

mITX-H61EC (MH61ECI-SI)

mITX-H61EC Mini-ITX Motherboard

User's Manual 1st Ed

Copyright Notice

This document is copyrighted, 2023. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated, or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, or for any infringements upon the rights of third parties that may result from its use.

The material in this document is for product information only and is subject to change without notice. While reasonable efforts have been made in the preparation of this document to assure its accuracy, GIGAIPC assumes no liabilities resulting from errors or omissions in this document, or from the use of the information contained herein.

GIGAIPC reserves the right to make changes in the product design without notice to its users.

Acknowledgement

All other products' name or trademarks are properties of their respective owners.

- Microsoft Windows is a registered trademark of Microsoft Corp.
- Intel, Pentium, Celeron, and Xeon are registered trademarks of Intel Corporation
- Core, Atom are trademarks of Intel Corporation
- ITE is a trademark of Integrated Technology Express, Inc.
- IBM, PC/AT, PS/2, and VGA are trademarks of International Business Machines Corporation.

All other product names or trademarks are properties of their respective owners.

Packing List

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

Item	Quantity
mITX-H61EC MB	1
SATA power cable	1
I/O Shield	1

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

About this Document

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

Users may refer to the 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

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	○	○	○	○	○	○
Wires & Connectors for External Connections	○	○	○	○	○	○
<p>○ : 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.</p> <p>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.</p> <p>Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only</p>						

Table Contents

mITX-H61EC Mini-ITX Motherboard User's Manual 1st Ed	1
Copyright Notice	2
Acknowledgement	3
Packing List.....	4
About this Document	5
Safety Precautions	6
FCC Statement.....	8
China RoHS Requirements (CN).....	9
China RoHS Requirement (EN)	10
 Chapter 1 - Product Specifications	 14
1.1 Specifications	16
 Chapter 2 – Hardware Information	 18
2.1 Jumpers and Connectors	19
2.2.1 IO Connector Information.....	22
2.2.2 DC_IN1 (DC In Jack 4 Pin Din)	23
2.2.3 DC_IN2 (ATX 2x2 Pin Power Connector).....	24
2.2.4 HDMI (HDMI Connector).....	25
2.2.5 VGA (VGA Port)	26
2.2.6 USB32_LAN1 (USB + 2.5GbE LAN Connector)	27
2.2.7 USB32_LAN2 (USB + 2.5GbE LAN Connector)	28
2.2.8 LAN3_4, LAN5_6 (2.5GbE LAN Connector)	29
2.2.9 CLR_CMOS (Clear CMOS jumper)	30

2.2.10	SATA4, SATA5 (SATA 6Gb/s Connector)	31
2.2.11	SATA_PWR (SATA Power Connector)	32
2.2.12	FUSB2_1, FUSB2_2 (USB 2.0 header).....	33
2.2.13	AT_CN (AT/ATX mode select jumper).....	34
2.2.14	JCOM1 (RI# pin RI#/5V/12V Select jumper for COM1 Port)	35
2.2.15	COM1, COM2 (Serial port header)	36
2.2.16	GPIO_CNT (General purpose input/out header).....	37
2.2.17	SYS_PANEL (Front Panel header)	38
2.2.18	BUZZER (Buzzer header)	39
2.2.19	SODIMM1, SODIMM2 (2 x DDR4 SO-DIMM Sockets) ...	40
2.2.20	CPU Socket (LGA 1700 Socket)	41
2.2.21	CPU_FAN (CPU FAN Connector)	42
2.2.22	PCIEX16 (1 x PCIe x16 (Gen4 x16) Slot)	43
2.2.23	Battery (Battery Connector)	44
2.2.24	FP_AUDIO (Front Panel Audio header)	45
2.2.25	SYS_FAN (System Fan Connector)	46
2.2.26	M2E (M.2 Slot, 2230 E-Key)	47
2.2.27	M2M (M.2 Slot, 2280 M-Key)	48

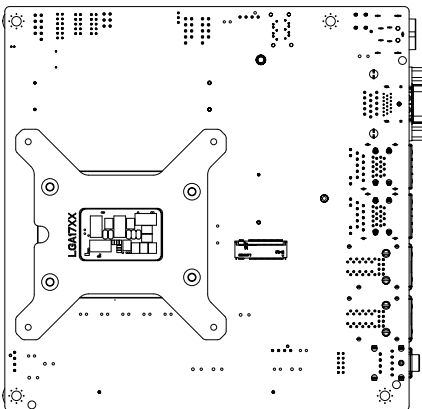
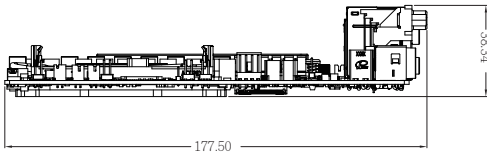
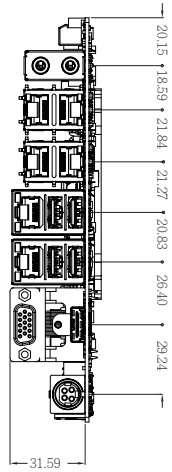
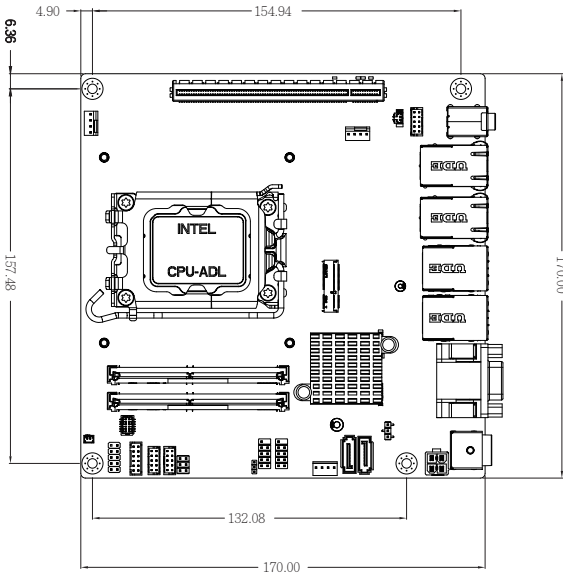
Chapter 3 – BIOS 49

3.1	Introduction	50
3.2	The Main Menu.....	51
3.3	Advanced	52
3.3.1	TPM Configuration.....	53
3.3.2	CPU Configuration	55

3.3.3	SATA Configuration	56
3.3.4	IT8786 Super IO Configuration	57
3.3.5	Hardware Monitor	58
3.3.6	S5 RTC Wake Settings	59
3.3.7	Network Stack Configuration.....	60
3.3.8	Digital IO Port Configuration	61
3.3.9	Tls Auth Configuration	62
3.4	Chipset	63
3.5	Security	65
3.6	Boot.....	68
3.7	Save & Exit	69

Chapter 1

Chapter 1 - Product Specifications



1.1 Specifications

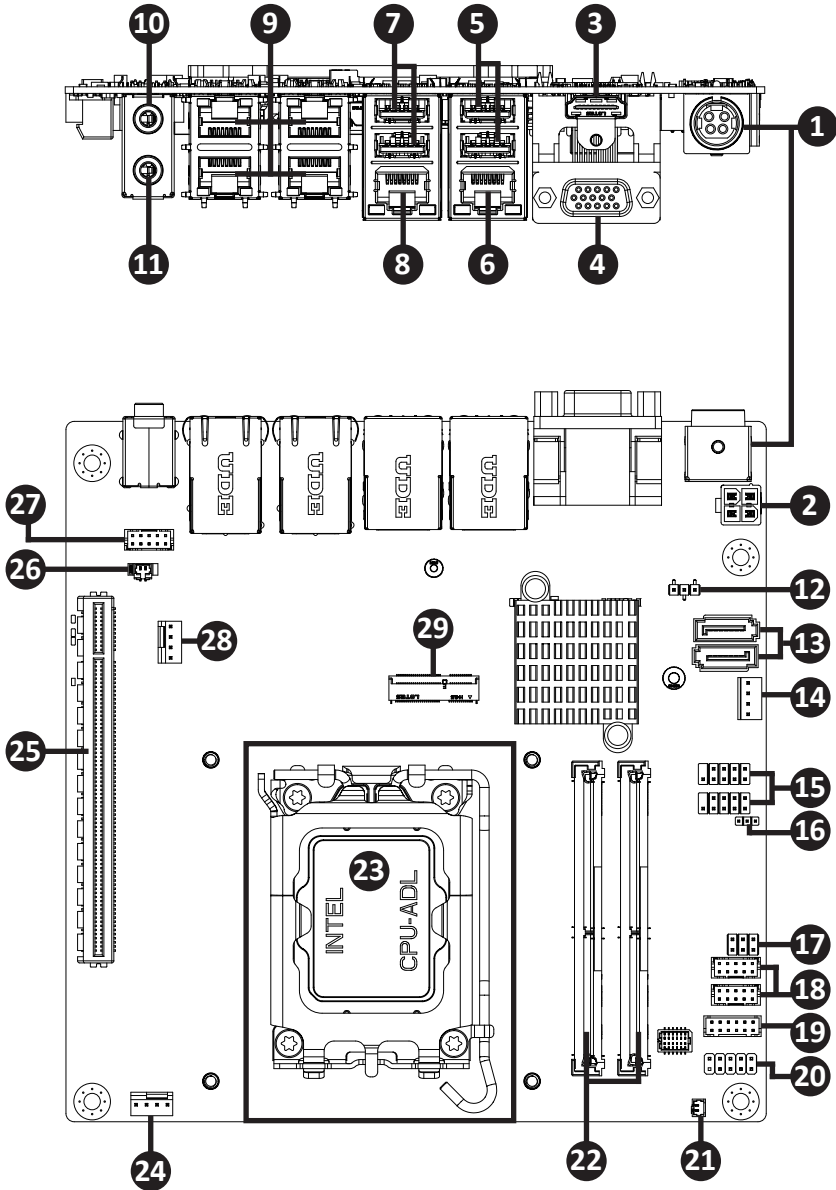
Motherboard	mITX-H61EC (MH61ECI-SI)
Form Factor	Mini-ITX 170W x 170D (mm)
CPU	Support for 13th/12th Generation Intel® Core™ i9/ i7/ i5/ i3, Pentium® and Celeron® processors in the LGA1700 package TDP under 65W
Socket	1 x LGA 1700
Chipset	Intel® H610E Chipset
Memory	2 x DDR4 SO-DIMM sockets, Max. Capacity 64 GB Support Dual channel DDR4 3200 MHz memory modules
Ethernet	6 x 2.5GbE LAN Ports (Intel® I226V)
Video	Integrated Graphics Processor - depends on CPU: 1 x HDMI 2.0 port, supporting a maximum resolution of 4096x2160 @60Hz 1 x VGA port, supporting a maximum resolution of 1920x1080 @60Hz (2 independent display outputs)
Audio	Realtek® Audio codec
Storage	2 x SATA 6Gb/s Ports
Expansion Slots	1 x PCIe x16 (Gen4 x16) 1 x 2280 M.2 M-Key (SATA 6Gb/s) 1 x 2230 M.2 E-Key (WiFi/BT)
Internal I/O	1 x 4-pin ATX main power connector 1 x SATA power connector 1 x CPU fan header 1 x System fan header 1 x Front panel header 1 x Front panel audio header 4 x USB 2.0 headers 1 x COM header (RS-232/422/485 & RI/5V/12V) 1 x COM header (RS-232) 1 x GPIO (8 bits) & SMBus header 1 x Clear CMOS jumper 1 x Buzzer header 1 x AT/ATX mode select jumper

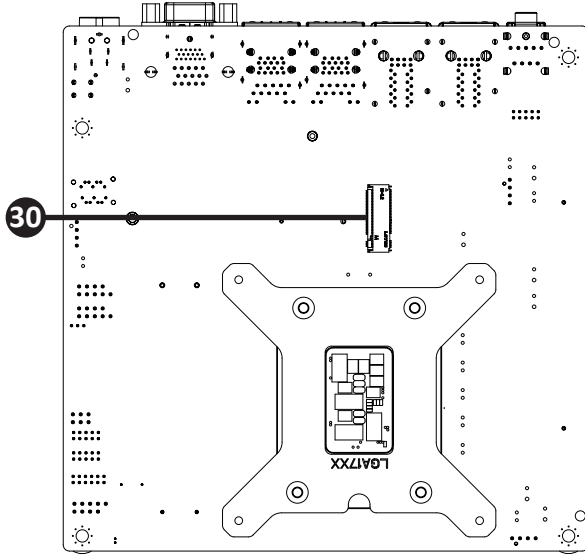
Motherboard	mITX-H61EC (MH61ECI-SI)
Rear I/O	2 x Audio Jacks (Line out, Mic in) 1 x HDMI 1 x VGA 6 x RJ45 LAN Ports 4 x USB 3.2 Gen 1 1 x DC Jack (+12V/+19V~24VDC)
TPM	Onboard TPM 2.0 security chip Infineon SLB9670VQ2.0
OS Compatibility	Windows® 10/11 (x64)
Operating Properties	Operating temperature: 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)
Order Information	Motherboard: 9MH61ECIMR-SI
Optional kit:	CPU Cooler : 25ST0-037820-Y0R CPU Cooler Backplate : 12KRH-0A1700-00R

Chapter 2

Chapter 2 – Hardware Information

2.1 Jumpers and Connectors

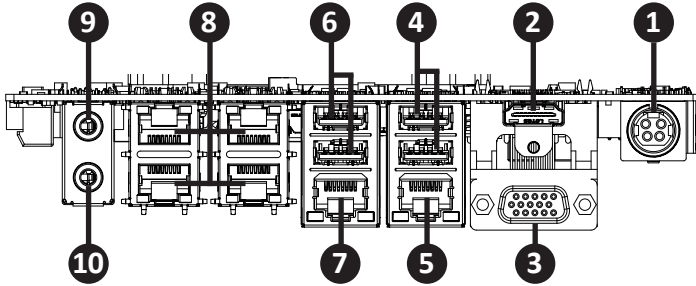




No	Code	Description
1	DC_IN1	DC In Jack 4 pin Din
2	DC_IN2	ATX 2x2 pin power Connector
3	HDMI	HDMI Connector
4	VGA	VGA Port
5	USB32_LAN1	USB 3.2 Gen 1 Connector
6		2.5GbE LAN Port
7	USB32_LAN2	USB 3.2 Gen 1 Connector
8		2.5GbE LAN Port
9	LAN3_4, LAN5_6	2.5GbE LAN Ports
10	AUDIO1	Mic In port (Pink)
11		Line out port (Green)
12	CLR_CMOS	Clear CMOS jumper

No	Code	Description
13	SATA4, SATA5	SATA 6Gb/s Connector x 2
14	SATA_PWR	SATA Power Connector
15	FUSB2_1 FUSB2_2	USB 2.0 header
16	AT_CN	AT/ATX mode select jumper
17	JCOM1	RI# pin RI#/5V/12V Select jumper for COM1 port
18	COM1, COM2	Serial port header COM1 : RS-232/422/485 & RI/5V/12V COM2 : RS-232
19	GPIO_CNT	General purpose input/output header
20	SYS_PANEL	Front Panel header
21	BUZZER	Buzzer header
22	SODIMM1, SODIMM2	2 x DDR4 SO-DIMM Sockets
23	CPU Socket	1 x LGA 1700 Socket
24	CPU_FAN	CPU FAN Connector
25	PCIEX16	1 x PCIe x16 (Gen4 x16) slot
26	BATTERY	Battery Connector
27	FP_AUDIO	Front Panel Audio header
28	SYS_FAN	System Fan Connector
29	M2E	M.2 Slot, 2230 E-Key
30	M2M	M.2 Slot, 2280 M-Key

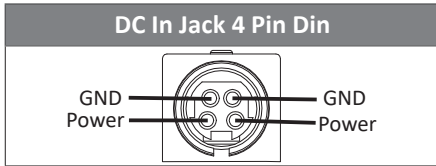
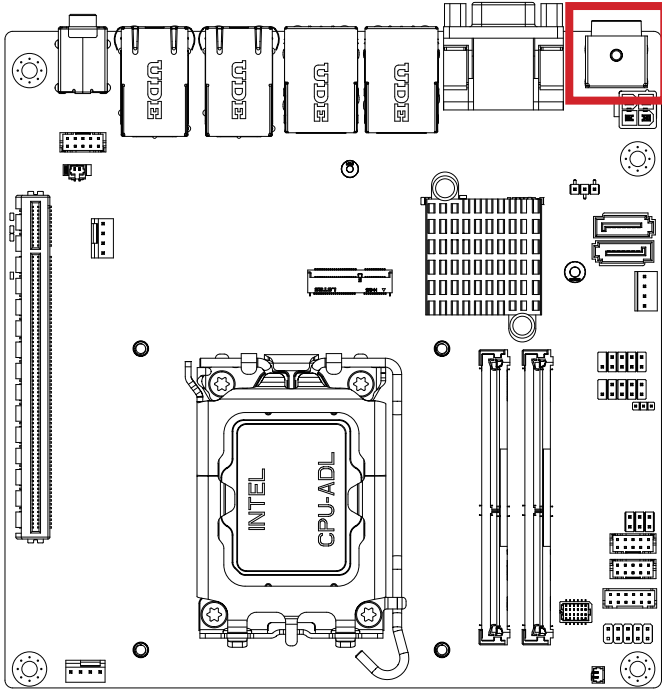
2.2.1 IO Connector Information



	Code	Description
1	DC_IN1	DC In Jack 4 pin Din
2	HDMI	HDMI connector
3	VGA	VGA Port
4	USB32_LAN1	USB 3.2 Gen 1 Connector
5		2.5GbE LAN Port
6	USB32_LAN2	USB 3.2 Gen 1 Connector
7		2.5GbE LAN Port
8	LAN3_4, LAN5_6	2.5GbE LAN Ports
9	AUDIO1	Mic In port (Pink)
10		Line out port (Green)

2.2.2 DC_IN1 (DC In Jack 4 Pin Din)

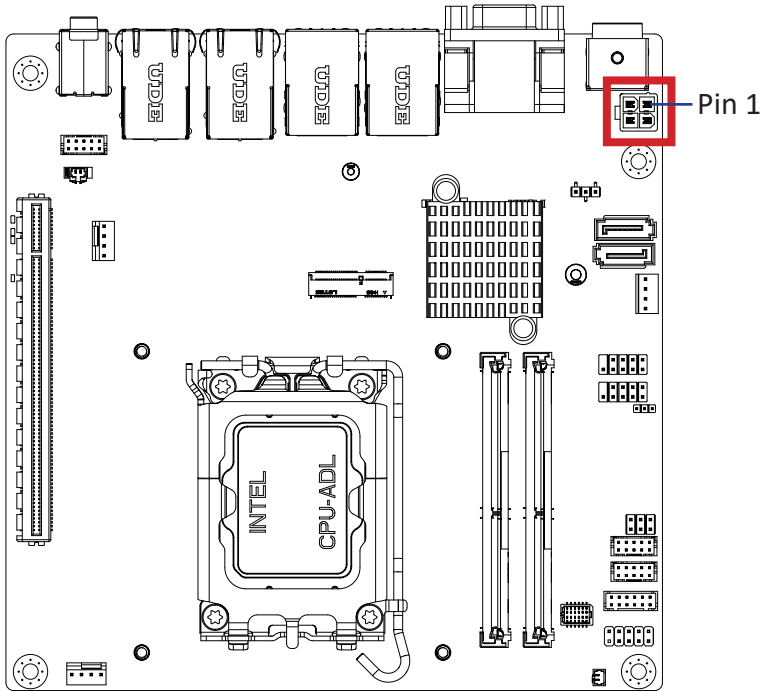
1



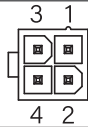
Connector PN	Vendor
2MJ-3422A110	SINGATRON

2.2.3 DC_IN2 (ATX 2x2 Pin Power Connector)

2



Power Connector



Connector PN

740-81-04TW56

Vendor

PINREX

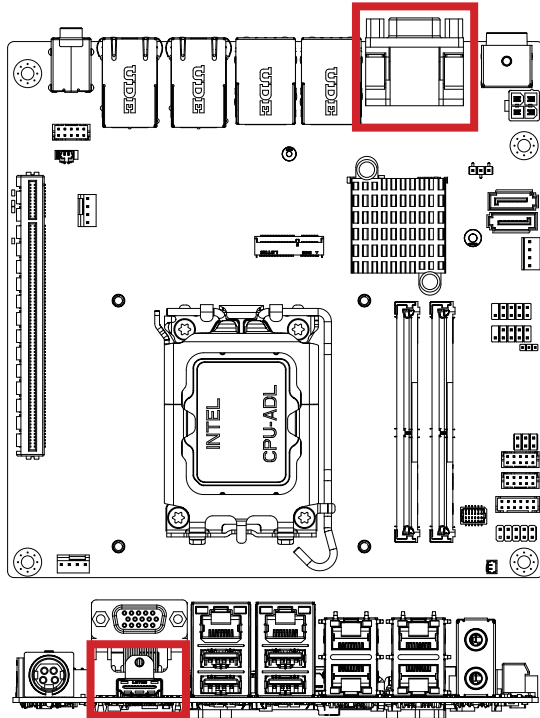
Connector type

2x2pin header, pitch 4.2mm

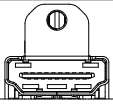
Pin No.	Definition
1	GND
2	GND
3	DC IN
4	DC IN

2.2.4 HDMI (HDMI Connector)

3



HDMI Connector



Connector PN

ABA-HDM-020-P05_A

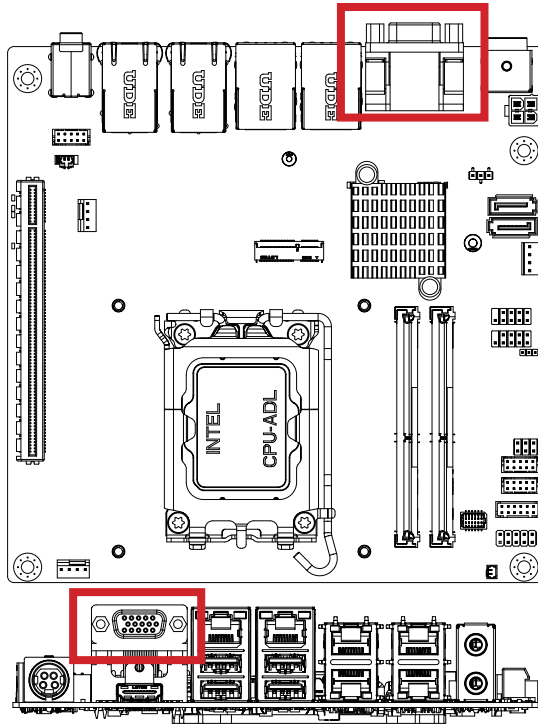
Vendor

LOTES

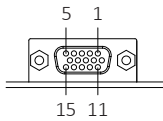
Pin No.	Definition	Pin No.	Definition
1	TX2p	11	GND
2	GND	12	CLKn
3	TX2n	13	NC
4	TX1p	14	NC
5	GND	15	SCL
6	TX1n	16	SDA
7	TX0p	17	GND
8	GND	18	5V
9	TX0n	19	Hot Plug Detect
10	CLKp		

2.2.5 VGA (VGA Port)

4



D-sub Connector



Connector PN

DV11261-25W9-4F

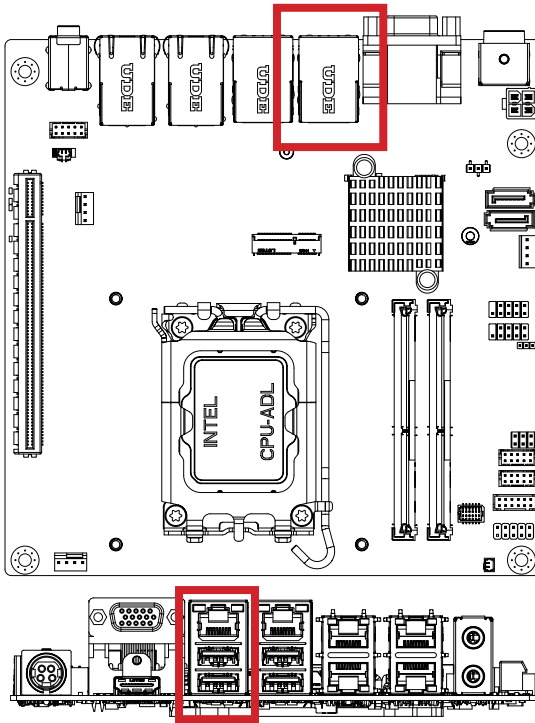
Vendor

FOXCONN

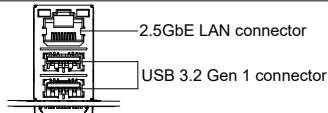
Pin No.	Definition	Pin No.	Definition
1	Red	9	5V
2	Green	10	GND
3	Blue	11	NC
4	NC	12	DDCSDA
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	DDCSCL
8	GND		

2.2.6 USB32_LAN1 (USB + 2.5GbE LAN Connector)

5 6



USB & LAN Connector

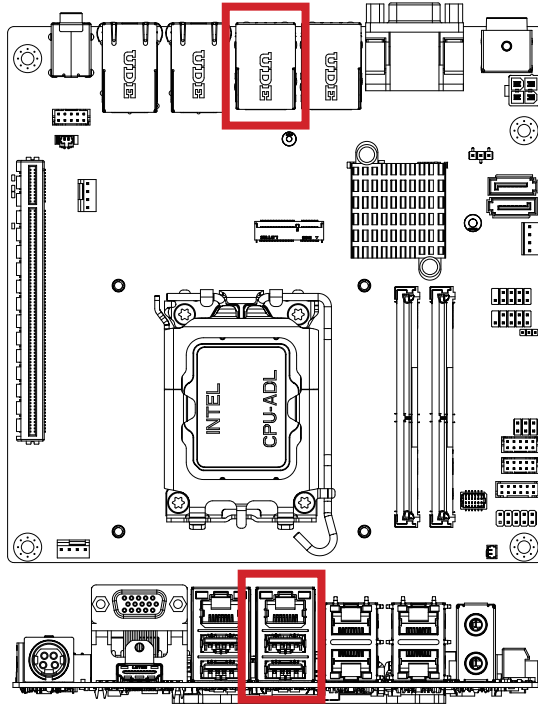


USB Connector			
Pin No.	Definition	Pin No.	Definition
1	5V	10	5V
2	D1n	11	D0n
3	D1p	12	D0p
4	GND	13	GND
5	USB3_RX1n	14	USB3_RX2n
6	USB3_RX1p	15	USB3_RX2p
7	GND	16	GND
8	USB3_TX1n	17	USB3_TX2n
9	USB3_TX1p	18	USB3_TX2p

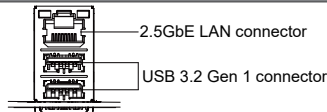
LAN Connector			
Pin No.	Definition	Pin No.	Definition
1	TX1+	4	TX3+
2	TX1-	5	TX3-
3	TX2+	7	TX4+
6	TX2-	8	TX4-
State		Description	
Orange On		2.5Gbps data rate	
Green On		1Gbps data rate	
Off		100M&10Mbps data rate	

2.2.7 USB32_LAN2 (USB + 2.5GbE LAN Connector)

7 8



USB & LAN Connector



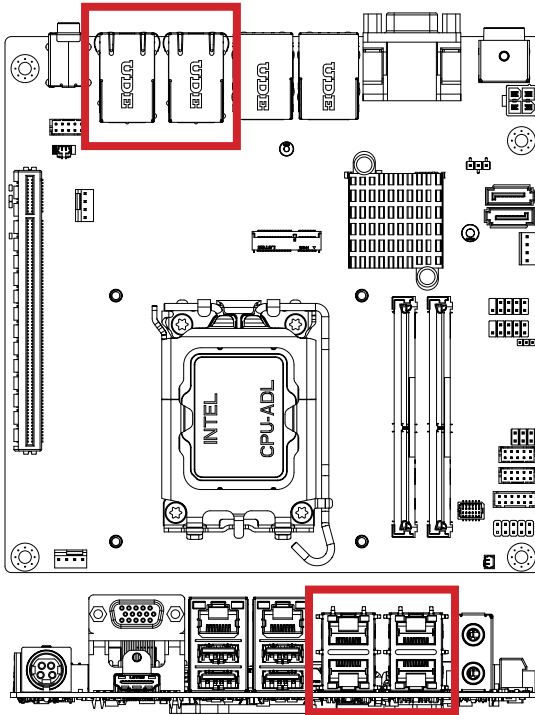
USB Connector			
Pin No.	Definition	Pin No.	Definition
1	5V	10	5V
2	D1n	11	D0n
3	D1p	12	D0p
4	GND	13	GND
5	USB3_RX1n	14	USB3_RX2n
6	USB3_RX1p	15	USB3_RX2p
7	GND	16	GND
8	USB3_TX1n	17	USB3_TX2n
9	USB3_TX1p	18	USB3_TX2p

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

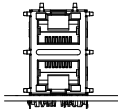
State	Description
Orange On	2.5Gbps data rate
Green On	1Gbps data rate
Off	100M&10Mbps data rate

2.2.8 LAN3_4, LAN5_6 (2.5GbE LAN Connector)

9



LAN Connector



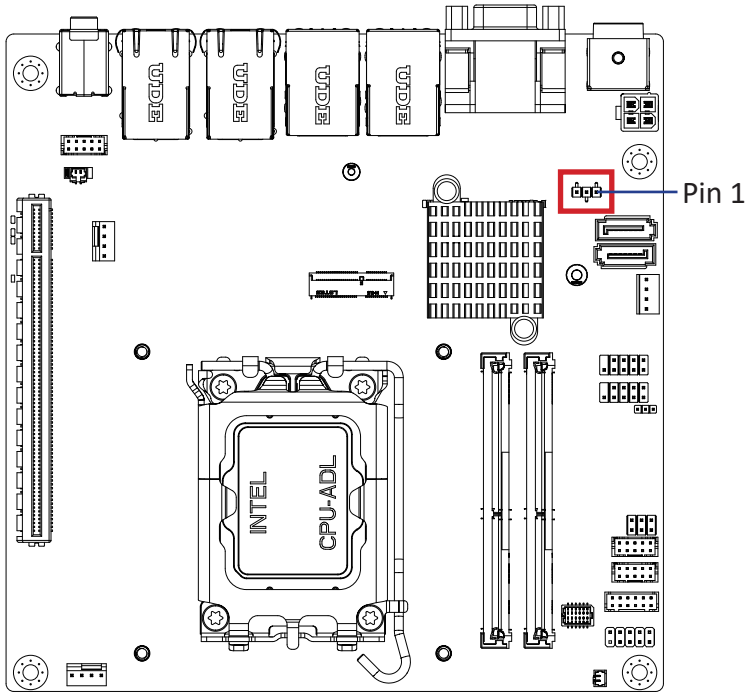
LAN Connector

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

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

2.2.9 CLR_CMOS (Clear CMOS jumper)

12



Clear CMOS Jumper



Connector PN

212-91-03GBE00K

Vendor

PINREX

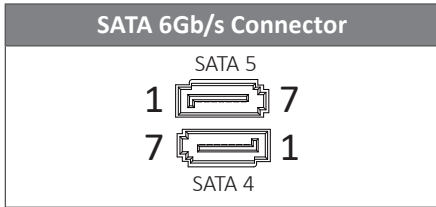
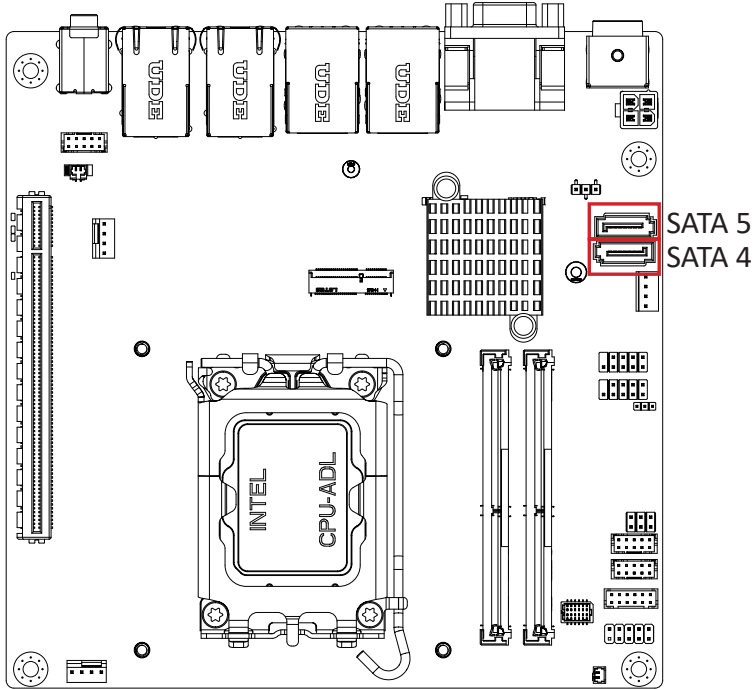
Connector type

1x3pin header, pitch 2.54mm

Pin No.	Definition
1	NC
2	GND
3	Clear CMOS
1-2 Close: Normal Operator (Default setting)	
2-3 Close: Clear CMOS data.	

2.2.10 SATA4, SATA5 (SATA 6Gb/s Connector)

13

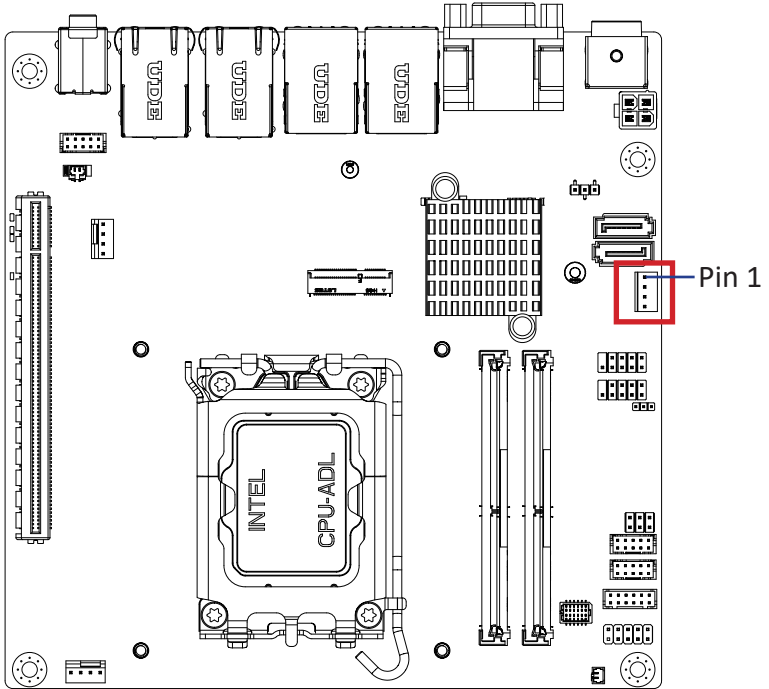


Connector PN	Vendor
WATM-07ABNB2BAUW3	WINWIN
770-83-07SW19	PINREX

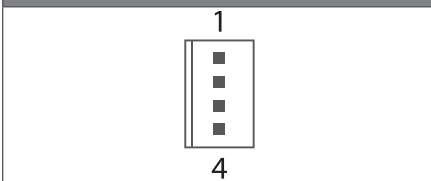
Pin No.	Definition
1	GND
2	TXp
3	TXn
4	GND
5	RXn
6	RXp
7	GND

2.2.11 SATA_PWR (SATA Power Connector)

14



SATA Power Connector



Connector PN

743-81-04TW00

Vendor

PINREX

Connector type

1x4pin header, pitch 2.54mm

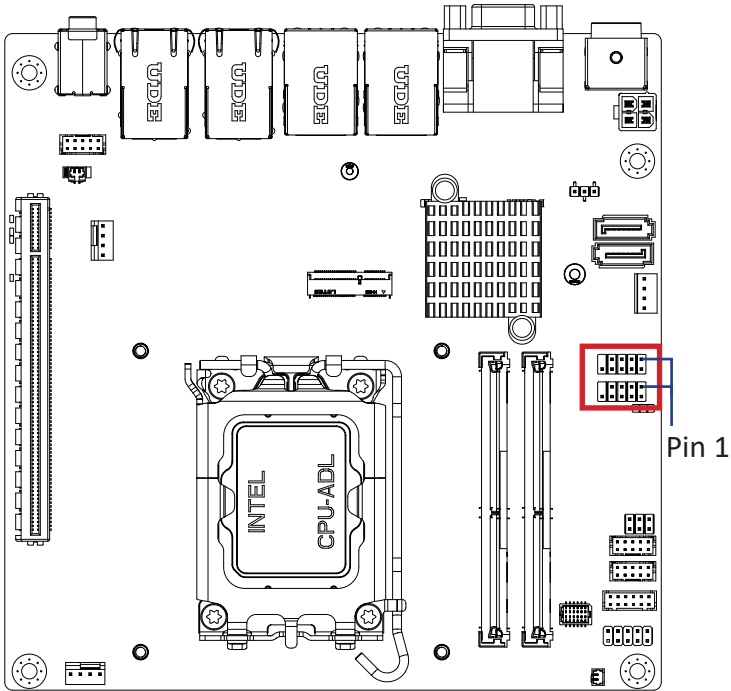
Pin No.

Definition

1	5V
2	GND
3	GND
4	5V

2.2.12 FUSB2_1, FUSB2_2 (USB 2.0 header)

15



USB 2.0 Header



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

Connector PN

210-92-05GB04

Vendor

PINREX

PH10R53BAZ009

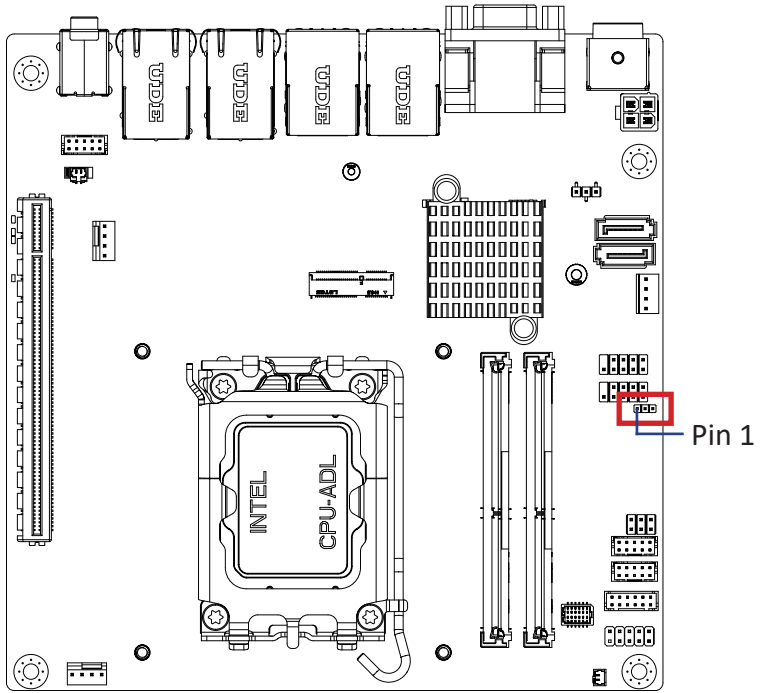
HORNGTONG

Connector type

2x5pin header, pitch 2.54mm

2.2.13 AT_CN (AT/ATX mode select jumper)

16



AT/ATX mode select jumper



Pin No.	Definition
1	AT MODE
2	Detect
3	ATX MODE

Jumper setting

1-2 Close : AT mode.

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

Connector PN

220-96-03GB01

PH03N2-7BAN000

Vendor

PINREX

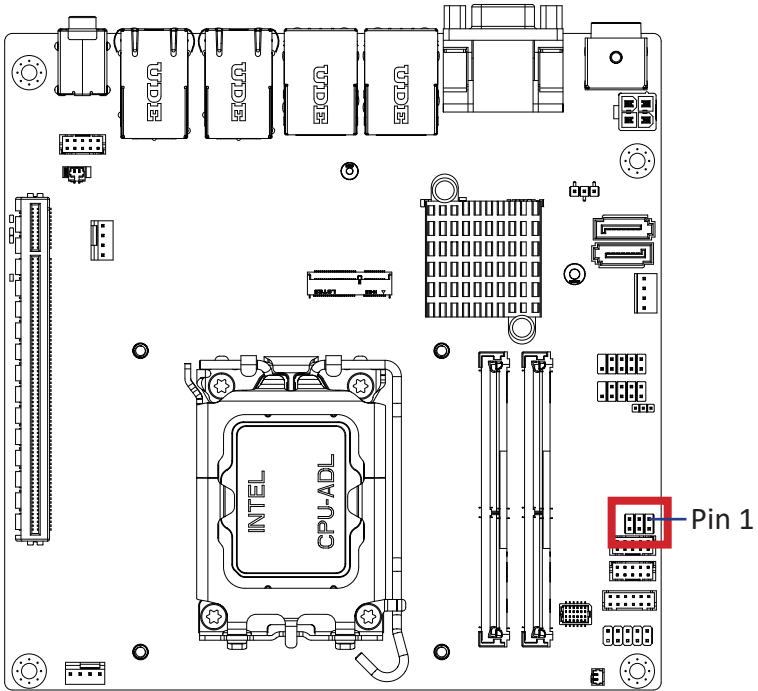
HORNGTONG

Connector type

1x3pin header, pitch 2.0mm

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

17



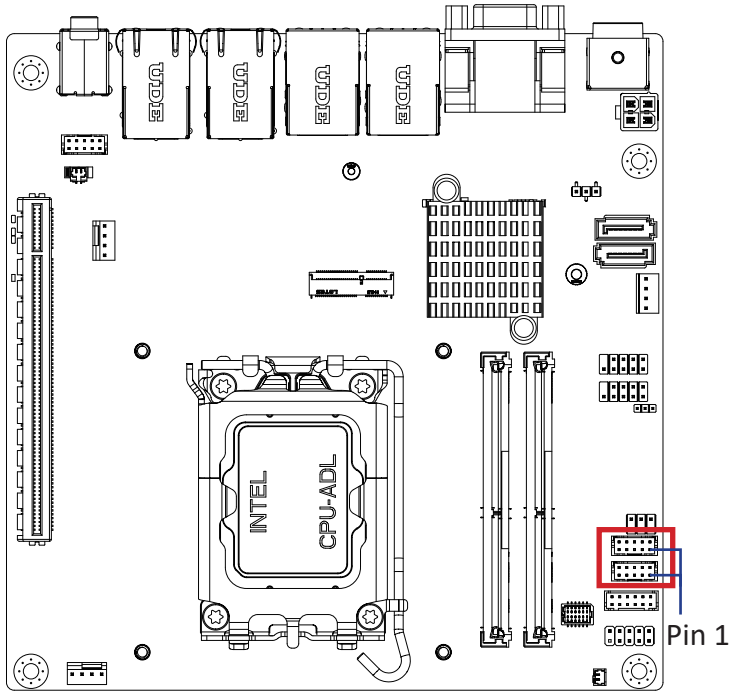
JCOM1 Jumper Select	
	1-2 Close: 5V (Power COM)
	3-4 Close: RI (Stand COM)
	5-6 Close: 12V (Power COM)

Connector PN	Vendor
210-92-03GB01	PINREX
PH06R53BAZ000	HORNGTONG

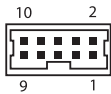
Connector type
2x3pin header, pitch 2.54mm

2.2.15 COM1, COM2 (Serial port header)

18



Serial port header



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

725-81-10TW00

Vendor

PINREX

A2004WV-2X05P46

JOINT-TECH

Connector type

2x5pin header, pitch 2.0mm

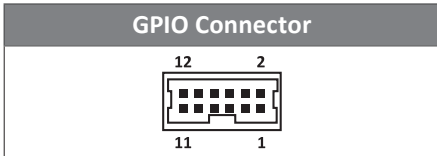
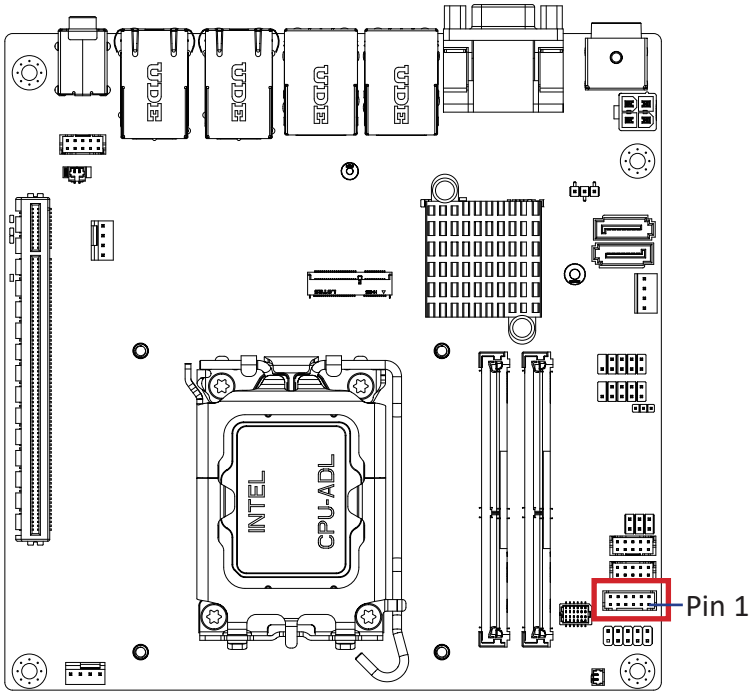
Note :

COM1 : Support RS-232/422/485 & RI/5V/12V
For RI/5V/12V jumper setting, please see P. 35

COM2 : Support RS-232 only

2.2.16 GPIO_CNT (General purpose input/out header)

19



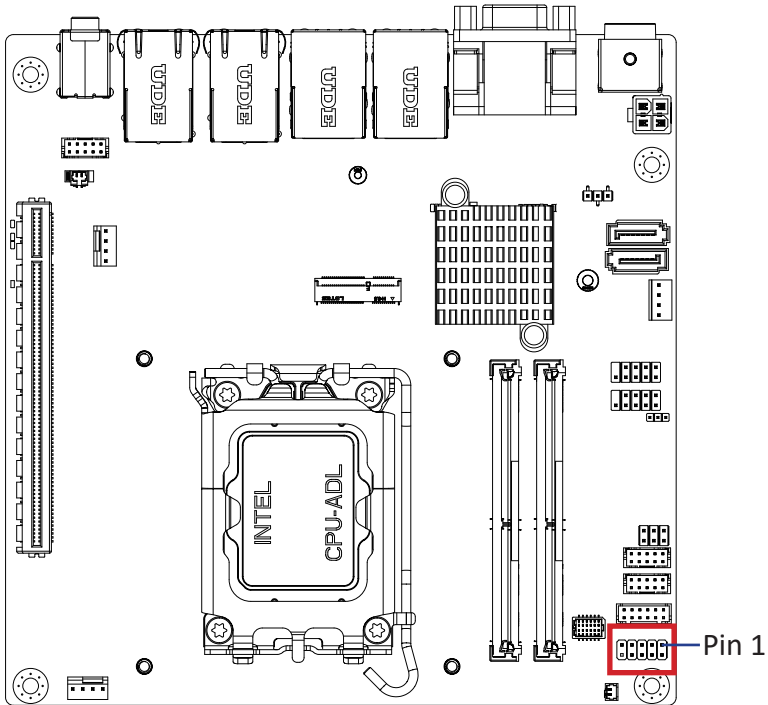
Pin No.	Definition
9	SMBus Clock
10	SMBus DATA
11	5V
12	GND

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

Connector PN	Vendor
725-81-12TW00	PINREX
A2004WV-2X06P46	JOINT-TECH
Connector type	
2x6pin header, pitch 2.0mm	

2.2.17 SYS_PANEL (Front Panel header)

20



System Panel Header



Pin No.	Definition
1	HD-P
2	MPD-P
3	HD-N
4	MPD-N
5	GND
6	POWER-ON
7	Reset
8	GND
9	Reserved
10	NC

Connector PN

210-92-05GW5W

Vendor

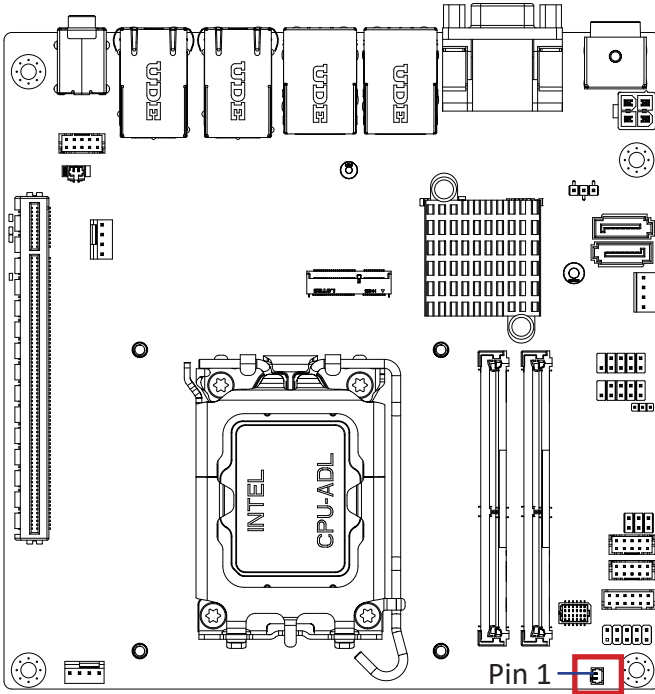
PINREX

Connector type

2x5pin header, pitch 2.54mm

2.2.18 BUZZER (Buzzer header)

21



Buzzer

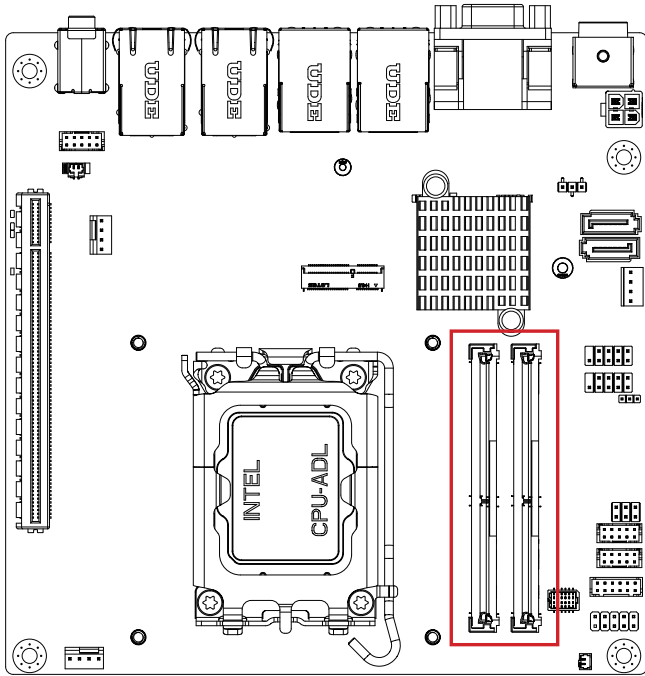
Pin No.	Definition
1	Buzzer
2	5V

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

Connector type
1x2pin header, pitch 1.25mm

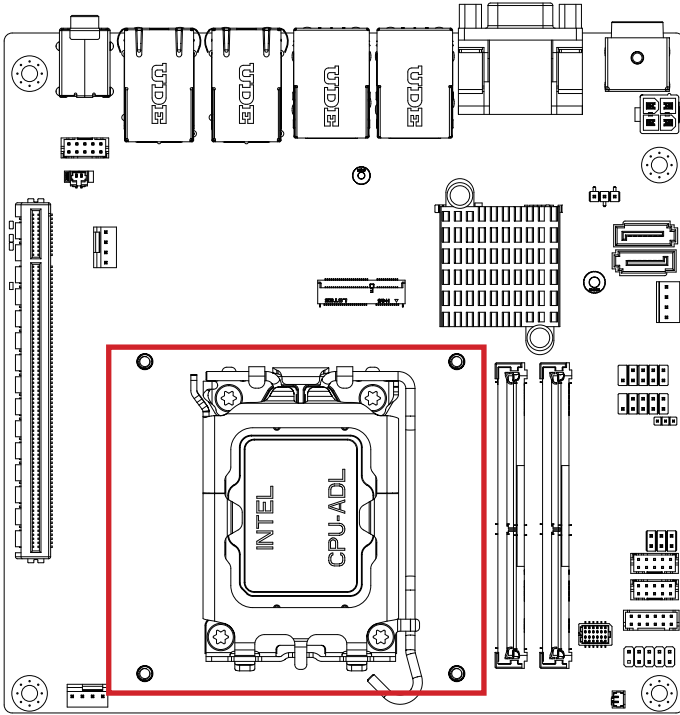
2.2.19 SODIMM1, SODIMM2 (2 x DDR4 SO-DIMM Sockets)

22



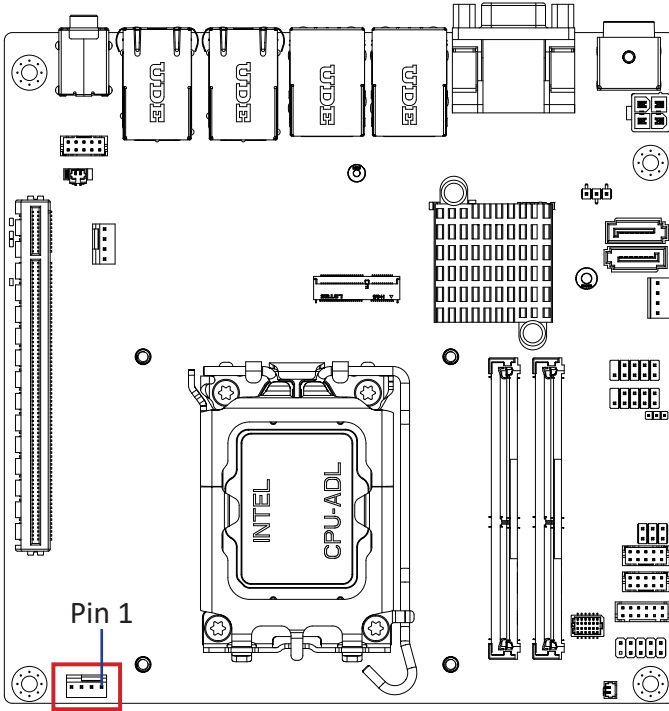
2.2.20 CPU Socket (LGA 1700 Socket)

23

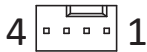


2.2.21 CPU_FAN (CPU FAN Connector)

24



CPU Fan Connector



Connector PN

744-81-045W11

Vendor

PINREX

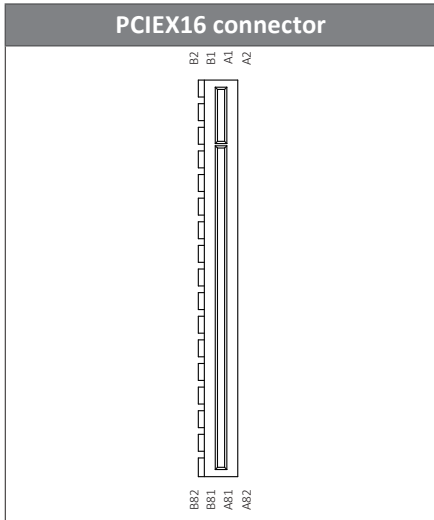
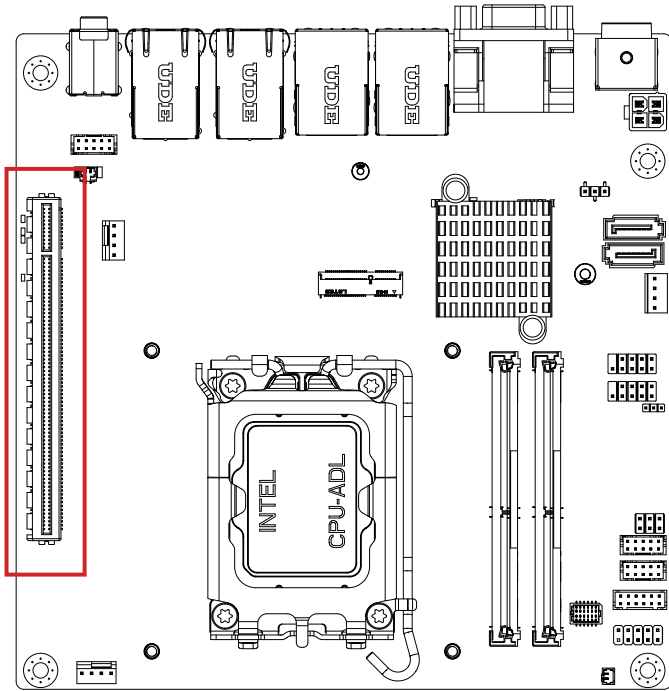
Connector type

1x4pin header, pitch 2.54mm

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

2.2.22 PCIeX16 (1 x PCIe x16 (Gen4 x16) Slot)

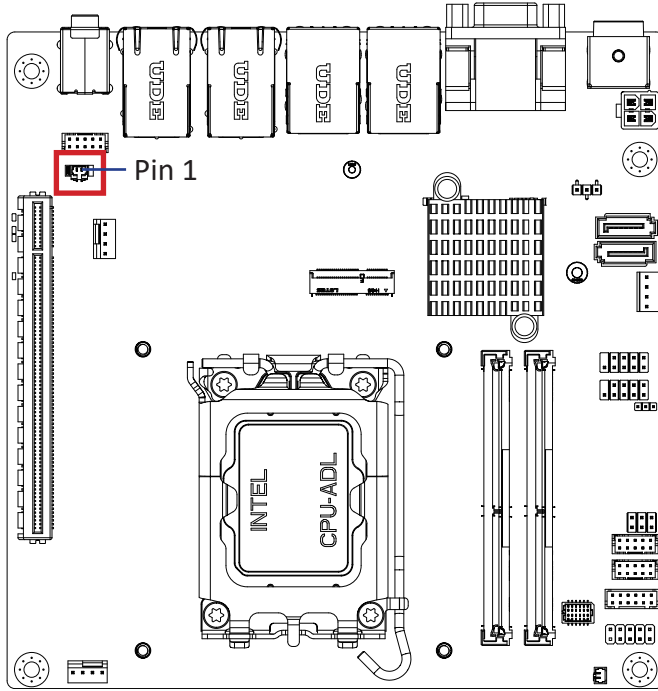
25



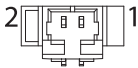
Connector PN	Vendor
2EF5827-DA9D0-5H	FOXCONN

2.2.23 Battery (Battery Connector)

26



Battery Connector



Pin No.	Definition
1	3V
2	GND

Connector PN

85205-0270L

Vendor

ACES

A1250WV-S-02PC

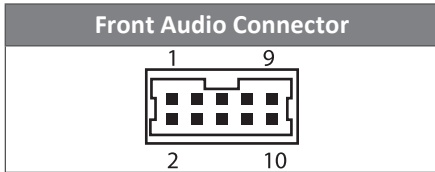
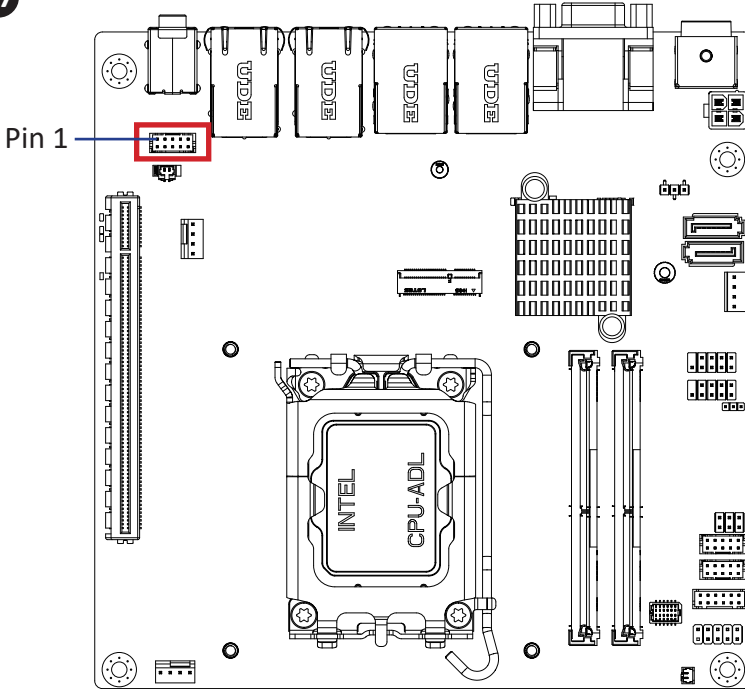
JOINT-TECH

Connector type

1x2pin header, pitch 1.25mm

2.2.24 FP_AUDIO (Front Panel Audio header)

27

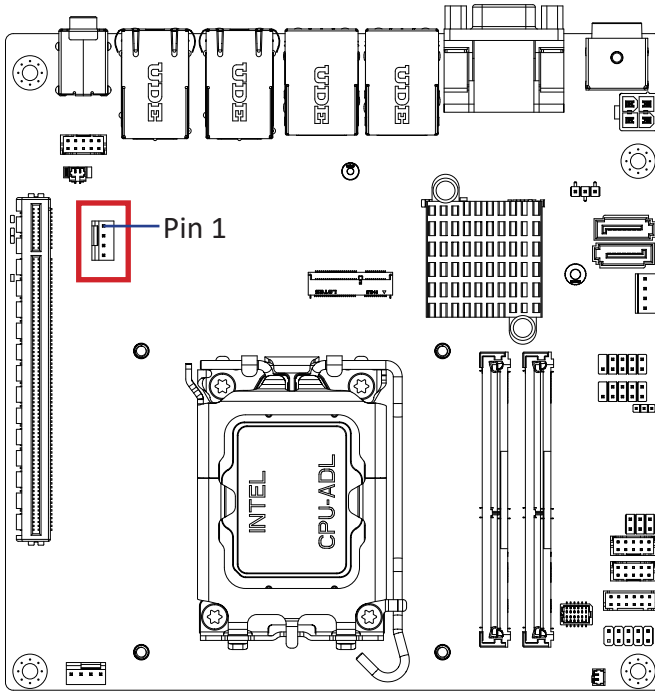


Connector PN	Vendor
725-81-10TW00	PINREX
A2004WV-2X05P46	JOINT-TECH
Connector type	
2x5pin header, pitch 2.0mm	

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

2.2.25 SYS_FAN (System Fan Connector)

28



System FAN



Connector PN

744-81-045R11

Vendor

PINREX

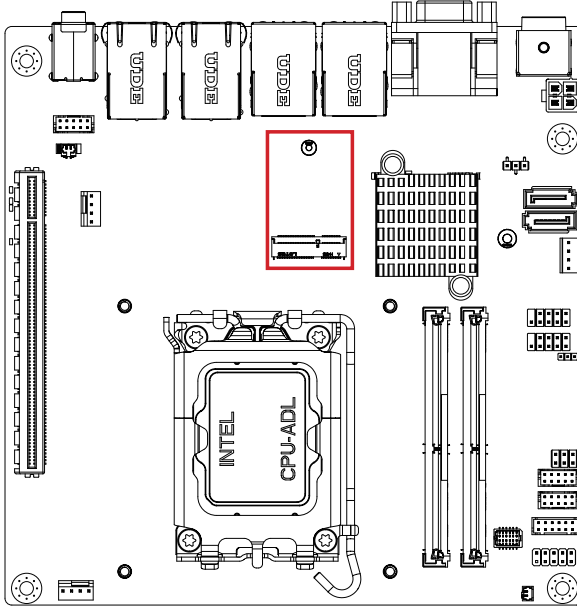
Connector type

1x4pin header, pitch 2.54mm

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

2.2.26 M2E (M.2 Slot, 2230 E-Key)

29



M.2 E Key Connector



Pin No.	Definition	Pin No.	Definition
1	GND	2	3.3V
3	D1p	4	3.3V
5	D1n	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		

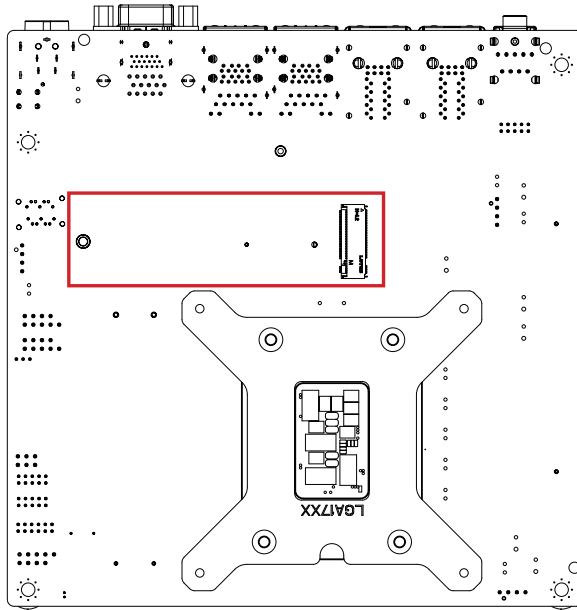
Pin No.	Definition	Pin No.	Definition
33	GND	32	NC
35	PCIe_TXp	34	NC
37	PCIe_TXn	36	NC
39	GND	38	NC

41	PCIe_RXp	40	NC
43	PCIe_RXn	42	NC
45	GND	44	NC
47	PCIe CLOCKp	46	NC
49	PCIe CLOCKn	48	NC
51	GND	50	SUSCLK
53	PCIe Clock Request	52	PCIRST
55	PCIe wake up	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	3.3V
75	GND	74	3.3V

Connector PN	Vendor
2E0BC21-S85BE-7H	FOXCONN
80152-8521	BELLWETHER
APCI0095-P002A	LOTES

2.2.27 M2M (M.2 Slot, 2280 M-Key)

30



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	NC	30	NC
31	NC	32	NC

Pin No.	Definition	Pin No.	Definition
33	GND	34	NC
35	NC	36	NC
37	NC	38	DEVSLP
39	GND	40	NC
41	SATA_Bp	42	NC
43	SATA_Bn	44	NC
45	SATA_An	46	NC
47	SATA_Ap	48	NC
49	PCIE0 TXp	50	PCI Reset
51	GND	52	PCI Clock Request
53	Clockn	54	NC
55	Clockp	56	NC
57	GND	58	NC

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

Connector PN	Vendor
AS0BC21-S40BM-7H	FOXCONN
APCI0073-P001A	LOTES

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

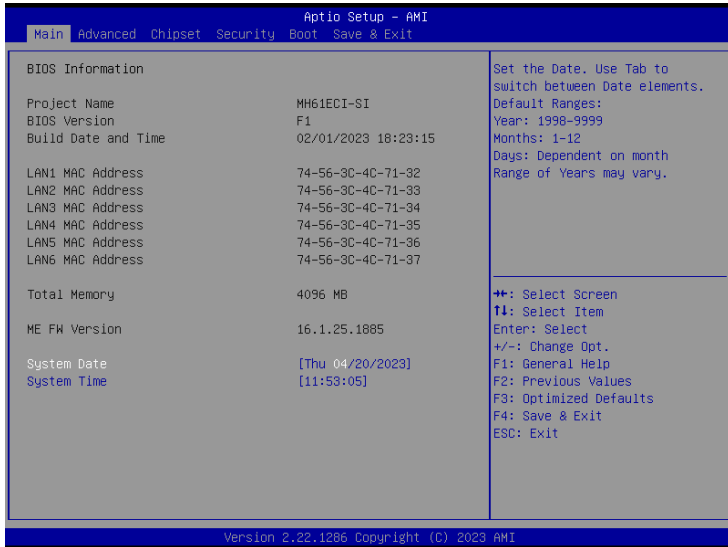
Once the system is power on, press the key as soon as possible to access into BIOS Setup program.

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

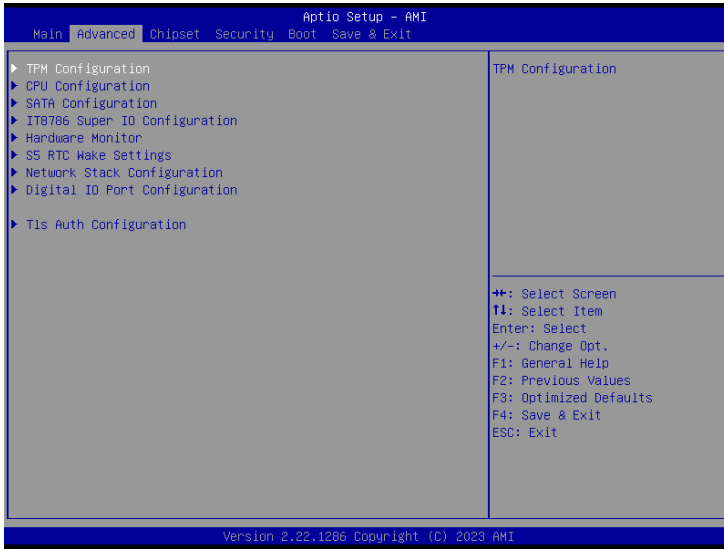
The main menu shows the basic system information. Use arrow keys to move among the items.



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 LAN 1 MAC Address information
LAN2 MAC Address	Shows LAN 2 MAC Address information
LAN3 MAC Address	Shows LAN 3 MAC Address information
LAN4 MAC Address	Shows LAN 4 MAC Address information
LAN5 MAC Address	Shows LAN 5 MAC Address information
LAN6 MAC Address	Shows LAN 6 MAC Address information
Total Memory	Shows the total memory size of the installed memory
ME FW version	Shows ME 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.



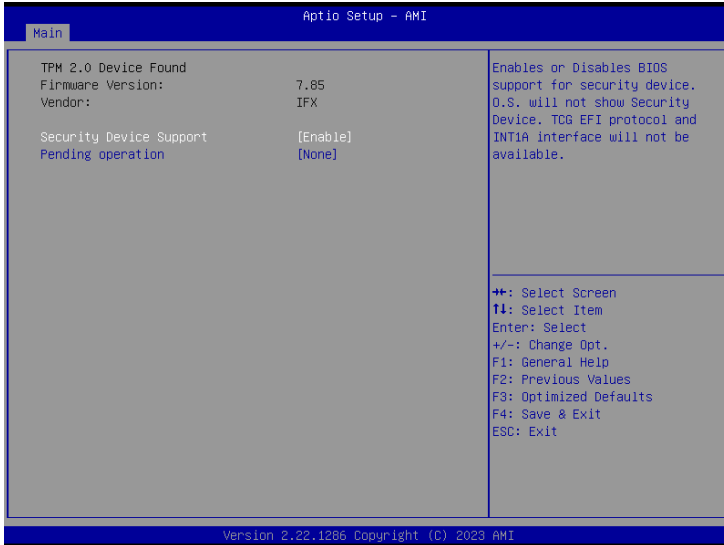
3.3.1 TPM Configuration

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)

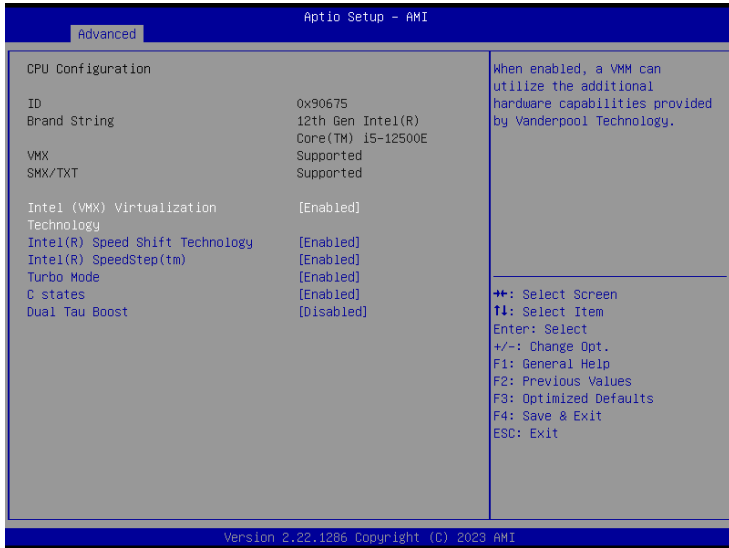
Trusted Computing : Shows TPM information, and TPM module configuration setting.



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

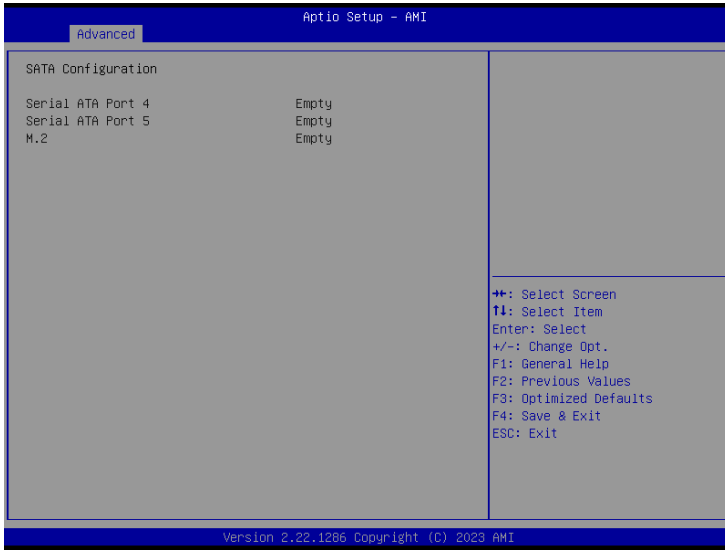
3.3.2 CPU Configuration

This submenu shows detailed CPU informations.



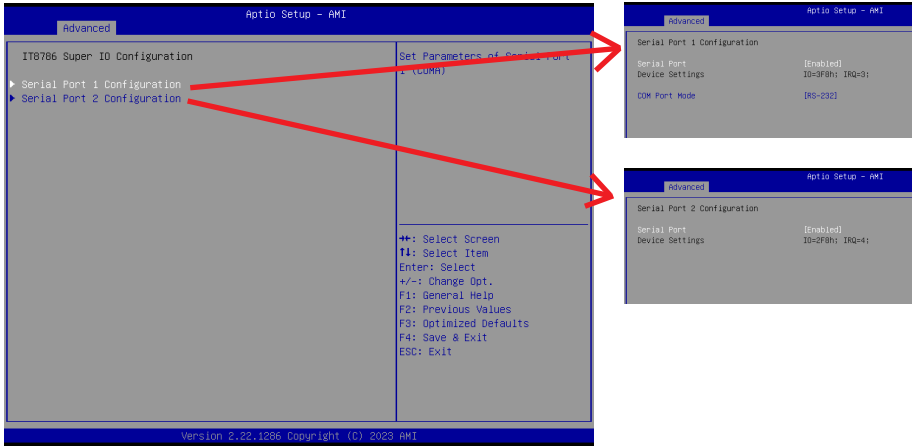
Item	Description
Intel (VMX) Virtualization Technology	Virtualization enhanced by Intel® Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems. Enabled : Enables Intel Virtualization Technology (Default setting) Disabled : Disables Intel Virtualization Technology
Intel(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 CPU C states function (Default setting) Disabled : Disables CPU C states function
Dual Tau Boost	To optimize CPU performance. Enabled : Enables Dual Tau Boost function Disabled : Disables Dual Tau Boost function (Default setting)

3.3.3 SATA Configuration



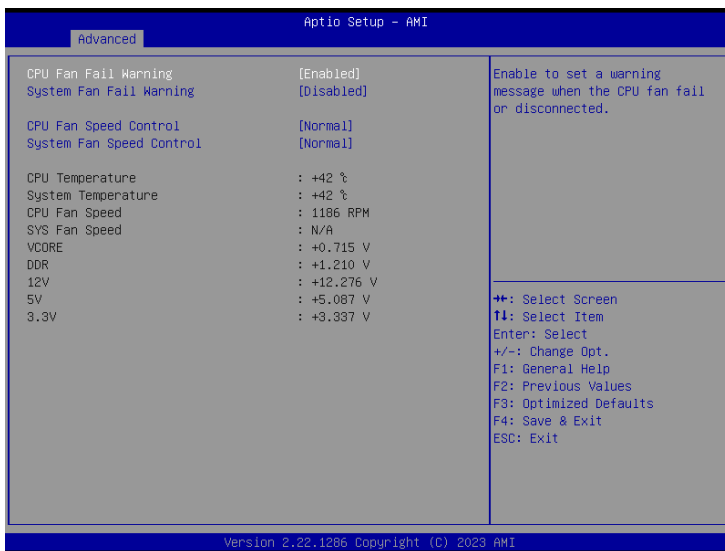
Item	Description
Serial ATA Port 4	shows 2.5" SATA HDD/SSD information
Serial ATA Port 5	
M.2	shows M.2 SSD information

3.3.4 IT8786 Super IO Configuration



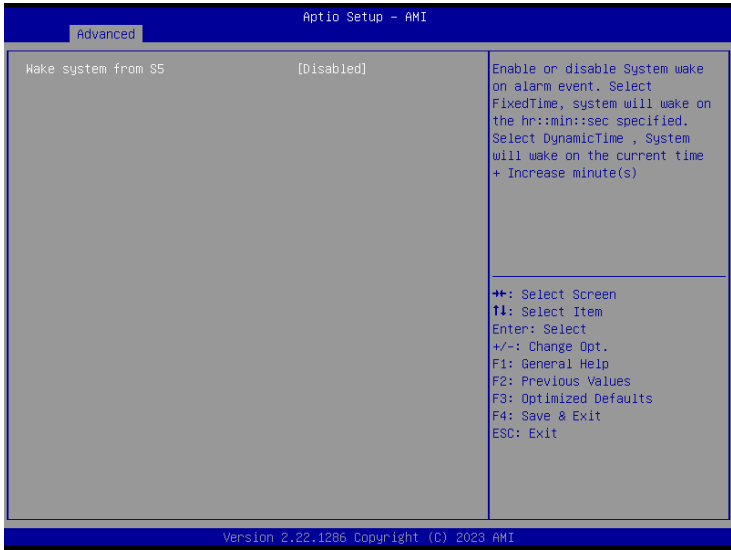
Item	Description
Serial Port 1 Configuration	<p>Press [Enter] to configure advanced items :</p> <p>Serial Port : Enabled : Enables allows you to configure the serial port settings Disabled : if Disabled, displays no configuration for the serial port</p> <p>Device settings : Display the specified Serial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

3.3.5 Hardware Monitor



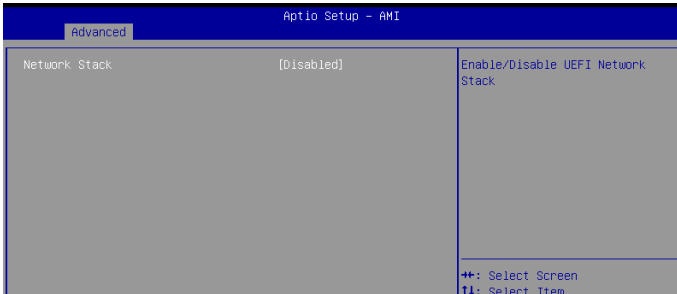
Item	Description
CPU Fan Fail Warning	Enabled : Enables CPU FAN Fail warning alert function (Default setting) Disabled : Disables CPU FAN Fail warning alert function
System Fan Fail Warning	Enabled : Enables System FAN Fail warning alert function Disabled : Disables System FAN Fail warning alert function (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

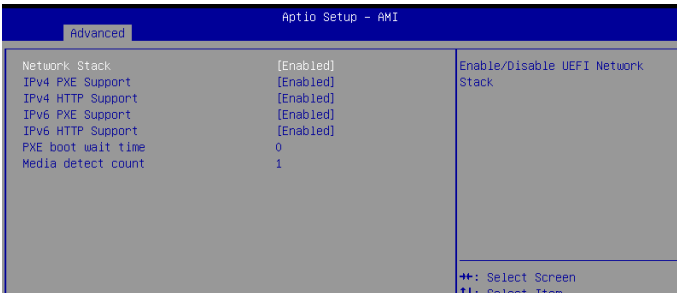


Item	Description
<p>Wake system from S5</p>	<p>Enable or Disable System to wake on a specific time. Disabled : Disables system to wake on a specific time (Default setting) Fixed Time : Enables system to wake on a specific time (Format : hr : min : sec)</p>

3.3.7 Network Stack Configuration

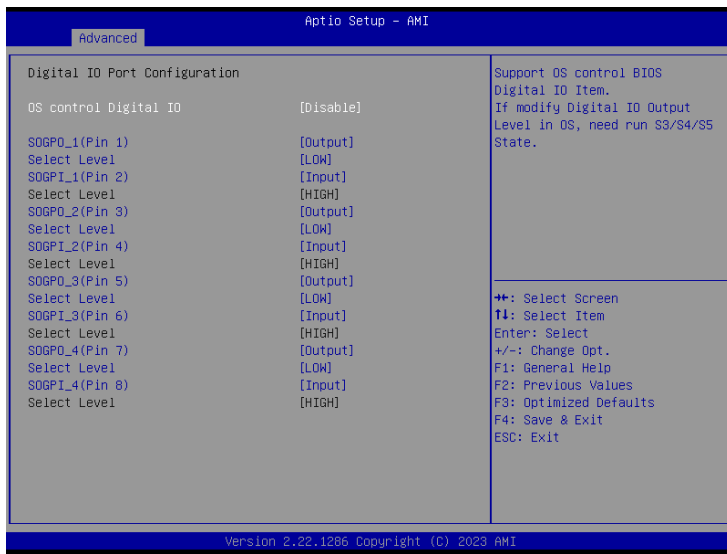


When Network stack is enabled :



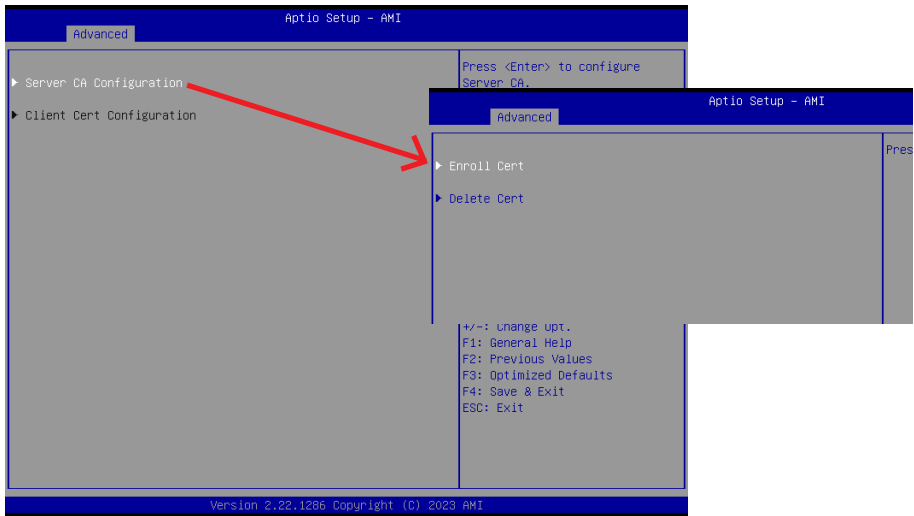
Item	Description
Network Stack	When system is power on, install LAN driver under UEFI mode Disabled : Disables UEFI Network Stack (Default setting) Enabled : Enables UEFI Network Stack
IPv4 PXE Support	When Network stack is enabled : Disabled : Disables IPv4 PXE Support Enabled : Enables IPv4 PXE Support
IPv4 HTTP Support	When Network stack is enabled : Disabled : Disables IPv4 HTTP Support Enabled : Enables IPv4 HTTP Support
IPv6 PXE Support	When Network stack is enabled : Disabled : Disables IPv6 PXE Support Enabled : Enables IPv6 PXE Support
IPv6 HTTP Support	When Network stack is enabled : Disabled : Disables IPv6 HTTP Support Enabled : Enables IPv6 HTTP 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 Digital IO Port Configuration



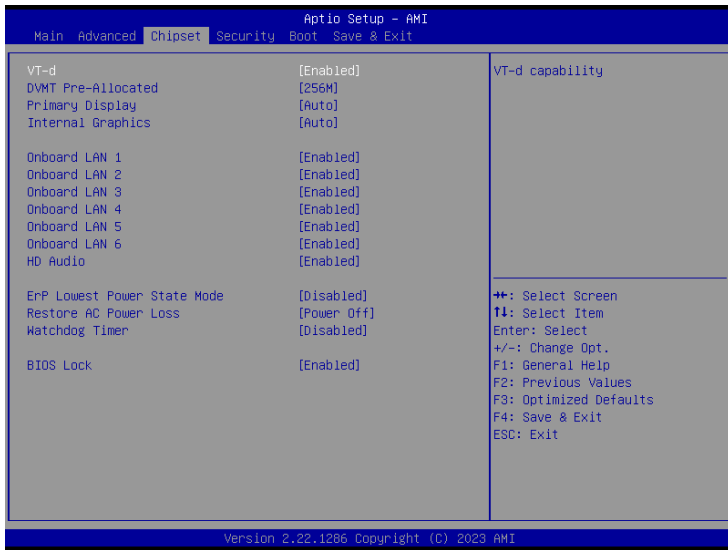
Item	Description
OS control Digital IO	<p>Disabled : If Digital IO Output value/level is modified in OS, they will not be memorized and kept. (Default setting)</p> <p>Enabled : If Digital IO Output value/level is modified in OS, they will be memorized and kept.</p>
SOGPO_1 (Pin 1) SOGPI_1 (Pin 2) SOGPO_2 (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.

3.3.9 Tls Auth Configuration



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

3.4 Chipset



Item	Description
VT-d	Enabled : Enables VT-d function (Default setting) Disabled : Disables VT-d function
DVMT Pre-Allocated	Use DVMT Pre-Allocated to set the amount of system memory which is installed to the integrated graphics processor Option items : 32M , 64M, 128M, 256M (Default setting)
Primary Display	Auto : When detects PCIe Graphic card, primary display will set to PCIe (Default setting) IGFX : Force IGFX Graphic card as the primary display device PEG : Force PEG Graphic card as the primary display device
Internal Graphics	Enables or disables the onboard graphics function Auto : Detects display device automatically (Default setting) Enabled : Enables onboard graphics Disabled : Disables onboard graphics
Onboard LAN1 Onboard LAN2 Onboard LAN3 Onboard LAN4 Onboard LAN5 Onboard LAN6	Enable/Disable onboard LAN controller Enabled : Enables onboard LAN controller (Default setting) Disabled : Disables onboard LAN controller

HD Audio	<p>Enable/Disable onboard audio controller</p> <p>Enabled : Enables onboard audio controller (Default setting)</p> <p>Disabled : Disables onboard audio controller</p>
ErP Lowest Power State Mode	<p>Enable/Disable power saving function</p> <p>Enabled : Enables ErP Lowest Power State Mode</p> <p>Disabled : Disabled ErP Lowest Power State Mode (Default setting)</p>
Restore AC Power Loss	<p>To set which option the system should returns if a sudden power loss occurred</p> <p>Power off : Do not power on when the power is back (Default setting)</p> <p>Power on : System power on when the power is back</p> <p>Last state : Restore the system to the state before power loss occurs</p>
Watchdog Timer	<p>Enable/Disable Watchdog Timer function</p> <p>Disabled : Disables Watchdog Timer function (Default setting)</p> <p>Enabled : Enables Watchdog Timer function</p>
BIOS Lock	<p>Enable/Disable BIOS Lock function</p> <p>Enabled : Enables BIOS Lock function (Default setting)</p> <p>Disabled : Disabled BIOS Lock function</p>

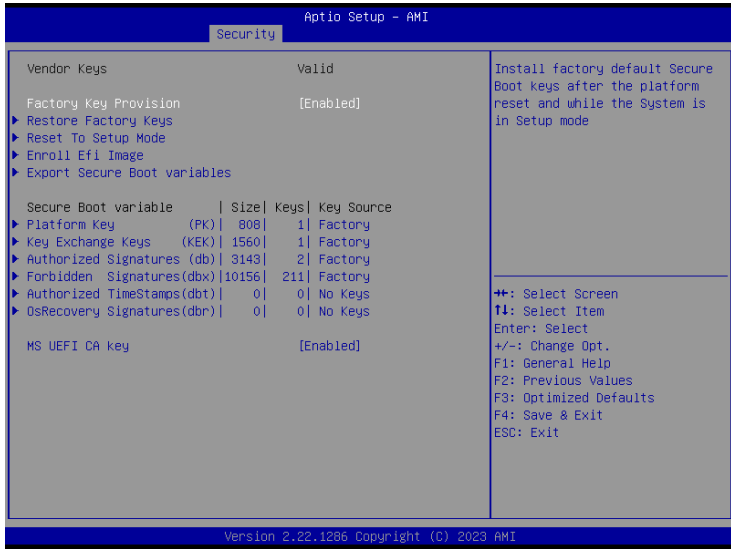
3.5 Security



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
Key Management	Enables expert users to modify Secure boot policy variables without full authentication Press <Enter> to configure the advanced items

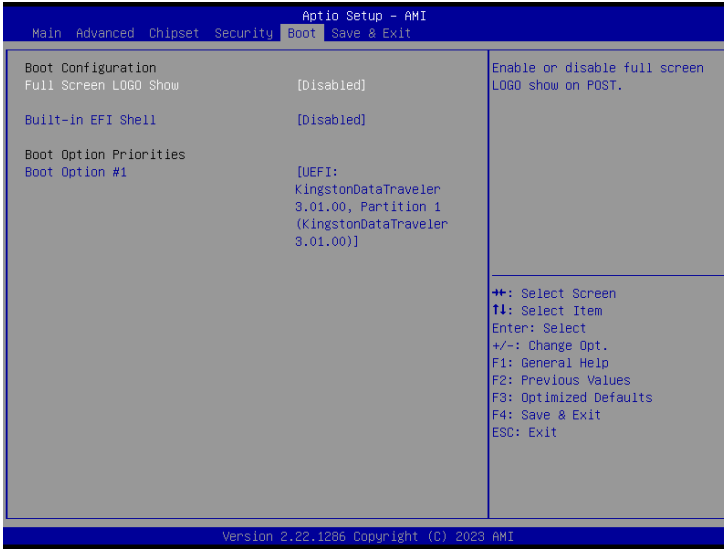


Item	Description
Factory Key Provision	Install factory default Secure Boot keys after the platform reset and while the system is in Setup mode Enabled : Enables Factory Key Provision (Default setting) Disabled : Disables Factory Key Provision
Restore Factory Keys	To restore factory settings Yes : Agree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

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

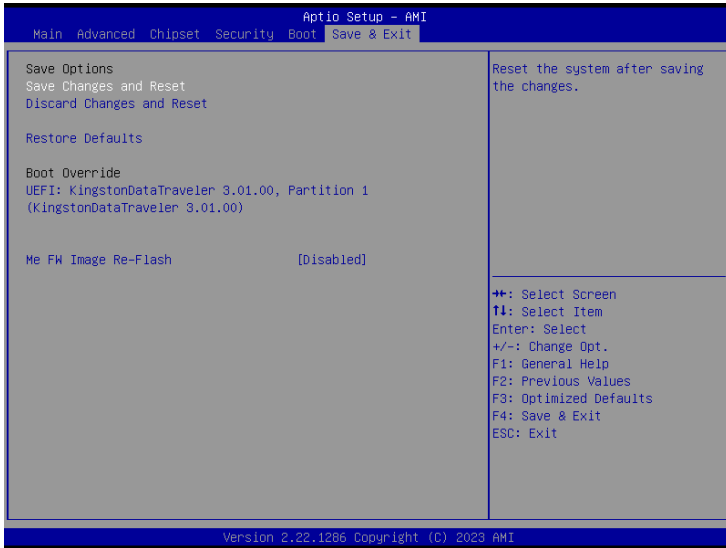
3.6 Boot

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 #1	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)