

mITX-2748A (MRZV2MI)

Mini-ITX Motherboard

Copyright Notice

This document is copyrighted, 2022. 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.

- AMD® is trademark of Advanced Micro Devices.
- Microsoft Windows is a registered trademark of Microsoft Corp.
- 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

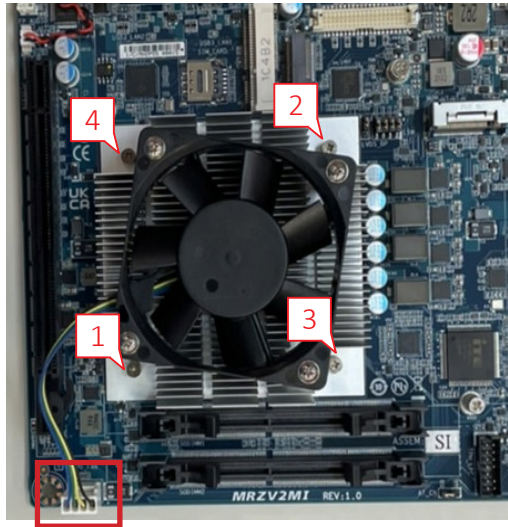
Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
mITX-2748A MB	1
SATA power cable	1
I/O Bracket	1
mITX-V2000 Fan Sink	1

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

Assembly Sequence

Material fan-sink.



※The image is for reference only.
The actual product could be slightly different.

Torque	2.5 kgf-cm
Assembly action	
1>	Connect the fansink and the CPU Fan connector. Remove the release paper on the pad of the fansink.
2>	Using your hand to fix the fansink to the correct corresponding hole position, and assemble the fansink as shown in the figure above. The correct torque is needed to be used to assemble the fansink.
3>	If you want to disassemble the fansink, please reverse (starting from position 4) to remove.

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	○	○	○	○	○	○

○ : 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

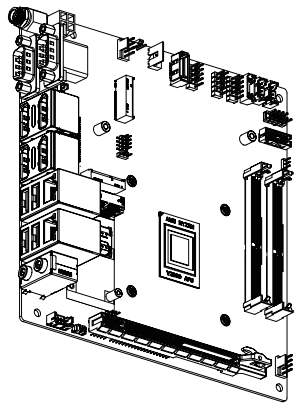
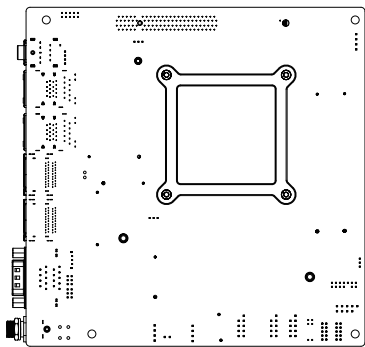
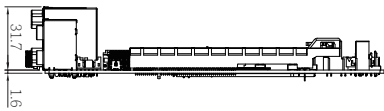
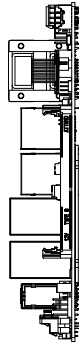
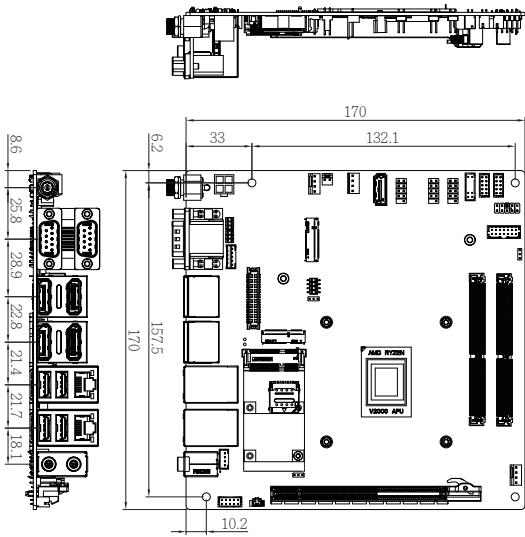
Mini-ITX Motherboard User's Manual 1st Ed	1
Copyright Notice	2
Acknowledgement	3
Packing List	3
Assembly Sequence	4
About this Document	5
Safety Precautions	6
FCC Statement.....	8
China RoHS Requirements (CN).....	9
China RoHS Requirement (EN)	10
 Chapter 1 – Product Specifications	 14
1.1 Specifications	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 connector).....	23
2.2.3 COM1_2 (COM Port (RS-232/422/485 & RI/5V/12V)).....	24
2.2.4 DP1_2, DP3_4 (Display ports).....	25
2.2.5 USB3_LAN1, USB3_LAN2 (USB+LAN connector x 2).....	26
2.2.6 DC_IN2 (ATX 2x2 pin power connector).....	27
2.2.7 SYS_FAN (System Fan connector).....	28

2.2.8	ATX_CTL (ATX Control header, Support PS-ON Signal of Power Supply Unit)	29
2.2.9	SATAPW (SATA power connector)	30
2.2.10	SATA0 (SATA 6Gb/s Connector)	31
2.2.11	F_USB2_1, F_USB2_3, F_USB2_2 (USB 2.0 header)	32
2.2.12	GPIO_CNT (General purpose input/output connector)	33
2.2.13	COM3, COM4 (COM header (RS-232/422/485))	34
2.2.14	SYS_PANEL (Front Panel Header)	35
2.2.15	TPM_LPC (TPM header)	36
2.2.16	AT_CN (AT/ATX mode select jumper)	37
2.2.17	SODIMM1, SODIMM2 (2 x DDR4 SO-DIMM slots)	38
2.2.18	CPU_FAN (CPU Fan connector)	39
2.2.19	PCIEX16 (PCIe x16 slot)	40
2.2.20	BAT (Battery connector)	41
2.2.21	FP_AUDIO (Front panel audio header)	42
2.2.22	SPKR (Speaker out connector)	43
2.2.23	CLR_CMOS (Clear CMOS jumper)	44
2.2.24	MPCIE (Mini PCIe connector)	45
2.2.25	M2E (M.2 E-key NGFF 2230)	46
2.2.26	LVDS (LVDS connector)	47
2.2.27	LVDS_DP (LVDS/DP jumper)	48
2.2.28	LSW (LVDS resolution jumper)	49
2.2.29	BKL_CN (Backlight control connector)	50
2.2.30	JCOM1, JCOM2 (RI# pin RI#/5V/12V Select jumper for COM1 & COM2 port)	51
2.2.31	M2M (M.2 M-key NGFF 2280)	52

Chapter 3 – BIOS	53
3.1	Introduction 54
3.2	The Main Menu..... 55
3.3	Advanced 56
3.3.1	TPM Configuration..... 57
3.3.2	IT8786 Super IO Configuration 58
3.3.3	Hardware Monitor 59
3.3.4	S5 RTC Wake Settings 60
3.3.5	CPU Configuration 61
3.3.6	SATA Configuration 62
3.3.7	AMI Graphic Output Protocol Policy..... 63
3.3.8	Network Stack Configuration..... 64
3.3.9	NVMe Configuration..... 65
3.3.10	AMD CBS..... 66
3.3.11	AMD PBS 67
3.3.12	Digital IO Port Configuration 68
3.4	Chipset 69
3.5	Security 70
3.6	Boot..... 73
3.7	Save & Exit 74

Chapter 1

Chapter 1 – Product Specifications



1.1 Specifications

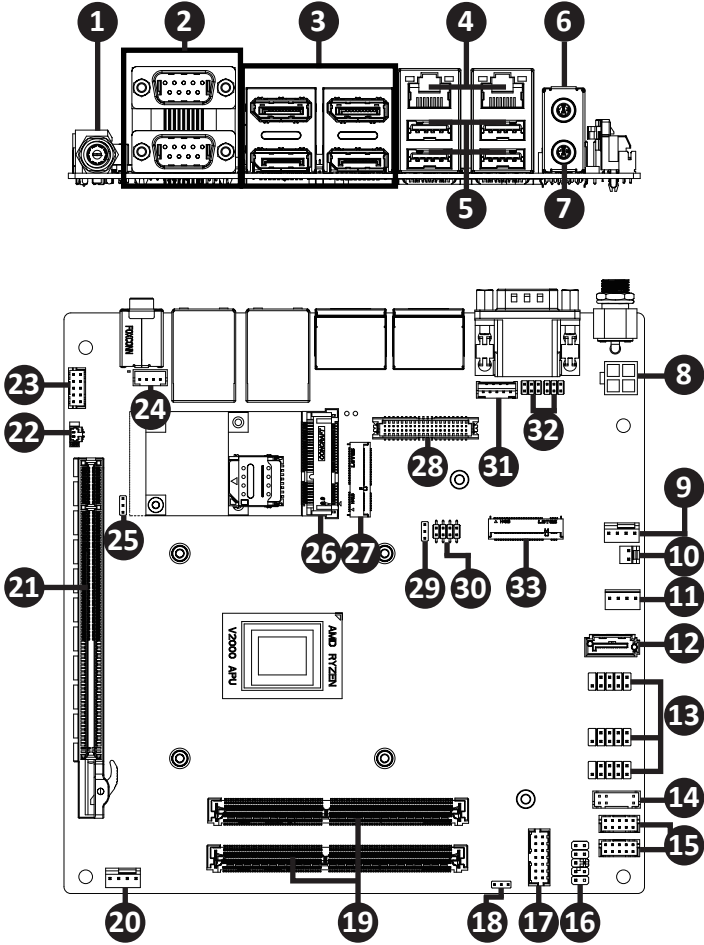
Motherboard	mITX-2748A (MRZV2MI)
Form Factor	Mini-ITX 170W x 170D (mm)
CPU	AMD Ryzen™ V2748 Embedded Processor 7nm, 8 cores, 16 threads, 2.9 GHz, up to 4.25GHz TDP 45W
Socket	1 x FP6 BGA
Chipset	—
Memory	2 x DDR4 SO-DIMM sockets, Max. Capacity 64 GB Support Dual channel DDR4 3200 MHz memory modules
Ethernet	2 x GbE LAN Ports (Realtek® RTL8118-CG)
Video	Integrated Graphics Processor - AMD Radeon™ Graphics: 4 x DP ports, supporting a maximum resolution of 4096x2160 @60Hz 1 x LVDS port, supporting a maximum resolution of 1080P (switch from DP) (4 independent display outputs)
Audio	Realtek® Audio Codec
Storage	1 x SATA 6Gb/s Port
Expansion Slots	1 x PCIe x16 (Gen3 x8) 1 x 2280 M.2 M-Key (PCIe x4, SATA 6Gb/s) 1 x 2230 M.2 E-Key 1 x Full-size mini PCIe with SIM slot

Motherboard	mITX-2748A (MRZV2MI)
Internal I/O	1 x 4-pin ATX 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 1 x 2W Speaker out header 6 x USB 2.0 headers 2 x COM headers (RS-232/422/485) 1 x GPIO (8 bits) header 1 x Backlight Control header 1 x LVDS/ DP Jumper 1 x AT/ATX mode select jumper 1 x ATX Control header 1 x Clear CMOS jumper
Rear I/O	2 x Audio Jacks (Line out, Mic in) 2 x COM Ports (RS-232/422/485 & RI/5V/12V) 4 x Display Ports 2 x RJ45 LAN Ports 4 x USB 3.2 Gen 1 1 x DC Jack (+12V~24VDC)
TPM	1 x TPM header
OS Compatibility	Windows 10 (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	Fan version: 9MRZV2MIMR-SI (Box packing)
Optional Kit	TPM 2.0 module: 9CTM000NR-00

Chapter 2

Chapter 2 – Hardware Information

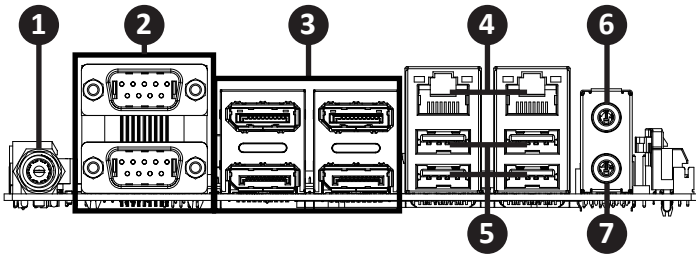
2.1 Jumpers and Connectors



No	Code	Description
1	DC_IN1	DC IN Jack connector
2	COM1_2	COM Port (RS-232/422/485 & RI/5V/12V)
3	DP1_2 DP3_4	Display ports
4	USB3_LAN1	LAN Connector x 2
5	USB3_LAN2	USB 3.2 Gen 1 Connector x 4
6	AUDIO	Line Out port (Green)
7		Mic In port (Pink)
8	DC_IN2	ATX 2x2 pin power connector
9	SYS_FAN	System fan connector
10	ATX_CTL	ATX Control header, Support PS-ON Signal of Power Supply Unit
11	SATAPW	SATA power connector
12	SATA0	SATA 6Gb/s connector
13	F_USB2_1, F_USB2_3, F_USB2_2	USB 2.0 header
14	GPIO_CNT	General Purpose input/output header
15	COM3, COM4	COM Port (RS-232/422/485)
16	SYS_PANEL	Front panel header
17	TPM_LPC	TPM header
18	AT_CN	AT/ATX mode select jumper
19	SODIMM1, SODIMM2	2 x DDR4 SO-DIMM slots

No	Code	Description
20	CPU_FAN	CPU FAN connector
21	PCIEX16	PCIe x16 slot
22	BAT	Battery connector
23	FP_AUDIO	Front panel audio header
24	SPKR	Speaker out connector
25	CLR_CMOS	Clear CMOS jumper
26	MPCIE	MINI PCIE connector
27	M2E	M.2 Slot, E-Key NGFF 2230
28	LVDS	LVDS connector
29	LVDS_DP	LVDS/DP Jumper
30	LSW	LVDS resolution jumper
31	BKL_CN	Backlight control connector
32	JCOM1 JCOM2	RI pin RI/5V/12V select jumper for COM1 port & COM2 port
33	M2M	M.2 Slot, M-Key NGFF 2280

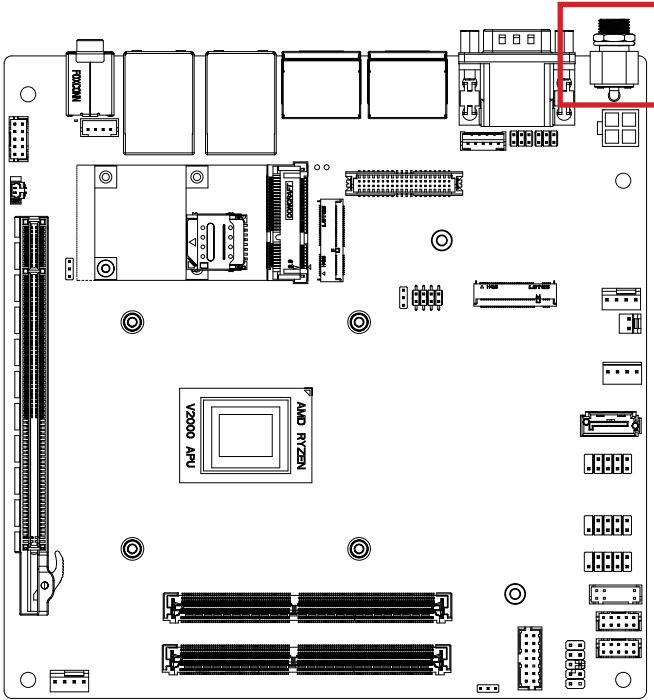
2.2.1 IO Connector Information



	Code	Description
1	DC_IN1	DC IN Jack connector
2	COM1_2	COM Port (RS-232/422/485 & RI/5V/12V)
3	DP1_2 DP3_4	Display ports
4	USB3_LAN1	LAN Connector x 2
5	USB3_LAN2	USB 3.2 Gen 1 Connector x 4
6	AUDIO	Line Out port (Green)
7		Mic In port (Pink)

2.2.2 DC_IN1 (DC IN Jack connector)

1



DC In Jack connector



Connector PN

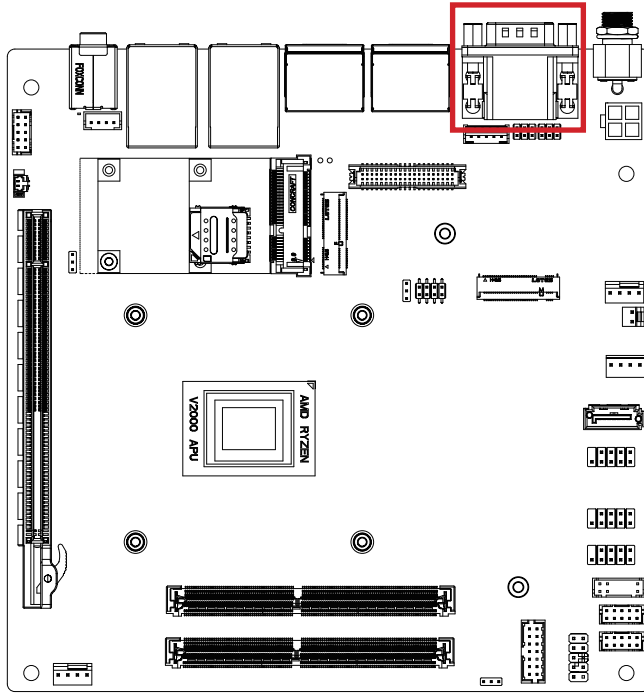
655-360-000

Vendor

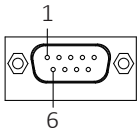
SHEN-MING

2.2.3 COM1_2 (COM Port (RS-232/422/485 & RI/5V/12V))

2



Serial Port connector



Connector PN

D20HB1102002P6JN

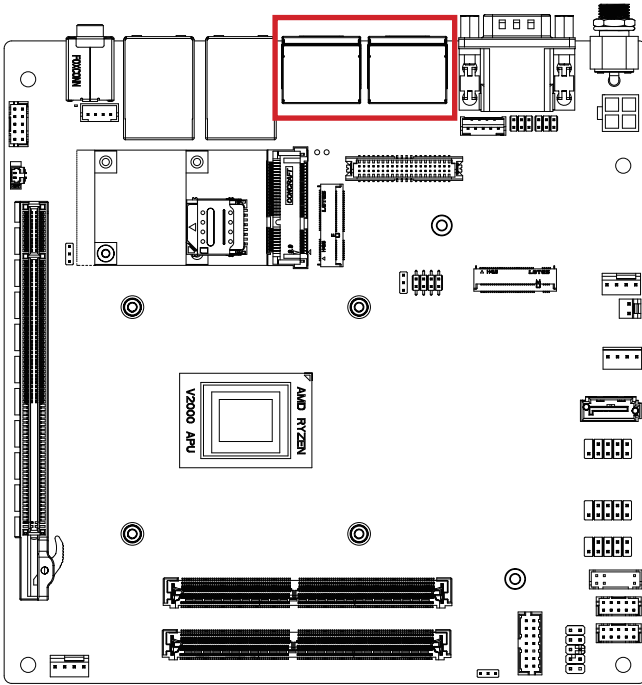
Vendor

FENYING

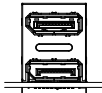
Pin No.	RS-232	RS-422 Full Duplex	RS-485 Half Duplex
1	DCD	TXD-	D-
2	RXD	TXD+	D+
3	TXD	RXD+	-
4	DTR	RXD-	-
5	GND		
6	DSR	-	-
7	RTS	-	-
8	CTS	-	-
9	RI	-	-

2.2.4 DP1_2, DP3_4 (Display ports)

3



DP connector



Connector PN

G3167C233S-006H

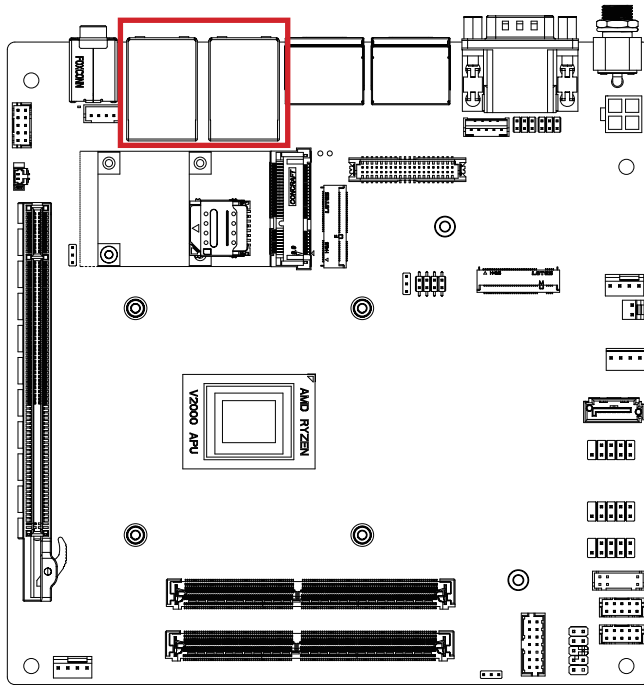
Vendor

WIESON

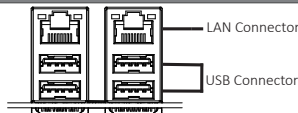
Pin No.	Definition	Pin No.	Definition
1	TX0p	11	GND
2	GND	12	TX3n
3	TX0n	13	GND
4	TX1p	14	GND
5	GND	15	AUXp
6	TX1n	16	GND
7	TX2p	17	AUXn
8	GND	18	Hot Plug Detect
9	TX2n	19	GND
10	TX3p	20	3.3V

2.2.5 USB_LAN1, USB_LAN2 (USB+LAN connector x 2)

4 5



USB & LAN connector

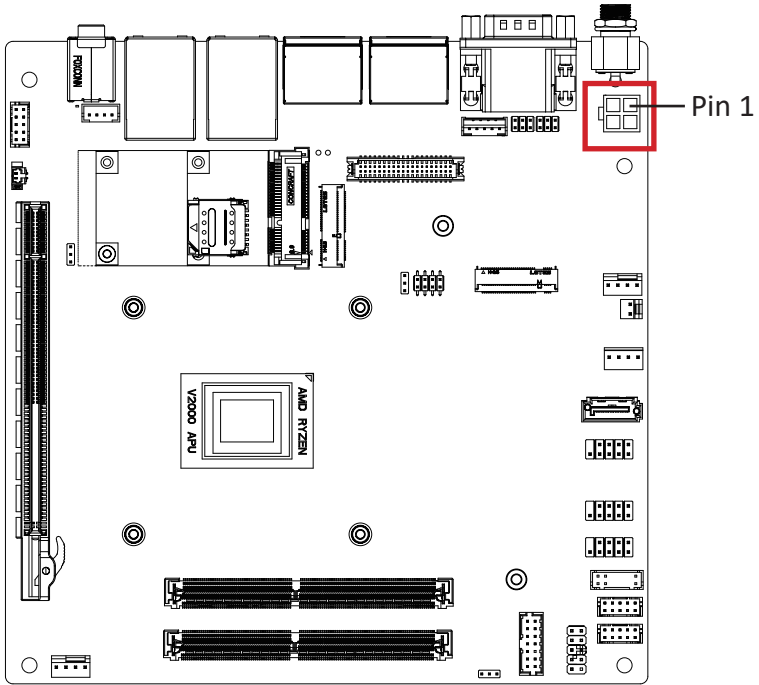


USB Connector			
Pin No.	Definition	Pin No.	Definition
1	5V	10	5V
2	D1n	11	D0n
3	D1p	12	D0p
4	GND	13	GND
5	USB3_RX1n	14	USB3_RX2n
6	USB3_RX1p	15	USB3_RX2p
7	GND	16	GND
8	USB3_TX1n	17	USB3_TX2n
9	USB3_TX1p	18	USB3_TX2p

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		1Gbps data rate	
Green On		100Mbps data rate	
Off		10Mbps data rate	

2.2.6 DC_IN2 (ATX 2x2 pin power connector)

8



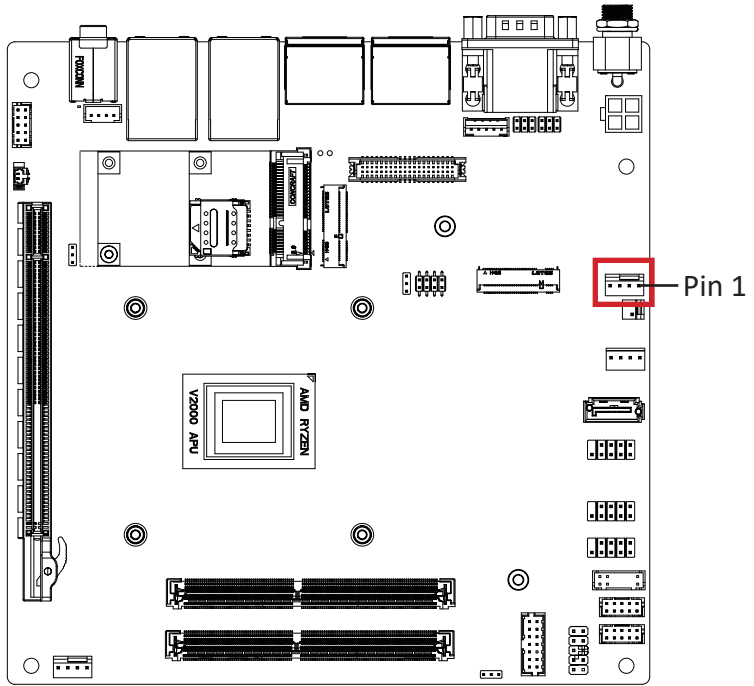
Power connector	

Connector PN	Vendor
740-81-04TW56	PINREX

Pin No.	Definition
1	GND
2	GND
3	+12V ~ +24V
4	+12V ~ +24V

2.2.7 SYS_FAN (System Fan connector)

9



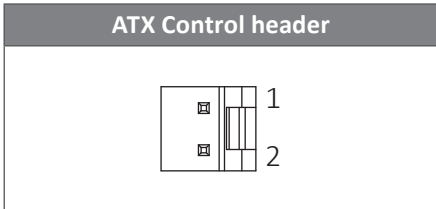
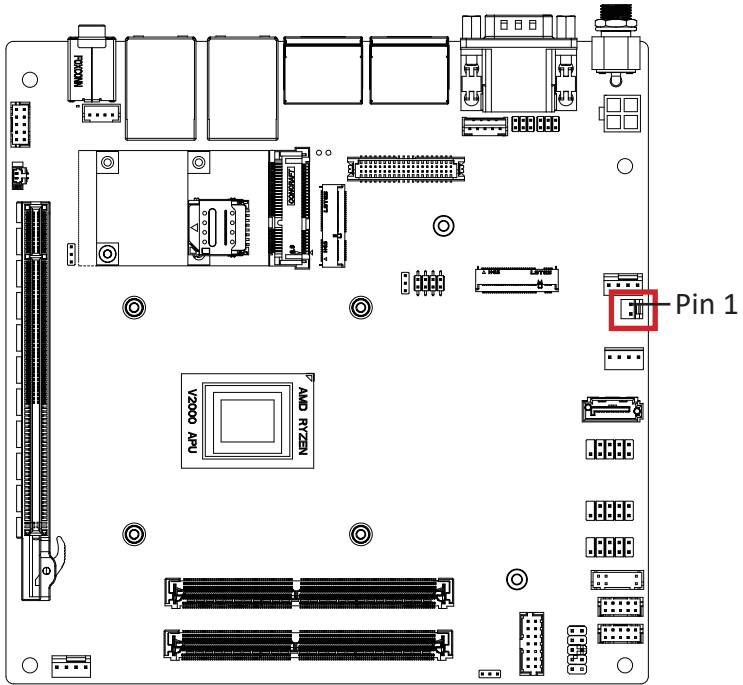
System FAN connector	
4	1

Connector PN	Vendor
744-81-045R11	PINREX
WF04R22RJQ105	HORNGTONG

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

2.2.8 ATX_CTL (ATX Control header, Support PS-ON Signal of Power Supply Unit)

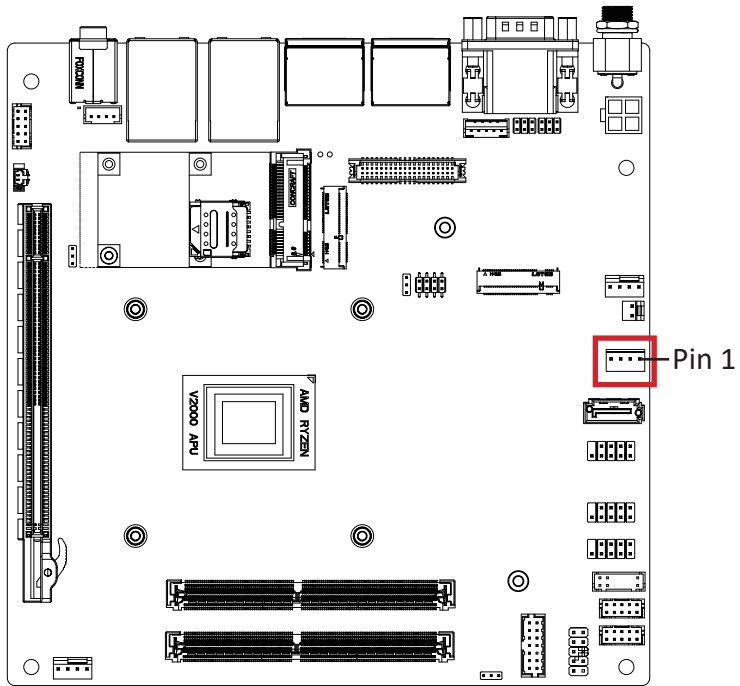
10



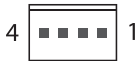
Pin No.	Definition
1	PSON#
2	5V

2.2.9 SATAPW (SATA power connector)

11



Hard Disk Power connector



Connector PN

743-81-04TW00
WF04Q2-3BJQ000

Vendor

PINREX
HORNGTONG

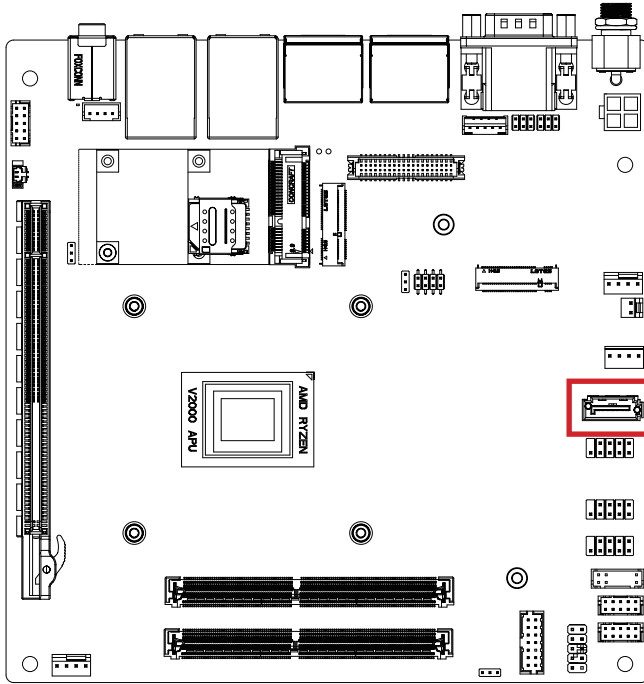
Pin No.

Definition

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

2.2.10 SATA0 (SATA 6Gb/s Connector)

12



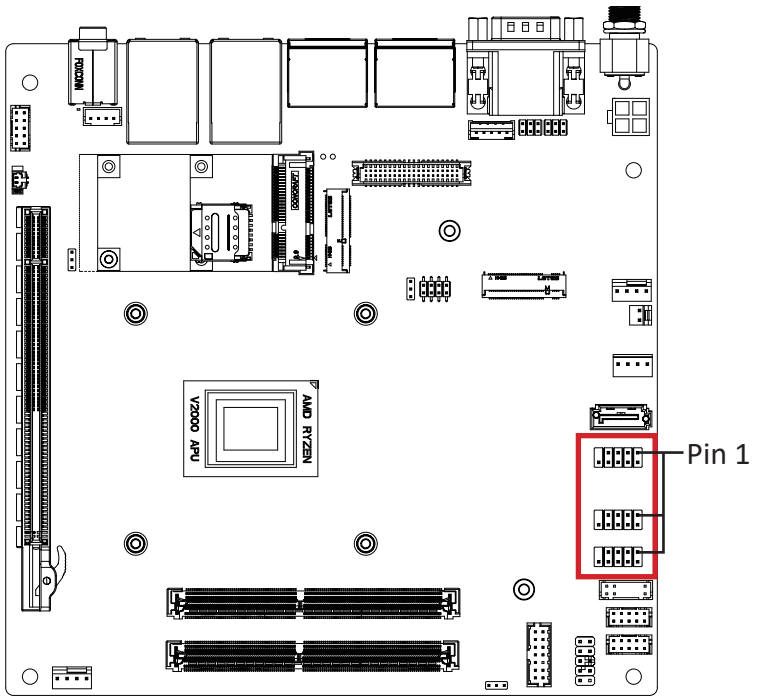
SATA 6Gb/s connector	

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

Connector PN	Vendor
WATF-07DBLBA1UW	WINWIN

2.2.11 F_USB2_1, F_USB2_3, F_USB2_2 (USB 2.0 header)

13



USB 2.0 header



Connector PN

210-92-05GB04
PH10R53BAZ009

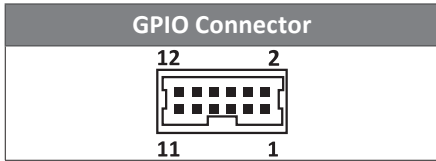
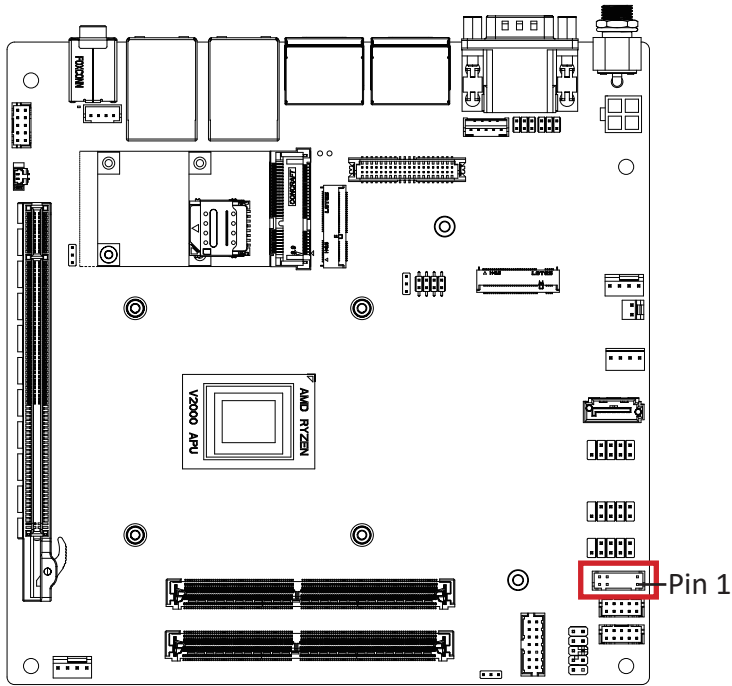
Vendor

PINREX
HORNGTONG

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

2.2.12 GPIO_CNT (General purpose input/output connector)

14



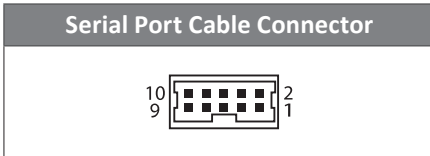
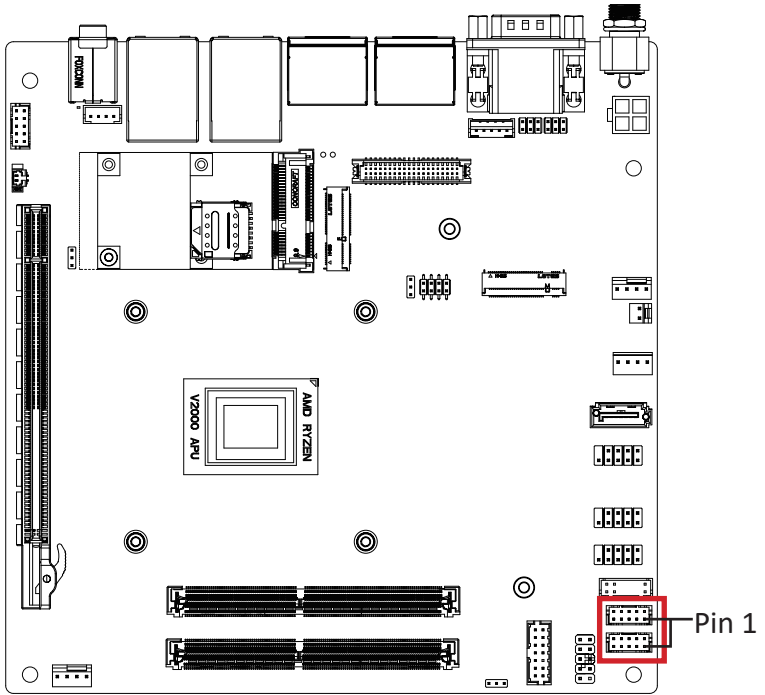
Pin No.	Definition
1	GPIO-output_1
2	GPIO-input_1
3	GPIO-output_2
4	GPIO-input_2
5	GPIO-output_3
6	GPIO-input_3
7	GPIO-output_4
8	GPIO-input_4
9	No Connect

Pin No.	Definition
10	No Connect
11	5V
12	GND

Connector PN	Vendor
725-81-12TW00	PINREX
A2004WV-2X06P46	JOINT-TECH

2.2.13 COM3, COM4 (COM header (RS-232/422/485))

15

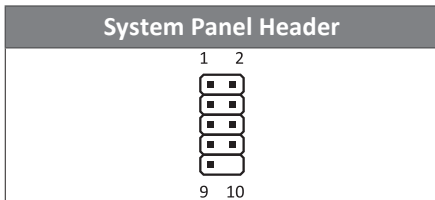
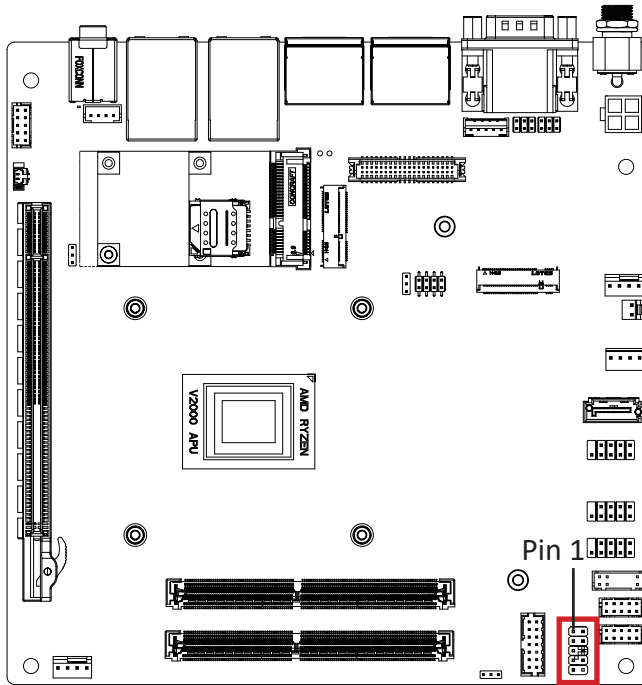


Connector PN	Vendor
725-81-10TW00	PINREX
A2004WV-2X05P46	JOINT-TECH

Pin No.	Definition	Pin No.	Definition
1	RXD	6	GND
2	DCD	7	CTS
3	DTR	8	RTS
4	TXD	9	No Connect
5	DSR	10	RI

2.2.14 SYS_PANEL (Front Panel Header)

16

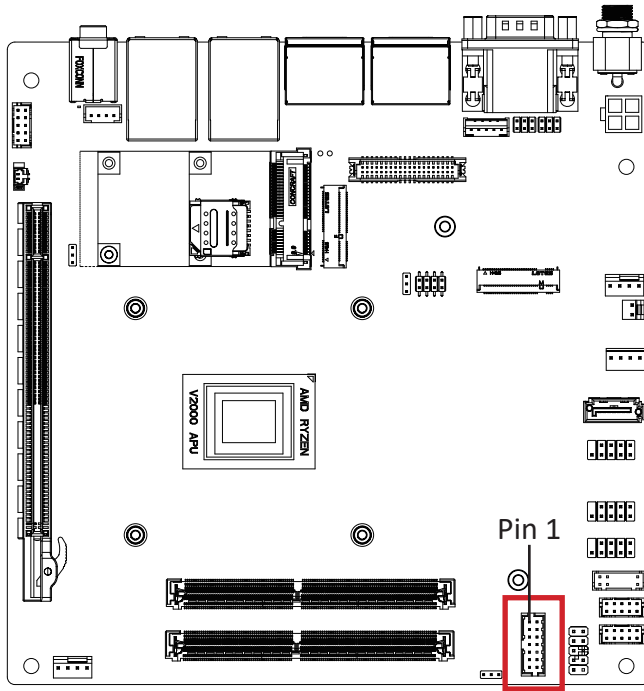


Connector PN	Vendor
210-92-05GW5W	PINREX

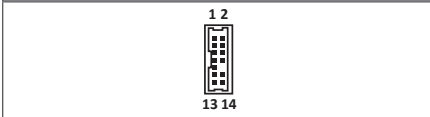
Pin No.	Definition
1	HDD LED+
2	Power LED+
3	HDD LED-
4	Power LED-
5	GND
6	Power Button+
7	Reset Button
8	Power Button-
9	No Connect
10	No Pin

2.2.15 TPM_LPC (TPM header)

17



TPM Module Connector



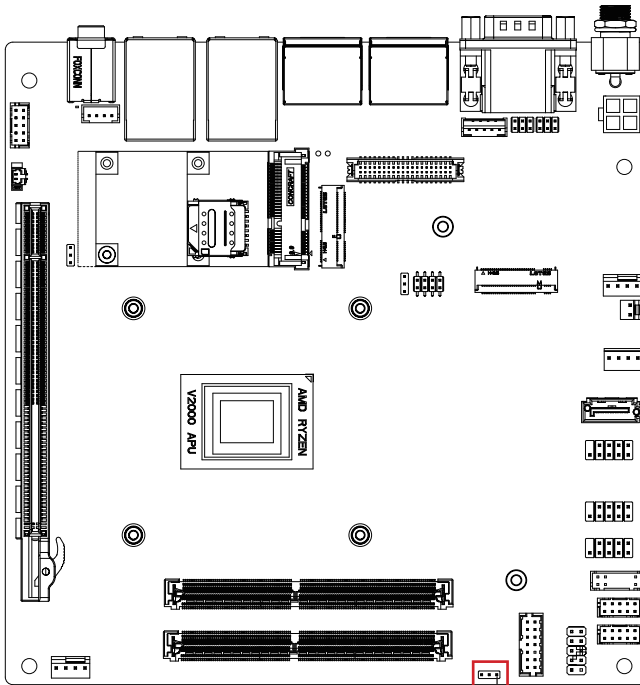
Pin No.	Definition
1	LPCCLK
2	3.3V
3	TPM_RST
4	3.3V
5	LAD0
6	IRQ_SERIAL
7	LAD1
8	TPM_DET
9	LAD2
10	NC

Pin No.	Definition
11	LAD3
12	GND
13	LFRAME
14	GND

Connector PN	Vendor
52S-90-14GB10	PINREX
BH14NQ-7BAI010	HORNGTONG

2.2.16 AT_CN (AT/ATX mode select jumper)

18



Pin 1

AT/ATX mode select jumper



Connector PN

220-96-03GB01

PH03N2-7BAN000

Vendor

PINREX

HORNGTONG

Pin No.

Definition

1

AT MODE

2

Detect

3

ATX MODE

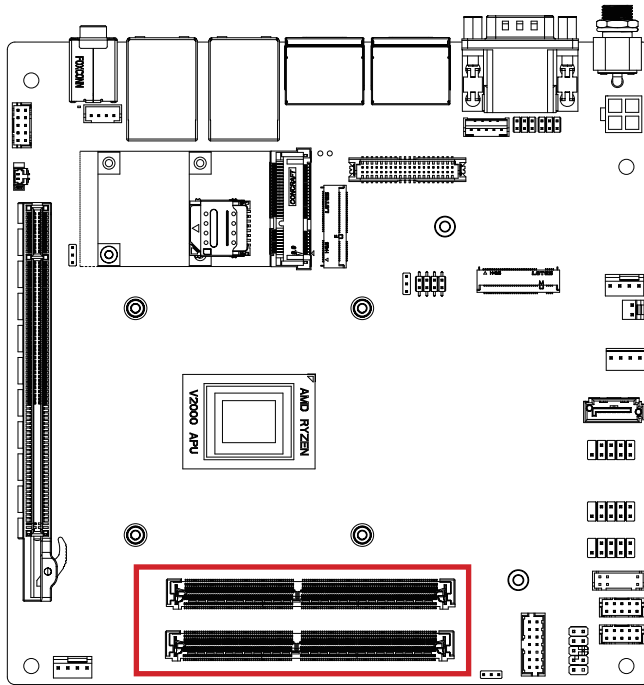
Jumper setting

1-2 Close : AT mode.

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

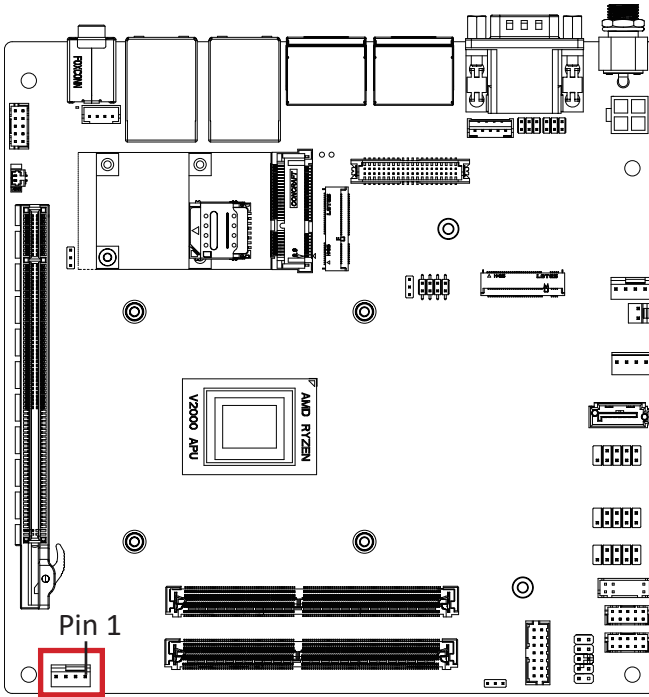
2.2.17 SODIMM1, SODIMM2 (2 x DDR4 SO-DIMM slots)


19



2.2.18 CPU_FAN (CPU Fan connector)

20



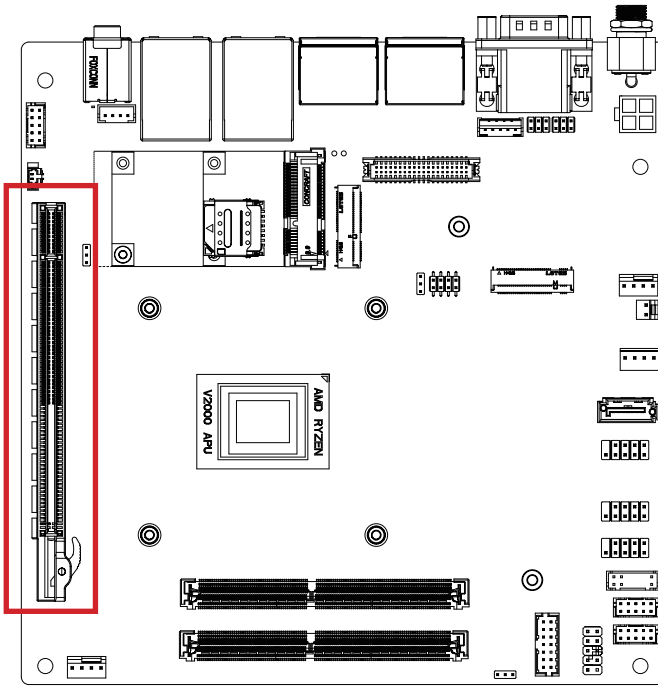
CPU FAN connector	
4	 1

Connector PN	Vendor
744-81-045W1Z	PINREX

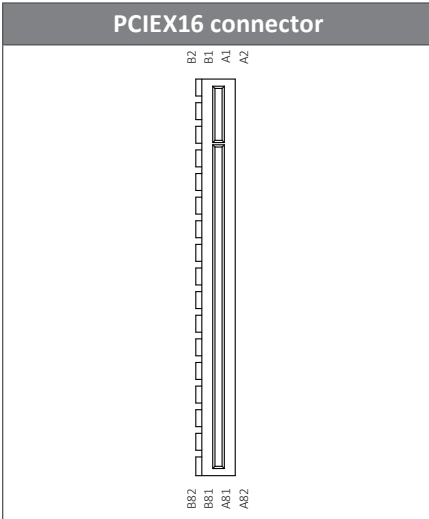
Pin No.	Definition
1	GND
2	12V
3	Detect
4	Speed Control

2.2.19 PCIEX16 (PCIe x16 slot)

21

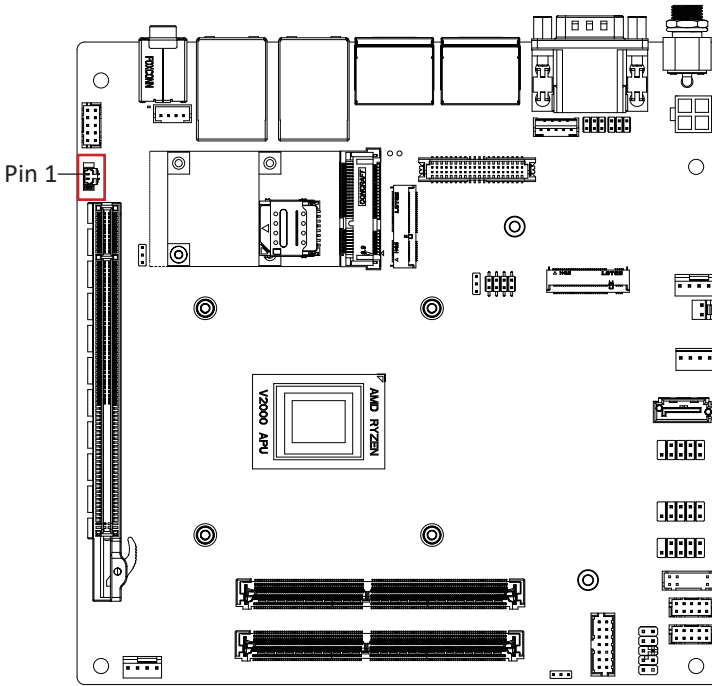


PCIEX16 connector



2.2.20 BAT (Battery connector)

22



Battery Cable Connector



Connector PN

85205-0270L

Vendor

ACES

A1250WV-S-02PC

JOINT-TECH

Pin No.

Definition

1

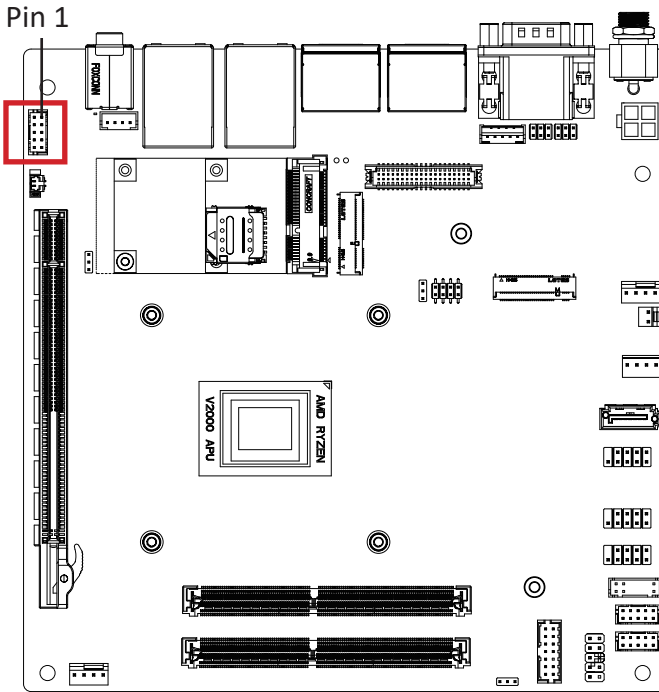
3V

2

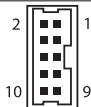
GND

2.2.21 FP_AUDIO (Front panel audio header)

23



Front panel audio header



Connector PN

725-81-10TW00

A2004WV-2X05P46

Vendor

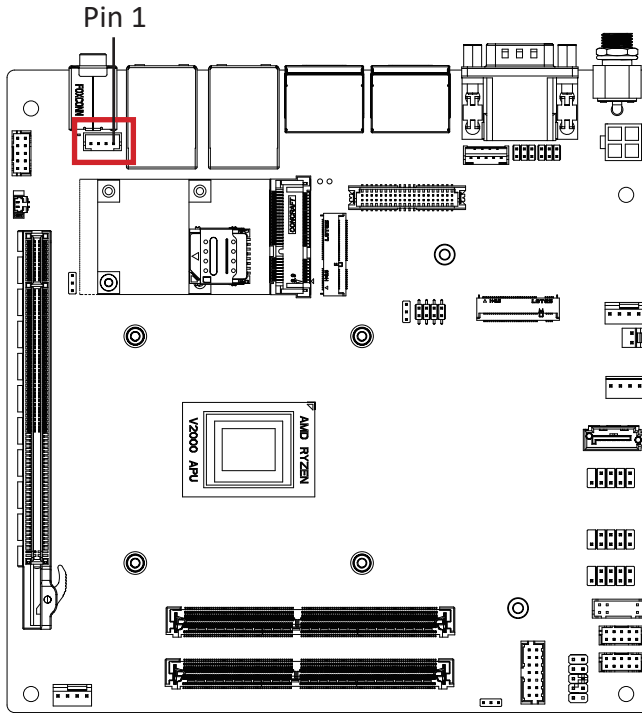
PINREX

JOINT-TECH

Pin No.	Definition	Pin No.	Definition
1	MIC_Left	6	No connect
2	GND	7	FAUDIO_JD
3	MIC_Right	8	No Connect
4	Detect	9	HPOUT_L
5	HPOUT_R	10	Detect

2.2.22 SPKR (Speaker out connector)

24



Audio Amplifier Connector



Connector PN

721-81-045W00

A2001WV-04P146

Vendor

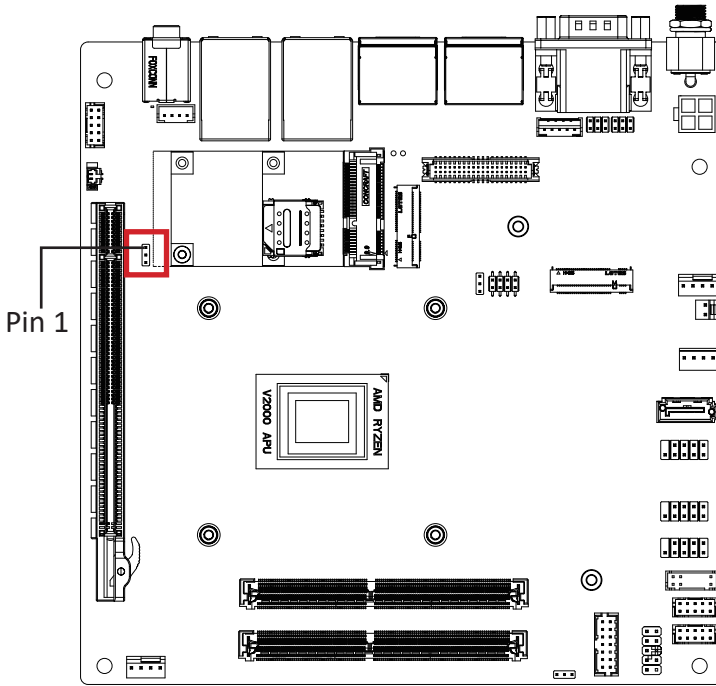
PINREX

JOINT-TECH

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

2.2.23 CLR_CMOS (Clear CMOS jumper)

25



Clear COMS Jumper



Connector PN

220-96-03GB01
PH03N2-7BAN000

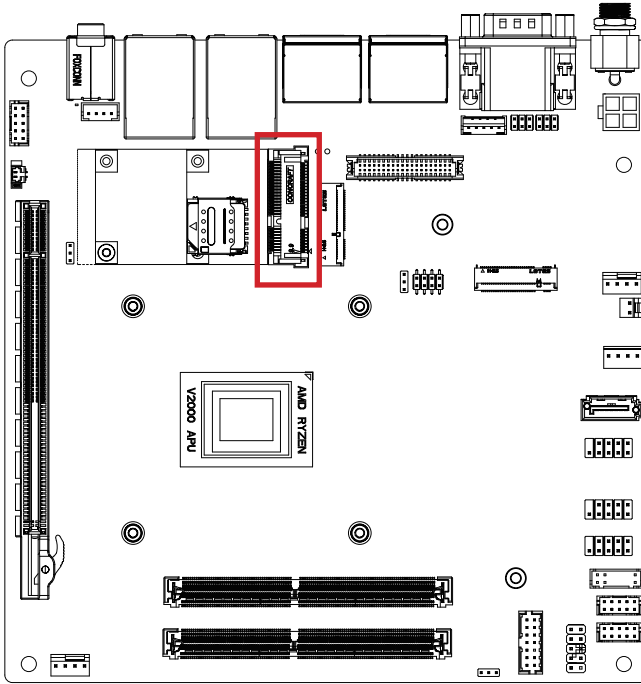
Vendor

PINREX
HORNGTONG

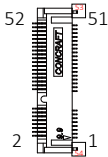
Pin No.	Definition
1	GND
2	RTCVDD_C
3	No Connect
1-2 Close: Clear COMS data. 2-3 Close: Normal Operator (Default setting)	

2.2.24 MPCIE (Mini PCIE connector)

26



Mini PCIe Connector



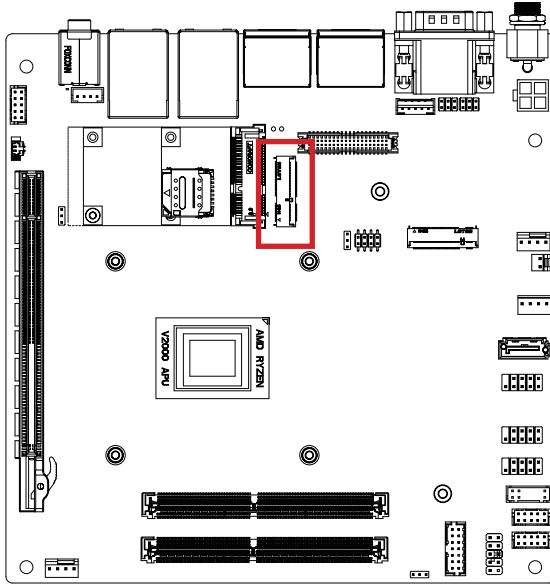
Pin No.	Definition	Pin No.	Definition
1	PCIE WAKE	2	3.3V
3	NC	4	GND
5	NC	6	NC
7	PCIE Clock Request	8	SIM PWR
9	GND	10	SIM DATA
11	PCIE Clock n	12	SIM Clock
13	PCIE Clock p	14	SIM Reset
15	GND	16	UIM VPP3
17	NC	18	GND
19	NC	20	WLAN_DISABLE
21	GND	22	Reset

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

Connector PN	Vendor
AS0B221-S99Q-7H	FOXCONN

2.2.25 M2E (M.2 E-key NGFF 2230)

27



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		

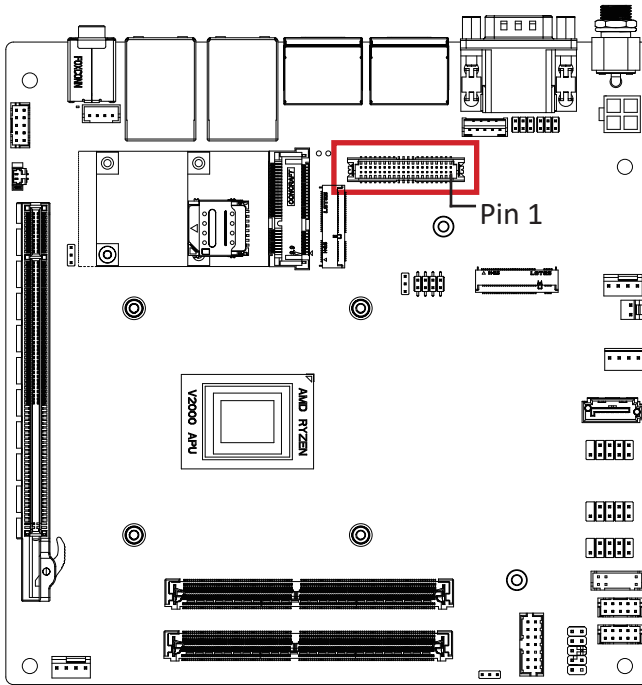
Pin No.	Definition	Pin No.	Definition
33	GND	32	NC
35	PCIE_TXp	34	NC
37	PCIE_TXn	36	NC
39	GND	38	NC

41	PCIE_RXp	40	CL_DATA
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

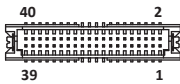
Connector PN	Vendor
80152-8521	BELLWETHER
APCI0095-P002A	LOTES

2.2.26 LVDS (LVDS connector)

28



LVDS Connector



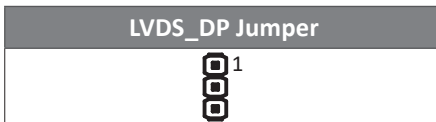
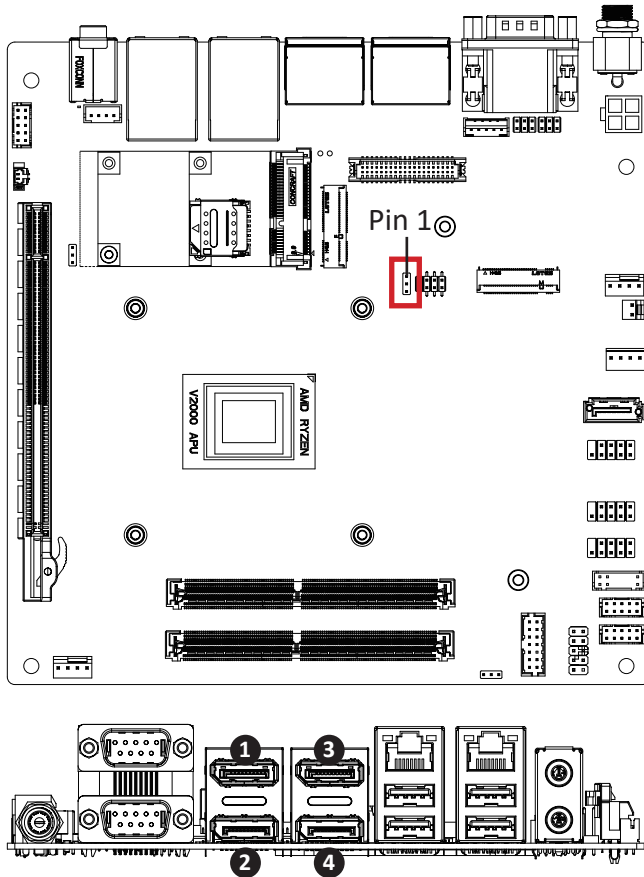
Pin No.	Definition	Pin No.	Definition
1	3.3V	21	A5+
2	5V	22	A4+
3	3.3V	23	A5-
4	5V	24	A4-
5	SPECO	25	GND
6	SPEDO	26	GND
7	GND	27	A7+
8	GND	28	A6+
9	A1+	29	A7-
10	A0+	30	A6-
11	A1-	31	GND
12	A0-	32	GND
13	GND	33	CLK2+
14	GND	34	CLK1+
15	A3+	35	CLK2-

Pin No.	Definition	Pin No.	Definition
16	A2+	36	CLK1-
17	A3-	37	GND
18	A2-	38	GND
19	GND	39	12V
20	GND	40	12V

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

2.2.27 LVDS_DP (LVDS/DP jumper)

29

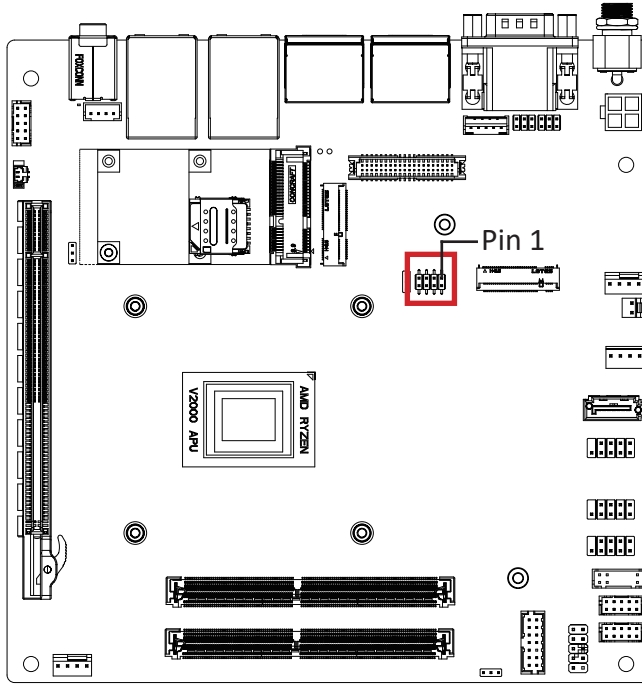


Pin No.	Definition
1	No Connect
2	GPU_SEL
3	GND
1-2 Close: DP1 DP Mode (Default)	
2-3 Close: DP1 LVDS Mode	

Connector PN	Vendor
220-96-03GB01	PINREX
PH03N2-7BAN000	HORNGTONG

2.2.28 LSW (LVDS resolution jumper)

30

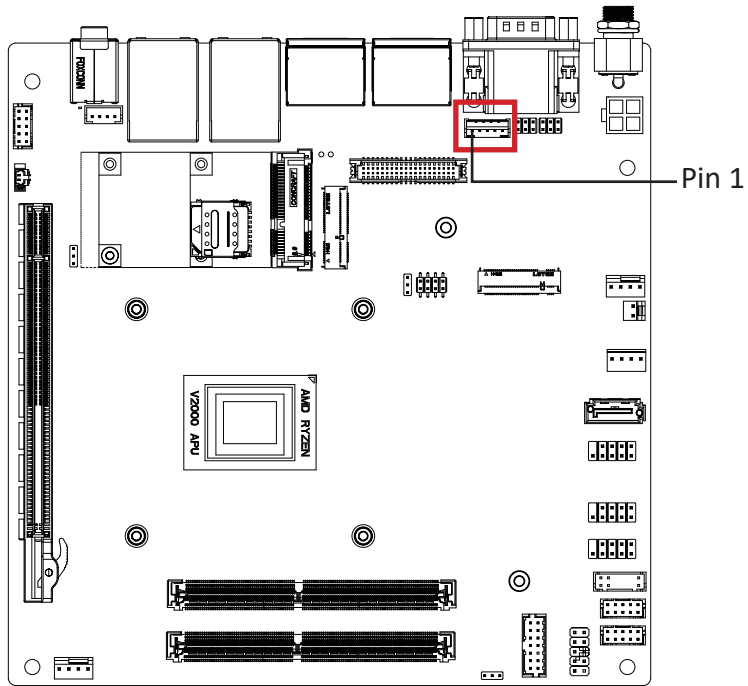


LVDS Resolution Jumper			
Jumper Setting	Resolution	Jumper Setting	Resolution
	800 x 600 18bit		1366 x 768 24bit
	1024 x 768 18bit		1440 x 900 24bit
	1024 x 768 24bit		1400 x 1050 24bit
	1024 x 600 18bit		1600 x 900 24bit
	1280 x 800 18bit		1680 x 1050 24bit
	1280 x 960 18bit		1600 x 1200 24bit
	1280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

Connector PN	Vendor
222-97-04GBE1	PINREX

2.2.29 BKL_CN (Backlight control connector)

31



Backlight control connector



Connector PN

721-81-05TW00

Vendor

PINREX

A2001WV-05P146

JOINT-TECH

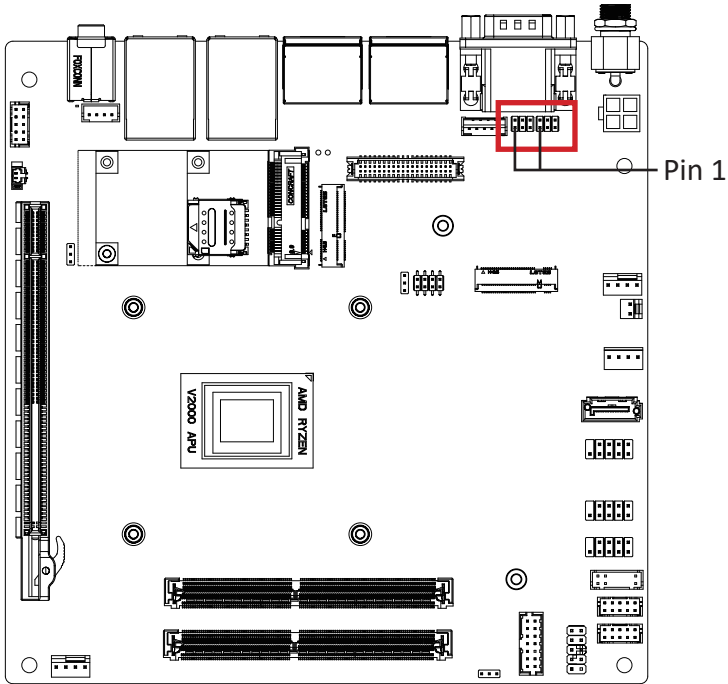
Pin No.

Definition

1	5V
2	PWM
3	Back Light Enable
4	GND
5	12V

2.2.30 JCOM1, JCOM2 (RI# pin RI#/5V/12V Select jumper for COM1 & COM2 port)

32

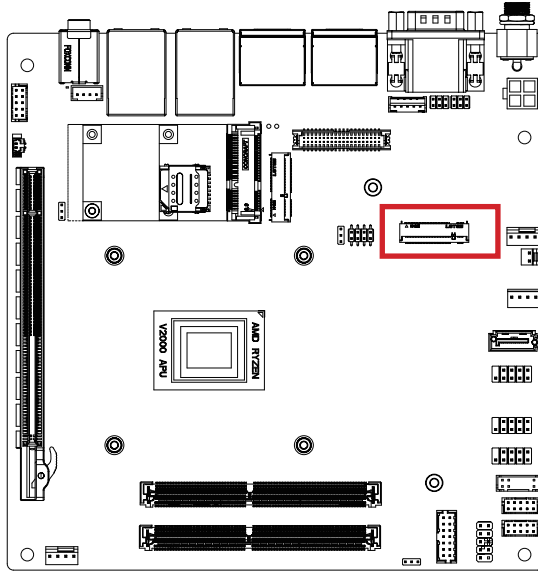


JCOM1, JCOM2 Jumper	
	1-2 Close: 5V (Power COM)
	3-4 Close: RI (Stand COM)(Default)
	5-6 Close: 12V (Power COM)

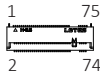
Connector PN	Vendor
220-97-03GB01	PINREX
PH06N53BAZ000	HORNGTONG

2.2.31 M2M (M.2 M-key NGFF 2280)

33



M.2 M Key Connector



Pin No.	Definition	Pin No.	Definition
1	GND	2	3.3V
3	GND	4	3.3V
5	NC	6	NC
7	NC	8	NC
9	GND	10	SSD LED
11	NC	12	3.3V
13	NC	14	3.3V
15	GND	16	3.3V
17	NC	18	3.3V
19	NC	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	PCIe1 RXn	30	NC
31	PCIe1 RXp	32	NC
33	GND	34	NC
35	PCIe2 TXn	36	NC

Pin No.	Definition	Pin No.	Definition
37	PCIe2 TXp	38	DEVS LP
39	GND	40	SMB Clock
41	PCIe0 RXn/SATA Bp	42	SMB Data
43	PCIe0 RXp/SATA Bn	44	SMB Alert
45	GND	46	NC
47	PCIe0 TXn/SATA An	48	NC
49	PCIe0 TXp/SATA Ap	50	PCI Reset
51	GND	52	PCIe Clock Request
53	PCIe Clock n	54	PCIe Wake#
55	PCIe Clock p	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
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

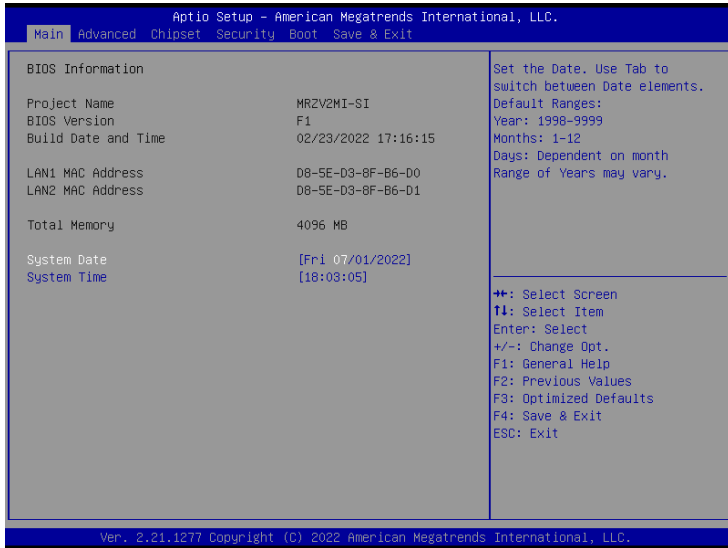
Once the system is power on, press the key as soon as possible to access into BIOS Setup program.

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

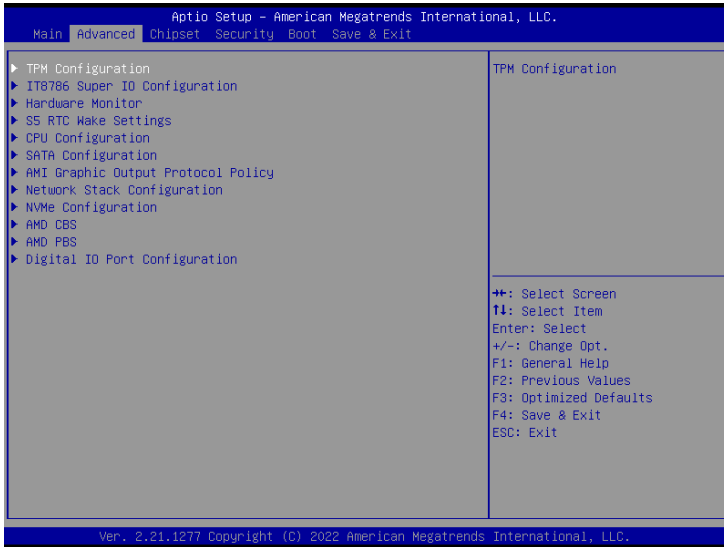
The main menu shows the basic system information. Use arrow keys to move among the items.



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
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)

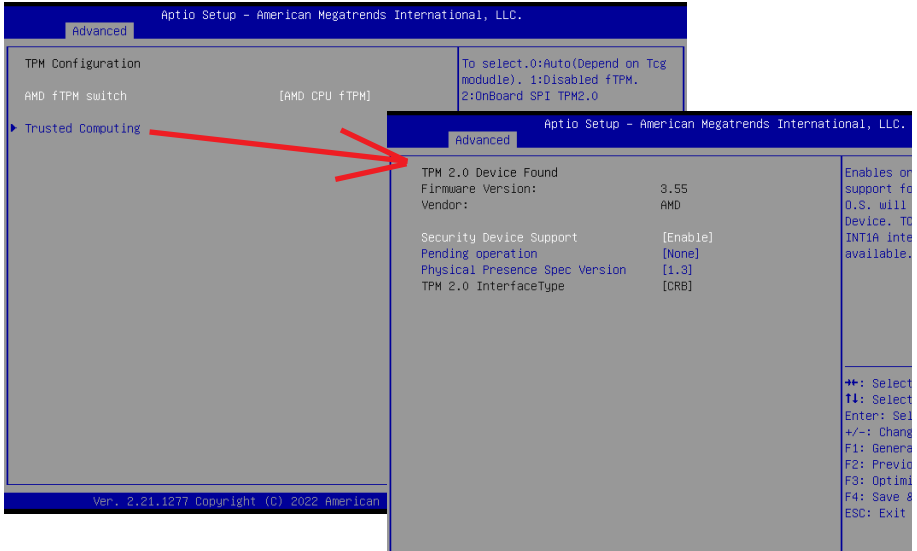
3.3 Advanced

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.



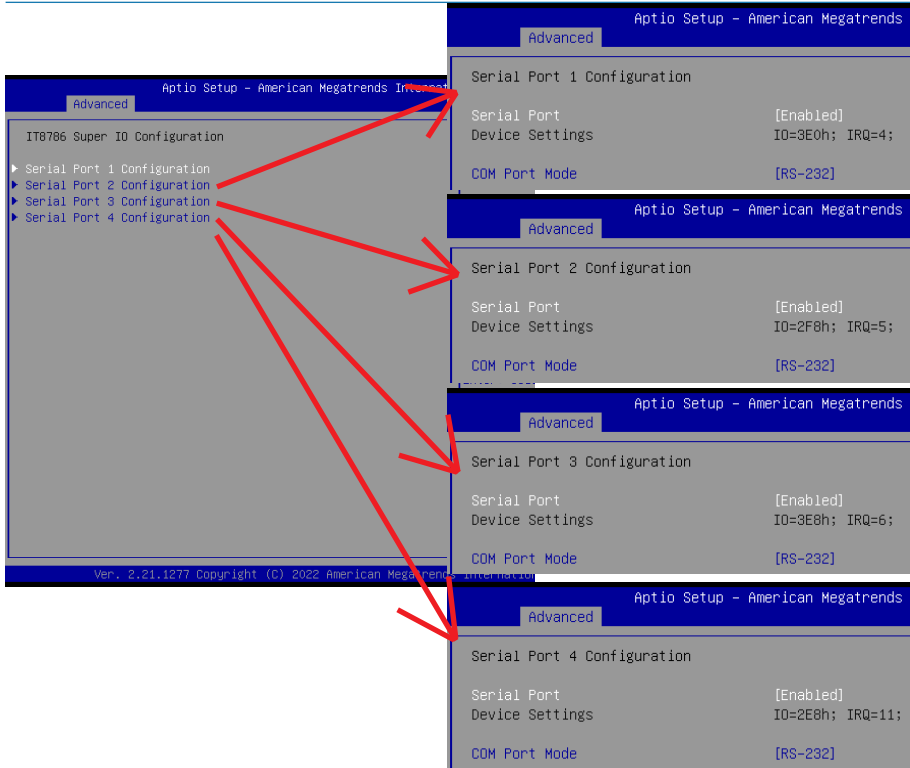
3.3.1 TPM Configuration

Use TPM Configuration submenu to choose TPM interface.



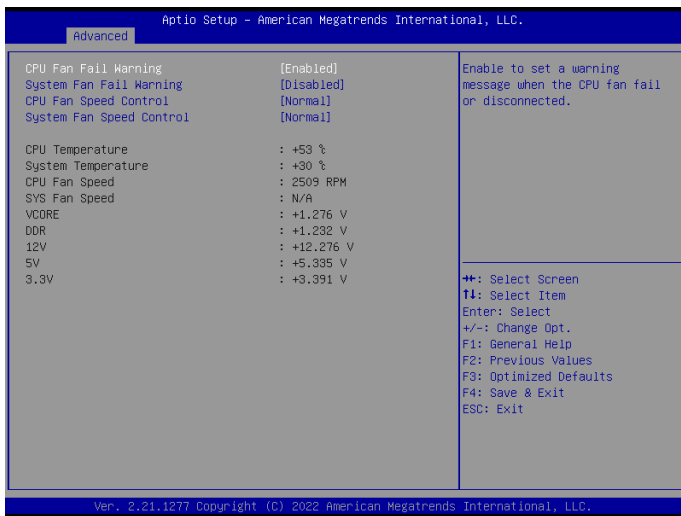
Item	Description
AMD fTPM switch	<p>AMD CPU fTPM : Enables AMD CPU firmwarm TPM (Default setting)</p> <p>Route to LPC TPM : Enables to route to LPC TPM</p>
Trusted Computing	<p>Security Device Support :</p> <p>Enabled : Enables TPM feature (Default setting)</p> <p>Disabled : Disables TPM feature</p> <p>Pending operation :</p> <p>None : No execution will be conducted (Default setting)</p> <p>TPM clear : Set to clear data on TPM</p> <p>Physical Presence Spec Version :</p> <p>Choose PPI spec version</p> <p>Option items : 1.2 or 1.3 (Default setting)</p>

3.3.2 IT8786 Super IO Configuration



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

3.3.3 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 CPU FAN Fail warning alert function Disabled : Disables CPU 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

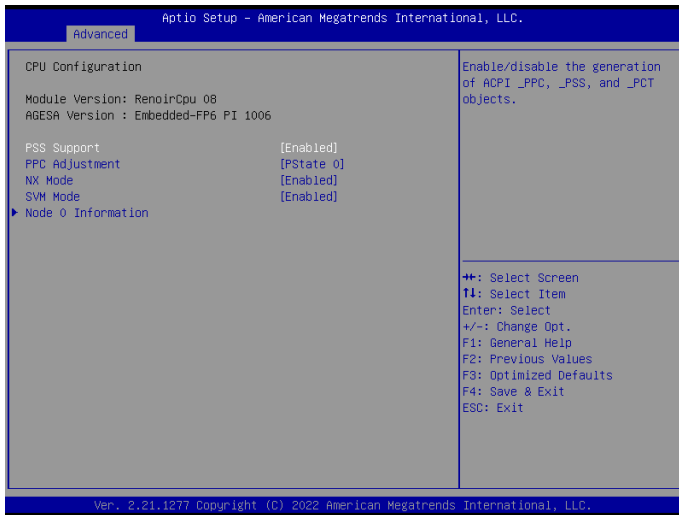
3.3.4 S5 RTC Wake Settings



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>

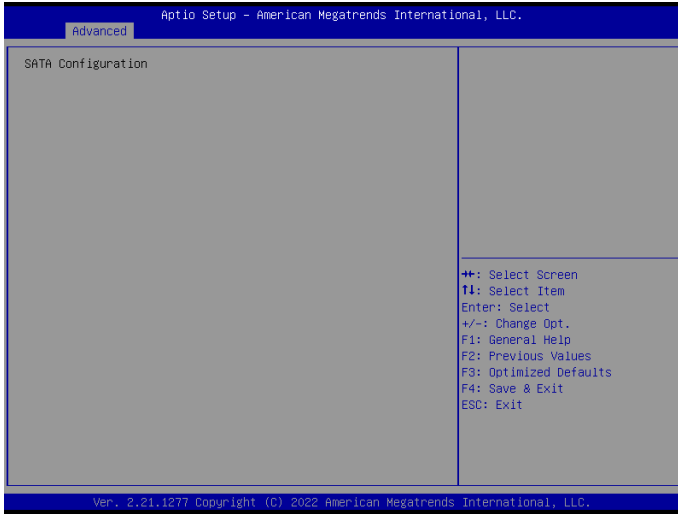
3.3.5 CPU Configuration

This submenu shows detailed CPU informations.

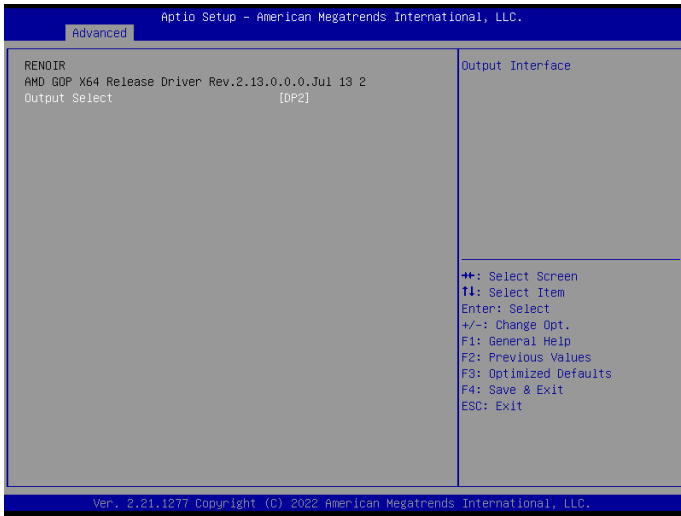


Item	Description
PSS Support	Allows you to get PState information Enabled : Enables to get PState information (Default setting) Disabled : Disables to get PState information
PPC Adjustment	To adjust the PState of the CPU Option items : PState 0 (Default setting), PState 1, PState 2
NX Mode	Enables or Disables the No-execute page-protection function. Enabled : Enables Turbo Mode (Default setting) Disabled : Disables Turbo Mode
SVM Mode	Enables or Disables the CPU virtualization funtion. Enabled : Enables SVM Mode (Default setting) Disabled : Disables SVM Mode
Node 0 Information	Shows AMD CPU information

3.3.6 SATA Configuration

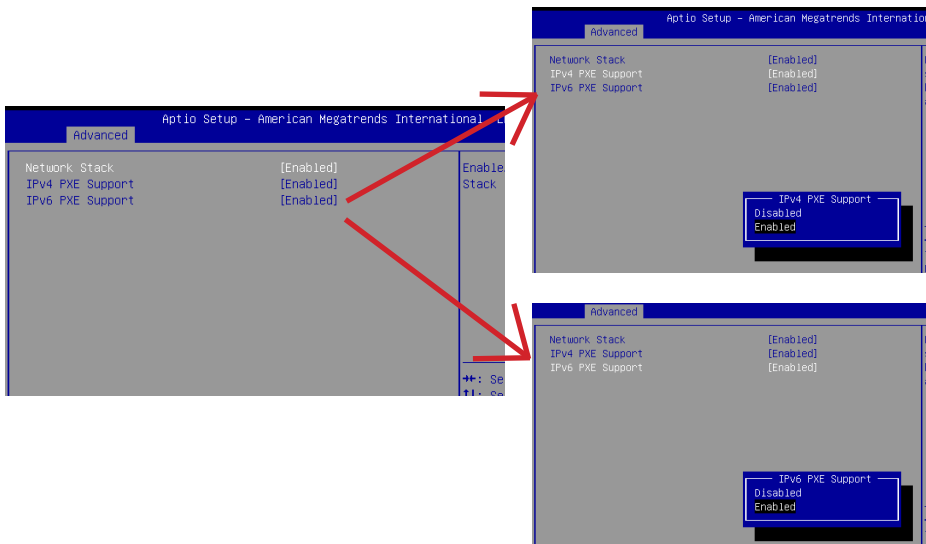
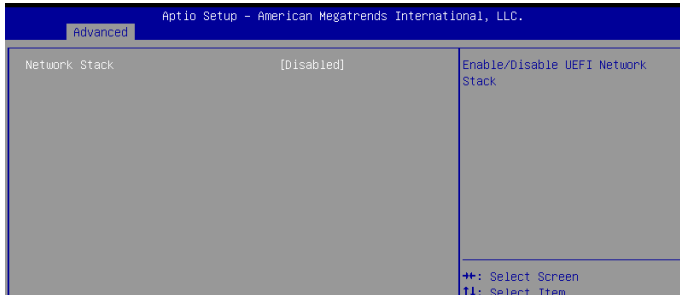


3.3.7 AMI Graphic Output Protocol Policy



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

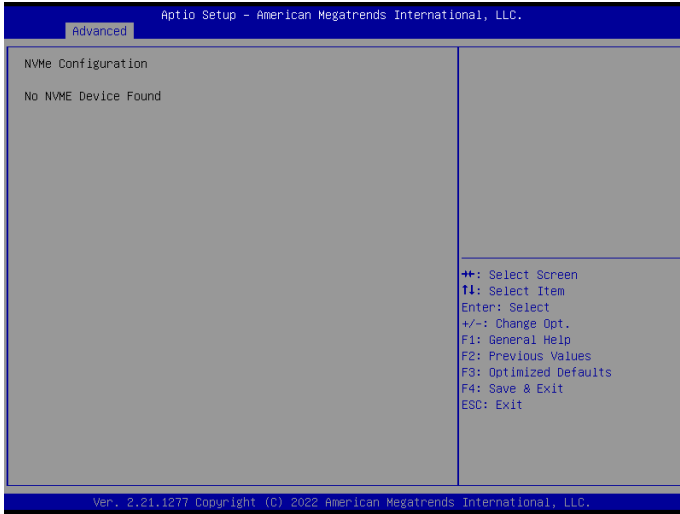
3.3.8 Network Stack Configuration



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
Ipv6 PXE Support	When Network stack is enabled : Disabled : Disables Ipv6 PXE Support Enabled : Enables Ipv6 PXE Support

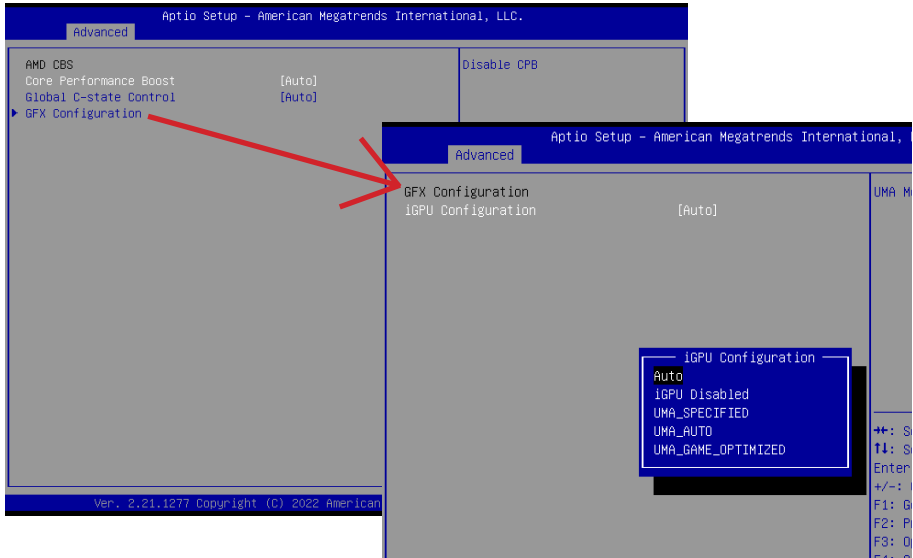
3.3.9 NVMe Configuration

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



3.3.10 AMD CBS

For AMD CPU function settings.



Item	Description
Core Performance Boost	To let CPU transits to a higher frequency. Disabled : Disables Core Performance Boost Auto : System will automatically allocate its' frequency (Default setting)
Global C-state Control	Command CPU to enter into low power consumption mode when CPU is under idle mode. Disabled : Disables Global C-state Control function Enabled : Enables Global C-state Control function Auto : System will automatically enter into power saving mode (Default setting)
GFX Configuration	For AMD CPU internal graphic setting Option items : Auto (Default setting), iGPU Disabled, UMA_SPECIFIED, UMA_AUTO, UMA_GAME_OPTIMIZED

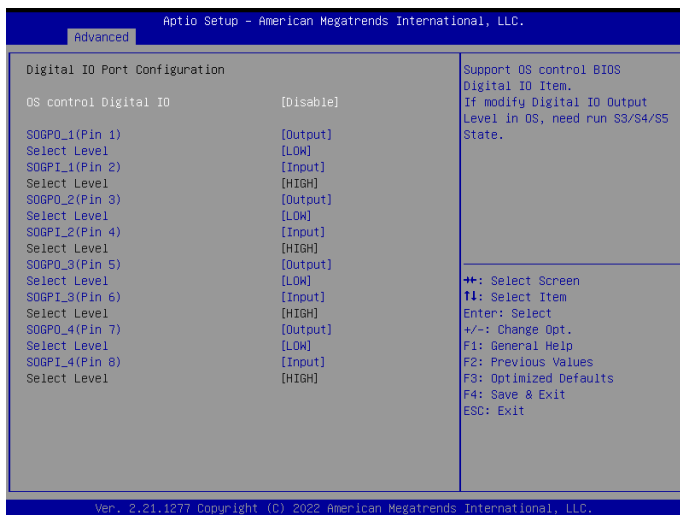
3.3.11 AMD PBS

To choose using internal graphic or external graphic let BIOS Menu display on the monitor.



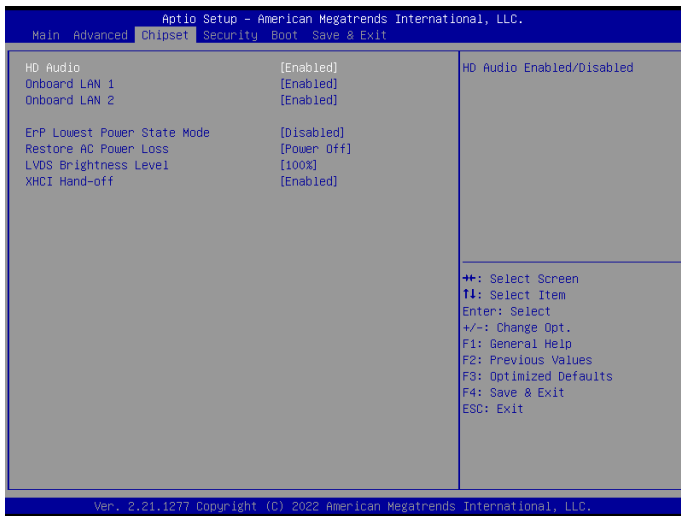
Item	Description
Primary Video Adaptor	Select to use internal or external graphic. Int Graphics (IGD) : Internal Graphic (Default setting) Ext Graphics (PEG) : External Graphics

3.3.12 Digital IO Port Configuration



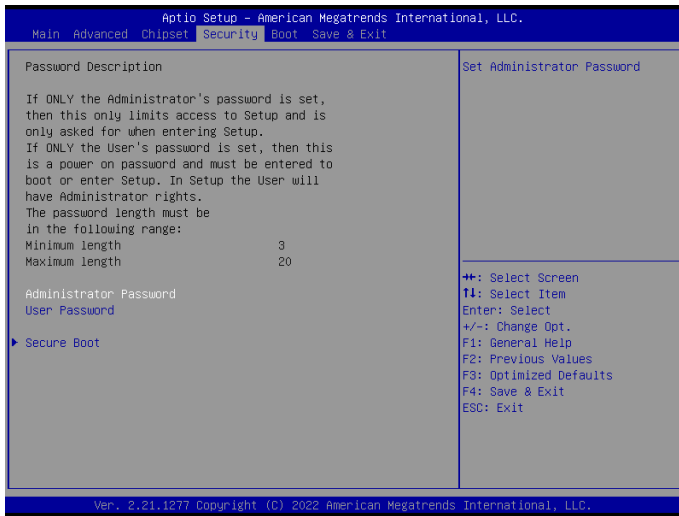
Item	Description
OS control Digital IO	<p>Disabled : If Digital IO Output value/level is modified in OS, they will not be memorized and kept. (Default setting)</p> <p>Enabled : If Digital IO Output value/level is modified in OS, they will be memorized and kept.</p>
SOGPO_1 (Pin 1) SOGPI_1 (Pin 2) SOGPO_2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

3.4 Chipset



Item	Description
HD Audio	Enable/Disable onboard audio controller Enabled : Enables onboard audio controller (Default setting) Disabled : Disables onboard audio controller
Onboard LAN1 Onboard LAN2	Enable/Disable onboard LAN controller Enabled : Enables onboard LAN controller (Default setting) Disabled : Disables onboard LAN controller
ErP Lowest Power State Mode	Enable/Disable power saving function Enabled : Enables ERP Lowest Power State Mode Disabled : Disabled ERP Lowest Power State Mode (Default setting)
Restore AC Power Loss	To set which option the system should returns if a sudden power loss occurred Power on : System power on when the power is back Power off : Do not power on when the power is back (Default setting) Last state : Restore the system to the state before power loss occurs
LVDS Brightness level	To modified the backlight brightness of the LVDS panel Option items : 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100% (Default Setting)
XHCI Hand-off	Enable/Disable XHCI Hand-off function Enabled : Enables XHCI Hand-off function (Default setting) Disabled : Disables XHCI Hand-off function

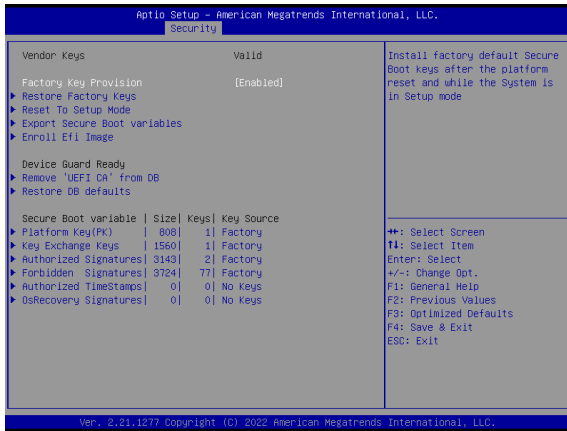
3.5 Security



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

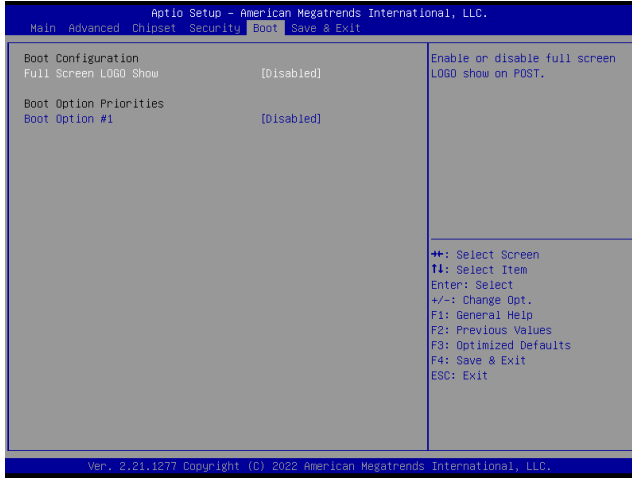


Item	Description
Factory Key Provision	Install factory default Secure Boot keys after the platform reset and while the system is in Setup mode Enabled : Enables Factory Key Provision (Default setting) Disabled : Disables Factory Key Provision
Restore Factory Keys	To restore factory settings Yes : Agree 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
Remove 'UEFI CA' from DB	To remove 'UEFI CA' from database Yes : Agree to remove 'UEFI CA' from database No : Cancel to remove 'UEFI CA' from database
Restore DB defaults	Restore DB variables to factory defaults Yes : Agree to restore DB defaults No : Cancel to restore DB defaults

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	

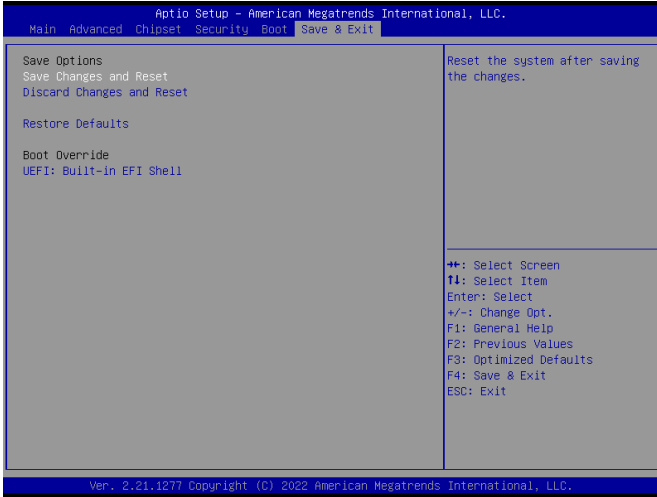
3.6 Boot

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)
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
Boot Override	Boot override