QBiP-255UB
QBiP-225UB

3.5” SBC Boards

Copyright Notice

Acknowledgement

Packing List

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

Item	Quantity
QBiP-255UB/ QBiP-225UB MB	1
SATA power cable	1
Thermal pad for Memory	1

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

How to assemble Thermal pad for Memory

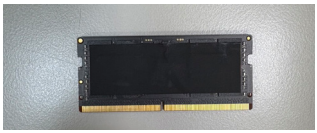
Follow instructions to apply thermal pad only when using 2 x DDR5 32GB 2Rx8 SO-DIMMs or above, to ensure better performance.

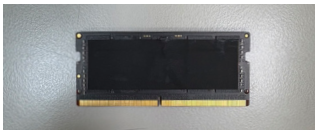
A

The thermal pad kit, located at the bottom of the single box, contains 2 x thermal pads and 4 x complex thermally conductive film.

B

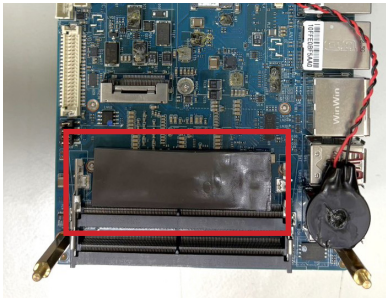
Paste complex thermally conductive film on both sides of memory modules.





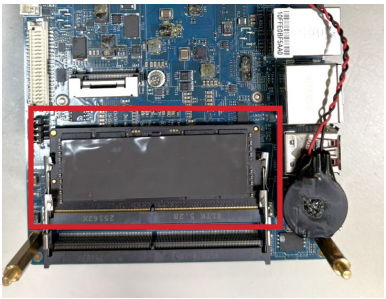
C

Apply the **thick** thermal pad to the motherboard (as below), and lock memory module on SO-DIMM2.



D

Apply the **thin** thermal pad to the installed memory module (as below), and lock memory module on SO-DIMM1.



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 GIGAIPC.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
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	○	○	○	○	○	○

O : 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

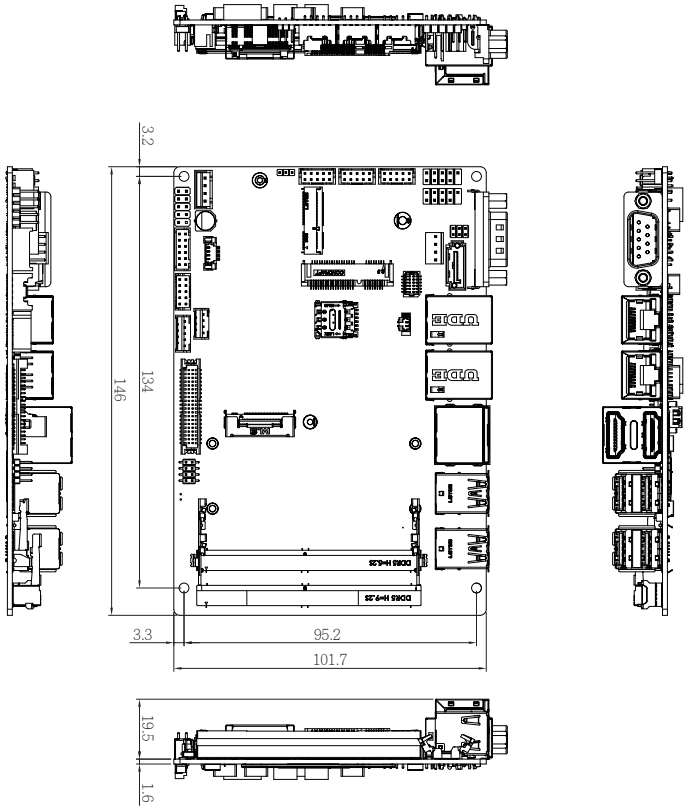
Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	O	O	O	O	O	○
Wires & Connectors for External Connections	O	O	O	O	O	O

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

Table Contents

Chapter 1

Chapter 1 - Product Specifications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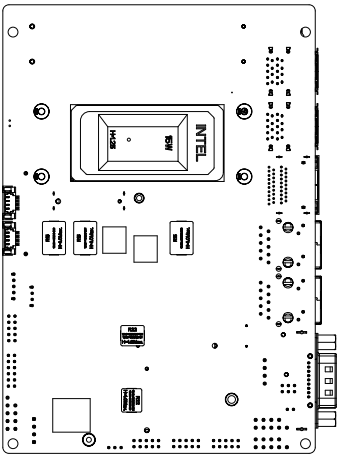

INTEL

1.1 Specifications - QBiP-255UB/ QBiP-225UB

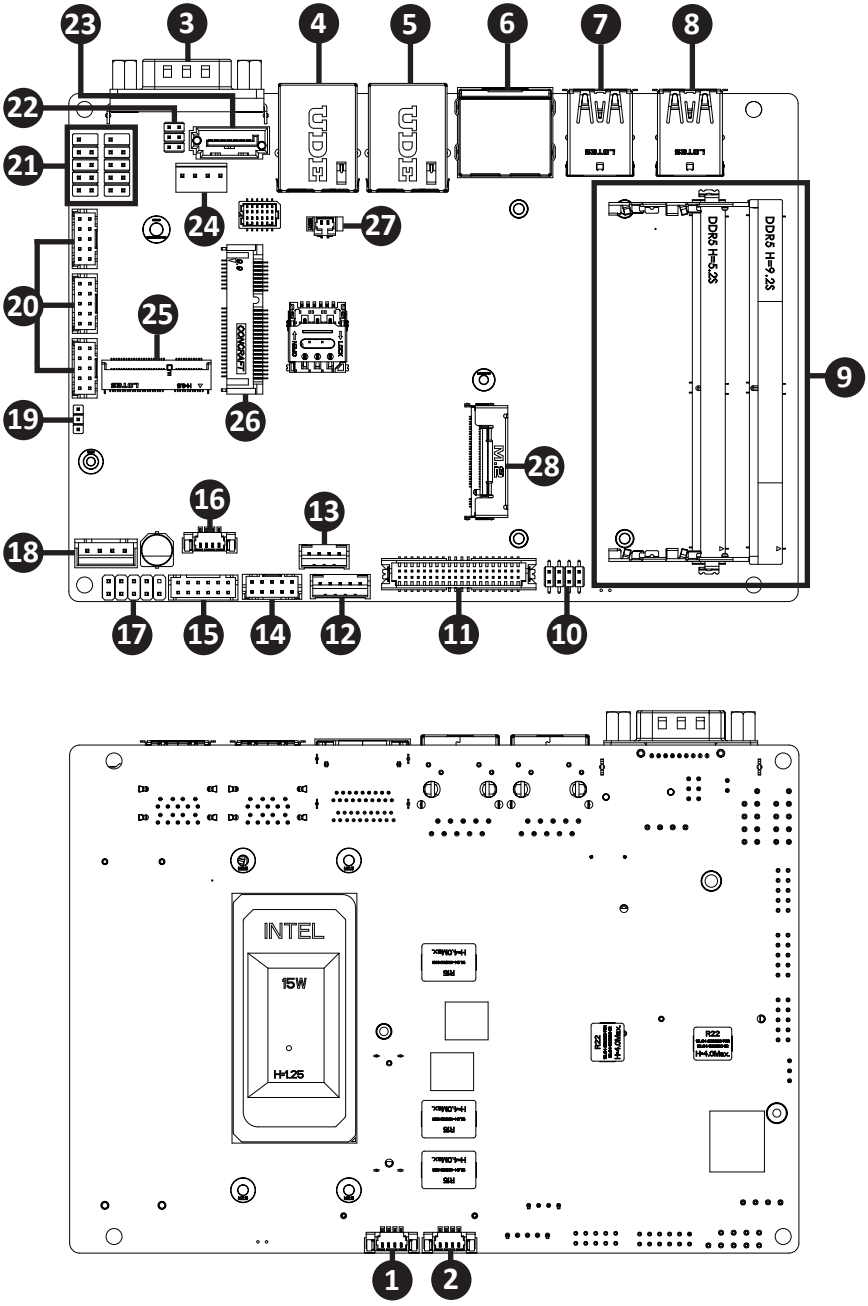
Motherboard	QBiP-255UB	QBiP-225UB
Form Factor	3.5'' SBC 146W x 101.7Dmm	
CPU	Intel® Core™ Ultra 7 Processor 255U Intel® 3, 12 cores, 2P+8E+2LPE, 14 threads, up to 5.20 GHz TDP 15W 12 MB Smart Cache	Intel® Core™ Ultra 5 Processor 225U Intel® 3, 12 cores, 2P+8E+2LPE, 14 threads, up to 4.8 GHz TDP 15W 12 MB Smart Cache
Socket	1 x FCBGA2049	
Chipset	—	
Memory	2 x DDR5 SO-DIMM/CSO-DIMM sockets, Max. Capacity 32 GB Support Dual channel DDR5 5600/6400 MHz memory modules	
Ethernet	2 x 2.5GbE LAN Ports (Intel® I226V & I226LM)	
Video	Integrated Graphics Processor - Intel® Graphics: 2 x HDMI 2.1 port, supporting a maximum resolution of 7680×4320 @60Hz (HDMI 2 port support HDMI CEC) 1 x LVDS port, supporting a maximum resolution of 1920x1200 @60Hz (3 independent display outputs)	
Audio	Realtek® ALC269	
Storage	1 x SATA 6Gb/s port	
Raid	Intel® SATA RAID 0/1	
Expansion Slots	1 x 2280 M.2 M-Key (PCIe Gen4x4, SATA 6Gb/s) 1 x 2230 M.2 E-Key 1 x Full-size Mini PCIe with SIM slot	

Motherboard	QBiP-255UB	QBiP-225UB
Internal I/O	1 x 4-pin box power connector (DC in +9V~36VDC) 1 x SATA Power header 1 x CPU fan header 1 x System fan header 1 x Front panel header 1 x Front panel audio header 1 x 2W Speaker out header 4 x USB 2.0 headers 3 x COM headers (RS-232/422/485) 1 x Backlight control header 1 x AT/ATX mode select jumper 1 x GPIO (8-bits) & SMBus header 1 x CANBus header	
Rear I/O	1 x COM Port (RS-232/422/485 & RI/5V/12V) 2 x HDMI 2 x RJ45 LAN Ports 4 x USB 3.2 Gen 2x1	
TPM	Onboard TPM 2.0 security chip INFINEON SLB9672XU2.0	
OS Compatibility	Windows® 10/11 (x64)	
Operating Properties	Operating temperature: 0°C to 60°C Operating humidity: 60°C @ 20-95% (non-condensing) Non-operating temperature: -40°C to 85°C Non-operating humidity: 85°C @ 95% (non-condensing)	

Chapter 2

Chapter 2 – Hardware Information

2.1 Jumpers and Connectors

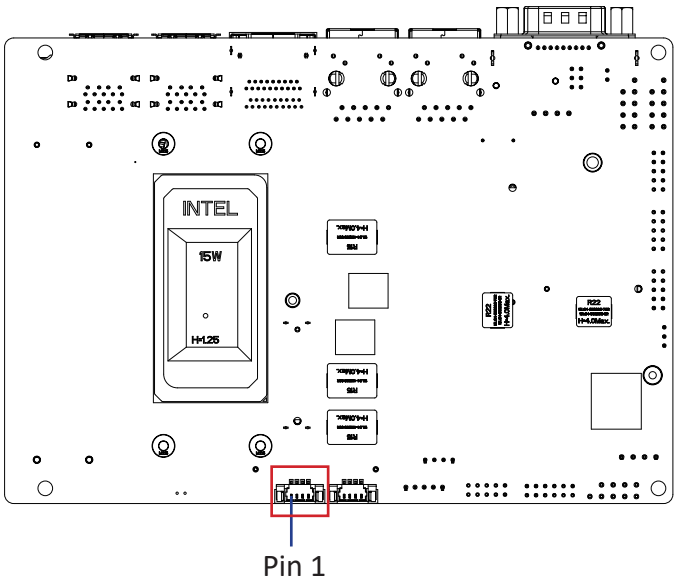


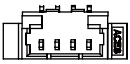
No	Code	Description
1	CPU_FAN	CPU fan connector
2	SYS_FAN	System fan connector
3	COM1	Serial Port (RS-232/422/485 & RI/5V/12V)
4	LAN2	LAN connector
5	LAN1	LAN connector
6	HDMI21	HDMI connector
7	USB32_2	USB 3.2 Gen 2x1 connector
8	USB32_1	USB 3.2 Gen 2x1 connector
9	SODIMM1 SODIMM2	DDR5 SO-DIMM Slot
10	LSW	LVDS resolution jumper
11	LVDS	LVDS connector
12	BKL_CN	Backlight control header
13	SPKR	Speaker out connector
14	FP_AUDIO	Front Audio connector
15	GPIO_CNT	General purpose input / ouput header
16	CAN_BUS	CANBus header
17	SYS_PANEL	Front panel header
18	DC_IN	DC IN 1x4 pin power connector
19	AT_CN	AT/ATX mode select jumper
20	COM2, COM3, COM4	Serial port header (RS-232/422/485)
21	FUSB1, FUSB2	USB 2.0 headers

No	Code	Description
22	JCOM1	RI# pin RI#/5V/12V Select jumper for COM1 Port
23	SATA0	SATA 6Gb/s connector
24	SATAPWR	SATA power connector
25	M2E	M.2 Slot, 2230 E-key
26	MPCIE	Mini PCIe slot
27	BATTERY	Battery cable connector
28	M2M	M.2 Slot, 2280 M-key

2.2.1 CPU_FAN (CPU fan connector)

1



CPU fan Connector
 1234

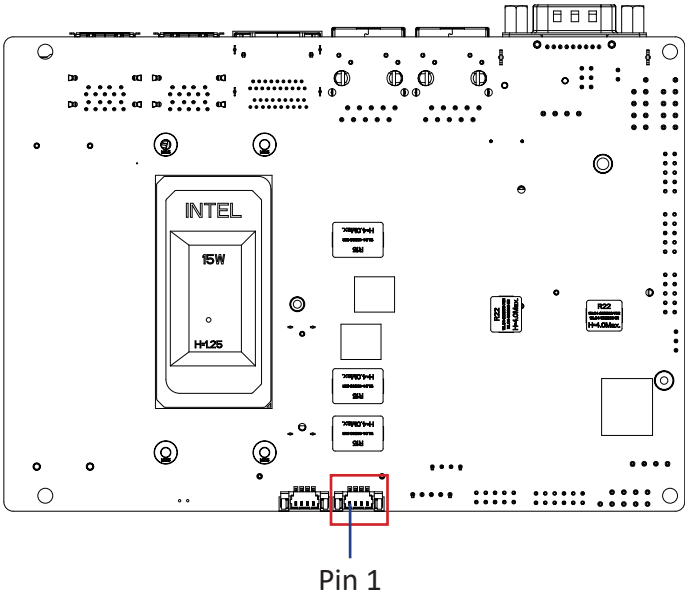
Pin No.	Definition
1	GND
2	12V
3	Detect
4	Speed control

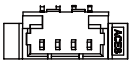
Connector PN	Vendor
85205-0470N	ACES
A1250WV-S-04PC	JOINT-TECH

Connector type
1x4pin header, pitch 1.25mm

2.2.2 SYS_FAN (System fan connector)

❷



System fan Connector
 1234

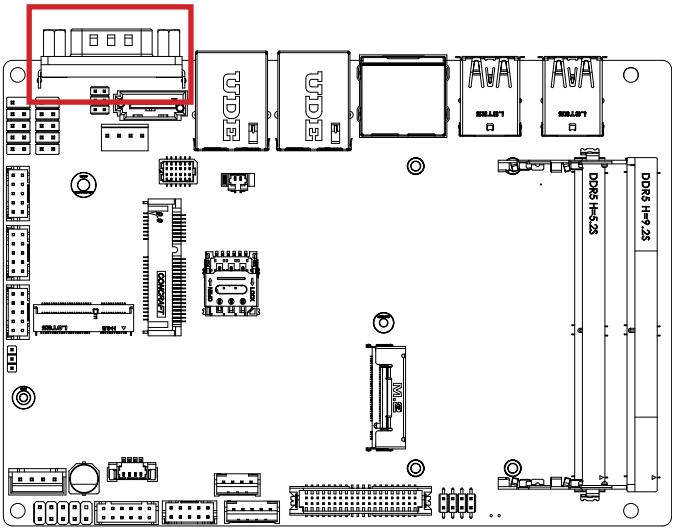
Pin No.	Definition
1	GND
2	12V
3	Detect
4	Speed control

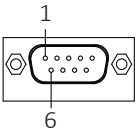
Connector PN	Vendor
85205-0470N	ACES
A1250WV-S-04PC	JOINT-TECH

Connector type
1x4pin header, pitch 1.25mm

2.2.3 COM1 (Serial Port (RS-232/422/485 & RI/5V/12V))

3



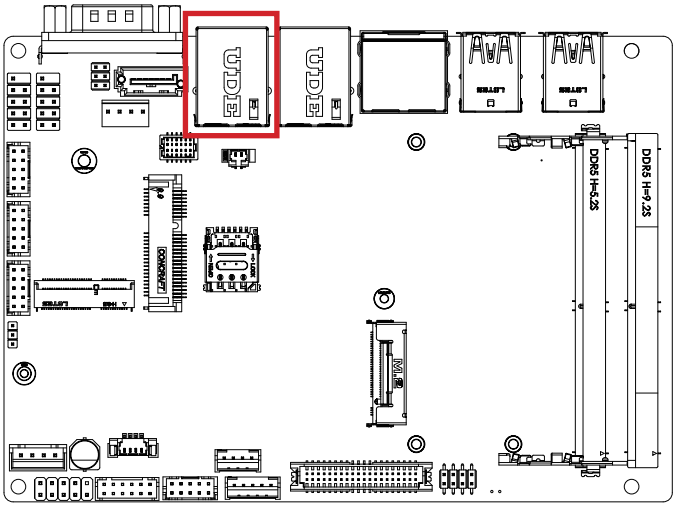
Serial Port connector


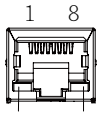
Pin No.	RS-232	RS-422 Full Duplex	RS-485 Half Duplex
1	DCD	TXD-	D-
2	RXD	TXD+	D+
3	TXD	RXD+	–
4	DTR	RXD-	–
5	GND		
6	DSR	–	–
7	RTS	–	–
8	CTS	–	–
9	RI	–	–

Connector PN	Vendor
SM41D1P1122N33NQ	FENYING

2.2.4 LAN2 (LAN connector)

4



LAN Connector

Link / Activity LED　　Connection/ Speed LED

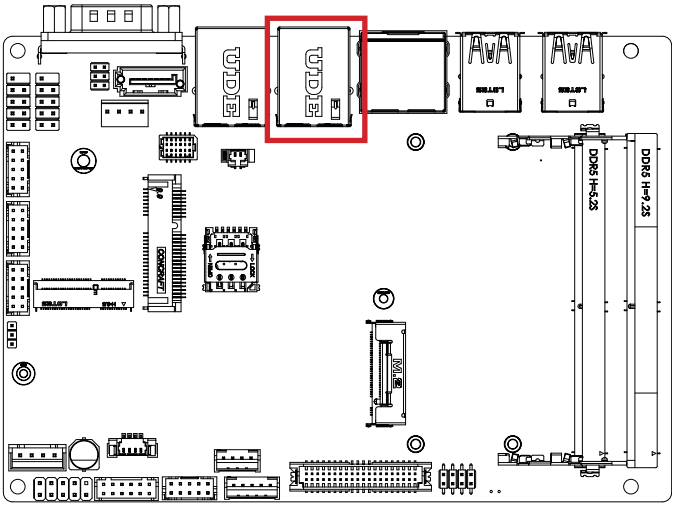
Pin No.	Definition
1	BI_DA+
2	BI_DA-
3	BI_DB+
4	BI_DC+
5	BI_DC-
6	BI_DB-
7	BI_DD+
8	BI_DD-

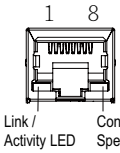
State	Description
Yellow On	2.5Gbps data rate
Green On	1Gbps data rate
Off	100Mbps data rate
Off	10Mbps data rate

Connector PN	Vendor
RB1-GB-0009	UDE

2.2.5 LAN1 (LAN connector)

5



LAN Connector


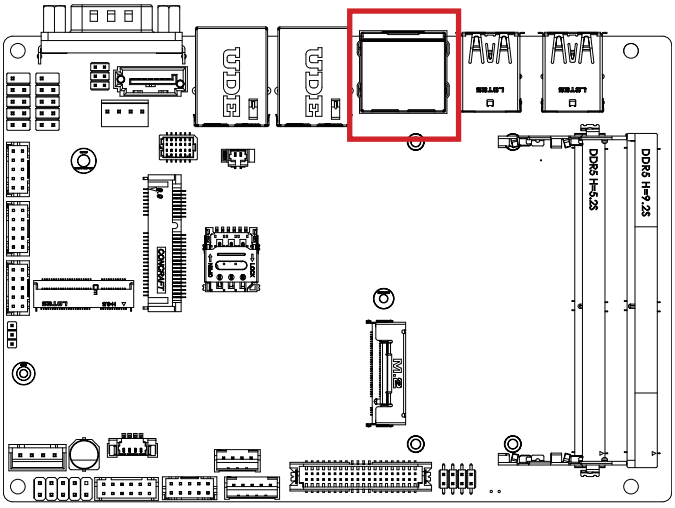
Pin No.	Definition
1	BI_DA+
2	BI_DA-
3	BI_DB+
4	BI_DC+
5	BI_DC-
6	BI_DB-
7	BI_DD+
8	BI_DD-

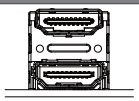
State	Description
Yellow On	2.5Gbps data rate
Green On	1Gbps data rate
Off	100Mbps data rate
Off	10Mbps data rate

Connector PN	Vendor
RB1-GB-0009	UDE

2.2.6 HDMI21 (HDMI connector)

6



HDMI Connector


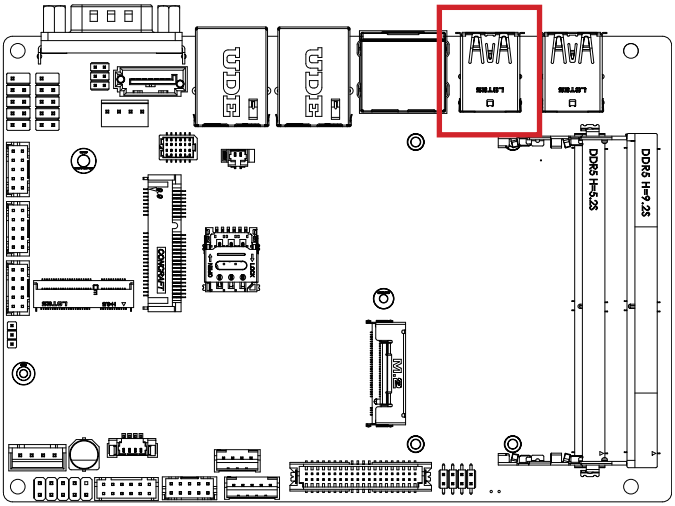
HDMI 1 connector			
Pin No.	Definition	Pin No.	Definition
1	HDMI_D2p	11	GND
2	GND	12	HDMI_CLKn
3	HDMI_D2n	13	NC
4	HDMI_D1p	14	NC
5	GND	15	HDMI_SCL
6	HDMI_D1n	16	HDMI_SDA
7	HDMI_D0p	17	GND
8	GND	18	5V
9	HDMI_D0n	19	HDMI_HPD
10	HDMI_CLKp		

HDMI 2 connector			
Pin No.	Definition	Pin No.	Definition
1	HDMI_D2p	11	GND
2	GND	12	HDMI_CLKn
3	HDMI_D2n	13	HDMI CEC
4	HDMI_D1p	14	NC
5	GND	15	HDMI_SCL
6	HDMI_D1n	16	HDMI_SDA
7	HDMI_D0p	17	GND
8	GND	18	5V
9	HDMI_D0n	19	HDMI_HPD
10	HDMI_CLKp		

Connector PN	Vendor
WDMM-38ACL1B1HW3Z1	WINWIN

2.2.7 USB32_2 (USB 3.2 Gen 2x1 connector)

7



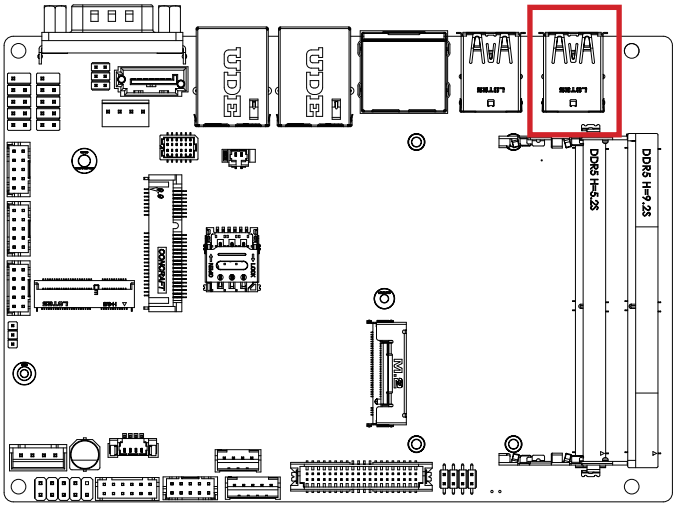
USB Connector


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

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

2.2.8 USB32_1 (USB 3.2 Gen 2x1 connector)

8



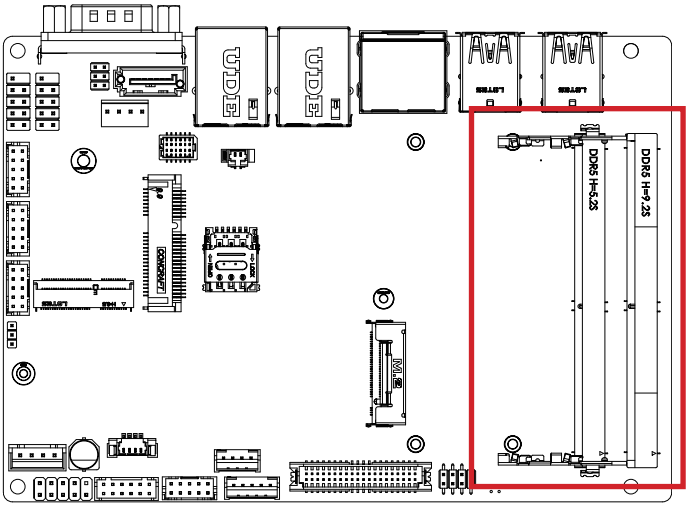
USB Connector


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

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

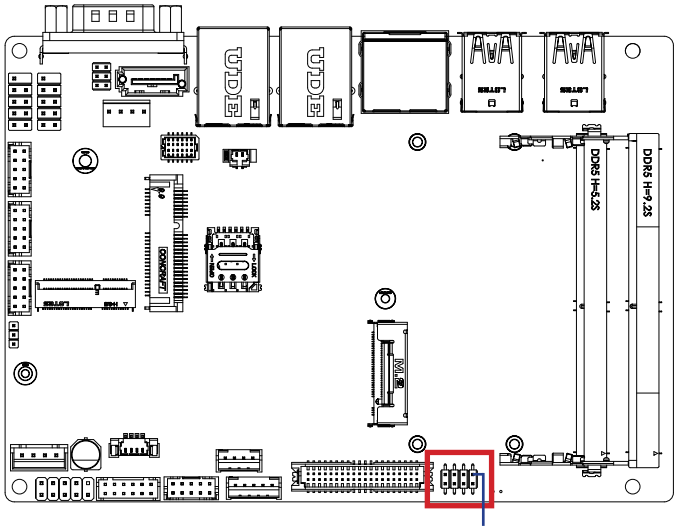
2.2.9 SODIMM1, SODIMM2 (DDR5 SO-DIMM Slot)

9



2.2.10 LSW (LVDS resolution jumper)

10



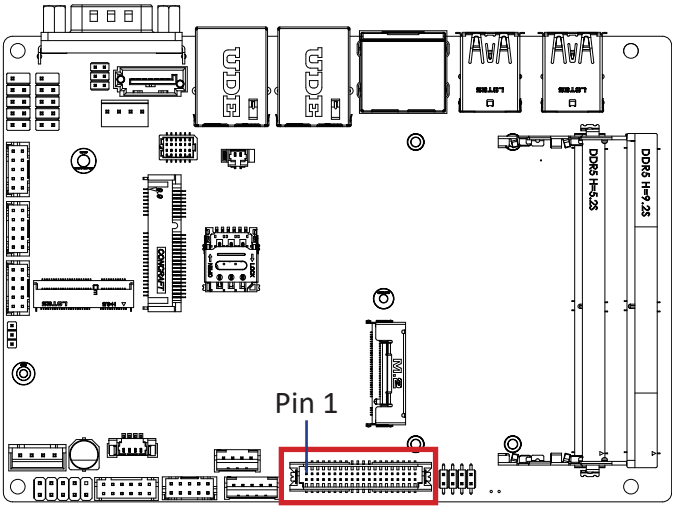
LVDS Resolution Jumper			
Jumper Setting	Resolution	Jumper Setting	Resolution
	800 x 600 18bit		1366 x 768 24bit
	1024 x 768 18bit		1440 x 900 24bit
	1024 x 768 24bit		1400 x 1050 24bit
	1024 x 600 18bit		1600 x 900 24bit
	1280 x 800 18bit		1680 x 1050 24bit
	1280 x 960 18bit		1600 x 1200 24bit
	1280 x 1024 24bit		1920 x 1080 24bit
	1366 x 768 18bit		1920 x 1200 24bit

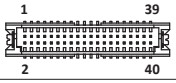
Connector PN	Vendor
222-97-04GBE1	PINREX

Connector type
2x4pin header, pitch 2.0mm

2.2.11 LVDS (LVDS connector)

11



LVDS Connector


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	SPEC0	25	GND
6	SPED0	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-
17	A3-	37	GND

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

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

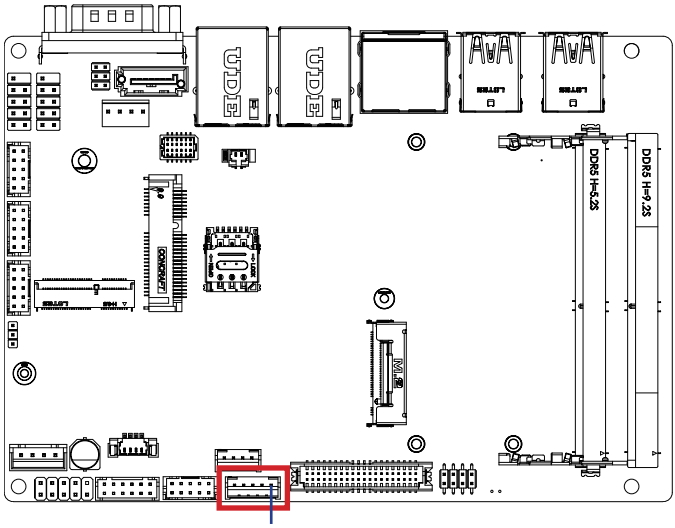
Connector type
2x20pin header, pitch 1.25mm

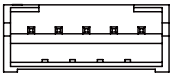
For each model support LVDS function.
But below model no need to add.
A0~A3 is odd channel 0~3, A4~A7 is even channel.

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

2.2.12 BKL_CN (Backlight control header)

12



Backlight control header
5  1

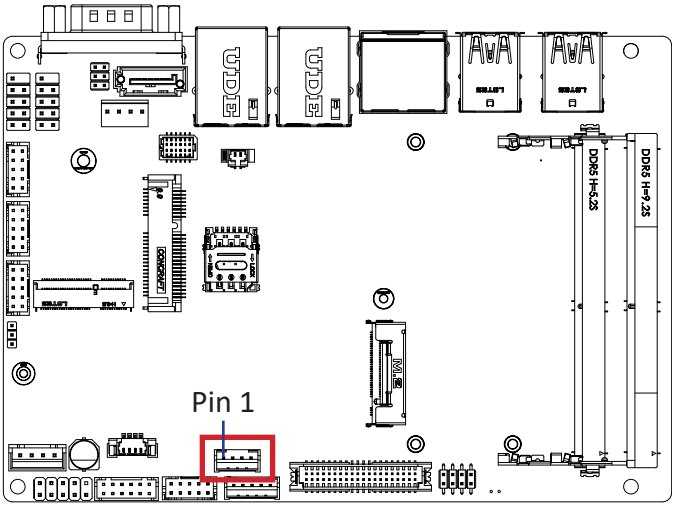
Connector PN	Vendor
721-81-05TW00	PINREX

Connector type
1x5pin header, pitch 2.0mm

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

2.2.13 SPKR (Speaker out connector)

13



Audio Amplifie Connector
1 4

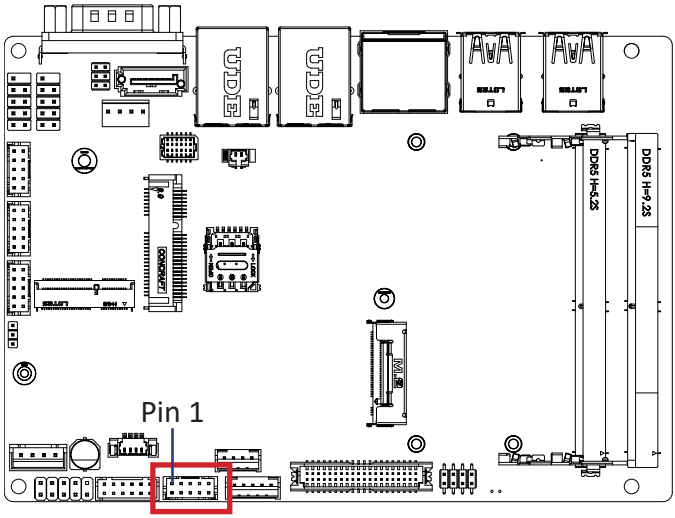
Pin No.	Definition
1	Speaker Out L+
2	Speaker Out L-
3	Speaker Out R-
4	Speaker Out R+

Connector PN	Vendor
A2001WV-04P146	JOINT-TECH

Connector type
1x4pin header, pitch 2.0mm

2.2.14 FP_AUDIO (Front Audio connector)

14



Front Audio Connector
1 9 2 10

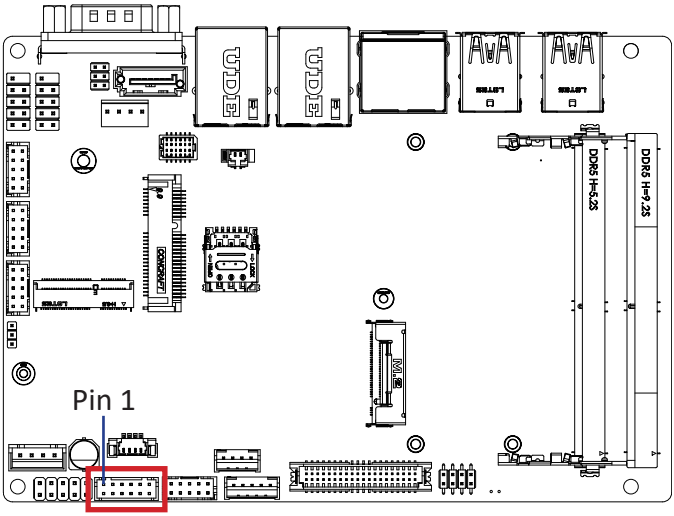
Pin No.	Definition
1	MIC_Left
2	GND
3	MIC_Right
4	NC
5	LINE_Right
6	MIC_JD
7	Jacksense Detect
8	No Connect
9	LINE_Left
10	GND

Connector PN	Vendor
725-81-10TW00	PINREX

Connector type
2x5pin header, pitch 2.0mm

2.2.15 GPIO_CNT (General Purpose input/output header)

15



GPIO Connector
1 11 2 12

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

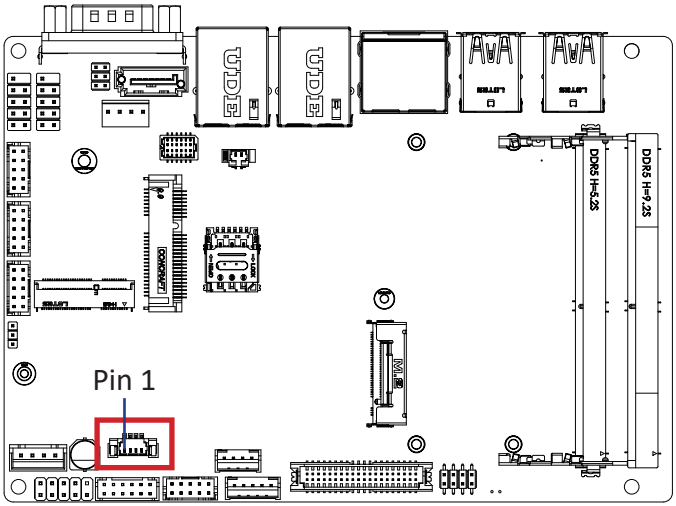
Pin No.	Definition
10	SMB_DATA
11	5V
12	GND

Connector PN	Vendor
725-81-12TW00	PINREX

Connector type
2x6pin header, pitch 2.0mm

2.2.16 CAN_BUS (CANBus header)

16



CANBus Header
1234

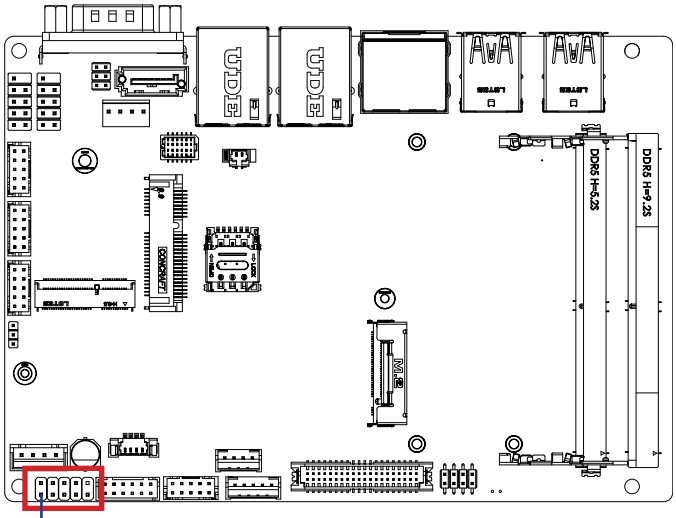
Pin No.	Definition
1	GND
2	CAN_H
3	CAN_L
4	5V

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

Connector type
1x4pin header, pitch 1.25mm

2.2.17 SYS_PANEL (Front panel header)

17



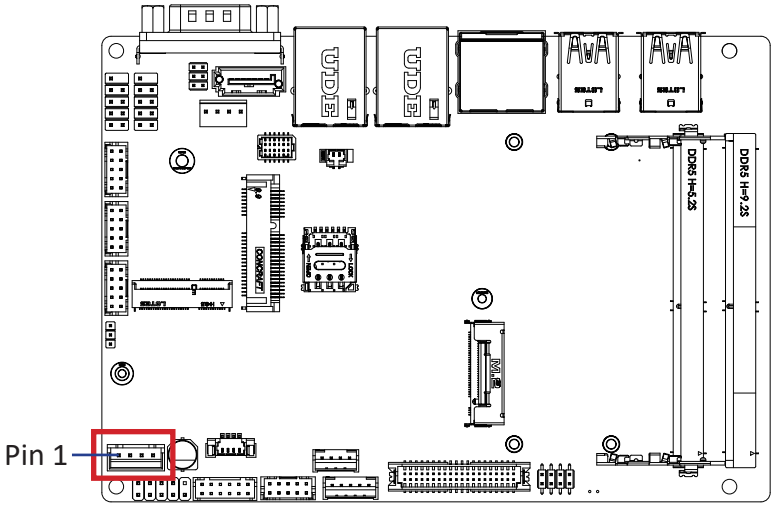
System Panel Header
2 10 1 9

Pin No.	Definition
1	HDD LED+
2	Power LED+
3	HDD LED-
4	Power LED-
5	GND
6	Power Button+
7	Reset Button
8	Power Button-
9	No Connect
10	No Pin

Connector PN	Vendor
210-92-05GW5W	PINREX
Connector type	
2x5pin header, pitch 2.54mm	

2.2.18 DC_IN (DC IN 1x4 pin power connector)

18



DC IN connector

1 2 34

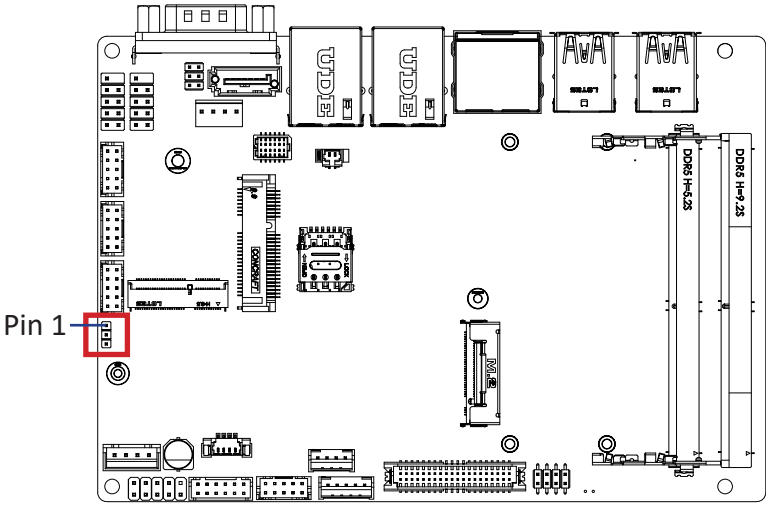
Pin No.	Definition
1	GND
2	Power
3	Power
4	GND

Connector PN	Vendor
753-81-04TW00	PINREX

Connector type
1x4pin header, pitch 2.5mm

2.2.19 AT_CN (AT/ATX mode select jumper)

19



AT/ATX mode select jumper

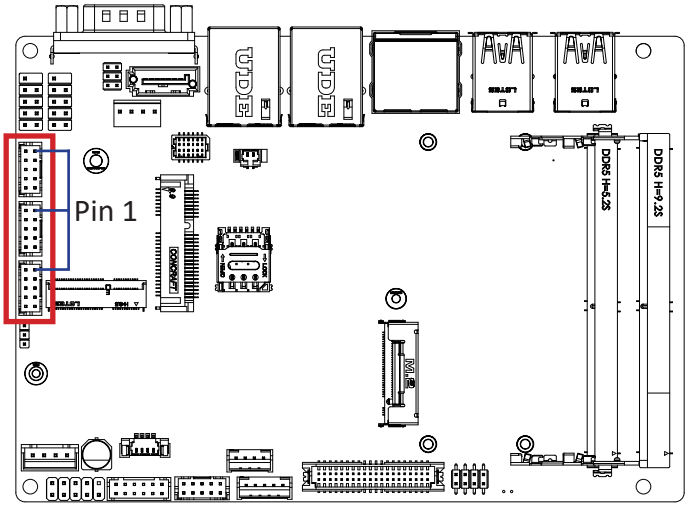

Pin No.	Definition
1	AT MODE
2	GPO7
3	ATX MODE
Jumper setting 1-2 Close : AT mode. 2-3 Close : ATX mode.(Default setting)	

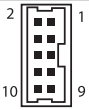
Connector PN	Vendor
220-96-03GB001K	PINREX
A2015WV-03P6T	JOINT-TECH

Connector type
1x3pin header, pitch 2.0mm

2.2.20 COM2, COM3, COM4 (Serial port header, RS-232/422/485)

20



Serial Port Cable Connector


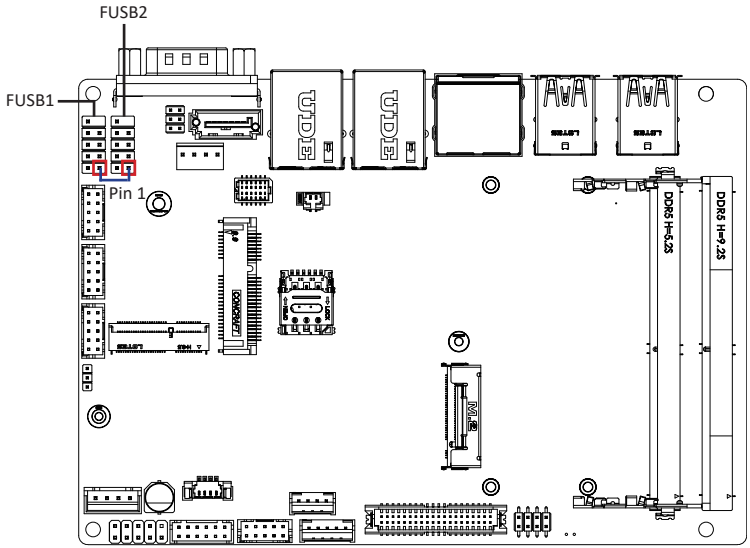
Pin No.	RS-232	RS-422 Full Duplex	RS-485 Half Duplex
1	RXD	TXD+	D+
2	DCD	TXD-	D-
3	DTR	RXD-	—
4	TXD	RXD+	—
5	DSR	—	—
6	GND	—	—
7	CTS	—	—
8	RTS	—	—
9	No Connect	—	—
10	RI	—	—

Connector PN	Vendor
725-81-10TW00	PINREX

Connector type
2x5pin header, pitch 2.0mm

2.2.21 FUSB1, FUSB2 (USB 2.0 headers)

21



USB 2.0 Header
10 9 2 1

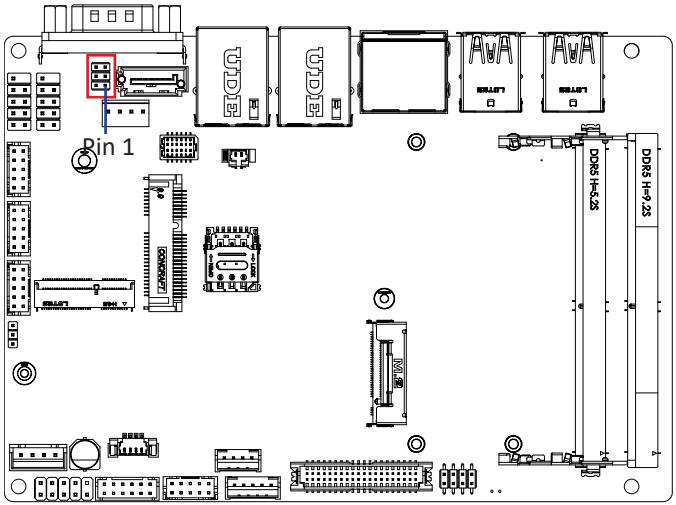
Connector PN	Vendor
210-92-05GB04	PINREX
PH10R53BAZ009	HORNGTONG

Connector type
2x5pin header, pitch 2.54mm

Pin No.	Definition
1	5V
2	5V
3	DXn
4	DYn
5	DXp
6	DYp
7	GND
8	GND
9	No Pin
10	No Connect

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

22



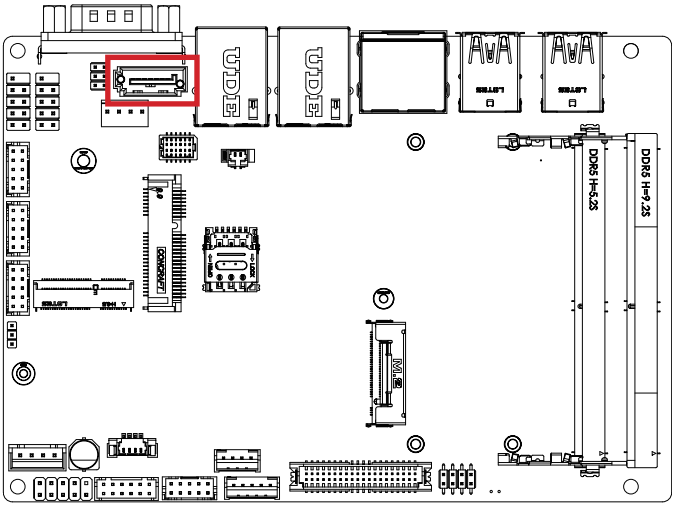
JCOM1 Jumper Select	
6 5 2 1	1-2 Close: 5V (Power COM)
6 5 2 1	3-4 Close: RI (Stand COM) (Default-Setting)
6 5 2 1	5-6 Close: 12V (Power COM)

Connector PN	Vendor
220-97-03GB01	PINREX
PH06N53BAZ000	HORNGTONG

Connector type
2x3pin header, pitch 2.0mm

2.2.23 SATA0 (SATA 6Gb/s connector)

23



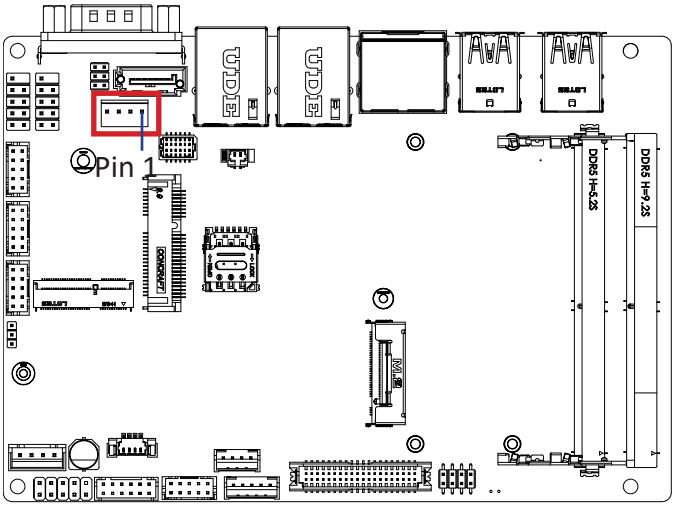
SATA Connector
1  7

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

Connector PN	Vendor
WATF-07DBLBA1UW	WINWIN

2.2.24 SATAPWR (SATA power connector)

24



Hard Disk Power Connector
4  1

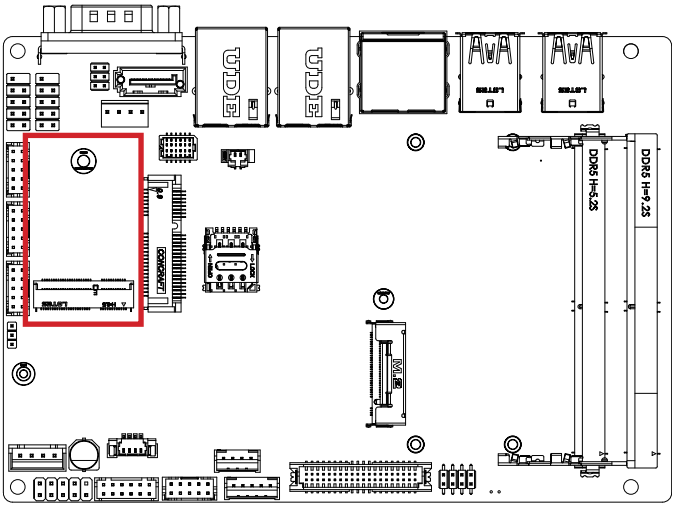
Pin No.	Definition
1	12V
2	GND
3	GND
4	5V

Connector PN	Vendor
743-91-045W00	PINREX

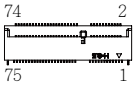
Connector type
1x4pin header, pitch 2.54mm

2.2.25 M2E (M.2 Slot, 2230 E-key)

25



M.2 E Key Connector



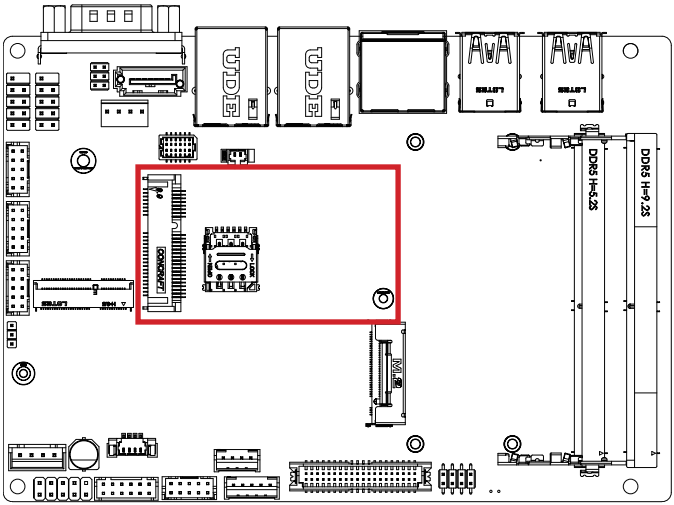
Pin No.	Definition	Pin No.	Definition
1	GND	2	3V
3	USB_Dp	4	3V
5	USB_Dn	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	NC		

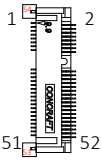
Pin No.	Definition	Pin No.	Definition
33	GND	32	NC
35	WLAN_TXp	34	NC
37	WLAN_TXn	36	NC
39	GND	38	CL_RST#
41	WLAN_RXp	40	CL_DATA
43	WLAN_RXn	42	CL_CLK
45	GND	44	NC
47	CLK_Dp	46	NC
49	CLK_Dn	48	NC
51	GND	50	SUSCLK
53	CLK_REQ	52	PCIE_RST
55	PCIE_WAKE	54	BT_Disable#
57	GND	56	WLAN_ DISABLE
59	NC	58	NC
61	NC	60	NC
63	GND	62	NC
65	NC	64	NC
67	NC	66	NC
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

2.2.26 MPCIE (Mini PCIe slot)

26



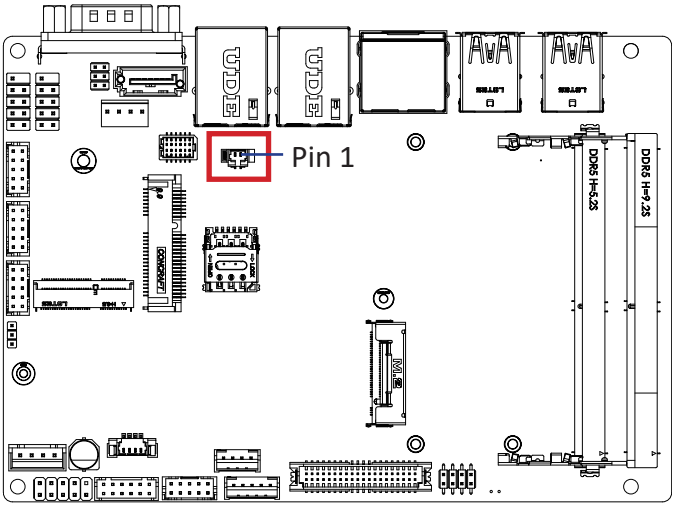
Mini PCIe Connector			
			
Pin No.	Definition	Pin No.	Definition
1	PCIE WAKE	2	3.3V
3	NC	4	GND
5	NC	6	NC
7	PCIE Clock Request	8	SIM PWR
9	GND	10	SIM DATA
11	PCIE Clock n	12	SIM Clock
13	PCIE Clock p	14	SIM Reset
15	GND	16	UIM VPP3
17	NC	18	GND
19	NC	20	WLAN_ DISABLE

Pin No.	Definition	Pin No.	Definition
21	GND	22	Reset
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

Connector PN	Vendor
AS0B221-S99Q-7H	FOXCONN

2.2.27 BATTERY (Battery cable Connector)

27



Battery cable Connector
2 1

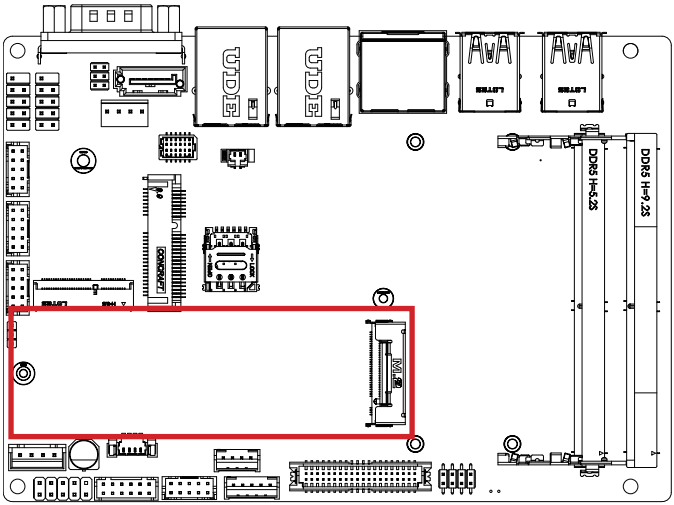
Pin No.	Definition
1	3.3V
2	GND

Connector PN	Vendor
85205-0270L	ACES
A1250WV-S-02PC	JOINT-TECH

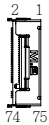
Connector type
1x2pin header, pitch 1.25mm

2.2.28 M2M (M.2 Slot, 2280 M-key)

28



M.2 M Key Connector



Pin No.	Definition	Pin No.	Definition
1	GND	2	3.3V
3	GND	4	3.3V
5	PCIE_RXn3	6	NC
7	PCIE_RXp3	8	NC
9	GND	10	M2_LED
11	PCIE_TXn3	12	3.3V
13	PCIE_TXp3	14	3.3V
15	GND	16	3.3V
17	PCIE_RXn2	18	3.3V
19	PCIE_RXp2	20	NC
21	GND	22	NC
23	PCIE_TXn2	24	NC
25	PCIE_TXp2	26	NC
27	GND	28	NC
29	PCIE_RXn1	30	NC
31	PCIE_RXp1	32	NC

Pin No.	Definition	Pin No.	Definition
33	GND	34	NC
35	PCIE_TXn1	36	NC
37	PCIE_ TXp1	38	DEVSLP
39	GND	40	SMB Clock
41	SATA_RXp	42	SMB DATA
43	SATA_RXn	44	SMB ALERT
45	GND	46	NC
47	SATA_TXn	48	NC
49	SATA_TXp	50	PLT_RST
51	GND	52	CK_REQ
53	CLK_n	54	PCIE_WAKE#
55	CLK_p	56	NC
57	GND	58	NC

Pin No.	Definition	Pin No.	Definition
67	NC	68	SUSCLK
69	M2_SSD_ Detect	70	3.3V
71	GND	72	3.3V
73	GND	74	3.3V
75	GND		

Connector PN	Vendor
2E0BC41-C85CM-LH	FOXCONN

Chapter 3

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

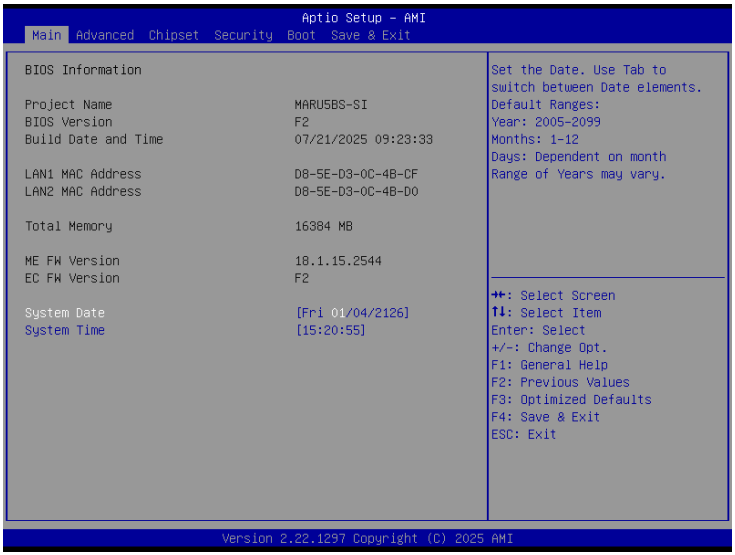
Once the system is power on, press the <DEL> key as soon as possible to access into BIOS Setup program.

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

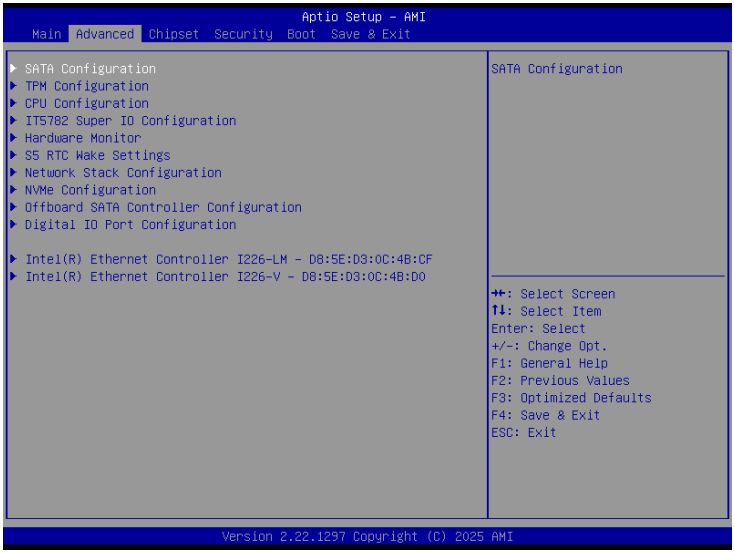
The main menu shows the basic system information.
Use arrow keys to move among the items.



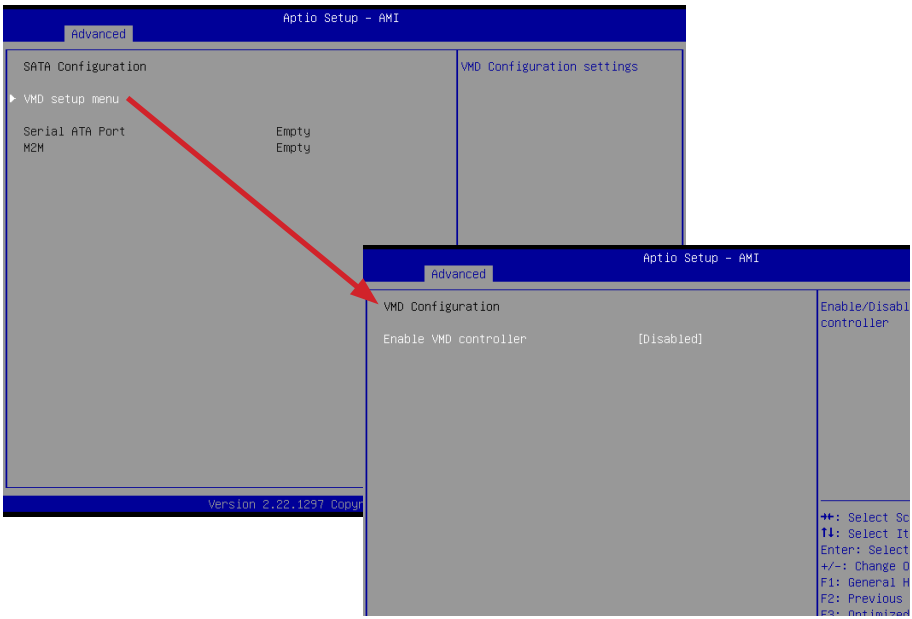
Items	Description
Project Name	Shows Project name information
BIOS Version	Shows the BIOS version of the system
Build Date and Time	Shows the Build Date and Time when the BIOS was created.
LAN1 MAC Address	Shows LAN1 MAC Address information
LAN2 MAC Address	Shows LAN2 MAC Address information
Total Memory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

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.



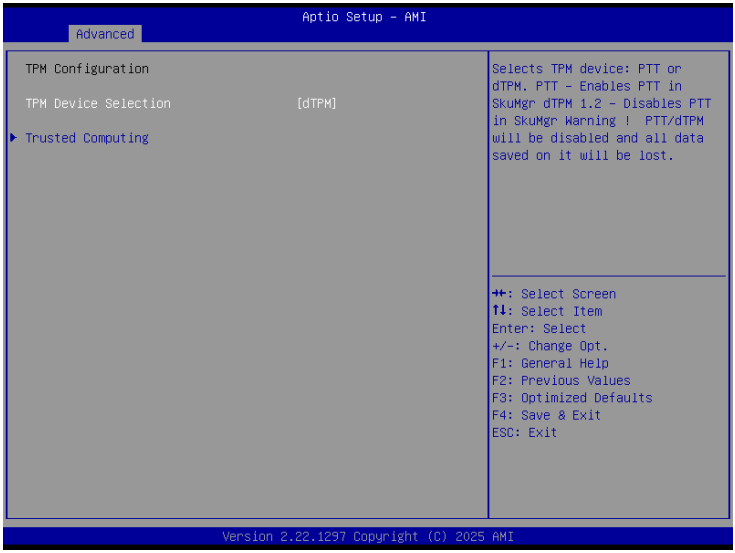
3.3.1 SATA Configuration



Item	Description
VMD setup menu / Enable VMD controller	Intel VMD feature helps you to control and manage NVMe PCIe SSD. **Enabled : Enables Intel VMD feature** **Disabled : Disables Intel VMD feature (Default setting)**
Serial ATA Port	shows 2.5"/3.5" SATA HDD/SSD information
M2M	shows M.2 SATA interface SSD information

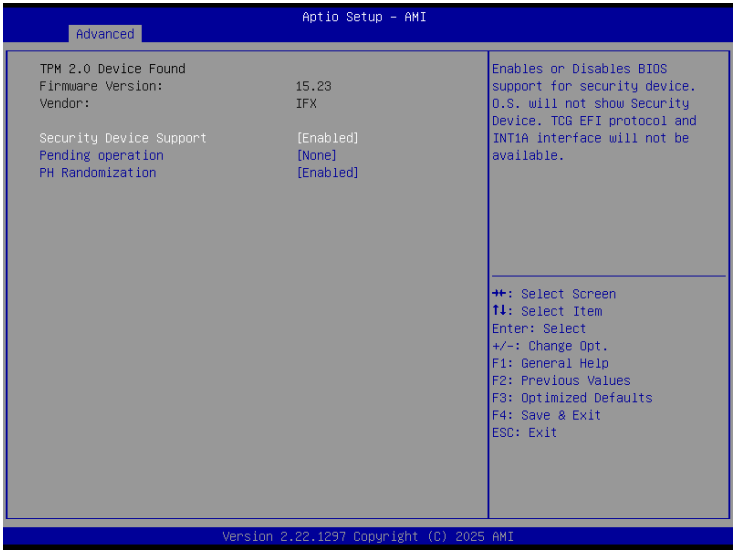
3.3.2 TPM Configuration

Use TPM Configuration submenu to choose TPM interface.



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

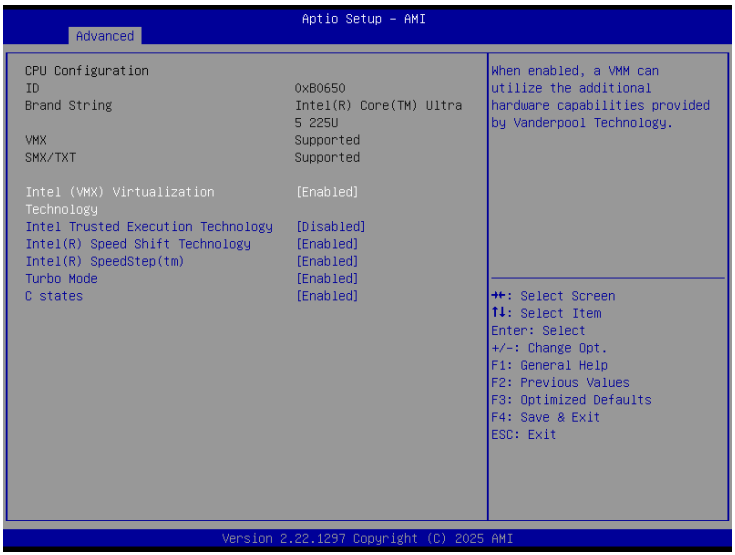
Trusted Computing : Shows TPM information, and TPM module configuration setting.



Item	Description
Security Device support	**Enabled : Enables TPM feature (Default setting)** **Disabled : Disables TPM feature**
Pending operation	**None : No execution will be conducted (Default setting)** **TPM clear : Set to clear data on TPM**
PH Randomization	**Enabled : Enables Platform Hiearchy (PH) Randomization. (Default setting)** **Disabled : Disables Platform Hiearchy (PH) Randomization.**

3.3.3 CPU Configuration

This submenu shows detailed CPU informations.

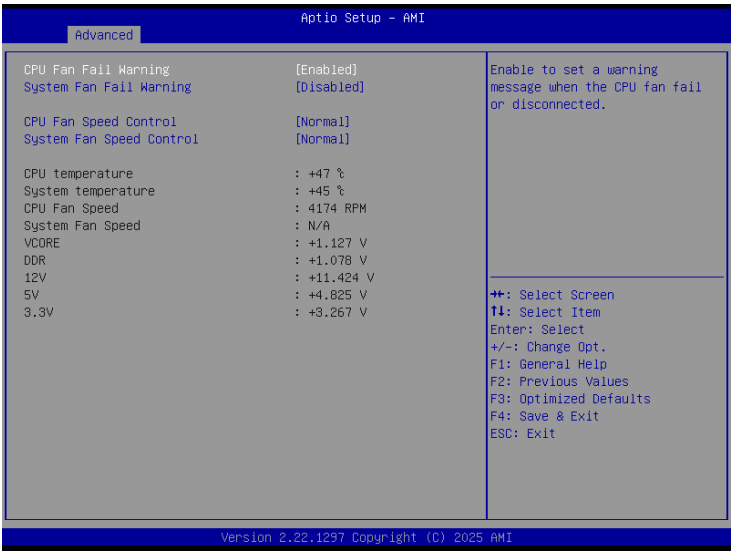


Item	Description
Intel (VMX) Virtualization Technology	Virtualization enhanced by Intel® Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems. **Enabled : Enables Intel Virtualization Technology (Default setting)** **Disabled : Disables Intel Virtualization Technology**
Intel Trusted Execution Technology	**Disabled : Disables Intel Trusted Execution Technology (Intel® TXT) (Default setting)** **Enabled : Enables Intel Trusted Execution Technology (Intel® TXT)**
Intel(R) Speed Shift Technology	To speed up CPU frequency transition time from basic frequency to maximum frequency. **Enabled : Enables Intel(R) Speed Shift Technology Interrupt control (Default setting)** **Disabled : Disables Intel(R) Speed Shift Technology Interrupt control**
Intel(R) SpeedStep(tm)	According to Intel CPU loading, Intel SpeedStep Technology will automatically adjust the CPU voltage and core frequency to decrease heat and power consumption for power saving. **Enabled : Enables Intel SpeedStep Technology (Default setting)** **Disabled : Disables Intel SpeedStep Technology**
Turbo Mode	**Enabled : Enables Turbo Mode (Default setting)** **Disabled : Disables Turbo Mode**
C states	Command CPU to enter into low power consumption mode when CPU is under idle mode. **Enabled : Enables C states (Default setting)** **Disabled : Disables C states**

3.3.4 IT5782 Super IO Configuration

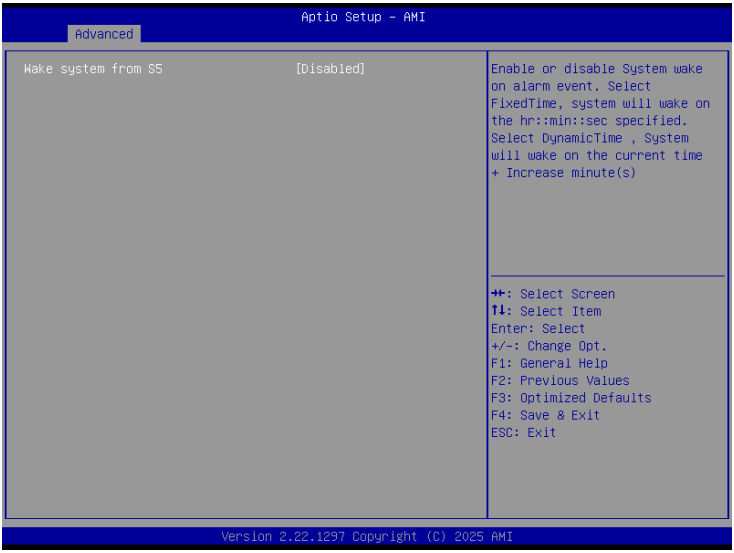
Item	Description
Super IO Chip	Shows Super IO chip model
Serial Port 1 Configuration **Serial Port 2 Configuration** **Serial Port 3 Configuration** **Serial Port 4 Configuration**	Press [Enter] to configure advanced items : Serial Port : **Enabled : Enables allows you to configure the serial port settings** **Disabled : if Disabled, displays no configuration for the serial port** 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

3.3.5 Hardware Monitor



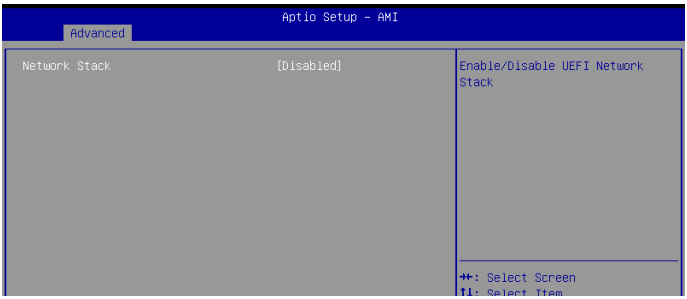
Item	Description
CPU Fan Fail Warning	**Enabled : Enables CPU FAN Fail warning alert function (Default setting)** **Disabled : Disables CPU FAN Fail warning alert function**
System Fan Fail Warning	**Enabled : Enables to set a warning message when the system fan fail or disconnected.** **Disabled : Disables to set a warning message when the system fan fail or disconnected. (Default setting)**
CPU Fan Speed Control	**Normal : Fan speed set by BIOS default (Default setting)** **Full Speed : Set Fan operates at full speed**
System Fan Speed Control	**Normal : Fan speed set by BIOS default (Default setting)** **Full Speed : Set Fan operates at full speed**
CPU Temperature	Shows current CPU temperature
System Temperature	Shows current system temperature
CPU Fan Speed	Shows current CPU fan Speed
SYS Fan Speed	Shows current System fan Speed

3.3.6 S5 RTC Wake Settings

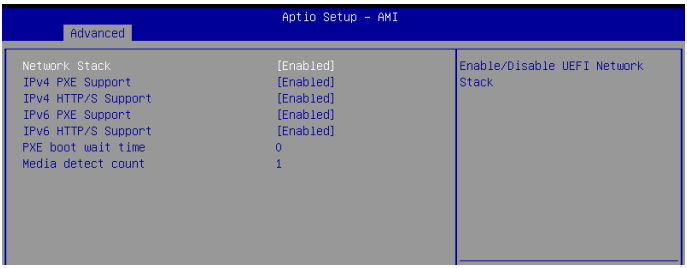


Item	Description
Wake system from S5	Enable or Disable System to wake on a specific time. **Disabled : Disables system to wake on a specific time** **Fixed Time : Enables system to wake on a specific time (Default setting)** **(Format : hr : min : sec)**

3.3.7 Network Stack Configuration



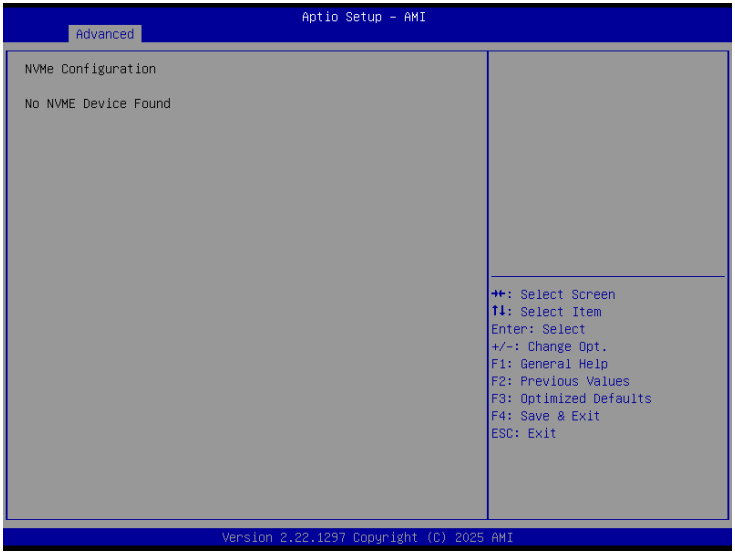
When Network stack is enabled :



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

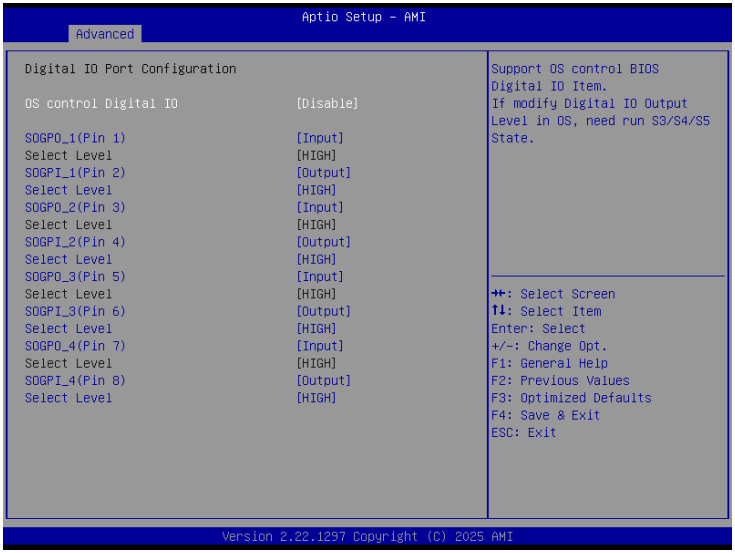
3.3.8 NVMe Configuration

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



3.3.9 Offboard SATA Controller Configuration

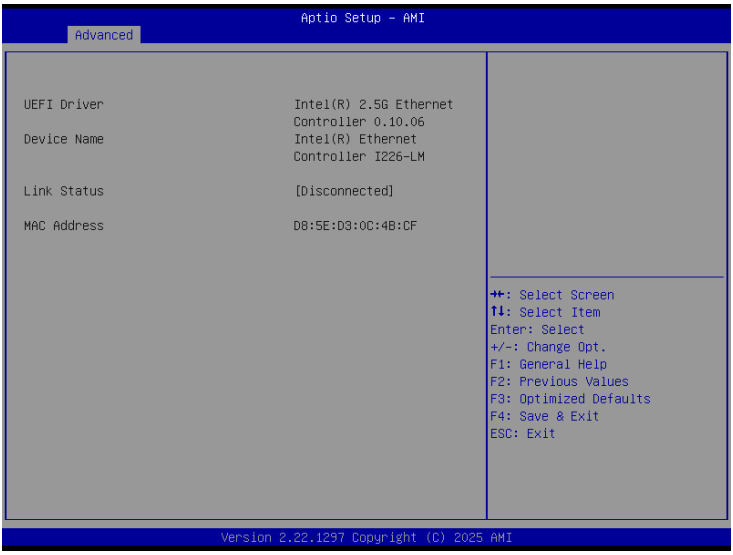
3.3.10 Digital IO Port Configuration



Item	Description
OS control Digital IO	**Disabled : If Digital IO Output value/level is modified in OS, they will not be memorized and kept. (Default setting)** **Enabled : If Digital IO Output value/level is modified in OS, they will be memorized and kept.**
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.

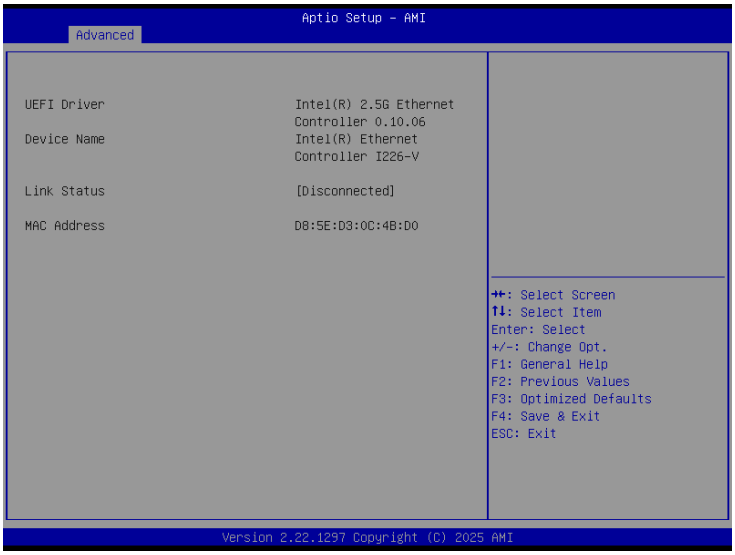
3.3.11 Intel(R) Ethernet Controller I226-LM - D8:5E:D3:0C:4B:CF (MAC address may varied based on different motherboard)

Shows Intel Ethernet controller information

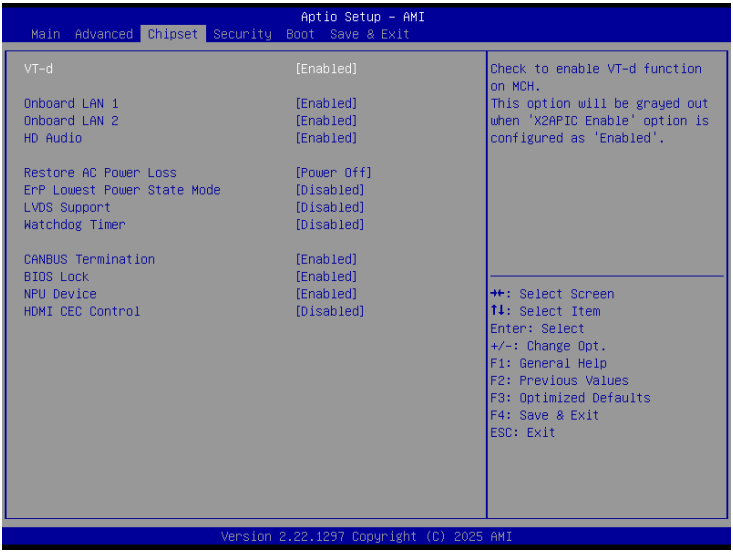


3.3.12 Intel(R) Ethernet Controller I226-V - D8:5E:D3:0C:4B:D0 (MAC address may varied based on different motherboard)

Shows Intel Ethernet controller information



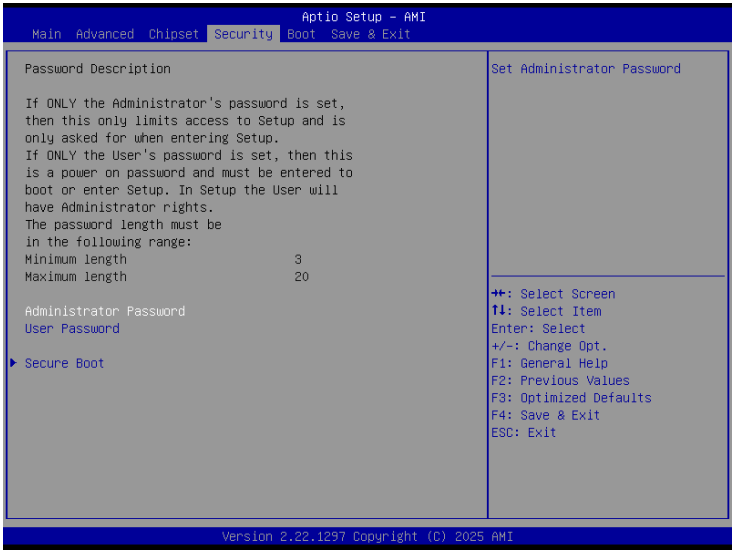
3.4 Chipset



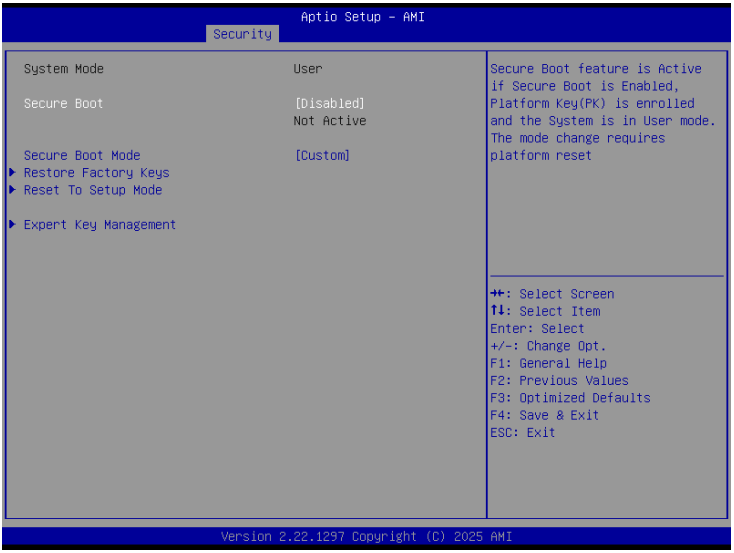
Item	Description
VT-d	**Enabled : Enables VT-d function (Default setting)** **Disabled : Disables VT-d function**
Onboard LAN1 **Onboard LAN2**	Enable/Disable onboard LAN controller **Enabled : Enables onboard LAN controller (Default setting)** **Disabled : Disables onboard LAN controller**
HD Audio	Enable/Disable onboard audio controller **Enabled : Enables onboard audio controller (Default setting)** **Disabled : Disables onboard audio controller**
Restore AC Power Loss	To set which option the system should returns if a sudden power loss occured **Power off : Do not power on when the power is back (Default setting)** **Power on : System power on when the power is back** **Last state : Restore the system to the state before power loss occures**
ErP Lowest Power State Mode	Enable/Disable power saving funtion **Enabled : Enables ERP Lowest Power State Mode** **Disabled : Disabled ERP Lowest Power State Mode (Default setting)**

LVDS Support	**Disabled : Disables LVDS Support (Default setting)** **Enabled : Enables LVDS Support**
Watchdog Timer	Enable/Disable Watchdog Timer function **Enabled : Enables Watchdog Timer function** **Disabled : Disabled Watchdog Timer function (Default setting)**
CANBUS Termination	Enable/Disable CANBUS Termination function **Enabled : Enables CANBUS Termination function (Default setting)** **Disabled : Disabled CANBUS Termination funtion**
BIOS Lock	Enable/Disable BIOS Lock function **Enabled : Enables BIOS Lock function (Default setting)** **Disabled : Disabled BIOS Lock funtion**
NPU Device	Enable/Disable NPU Device function **Enabled : Enables NPU Device function (Default setting)** **Disabled : Disabled NPU Device funtion** ※Suggest to disable this function when using Windows 10
HDMI CEC Control	Enable/Disable HDMI CEC Control function **Enabled : Enables HDMI CEC Control function** **Disabled : Disabled HDMI CEC Control funtion (Default setting)**

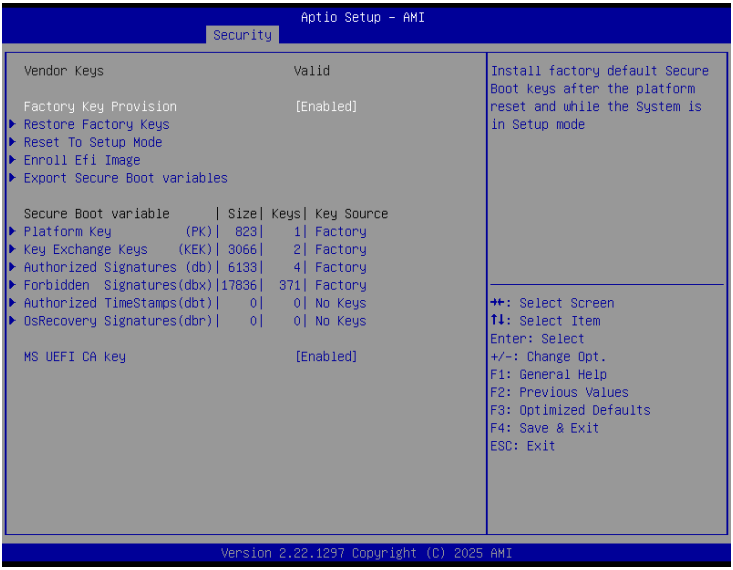
3.5 Security



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



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

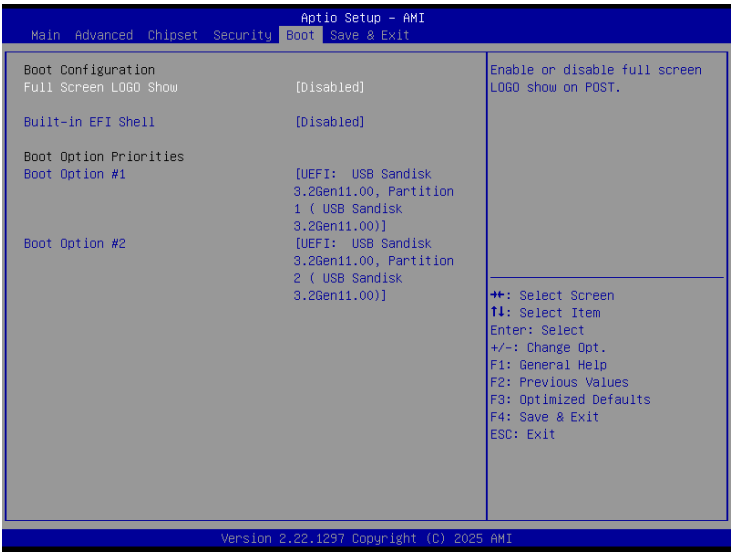


Item	Description
Factory Key Provision	Install factory default Secure Boot keys after the platform reset and while the system is in Setup mode **Enabled : Enables Factory Key Provision (Default setting)** **Disabled : Disables Factory Key Provision**
Restore Factory Keys	To restore factory settings
Reset To Setup Mode	Delete all Secure boot key databases from NVRAM
Enroll Efi Image	Allow the image to run in Secure Boot mode
Export Secure Boot variables	Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device

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

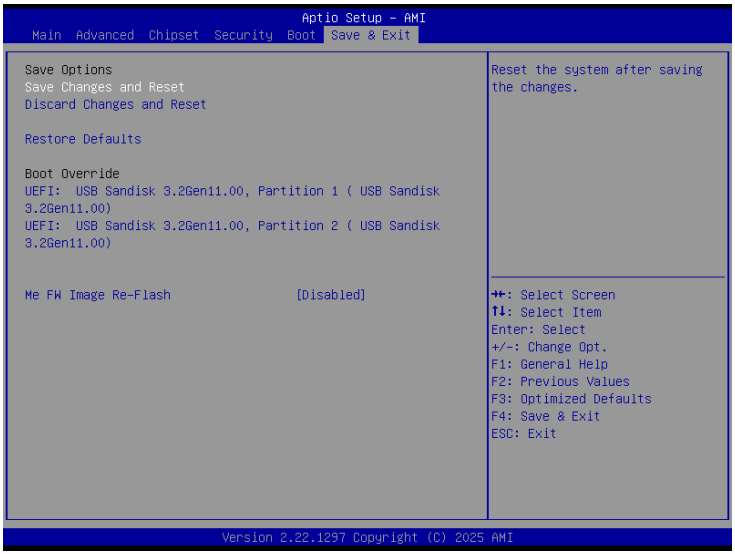
3.6 Boot

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



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

3.7 Save & Exit



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