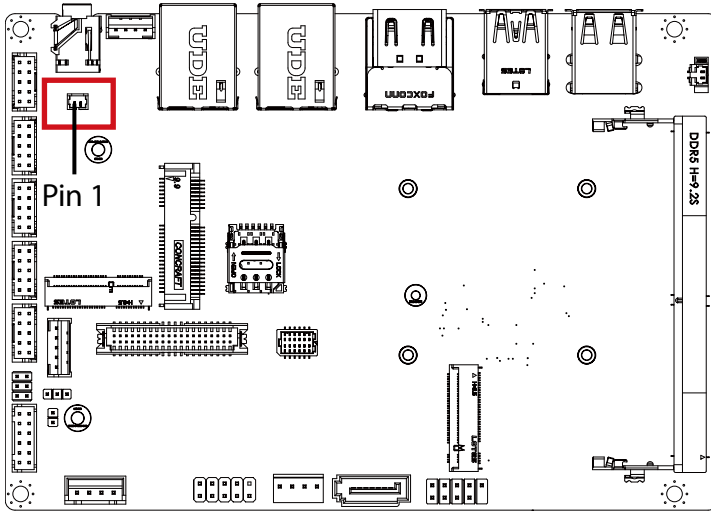
Pin No.	Definition	Pin No.	Definition
1	PCIE WAKE	2	3.3V
3	NC	4	GND
5	NC	6	NC
7	PCIE Clock Request	8	SIM VCC
9	GND	10	SIM DATA
11	PCIE Clock n	12	SIM Clock
13	PCIE Clock p	14	SIM Reset
15	GND	16	VPP
17	NC	18	GND
19	NC	20	WLAN_DISABLE
21	GND	22	Reset


Pin No.	Definition	Pin No.	Definition
23	PCIE RXn	24	3.3V
25	PCIE RXp	26	GND
27	GND	28	NC
29	GND	30	SMB Clock
31	PCIE TXn	32	SMB DATA
33	PCIE TXp	34	GND
35	GND	36	USB Dn
37	GND	38	USB Dp
39	3.3V	40	GND
41	3.3V	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	NC
49	NC	50	GND
51	NC	52	3.3V
53	GND	54	GND

Connector PN	Vendor
AS0B221-S99Q-7H	FOXCONN

## 2.2.20 BUZZER (Buzzer header)

20



Buzzer header


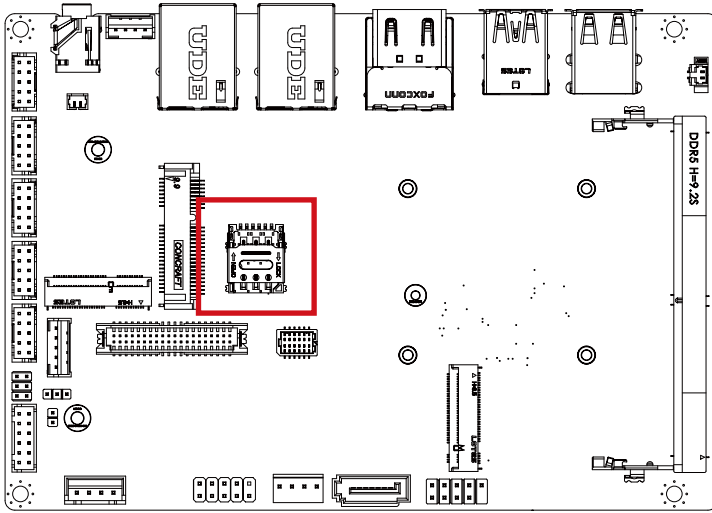
Connector PN	Vendor
712-71-02TW01	PINREX
A1250WV-02P	JOINT-TECH

Pin No.	Definition
1	Buzzer
2	5V

Connector type
1x2pin header, pitch 1.25mm

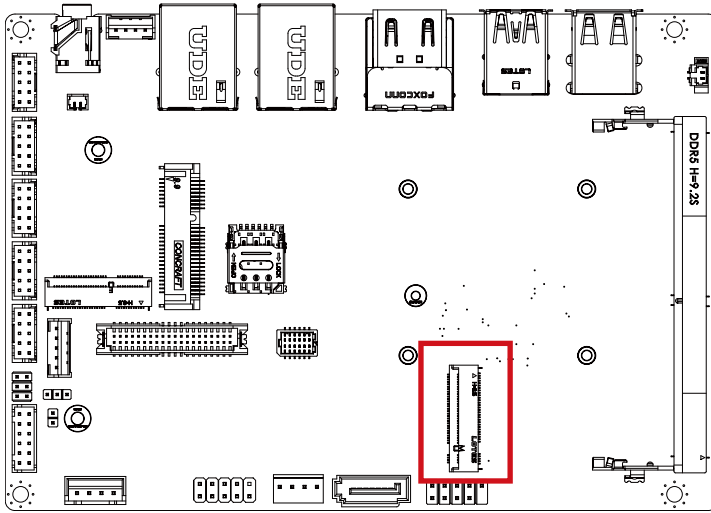
## 2.2.21 SIM\_CARD (3G/4G SIM Slot)

21

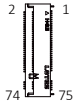


## 2.2.22 M2M (M.2 Slot, 2280 M-Key)

22



M.2 M Key Connector



Pin No.	Definition	Pin No.	Definition
1	GND	2	3.3V
3	GND	4	3.3V
5	NC	6	NC
7	NC	8	NC
9	GND	10	SSD LED
11	NC	12	3.3V
13	NC	14	3.3V
15	GND	16	3.3V
17	NC	18	3.3V
19	NC	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	PCIe1 RXn	30	NC
31	PCIe1 RXp	32	NC
33	GND	34	NC

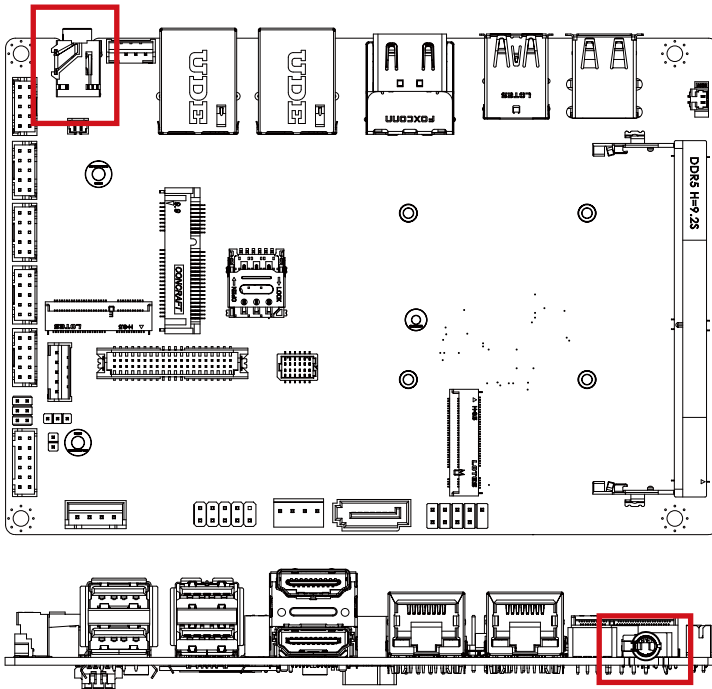
Pin No.	Definition	Pin No.	Definition
35	PCIe1 TXn	36	NC
37	PCIe1 TXp	38	NC
39	GND	40	NC
41	PCIe0 RXn	42	NC
43	PCIe0 RXp	44	NC
45	GND	46	NC
47	PCIe0 TXn	48	NC
49	PCIe0 TXp	50	PCI Reset
51	GND	52	PCIe Clock Request
53	PCIe Clock n	54	NC
55	PCIe Clock p	56	NC
57	GND	58	NC

Pin No.	Definition	Pin No.	Definition
67	NC	68	SUS_CLK
69	Detect	70	3.3V
71	GND	72	3.3V
73	GND	74	3.3V
75	GND		

Connector PN	Vendor
80159-8521	BELLWETHER

## 2.2.23 HP (LINE out connector)

23



Audio Connector



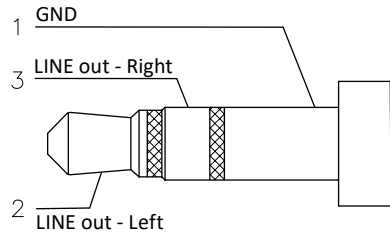
Connector PN

WTJ-035-47ABZ1

Vendor

KYOYAKU

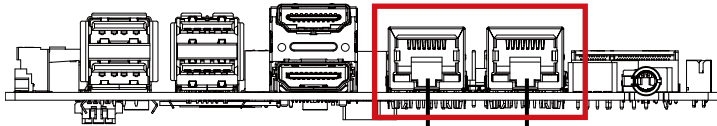
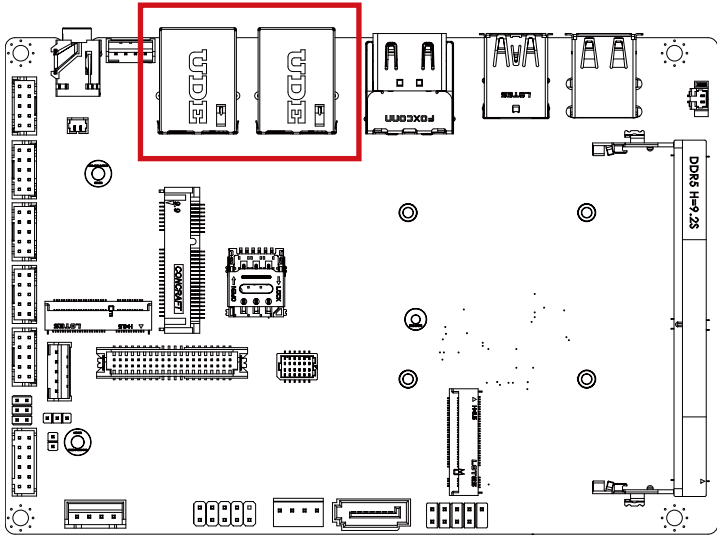
Pin No.	Definition
1	GND
2	LINE out - Left
3	LINE out - Right
4	JackSense
5	GND
6	GND
7	NC



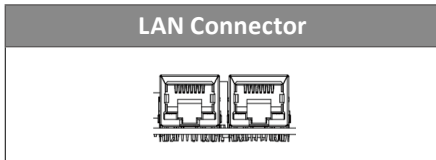


## 2.2.24 LAN1, LAN2 (LAN connector)

24



LAN 1 LAN 2



State	Description
Yellow On	2.5Gbps data rate
Green On	1Gbps data rate
Off	100M & 10Mbps data rate

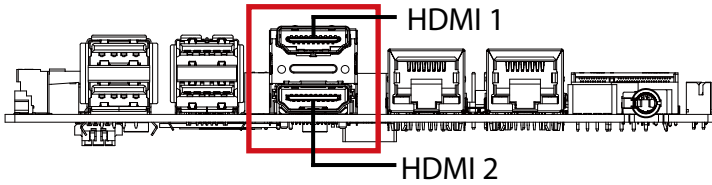
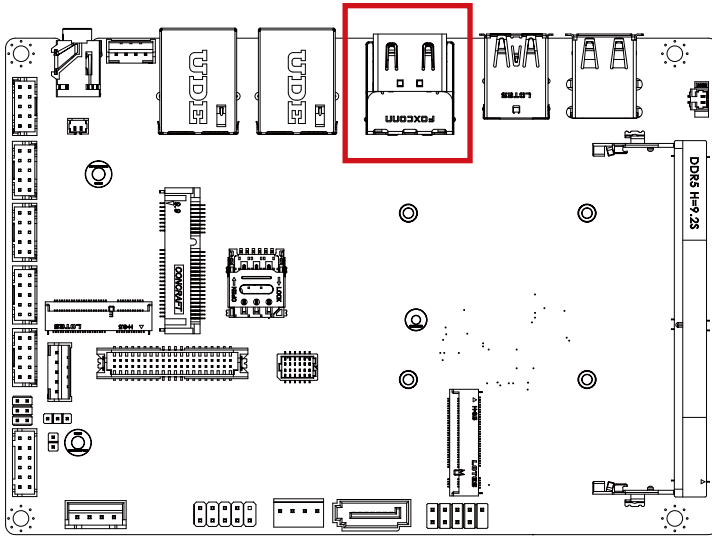
  

Connector PN	Vendor
RB1-GB-0010	UDE

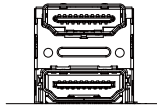
Pin No.	Definition
1	TX1+
2	TX1-
3	TX2+
6	TX2-
4	TX3+
5	TX3-
7	TX4+
8	TX4-

## 2.2.25 HDMI\_21 (HDMI connector)

25



HDMI Connector



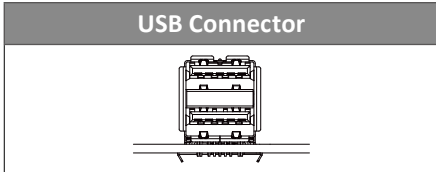
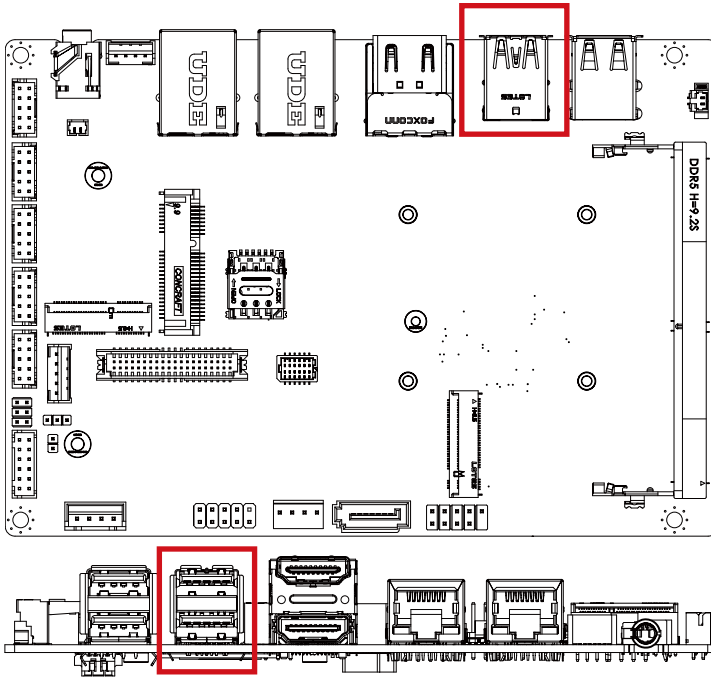
Pin No.	Definition	Pin No.	Definition
1	TX2p	20	TX2p
2	GND	21	GND
3	TX2n	22	TX2n
4	TX1p	23	TX1p
5	GND	24	GND
6	TX1n	25	TX1n
7	TX0p	26	TX0p
8	GND	27	GND
9	TX0n	28	TX0n
10	CLKp	29	CLKp

Pin No.	Definition	Pin No.	Definition
11	GND	30	GND
12	CLKn	31	CLKn
13	NC	32	NC
14	NA	33	NA
15	DDC Clock	34	DDC Clock
16	DDC Data	35	DDC Data
17	GND	36	GND
18	5V	37	5V
19	Hot Plug Detect	38	Hot Plug Detect

Connector PN	Vendor
QJ11191-DFB1-4F	FOXCONN

## 2.2.26 USB32 (USB 3.2 Gen 2x1 connector)

26

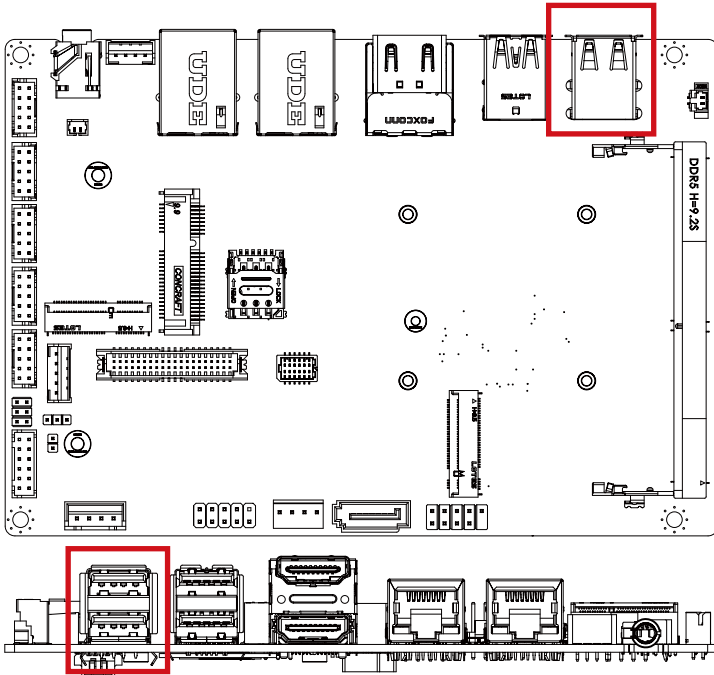


Connector PN	Vendor
18-A5950-6A33-A	TCOONN

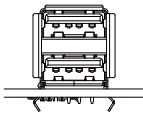
Pin No.	Definition	Pin No.	Definition
1	5V	10	5V
2	USB_Dn	11	USB_Dn
3	USB_Dp	12	USB_Dp
4	GND	13	GND
5	USB3_RXn	14	USB3_RXn
6	USB3_RXp	15	USB3_RXp
7	GND	16	GND
8	USB3_TXn	17	USB3_TXn
9	USB3_TXp	18	USB3_TXp

## 2.2.27 USB2 (USB 2.0 connector)

27



USB Connector



Connector PN	Vendor
UB1112C-8FDE-4F	FOXCONN
185-0820112-GB	YSELEC

Pin No.	Definition
1	5V
2	D1n
3	D1p
4	GND
5	5V
6	D2n
7	D2p
8	GND

# Chapter 3

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Chapter 3 – BIOS

## 3.1 Introduction

BIOS (Basic input/output system) provides hardware detailed information and boot-up options, which include firmware to control, set-up and test all hardware settings. Therefore, BIOS is the communication bridge between OS/application software and hardware.

### 3.1.1 How to Entering into BIOS menu

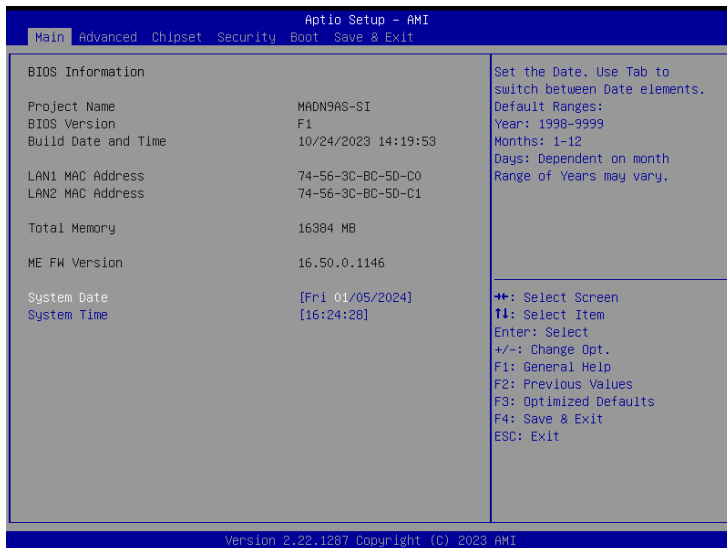
Once the system is power on, press the <DEL> key as soon as possible to access into BIOS Setup program.

### 3.1.2 Function Keys to setup in BIOS Setup program

Function keys	Description
→←	Select Screen
↑↓	Select Item
Enter	Execute command or enter the submenu
+	Increase the numeric value or make changes
—	Decrease the numeric value or make changes
F1	General Help
F2	Previous Values
F3	Load Optimized Defaults Settings
F4	Save changes & Exit the BIOS Setup program
ESC	Exit the BIOS Setup program

## 3.2 The Main Menu

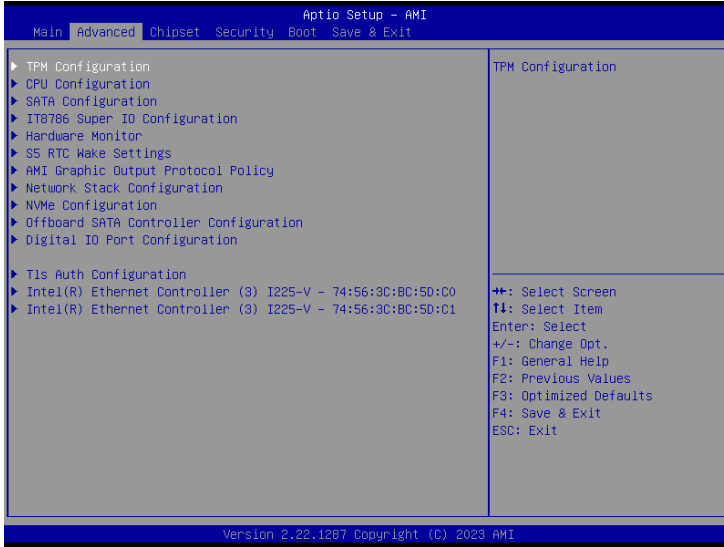
The main menu shows the basic system information. Use arrow keys to move among the items.



Items	Description
<b>Project Name</b>	<b>Shows Project name information</b>
<b>BIOS Version</b>	<b>Shows the BIOS version of the system</b>
<b>Build Date and Time</b>	<b>Shows the Build Date and Time when the BIOS was created.</b>
<b>LAN1 MAC Address</b>	<b>Shows LAN1 MAC Address information</b>
<b>LAN2 MAC Address</b>	<b>Shows LAN2 MAC Address information</b>
<b>Total Memory</b>	<b>Shows the total memory size of the installed memory</b>
<b>ME FW version</b>	<b>Shows ME firmware version</b>
<b>System Date</b>	<b>Set the Date for the system (Format : Week - Month - Day - Year)</b>
<b>System Time</b>	<b>Set the time for the system (Format : Hour - Minute - Second)</b>

### 3.3 Advanced

The Advanced menu is to configure the functions of hardware settings through submenu. Use arrow keys to move among the items, and press <Enter> to access into the related submenu.





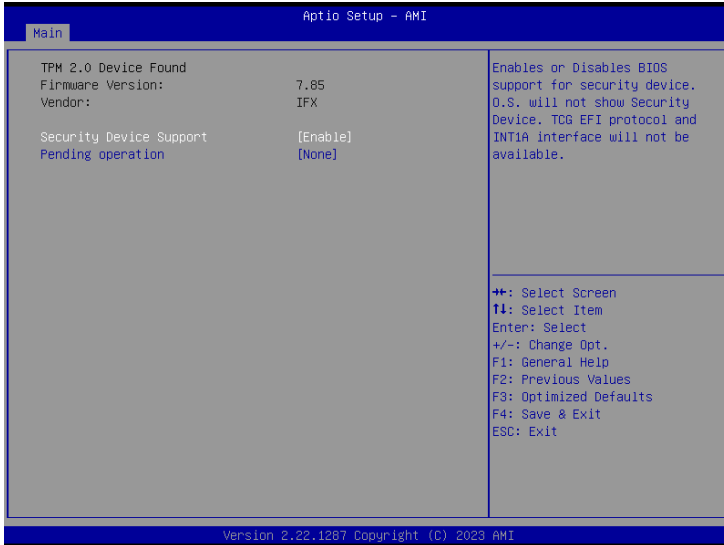
## 3.3.1 TPM Configuration

Use TPM Configuration submenu to choose TPM interface.



Item	Description
TPM Device Selection	<b>PTT : Internal TPM</b> <b>dTPM : External TPM (When using External TPM module or having TPM chip on MB) (Default setting)</b>

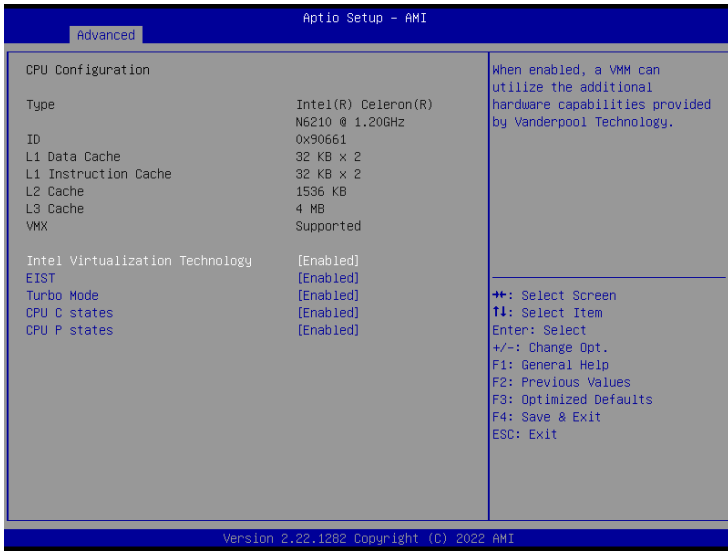
Trusted Computing : Shows TPM information, and TPM module configuration setting.



Item	Description
<b>Security Device support</b>	<b>Enabled : Enables TPM feature (Default setting)</b> <b>Disabled : Disables TPM feature</b>
<b>Pending operation</b>	<b>None : No execution will be conducted (Default setting)</b> <b>TPM clear : Set to clear data on TPM</b>

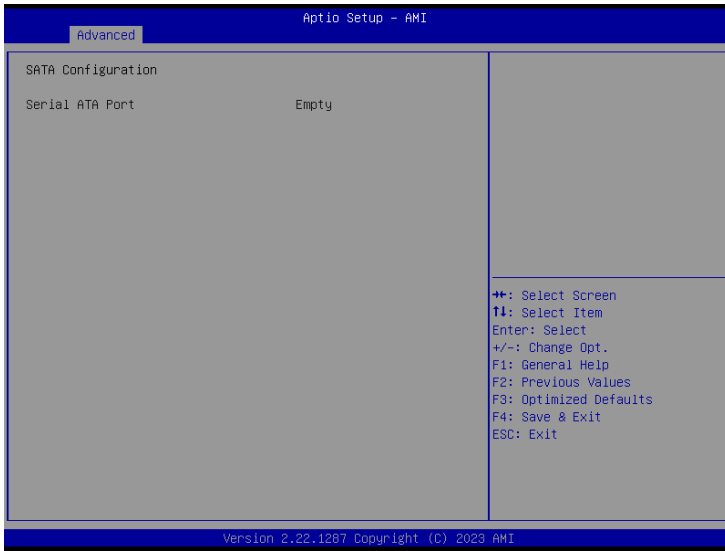
## 3.3.2 CPU Configuration

This submenu shows detailed CPU informations.



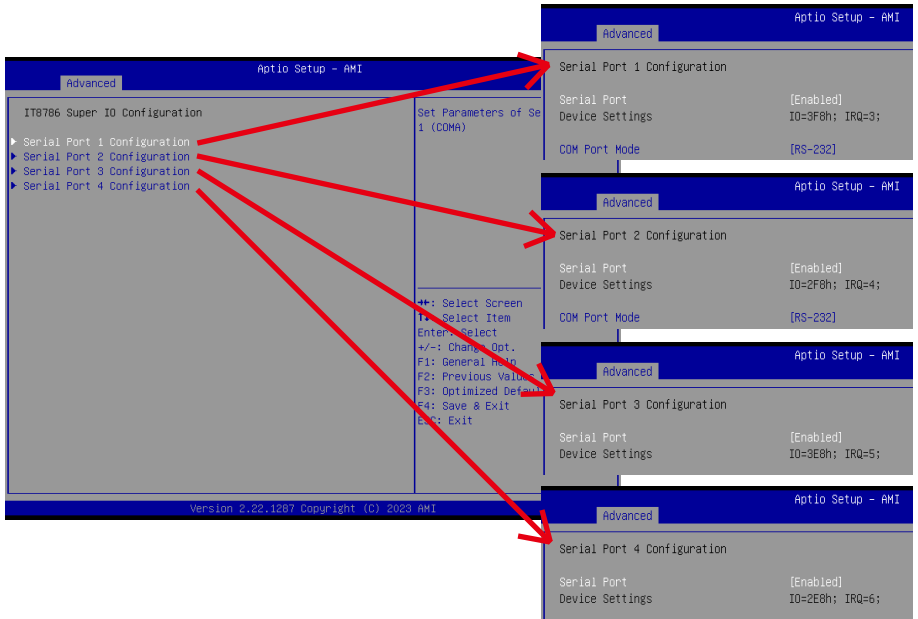
Item	Description
<b>Intel Virtualization Technology</b>	Virtualization enhanced by Intel® Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems. <b>Enabled : Enables Intel Virtualization Technology (Default setting)</b> <b>Disabled : Disables Intel Virtualization Technology</b>
<b>EIST</b>	According to System loading, Enhanced Intel SpeedStep Technology (EIST) will automatically adjust the CPU voltage and core frequency to decrease heat and power consumption for power saving. <b>Enabled : Enables EIST Technology (Default setting)</b> <b>Disabled : Disables EIST Technology</b>
<b>Turbo Mode</b>	<b>Enabled : Enables Turbo Mode (Default setting)</b> <b>Disabled : Disables Turbo Mode</b>
<b>CPU C states</b>	Command CPU to enter into low power consumption mode when CPU is under idle mode. <b>Enabled : Enables C states (Default setting)</b> <b>Disabled : Disables C states</b>
<b>CPU P states</b>	CPU will adjust frequency depends on it's loading. <b>Enabled : Enables CPU P states function (Default setting)</b> <b>Disabled : Disables CPU P states function</b>

### 3.3.3 SATA Configuration



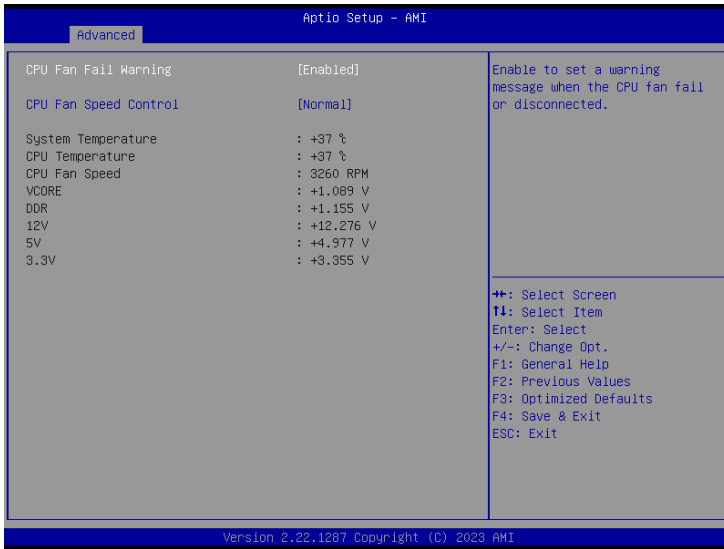
Item	Description
<b>Serial ATA Port</b>	shows 2.5" SATA HDD/SSD information

### 3.3.4 IT8786 Super IO Configuration



Item	Description
<b>Serial Port 1 Configuration</b>	Press [Enter] to configure advanced items : Serial Port : <b>Enabled : Enables allows you to configure the serial port settings</b> <b>Disabled : if Disabled, displays no configuration for the serial port</b>
<b>Serial Port 2 Configuration</b>	Device settings : Display the specified Serial Port base I/O address and IRQ  COM Port Mode : Choose RS-232, RS-422, or RS-485 feature
<b>Serial Port 3 Configuration</b>	Press [Enter] to configure advanced items : Serial Port : <b>Enabled : Enables allows you to configure the serial port settings</b> <b>Disabled : if Disabled, displays no configuration for the serial port</b>
<b>Serial Port 4 Configuration</b>	Device settings : Display the specified Serial Port base I/O address and IRQ

### 3.3.5 Hardware Monitor



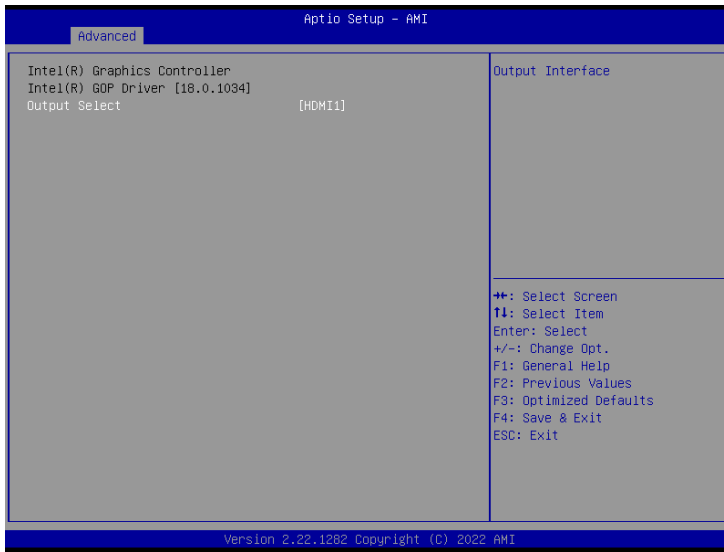
Item	Description
<b>CPU Fan Fail Warning</b>	<b>Enabled</b> : Enables CPU FAN Fail warning alert function (Default setting) <b>Disabled</b> : Disables CPU FAN Fail warning alert function
<b>CPU Fan Speed Control</b>	<b>Normal</b> : Fan speed set by BIOS default (Default setting) <b>Full Speed</b> : Set Fan operates at full speed
<b>System temperature</b>	Shows current system temperature
<b>CPU temperature</b>	Shows current CPU temperature
<b>CPU Fan Speed</b>	Shows current CPU fan Speed

## 3.3.6 S5 RTC Wake Settings



Item	Description
Wake system from S5	<p>Enable or Disable System to wake on a specific time.</p> <p><b>Disabled : Disables system to wake on a specific time (Default setting)</b></p> <p><b>Fixed Time : Enables system to wake on a specific time (Format : hr : min : sec)</b></p>

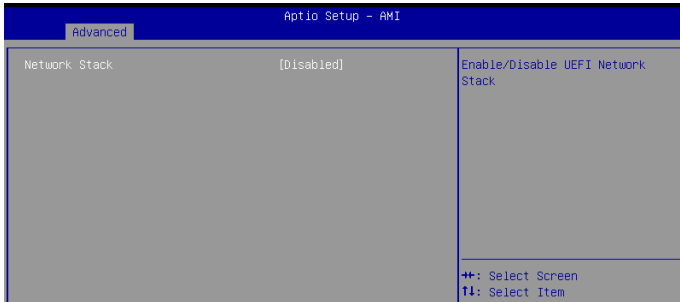
### 3.3.7 AMI Graphic Output Protocol Policy



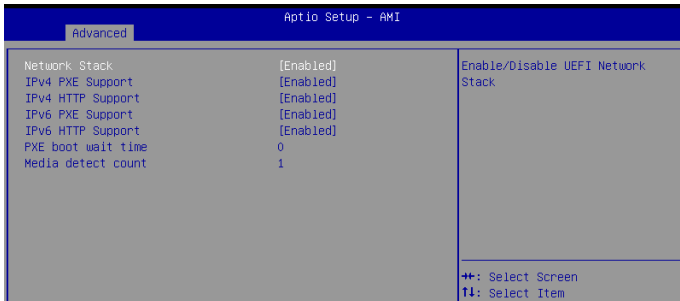
Item	Description
<b>Output Select</b>	Choose default monitor output when there are more than one monitor plugged on the motherboard.



## 3.3.8 Network Stack Configuration



When Network stack is enabled :

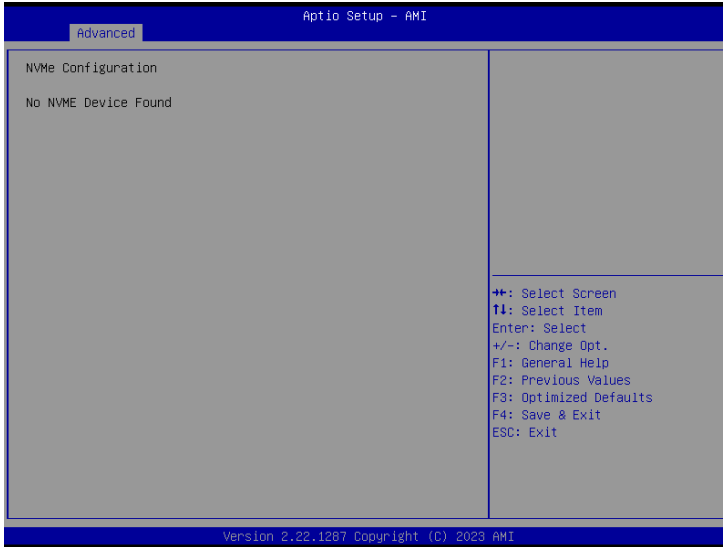


Item	Description
<b>Network Stack</b>	When system is power on, install LAN driver under UEFI mode <b>Disabled : Disables UEFI Network Stack (Default setting)</b> <b>Enabled : Enables UEFI Network Stack</b>
<b>IPv4 PXE Support</b>	When Network stack is enabled : <b>Disabled : Disables Ipv4 PXE Support</b> <b>Enabled : Enables Ipv4 PXE Support</b>
<b>IPv4 HTTP Support</b>	When Network stack is enabled : <b>Disabled : Disables Ipv6 PXE Support</b> <b>Enabled : Enables Ipv6 PXE Support</b>
<b>IPv6 PXE Support</b>	When Network stack is enabled : <b>Disabled : Disables Ipv4 PXE Support</b> <b>Enabled : Enables Ipv4 PXE Support</b>
<b>IPv6 HTTP Support</b>	When Network stack is enabled : <b>Disabled : Disables Ipv6 PXE Support</b> <b>Enabled : Enables Ipv6 PXE Support</b>
<b>PXE boot wait time</b>	Wait time in seconds, or use ESC key to abort the PXE boot.
<b>Media detect count</b>	Number of times the presence of media will be checked.

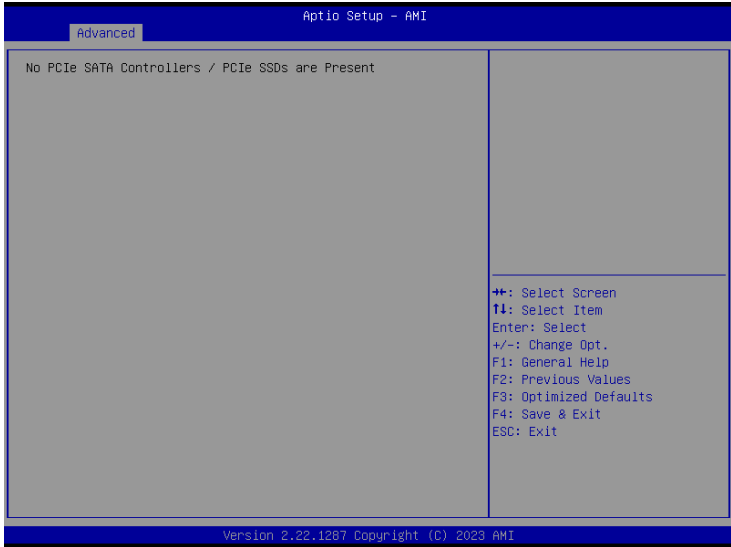
### 3.3.9 NVMe Configuration

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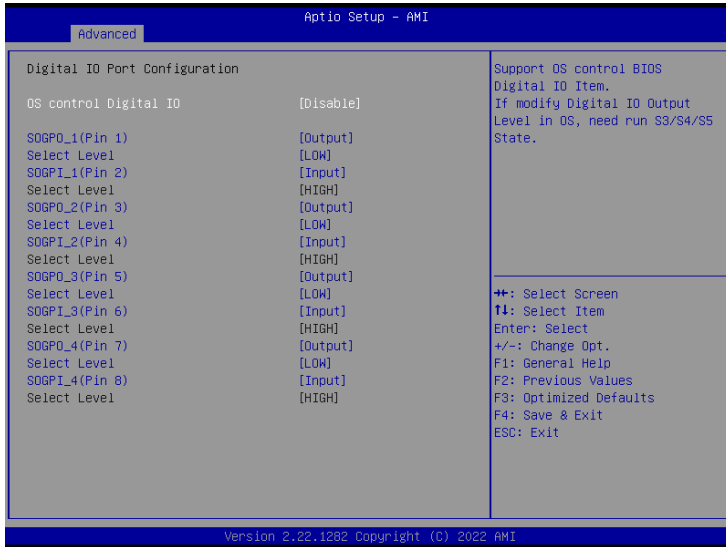
NVMe Configuration shows information when your M.2 NVMe PCIe SSD is installed.



## 3.3.10 Offboard SATA Controller Configuration

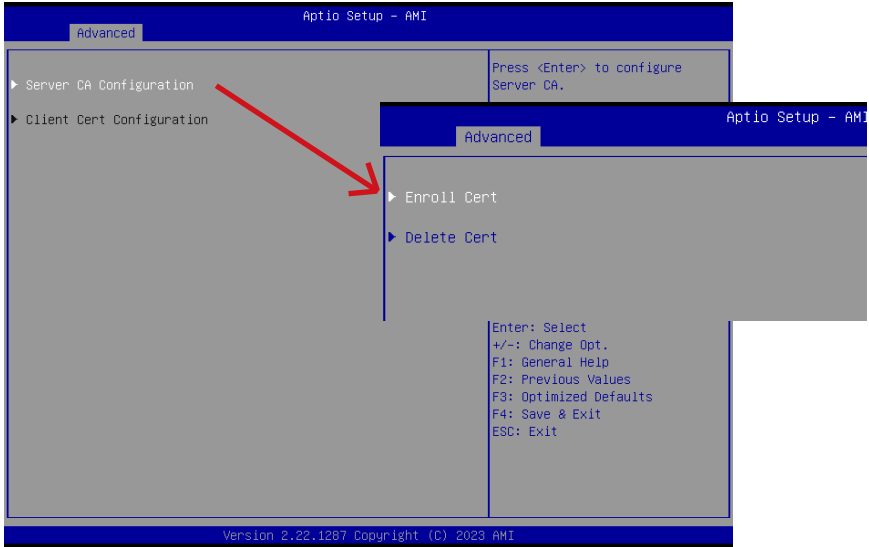


### 3.3.11 Digital IO Port Configuration



Item	Description
OS control Digital IO	<p><b>Disabled</b> : If Digital IO Output value/level is modified in OS, they will not be memorized and kept. (Default setting)</p> <p><b>Enabled</b> : If Digital IO Output value/level is modified in OS, they will be memorized and kept.</p>
SOGPO_1 (Pin 1) SOGPI_1 (Pin 2) SOGPO_2 (Pin 3) SOGPI_2 (Pin 4) SOGPO_3 (Pin 5) SOGPI_3 (Pin 6) SOGPO_4 (Pin 7) SOGPI_4 (Pin 8)	Configure Digital IO Input or Output values for each pin.

## 3.3.12 Tls Auth Configuration



Item	Description
<b>Enroll Cert</b>	<p>Press [Enter] to configure advanced items :</p> <p><b>Server CA Configuration :</b></p> <p>Enroll Cert :</p> <ol style="list-style-type: none"> <li>1. Enroll Cert Using File</li> <li>2. Cert GUID : Input digit character in 11111111-2222-3333-4444-1234567 890ab format.</li> <li>3. Commit Changes and Exit</li> <li>4. Discard Changes and Exit</li> </ol>

### 3.3.13 Intel(R) Ethernet Controller (3) I225-V - 74:56:3C:BC:5D:C0 (MAC address may varied based on different motherboard)

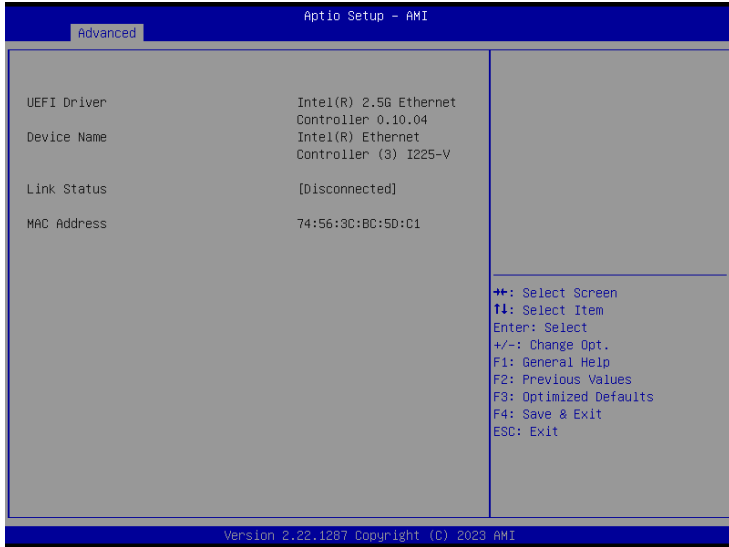
Shows Intel Ethernet controller information



NOTE : MAC address may varied based on different motherboard

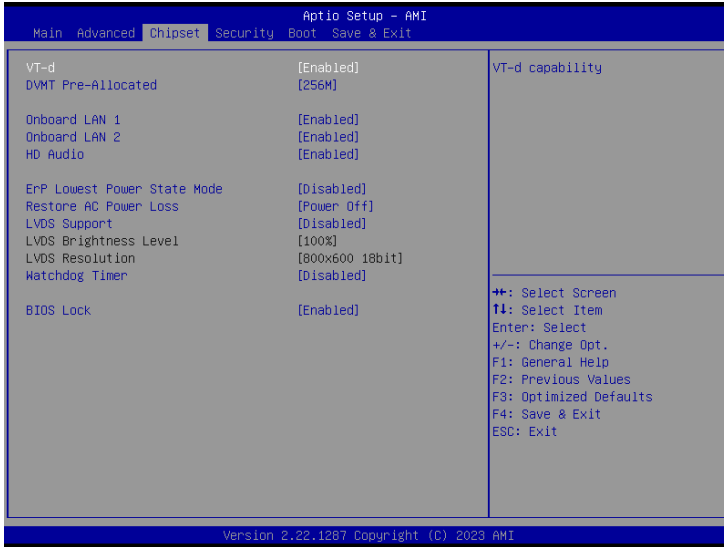
### 3.3.14 Intel(R) Ethernet Controller (3) I225-V - 74:56:3C:BC:5D:C1 (MAC address may varied based on different motherboard)

Shows Intel Ethernet controller information



NOTE : MAC address may varied based on different motherboard

### 3.4 Chipset



Item	Description
<b>VT-d</b>	<b>Enabled : Enables VT-d function (Default setting)</b> <b>Disabled : Disables VT-d function</b>
<b>DVMT Pre-Allocated</b>	Use DVMT Pre-Allocated to set the amount of system memory which is installed to the integrated graphics processor <b>Option items : 32M , 64M , 128M , 256M(Default setting)</b>
<b>Onboard LAN 1</b> <b>Onboard LAN 2</b>	Enable/Disable onboard LAN controller <b>Enabled : Enables onboard LAN controller (Default setting)</b> <b>Disabled : Disables onboard LAN controller</b>
<b>HD Audio</b>	Enable/Disable onboard audio controller <b>Enabled : Enables onboard audio controller (Default setting)</b> <b>Disabled : Disables onboard audio controller</b>
<b>ErP Lowest Power State Mode</b>	Enable/Disable power saving funtion <b>Enabled : Enables ERP Lowest Power State Mode</b> <b>Disabled : Disabled ERP Lowest Power State Mode (Default setting)</b>

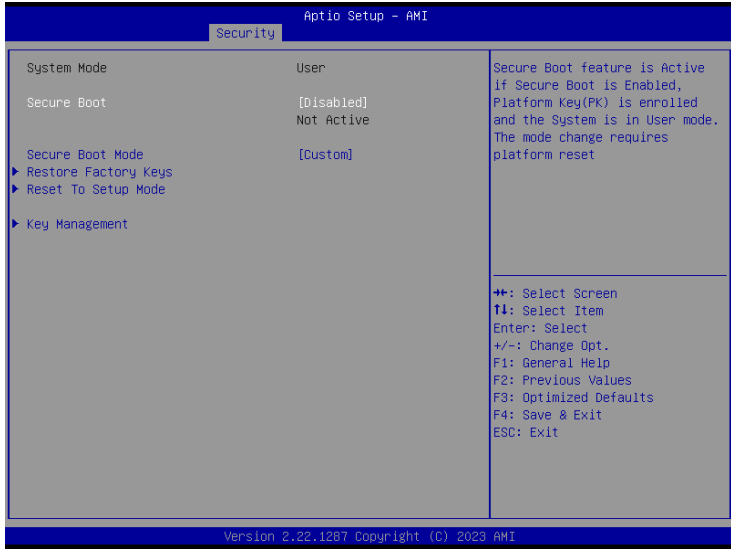


<b>Restore AC Power Loss</b>	To set which option the system should returns if a sudden power loss occurred <b>Power off : Do not power on when the power is back (Default setting)</b> <b>Power on : System power on when the power is back</b> <b>Last state : Restore the system to the state before power loss occurs</b>
<b>LVDS Support</b>	<b>Disabled : Disables LVDS Support (Default setting)</b> <b>Enabled : Enables LVDS Support</b>
<b>LVDS Brightness Level</b>	When LVDS Support is enabled : To modified the backlight brightness of the LVDS panel <b>Option items : 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100% (Default Setting)</b>
<b>LVDS Resolution</b>	When LVDS Support is enabled : To modified the LVDS resolution <b>Option items : 800x600 18bit (Default Setting) , 1024x768 18bit, 1024x768 24bit, 1024x600 18bit, 1280x800 18bit, 1280x960 18bit, 1280x1024 24bit, 1366x768 18bit, 1366x768 24bit, 1440x900 24bit, 1400x1050 24bit, 1600x900 24bit, 1680x1050 24bit, 1600x1200 24bit, 1920x1080 24bit, 1920x1200 24bit</b>
<b>Watchdog Timer</b>	Enable/Disable Watchdog Timer function <b>Enabled : Enables Watchdog Timer function</b> <b>Disabled : Disabled Watchdog Timer function (Default setting)</b>
<b>BIOS Lock</b>	Enable/Disable BIOS Lock function <b>Enabled : Enables BIOS Lock function (Default setting)</b> <b>Disabled : Disabled BIOS Lock funtion</b>

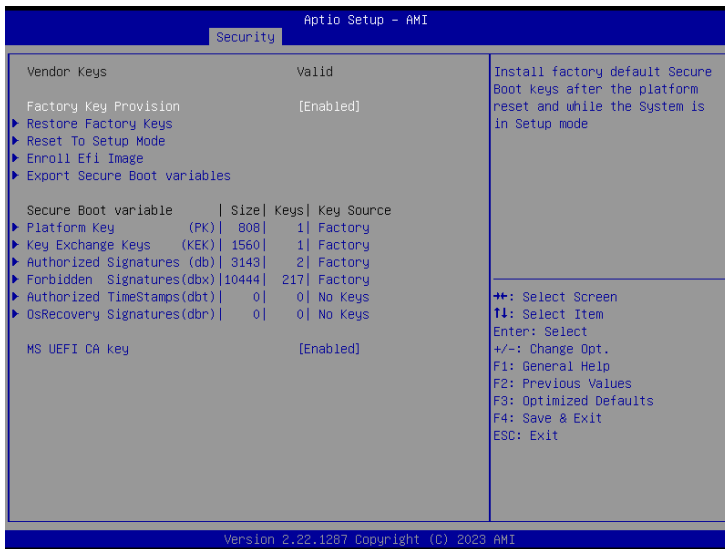
## 3.5 Security



Item	Description
<b>Administrator Password</b>	To set up Administrator's password <b>Minimum length : 3</b> <b>Maximum length : 20</b>
<b>User Password</b>	To set up User's password <b>Minimum length : 3</b> <b>Maximum length : 20</b>
<b>Secure Boot</b>	Press <Enter> to configure the advanced items



Item	Description
<b>Secure Boot</b>	Secure Boot requires all the applications that are running during the booting process to be pre-signed with valid digital certificates <b>Enabled : Enables Secure Boot function</b> <b>Disabled : Disables Secure Boot function (Default setting)</b>
<b>Secure Boot Mode</b>	<b>Standard : Standard mode</b> <b>Custom : Custom mode (Default setting)</b>
<b>Restore Factory Keys</b>	To restore factory settings <b>Yes : Agree to restore factory settings</b> <b>No : Cancel to restore factory settings</b>
<b>Reset To Setup Mode</b>	<b>Yes : Agree to setup mode</b> <b>No : Cancel to setup mode</b>
<b>Key Management</b>	Enables expert users to modify Secure boot policy variables without full authentication Press <Enter> to configure the advanced items



Item	Description
<b>Factory Key Provision</b>	Install factory default Secure Boot keys after the platform reset and while the system is in Setup mode <b>Enabled : Enables Factory Key Provision (Default setting)</b> <b>Disabled : Disables Factory Key Provision</b>
<b>Restore Factory Keys</b>	To restore factory settings <b>Yes : Agree to restore factory settings</b> <b>No : Cancel to restore factory settings</b>
<b>Reset To Setup Mode</b>	<b>Yes : Agree to setup mode</b> <b>No : Cancel to setup mode</b>
<b>Enroll Efi Image</b>	Allow the image to run in Secure Boot mode
<b>Export Secure Boot variables</b>	Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device

Item	Description
<b>Platform Key (PK)</b>	These items allows you to enroll factory defaults or load Certificates from a file.
<b>Key Exchange Keys (KEK)</b>	
<b>Authorized Signatures (db)</b>	
<b>Forbidden Signatures (dbx)</b>	
<b>Authorized TimeStamps (dbt)</b>	
<b>OsRecovery Signatures (dbr)</b>	
<b>MS UEFI CA Key</b>	Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database(db)

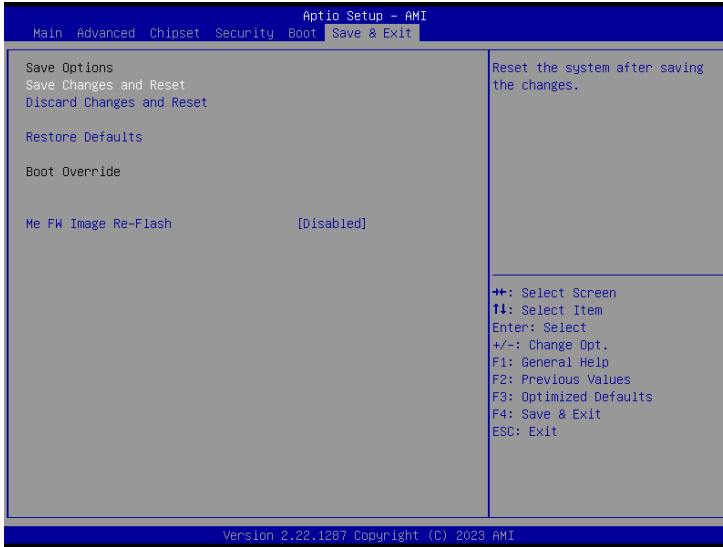
## 3.6 Boot

This Boot menu allows you to set/change system boot options



Item	Description
<b>Full Screen LOGO Show</b>	Enable/Disable full screen LOGO show on POST screen <b>Enabled : Enables Full screen LOGO Show on POST screen</b> <b>Disabled : Disables Full screen LOGO Show on POST screen (Default setting)</b>
<b>Built-in EFI Shell</b>	Enable/Disable Built-in EFI Shell <b>Enabled : Enables Built-in EFI Shell</b> <b>Disabled : Disables Built-in EFI Shell (Default setting)</b>
<b>Boot Option Priorities</b>	Shows the information of the storage that be installed in the system <b>Choose/set the boot priority</b>

## 3.7 Save & Exit



Item	Description
<b>Save Changes and Reset</b>	After configuring all the options that you wish to change, choose this option to save all the changes and reboot the system <b>Yes : Agree to save and reset</b> <b>No : Cancel to save and reset</b>
<b>Discard Changes and Reset</b>	Choose this option to reboot the system without saving any changes <b>Yes : Agree to discard changes and reset</b> <b>No : Cancel to discard changes and reset</b>
<b>Restore Defaults</b>	Restore/Load default values for all the setup options <b>Yes : Agree to load optimized defaults</b> <b>No : Cancel to load optimized defaults</b>
<b>Me FW Image Re-Flash</b>	Enable/Disable Me FW image re-flash function <b>Enabled : Enables Me FW image re-flash function</b> <b>Disabled : Disables Me FW image re-flash function (Default setting)</b>