

# **QBiX-DR-EHLA6412H-A1 (DR-6412A-SI)**

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Industrial Embedded System  
Quick Start Guide

## Copyright Notice

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## Packing List

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

Item	Quantity
System	1
Terminal Blocks 1 x 3P (P/N: 25IO0-5ESDV0-D2R )	1
Terminal Blocks 1 x 2P (P/N: 25IO0-EC3500-D2R)	1
Terminal Blocks 1 x 10P (P/N: 25IO0-EC3810-D2R)	1
SATA cable (P/N: 25CF4-500500-S9R)	1
SATA power cable (P/N: 25CRI-190920-S9R)	1
HDD screw M3x4L (P/N : 25984G-1C014-S00)	4

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



## About this Document

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

## Safety Precautions

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Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any AC supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls
12. Do not cover the openings on the device to ensure optimal heat dissipation.

13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.
17. If any of the following situations arises, please the contact our service personnel:
  - i. Damaged power cord or plug
  - ii. Liquid intrusion to the device
  - iii. Exposure to moisture
  - iv. Device is not working as expected or in a manner as described in this manual
  - v. The device is dropped or damaged
  - vi. Any obvious signs of damage displayed on the device
18. **DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.**

## FCC Statement

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### **Warning!**



This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

### **Caution:**

*There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.*

### **Attention:**

*Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte. Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur. Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.*

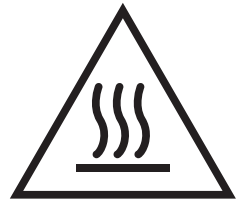
## High Temperature Warning

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(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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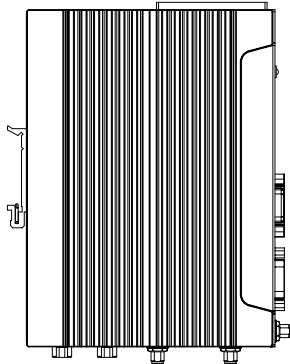
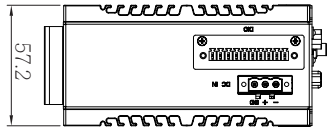
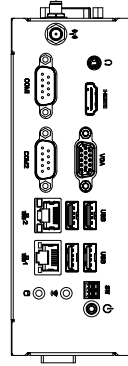
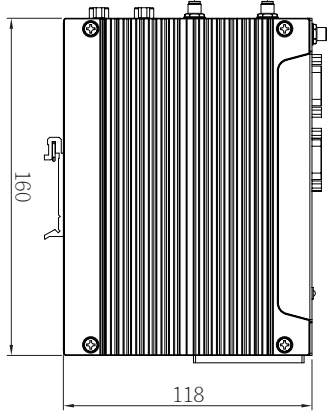
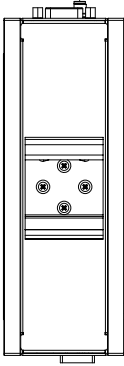
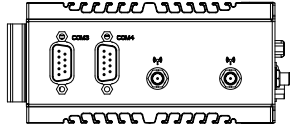
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# Chapter 1

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## Chapter 1 - Product Specifications



## 1.1 Specifications

System	QBiX-DR-EHLA6412H-A1 (DR-6412A-SI)
Dimension	System Size : 160W x 118D x 62.6H(mm)
CPU	Intel® Celeron® J6412 Processor 10nm, 4 cores, 4 threads, up to 2.60 GHz TDP 10W
Memory	1 x DDR4 SO-DIMM socket, Max. Capacity 32 GB Support Single Channel DDR4 3200 MHz memory modules
Ethernet	2 x GbE LAN Ports (Intel® I210AT)
Graphic support	Integrated Graphics Processor- Intel® UHD Graphics for 10th Gen Intel® Processors: 1 x HDMI 2.0 port, supporting a maximum resolution of 4096x2160 @60Hz 1 x VGA port, supporting a maximum resolution of 1920x1200 @60Hz  (2 independent display outputs)
Audio	Realtek® Audio Codec
Storage	1 x 2.5" HDD/SSD (SATA 6Gb/s)
Expansion Slots	1 x 2280 M.2 M-Key (SATA 6Gb/s) 1 x 2230 M.2 E-Key 1 x 3052/3042 M.2 B key with SIM Slot – 4G/5G Support 1 x Vertical USB 2.0
Front I/O	2 x RJ45 LAN Ports 2 x USB 3.2 Gen 1 2 x USB 2.0 1 x HDMI 1 x VGA 2 x COM Ports (RS-232/422/485 & RI/5V/12V) 1 x Power button with LED 1 x WiFi/HDD LED 1 x Remote control connector 1 x Headphone Jack 1 x External Antenna Hole (Optional)
Rear I/O	1 x Din Rail Mounting Support

System	QBiX-DR-EHLA6412H-A1 (DR-6412A-SI)
Side I/O	1 x GPIO (8 bits) 1 x 3-pin Terminal Block 2 x COM Ports (RS-232/422/485 & RI/5V/12V) 2 x External Antenna Holes (Optional)
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 85°C Non-operating humidity: 0%-95% (non-condensing) Use wide temperature range memory and storage
Vibration During Operation	Operation: IEC 60068-2-64, 3 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: 416 x 409 x 347 (mm) Packing Capacity: 6pcs  Including: Terminal Blocks 1*3P x 1 (P/N: 25IO0-5ESDV0-D2R) Terminal Blocks 1*2P x 1 (P/N: 25IO0-EC3500-D2R) Terminal Blocks 1*10P x 1 (P/N: 25IO0-EC3810-D2R) SATA cable x 1 (P/N: 25CF4-500500-S9R) SATA power cable x 1 (P/N: 25CRI-190920-S9R) HDD screw M3x4L x 4 (P/N: 25984G-1C014-S00)
Order Information	System: 6BDR6412AMR-SI (Box packing)

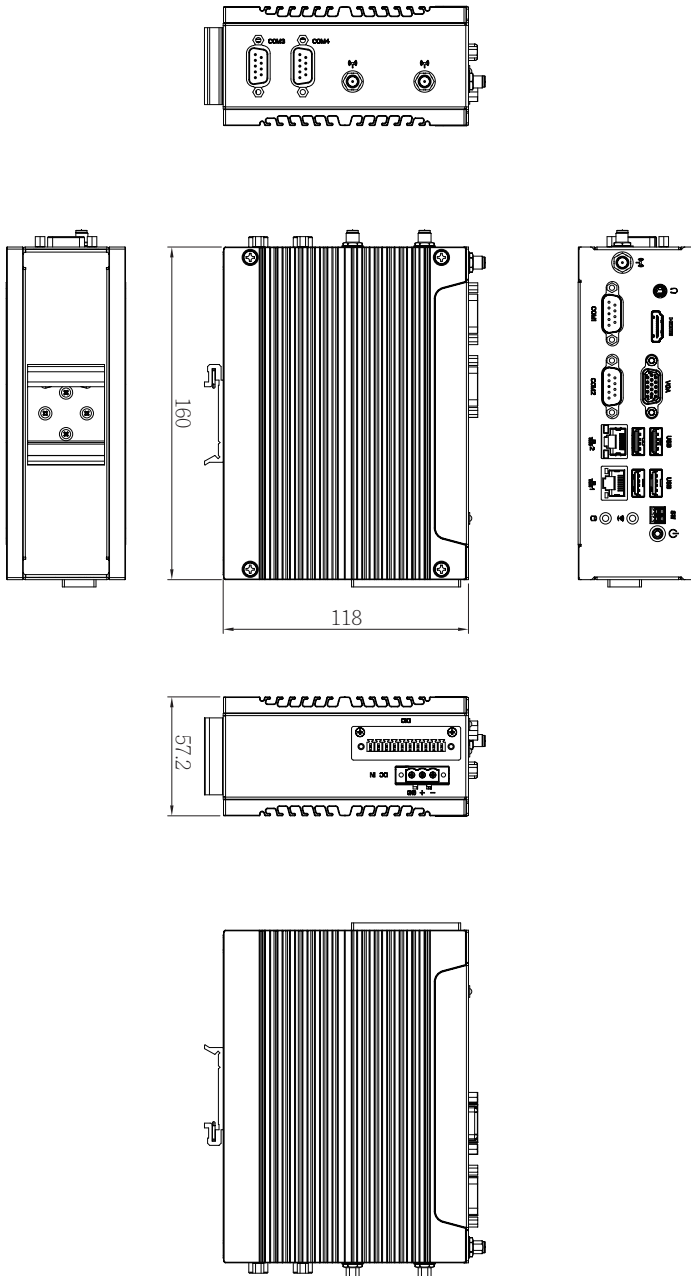
## Chapter 2

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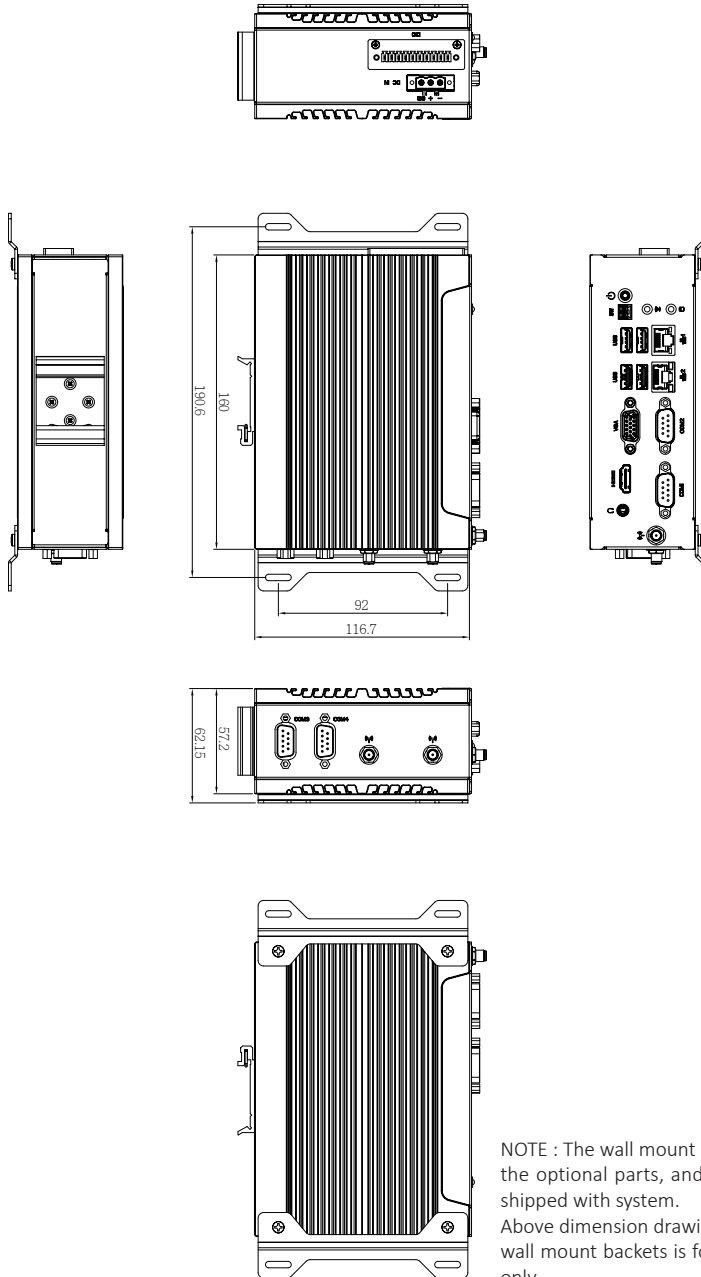
Chapter 2 – QBiX-DR-EHLA6412H-A1 (DR-6412A-SI)

## 2.1 Dimension

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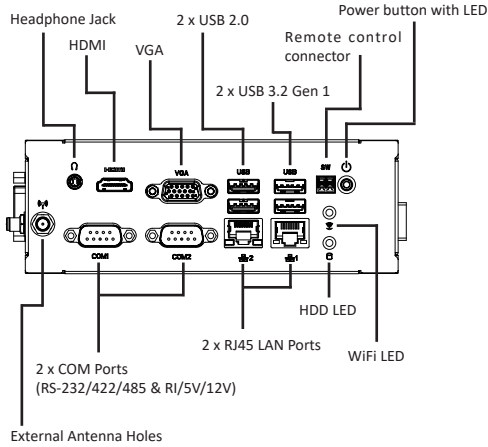
## 2.1 Dimension - including wall mount brackets



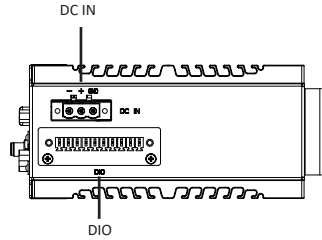
NOTE : The wall mount brackets are the optional parts, and will not be shipped with system. Above dimension drawing including wall mount brackets is for reference only.

## 2.2 Getting Familiar with Your Unit

### [Rear I/O Port on Board]

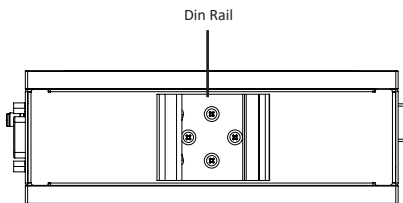


### [Side IO Down side]

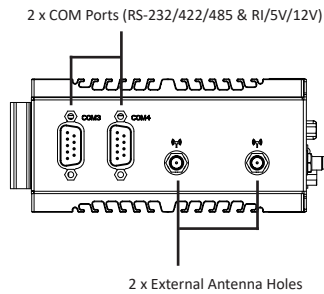


\*NOTE : COM1 & COM2 RI/5V/12V setting are supported by BIOS selection. (please refer to Page 63)

### [Front Side]



### [Side IO Top Side]

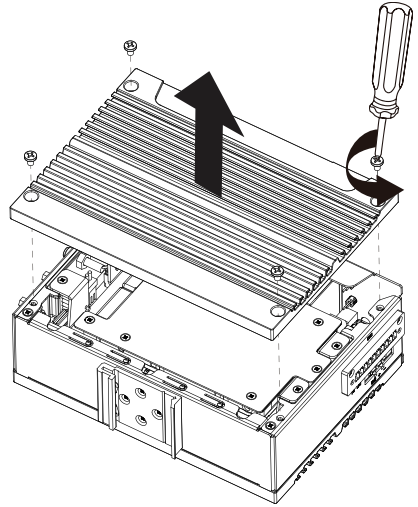


\*NOTE : COM3 & COM4 RI/5V/12V setting are supported by jumper setting. (please refer to Page 38)



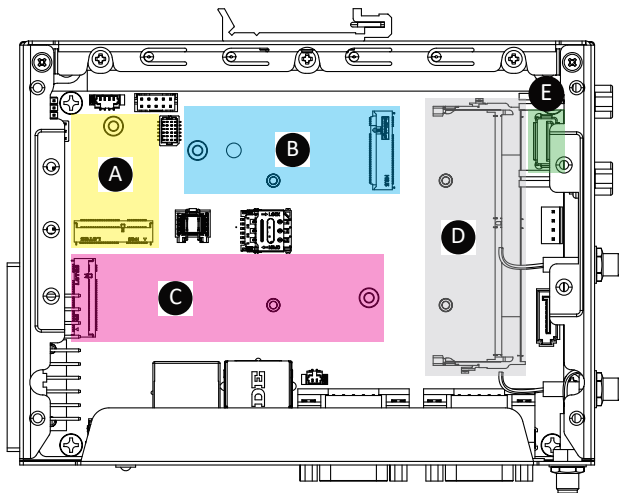
## [Installation]

- \* Before opening the case, make sure to unplug the power cord.
- \* 打開機殼前，請確實移除電源。
- \* Before Connecting the power, make sure to fasten the case securely.
- \* 接上電源前，請確實將機殼完整鎖附。



## [Bottom PCB Side]

Information	
A	M.2 2230 E-Key connector
B	M.2 3052/3042 B-Key connector
C	M.2 2280 M-Key connector
D	DDR4 SO-DIMM Slot
E	USB 2.0 Vertical connector

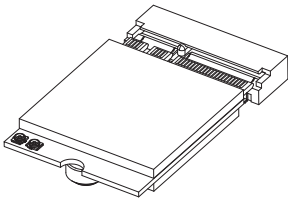


## 2.3 A) Wireless Module : How to safely install the Module (Wireless Module inclusion may vary based on local distribution)

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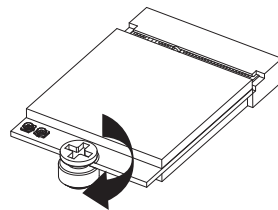
1

Carefully insert the wireless module into the M.2 slot



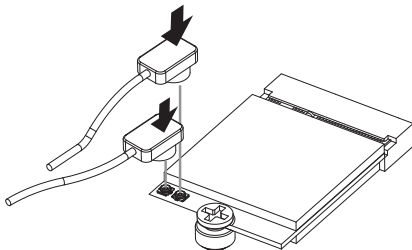
2

Lock the screw in the middle.



3

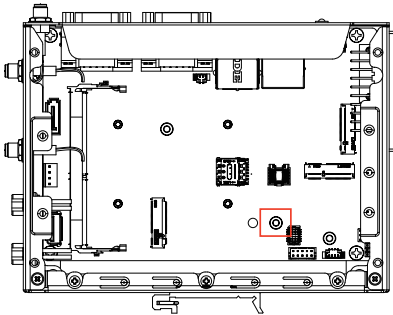
Install the antenna on the left side of the connection wireless module down.



## 2.4 B) 5G module Installation: How to safely install the module (5G Module inclusion may vary based on local distribution)

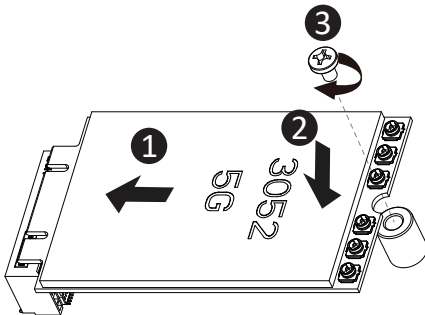
1

Remove the screw from the screw hole.



2

Carefully insert the 5G module into the slot, and secure with the screw.

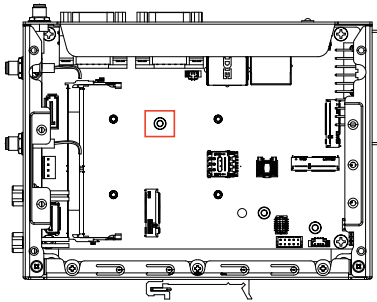


## 2.5 C) M.2 SSD Installation: How to safely install the M.2 2280 SSD

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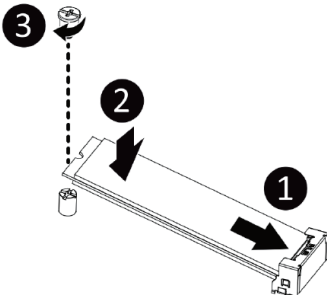
1

Remove the screw from the screw hole (Location : MSO9)



2

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

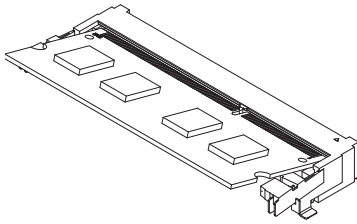


## 2.6 D) Memory Installation: DDR4 SO-DIMM

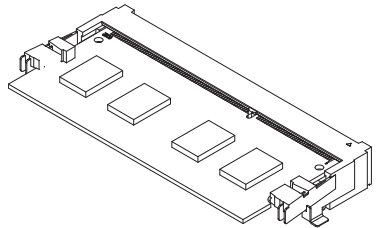
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**1**

Carefully insert SO-DIMM memory modules.

**2**

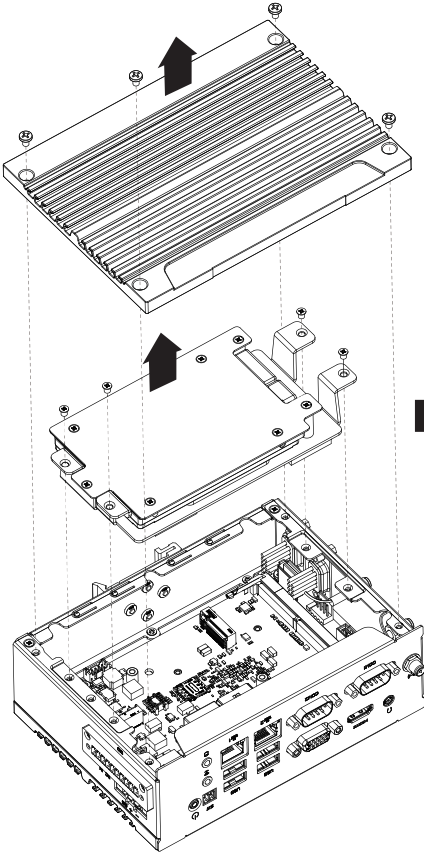
Push down until the modules click into place.



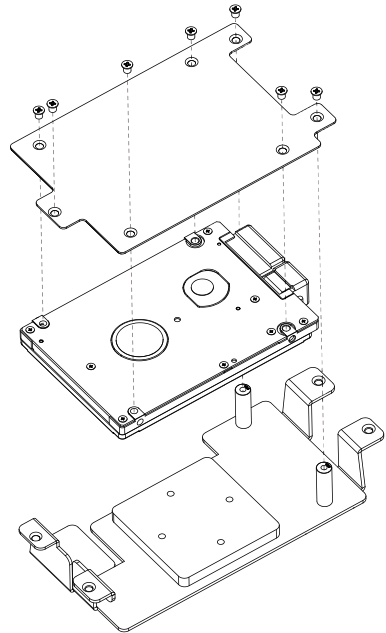
## 2.7 HDD Installation

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1



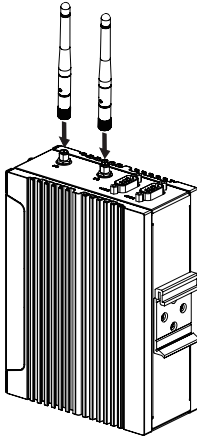
2



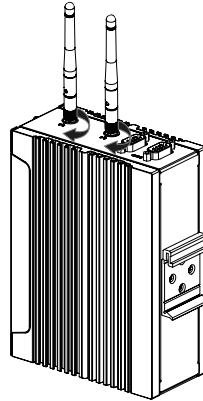
## 2.8 Antenna Installation (Antenna inclusion may vary based on local distribution)

**1**

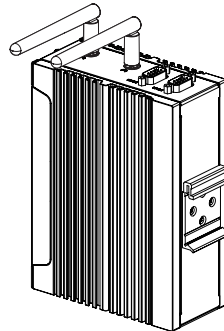
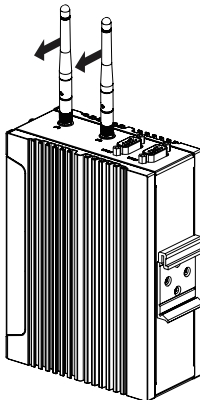
Carefully insert the antennas into the connectors.

**2**

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

**3**

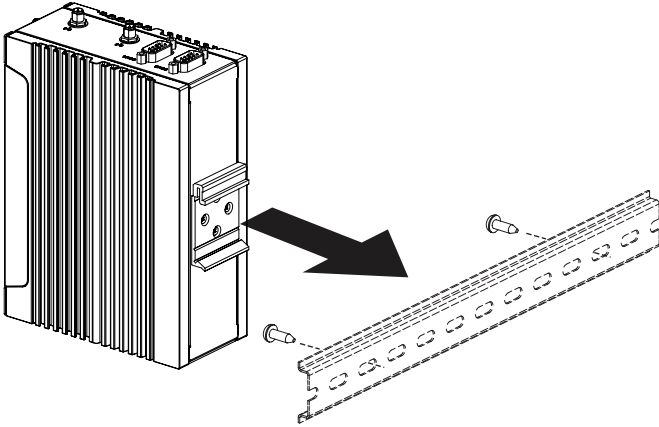
Flip up the antenna heads so that they are perpendicular to the machine.



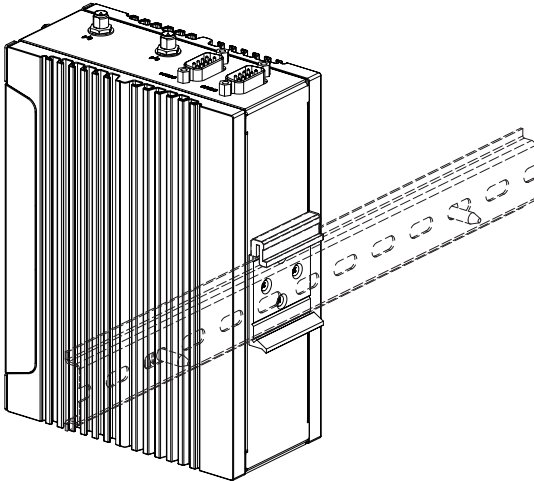
## 2.9 Din Rail Bracket Installation

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1



2

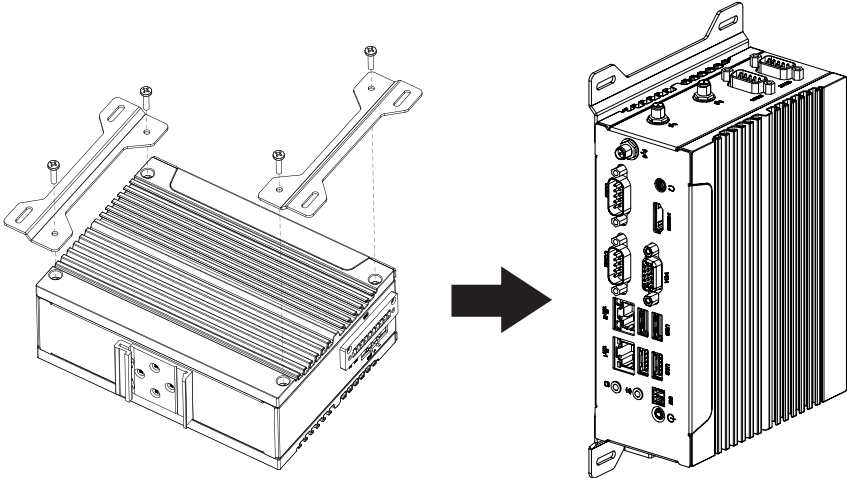




## 2.10 Wall mount Bracket Installation

1

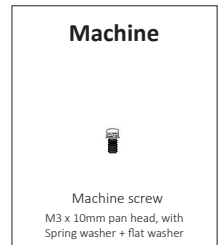
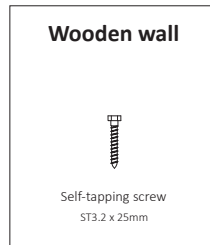
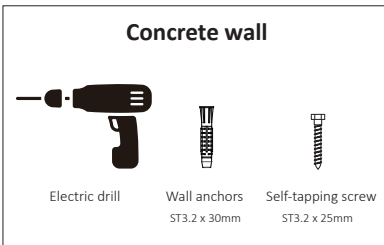
Remove 4 screws on the top cover, then install wall mount brackets with those 4 screws.



NOTE : The wall mount brackets are the optional parts, and will not be shipped with system.

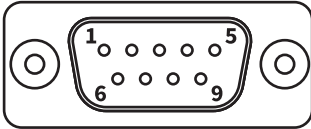
2

Suggest screws as below for different type of surface.



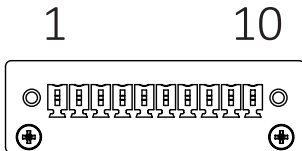
## 2.11 Cable Pin-define

### 1. DB9 COM (25CF8-250620-S9R)



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 (25CR5-100701-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	GND
10	5V

## 2.12 Safety and Regulatory Information

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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.

**HDMI™**  
HIGH DEFINITION MULTIMEDIA INTERFACE



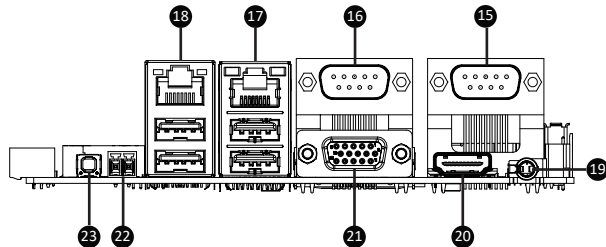
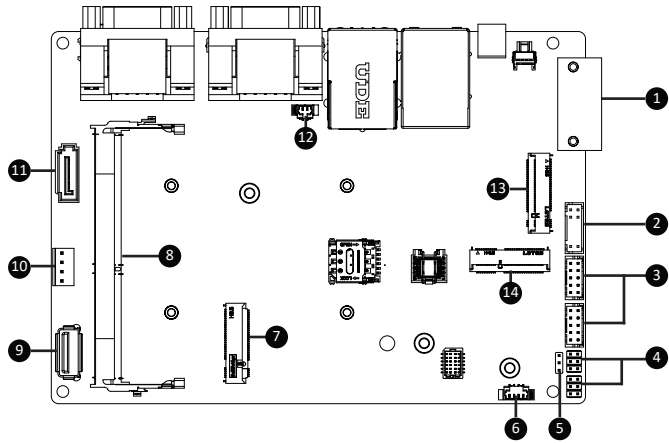
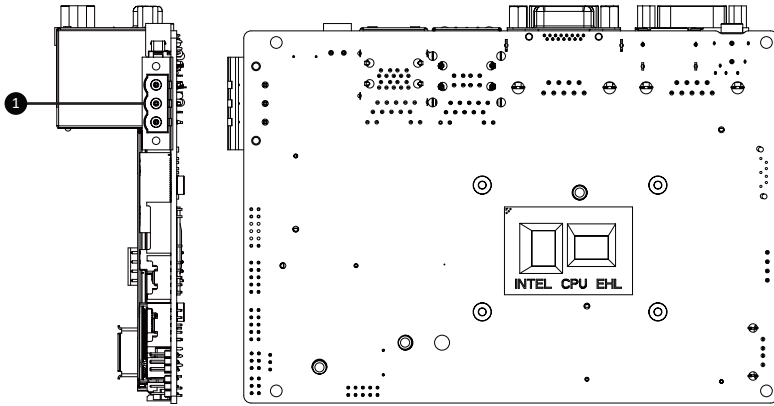
At the end of its serviceable life, this product should not be treated as household or general waste. It should be handed over to the applicable collection point for the recycling of electrical and electronic equipment, or returned to the supplier for disposal.

# Chapter 3

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## Chapter 3 – Motherboard Pin Define

# 3.1 Jumpers and Connectors

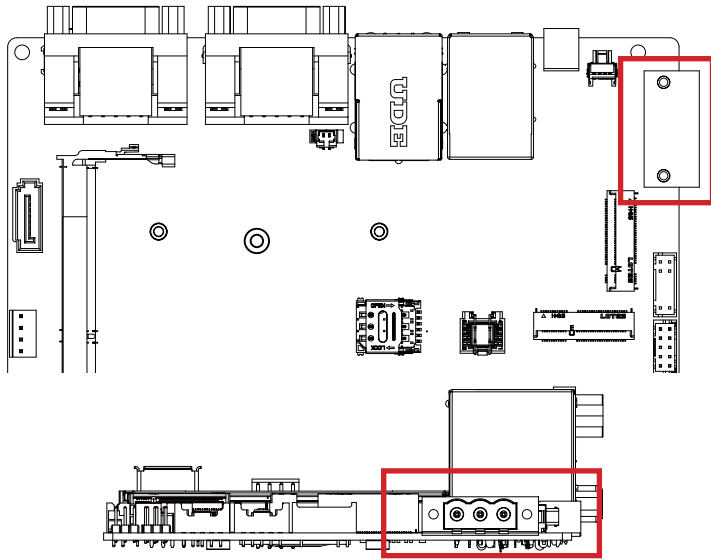


	Code	Description
1	DC_IN	DC IN 1 x 3-pin Terminal block (Side)
2	GPIO_CN	General purpose input/output header
3	COM3, COM4	Serial port header (RS-232/422/485 & RI/5V/12V)
4	JCOM3, JCOM4	RI# pin RI#/5V/12V Select jumper for COM3 & COM4 Port
5	AT_CN	AT/ATX mode select jumper
6	SYS_PANEL	Front panel header
7	M2B	M.2 Slot, B-Key, NGFF 3052/3042
8	SODIMM	DDR4 SO-DIMM Slot
9	USB_V	Vertical USB 2.0 connector
10	SATAPW	SATA power connector
11	SATA0	SATA 6Gb/s Connector
12	BAT	Battery cable connector
13	M2M	M.2 Slot, M-Key, NGFF 2280
14	M2E	M.2 Slot, E-key, NGFF 2230
15	COM1	Serial Port connector, COM Port (RS-232/422/485 & RI/5V/12V) <small>*RI/5V/12V setting are supported by BIOS selection.</small>
16	COM2	Serial Port connector, COM Port (RS-232/422/485 & RI/5V/12V) <small>*RI/5V/12V setting are supported by BIOS selection.</small>
17	USB_LAN2	LAN Connector (Top)
		USB 2.0 Connector (Bottom)
18	USB_LAN1	LAN Connector (Top)
		USB 3.2 Gen 1 Connector (Bottom)

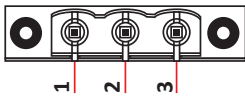
	Code	Description
<b>19</b>	<b>HP</b>	<b>Headphone Jack</b>
<b>20</b>	<b>HDMI</b>	<b>HDMI connector</b>
<b>21</b>	<b>VGA</b>	<b>VGA Connector</b>
<b>22</b>	<b>PWR_SW</b>	<b>Remote Control connector</b>
<b>23</b>	<b>PWR_BUTTON</b>	<b>Power button with LED</b>

## 3.2.1 DC\_IN (DC IN 1x3-pin Terminal Block)

1



DC\_IN Connector

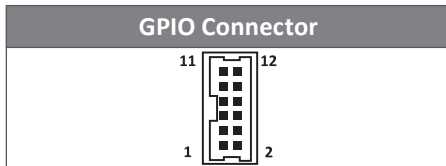
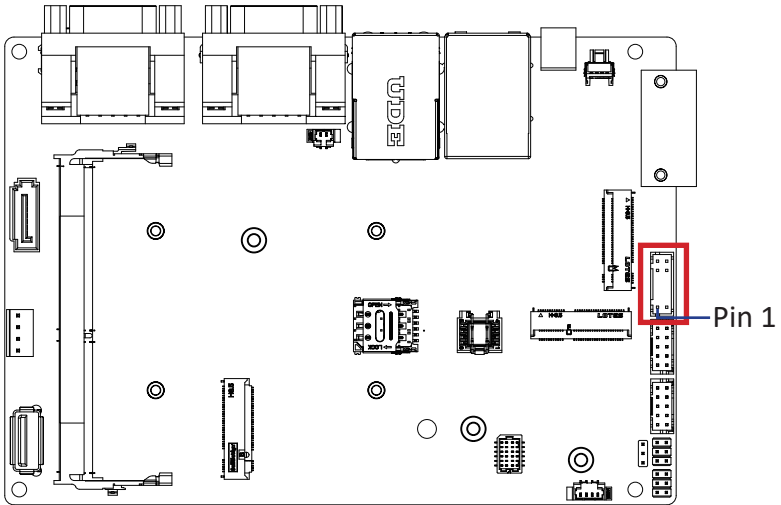


Pin No.	Definition
1	CH_GND
2	DCVIN
3	GND



## 3.2.2 GPIO\_CN (General Purpose input/output header )

2

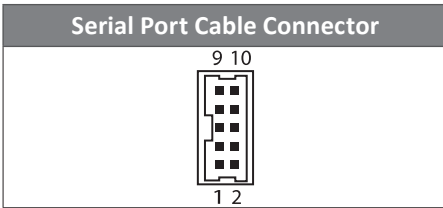
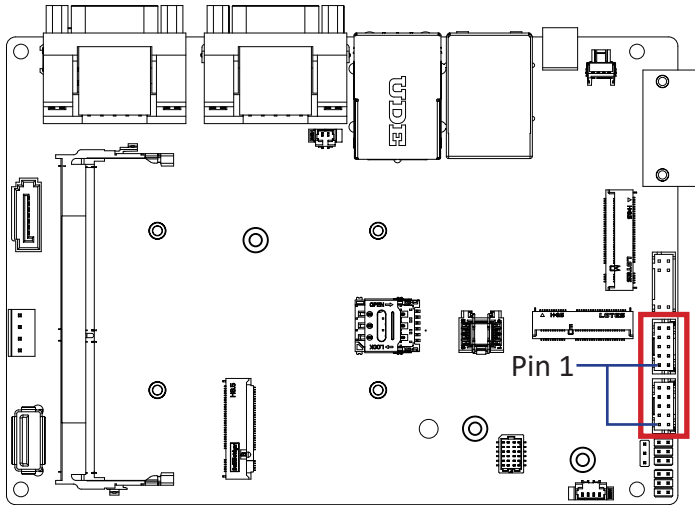


Connector PN	Vendor
725-81-12TW00	PINREX
A2004WV-2X06P46	JOINT-TECH

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

## 3.2.3 COM3, COM4 (Serial port header, RS-232/422/485 & RI/5V/12V)

3

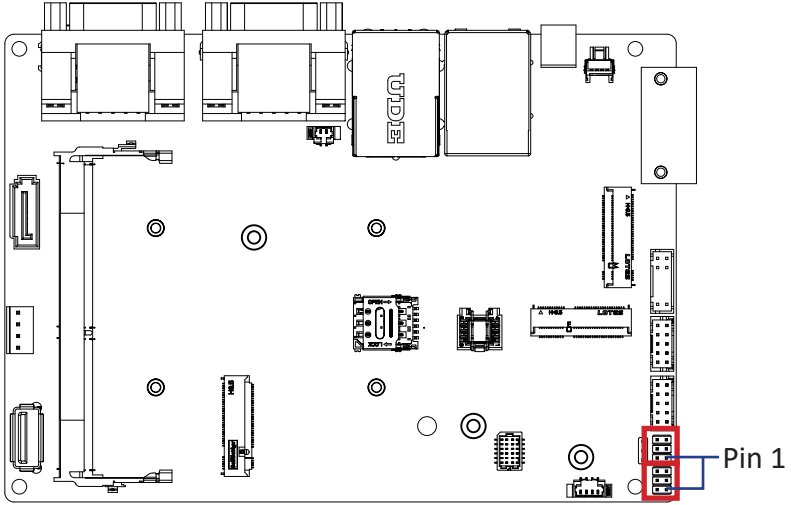


Connector PN	Vendor
725-81-10TW00	PINREX
A2004WV-2X05P46	JOINT-TECH

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

### 3.2.4 JCOM3, JCOM4 (RI# pin RI#/5V/12V Select jumper for COM3 & COM4 Port)

4

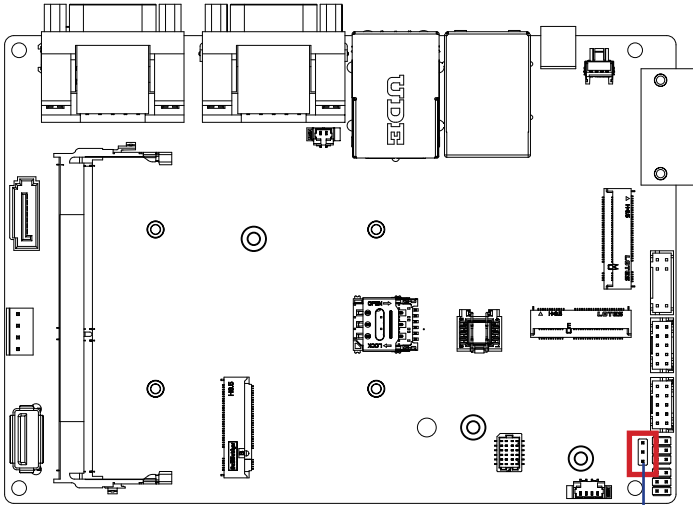


JCOM3/ JCOM4 Jumper Select	
	<p>1-2 Close: 5V (Power COM)</p>
	<p>3-4 Close: RI (Stand COM)</p>
	<p>5-6 Close: 12V (Power COM)</p>

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

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

5



Pin 1

### AT/ATX mode select jumper



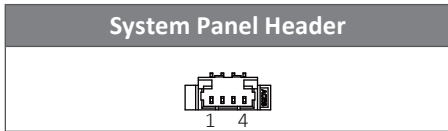
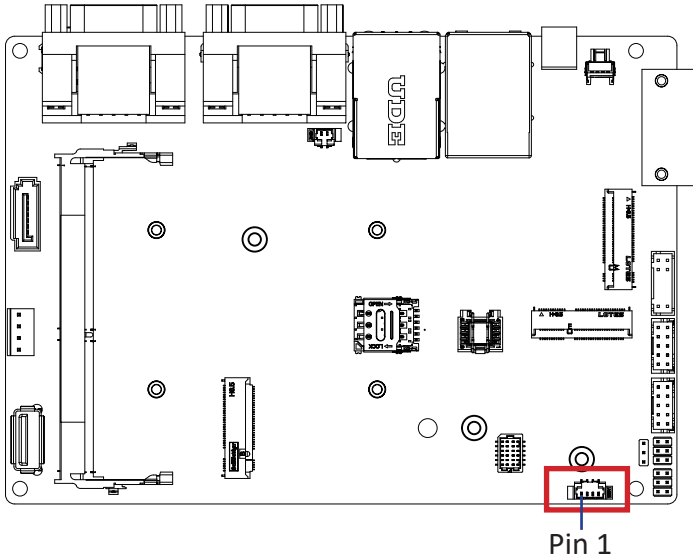
Connector PN	Vendor
220-96-03GB01	PINREX
PH03N2-7BAN000	HORNGTONG
220-96-03GB001K	PINREX

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)

### 3.2.6 SYS\_PANEL (Front panel header)

6

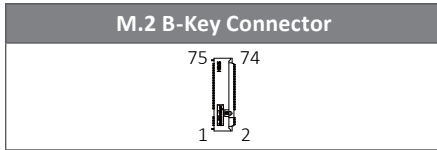
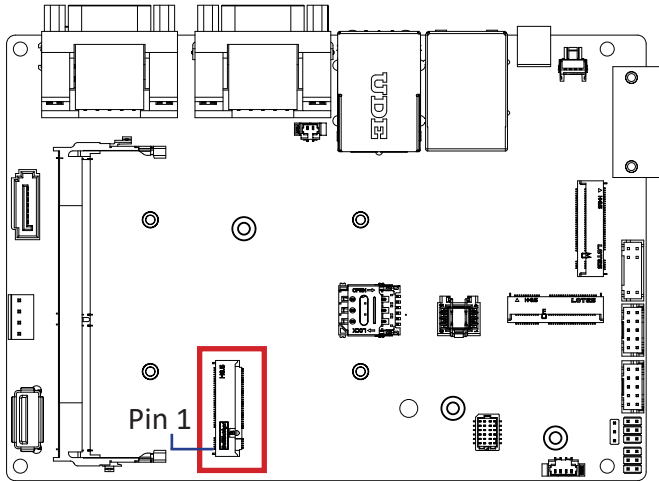


Connector PN	Vendor
85205-0470N	ACES
A1250WV-S-04PC	JOINT-TECH

Pin No.	Definition
1	HD-
2	HD+
3	+V3.3A_FUSE
4	WIFI_LED

## 3.2.7 M2B (M.2 Slot, B-Key, NGFF 3052/3042)

7



Pin No.	Definition	Pin No.	Definition
1	3.3V	2	3.3V
3	GND	4	3.3V
5	GND	6	WWAN_PWR_OFF
7	USB D+	8	WWAN_Disable
9	USB D-	10	LED
11	GND		

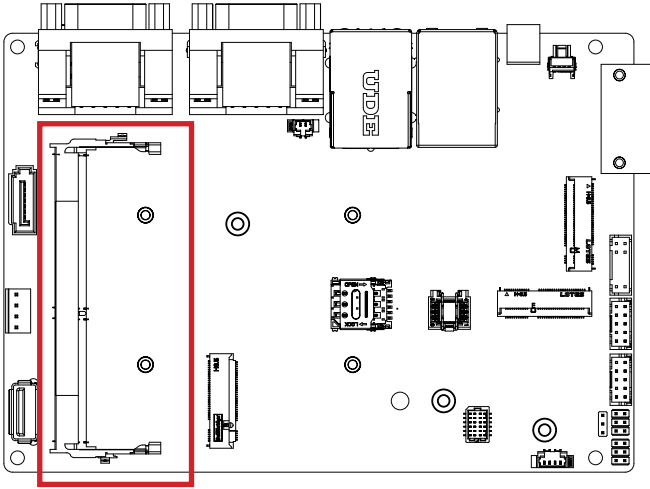
Pin No.	Definition	Pin No.	Definition
21	NC	20	NC
23	M2B_WAKE	22	NC
25	M2B_DRP	24	NC
27	GND	26	WWAN_Disable2
29	USB3 RXn	28	NC
31	USB3_RXp	30	SIM_RST#
33	GND	32	SIM_CLK
35	USB3_TXn	34	SIM_DATA

Pin No.	Definition	Pin No.	Definition
37	USB3_TXp	36	SIM_PWR
39	GND	38	Boot Select
41	PCIE_RXn	40	NC
43	PCIE_RXp	42	NC
45	GND	44	NC
47	PCIE_TXn	46	NC
49	PCIE_TXp	48	NC
51	GND	50	PLT_RST
53	CLK_n	52	CK_REQ
55	CLK_p	54	PCIE_WAKE
57	GND	56	NC
59	NC	58	NC
61	NC	60	NC
63	NC	62	NC
65	NC	64	NC
67	GPP_RESET	66	NC
69	M2B_DET	68	NC
71	GND	70	3.3V
73	GND	72	3.3V
75	NC	74	3.3V

Connector PN	Vendor
80149-8521	BELLWETHER
2E0BC21-S85BB-7H	FOXCONN

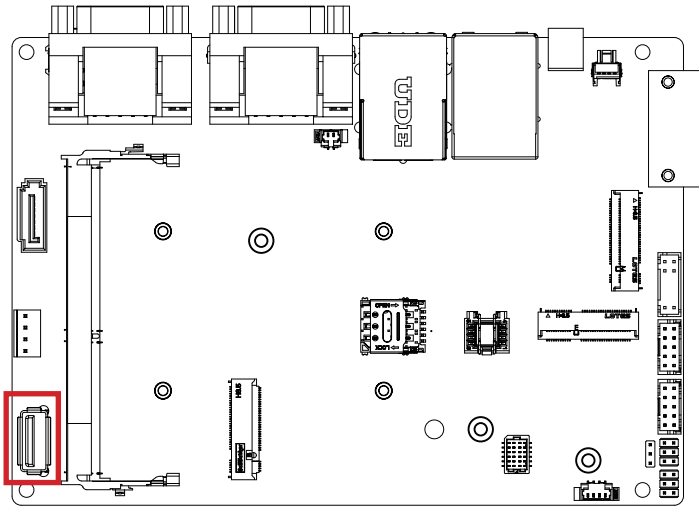
### 3.2.8 SODIMM (DDR4 SO-DIMM Slot)

8



## 3.2.9 USB\_V (Vertical USB2.0 connector)

9



USB 2.0 connector



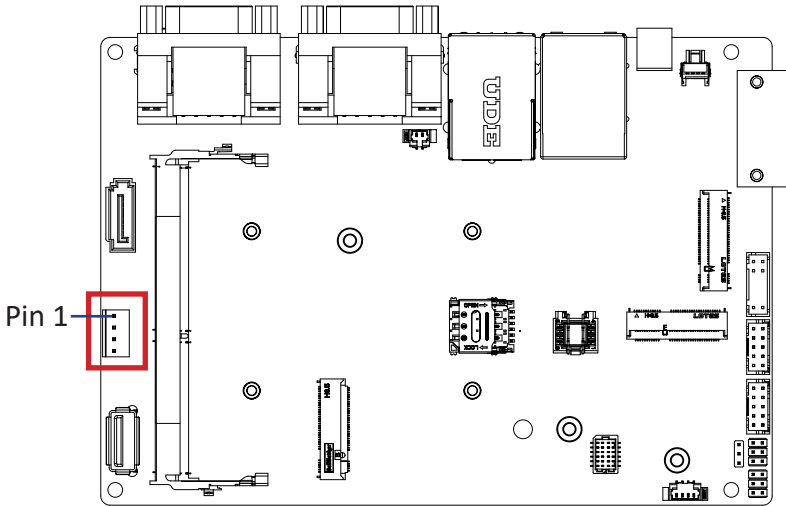
Pin No.	Definition
1	5V
2	D1n
3	D1p
4	GND

Connector PN	Vendor
UB0112C-4FH9-4H	FOXCONN
UB0112C-4HH9-4F	FOXCONN



### 3.2.10 SATAPW (SATA power connector)

10



Hard Disk Power Connector



Connector PN

Vendor

743-81-04TW00

PINREX

WF04Q2-3BJQ000

HORNGTONG

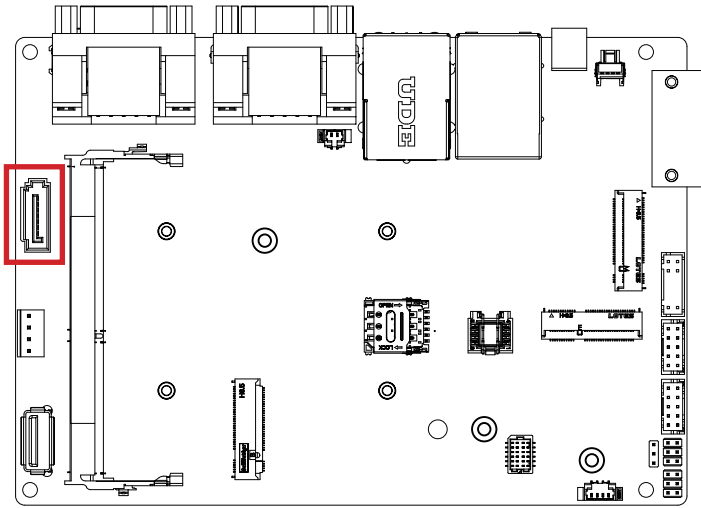
Pin No.

Definition

1	NC
2	GND
3	GND
4	5V

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

11



SATA Connector



Connector PN

WATF-07DBLBA1UW

Vendor

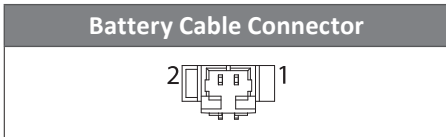
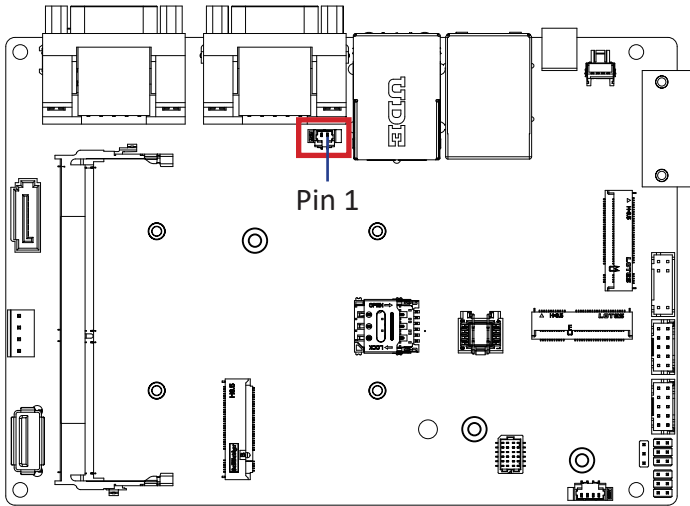
WINWIN

Pin No. Definition

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

### 3.2.12 BAT (Battery cable connector)

12

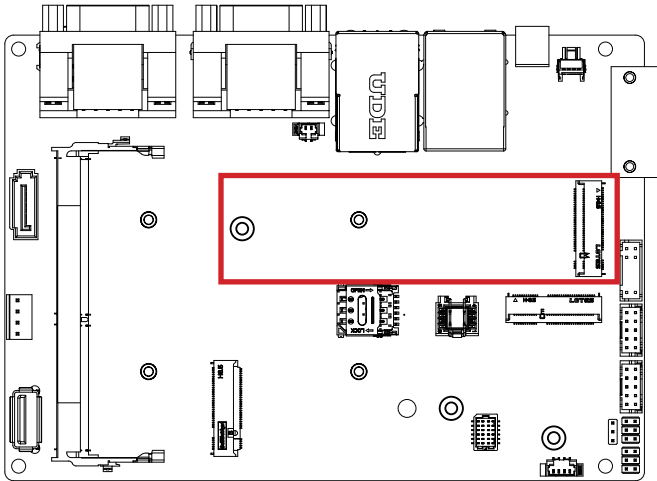


Connector PN	Vendor
85205-0270L	ACES
A1250WV-S-02PC	JOINT-TECH

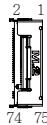
Pin No.	Definition
1	3.3V
2	GND

## 3.2.13 M2M (M.2 Slot, M-Key, NGFF2280)

13



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	NC	30	NC
31	NC	32	NC
33	GND	34	NC

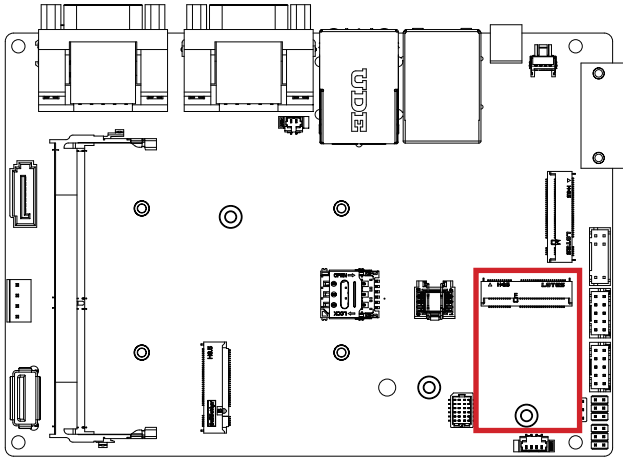
Pin No.	Definition	Pin No.	Definition
35	NC	36	NC
37	NC	38	NC
39	GND	40	SMB Clock
41	SATA_RXp	42	SMB DATA
43	SATA_RXn	44	SMB ALERT
45	GND	46	NC
47	SATA_TXn	48	NC
49	SATA_TXp	50	NC
51	GND	52	NC
53	NC	54	NC
55	NC	56	NC
57	GND	58	NC

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

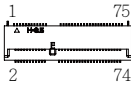
Connector PN	Vendor
80159-8521	BELLWETHER

### 3.2.14 M2E (M.2 Slot, E-key, NGFF2230)

14



#### M.2 E Key Connector



Pin No.	Definition	Pin No.	Definition
1	GND	2	3.3V
3	USBp	4	3.3V
5	USBn	6	WiFi_LED
7	NC	8	NC
9	NC	10	NC
11	NC	12	NC
13	NC	14	NC
15	NC	16	BT_LED
17	NC	18	GND
19	NC	20	NC
21	NC	22	NC
23	NC		

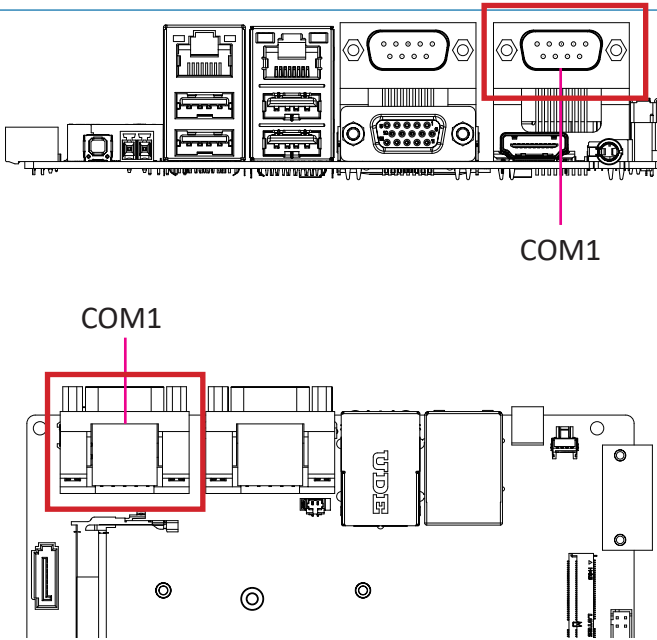
Pin No.	Definition	Pin No.	Definition
33	GND	32	NC
35	PCIE_TXp	34	NC
37	PCIE_TXn	36	NC
39	GND	38	NC

41	PCIE_RXp	40	NC
43	PCIE_RXn	42	NC
45	GND	44	NC
47	PCIE_CLKp	46	NC
49	PCIE_CLKn	48	NC
51	GND	50	SUSCLK
53	PCIE_CLKREQ	52	Reset
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	3.3V
75	GND	74	3.3V

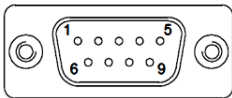
Connector PN	Vendor
APCI0095-P002A	LOTES
80152-8521	BELLWETHER

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

15



Serial port Connector

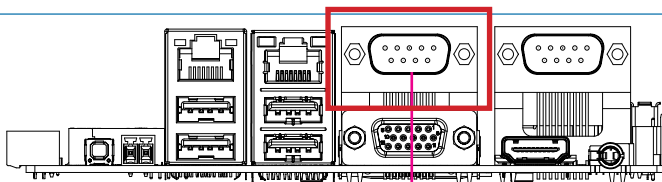


Pin No.	RS-232	RS-422 Full Duplex	RS-485 Half Duplex
1	DCD	TXD-	D-
2	RXD	TXD+	D+
3	TXD	RXD+	—
4	DTR	RXD-	—
5	GND		
6	DSR	—	—
7	RTS	—	—
8	CTS	—	—
9	RI	—	—

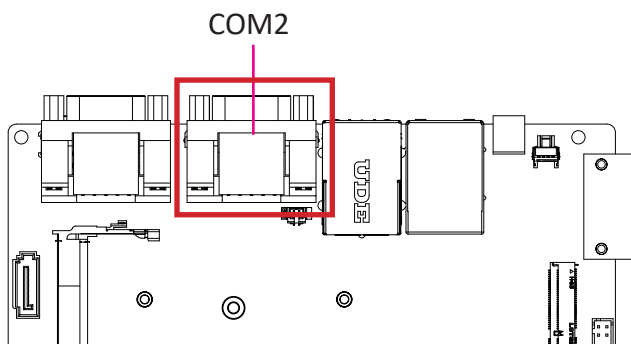
\*NOTE : RI/5V/12V are supported by BIOS selection.  
(please refer to Page 63)

### 3.2.16 COM2 (Serial Port connector (RS-232/422/485 & RI/5V/12V))

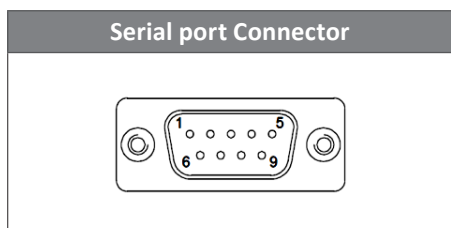
16



COM2



COM2



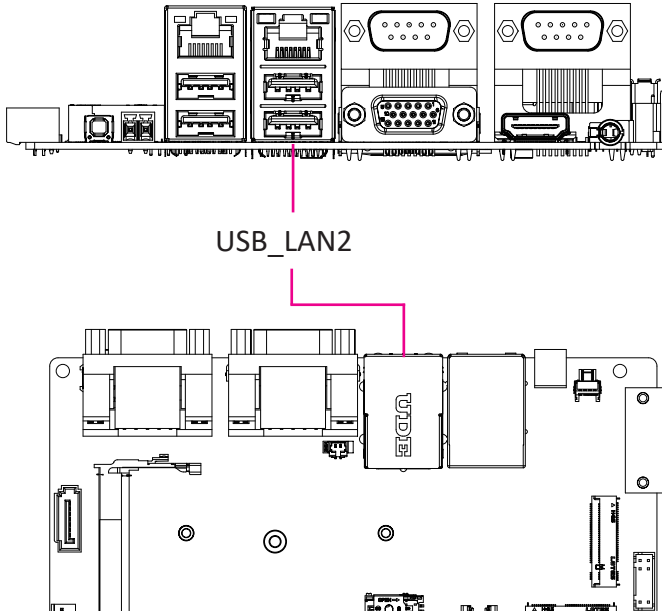
Serial port Connector

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	—	—

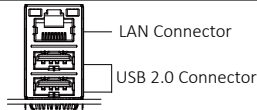
\*NOTE : RI/5V/12V are supported by BIOS selection.  
(please refer to Page 63)

## 3.2.17 USB\_LAN2 (LAN Connector (top) + USB 2.0 Connector (bottom))

17



### USB & LAN connector



USB Connector			
Pin No.	Definition	Pin No.	Definition
1	5V	5	5V
2	D1n	6	D0n
3	D1p	7	D0p
4	GND	8	GND

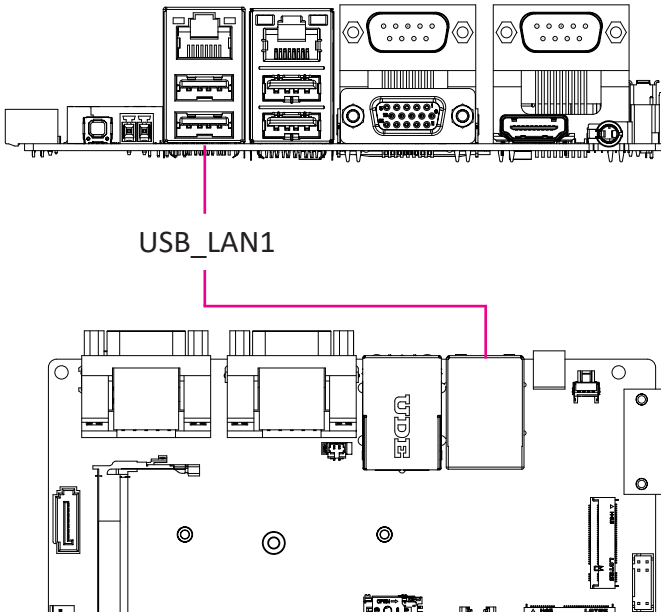
LAN Connector			
Pin No.	Definition	Pin No.	Definition
1	BI_DA+	5	BI_DC-
2	BI_DA-	6	BI_DB-
3	BI_DB+	7	BI_DD+
4	BI_DC+	8	BI_DD-

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



### 3.2.18 USB\_LAN1 (LAN Connector (top) + USB 3.2 Gen 1 Connector (bottom))

18



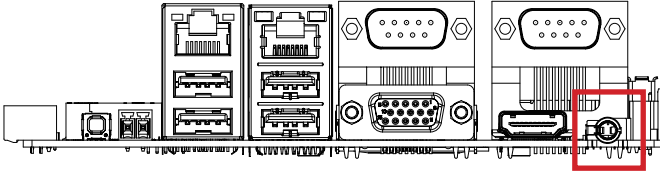
#### USB & LAN connector



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

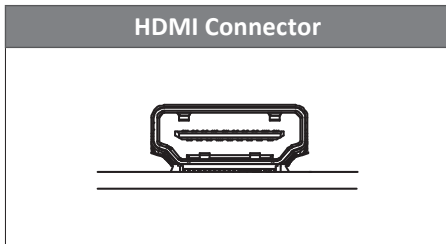
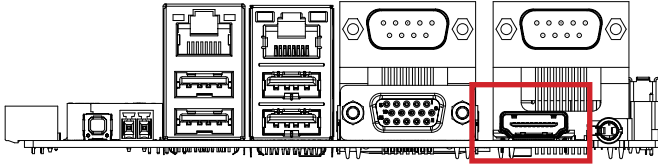
LAN Connector			
Pin No.	Definition	Pin No.	Definition
1	BI_DA+	5	BI_DC-
2	BI_DA-	6	BI_DB-
3	BI_DB+	7	BI_DD+
4	BI_DC+	8	BI_DD-
State		Description	
Orange On		1Gbps data rate	
Green On		100Mbps data rate	
Off		10Mbps data rate	

### 3.2.19 HP (Headphone Jack)

**19**

## 3.2.20 HDMI (HDMI Connector)

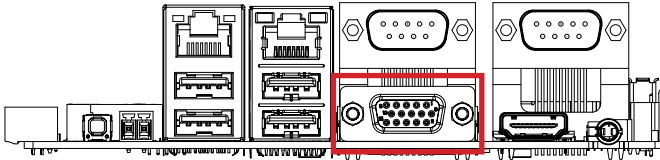
20



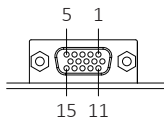
Pin No.	Definition	Pin No.	Definition
1	TX2p	11	GND
2	GND	12	CLKn
3	TX2n	13	NC
4	TX1p	14	NC
5	GND	15	SCL
6	TX1n	16	SDA
7	TX0p	17	GND
8	GND	18	5V
9	TX0n	19	Hot Plug Detect
10	CLKp		

## 3.2.21 VGA (DB-15 VGA Connector)

21



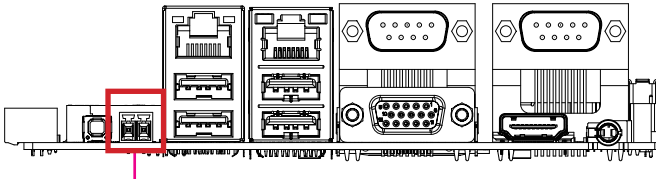
D-sub Connector



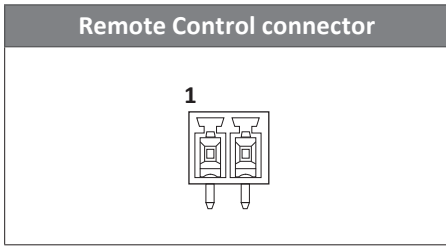
Pin No.	Definition	Pin No.	Definition
1	Red	9	5V
2	Green	10	GND
3	Blue	11	NC
4	NC	12	DDCSDA
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	DDCSCL
8	GND		

### 3.2.22 PWR\_SW (Remote Control connector)

22



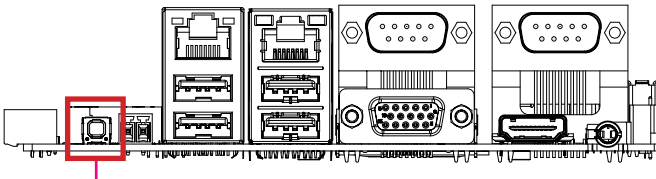
Power Switch



Pin No.	Definition
1	PWRBTSW
2	GND

### 3.2.23 PWR\_BUTTON (Power button with LED)

23



Power Button with LED

# Chapter 4

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## 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

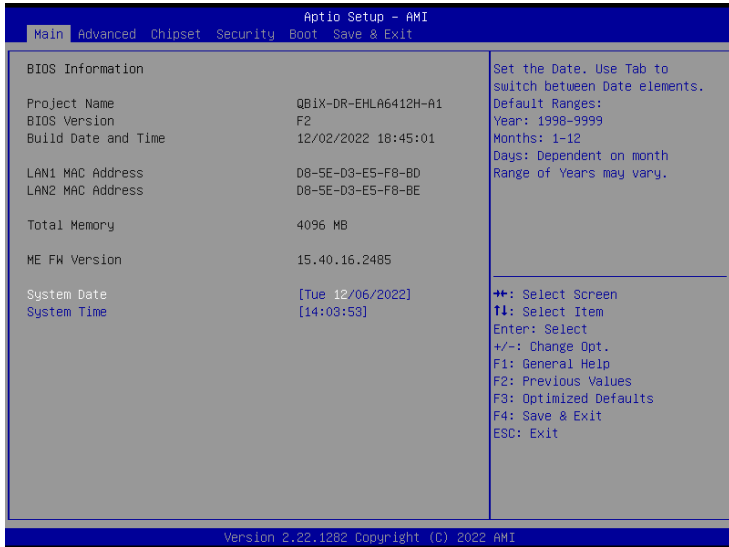
Once the system is power on, press the <DEL> key as soon as possible to access into BIOS Setup program.

### 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.

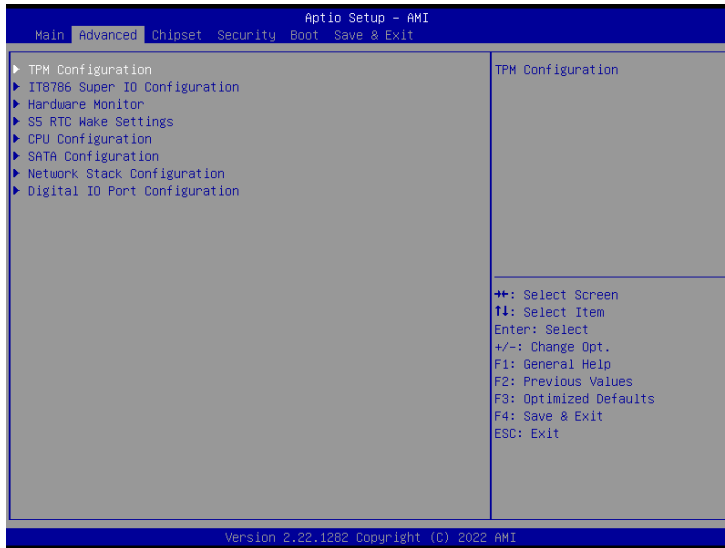


Items	Description
<b>Project Name</b>	<b>Shows Project name information</b>
<b>BIOS Version</b>	<b>Shows the BIOS version of the system</b>
<b>Build Date and Time</b>	<b>Shows the Build Date and Time when the BIOS was created.</b>
<b>LAN1 MAC Address</b>	<b>Shows LAN1 MAC Address information</b>
<b>LAN2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



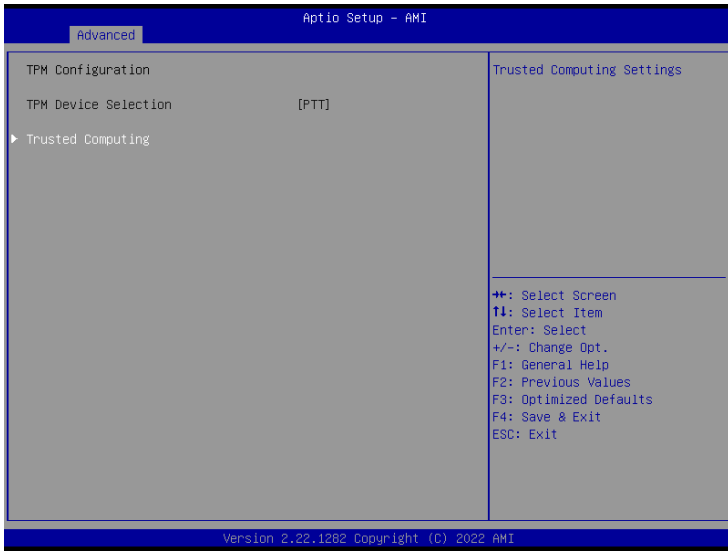
## 4.3 Advanced

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.



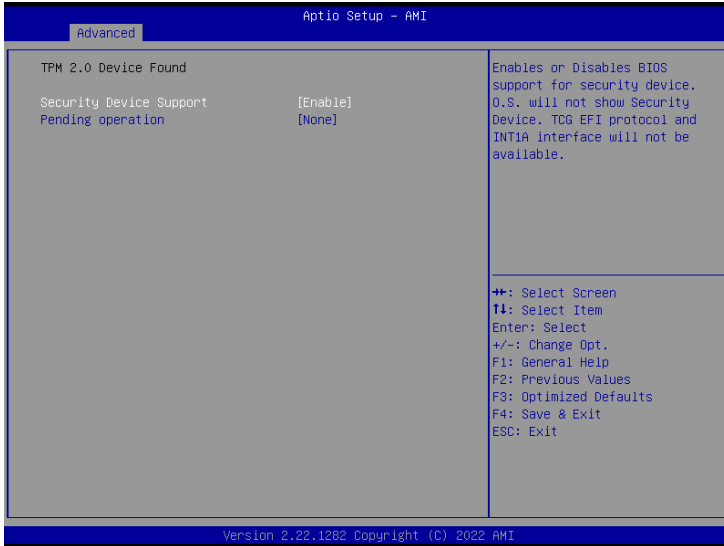
### 4.3.1 TPM Configuration

Use TPM Configuration submenu to choose TPM interface.



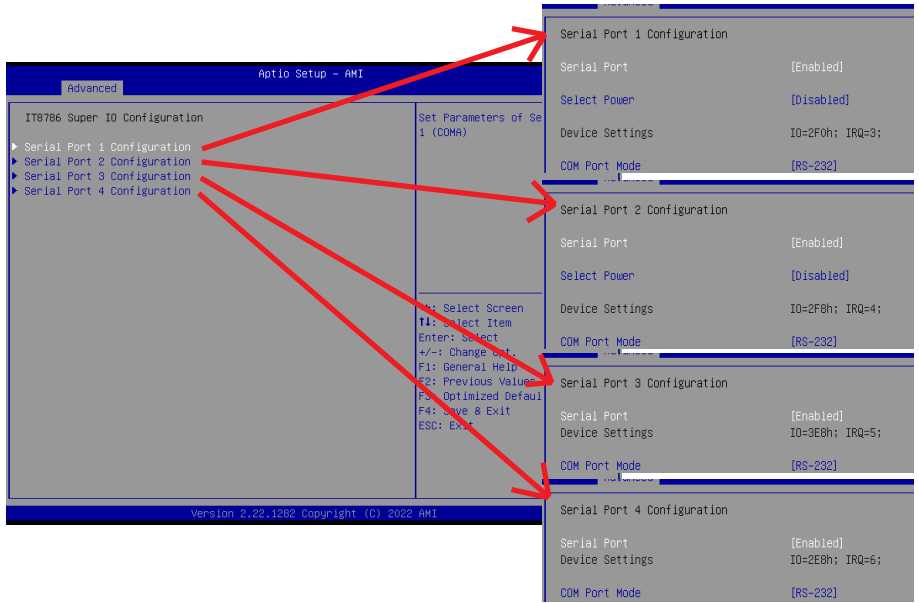
Item	Description
<p><b>TPM Device Selection</b></p>	<p><b>PTT (Default setting)</b></p>

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



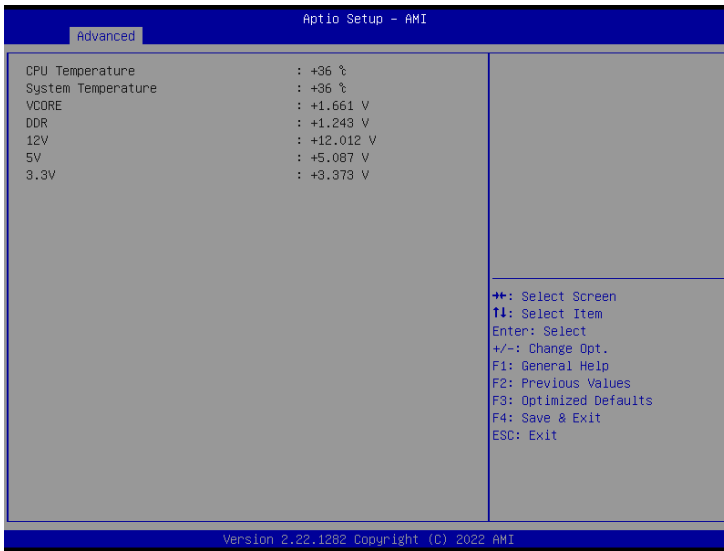
Item	Description
<b>Security Device support</b>	<b>Enabled : Enables TPM feature (Default setting)</b> <b>Disabled : Disables TPM feature</b>
Item	Description
<b>Pending operation</b>	<b>None : No execution will be conducted (Default setting)</b> <b>TPM clear : Set to clear data on TPM</b>

### 4.3.2 IT8786 Super IO Configuration



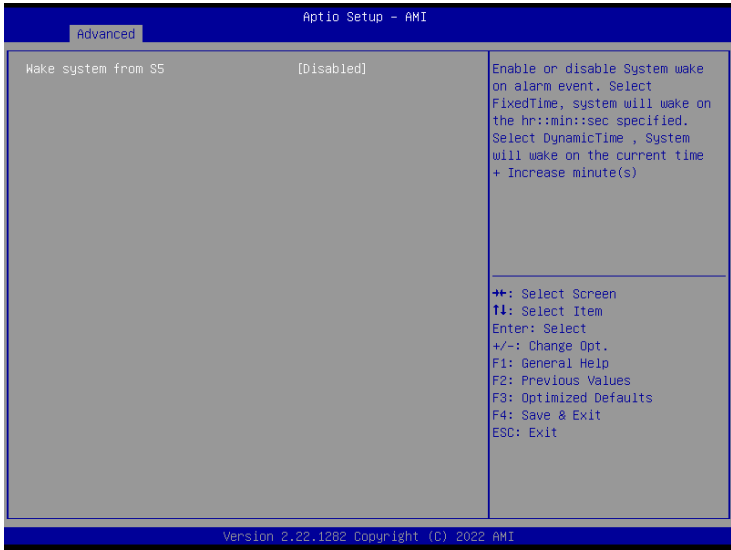
Item	Description
<b>Serial Port 1 Configuration</b>	<p>Press [Enter] to configure advanced items :</p> <p>Serial Port :  <b>Enabled : Enables allows you to configure the serial port settings</b>  <b>Disabled : if Disabled, displays no configuration for the serial port</b></p> <p>Select Power :                      Option items : Disabled (Default setting), 5V, 12V</p>
<b>Serial Port 2 Configuration</b>	<p>Device settings :                      Display the specified Serial Port base I/O address and IRQ</p> <p>COM Port Mode :                      Choose RS-232, RS-422, or RS-485 feature</p>
<b>Serial Port 3 Configuration</b>	<p>Press [Enter] to configure advanced items :</p> <p>Serial Port :  <b>Enabled : Enables allows you to configure the serial port settings</b>  <b>Disabled : if Disabled, displays no configuration for the serial port</b></p>
<b>Serial Port 4 Configuration</b>	<p>Device settings :                      Display the specified Serial Port base I/O address and IRQ</p> <p>COM Port Mode :                      Choose RS-232, RS-422, or RS-485 feature</p>

### 4.3.3 Hardware Monitor



Item	Description
<b>CPU temperature</b>	Shows current CPU temperature
<b>System temperature</b>	Shows current system temperature

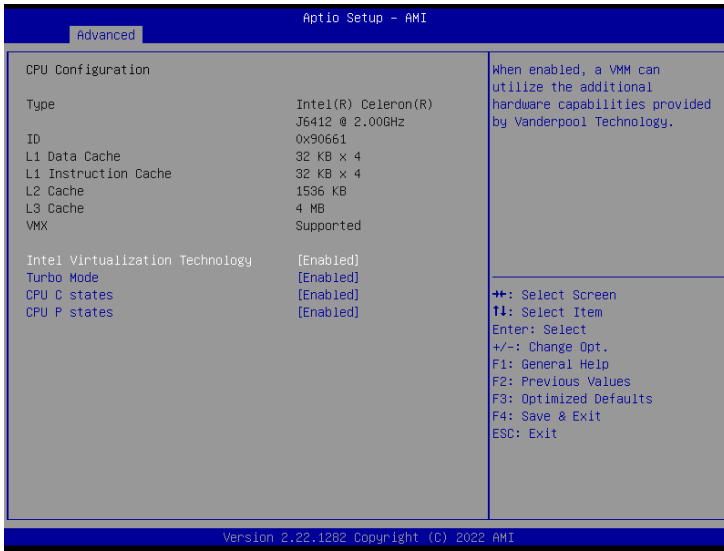
### 4.3.4 S5 RTC Wake Settings



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

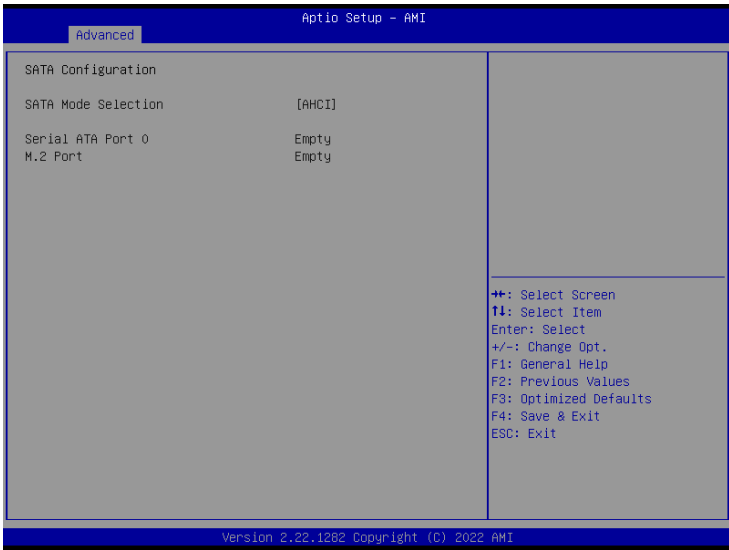
### 4.3.5 CPU Configuration

This submenu shows detailed CPU informations.



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

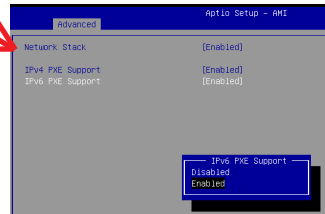
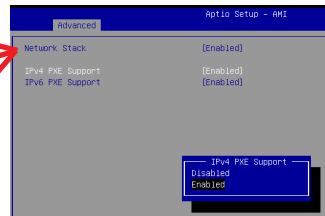
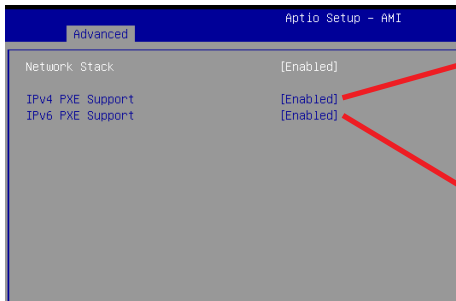
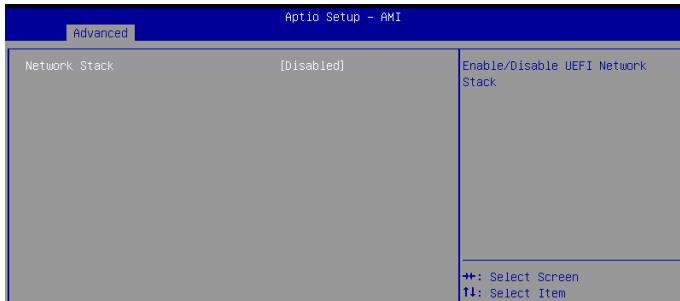
## 4.3.6 SATA Configuration



Item	Description
<b>SATA Mode Selection</b>	<b>AHCI</b> : Configures the SATA controllers to AHCI mode. (Default setting)
<b>Serial ATA Port 0</b>	shows 2.5" SATA HDD/SSD information
<b>M.2 Port</b>	shows M.2 SATA interface SSD information

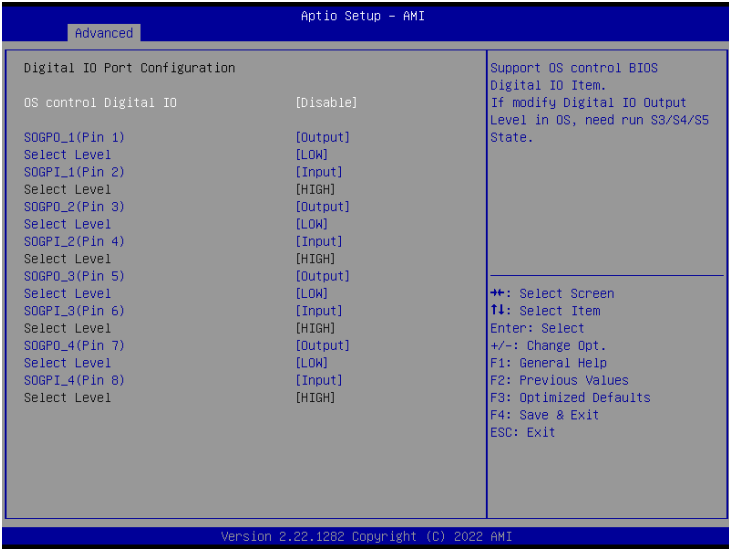


### 4.3.7 Network Stack Configuration



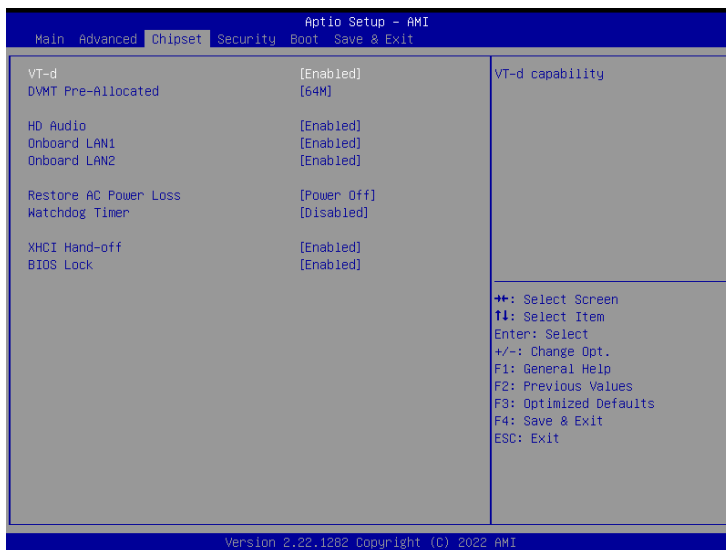
Item	Description
<b>Network Stack</b>	When system is power on, install LAN driver under UEFI mode <b>Disabled : Disables UEFI Network Stack (Default setting)</b> <b>Enabled : Enables UEFI Network Stack</b>
<b>Ipv4 PXE Support</b>	When Network stack is enabled : <b>Disabled : Disables Ipv4 PXE Support</b> <b>Enabled : Enables Ipv4 PXE Support</b>
<b>Ipv6 PXE Support</b>	When Network stack is enabled : <b>Disabled : Disables Ipv6 PXE Support</b> <b>Enabled : Enables Ipv6 PXE Support</b>

### 4.3.8 Digital IO Port Configuration



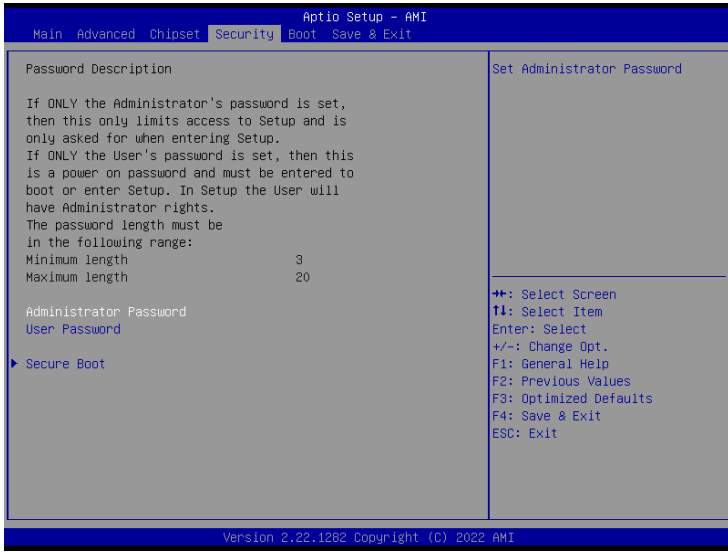
Item	Description
OS control Digital IO	<p><b>Disabled</b> : If Digital IO Output value/level is modified in OS, they will not be memorized and kept. (Default setting)</p> <p><b>Enabled</b> : If Digital IO Output value/level is modified in OS, they will be memorized and kept.</p>
SOGPO_1 (Pin 1) SOGPI_1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

## 4.4 Chipset



Item	Description
VT-d	<b>Enabled : Enables VT-d function (Default setting)</b> <b>Disabled : Disables VT-d function</b>
DVMT Pre-Allocated	Use DVMT Pre-Allocated to set the amount of system memory which is installed to the integrated graphics processor <b>Option items : 32M , 64M(Default setting) , 128M , 256M</b>
HD Audio	Enable/Disable onboard audio controller <b>Enable : Enables onboard audio controller (Default setting)</b> <b>Disable : Disables onboard audio controller</b>
Onboard LAN1 Onboard LAN2	Enable/Disable onboard LAN controller <b>Enable : Enables onboard LAN controller (Default setting)</b> <b>Disable : Disables onboard LAN controller</b>
Restore AC Power Loss	To set which option the system should returns if a sudden power loss occurred <b>Power off : Do not power on when the power is back (Default setting)</b> <b>Power on : System power on when the power is back</b> <b>Last state : Restore the system to the state before power loss occurs</b>
Watchdog Timer	Enable/Disable Watchdog Timer function <b>Enabled : Enables Watchdog Timer function</b> <b>Disabled : Disabled Watchdog Timer function (Default setting)</b>
XHCI Hand-off	Enable/Disable XHCI Hand-off function <b>Enabled : Enables XHCI Hand-off function (Default setting)</b> <b>Disabled : Disables XHCI Hand-off function</b>
BIOS Lock	Enable/Disable BIOS Lock function <b>Enabled : Enables BIOS Lock function (Default setting)</b> <b>Disabled : Disabled BIOS Lock function</b>

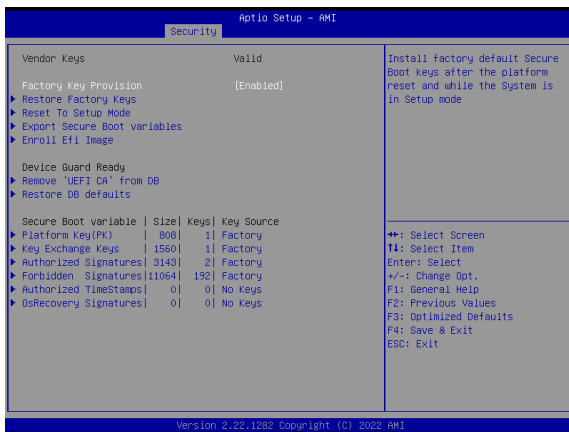
## 4.5 Security



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



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



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

Item	Description
<b>Platform Key (PK)</b>	These items allows you to enroll factory defaults or load Certificates from a file.
<b>Key Exchange Keys</b>	
<b>Authorized Signatures</b>	
<b>Forbidden Signatures</b>	
<b>Authorized TimeStamps</b>	
<b>OsRecovery Signatures</b>	

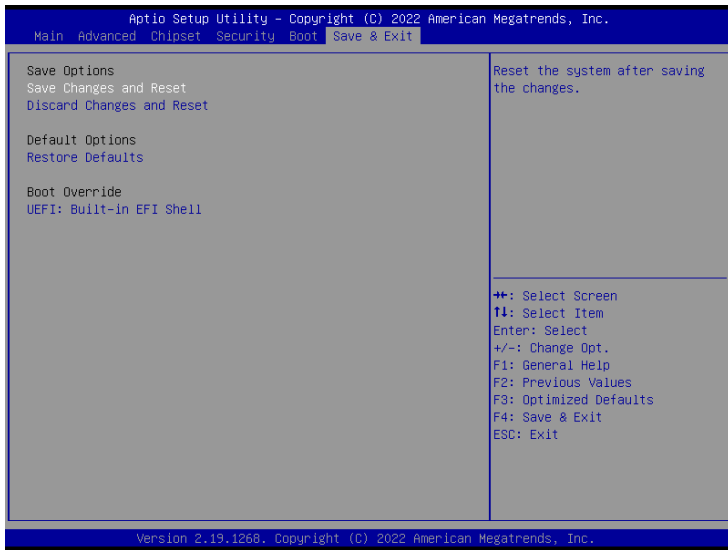
## 4.6 Boot

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



Item	Description
<b>Full Screen LOGO Show</b>	Enable/Disable full screen LOGO show on POST screen <b>Enabled : Enables Full screen LOGO Show on POST screen</b> <b>Disabled : Disables Full screen LOGO Show on POST screen (Default setting)</b>
<b>Boot Option #1</b> <b>Boot Option #2</b>	Shows the information of the storage that be installed in the system <b>Choose/set the boot priority</b>

## 4.7 Save & Exit



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