GIGAIPC

# iTXL-6412A
# iTXL-6210A

Thin Mini-ITX Motherboard
User's Manual 1st Ed

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## Packing List

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

| Item | Quantity |
|---|---|
| iTXL-6412A or iTXL-6210A MB | 1 |
| SATA power cable | 1 |
| Low-Profile I/O Shield | 1 |
| Standard IO Shield | 1 |

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

## About this Document

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

Users may refer to the GIGAIPC.com for the latest version of this document.

## Safety Precautions

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

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

13. Watch out for high temperatures when the system is running.

14. Do not touch the heat sink or heat spreader when the system is running

15. Never pour any liquid into the openings. This could cause fire or electric shock.

16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.

17. If any of the following situations arises, please the contact our service personnel:
    i. Damaged power cord or plug
    ii. Liquid intrusion to the device
    iii. Exposure to moisture
    iv. Device is not working as expected or in a manner as described in this manual
    v. The device is dropped or damaged
    vi. Any obvious signs of damage displayed on the device

18. **DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.**

## FCC Statement




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

***Caution:***

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

***Attention:***

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

## China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量
GIGAIPC Main Board/ Daughter Board/ Backplane

| 部件名称 | 有毒有害物质或元素 | | | | | |
|---|---|---|---|---|---|---|
| | 铅 (Pb) | 汞 (Hg) | 镉 (Cd) | 六价铬 (Cr(VI)) | 多溴联苯 (PBB) | 多溴二苯醚 (PBDE) |
| 印刷电路板及其电子组件 | ○ | ○ | ○ | ○ | ○ | ○ |
| 外部信号连接器及线材 | ○ | ○ | ○ | ○ | ○ | ○ |

O : 表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T 11363-2006 标准规定的限量要求以下。
X:表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T 11363-2006 标准规定的限量要求。
备注 : 此产品所标示之环保使用期限，系指在一般正常使用状况下。

## China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products
GIGAIPC Main Board/ Daughter Board/ Backplane

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

O : The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.
X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.
Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

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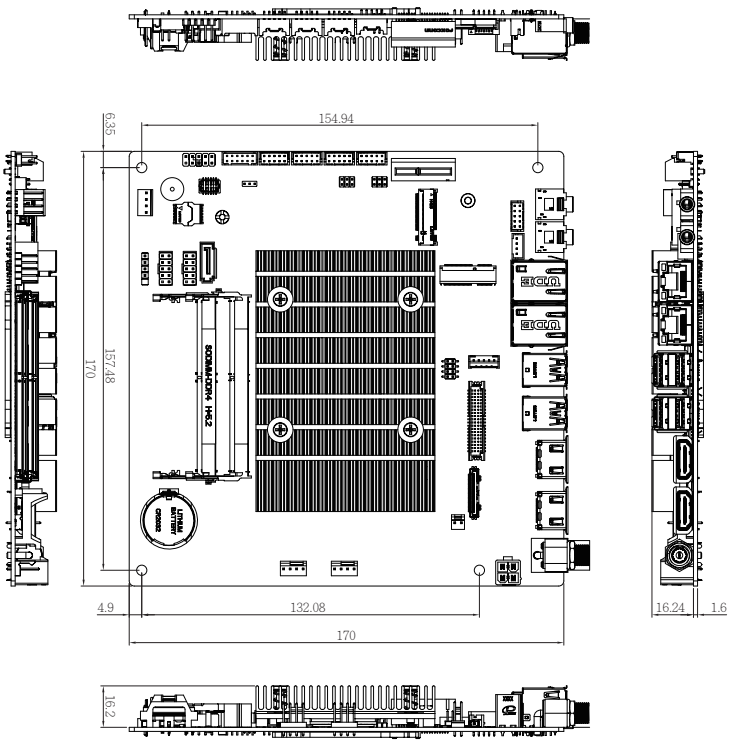
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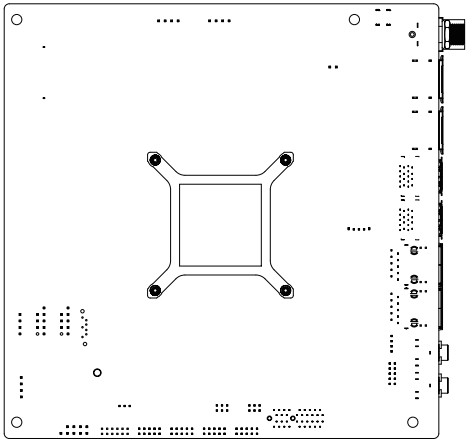
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# Chapter 1

Chapter 1 - Product Specifications


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## 1.1 Specifications

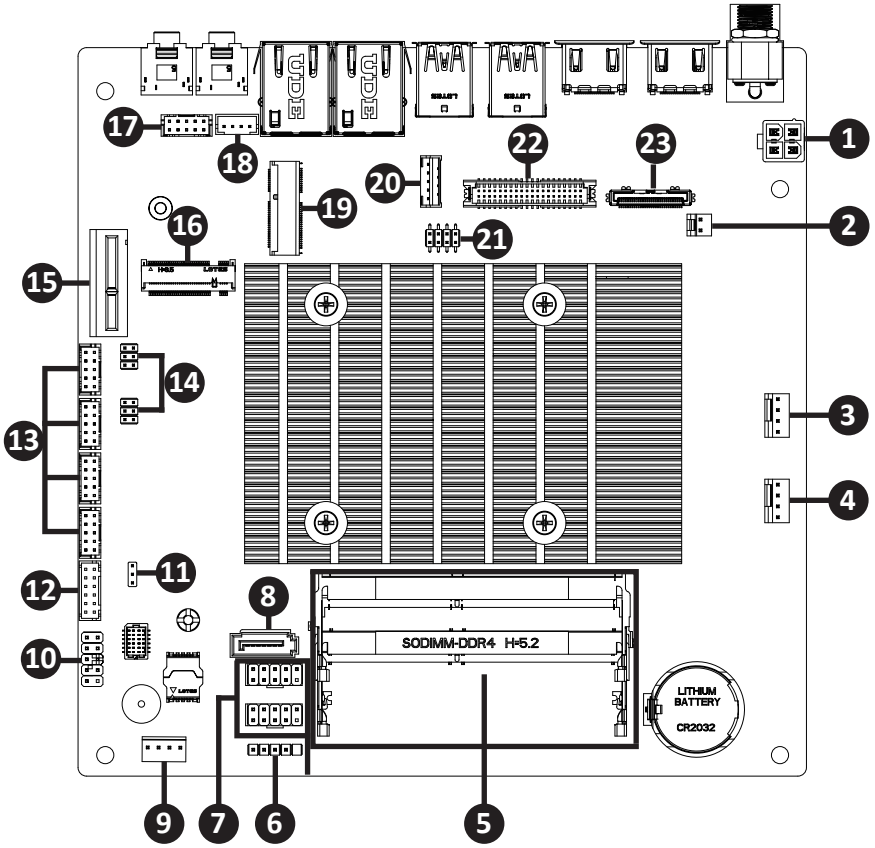
| Motherboard | iTXL-6412A (MEHLJAT) | iTXL-6210A (MEHLNAT) |
|---|---|---|
| Form Factor | Thin Mini-ITX<br>170W x 170D (mm) | |
| CPU | Intel® Celeron® J6412 Processor<br>10nm, 4 cores, 4 threads,<br>up to 2.60 GHz<br>TDP 10W | Intel® Celeron® N6210 Processor<br>10nm, 2 cores, 2 threads,<br>up to 2.60 GHz<br>TDP 6.5W |
| Socket | 1 x FCBGA1493 | |
| Chipset | — | |
| Memory | 2 x DDR4 SO-DIMM sockets, Max. Capacity 32 GB<br>Support Dual channel DDR4 3200 MHz memory modules | |
| Ethernet | 2 x GbE LAN Ports | |
| Video | Integrated Graphics Processor -<br>Intel® UHD Graphics for 10th Gen Intel® Processors:<br>2 x HDMI 2.0 port, supporting a maximum resolution of 4096x2160 @60Hz<br>1 x LVDS port, supporting a maximum resolution of 1920x1080 @60Hz<br>1 x eDP port, supporting a maximum resolution of 4096x2160 @60Hz<br>* eDP connector is alternative with LVDS port, only one can be worked at the same time<br><br>(3 independent display outputs) | |
| Audio | Realtek® ALC897 | |
| Storage | 1 x SATA 6Gb/s port | |
| Raid | — | |
| Expansion Slots | 1 x PCIe x1 (Gen3 x1)<br>1 x 2280 M.2 M-Key (PCIe x2, SATA 6Gb/s)<br>1 x 2230 M.2 E-Key (PCIe x1, USB 2.0) | |

| Motherboard | iTXL-6412A (MEHLJAT) | iTXL-6210A (MEHLNAT) |
|---|---|---|
| Internal I/O | 1 x 4-pin ATX main power connector<br>1 x SATA Power connector<br>1 x CPU fan header<br>1 x System fan header<br>1 x Front panel header<br>1 x Front panel audio header<br>1 x 2W Speaker out header<br>5 x USB 2.0 headers<br>1 x Buzzer<br>1 x COM header (RS-232/422/485 & RI/5V/12V)<br>1 x COM header (RS-232 & RI/5V/12V)<br>2 x COM headers (RS-232)<br>1 x GPIO (8 bits) & SMBus header<br>1 x Backlight Control header<br>1 x AT/ATX mode select jumper<br>1 x ATX control header | | |
| Rear I/O | 2 x Audio Jacks (Line out, Mic in)<br>2 x HDMI<br>2 x RJ45 LAN Ports<br>3 x USB 3.2 Gen 1<br>1 x USB 2.0<br>1 x DC Jack (+12V/19~24VDC) | | |
| TPM | – | | |
| OS Compatibility | Windows 10 (x64) | | |
| Operating Properties | Operating temperature: 0°C to 60°C<br>Operating humidity: 0-90% (non-condensing)<br>Non-operating temperature: -40°C to 85°C<br>Non-operating humidity: 0%-95% (non-condensing) | | |

# Chapter 2

Chapter 2 – Hardware Information

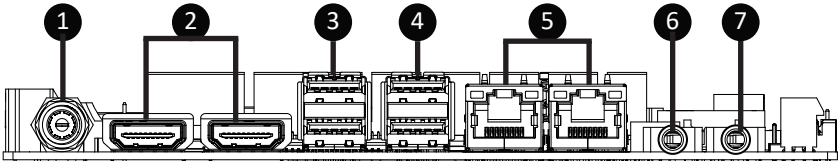
## 2.1 Jumpers and Connectors



| No | Code | Description |
|---|---|---|
| 1 | DC_IN2 | ATX 2x2 pin power connector |
| 2 | ATX_CTL | ATX control header |
| 3 | CPU_FAN | CPU fan connector |
| 4 | SYS_FAN | System fan connector |
| 5 | SODIMMA<br>SODIMMB | DDR4 SO-DIMM Slot |
| 6 | F_USB2_3 | USB 2.0 header |
| 7 | F_USB2_1<br>F_USB2_2 | USB 2.0 headers |
| 8 | SATA0 | SATA 6Gb/s connector |
| 9 | SATAPWR | SATA power connector |
| 10 | SYS_PANEL | Front panel header |
| 11 | AT_CN | AT/ATX mode select jumper |
| 12 | GPIO_CNT | General purpose input / output header |
| 13 | COM1,COM2<br>COM3,COM4 | Serial port header<br>COM1 : RS-232/422/485 & RI/5V/12V<br>COM2 : RS-232 & RI/5V/12V<br>COM3, COM4 : RS-232 |
| 14 | JCOM1<br>JCOM2 | RI# pin RI#/5V/12V Select jumper for COM1 & COM2 Port |
| 15 | PCIEX1 | PCIe x1 (Gen3 x1) Slot |
| 16 | M2M | M.2 Slot, 2280 M-Key |
| 17 | FP_AUDIO | Front panel audio connector |
| 18 | SPKR | Speaker out connector |
| 19 | M2E | M.2 Slot, 2230 E-Key |
| 20 | BKL_CN | Backlight Control header |
| 21 | LSW | LVDS resolution jumper |

| No | Code | Description |
|---|---|---|
| 22 | LVDS | LVDS connector |
| 23 | EDP | Embedded Display Port connector |

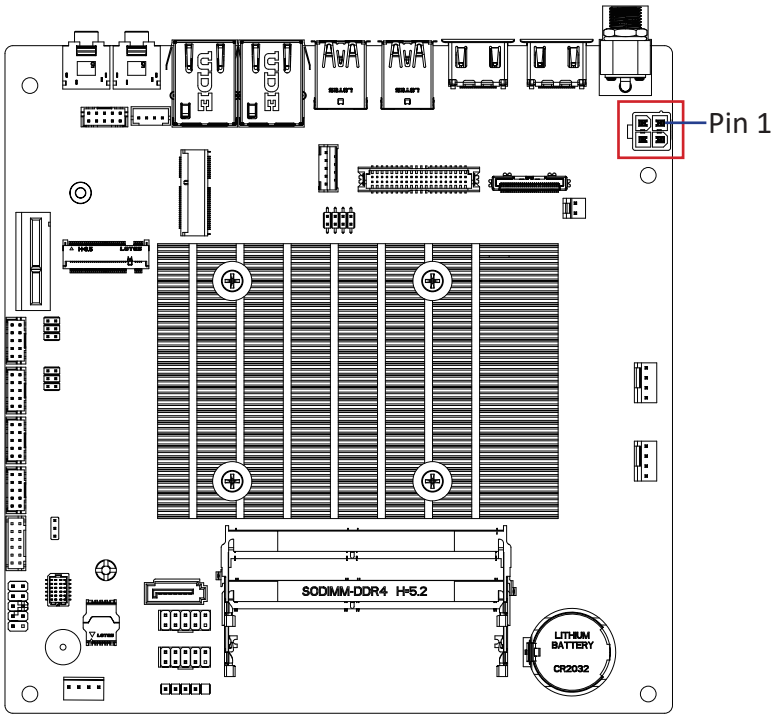
### 2.1.1 Rear I/O Connector

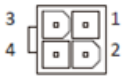



| No | Code | Description |
|---|---|---|
| 1 | DC_IN1 | DC IN (+12V/19~24VDC) |
| 2 | HDMI1<br>HDMI2 | HDMI |
| 3 | USB31_1 | USB 3.2 Gen 1 |
| 4 | USB31_2 | USB 2.0 (top)<br>USB 3.2 Gen 1 (bottom) |
| 5 | LAN1<br>LAN2 | RJ45 LAN Ports |
| 6 | HP_OUT | Audio jack (Line out) |
| 7 | MIC_IN | Audio jack (MIC in) |

## 2.2.1 DC_IN2 (ATX 2x2 pin power connector)

1




| Power Connector |
|---|
|  |



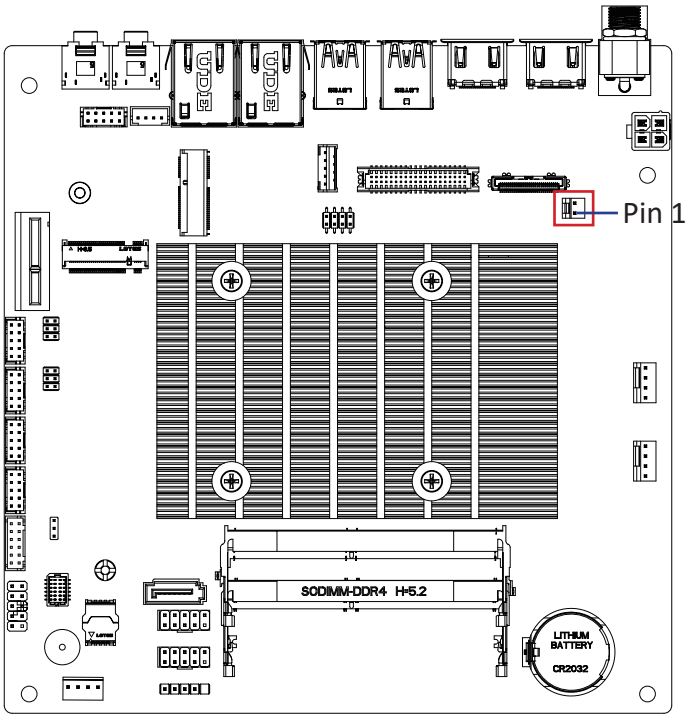
| Pin No. | Definition |
|---|---|
| 1 | GND |
| 2 | GND |
| 3 | DC IN |
| 4 | DC IN |

| Connector PN | Vendor |
|---|---|
| 740-81-04TW56 | PINREX |

**NOTE : if having special/additional request to use ATX Power supply to boot up the system :**
a). please plug in +12V/19~24V adapter to boot up. Enter into BIOS mode, choose “chipset” menu, and select “ATX control” item to be enabled (refer P.66), shut down the system after save the changes.
b). Connect ATX Control cable (1x2pin ATX Control + 2x2pin power cable, PN : 25CRI-200004-S9R) with ATX Power supply to boot up the system.
※ **For ATX Control cable information, please contact with your sales representative.**

## 2.2.2 ATX_CTL (ATX control header)

❷



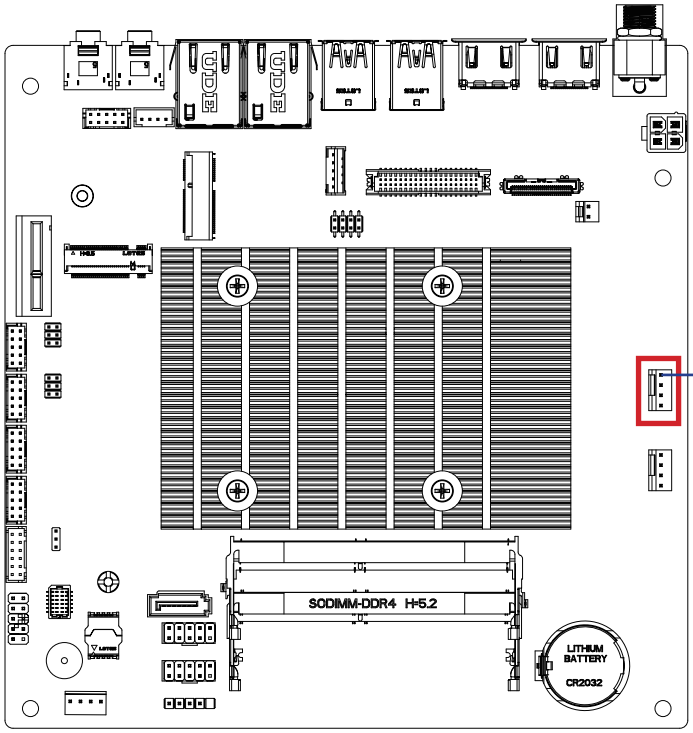

| ATX control header |
|---|
| 2<br>1 |

| Connector PN | Vendor |
|---|---|
| 744-81-02TW10 | PINREX |

| Pin No. | Definition |
|---|---|
| 1 | PS_ON# |
| 2 | 5V |

## 2.2.3 CPU_FAN (CPU fan connector)

3



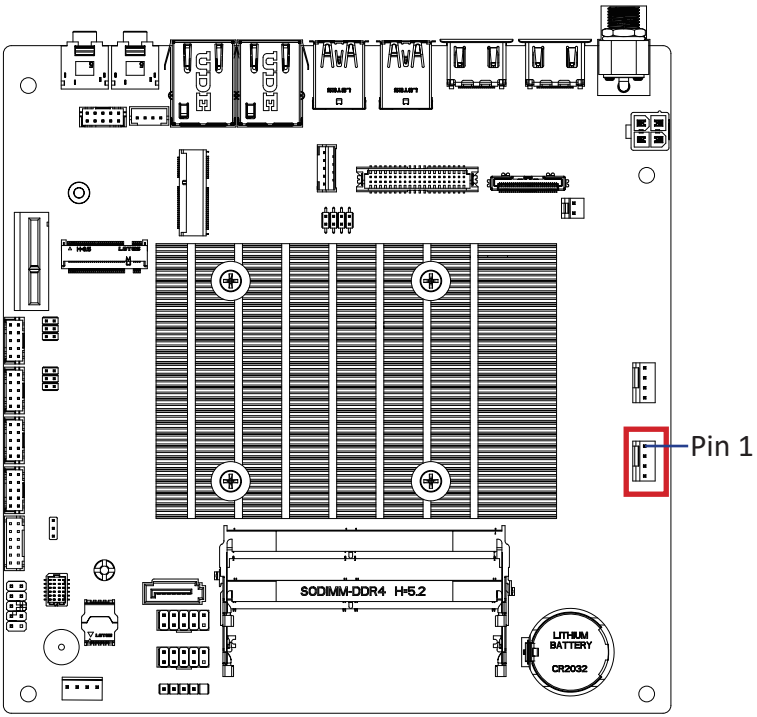

| CPU FAN connector |
|---|
| 1  4 |

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

| Connector PN | Vendor |
|---|---|
| 744-81-045W11 | PINREX |
| WF04R22WJQ195 | HORNGTONG |

## 2.2.4 SYS_FAN (System fan connector)

4



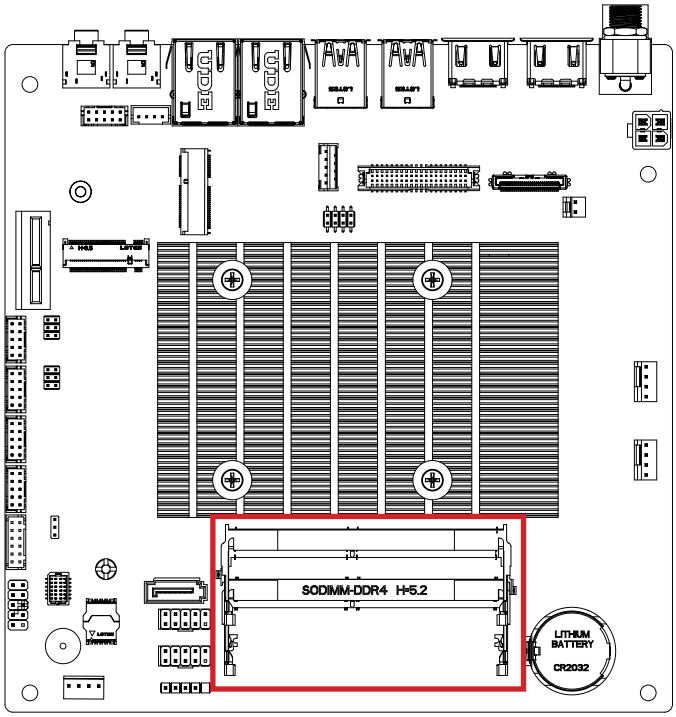

| System FAN connector |
|---|
| 1 |
|  |
| 4 |

| Connector PN | Vendor |
|---|---|
| 744-81-045W11 | PINREX |
| WF04R22WJQ195 | HORNGTONG |

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

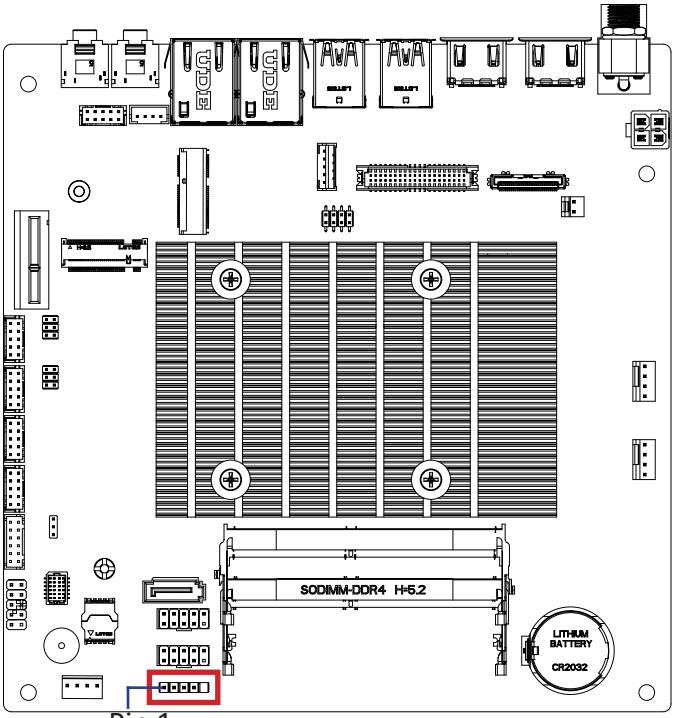
## 2.2.5 SODIMMA, SODIMMB (DDR4 SO-DIMM Slot)

5



## 2.2.6 F_USB2_3 (USB 2.0 header)

6



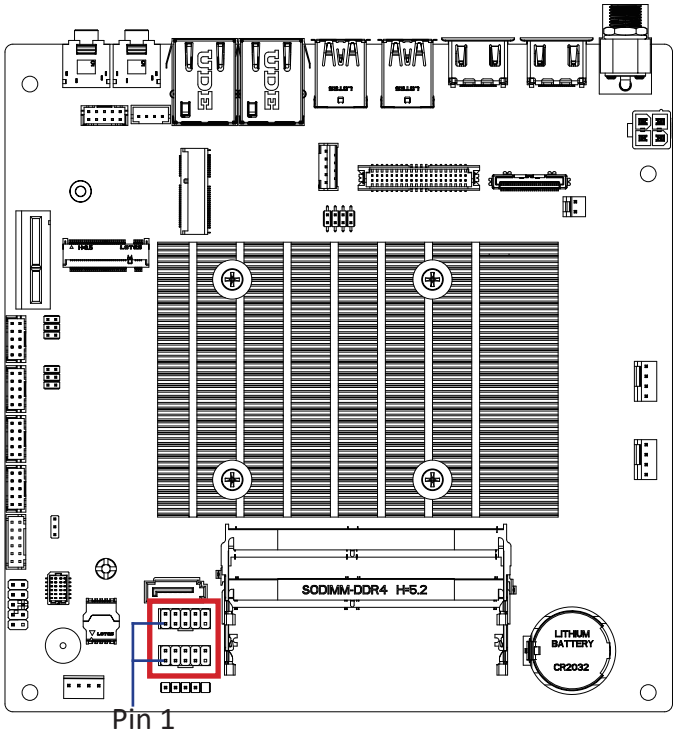

| USB 2.0 header |
|---|
| 1 |

| Pin No. | Definition |
|---|---|
| 1 | 5V |
| 2 | Dn |
| 3 | Dp |
| 4 | GND |
| 5 | NC |

| Connector PN | Vendor |
|---|---|
| 210-92-05GB02 | PINREX |
| PH05R23BAZ005 | HORNGTONG |

## 2.2.7 F_USB2_1, F_USB2_2 (USB 2.0 headers)

7

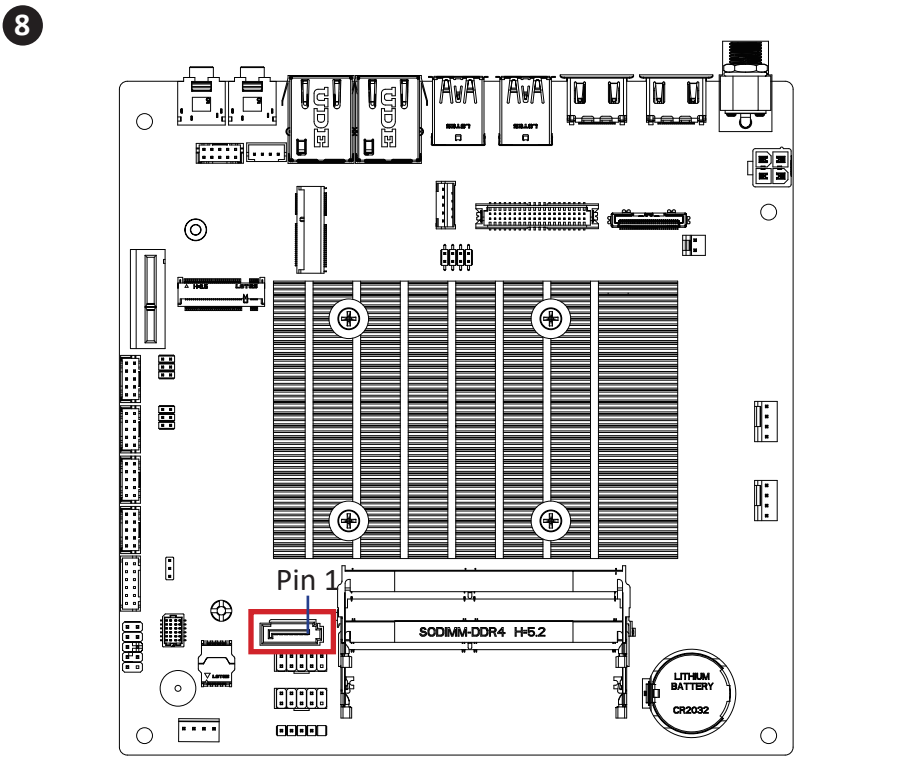



| USB 2.0 header |
|---|
| 2 1 10 9 |

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

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

## 2.2.8 SATA0 (SATA 6Gb/s connector)



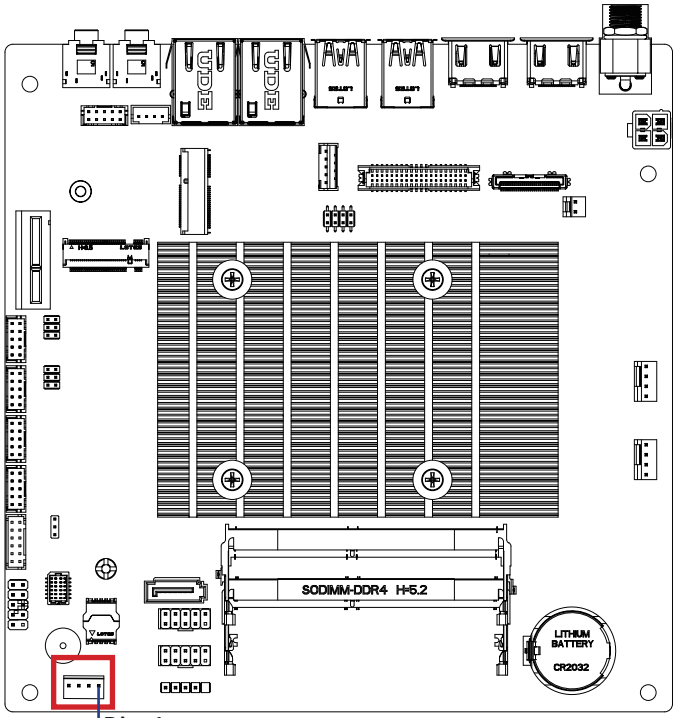

| SATA connector |
|---|
| 7  1 |

| Connector PN | Vendor |
|---|---|
| WAT3M-07A1G3BU4W | WINWIN |
| ABA-SAT-054-S15 | LOTES |

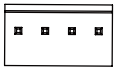
| Pin No. | Definition |
|---|---|
| 1 | GND |
| 2 | TXp |
| 3 | TXn |
| 4 | GND |
| 5 | RXn |
| 6 | RXp |
| 7 | GND |

## 2.2.9 SATAPWR (SATA power connector)

9



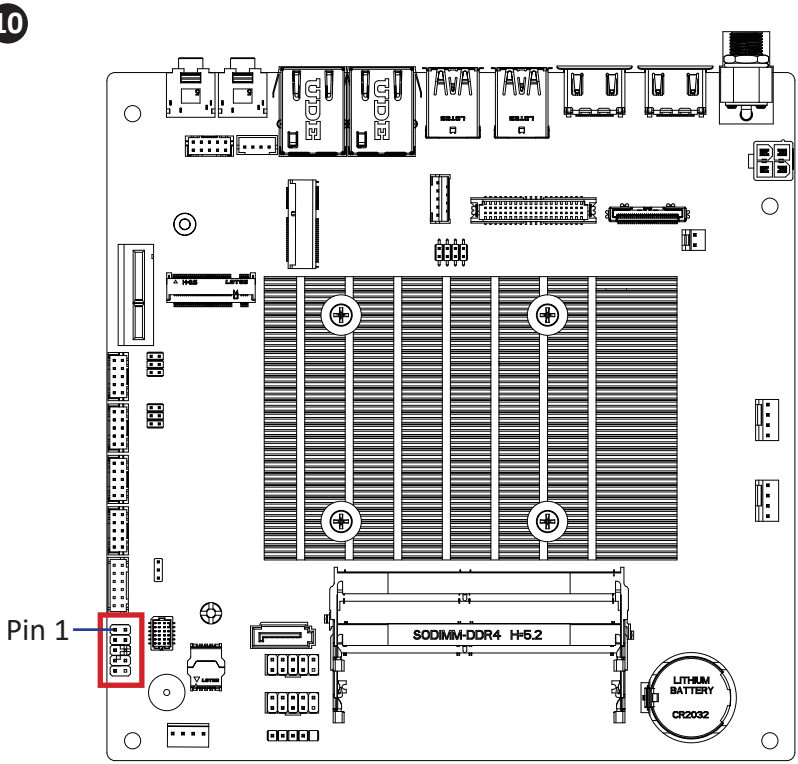

Pin 1

| Hard Disk Power Connector |
|---|
| 4  1 |

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

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

## 2.2.10 SYS_PANEL (Front panel header)



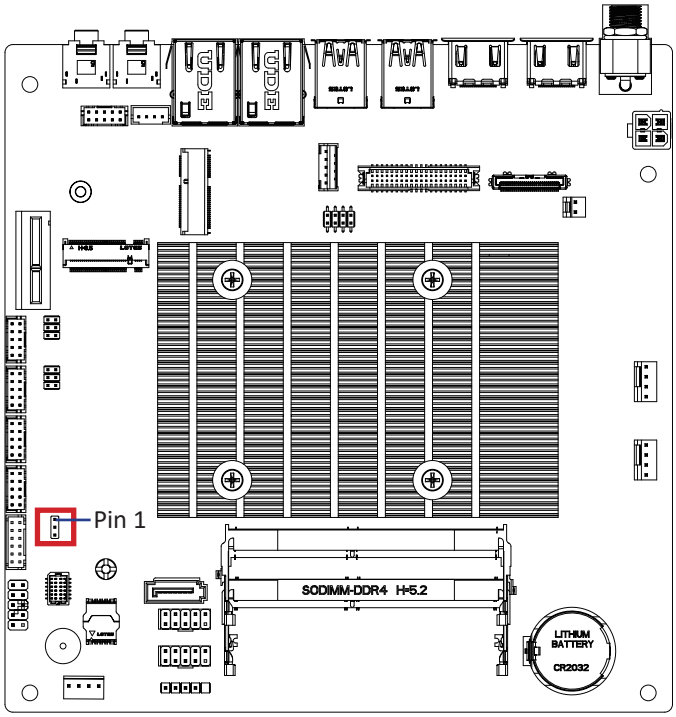

| System Panel Header |
|---|
| 1 2<br>9 10 |

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

| Connector PN | Vendor |
|---|---|
| 210-92-05GW5W | PINREX |

## 2.2.11 AT_CN (AT/ATX mode select jumper)

11



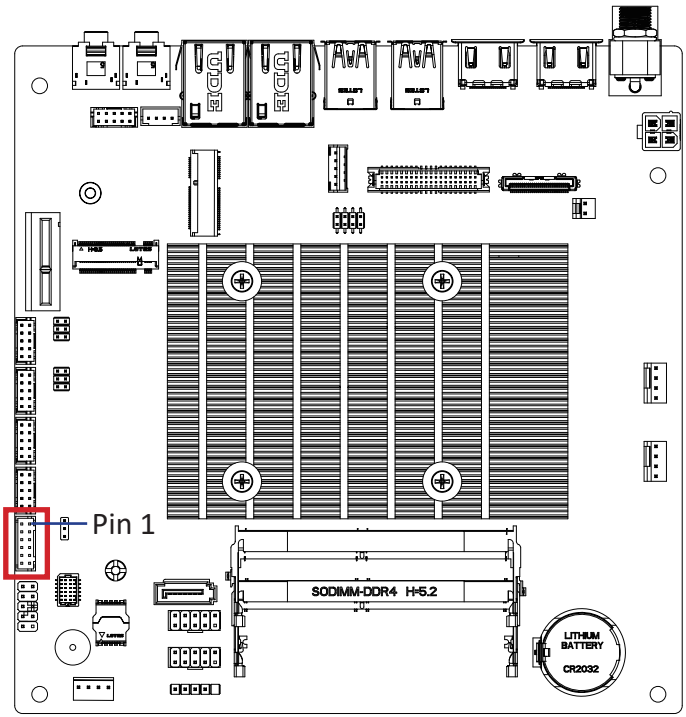

| AT/ATX mode select jumper |
|---|
| 1 |

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

| Pin No. | Definition |
|---|---|
| 1 | AT MODE |
| 2 | Detect |
| 3 | ATX MODE |
| Jumper setting<br>1-2 Close : AT mode.<br>2-3 Close : ATX mode.(Default setting) | |

## 2.2.12 GPIO_CNT (General Purpose input/output header)

12




| GPIO Connector |
|---|
| 2 1<br>12 11 |

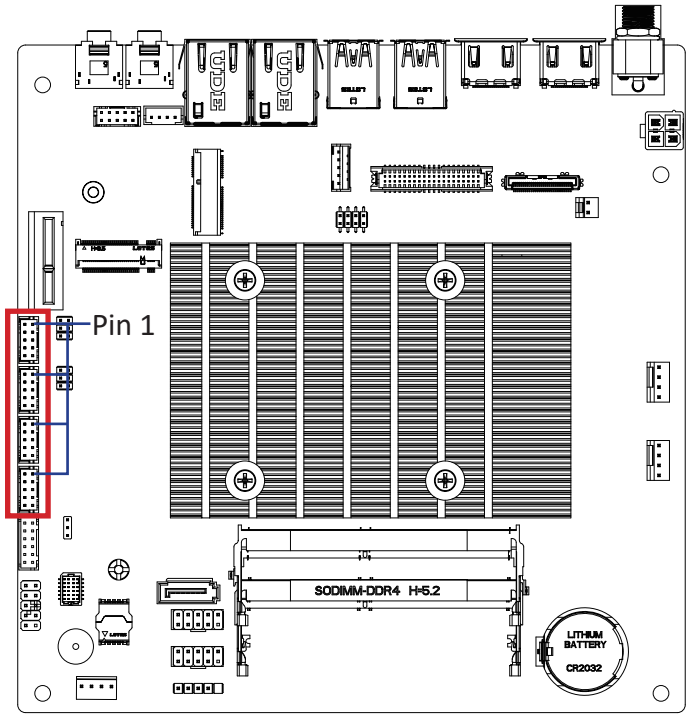
| Pin No. | Definition |
|---|---|
| 1 | GPIO-output_1 |
| 2 | GPIO-input_1 |
| 3 | GPIO-output_2 |
| 4 | GPIO-input_2 |
| 5 | GPIO-output_3 |
| 6 | GPIO-input_3 |
| 7 | GPIO-output_4 |
| 8 | GPIO-input_4 |
| 9 | SMBus Clock |

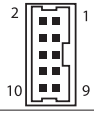
| Pin No. | Definition |
|---|---|
| 10 | SMBus DATA |
| 11 | 5V |
| 12 | GND |

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

## 2.2.13 COM1, COM2, COM3, COM4 (Serial port)

13




| Serial Port Cable Connector |
|---|
|  |



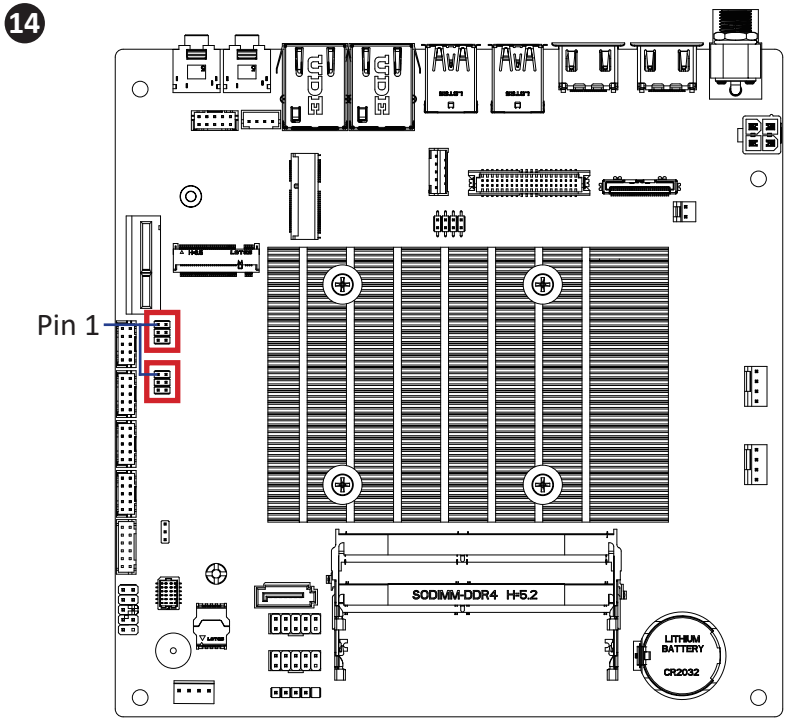
| Pin No. | RS-232 | RS-422/485 Full Duplex | RS-485 Half Duplex |
|---|---|---|---|
| 1 | RXD | TXD+ | D+ |
| 2 | DCD | TXD- | D- |
| 3 | DTR | RXD- | – |
| 4 | TXD | RXD+ | – |
| 5 | DSR | – | – |
| 6 | GND | – | – |
| 7 | CTS | – | – |
| 8 | RTS | – | – |
| 9 | No Connect | – | – |
| 10 | RI/5V/12V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

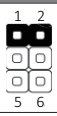
| Connector PN | Vendor |
|---|---|
| 725-81-10TW00 | PINREX |
| A2004WV-2X05P46 | JOINT-TECH |

**Note :**

COM1 : Support RS-232/422/485 & RI/5V/12V
COM2 : Support RS-232 & RI/5V/12V
For RI/5V/12V jumper setting, please see **P. 35**
COM3, COM4 : Support RS-232 only

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

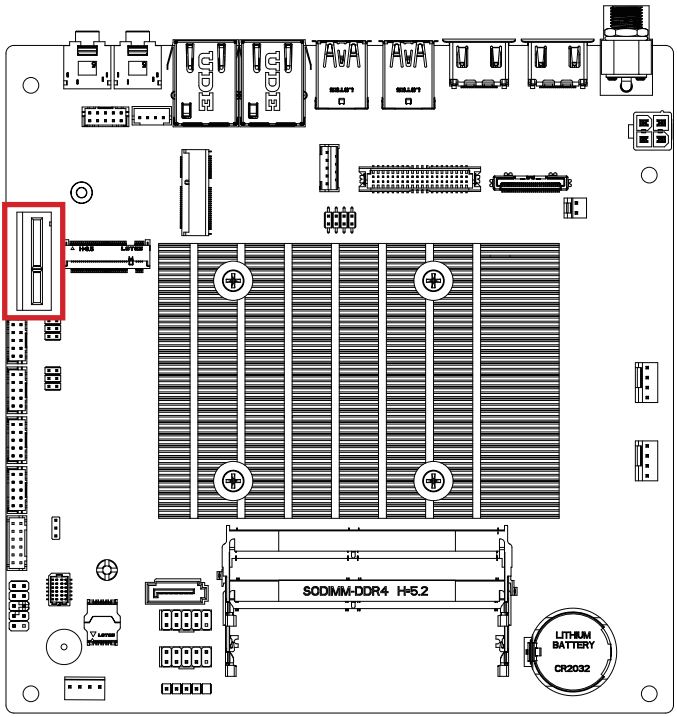



| JCOM1, JCOM2 Jumper | |
|---|---|
|  | 1-2 Close:<br>5V (Power COM) |
|  | 3-4 Close:<br>RI (Stand COM) |
|  | 5-6 Close:<br>12V (Power COM) |

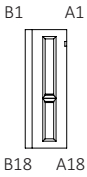
| Connector PN | Vendor |
|---|---|
| 220-97-03GB01 | PINREX |
| PH06N53BAZ000 | HORNGTONG |

## 2.2.15 PCIEX1 (PCIe x1 (Gen3 x1) slot)

15

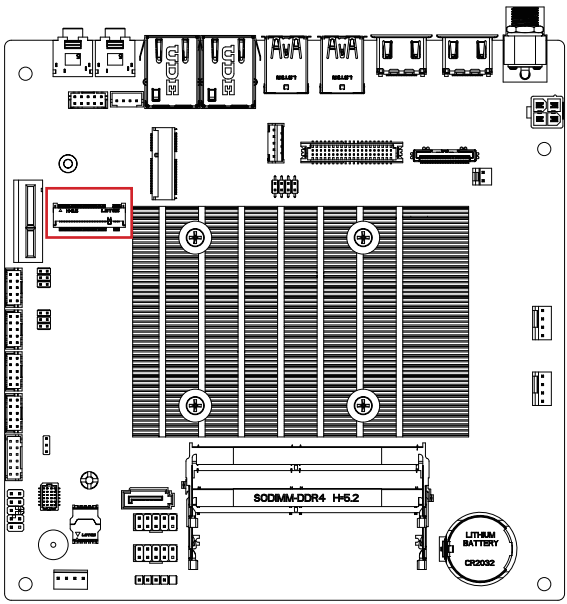



**PCIEX1 connector**



## 2.2.16 M2M (M.2 Slot, 2280 M-Key)

16




| M.2 M Key Connector | |
|---|---|
| 1 | 75 |
| 2 | 74 |

| Pin No. | Definition | Pin No. | Definition |
|---|---|---|---|
| 1 | GND | 2 | 3.3V |
| 3 | GND | 4 | 3.3V |
| 5 | NC | 6 | NC |
| 7 | NC | 8 | NC |
| 9 | GND | 10 | SSD LED |
| 11 | NC | 12 | 3.3V |
| 13 | NC | 14 | 3.3V |
| 15 | GND | 16 | 3.3V |
| 17 | NC | 18 | 3.3V |
| 19 | NC | 20 | NC |
| 21 | GND | 22 | NC |
| 23 | NC | 24 | NC |
| 25 | NC | 26 | NC |
| 27 | GND | 28 | NC |
| 29 | PCIe1 RXn | 30 | NC |
| 31 | PCIe1 RXp | 32 | NC |
| 33 | GND | 34 | NC |
| 35 | PCIe1 TXn | 36 | NC |
| 37 | PCIe1 TXp | 38 | GND |

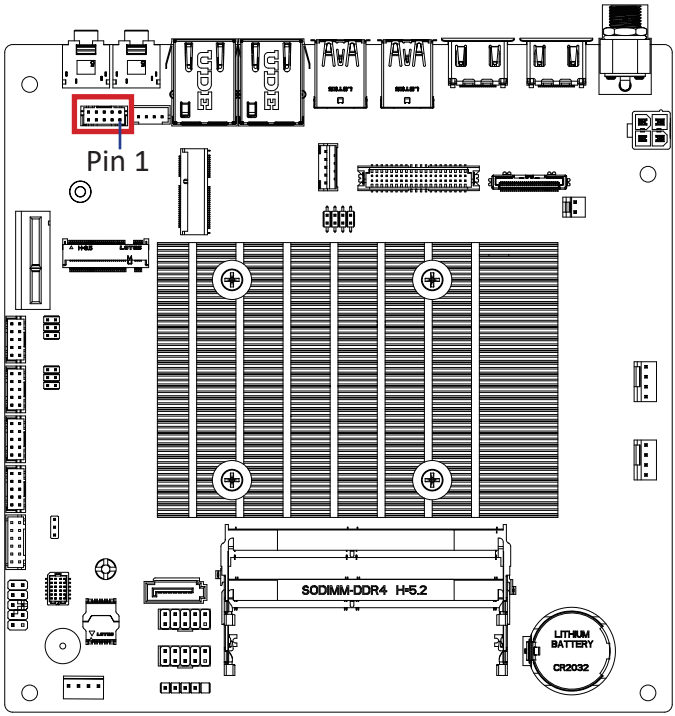
| Pin No. | Definition | Pin No. | Definition |
|---|---|---|---|
| 39 | GND | 40 | NC |
| 41 | PCIe0 RXp/ SATA_p | 42 | NC |
| 43 | PCIe0 Rxn/ SATA_n | 44 | NC |
| 45 | GND | 46 | NC |
| 47 | PCIe0 TXn/ SATA_n | 48 | NC |
| 49 | PCIe0 TXp/ SATA_p | 50 | Reset |
| 51 | GND | 52 | Clock request |
| 53 | Clockn | 54 | NC |
| 55 | Clockp | 56 | NC |
| 57 | GND | 58 | NC |

| Pin No. | Definition | Pin No. | Definition |
|---|---|---|---|
| 67 | NC | 68 | SUSClock |
| 69 | Select | 70 | 3.3V |
| 71 | GND | 72 | 3.3V |
| 73 | GND | 74 | 3.3V |
| 75 | GND | | |

| Connector PN | Vendor |
|---|---|
| 80159-8521 | BELLWETHER |
| 2E0BC21-S85BM-7H | FOXCONN |
| APCI0096-P002A | LOTES |

## 2.2.17 FP_AUDIO (Front panel audio connector)

17



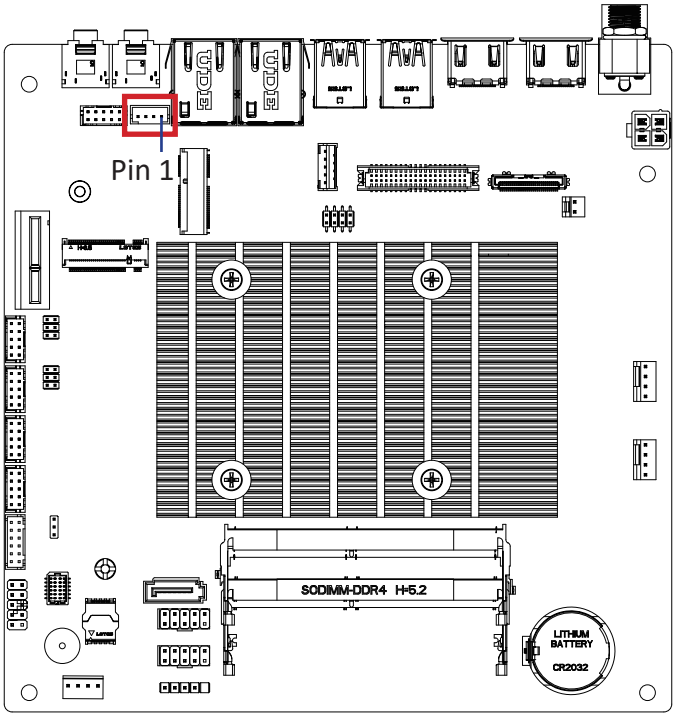

| Front Audio Connector |
|---|
| 10 2<br>9 1 |

| Pin No. | Definition | Pin No. | Definition |
|---|---|---|---|
| 1 | MIC_Left | 6 | GND |
| 2 | GND | 7 | Jacksense Detect |
| 3 | MIC_Right | 8 | No Connect |
| 4 | Detect | 9 | LINE-LEFT |
| 5 | LINE_Right | 10 | GND |

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

## 2.2.18 SPKR (Speaker out connector)

18



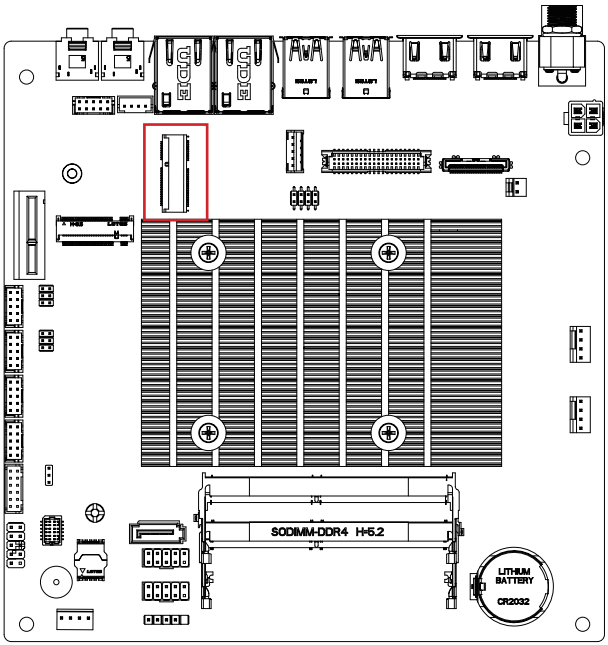

| Audio Amplifie Connector |
|---|
| 4 [connector] 1 |

| 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 |

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

19




### M.2 E Key Connector

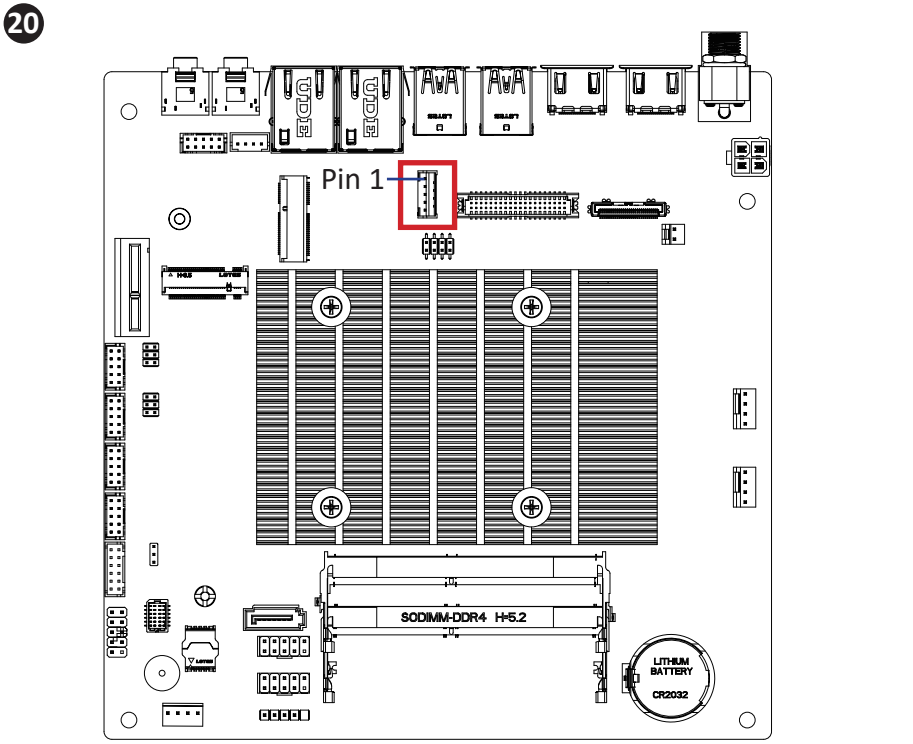



| Pin No. | Definition | Pin No. | Definition |
|---|---|---|---|
| 1 | GND | 2 | 3V |
| 3 | USB_Dp | 4 | 3V |
| 5 | USB_Dn | 6 | NC |
| 7 | GND | 8 | NC |
| 9 | NC | 10 | NC |
| 11 | NC | 12 | NC |
| 13 | GND | 14 | NC |
| 15 | NC | 16 | NC |
| 17 | NC | 18 | GND |
| 19 | GND | 20 | NC |
| 21 | NC | 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 | CLK_Dp | 46 | NC |
| 49 | CLK_Dn | 48 | NC |
| 51 | GND | 50 | SUSCLK |
| 53 | CLK_REQ | 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 | PE Reset |
| 69 | GND | 68 | NC |
| 71 | NC | 70 | NC |
| 73 | NC | 72 | 3V |
| 75 | GND | 74 | 3V |

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

## 2.2.20 BKL_CN (Backlight Control header)



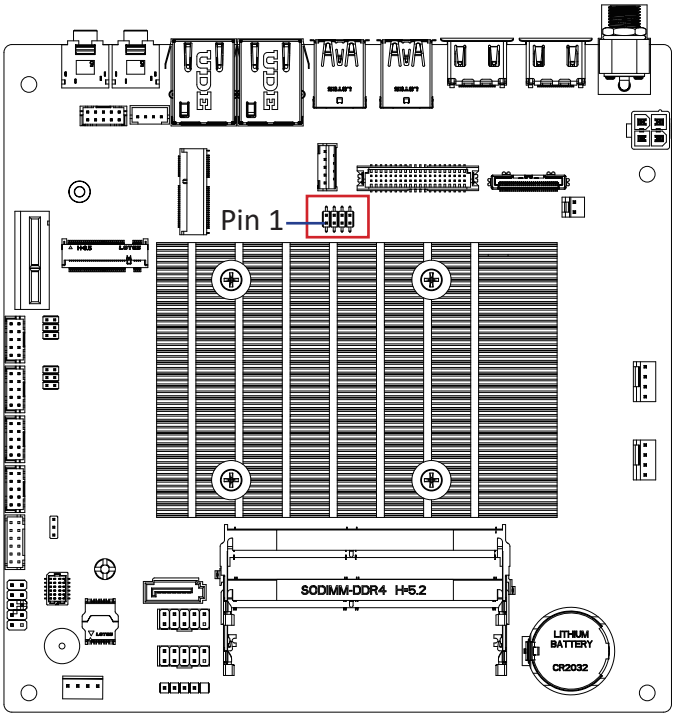

| Backlight control connector |
|---|
| 1  5 |

| Pin No. | Definition |
|---|---|
| 1 | 12V (5V for optional) |
| 2 | PWM |
| 3 | Backlight Enable |
| 4 | GND |
| 5 | 12V |

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

## 2.2.21 LSW (LVDS resolution jumper)

21

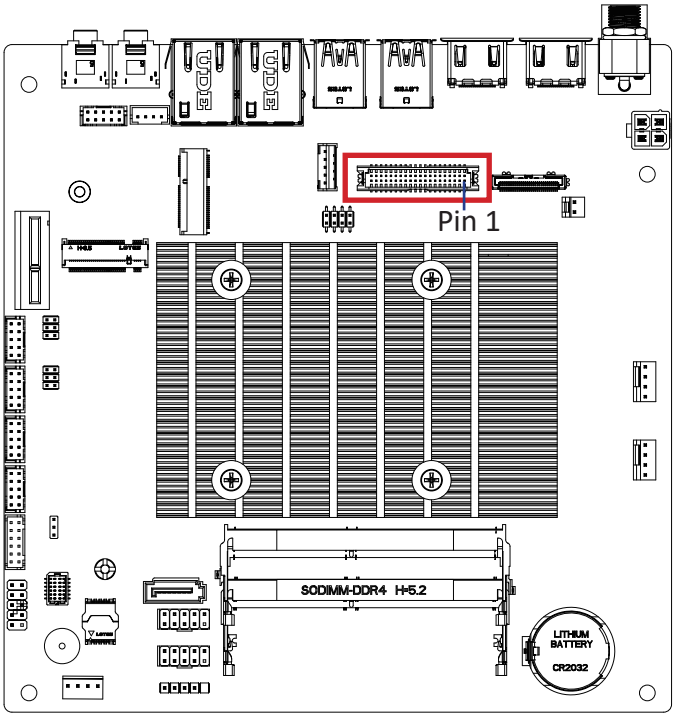



| LVDS Resolution Jumper | | | |
|---|---|---|---|
| Jumper Setting | Resolution | Jumper Setting | Resolution |
|  | 800 x 600 18bit |  | 1366 x 768 24bit |
|  | 1024 x 768 18bit |  | 1440 x 900 24bit |
|  | 1024 x 768 24bit |  | 1400 x 1050 24bit |
|  | 1024 x 600 18bit |  | 1600 x 900 24bit |
|  |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

| Connector PN | Vendor |
|---|---|
| 222-97-04GBE1 | PINREX |

## 2.2.22 LVDS (LVDS connector)

22



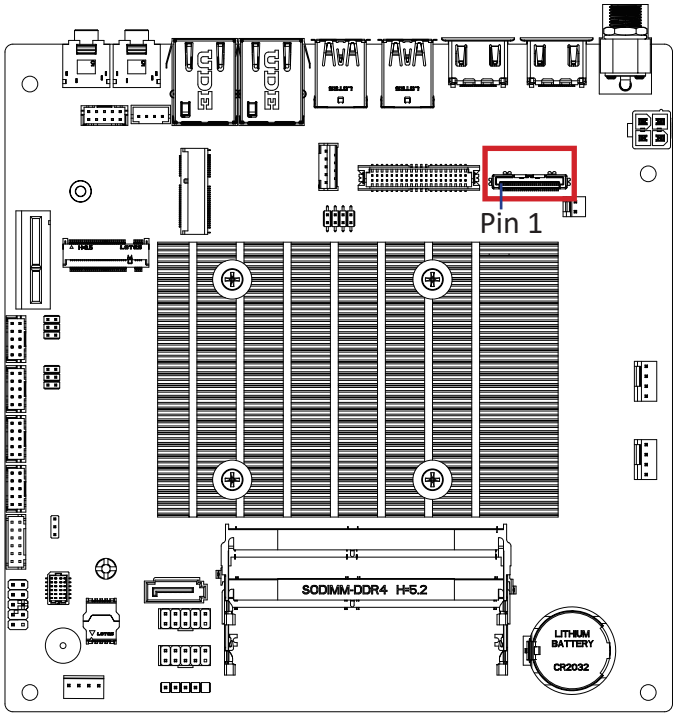

| LVDS Connector |
|---|
| 40 2<br>39 1 |

| 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 |

## 2.2.23 EDP (Embedded Display Port Connector)

23




| Embedded Display Port connector |
|---|
|  |
| 1 30 |

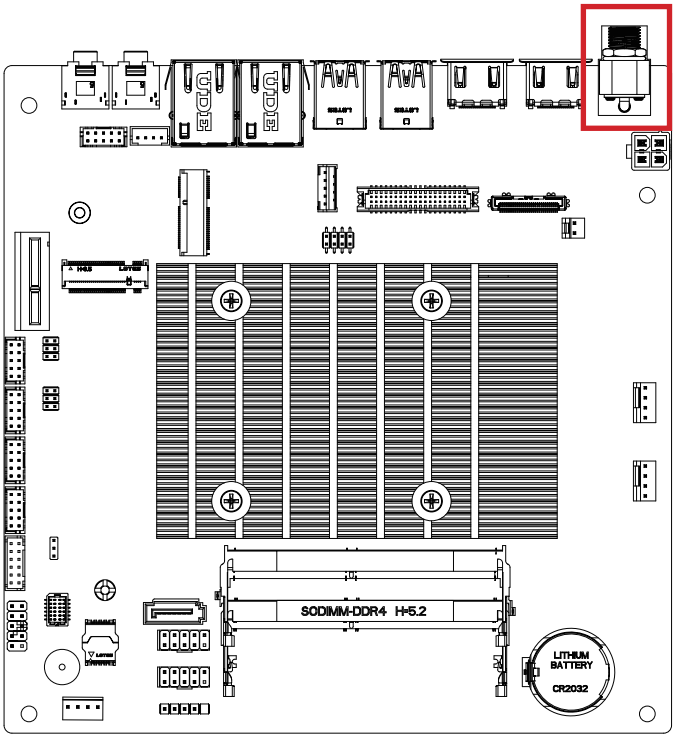
| Pin No. | Definition | Pin No. | Definition |
|---|---|---|---|
| 1 | GND | 16 | eDP SW |
| 2 | TX0N | 17 | Hot Plug Detect |
| 3 | TX0P | 18 | Backlight Enable |
| 4 | GND | 19 | GND |
| 5 | TX1N | 20 | Backlight control |
| 6 | TX1P | 21 | GND |
| 7 | GND | 22 | 3.3V |
| 8 | TX2N | 23 | 3.3V |
| 9 | TX2P | 24 | 3.3V |

| Pin No. | Definition | Pin No. | Definition |
|---|---|---|---|
| 10 | GND | 25 | 3.3V |
| 11 | TX3N | 26 | GND |
| 12 | TX3P | 27 | 5V |
| 13 | GND | 28 | 5V |
| 14 | AUXN | 29 | 5V |
| 15 | AUXP | 30 | 5V |

| Connector PN | Vendor |
|---|---|
| 115B30-000040-G4-R | STARCONN |

## 2.2.24 DC_IN1 (DC IN Jack connector)

24

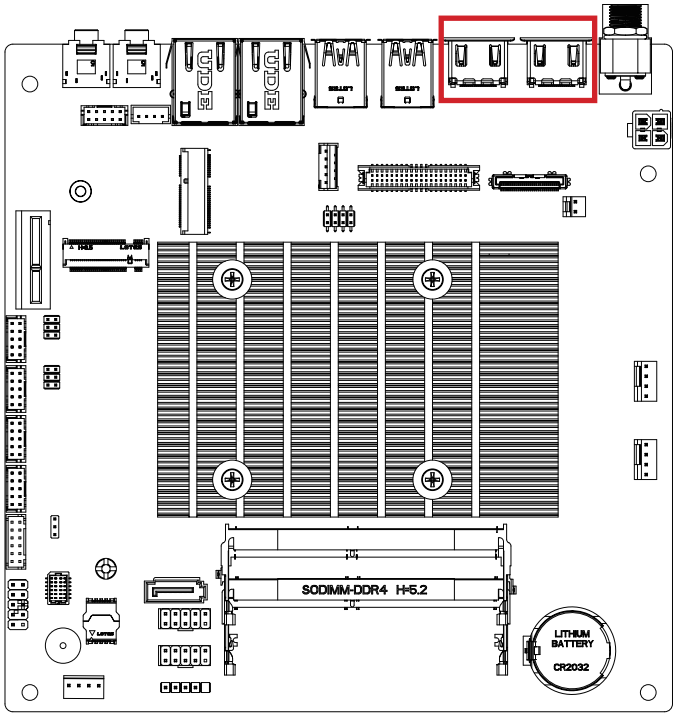


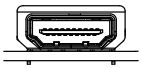

| DC IN Jack Connector |
| --- |
|  |

| Connector PN | Vendor |
| --- | --- |
| 655-360-000 | SHEN-MING |

## 2.2.25 HDMI1, HDMI2 (HDMI connector)

25



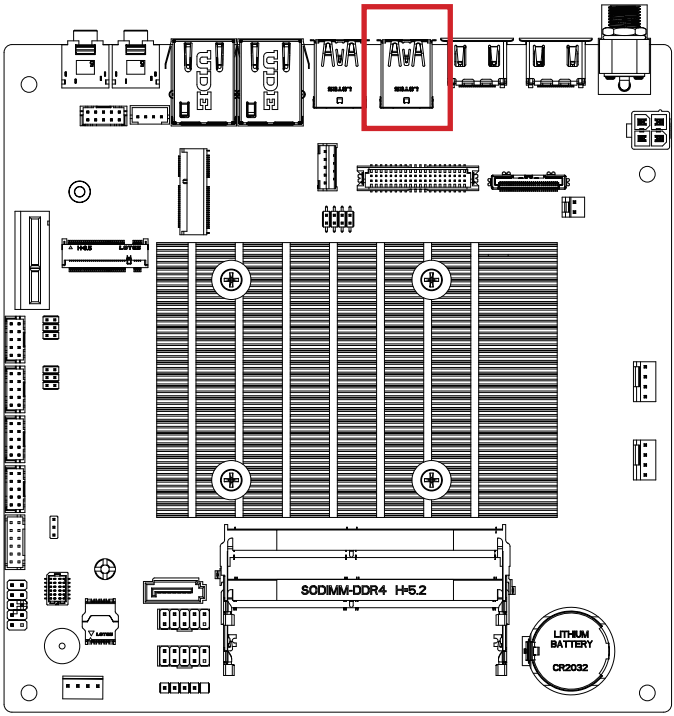

| HDMI connector |
|---|
|  |

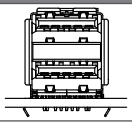
| Pin No. | Definition | Pin No. | Definition |
|---|---|---|---|
| 1 | TX2p | 11 | GND |
| 2 | GND | 12 | CLKn |
| 3 | TX2n | 13 | NC |
| 4 | TX1p | 14 | NC |
| 5 | GND | 15 | SCL |
| 6 | TX1n | 16 | SDA |
| 7 | TX0p | 17 | GND |
| 8 | GND | 18 | 5V |
| 9 | TX0n | 19 | Hot Plug Detect |
| 10 | CLKp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

| Connector PN | Vendor |
|---|---|
| 1165-2CG04-24P | TCONN |

## 2.2.26 USB31_1 (USB 3.2 Gen 1 connector)

26



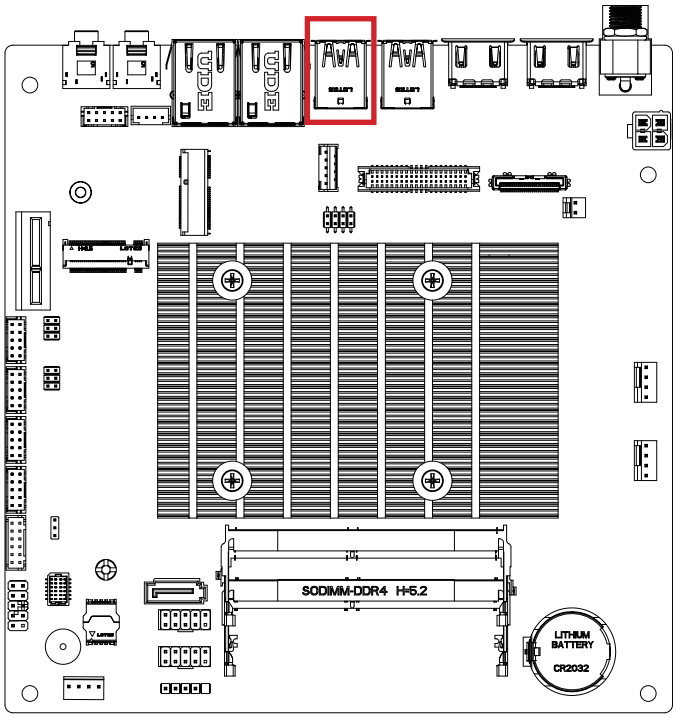

| USB Connector |
|---|
|  |

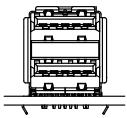
| Pin No. | Definition | Pin No. | Definition |
|---|---|---|---|
| 1 | 5V | 10 | 5V |
| 2 | D1n | 11 | D0n |
| 3 | D1p | 12 | D0p |
| 4 | GND | 13 | GND |
| 5 | USB3_RX1n | 14 | USB3_RX2n |
| 6 | USB3_RX1p | 15 | USB3_RX2p |
| 7 | GND | 16 | GND |
| 8 | USB3_TX1n | 17 | USB3_TX2n |
| 9 | USB3_TX1p |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

| Connector PN | Vendor |
|---|---|
| UEA11121-8FS6-4F | FOXCONN |
| ABA-USB-079-K01 | LOTES |

## 2.2.27 USB31_2 (USB 2.0 (top) + USB 3.2 Gen 1 (bottom) connector)

27



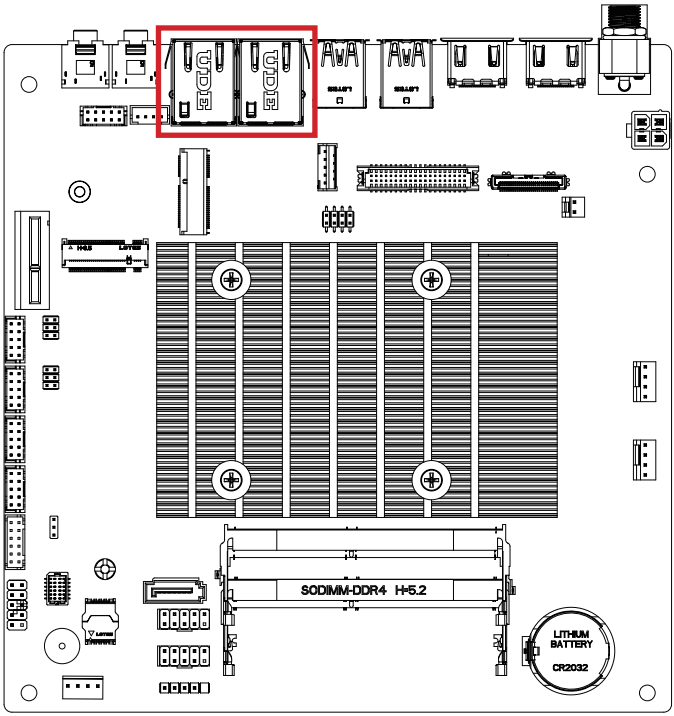

| USB connector |
|---|
|  |

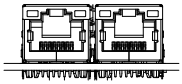
| Connector PN | Vendor |
|---|---|
| UEA11121-UHS6-4F | FOXCONN |

| USB 2.0 Connector | | USB 3.2 Gen 1 Connector | |
|---|---|---|---|
| Pin No. | Definition | Pin No. | Definition |
| 1 | 5V | 1 | 5V |
| 2 | D1n | 2 | D1n |
| 3 | D1p | 3 | D1p |
| 4 | GND | 4 | GND |
| | | 5 | USB3_RX1n |
| | | 6 | USB3_RX1p |
| | | 7 | GND |
| | | 8 | USB3_TX1n |
| | | 9 | USB3_TX1p |

## 2.2.28 LAN1, LAN2 (RJ45 LAN ports)

28




| LAN Connector |
|---|
|  |

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

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

| Connector PN | Vendor |
|---|---|
| RT7-GB-0003 | UDE |

# Chapter 3

Chapter 3 – BIOS

## 3.1 Introduction

BIOS (Basic input/output system) provides hardware detailed information and boot-up options, which include firmware to control, set-up and test all hardware settings. Therefore, BIOS is the communication bridge between OS/application software and hardware.

### 3.1.1 How to Entering into BIOS menu

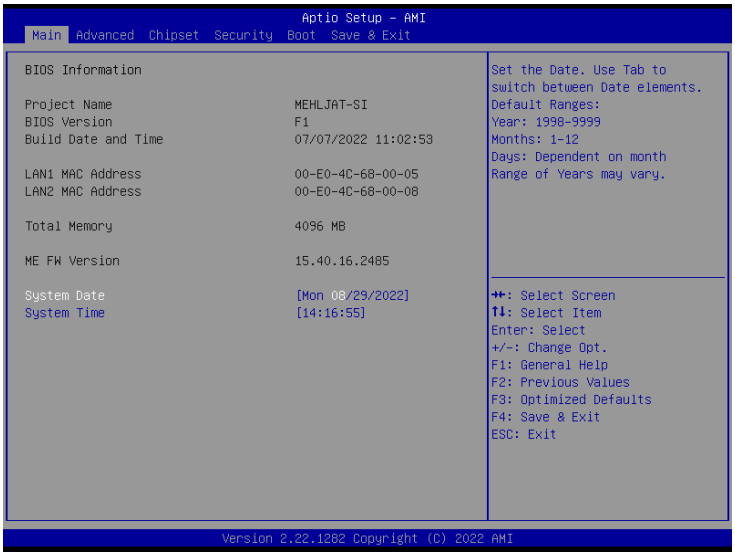
Once the system is power on, press the <DEL> key as soon as possible to access into BIOS Setup program.

### 3.1.2 Function Keys to setup in BIOS Setup program

| Function keys | Description |
|---|---|
| →← | Select Screen |
| ↑↓ | Select Item |
| Enter | Execute command or enter the submenu |
| + | Increase the numeric value or make changes |
| — | Decrease the numeric value or make changes |
| F1 | General Help |
| F2 | Previous Values |
| F3 | Load Optimized Defaults Settings |
| F4 | Save changes & Exit the BIOS Setup program |
| ESC | Exit the BIOS Setup program |

## 3.2 The Main Menu

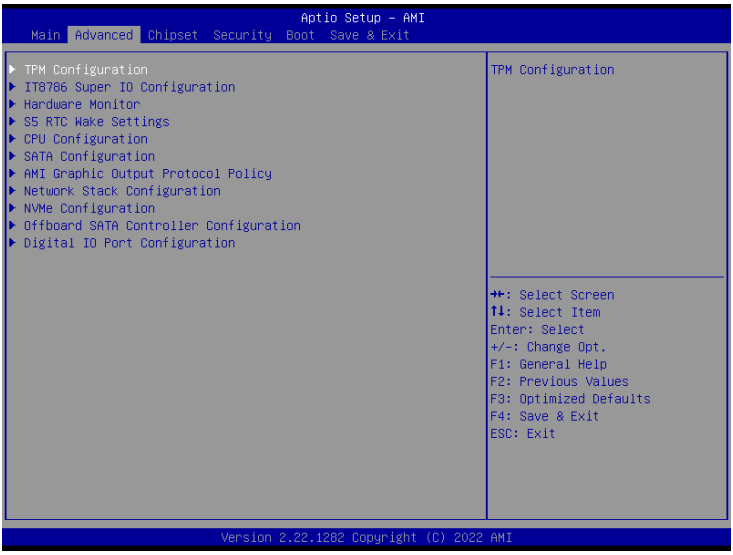
The main menu shows the basic system information.
Use arrow keys to move among the items.




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

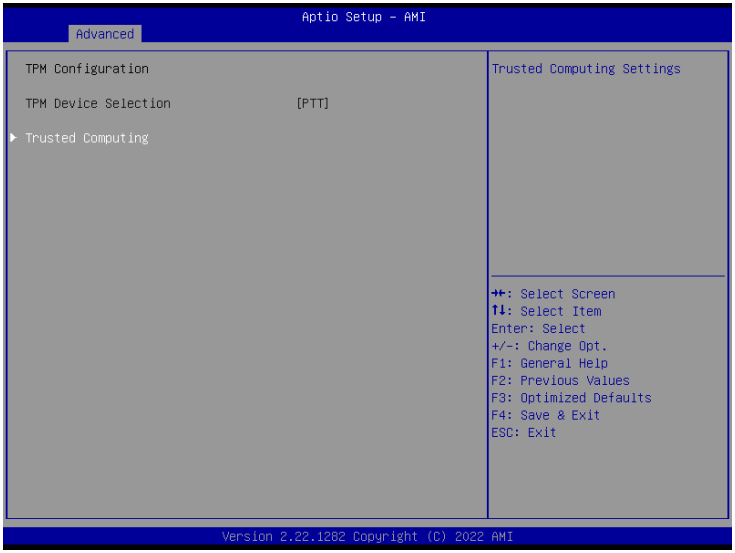
## 3.3 Advanced

The Advanced menu is to configure the functions of hardware settings through submenu. Use arrow keys to move among the items, and press <Enter> to access into the related submenu.



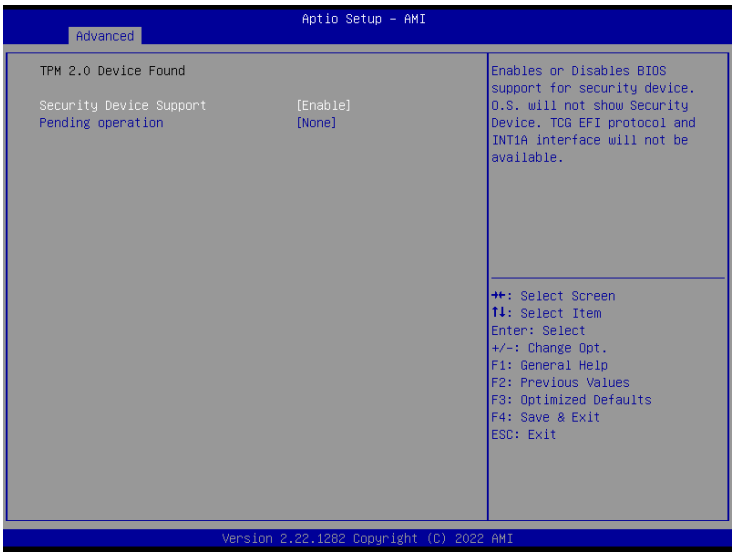
### 3.3.1 TPM Configuration

Use TPM Configuration submenu to choose TPM interface.




| Item | Description |
|---|---|
| **TPM Device Selection** | **PTT : Internal TPM (Default setting)** |

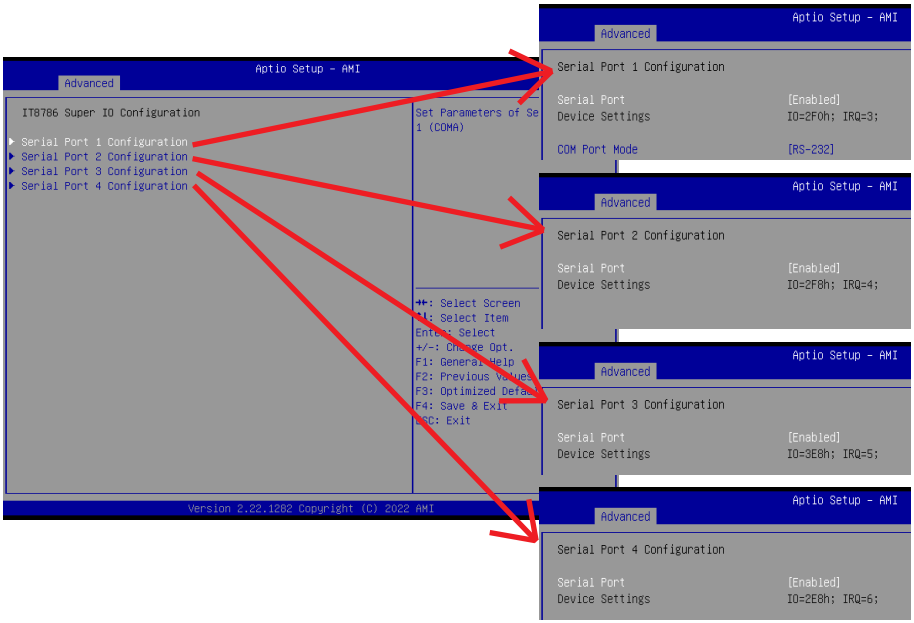
Trusted Computing : Shows TPM information, and TPM module configuration setting.




| Item | Description |
|---|---|
| **Security Device support** | **Enabled : Enables TPM feature (Default setting)**<br>**Disabled : Disables TPM feature** |

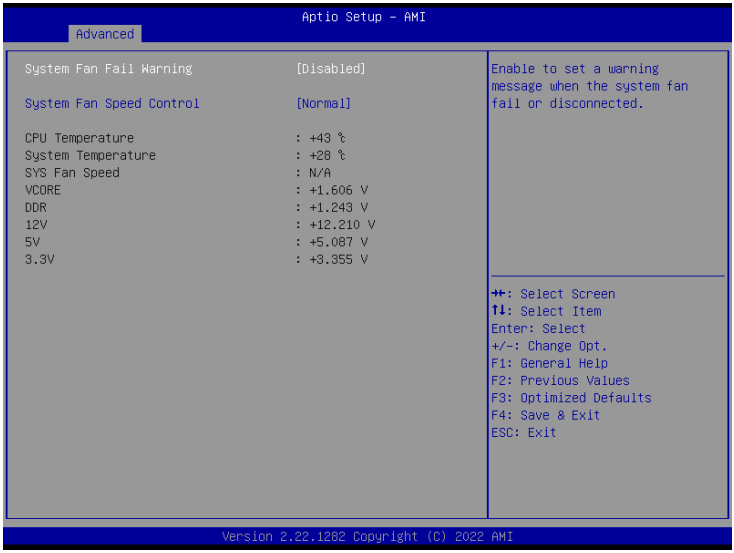
| Item | Description |
|---|---|
| **Pending operation** | **None : No execution will be conducted (Default setting)**<br>**TPM clear : Set to clear data on TPM** |

## 3.3.2 IT8786 Super IO Configuration



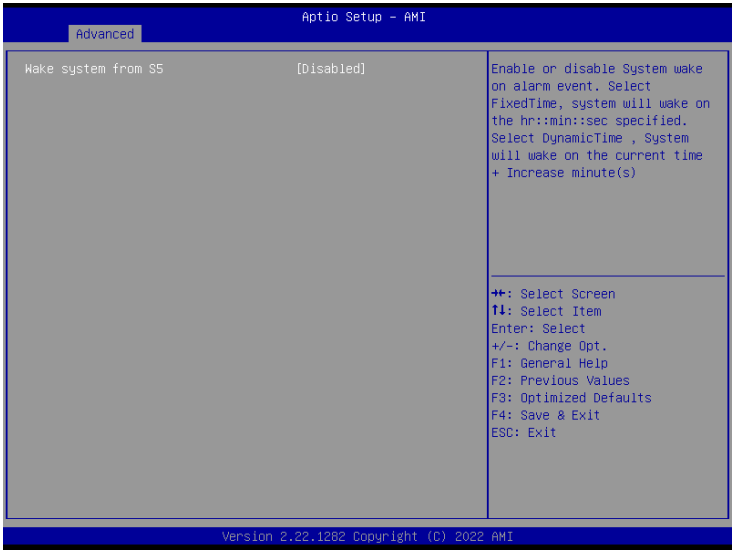

| Item | Description |
|---|---|
| **Serial Port 1 Configuration** | Press [Enter] to configure advanced items :<br><br>Serial Port :<br>**Enabled : Enables allows you to configure the serial port settings**<br>**Disabled : if Disabled, displays no configuration for the serial port**<br><br>Device settings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

## 3.3.3 Hardware Monitor




| Item | Description |
|---|---|
| **System Fan Fail Warning** | **Enabled : Enables System FAN Fail warning alert function**<br>**Disabled : Disables System FAN Fail warning alert function (Default setting)** |
| **System Fan Speed Control** | **Normal : Fan speed set by BIOS default (Default setting)**<br>**Full Speed : Set Fan operates at full speed** |
| **CPU temperature** | Shows current CPU temperature |
| **System temperature** | Shows current system temperature |
| **SYS Fan Speed** | Shows current CPU fan Speed |

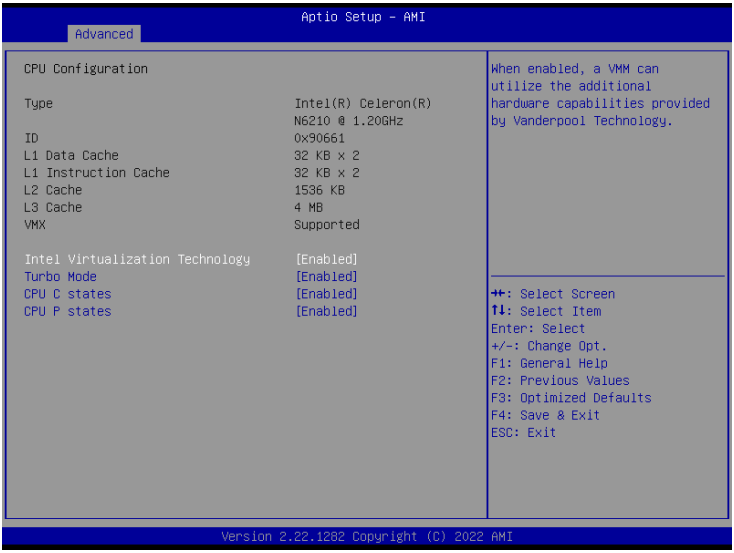
## 3.3.4 S5 RTC Wake Settings




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

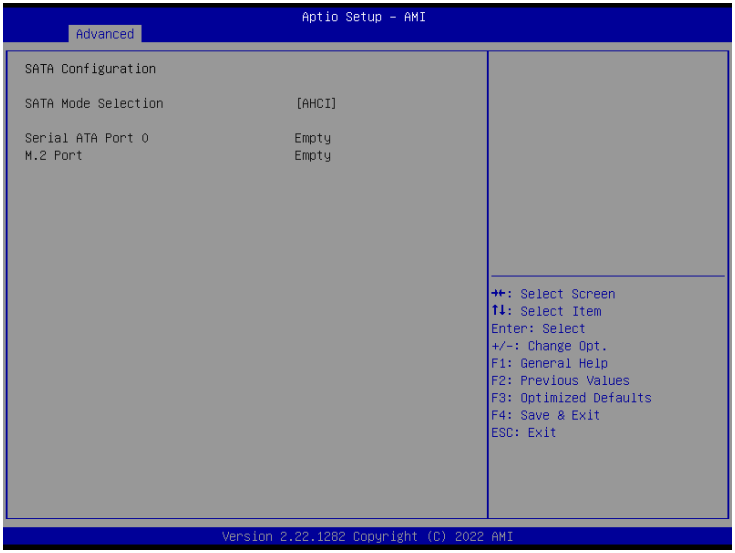
## 3.3.5 CPU Configuration

This submenu shows detailed CPU informations.



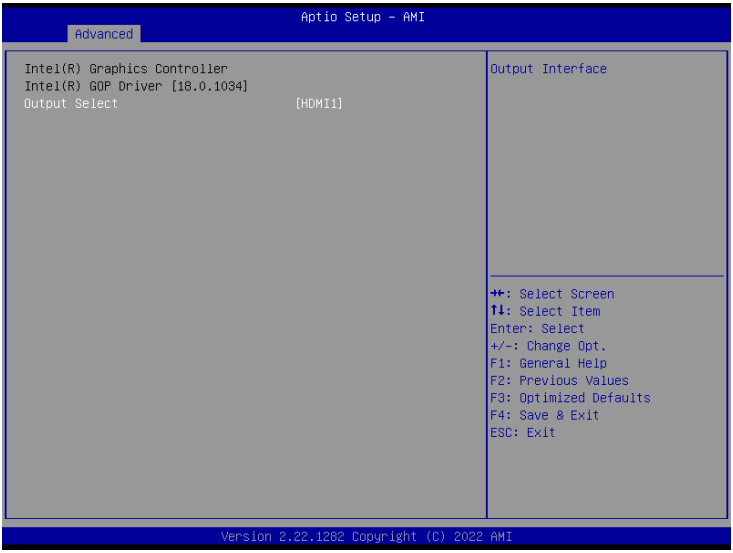

| Item | Description |
|---|---|
| **Intel Virtualization Technology** | Virtualization enhanced by Intel® Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual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

## 3.3.6 SATA Configuration



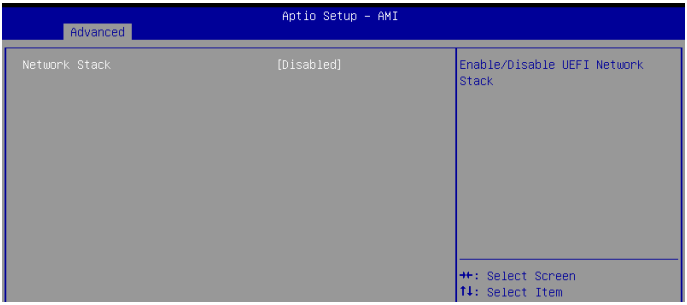

| Item | Description |
|---|---|
| **SATA Mode Selection** | **AHCI : Configures the SATA controllers to AHCI mode. (Default setting)** |
| **Serial ATA Port 0** | shows 2.5" SATA HDD/SSD information |
| **M.2** | shows M.2 SATA interface SSD information |

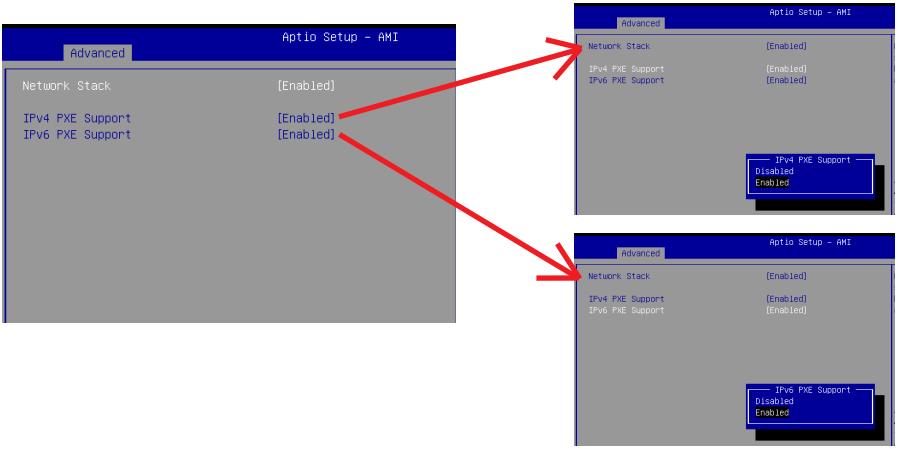
## 3.3.7 AMI Graphic Output Protocol Policy




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

## 3.3.8 Network Stack Configuration

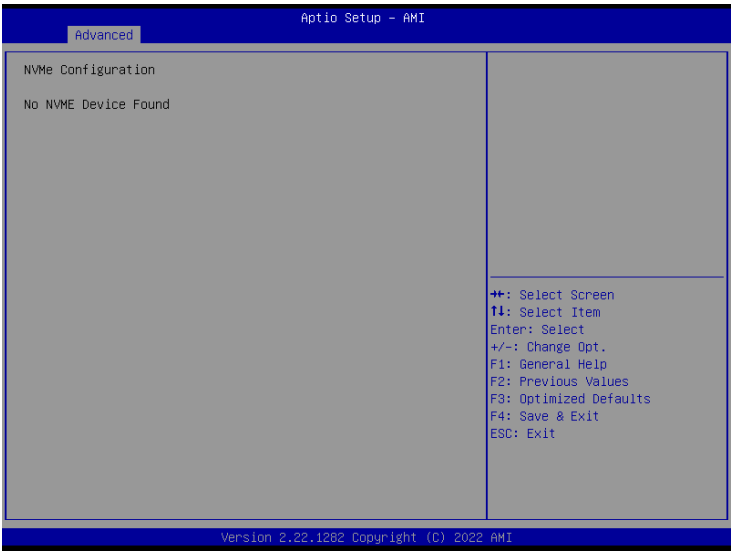



| Item | Description |
|---|---|
| **Network Stack** | When system is power on, install LAN driver under UEFI mode<br>**Disabled : Disables UEFI Network Stack (Default setting)**<br>**Enabled : Enables UEFI Network Stack** |
| **Ipv4 PXE Support** | When Network stack is enabled :<br>**Disabled : Disables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

### 3.3.9 NVMe Configuration

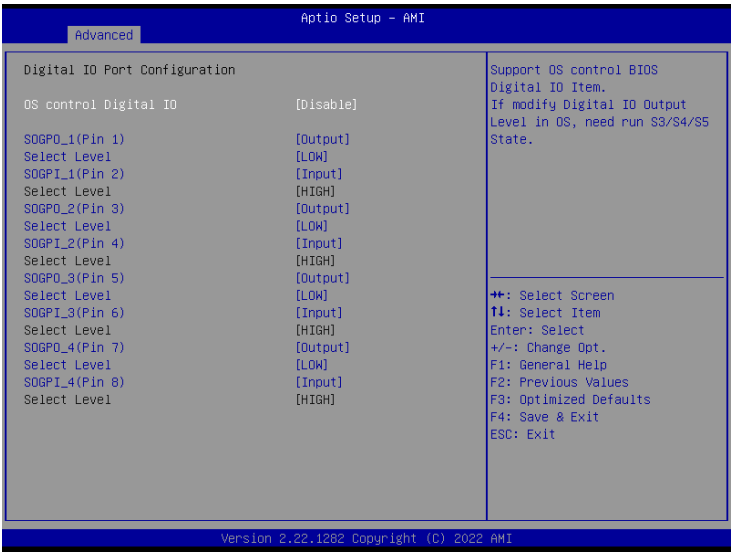
NVMe Configuration shows information when your M.2 NVMe PCIe SSD is installed.



## 3.3.10 Offboard SATA Controller Configuration

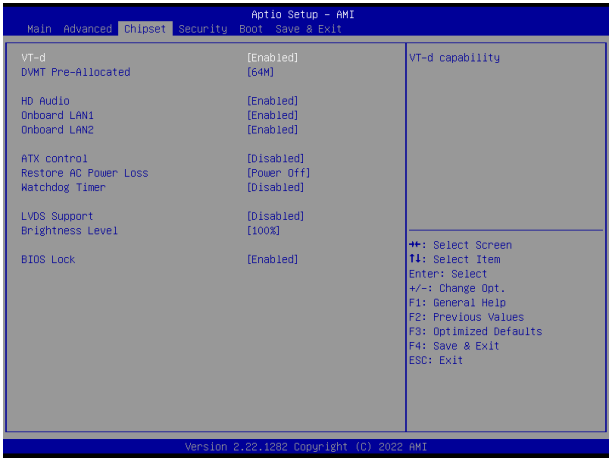


## 3.3.11 Digital IO Port Configuration



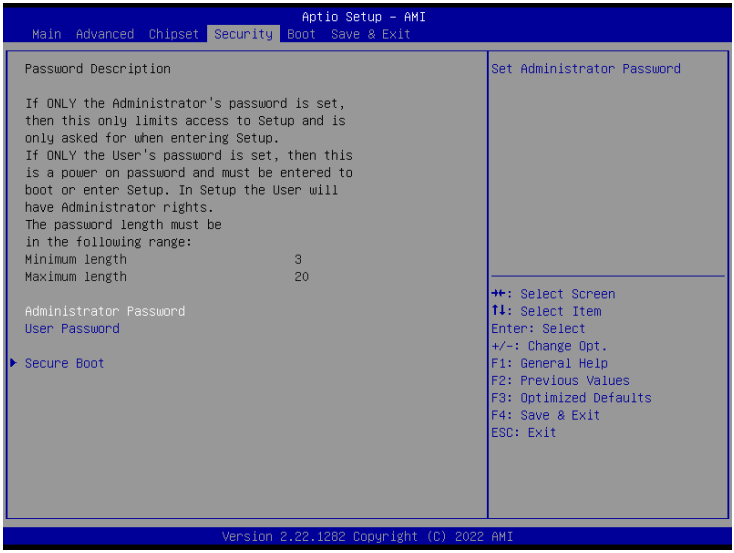

| Item | Description |
|---|---|
| **OS control Digital IO** | **Disabled : If Digital IO Output value/level is modified in OS, they will not be memorized and kept. (Default setting)**<br>**Enabled : If Digital IO Output value/level is modified in OS, they will be memorized and kept.** |
| **SOGPO_1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

## 3.4 Chipset

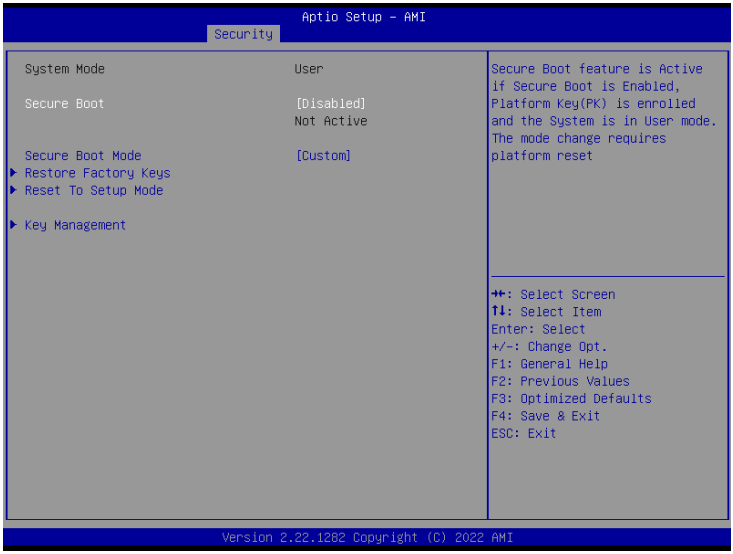



| Item | Description |
|---|---|
| **VT-d** | **Enabled : Enables VT-d function (Default setting)**<br>**Disabled : Disables VT-d function** |
| **DVMT Pre-Allocated** | Use DVMT Pre-Allocated to set the amount of system memory which is installed to the integrated graphics processor<br>**Option items : 32M , 64M(Default setting) , 128M , 256M** |
| **HD Audio** | Enable/Disable onboard audio controller<br>**Enabled : Enables onboard audio controller (Default setting)**<br>**Disabled : Disables onboard audio controller** |
| **Onboard LAN1**<br>**Onboard LAN2** | Enable/Disable onboard LAN controller<br>**Enabled : Enables onboard LAN controller (Default setting)**<br>**Disabled : Disables onboard LAN controller** |
| **ATX control** | To choose whether if to use ATX PSU to boot up.<br>**Enabled : Enables if needed to use ATX PSU to boot up.**<br>**Disabled : Disables ATX control function (Default setting)** |
| **Restore AC Power Loss** | To set which option the system should returns if a sudden power loss occured<br>**Power off : Do not power on when the power is back (Default setting)**<br>**Power on : System power on when the power is back**<br>**Last state : Restore the system to the state before power loss occures** |
| **Watchdog Timer** | Enable/Disable Watchdog Timer function<br>**Enabled : Enables Watchdog Timer function**<br>**Disabled : Disabled Watchdog Timer function (Default setting)** |
| **LVDS Support** | **Disabled : Disables LVDS Support (Default setting)**<br>**Enabled : Enables LVDS Support** |
| **Brightness Level** | To modified the backlight brightness of the LVDS/eDP panel<br>**Option items : 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100% (Default Setting)** |
| **BIOS Lock** | Enable/Disable BIOS Lock function<br>**Enabled : Enables BIOS Lock function (Default setting)**<br>**Disabled : Disabled BIOS Lock funtion** |

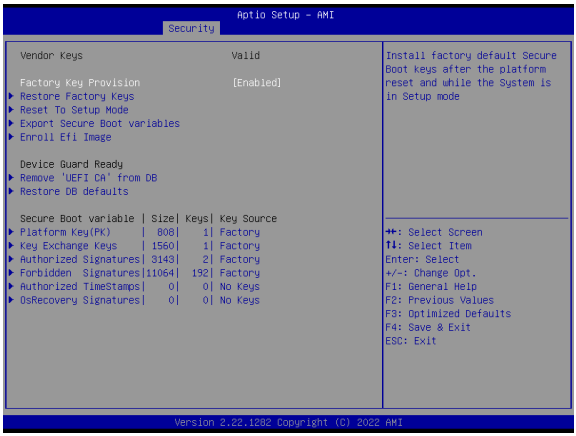
## 3.5 Security




| Item | Description |
|---|---|
| **Administrator Password** | To set up Administrator's password<br>**Minimum length : 3**<br>**Maximum length : 20** |
| **User Password** | To set up User's password<br>**Minimum length : 3**<br>**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<br>**Enabled : Enables Secure Boot function**<br>**Disabled : Disables Secure Boot function (Default setting)** |
| **Secure Boot Mode** | **Standard : Standard mode**<br>**Custom : Custom mode (Default setting)** |
| **Restore Factory Keys** | To restore factory settings<br>**Yes : Agree to restore factory settings**<br>**No : Cancel to restore factory settings** |
| **Reset To Setup Mode** | **Yes : Agree to setup mode**<br>**No : Cancel to setup mode** |
| **Key Management** | Enables expert users to modify Secure boot policy variables without full authentication<br>Press <Enter> to configure the advanced items |

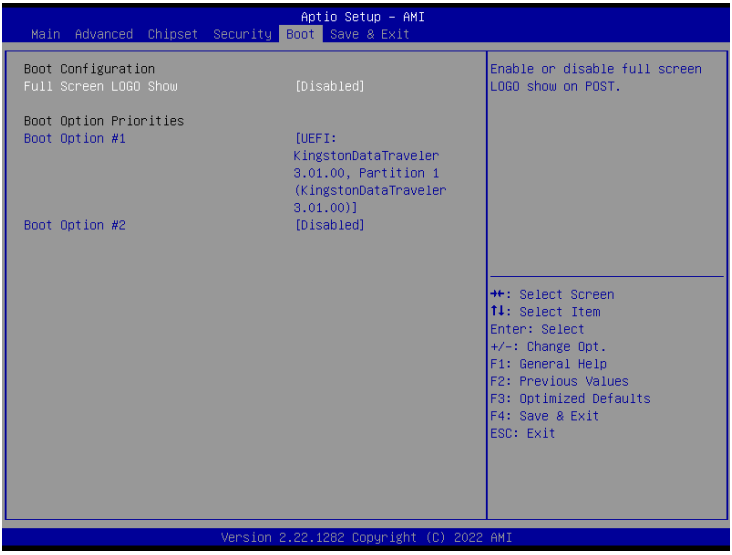



| Item | Description |
|---|---|
| **Factory Key Provision** | Install factory default Secure Boot keys after the platform reset and while the system is in Setup mode<br>**Enabled : Enables Factory Key Provision (Default setting)**<br>**Disabled : Disables Factory Key Provision** |
| **Restore Factory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

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

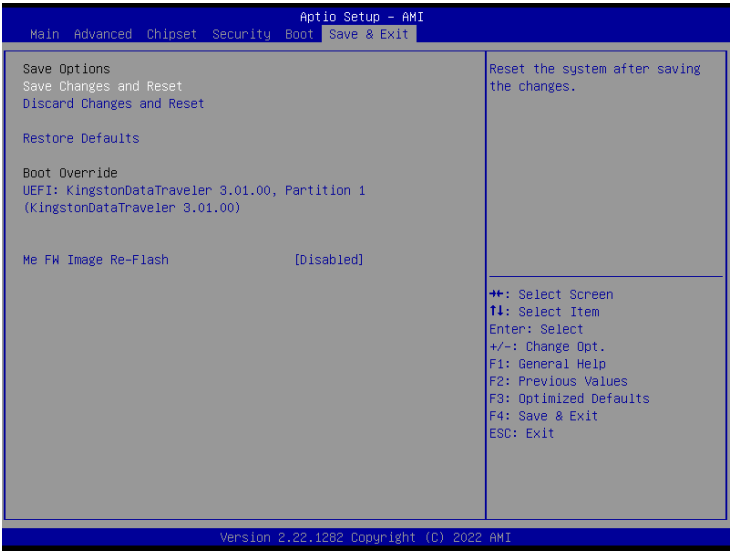
## 3.6 Boot

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




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

## 3.7 Save & Exit




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