GIGAIPC

QBiX-PPC-156A8145T-A1 (PS-8145A-SI)

15.6” Industrial Panel PC System
Quick Start Guide

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Packing List

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

Item	Quantity
System kit	1
Terminal Blocks Male Plug	1
Thermal pad for Memory (25ST3-200086-T5R)	1
USB 2.0 Female cable	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

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.

High Temperature Warning

(1) This equipment is intended to be used in Restrict Access Location. The access can only be gained by Skilled person or by Instructed person who have been instructed about the metal chassis of the equipment is so hot that Skilled person have to pay special attention or take special protection. Only authorized by well trained professional person can access the restrict access location.
(2) External metal parts are hot!! Before touching it, special attention or protection is necessary

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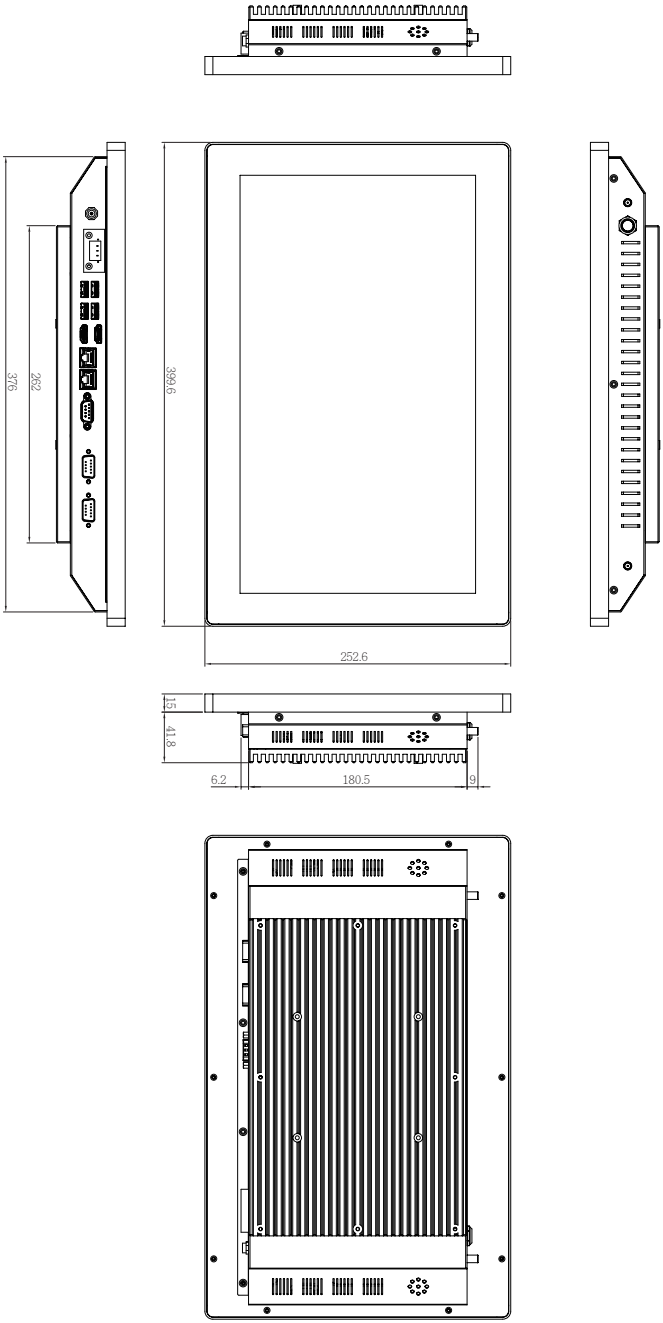
Chapter 1

Chapter 1 - Product Specifications


376
262
399.6
252.6
15
41.8
6.2
180.5
9

1.1 Specifications

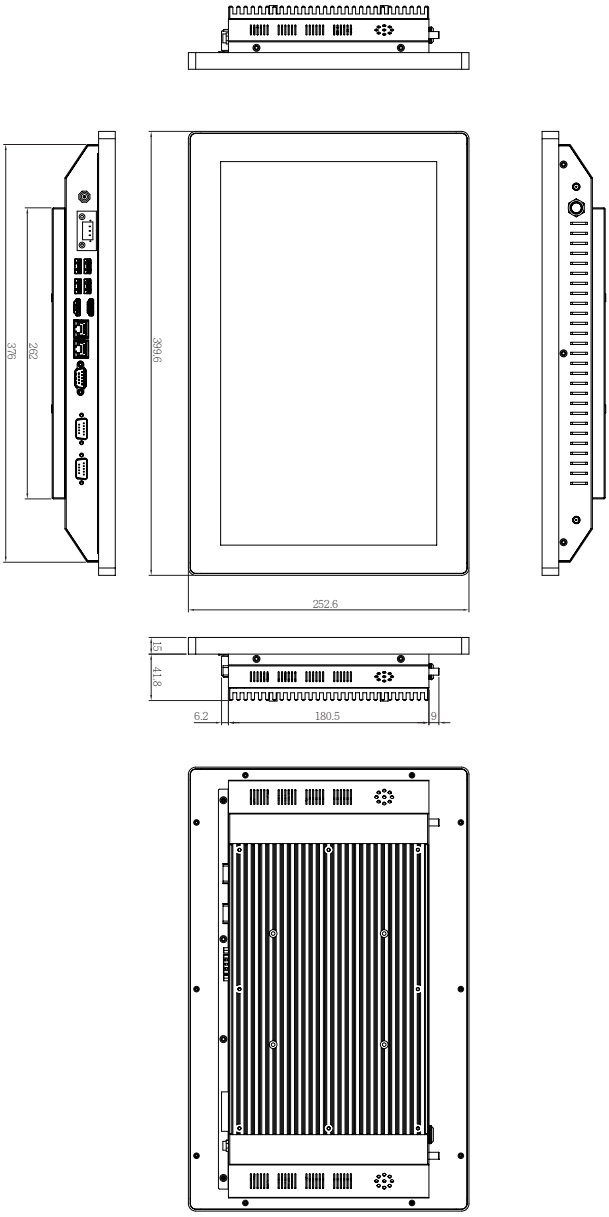
System	QBiX-PPC-156A8145T-A1 (PS-8145A-SI)
Dimension	System Size : 399.6W x 56.8D x 252.6H (mm)
Motherboard	QBiP-8145A
LCD	Display Type : 15.6” TFT LCD panel Resolution : 1920 x 1080 Brightness : 450 cd/m^2 View angel : 80°/85° (H), 80°/85° (V) Contrast Ratio : 800:1 Response time : 25 ms Backlight lifetime : 50,000 hrs
Touch screen	Touch screen : 15.6’’ Touch Panel Type : 10 points, projected capacitive Viewing Area : 346.00L x 193.10W Active Area : 344.16L x 193.59W Surface Hardness : >=3H Transparency : >80%
CPU	Intel® Core™ i3-8145UE Processor 14nm, 2 cores, 4 threads, up to 3.9 GHz TDP 15W
Memory	2 x DDR4 SO-DIMM sockets, Max. Capacity 64 GB Support Dual Channel DDR4 2400 MHz memory modules
Ethernet	2 x GbE LAN Ports (Intel® I219V and Intel® I211AT)
Expansion Slots	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 (PCIe x1 + USB2.0) -- support 3G/4G module
I/O	2 x RJ45 LAN Ports 4 x USB 3.2 Gen 2x1 1 x GPIO (8 bits) 1 x COM Port (RS-232/422/485 & RI/5V/12V) 1 x COM Port (RS-232/422/485) 2 x HDMI 1 x 3-pin Terminal block 1 x Power button with LED 2 x External Antenna Holes (Optional)

System	QBiX-PPC-156A8145T-A1 (PS-8145A-SI)
Storage	2 x 2.5'' HDD/SSD
Speaker	2 x 2W speaker
Power	+9V~36VDC (Full Range)
Operation Temperature	Operating temperature: 0°C to 50°C Operating humidity: 0-90% (non-condensing) Non-operating temperature: -40°C to 70°C Non-operating humidity: 0%-95% (non-condensing) Use wide temperature range memory and storage
Vibration During Operation	Operation: IEC 60068-2-64, 1 Grms, random, 5 ~ 500 Hz, 1 hr / Per Axis, with SSD/M.2 2280 Non-operation: IEC 60068-2-6, 2 G, Sine, 10 ~ 500 Hz, 1 Oct/min, 1 hr / Per Axis
Shock During Operation	Operation: IEC 60068-2-27, 50 G, half sine, 11 ms duration, With SSD
Packaging Content	Carton size: 490 x 336 x 175 (mm) Packing Capacity: 1pc Including: Thermal Pad for Memory x 1 (P/N: 25ST3-200086-T5R) Terminal Blocks Male Plug x 1 USB 2.0 Female cable x 1
Order Information	System: 6BPS8145AMR-SI (Box packing)

Chapter 2

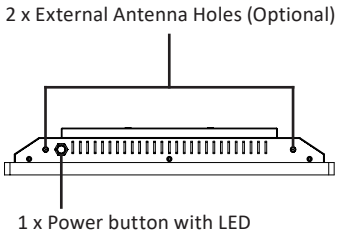
Chapter 2 – QBiX-PPC-156A8145T-A1
Industrial Panel PC System Kit

2.1 Dimension

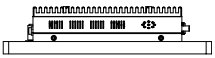


2.2 Getting Familiar with Your Unit

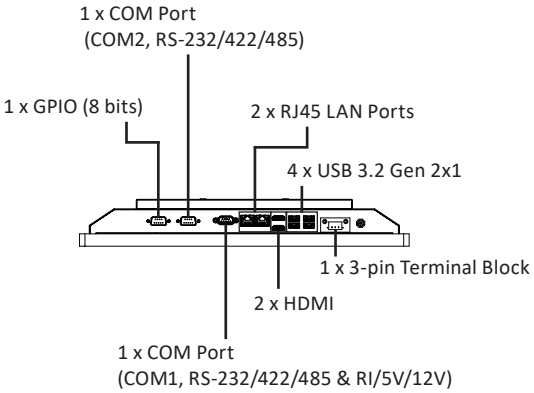
[Front Side]



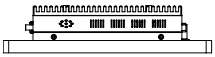
[Left Side]



[Rear Side]

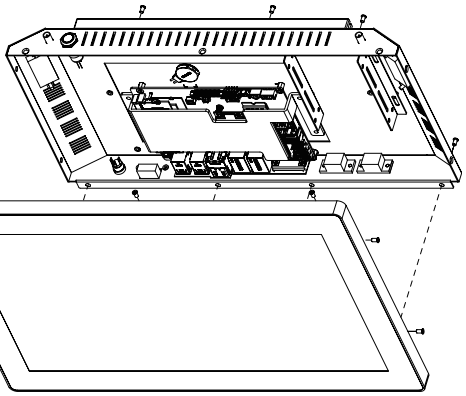


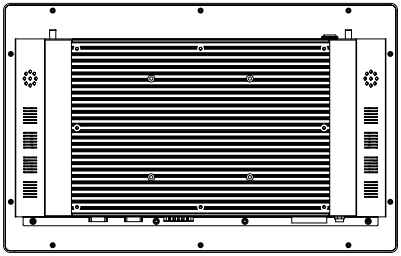
[Right Side]



[Install]

* Before opening the case, make sure to unplug the power cord.
* Before Connecting the power, make sure to fasten the case securely.

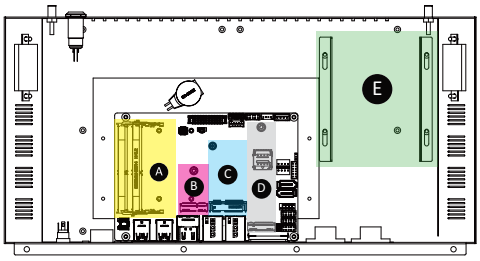




[Bottom PCB Side]

	Information
A	2 x DDR4 SO-DIMM sockets
B	1 x M.2 slot (Support NGFF-2230)

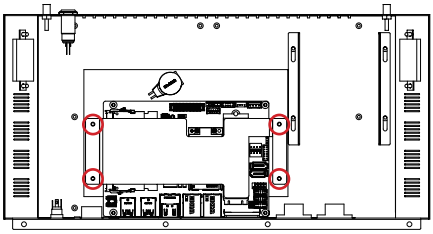
	Information
C	1 x Mini PCIe slot (PCIe x1 + USB2.0) with SIM Slot
D	1 x M.2 slot (Support NGFF-2280)
E	support 2.5'' Hard drive/SSD



2.3 A) Memory Installation: DDR4 SO-DIMM

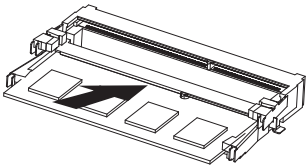
1

Remove 4 screws and disassemble the heat-plate.



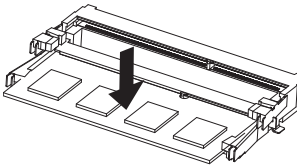
2

Carefully insert SO-DIMM memory modules.



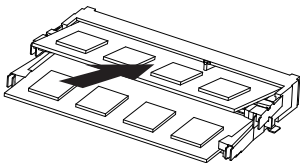
3

Push down until the modules click into place.



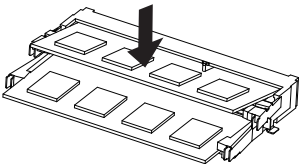
4

Carefully insert SO-DIMM memory modules.



5

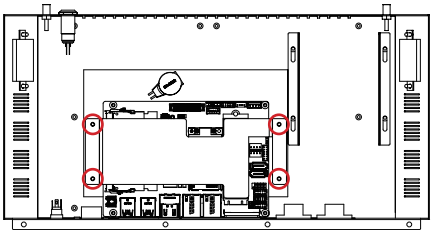
Push down until the modules click into place.



2.4 B) Wireless Module: How to safely install the Module (Wireless Module inclusion may vary based on local distribution)

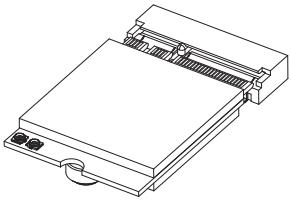
1

Remove 4 screws and disassemble the heat-plate, and then remove the screw from the screw hole. (Location : MSO2)



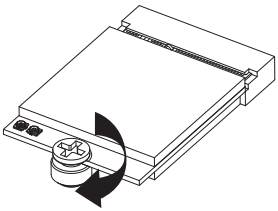
2

Carefully insert the wireless module into the M.2 slot



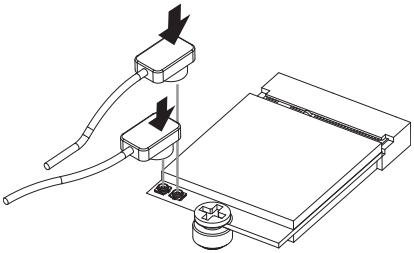
3

Lock the screw in the middle.



4

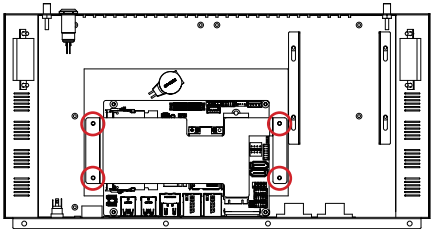
Install the antenna on the left side of the connection wireless module down.



2.5 C) Mini PCIe Card Installation: How to safely install the Mini PCIe Card

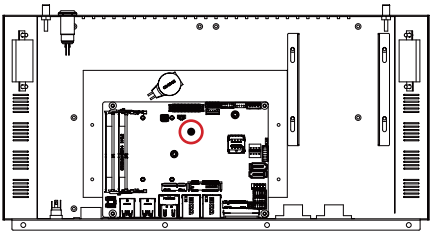
1

Remove 4 screws and disassemble the heat-plate.



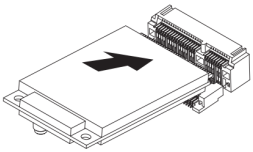
2

Remove the screw from the screw hole (Location : MSO1)



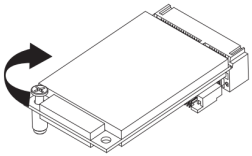
3

Carefully insert the Mini PCIe Card into the slot.



4

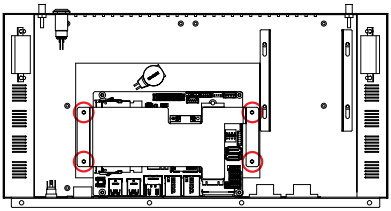
Secure the Mini PCIe Card with screw.



2.6 D) M.2 SSD Installation: How to safely install the M.2 2280 SSD

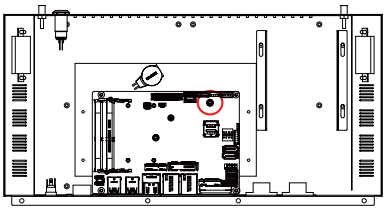
1

Remove 4 screws and disassemble the heat-plate.



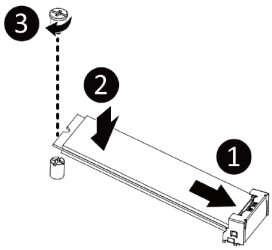
2

Remove the screw from the screw hole (Location : MSO3)



3

Carefully insert the M.2 SSD into the slot, and secure with screw.

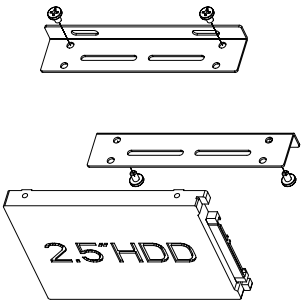


2.7 E) 2.5” HDD/SSD installation

1

Install 1st 2.5” HDD with 4 screws.

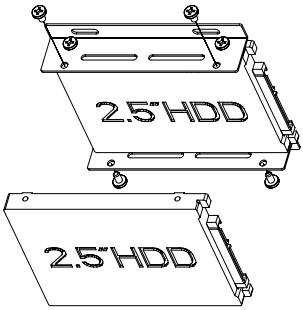
Torsion : 1.0~1.5 kgf-cm



2

Install 2nd 2.5” HDD with 4 screws.

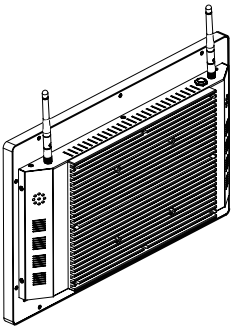
Torsion : 1.0~1.5 kgf-cm



2.8 Antenna Installation (Antenna inclusion may vary based on local distribution)

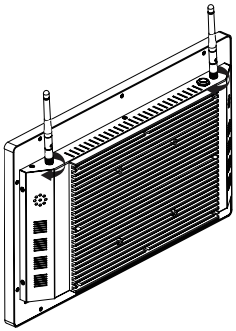
1

Carefully insert the antennas into the connectors.



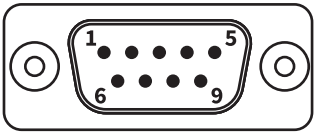
2

Turn the antennas clockwise until they are completely secure on the connectors.



2.9 Cable Pin-define

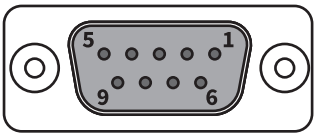
1. DB9 COM (25CF8-050620-S9R)



DB9 Pin Define

DB9 Pin	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. DBP DIO (25CR5-150606-S9R)



DBP DIO Pin	Pin Name
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	5V

2.10 Support

● For a list of tested memory, M.2, 2.5'' SSD, wireless adapters and OS supported, go to: http://www.gigaipc.com
● To download the latest drivers and BIOS updates, go to: http://www.gigaipc.com
● For product support, go to: http://www.gigaipc.com

2.11 Safety and Regulatory Information

Risk of explosion if the battery is replaced with an incorrect type. Batteries should be recycled where possible.
Disposal of used Batteries must be in accordance with local environmental regulations.
Failure to use the included Power Adapter may violate regulatory compliance and may expose the user to safety
hazards.

HIGH DEFINITION MULTIMEDIA INTERFACE

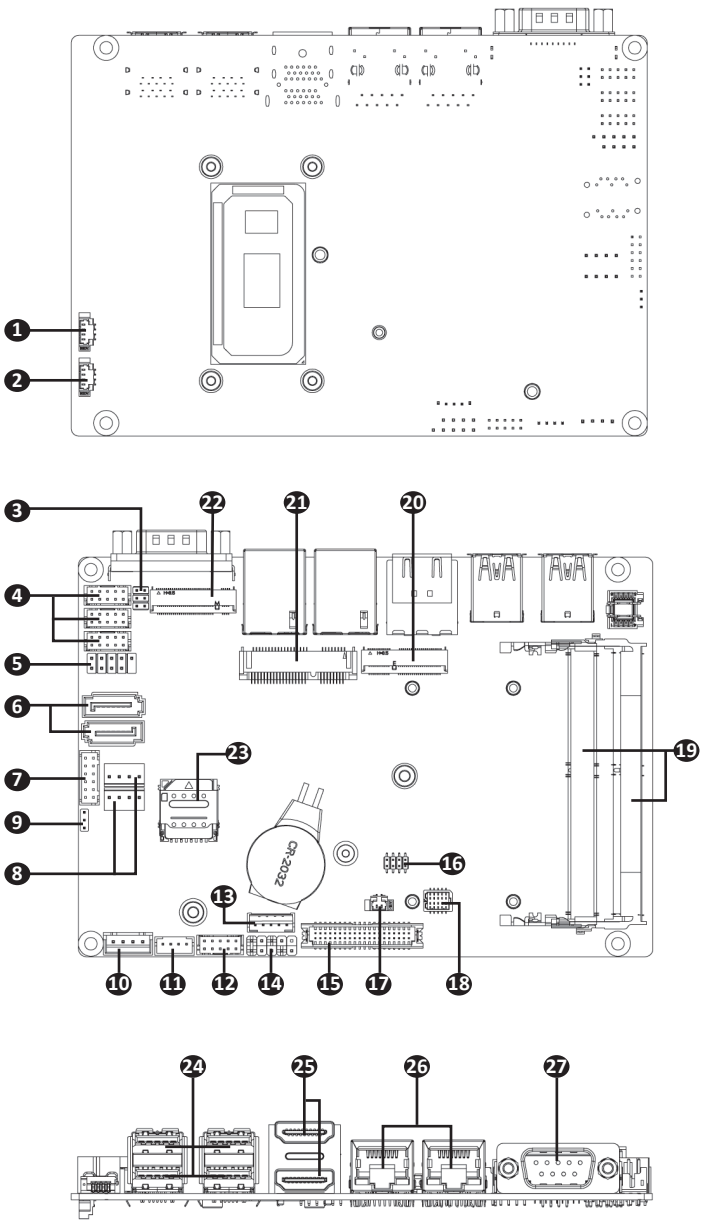
At the end of its serviceable life, this product should not be treated as household or general waste. It should be handed over to the applicable collection point for the recycling of electrical and electronic equipment, or returned to the supplier for disposal.

Chapter 3

Chapter 3 – Hardware Information

GIGAIPC reserves the right to modify or revise the content at anytime without prior notice.

3.1 Jumpers and Connectors



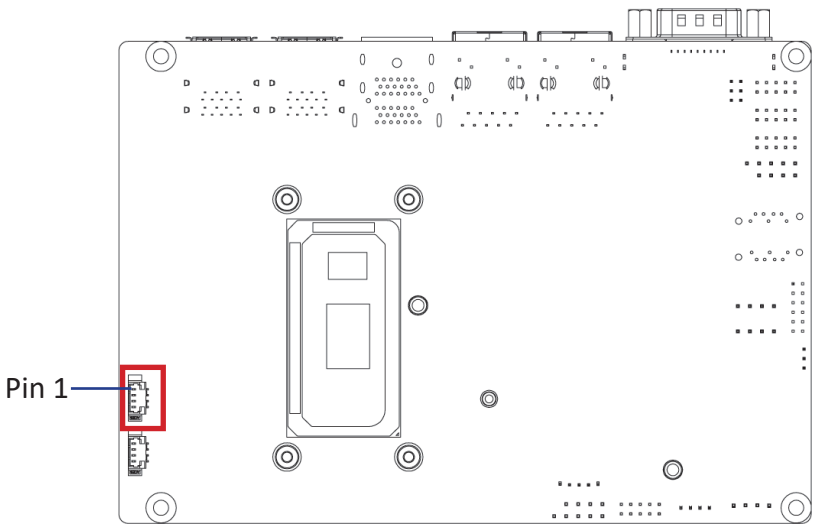
No	Code	Description
1	CPU FAN	CPU FAN connector
2	SYS FAN	System FAN connector
3	JCOM1	COM1 (COM RI# pin RI#/5V/12V Select)
4	COM2 COM3 COM4	Serial port header (RS-232)
5	FUSB	USB 2.0 header
6	SATAIII1 SATAIII0	SATA 6GB/s Connector
7	GPIO_CNT	General purpose input/output header
8	SATAPW1 SATAPW2	SATA power connector
9	AT_CN	AT/ATX mode select jumper
10	DC_IN	DC IN 1x4pin power connector
11	SPK_OUT	Speaker out connector
12	FP_Audio	Front Audio connector
13	BKL_CN	Backlight Control connector
14	SYS_PANEL	Front panel header
15	LVDS	LVDS connector
16	LSW	LVDS resolution jumper
17	BATTERY	Battery cable connector
18	LPC_CN	LPC Connector
19	SODIMM1 SODIMM2	DDR4 SO-DIMM Slot

GIGAIPC reserves the right to modify or revise the content at anytime without prior notice.

No	Code	Description
20	M2E	M.2 Slot, E-key, NGFF2230, WiFi & Bluetooth module
21	MPCIE	Mini PCIe full size, support 3G/4G module
22	M2M	M.2 Slot, SATA/PCIe x4, NGFF2280
23	SIM-CARD	SIM Card slot
24	RUSB31_1 RUSB31_2	USB 3.2 Gen 2x1 Connector x 4
25	HDMI21	HDMI connector
26	LAN1, LAN2	LAN connector
27	COM1	Serial Port connector (RS-232/422/485 & RI/5V/12V)

3.2.1 CPU FAN (CPU FAN connector)

1



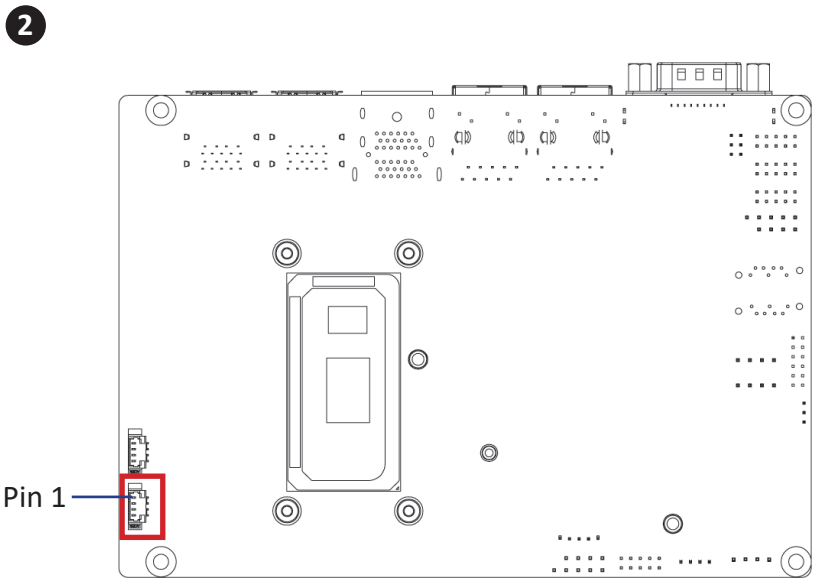
CPU FAN connector


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

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

GIGAIPC reserves the right to modify or revise the content at anytime without prior notice.

3.2.2 System FAN (System FAN connector)



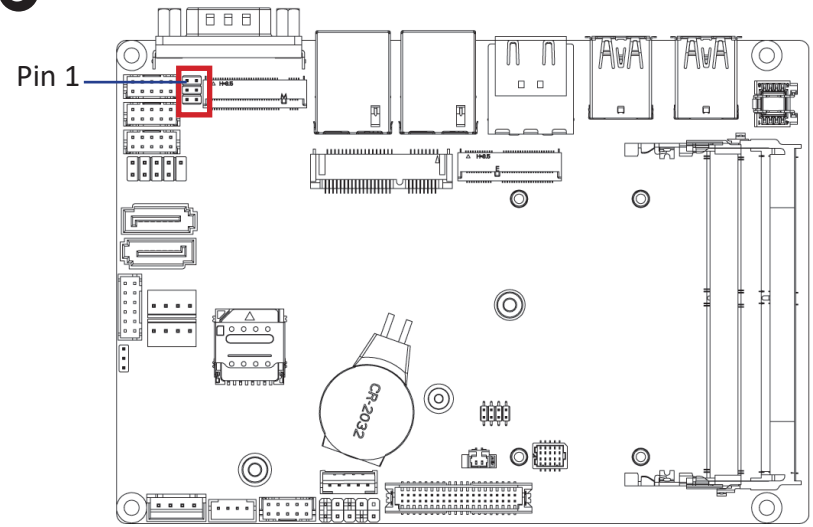
System FAN connector


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

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

3.2.3 JCOM1 (COM1 RI# pin RI#/5V/12V Select)

3



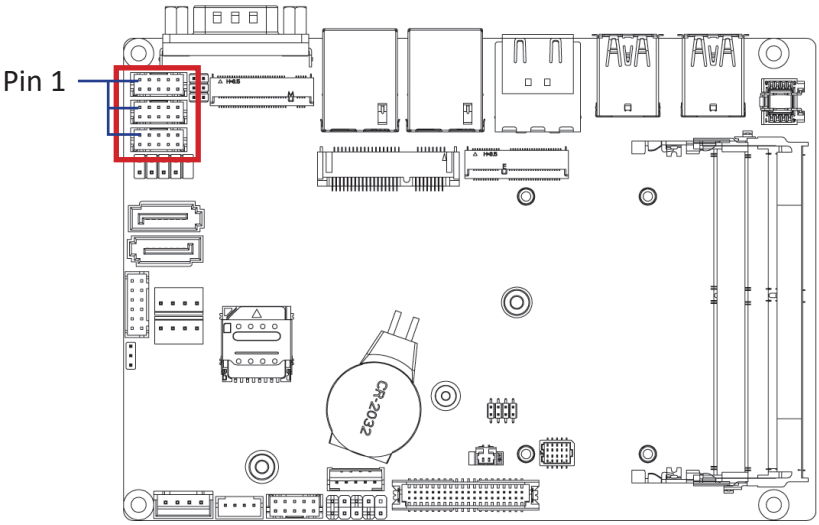
JCOM11 Jumper Select	
1 2 5 6	1-2 Close: 5V (Power COM)
1 2 5 6	3-4 Close: RI (Stand COM) (Default-Setting)
1 2 5 6	5-6 Close: 12V (Power COM)

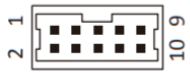
Connector PN	Vendor
220-97-03GB01	PINREX
PH06N53BAZ000	HORNGTONG

GIGAIPC reserves the right to modify or revise the content at anytime without prior notice.

3.2.4 COM2, COM3, COM4 (Serial port header, RS-232)

4



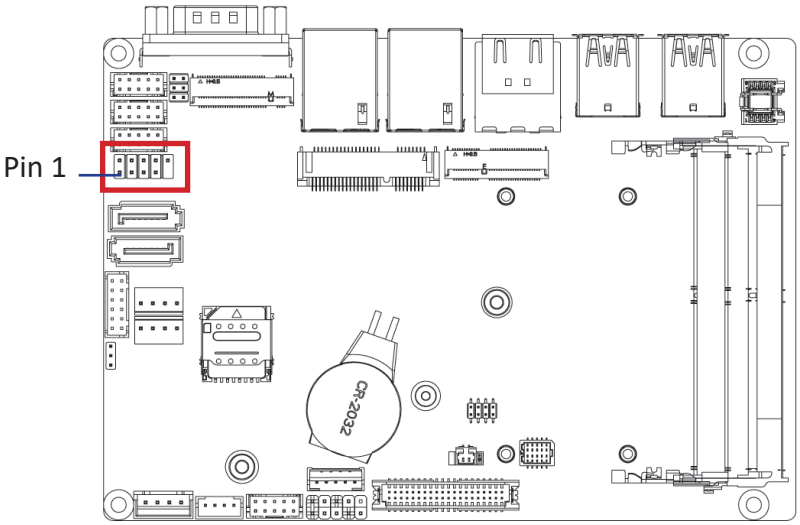
Serial Port Cable Connector


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

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

3.2.5 FUSB (USB 2.0 header)

5



USB 2.0 Header

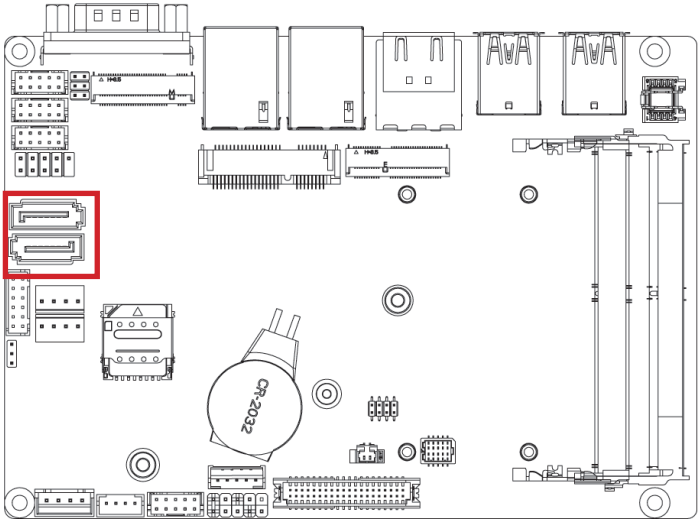

Connector PN	Vendor
210-92-05GB04	PINREX
PH10R53BAZ009	HORNGTONG

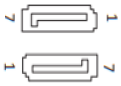
Pin No.	Definition
1	5V
2	5V
3	DX-
4	DY-
5	DX+
6	DY+
7	GND
8	GND
9	No Pin
10	No Connect

GIGAIPC reserves the right to modify or revise the content at anytime without prior notice.

3.2.6 SATAIII_0, SATAIII_1 (SATA 6Gb/s Connector)

6



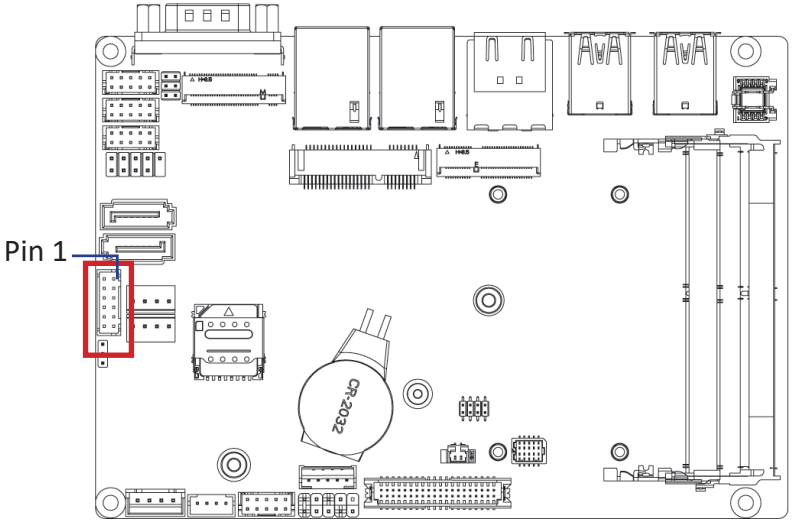
SATA Connector


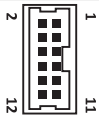
SATAIII_1,SATAIII_0	
Connector PN	Vendor
WATM-07ABNB2BAUW3	WINWIN
770-83-07SW19	PINREX

Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

3.2.7 GPIO_CNT (General Purpose input/output header)

7



GPIO Connector


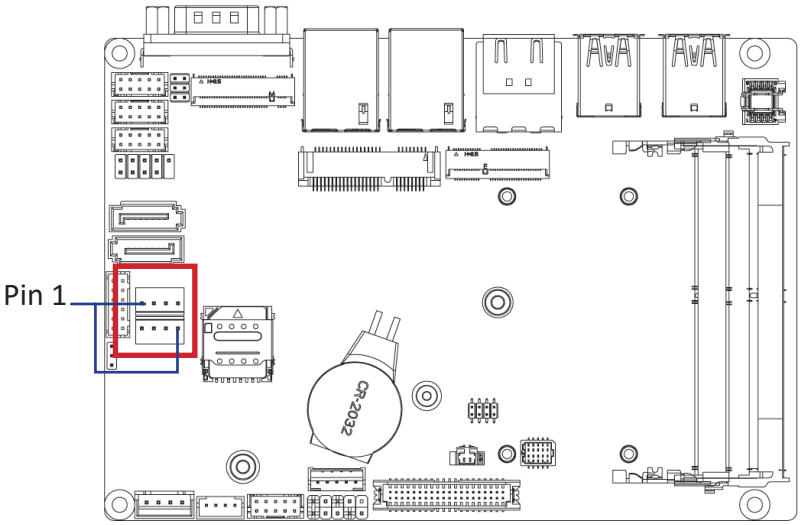
Connector PN	Vendor
725-81-12TW00	PINREX
A2004WV-2X06P46	JOINT-TECH

Pin No.	Definition
1	GPIO-output_1
2	GPIO-input_1
3	GPIO-output_2
4	GPIO-input_2
5	GPIO-output_3
6	GPIO-input_3
7	GPIO-output_4
8	GPIO-input_4
9	SMBus Clock
10	SMBus DATA
11	5V
12	GND

GIGAIPC reserves the right to modify or revise the content at anytime without prior notice.

3.2.8 SATAPW1, SATAPW2 (SATA power connector)

8



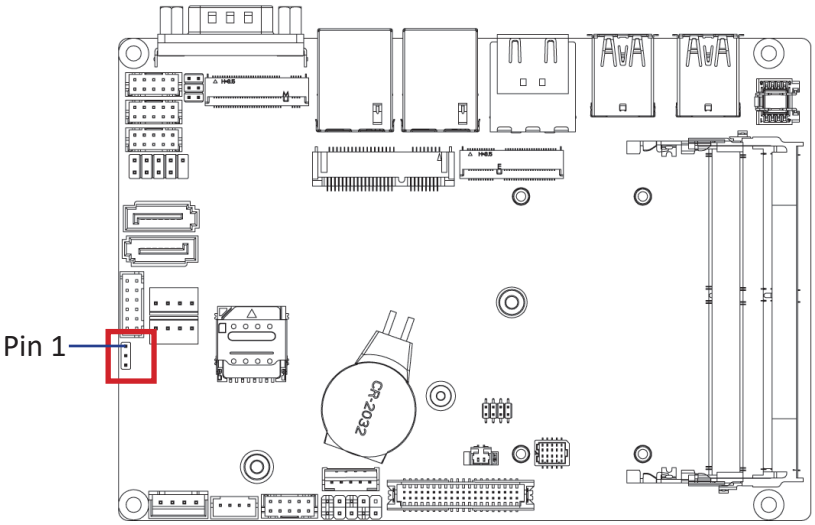
Hard Disk Power Connector
4 ■■■■ 1

Connector PN	Vendor
743-81-04TW00	PINREX
WF04Q2-3BJQ000	HORNGTONG

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

3.2.9 AT_CN (AT/ATX mode select jumper)

9



AT/ATX mode select jumper
1

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

Pin No.	Definition
1	AT MODE
2	TXD5
3	ATX MODE
Jumper setting 1-2 Close : AT mode. 2-3 Close : ATX mode.(Default setting)	

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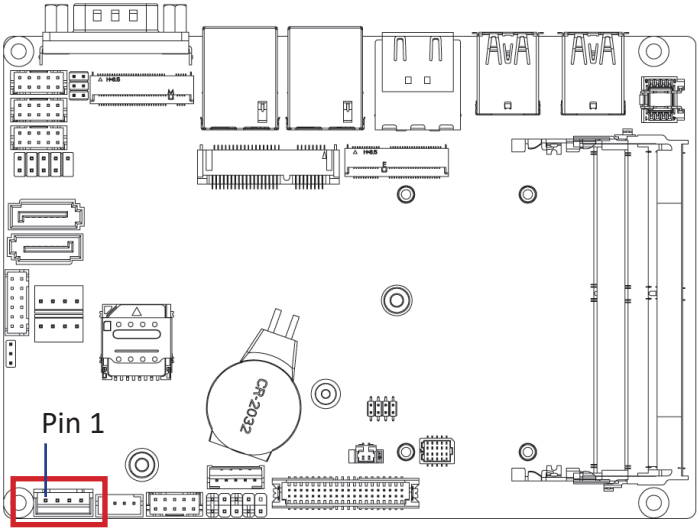
3.2.10 DC_IN (DC IN 1x4-pin power connector)

10



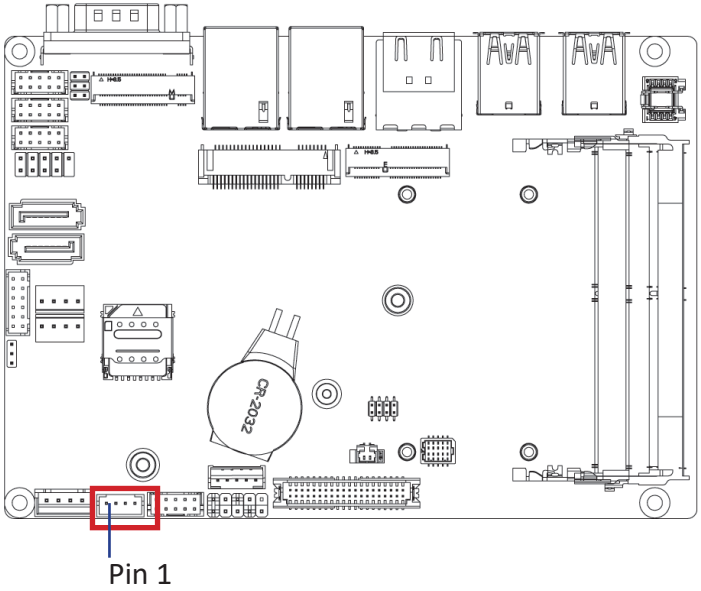
DC in connector

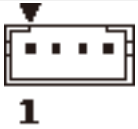

Connector PN	Vendor
753-81-04TW00	PINREX

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

3.2.11 SPK_OUT (Speaker out connector)

11



Audio Amplifie Connector


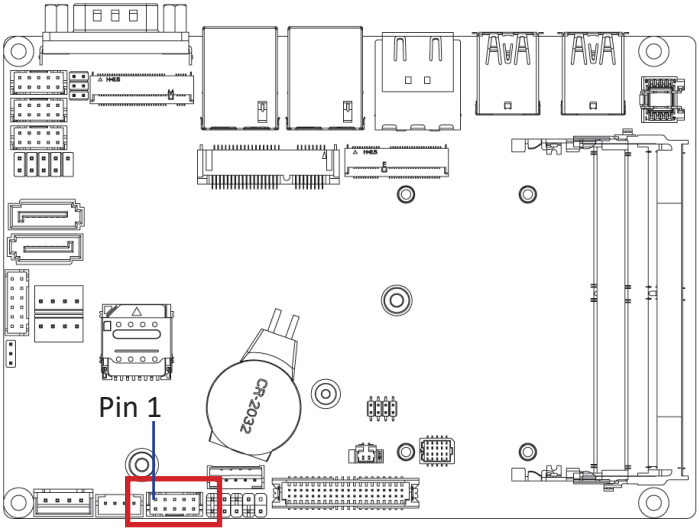
Pin No.	Definition
1	Speaker Out L+
2	Speaker Out L-
3	Speaker Out R-
4	Speaker Out R+

Connector PN	Vendor
721-81-045W00	PINREX
A2001WV-04P146	JOINT-TECH

GIGAIPC reserves the right to modify or revise the content at anytime without prior notice.

3.2.12 FP_Audio (Front Audio connector)

12



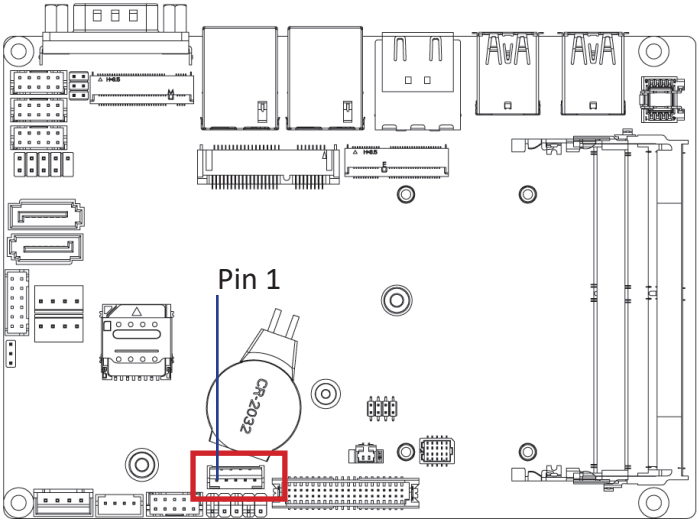
Front Audio Connector
1 9 2 10

Pin No.	Definition
1	MIC_L
2	GND
3	MIC_R
4	Detect
5	HPOUT_R
6	MIC_JD
7	FAUDIO_JD
8	No Connect
9	HPOUT_L
10	GND

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

3.2.13 BKL_CN (Backlight Control connector)

13



Backlight Control connector
1 [connector] 5

Connector PN	Vendor
721-81-05TW00	PINREX
A2001WV-05P146	JOINT-TECH

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

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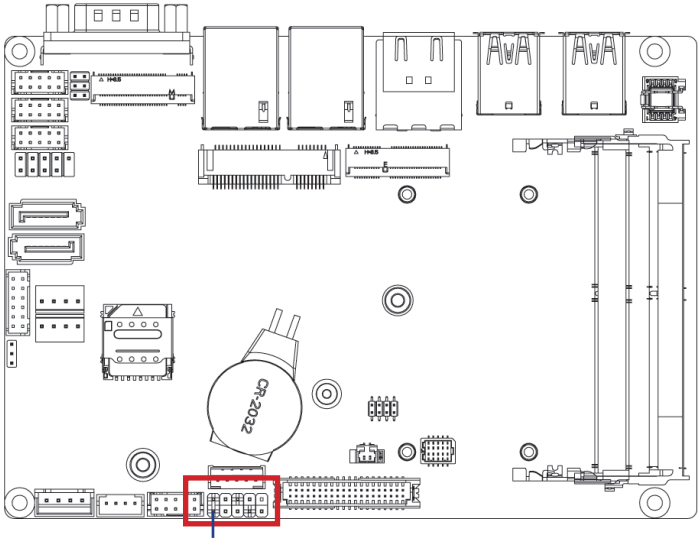
3.2.14 SYS_PANEL (Front panel header)

14



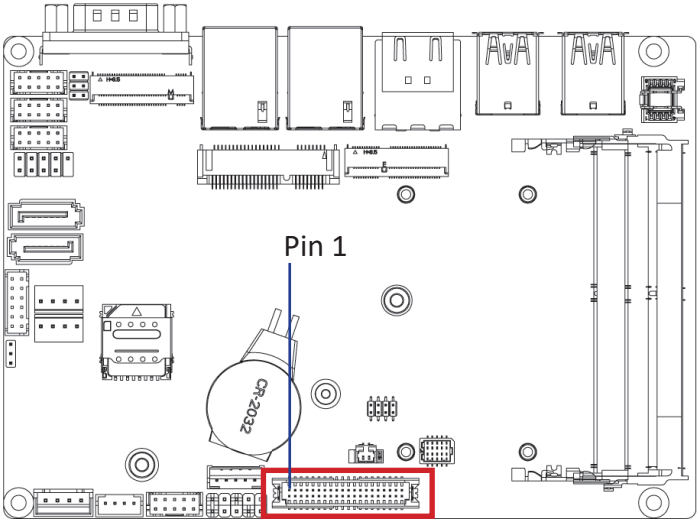
System Panel Header
2 10 1 9

Connector PN	Vendor
210-92-05G111	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

3.2.15 LVDS (LVDS connector)

15



LVDS Connector	
1	39
2	40

Pin No.	Definition	Pin No.	Definition
1	3.3V	21	A5+
2	5V	22	A4+
3	3.3V	23	A5-
4	5V	24	A4-
5	SPEC0	25	GND
6	SPED0	26	GND
7	GND	27	A7+
8	GND	28	A6+
9	A1+	29	A7-
10	A0+	30	A6-
11	A1-	31	GND
12	A0-	32	GND
13	GND	33	CLK2+
14	GND	34	CLK1+
15	A3+	35	CLK2-
16	A2+	36	CLK1-
17	A3-	37	GND
18	A2-	38	GND
19	GND	39	12V
20	GND	40	12V

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

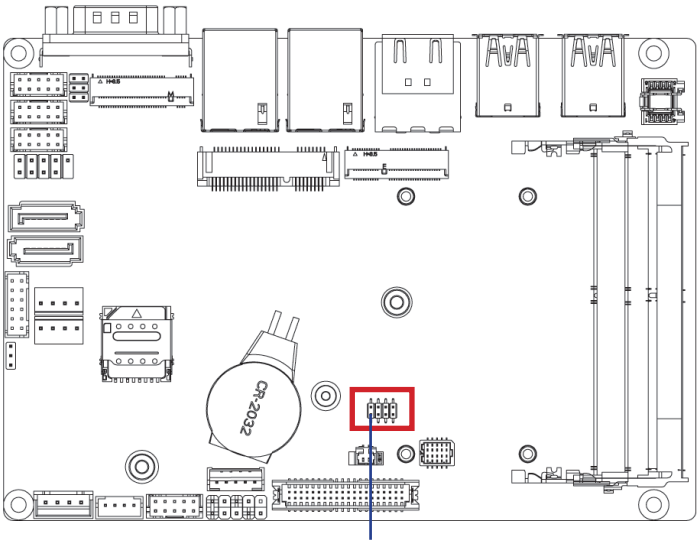
For each model support LVDS function. But below model no need to add.
A0~A3 is odd channel 0~3, A4~A7 is ev en channel.

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

GIGAIPC reserves the right to modify or revise the content at anytime without prior notice.

3.2.16 LSW (LVDS resolution jumper)

16

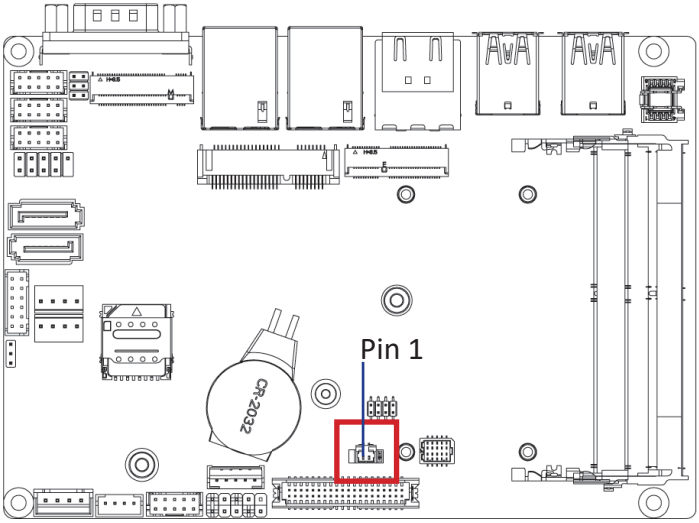


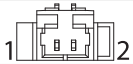
LVDS Resolution Jumper			
Jumper Setting	Resolution	Jumper Setting	Resolution
1 8	800 x 600 18bit	1 8	1366 x 768 24bit
1 8	1024 x 768 18bit	1 8	1440 x 900 24bit
1 8	1024 x 768 24bit	1 8	1400 x 1050 24bit
1 8	1024 x 600 18bit	1 8	1600 x 900 24bit
1 8	1280 x 800 18bit	1 8	1680 x 1050 24bit
1 8	1280 x 960 18bit	1 8	1600 x 1200 24bit
1 8	1280 x 1024 24bit	1 8	1920 x 1080 24bit
1 8	1366 x 768 18bit	1 8	1920 x 1200 24bit

Connector PN	Vendor
222-97-04GBE1	PINREX

3.2.17 BATTERY (Battery cable connector)

17



Battery Cable Connector


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

Pin No.	Definition
1	3.3V
2	GND

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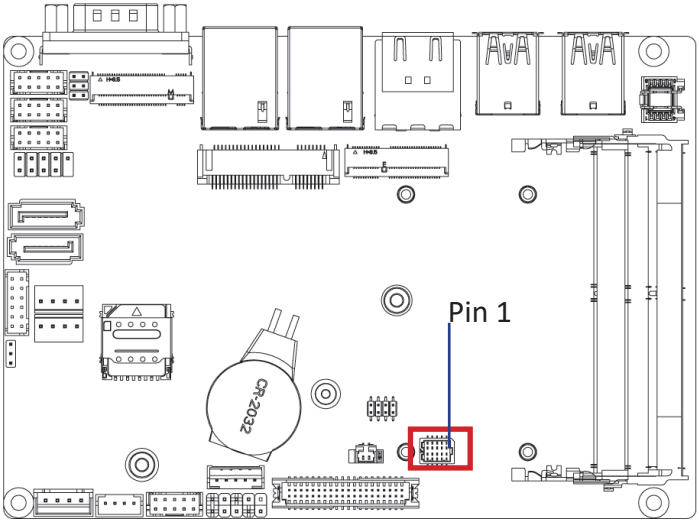
3.2.18 LPC_CN (LPC Connector)

18

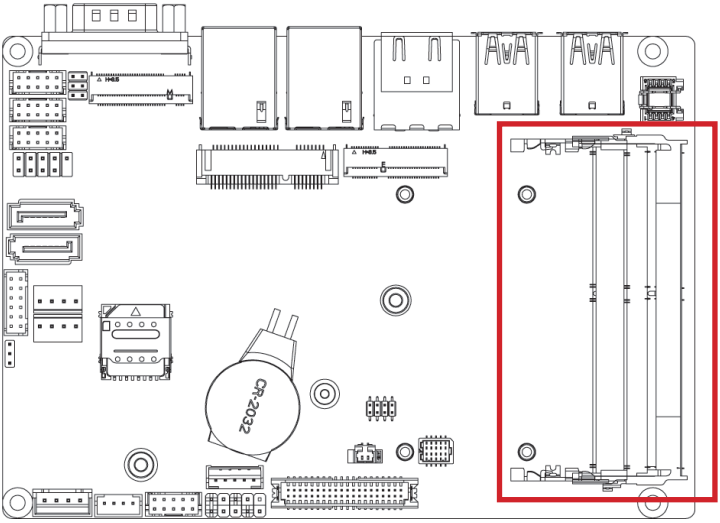


LPC_CN Connector


Pin No.	Definition
1	CK_LPC1
2	GND
3	LFRAME#
4	LAD0
5	PLT_RST_80H
6	LAD1
7	LAD3
8	LAD2
9	3.3V
10	SERIRQ

3.2.19 SODIMM1, SODIMM2 (DDR4 SO-DIMM Slot)

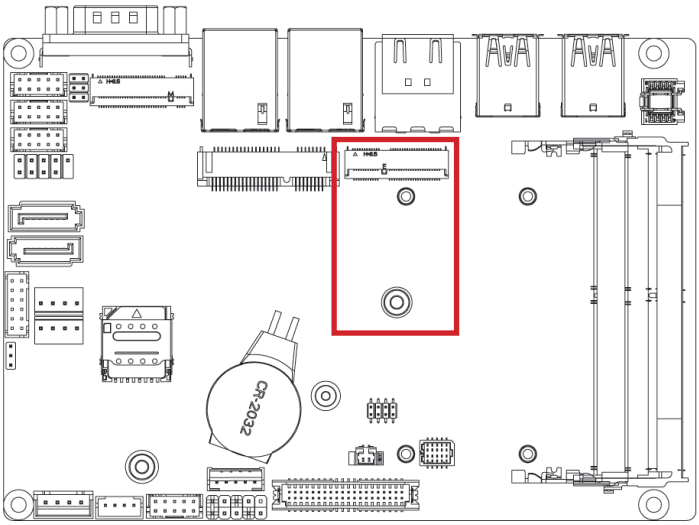
19



GIGAIPC reserves the right to modify or revise the content at anytime without prior notice.

3.2.20 M2E (M.2 Slot, E-Key, NGFF2230, WiFi & Bluetooth module)

20



M.2 E Key Connector	
1	75
2	74

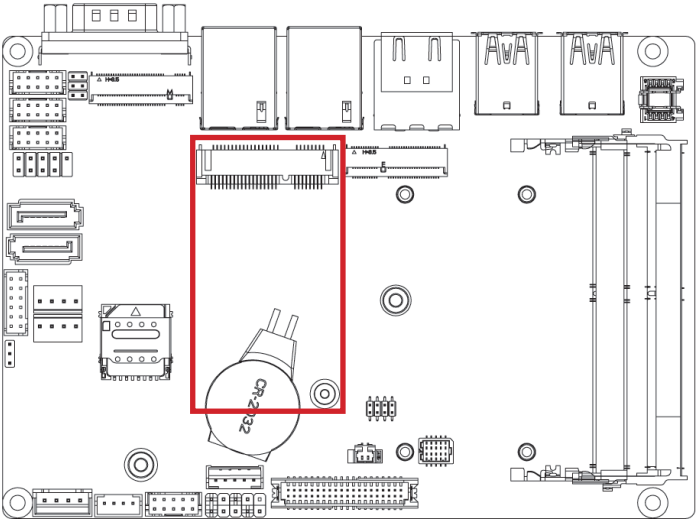
Pin No.	Definition	Pin No.	Definition
1	GND	2	3V
3	USB_D+	4	3V
5	USB_D-	6	NC
7	GND	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	GND
19	NC	20	BT_WAKE
21	NC	22	NC
23	NC		

Pin No.	Definition	Pin No.	Definition
33	GND	32	NC
35	WLAN_TXp	34	NC
37	WLAN_TXn	36	NC
39	GND	38	CL_RST#
41	WLAN_RXp	40	CL_DATA
43	WLAN_RXn	42	CL_CLK
45	GND	44	NC
47	CLK_DP	46	NC
49	CLK_DN	48	NC
51	GND	50	SUSCLK
53	CLK_REQ	52	PLT_RST#
55	PCIE_WAKE	54	BT_Disable#
57	GND	56	WIFI_Disable#
59	NC	58	NC
61	NC	60	NC
63	GND	62	NC
65	NC	64	NC
67	NC	66	NC
69	GND	68	NC
71	NC	70	NC
73	NC	72	3V
75	GND	74	3V

Connector PN	Vendor
APCI0095-P002A	LOTES
80152-8521	BELLWETHER

3.2.21 MPCIE (Mini PCIe full size, support 3G/4G module)

21



Mini PCIe Connector			
			
Pin No.	Definition	Pin No.	Definition
1	PCIE_WAKE#	2	3.3V
3	NC	4	GND
5	NC	6	1.5V
7	PCIE_ CLKREQ#	8	SIM_PWR
9	GND	10	SIM_DATA
11	PCIE_CLK#	12	SIM_CLK
13	PCIE_CLK	14	SIM_RST
15	GND	16	SIM_VPP
17	NC	18	GND
19	NC	20	PCIE_DISABLE
21	GND	22	PCIRST#
23	PCIE_RXn	24	3.3V
25	PCIE_RXp	26	GND
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PCIE_TXn	32	SMBDATA
33	PCIE_TXp	34	GND
35	GND	36	USBD-
37	GND	38	USBD+
39	3.3V	40	GND
41	3.3V	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	1.5V
49	NC	50	GND
51	NC	52	3.3V

Connector PN	Vendor
AS0B221-S99Q-7H	FOXCONN

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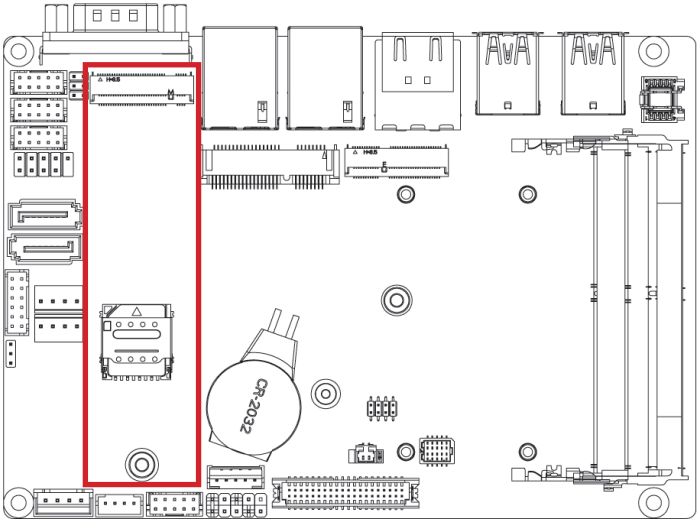
3.2.22 M2M (M.2 Slot, SATA/PCIe x4, NGFF2280)

22



M.2 M Key Connector


Pin No.	Definition	Pin No.	Definition
1	GND	2	3.3V
3	GND	4	3.3V
5	NC	6	NC
7	NC	8	NC
9	GND	10	M2_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	PCIE_RXn	30	NC
31	PCIE_RXp	32	NC
33	GND	34	NC
35	PCIE_TXn	36	NC

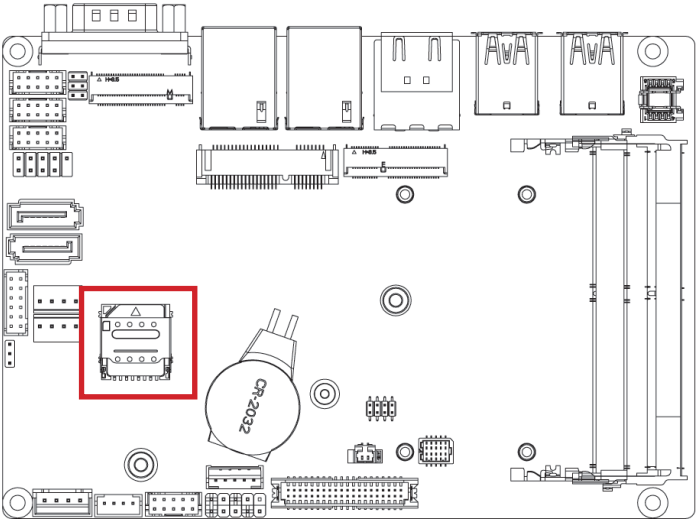
Pin No.	Definition	Pin No.	Definition
37	PCIE_ TXp	38	DEVSLP
39	GND	40	SMB Clock
41	SATA_RXp	42	SMB DATA
43	SATA_RXn	44	SMB ALERT
45	GND	46	NC
47	SATA_TXn	48	NC
49	SATA_TXp	50	PLT_RST
51	GND	52	CK_REQ
53	CLK_n	54	PCIE_WAKE#
55	CLK_p	56	NC
57	GND	58	NC

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

Connector PN	Vendor
80159-8521	BELLWETHER

3.2.23 SIM_CARD (SIM Card slot)

23



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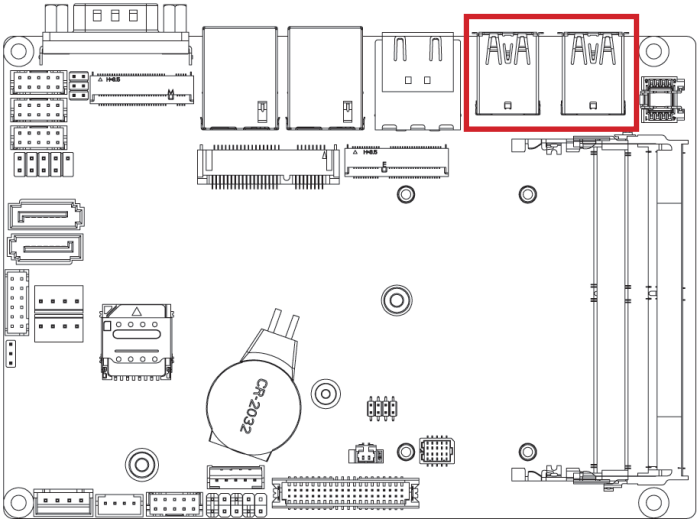
3.2.24 RUSB31_1, RUSB31_2 (USB 3.2 Gen 2x1 connector)

24



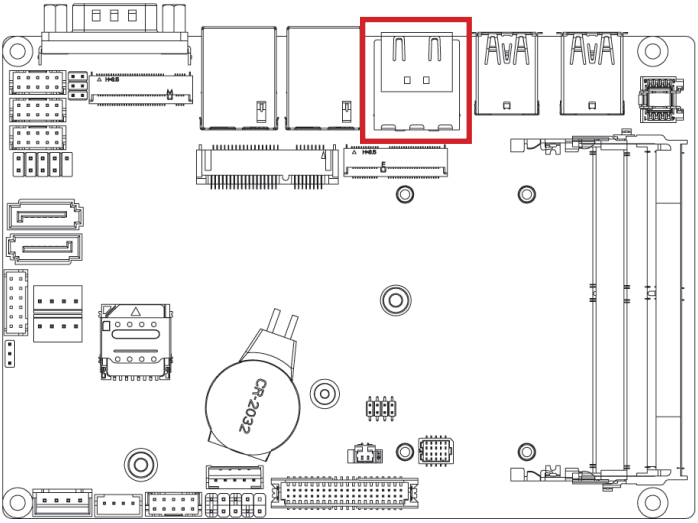
USB Connector


Pin No.	Definition	Pin No.	Definition
1	5V	10	5V
2	USB_D-	11	USB_D-
3	USB_D+	12	USB_D+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

Connector PN	Vendor
UAA111C-841R1-4H	FOXCONN

3.2.25 HDMI21 (HDMI connector)

25



HDMI Connector


Pin No.	Definition	Pin No.	Definition
1	HDMI_D2+	13	NC
2	GND	14	NC
3	HDMI_D2-	15	HDMI_SCL
4	HDMI_D1+	16	HDMI_SDA
5	GND	17	GND
6	HDMI_D1-	18	5V
7	HDMI_D0+	19	HDMI_HPD
8	GND		
9	HDMI_D0-		
10	HDMI_CLK+		
11	GND		
12	HDMI_CLK-		

Connector PN	Vendor
QJ11191-DFB1-4F	FOXCONN

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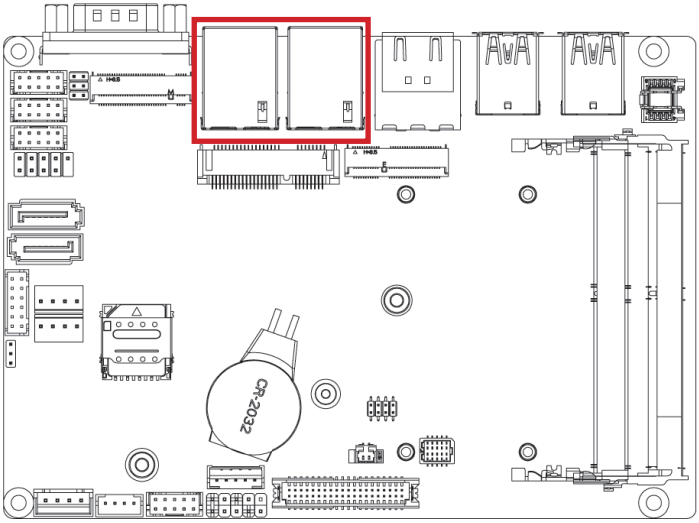
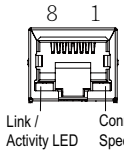
3.2.26 LAN1, LAN2 (LAN connector)

26



LAN Connector


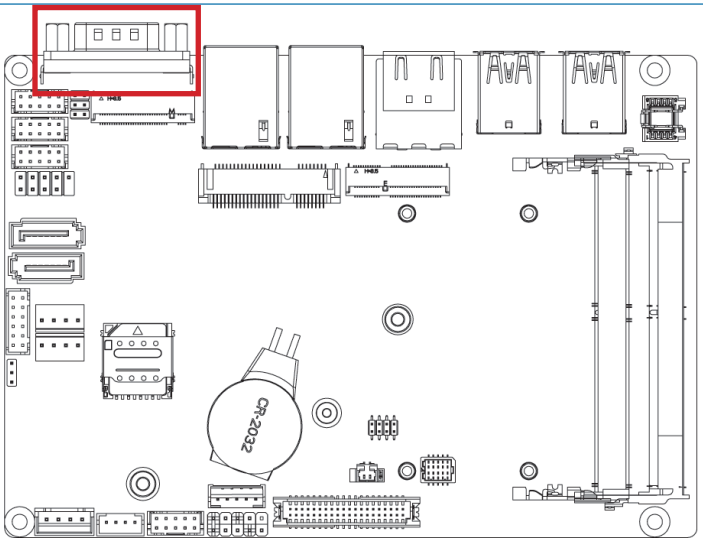
Pin No.	Definition
1	TX1+
2	TX1-
3	TX2+
6	TX2-
4	TX3+
5	TX3-
7	TX4+
8	TX4-

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

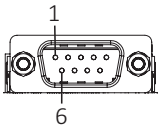
Connector PN	Vendor
RB1-13NB5N5A	UDE

3.2.27 COM1 (Serial port connector, RS-232/422/485 & RI/5V/12V)

27



Serial Port Connector



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

Connector PN	Vendor
SM41D1P1122N33N1	FENYING

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Chapter 4

Chapter 4 – BIOS

4.1 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.

4.1.1 How to Entering into BIOS menu

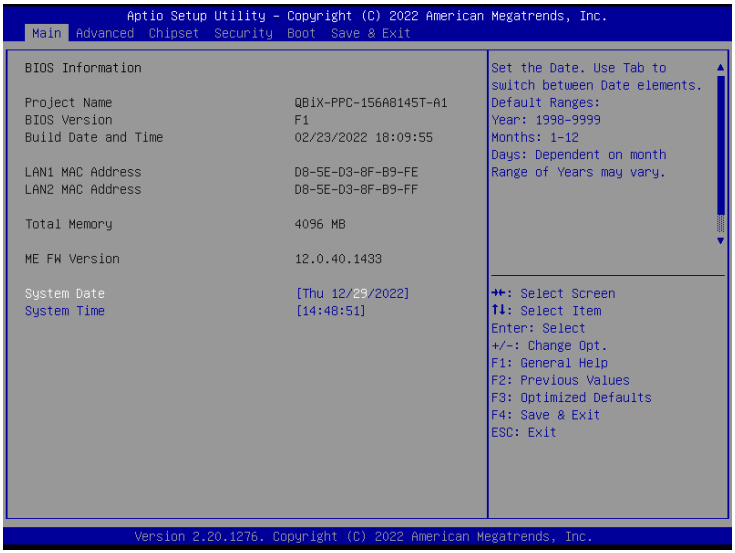
Once the system is power on, press the <DEL> key as soon as possible to access into BIOS Setup program.

4.1.2 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

4.2 The Main Menu

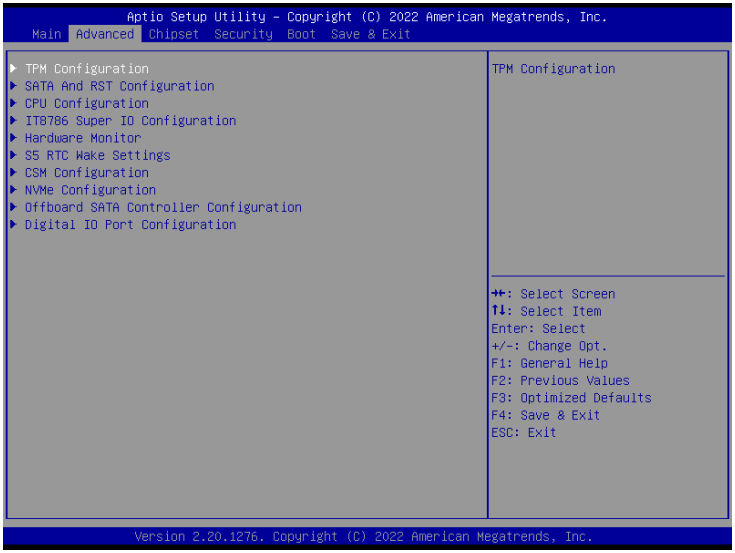
The main menu shows the basic system information.
Use arrow keys to move among the items.



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

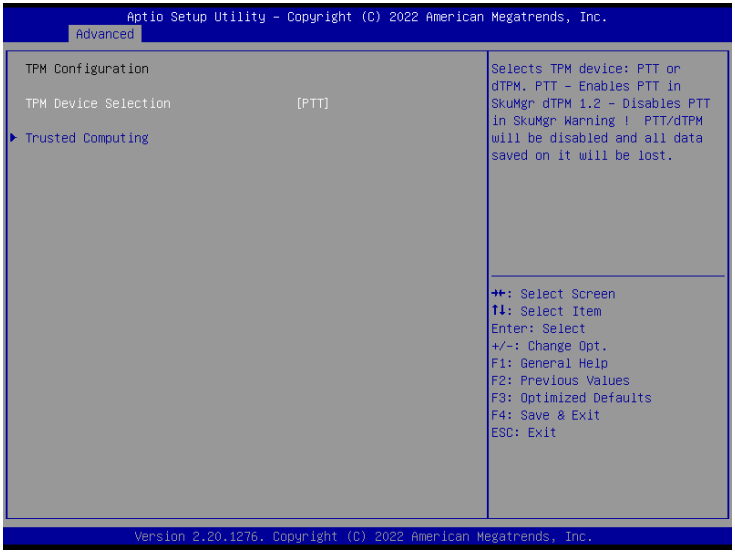
4.3 Advanced

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.



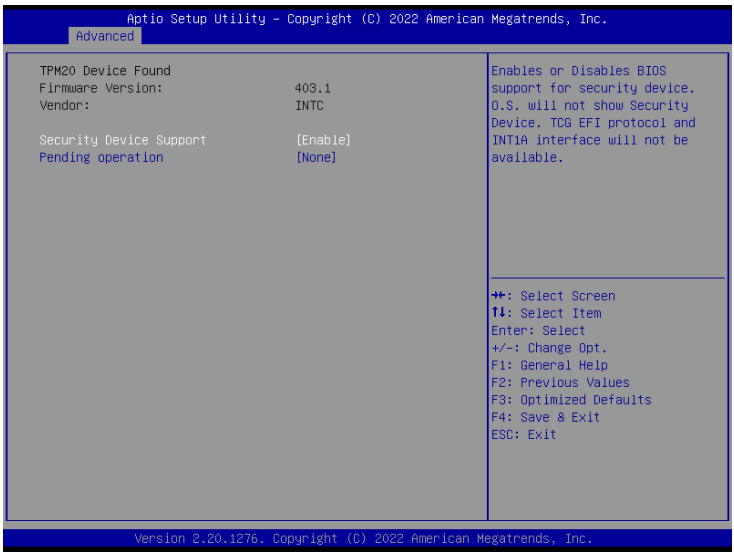
4.3.1 TPM Configuration

Use TPM Configuration submenu to choose TPM interface.



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

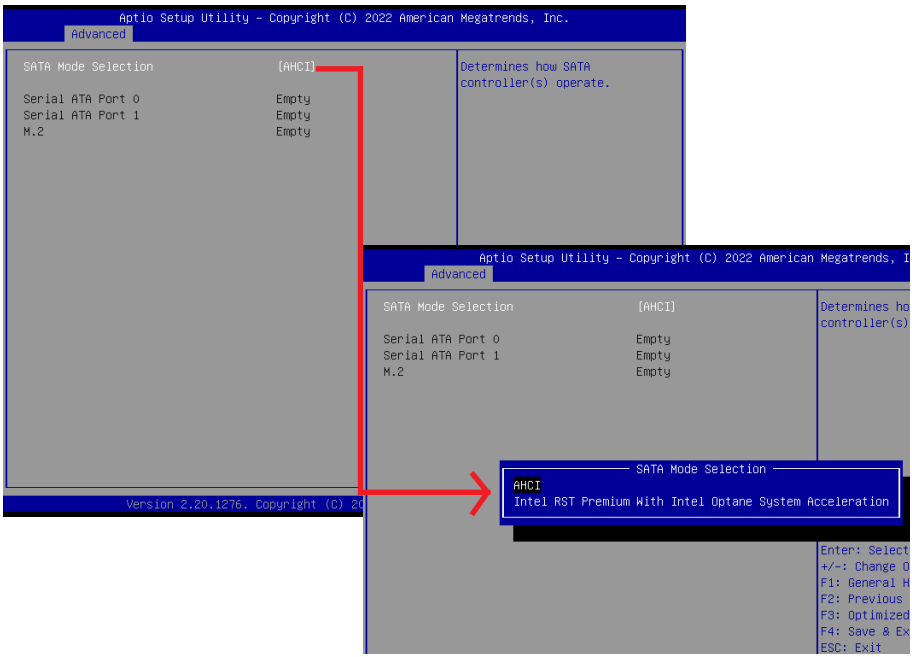
Trusted Computing : Shows TPM information, and TPM module configuration setting.



Item	Description
Security Device support	**Enabled : Enables TPM feature (Default setting)** **Disabled : Disables TPM feature**

Item	Description
Pending operation	**None : No execution will be conducted (Default setting)** **TPM clear : Set to clear data on TPM**

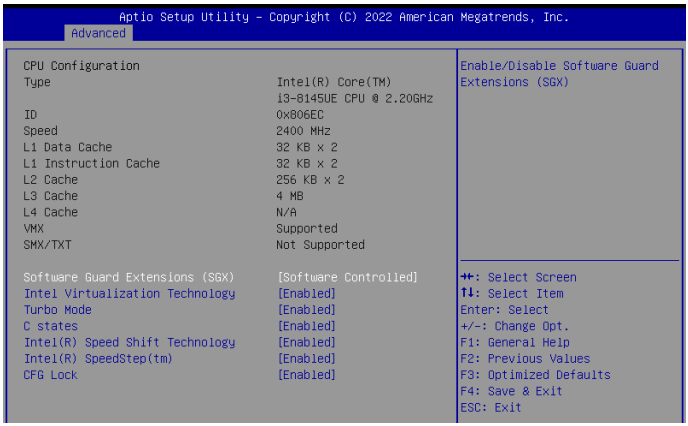
4.3.2 SATA And RST Configuration



Item	Description
SATA Mode Selection	**AHCI : Configures the SATA controllers to AHCI mode. (Default setting)** **Intel RST Premium With Intel Optane System Acceleration : Enables RAID mode for the SATA controller**
Serial ATA Port 0	shows 2.5" SATA HDD/SSD information
Serial ATA Port 1	shows 2.5" SATA HDD/SSD information
M.2	shows M.2 SATA interface SSD information

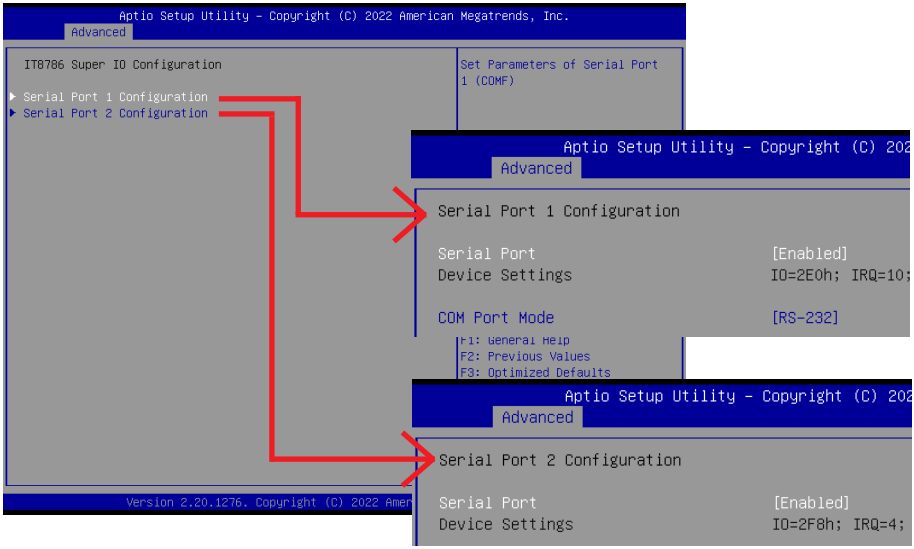
4.3.3 CPU Configuration

This submenu shows detailed CPU informations.



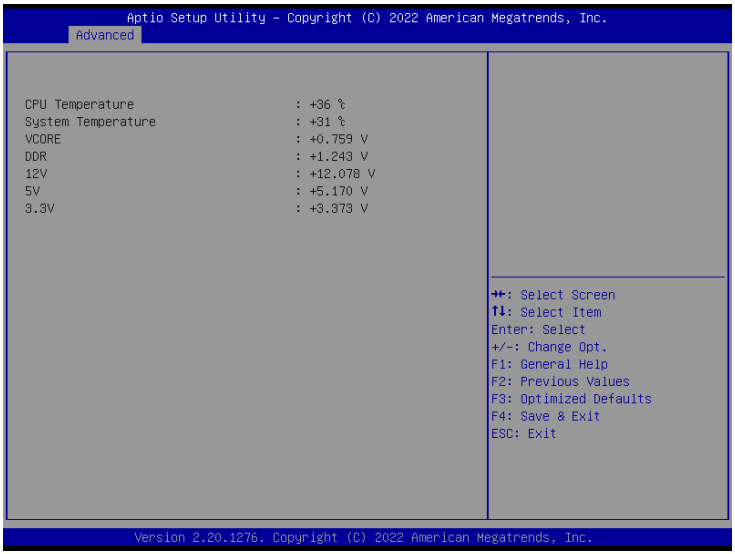
Item	Description
Software Guard Extensions (SGX)	**Disabled : Disables Software Guard Extensions (SGX)** **Enabled : Enables Software Guard Extensions (SGX)** **Software Controlled : If this item is selected, SGX will be controlled by SGX application for UEFI boot OS (Default seeting)**
Intel Virtualization 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**
Turbo Mode	**Enabled : Enables Turbo Mode (Default setting)** **Disabled : Disables Turbo Mode**
C states	Command CPU to enter into low power consumption mode when CPU is under idle mode. **Enabled : Enables C states (Default setting)** **Disabled : Disables C states**
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**
CFG Lock	**Enabled : Configure MSR 0xE2[15] , CFG Lock bit (Default setting)** **Disabled : Disables CFG Lock**

4.3.4 IT8786 Super I/O Configuration



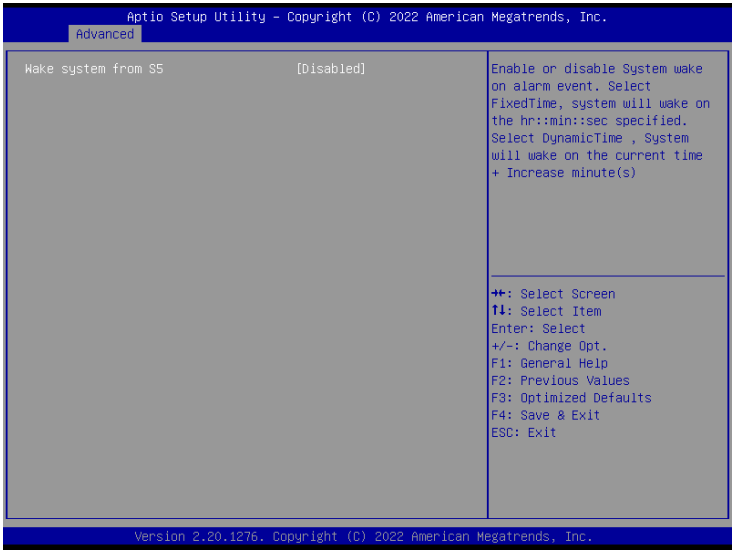
Item	Description
Serial Port 1 Configuration	Press [Enter] to configure advanced items : Serial Port : **Enabled : Enables allows you to configure the serial port settings** **Disabled : if Disabled, displays no configuration for the serial port** Device settings : Display the specified Serial Port base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

4.3.5 Hardware Monitor



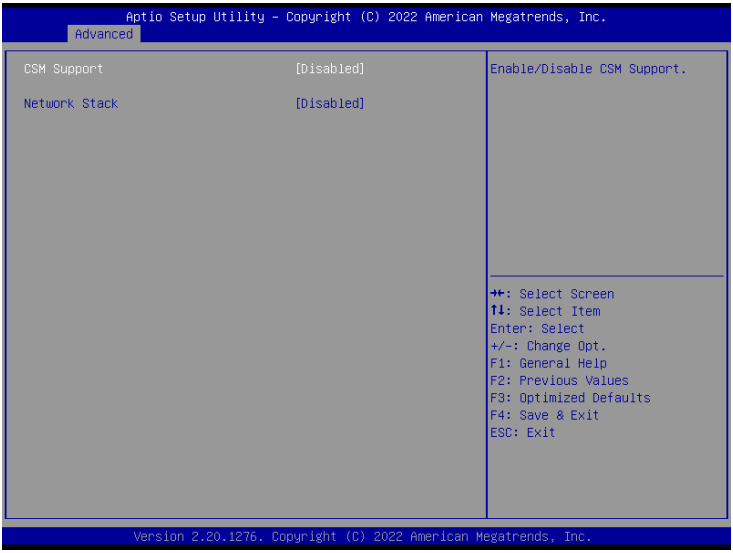
Item	Description
CPU temperature	Shows current CPU temperature
System temperature	Shows current system temperature

4.3.6 S5 RTC Wake Settings



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

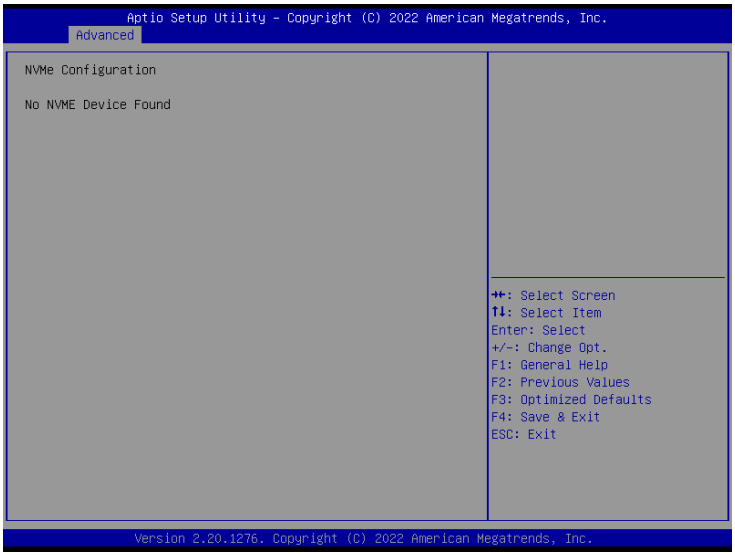
4.3.7 CSM Configuration



Item	Description
CSM Support	Choose UEFI or Legacy Mode **Disabled : UEFI Mode only (Default setting)** **Enabled : Enables Legacy Mode feature**
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**

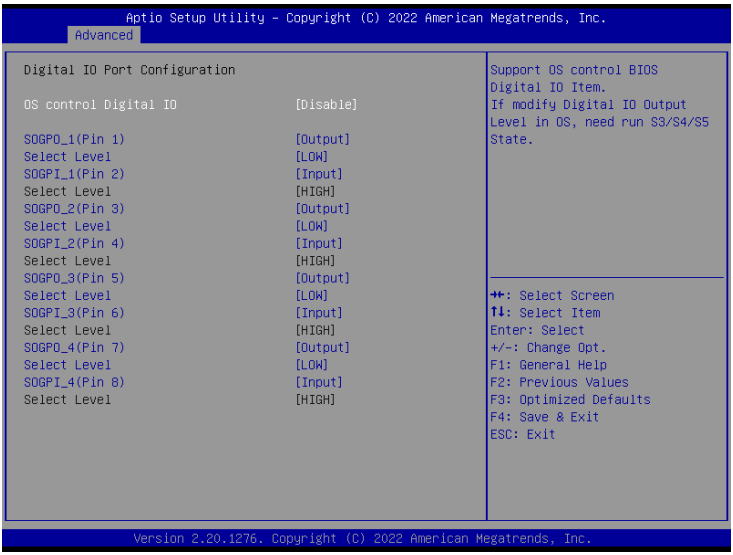
4.3.8 NVMe Configuration

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



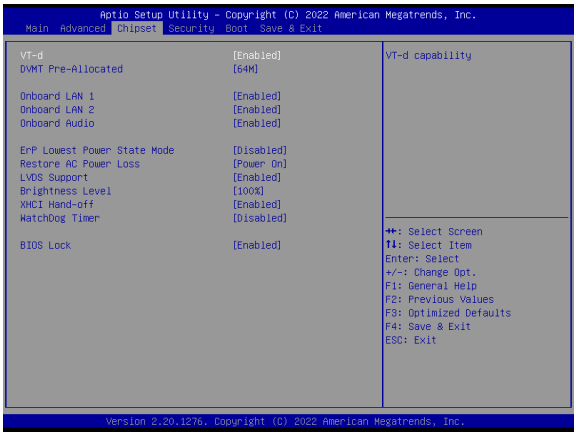
4.3.9 Offboard SATA Controller Configuration

4.3.10 Digital IO Port Configuration



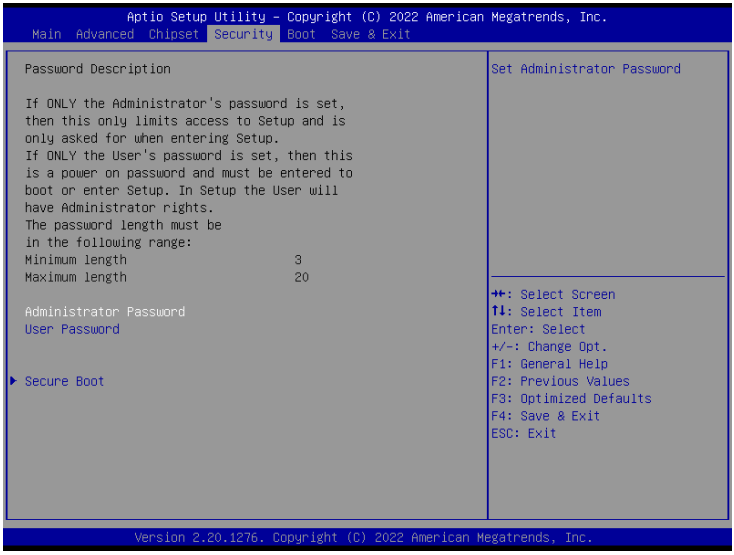
Item	Description
OS control Digital IO	**Disabled : If Digital IO Output value/level is modified in OS, they will not be memorized and kept. (Default setting)** **Enabled : If Digital IO Output value/level is modified in OS, they will be memorized and kept.**
SOGPO_1 (Pin 1) **SOGPI_1 (Pin 2)** **SOGPO_2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

4.4 Chipset

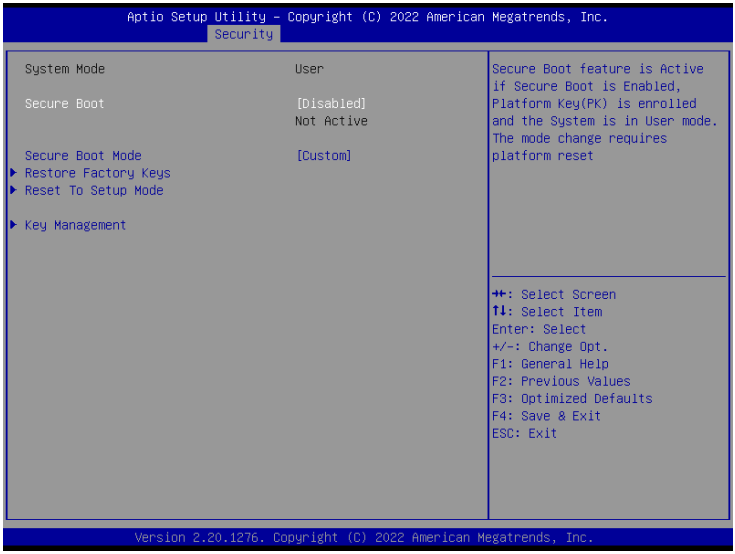


Item	Description
VT-d	**Enabled : Enables VT-d function (Default setting)** **Disabled : Disables VT-d function**
DVMT Pre-Allocated	Use DVMT Pre-Allocated to set the amount of system memory which is installed to the integrated graphics processor **Option items : 32M , 64M(Default setting)**
Onboard LAN1 **Onboard LAN2**	Enable/Disable onboard LAN controller **Enabled : Enables onboard LAN controller (Default setting)** **Disabled : Disables onboard LAN controller**
Onboard Audio	Enable/Disable onboard audio controller **Enabled : Enables onboard audio controller (Default setting)** **Disabled : Disables onboard audio controller**
ErP Lowest Power State Mode	Enable/Disable power saving funtion **Enabled : Enables ERP Lowest Power State Mode** **Disabled : Disabled ERP Lowest Power State Mode (Default setting)**
Restore AC Power Loss	To set which option the system should returns if a sudden power loss occured **Power off : Do not power on when the power is back** **Power on : System power on when the power is back (Default setting)** **Last state : Restore the system to the state before power loss occures**
LVDS Support	**Disabled : Disables LVDS Support** **Enabled : Enables LVDS Support (Default setting)**
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**
Watchdog Timer	Enable/Disable Watchdog Timer function **Enabled : Enables Watchdog Timer function** **Disabled : Disabled Watchdog Timer function (Default setting)**
BIOS Lock	Enable/Disable BIOS Lock function **Enabled : Enables BIOS Lock function (Default setting)** **Disabled : Disabled BIOS Lock funtion**

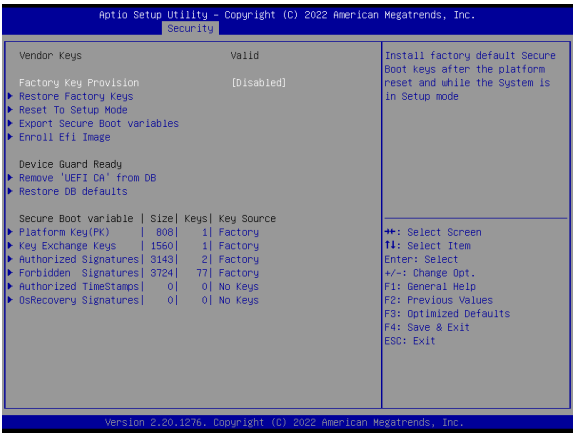
4.5 Security



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

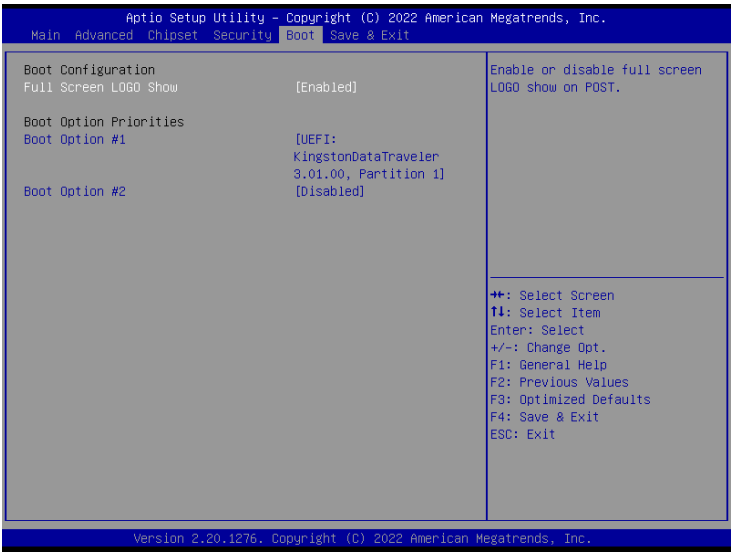


Item	Description
Factory Key Provision	Install factory default Secure Boot keys after the platform reset and while the system is in Setup mode **Enabled : Enables Factory Key Provision (Default setting)** **Disabled : Disables Factory Key Provision**
Restore Factory Keys	To restore factory settings **Yes : 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	

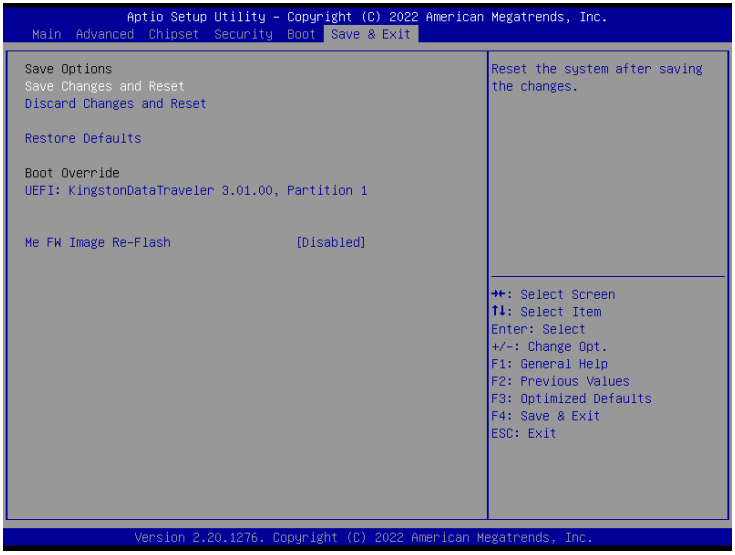
4.6 Boot

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 **Boot Option #2**	Shows the information of the storage that be installed in the system **Choose/set the boot priority**

4.7 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)**