

# mITX-H42EA (MH42EAI-SI)

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mITX-H42EA Mini-ITX Motherboard

User's Manual 1st Ed

## 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 |
|------------------|----------|
| miTX-H42EA MB    | 1        |
| SATA power cable | 2        |
| I/O Bracket      | 1        |

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.

Users may refer to the [GIGAIPC.com](http://GIGAIPC.com) for the latest version of this document.

## 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.*

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<br>(Pb) | 汞<br>(Hg) | 镉<br>(Cd) | 六价铬<br>(Cr(VI)) | 多溴联苯<br>(PBB) | 多溴二苯醚<br>(PBDE) |
| 印刷电路板<br>及其电<br>子组件                                                                                                                                                       | ○         | ○         | ○         | ○               | ○             | ○               |
| 外部信号<br>连接器<br>及线材                                                                                                                                                        | ○         | ○         | ○         | ○               | ○             | ○               |
| <p>○: 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。</p> <p>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。</p> <p>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。</p> |           |           |           |                 |               |                 |

# 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                              | O                                     |
| Wires & Connectors for External Connections                                                                                                                                                                                                                                                                                                                                                                                                                         | O                                             | O            | O            | O                            | O                              | O                                     |
| <p>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.</p> <p>X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.</p> <p>Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only</p> |                                               |              |              |                              |                                |                                       |

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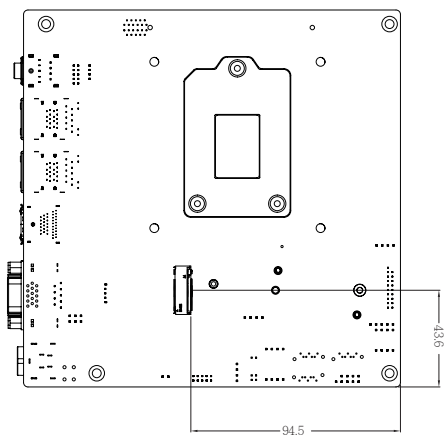
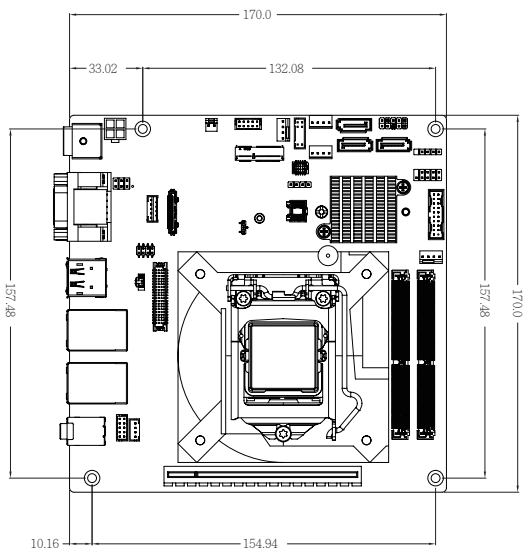
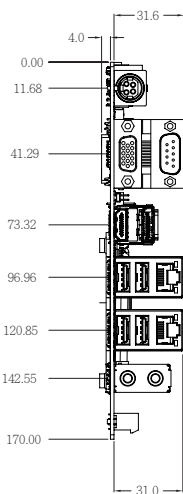
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# Chapter 1

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## Chapter 1 - Product Specifications



## 1.1 Specifications

| Motherboard     | mITX-H42EA (MH42EAI-SI)                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Form Factor     | Mini-ITX<br>170W x 170D (mm)                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| CPU             | Support for 10th Generation Intel® Core™ i9/ i7/ i5/ i3, Pentium® & Celeron® processors in the LGA1200 package<br>TDP under 65W<br>L3 cache varies with CPU                                                                                                                                                                                                                                                                                                       |
| Socket          | 1 x LGA 1200                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Chipset         | Intel® H420E Express Chipset                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Memory          | 2 x DDR4 SO-DIMM sockets, Max. Capacity 64 GB<br>Support Dual channel DDR4 2933/2666 MHz memory modules                                                                                                                                                                                                                                                                                                                                                           |
| Ethernet        | 2 x GbE LAN Ports (Intel® I219V and Intel® I211AT)                                                                                                                                                                                                                                                                                                                                                                                                                |
| Video           | Integrated Graphics Processor - depends on CPU:<br>1 x HDMI 2.0 port, supporting a maximum resolution of 4096x2160 @60Hz<br>1 x DP 1.4 port, supporting a maximum resolution of 4096x2304 @60Hz<br>1 x D-sub port, supporting a maximum resolution of 1920x1200 @60Hz<br>1 x eDP port, supporting a maximum resolution of 4096x2160 @60Hz<br>1 x LVDS port, supporting a maximum resolution of 1920x1080 @60Hz<br><br>* Support up to 2 displays at the same time |
| Audio           | Realtek® Audio Codec                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Storage         | 3 x SATA 6Gb/s Ports                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Raid            | —                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Expansion Slots | 1 x PCIe x16 (Gen3 x16)<br>1 x 2280/2242 M.2 M-Key (PCIe x2)<br>1 x 2230 M.2 E-Key                                                                                                                                                                                                                                                                                                                                                                                |

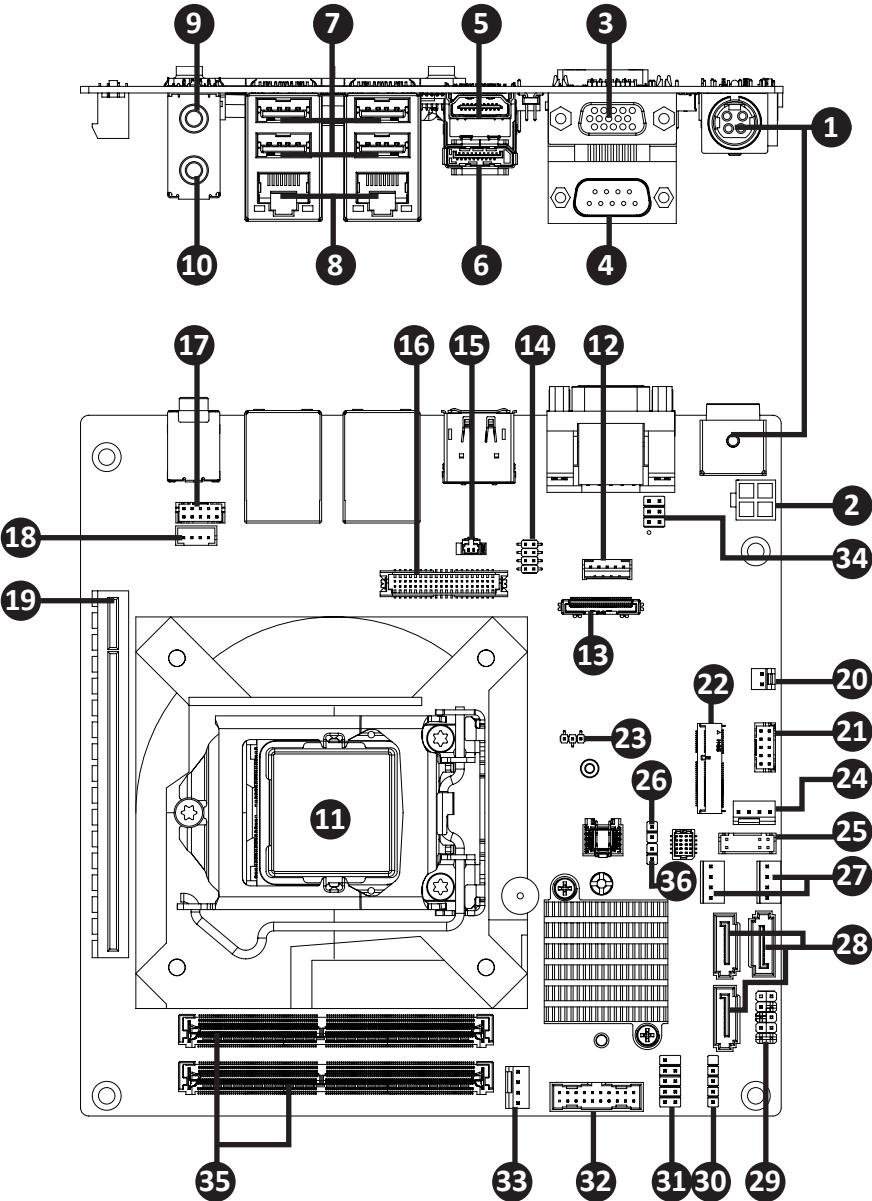
| Motherboard          | mITX-H42EA (MH42EAI-SI)                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internal I/O         | 1 x 4-pin ATX main power connector<br>2 x SATA power connectors<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>3 x USB 2.0 headers<br>2 x USB 3.2 Gen 1 headers<br>1 x COM header (RS-232)<br>1 x GPIO (8 bits) & SMBUS header<br>1 x Backlight Control header<br>1 x Clear CMOS jumper<br>1 x Buzzer<br>1 x ATX Control header<br>1 x AT/ATX mode select jumper |
| Rear I/O             | 2 x Audio Jacks (Line out, Mic in)<br>1 x COM Port (RS-232/422/485 & RI/5V/12V)<br>1 x HDMI<br>1 x Display Port<br>1 x D-sub<br>2 x RJ45 LAN Ports<br>4 x USB 3.2 Gen 1<br>1 x DC Jack (+12V/+19V~+24VDC)                                                                                                                                                                                                                                                  |
| TPM                  | 1 x TPM header                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 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)                                                                                                                                                                                                                                                                            |
| Order Information    | Motherboard: 9MH42EAIMR-SI                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Optional kit:        | TPM 2.0 module: 9CTM000NR-00<br>TPM Cable: 25CRZ-100600-S9R                                                                                                                                                                                                                                                                                                                                                                                                |

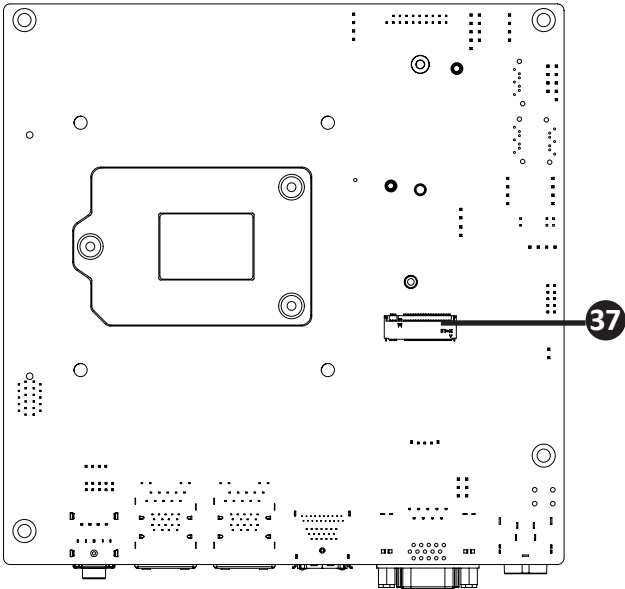
## Chapter 2

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### Chapter 2 – Hardware Information

# 2.1 Jumpers and Connectors





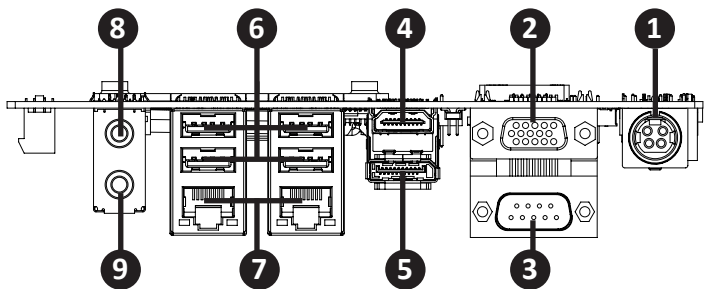
| No | Code      | Description                            |
|----|-----------|----------------------------------------|
| 1  | DC_IN1    | DC In Jack 4 pin Din                   |
| 2  | DC_IN2    | ATX 2x2 pin power Connector            |
| 3  | VGA       | VGA Port                               |
| 4  | COM1      | COM1 Port (RS-232/422/485 & RI/5V/12V) |
| 5  | HDMI_DP   | HDMI Connector                         |
| 6  |           | Display Port Connector                 |
| 7  | USB3_LAN1 | USB 3.2 Gen 1 Connector x 4            |
| 8  | USB3_LAN2 | LAN Connector x 2                      |
| 9  | AUDIO     | Mic In port (Pink)                     |
| 10 |           | Line Out port (Green)                  |



| No | Code                   | Description                                                   |
|----|------------------------|---------------------------------------------------------------|
| 11 | CPU                    | 1 x LGA 1200 Socket                                           |
| 12 | BKL_CN                 | Backlight Control header                                      |
| 13 | EDP                    | Embedded Display Port connector                               |
| 14 | LSW                    | LVDS Resolution jumper                                        |
| 15 | Battery                | Battery Connector                                             |
| 16 | LVDS                   | LVDS Connector                                                |
| 17 | FP_Audio               | Front panel audio header                                      |
| 18 | SPKR                   | Speaker out Connector                                         |
| 19 | PCIEX16                | 1 x PCIe x16 (Gen3 x16) slot                                  |
| 20 | ATX_CTL                | ATX Control header, Support PS-ON Signal of Power Supply Unit |
| 21 | COM2                   | COM header (RS-232)                                           |
| 22 | M2E                    | M.2 Slot, E-Key NGFF 2230                                     |
| 23 | AT_CN                  | AT/ATX mode select jumper                                     |
| 24 | SYS_FAN                | System Fan Connector                                          |
| 25 | GPIO_CNT               | General purpose input/output header                           |
| 26 | CLR_CMOS               | Clear CMOS jumper                                             |
| 27 | SATA_PWR1<br>SATA_PWR2 | SATA Power Connector x 2                                      |
| 28 | SATA0, 1, 2            | SATA 6 Gb/s Connector x 3                                     |
| 29 | SYS_PANEL              | System panel header                                           |
| 30 | FUSB2_1                | USB 2.0 header                                                |
| 31 | FUSB2_2                | USB 2.0 header                                                |
| 32 | FUSB3                  | USB 3.2 Gen 1 header                                          |

| No | Code                | Description                                  |
|----|---------------------|----------------------------------------------|
| 33 | CPU_FAN             | CPU FAN Connector                            |
| 34 | JCOM1               | RI pin RI/5V/12V select jumper for COM1 port |
| 35 | SODIMM1,<br>SODIMM2 | 2 x DDR4 SO-DIMM Sockets                     |
| 36 | ME_EN               | ME Disable jumper                            |
| 37 | M2_M                | M.2 Slot, M-Key NGFF 2280                    |

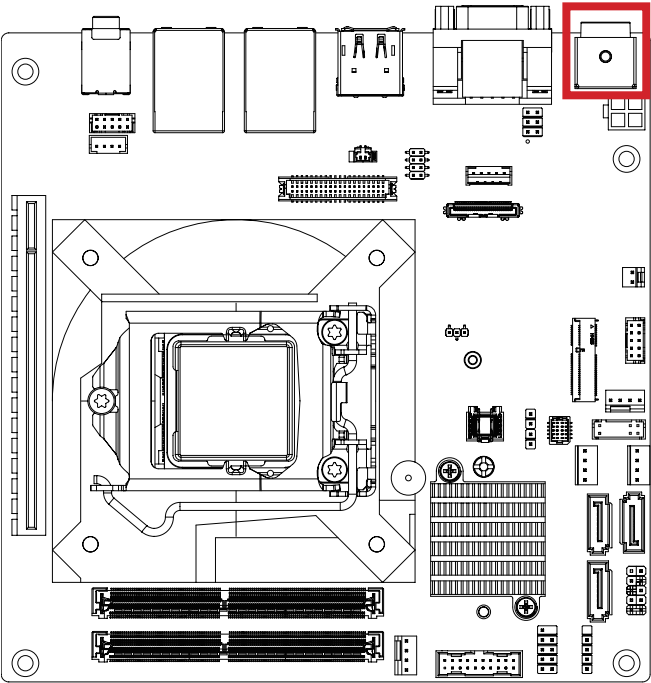
## 2.2.1 IO Connector Information



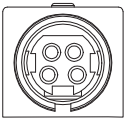
|   | Code      | Description                                      |
|---|-----------|--------------------------------------------------|
| 1 | DC_IN1    | DC In Jack 4 pin Din                             |
| 2 | VGA       | D-sub Port                                       |
| 3 | COM1      | COM1 Port (RS-232/422/485 & RI/5V/12V)           |
| 4 | HDMI_DP   | HDMI Connector                                   |
| 5 |           | Display Port Connector                           |
| 6 | USB3_LAN1 | USB 3.2 Gen 1 Connector x 4<br>LAN Connector x 2 |
| 7 | USB3_LAN2 |                                                  |
| 8 | AUDIO     | Mic In port (Pink)                               |
| 9 |           | Line Out port (Green)                            |

2.2.2 DC\_IN1 (DC In Jack 4 Pin Din)

1



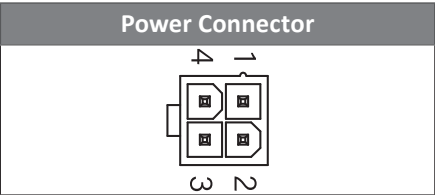
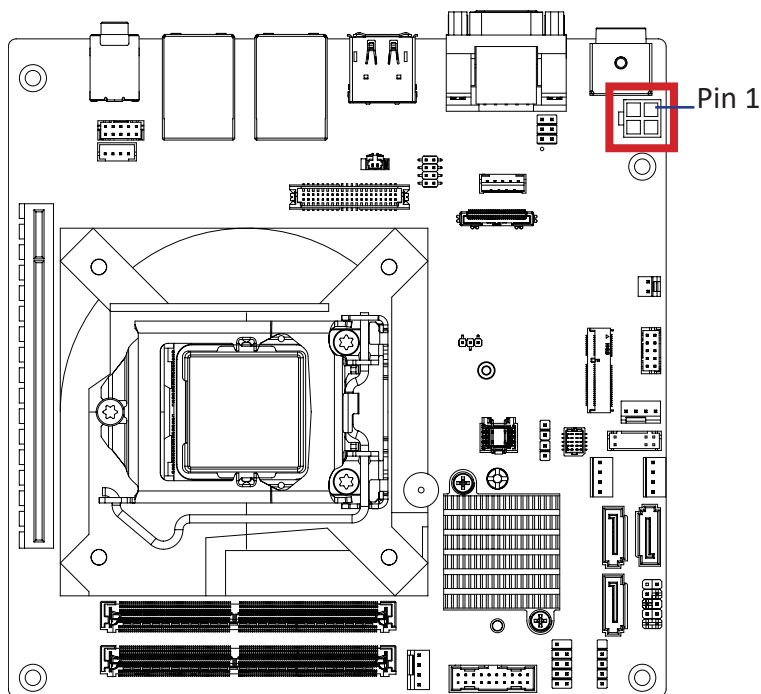
DC In Jack 4 Pin Din



| Connector PN | Vendor    |
|--------------|-----------|
| 2MJ-3422A110 | SINGATRON |

### 2.2.3 DC\_IN2 (ATX 2x2 Pin Power Connector)

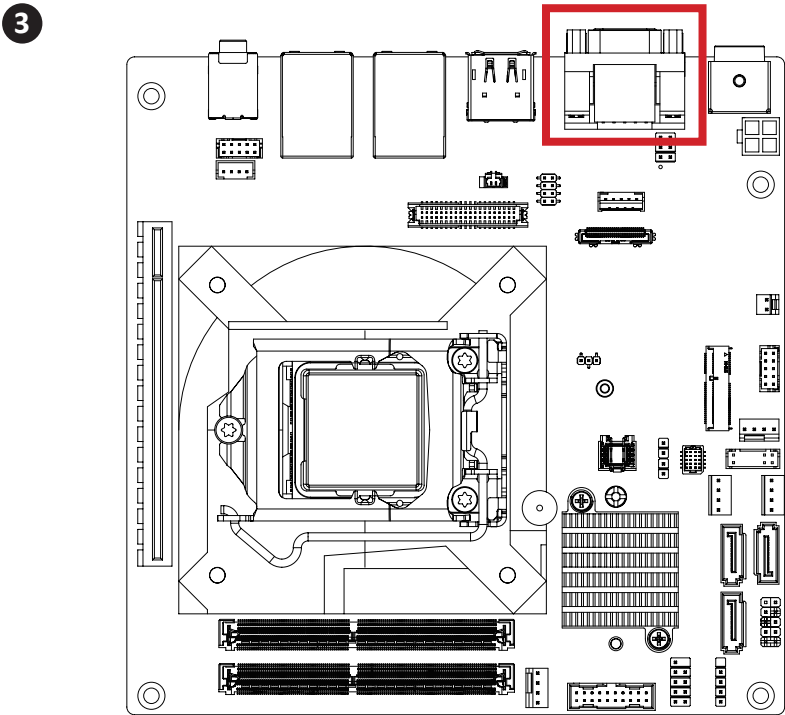
2



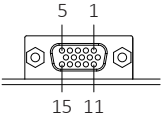
| Connector PN  | Vendor |
|---------------|--------|
| 740-81-04TW56 | PINREX |

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

2.2.4 VGA (D-sub Port)



D-sub Connector

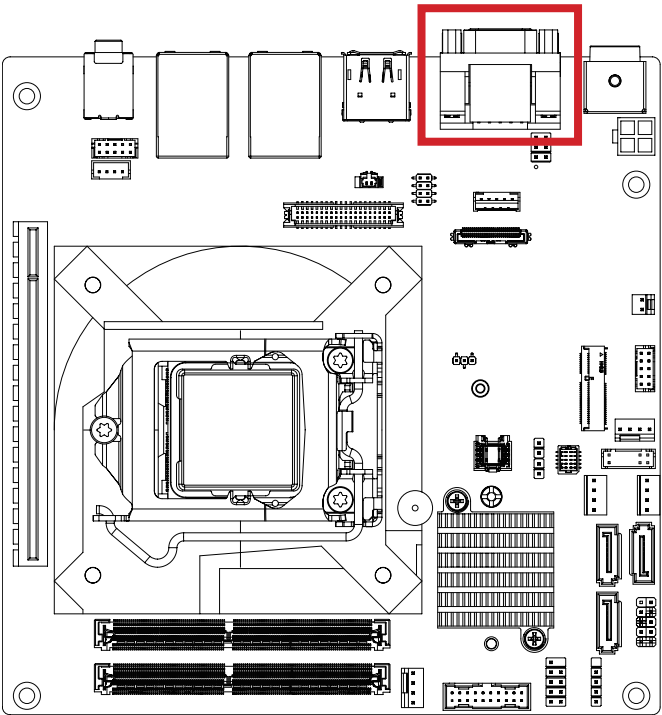


| Connector PN    | Vendor  |
|-----------------|---------|
| DZ11AA1-H5A7-4F | FOXCONN |
| D11015S021126N  | FENYING |

| 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      | VSYN       |
| 7       | GND        | 15      | DDCSCL     |
| 8       | GND        |         |            |

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

4



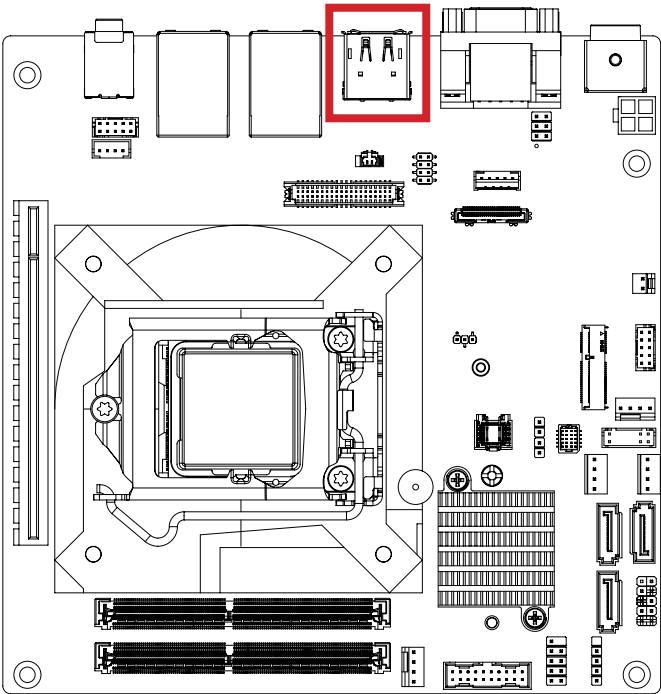
Serial Port Connector

| Connector PN    | Vendor  |
|-----------------|---------|
| DM10151-N5W3-4F | FOXCONN |

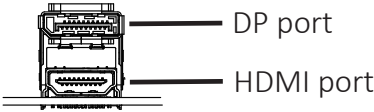
| Pin No. | RS-232 | RS-422 Full Duplex | RS-485 Half Duplex |
|---------|--------|--------------------|--------------------|
| 1       | DCD    | TXD-               | D-                 |
| 2       | RXD    | TXD+               | D+                 |
| 3       | TXD    | RXD+               | —     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

2.2.6 HDMI\_DP (HDMI + DP Connector)

5 6



HDMI & DP Connector



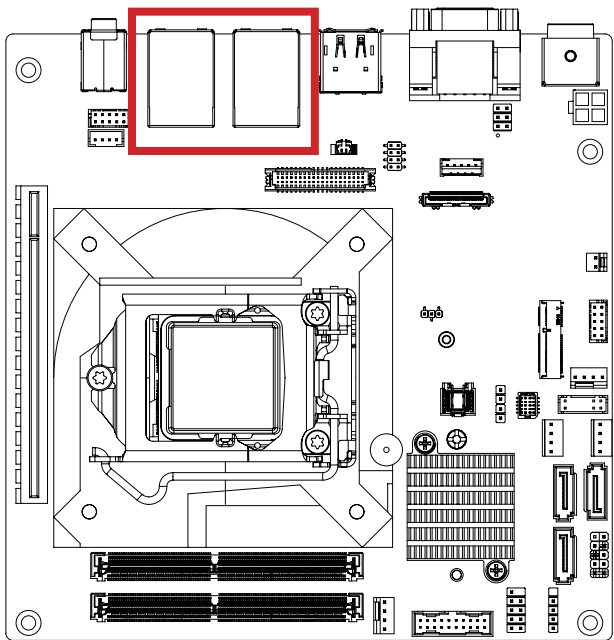
| HDMI Connector |            |         |                 |
|----------------|------------|---------|-----------------|
| Pin No.        | Definition | Pin No. | Definition      |
| 1              | TX2p       | 11      | GND             |
| 2              | GND        | 12      | CLKn            |
| 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       |         |                 |

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

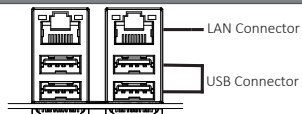


## 2.2.7 USB\_LAN1, USB\_LAN2 (USB+LAN Connector x 2)

7 8



USB & LAN Connector



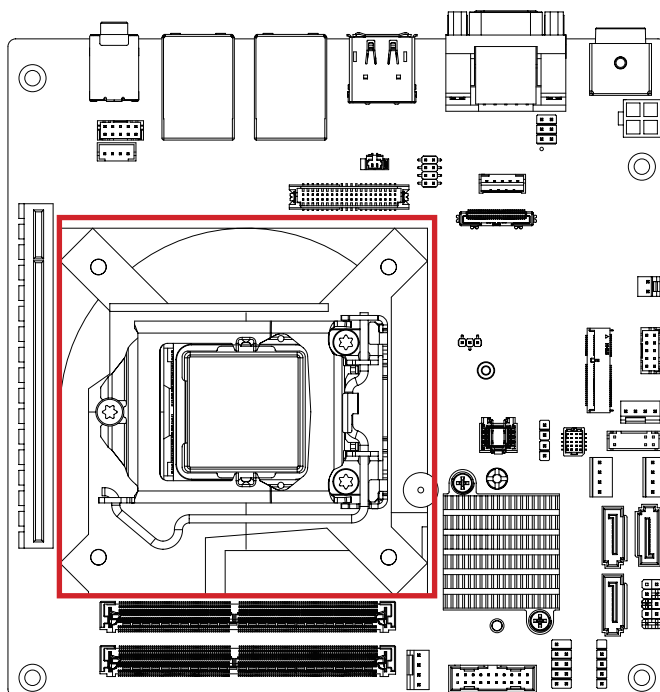
| USB Connector |            |         |            |
|---------------|------------|---------|------------|
| Pin No.       | Definition | Pin No. | Definition |
| 1             | 5V         | 10      | 5V         |
| 2             | D1n        | 11      | D0n        |
| 3             | D1p        |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

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

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

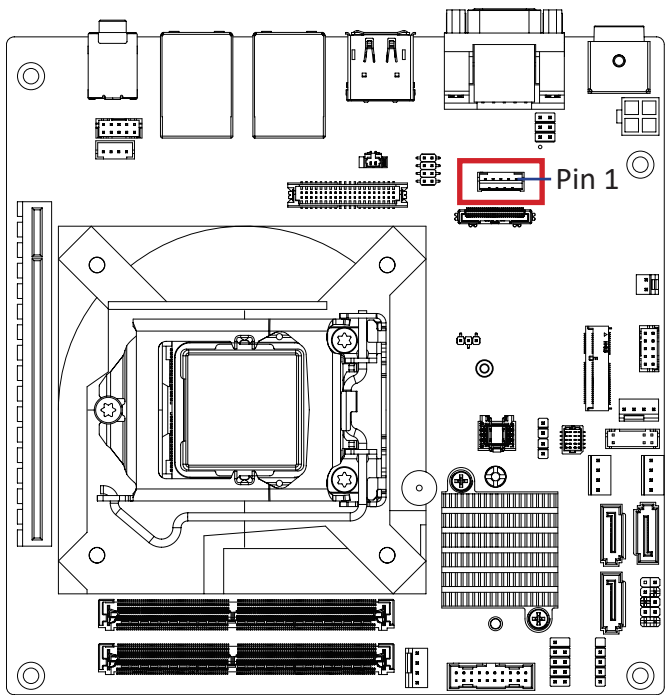
## 2.2.4 CPU (1 x LGA 1200 Socket)

11

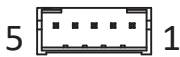


## 2.2.5 BKL\_CN (Backlight Control Connector)

12



Backlight Control Connector

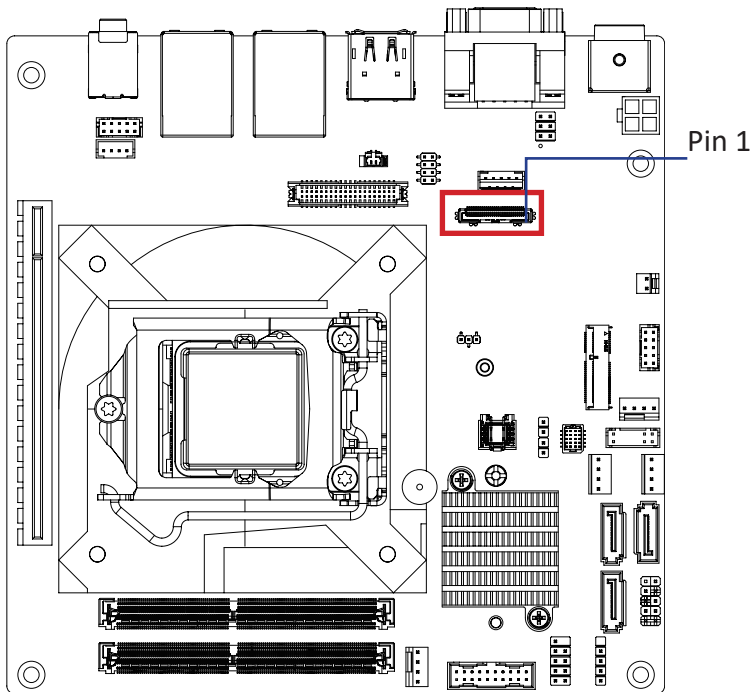


| Connector PN   | Vendor     |
|----------------|------------|
| 721-81-05TW00  | PINREX     |
| A2001WV-05P146 | JOINT-TECH |

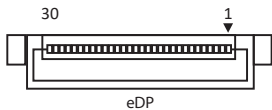
| Pin No. | Definition       |
|---------|------------------|
| 1       | 5V               |
| 2       | PWM              |
| 3       | Backlight enable |
| 4       | GND              |
| 5       | 12V              |

2.2.6 EDP (Embedded Display Port connector)

13



Embedded Display Port connector



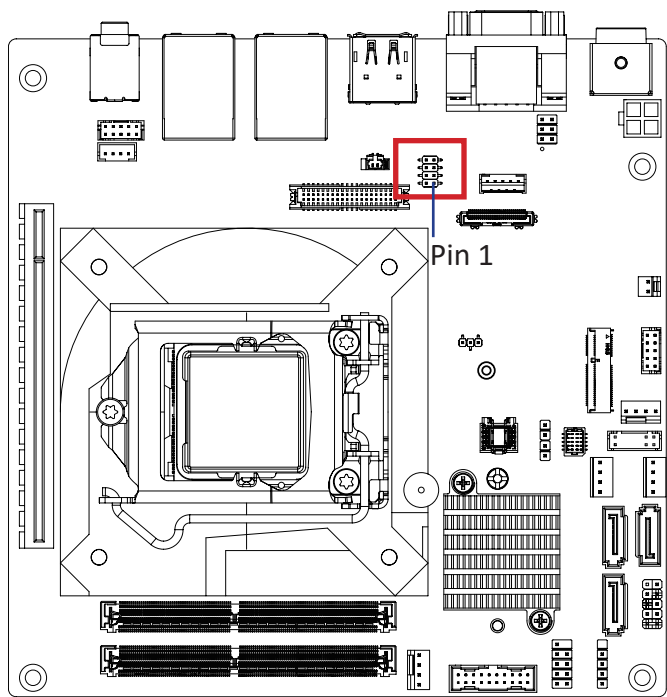
| Pin No. | Definition | Pin No. | Definition        |
|---------|------------|---------|-------------------|
| 1       | GND        | 16      | GND               |
| 2       | TX0n       | 17      | Hot Plug Detect   |
| 3       | TX0p       | 18      | Backlight Enable  |
| 4       | GND        | 19      | 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 |

## 2.2.7 LSW (LVDS Resolution Jumper)

14



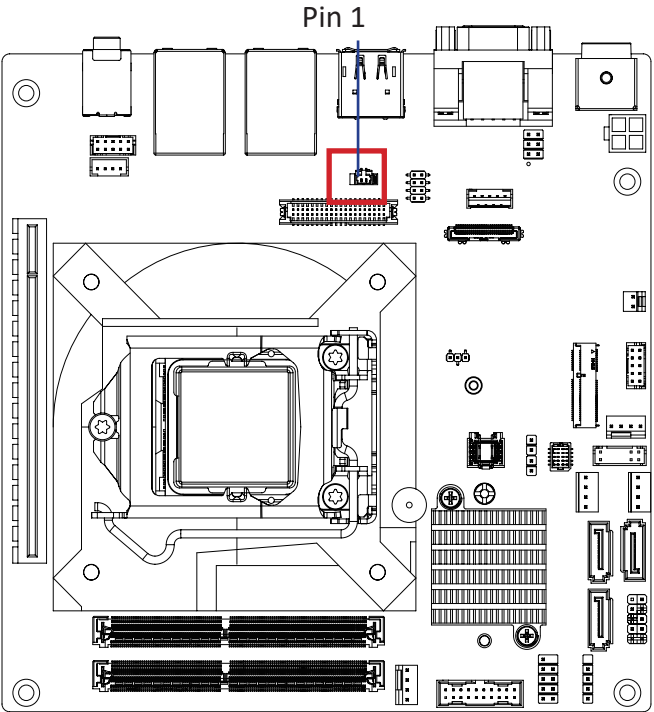
| LVDS Resolution Jumper |                      |                |                      |
|------------------------|----------------------|----------------|----------------------|
| Jumper Setting         | Resolution           | Jumper Setting | Resolution           |
|                        | 800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

| LVDS Resolution Jumper |                     |  |                      |
|------------------------|---------------------|--|----------------------|
|                        | 1366 x 768<br>18bit |  | 1920 x 1200<br>24bit |

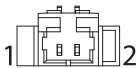
| Connector PN  | Vendor |
|---------------|--------|
| 222-97-04GBE1 | PINREX |

2.2.8 Battery (Battery Connector)

15



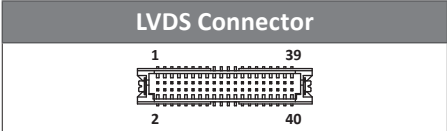
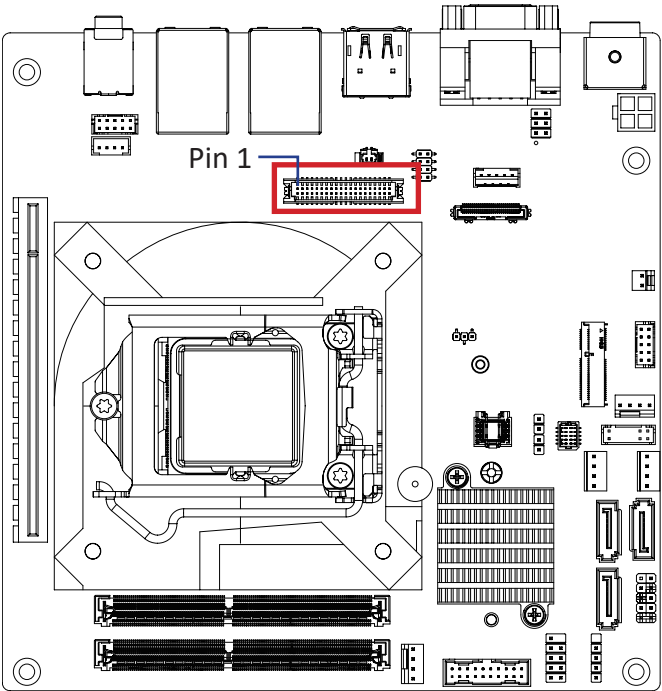
Battery Connector



| Pin No. | Definition |
|---------|------------|
| 1       | 3V         |
| 2       | GND        |

2.2.9 LVDS (LVDS Connector)

16



| 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       | SPE0       | 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-      |

| Pin No. | Definition | Pin No. | Definition |
|---------|------------|---------|------------|
| 17      | A3-        | 37      | GND        |
| 18      | A2-        | 38      | GND        |
| 19      | GND        | 39      | 12V        |
| 20      | GND        | 40      | 12V        |

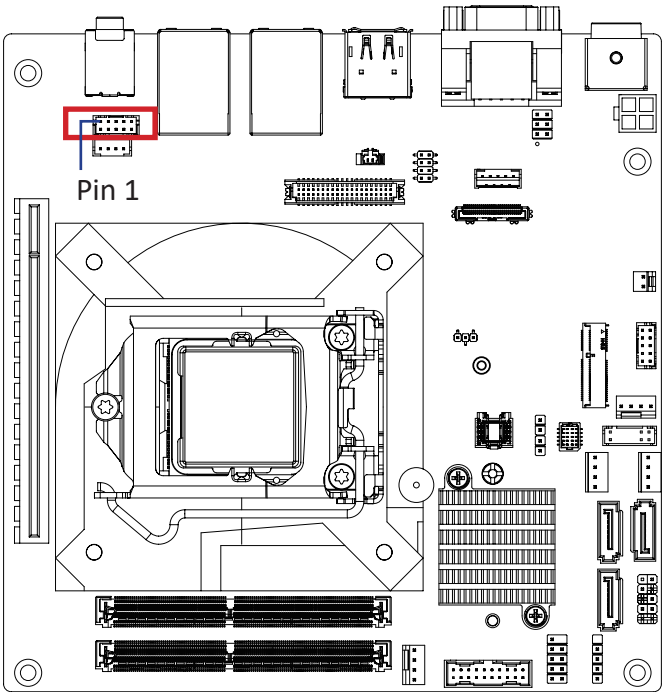
| Connector PN        | Vendor     |
|---------------------|------------|
| 712-76-40GWE0       | PINREX     |
| A1252WV-SF-2X20PD01 | JOINT-TECH |

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

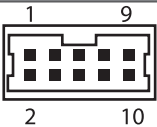
Note: \*The LVDS output connector of the unit is only intended to be connected to an UL/IEC/EN approval equipment with fire enclosure.

2.2.10 FP\_Audio (Front Panel Audio header)

17



Front panel audio Connector



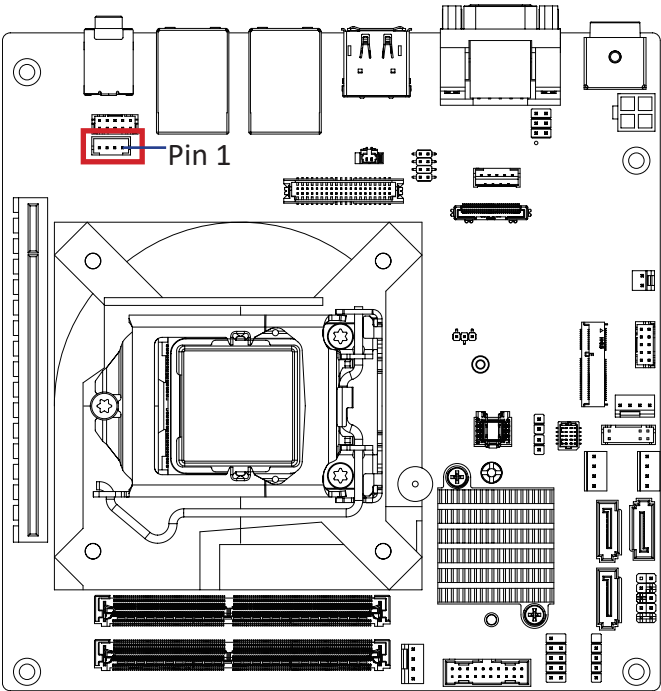
| Connector PN    | Vendor     |
|-----------------|------------|
| 725-81-10TW00   | PINREX     |
| A2004WV-2X05P46 | JOINT-TECH |

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



## 2.2.11 SPKR (Speaker Out Connector)

18



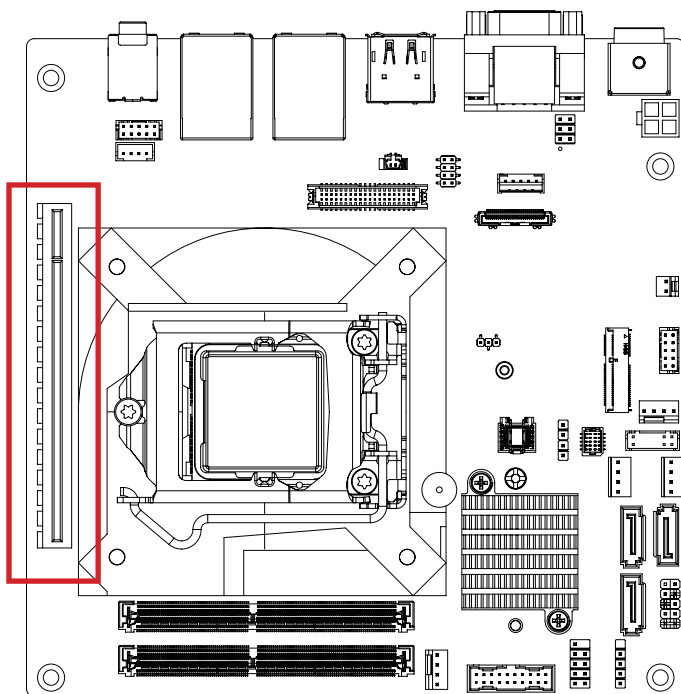
| Speaker Out Connector |   |
|-----------------------|---|
| 4                     | 1 |
|                       |   |

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

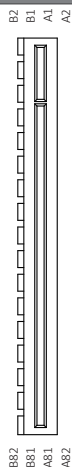
| Pin No. | Definition |
|---------|------------|
| 1       | SPEAKER L+ |
| 2       | SPEAKER L- |
| 3       | SPEAKER R- |
| 4       | SPEAKER R+ |

## 2.2.12 PCIEX16 (1 x PCIe x16 (Gen3 x16) Slot)

19

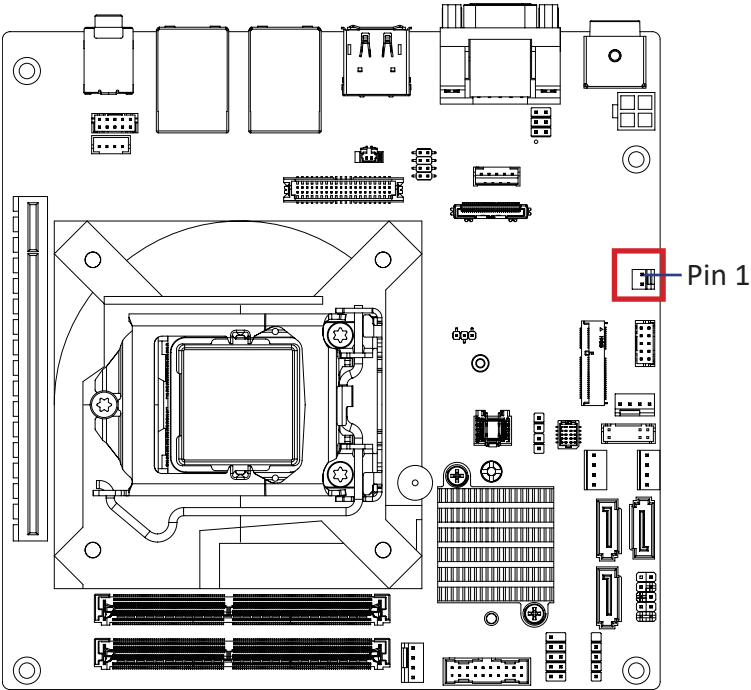


PCIEX16 connector



### 2.2.13 ATX\_CTL (ATX Control header, Support PS-ON Signal of Power Supply Unit)

20



ATX Control Header

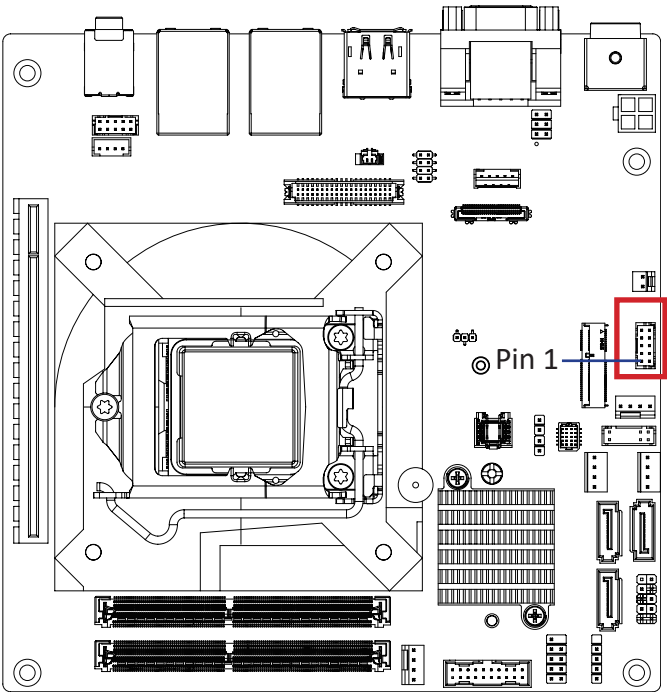
1

2

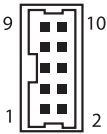
| Pin No. | Definition |
|---------|------------|
| 1       | PSON#      |
| 2       | 5V         |

2.2.14 COM2 (COM header (RS-232))

21



COM 2 header

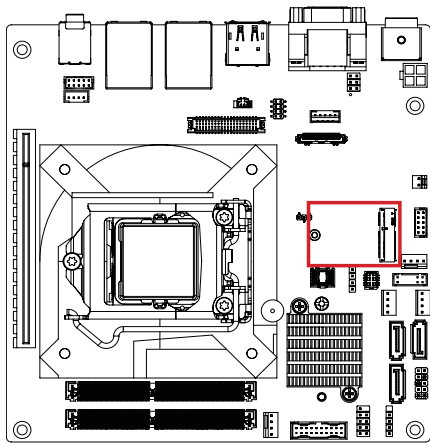


| Connector PN    | Vendor     |
|-----------------|------------|
| 725-81-10TW00   | PINREX     |
| A2004WV-2X05P46 | JOINT-TECH |

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

## 2.2.15 M2E (M.2 Slot, E-Key, Supports NGFF-2230)

22

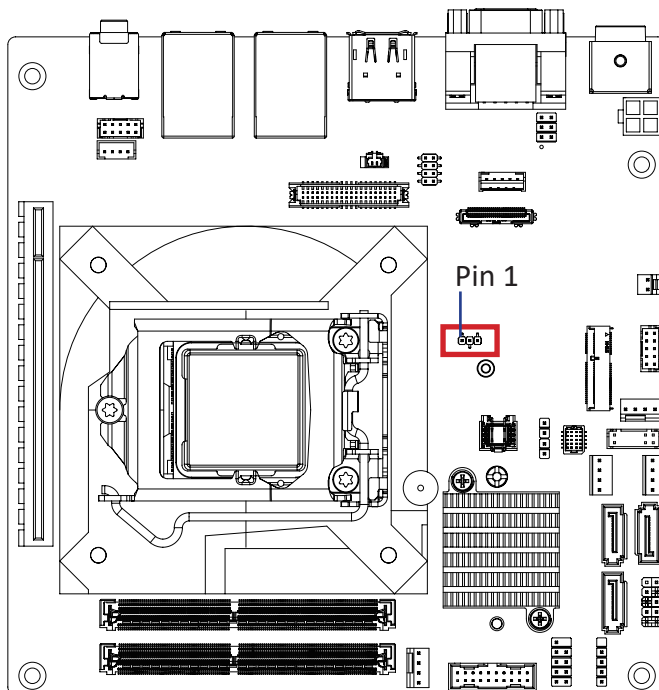


| M.2 E Key Connector                                                               |            |         |            |
|-----------------------------------------------------------------------------------|------------|---------|------------|
|  |            |         |            |
| Pin No.                                                                           | Definition | Pin No. | Definition |
| 1                                                                                 | GND        | 2       | 3.3V       |
| 3                                                                                 | D1p        | 4       | 3.3V       |
| 5                                                                                 | D1n        | 6       | NC         |
| 7                                                                                 | GND        | 8       | NC         |
| 9                                                                                 | NC         | 10      | NC         |
| 11                                                                                | NC         | 12      | NC         |
| 13                                                                                | 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      | CL_Reset   |

| 41               | PCIE_RXp           | 40         | CL_DATA      |
|------------------|--------------------|------------|--------------|
| 43               | PCIE_RXn           | 42         | CL_Clock     |
| 45               | GND                | 44         | NC           |
| 47               | PCIE_CLOCKp        | 46         | NC           |
| 49               | PCIE_CLOCKn        | 48         | NC           |
| 51               | GND                | 50         | SUSCLK       |
| 53               | PCIE Clock Request | 52         | PCIRST       |
| 55               | PCIE wake up       | 54         | BT_Disable   |
| 57               | GND                | 56         | WLAN_DISABLE |
| 59               | NC                 | 58         | NC           |
| 61               | NC                 | 60         | NC           |
| 63               | GND                | 62         | NC           |
| 65               | NC                 | 64         | NC           |
| 67               | NC                 | 66         | NC           |
| 69               | GND                | 68         | NC           |
| 71               | NC                 | 70         | NC           |
| 73               | NC                 | 72         | 3.3V         |
| 75               | GND                | 74         | 3.3V         |
| Connector PN     |                    | Vendor     |              |
| 2E0BC21-S85BE-7H |                    | FOXCONN    |              |
| 80152-8521       |                    | BELLWETHER |              |
| APCI0095-P002A   |                    | LOTES      |              |

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

23



AT/ATX mode select jumper



Connector PN Vendor

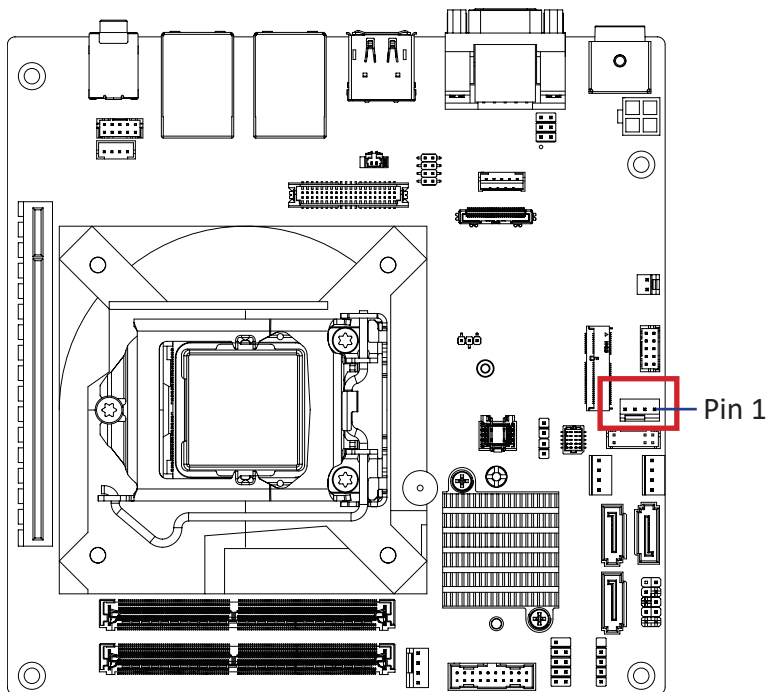
222-96-03GBE1

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) |            |

## 2.2.17 SYS\_FAN (System Fan Connector)

24



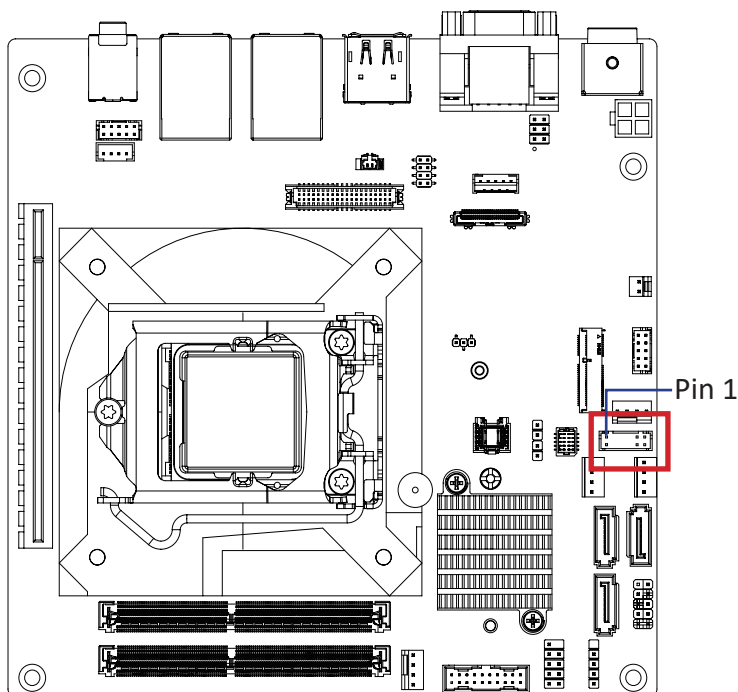
| System FAN |                                                                                     |   |
|------------|-------------------------------------------------------------------------------------|---|
| 4          |  | 1 |

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

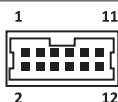
| Pin No. | Definition    |
|---------|---------------|
| 1       | GND           |
| 2       | 12V           |
| 3       | Detect        |
| 4       | Speed Control |

## 2.2.18 GPIO\_CNT (General purpose input/output header)

25



GPIO Connector



Pin No.

Definition

|    |             |
|----|-------------|
| 9  | SMBus Clock |
| 10 | SMBus DATA  |
| 11 | 5V          |
| 12 | GND         |

Pin No.

Definition

|   |               |
|---|---------------|
| 1 | GPIO-output_1 |
| 2 | GPIO-input_1  |
| 3 | GPIO-output_2 |
| 4 | GPIO-input_2  |
| 5 | GPIO-output_3 |
| 6 | GPIO-input_3  |
| 7 | GPIO-output_4 |
| 8 | GPIO-input_4  |

Connector PN

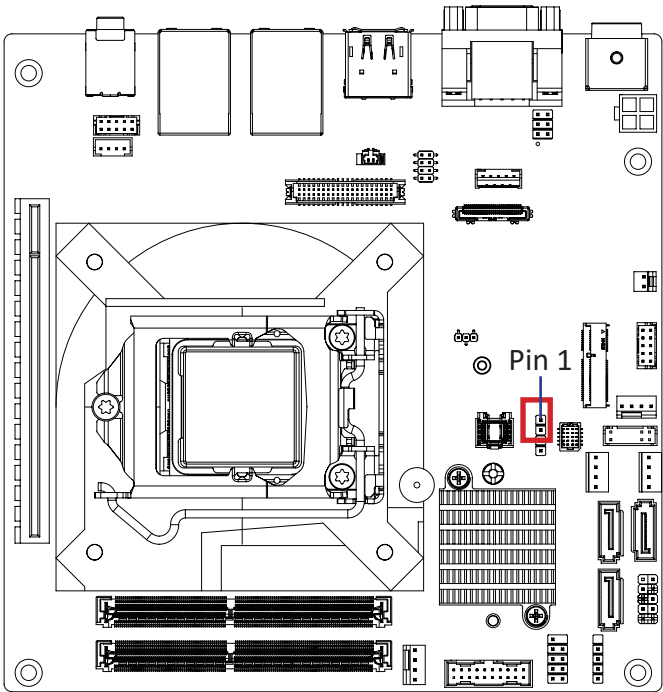
Vendor

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



# 2.2.19 CLR\_CMOS (Clear CMOS jumper)

26



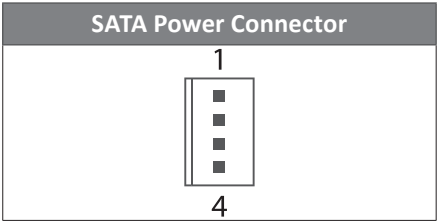
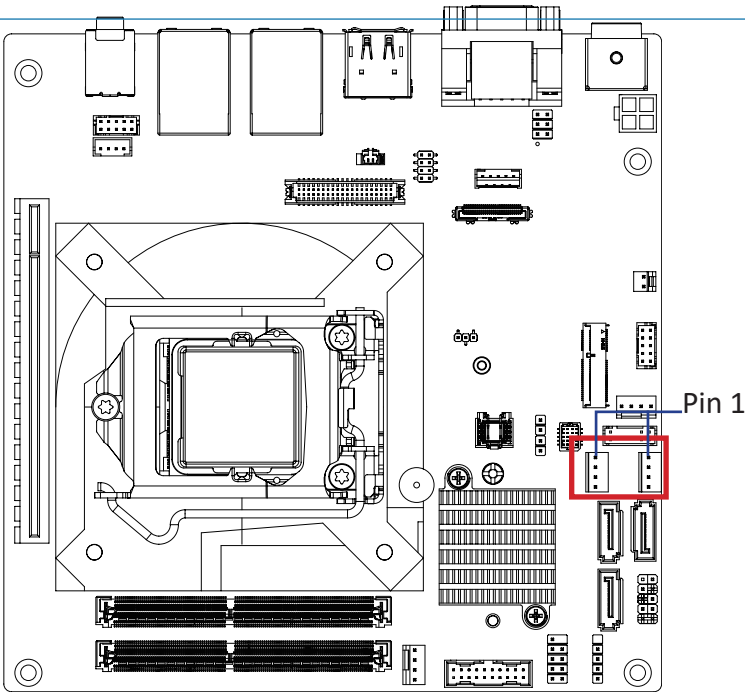
Clear COMS jumper

1

| Pin No.                                     | Definition |
|---------------------------------------------|------------|
| 1                                           | Clear CMOS |
| 2                                           | GND        |
| Open:<br>Normal Operation (Default setting) |            |
| Close:<br>Clear COMS data.                  |            |

2.2.20 SATA\_PWR1, SATA\_PWR2 (SATA Power Connector x 2)

27

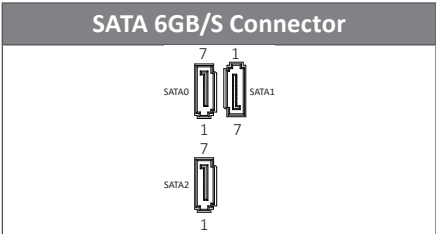
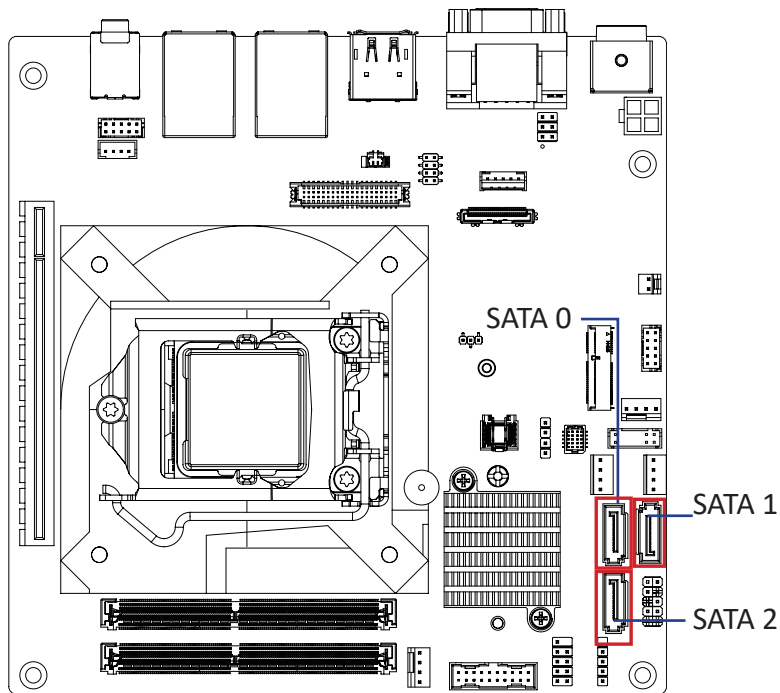


| Connector PN   | Vendor    |
|----------------|-----------|
| 743-81-04TW00  | PINREX    |
| WF04Q2-3BJQ000 | HORNGTONG |

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

2.2.21 SATA0, 1, 2 (SATA 6 Gb/s Connector x 3)

28

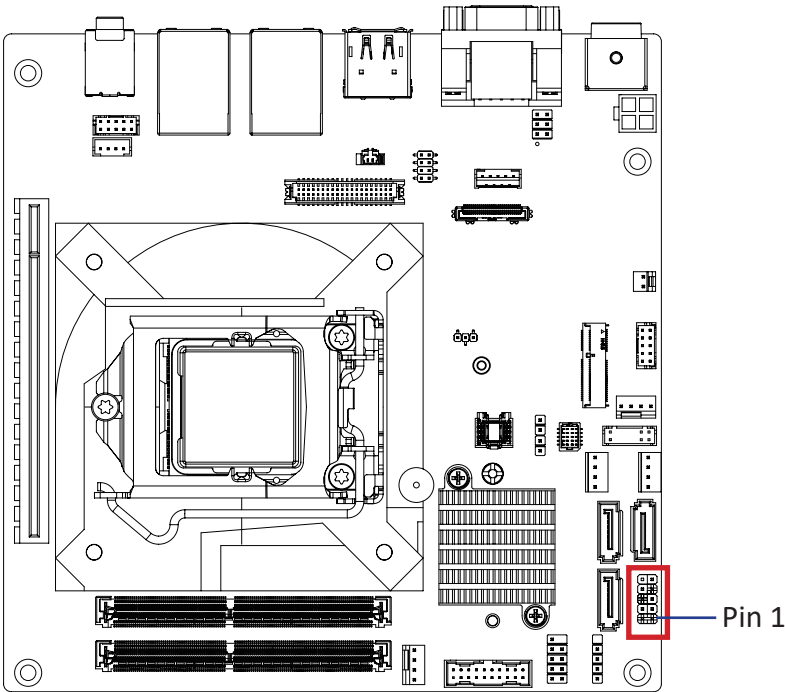


| Connector PN      | Vendor |
|-------------------|--------|
| WATM-07ABNB2BAUW3 | WINWIN |
| 770-83-07SW19     | PINREX |

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

2.2.22 SYS\_PANEL (System Panel header)

29



System Panel Header



Connector PN

210-92-05GW5W

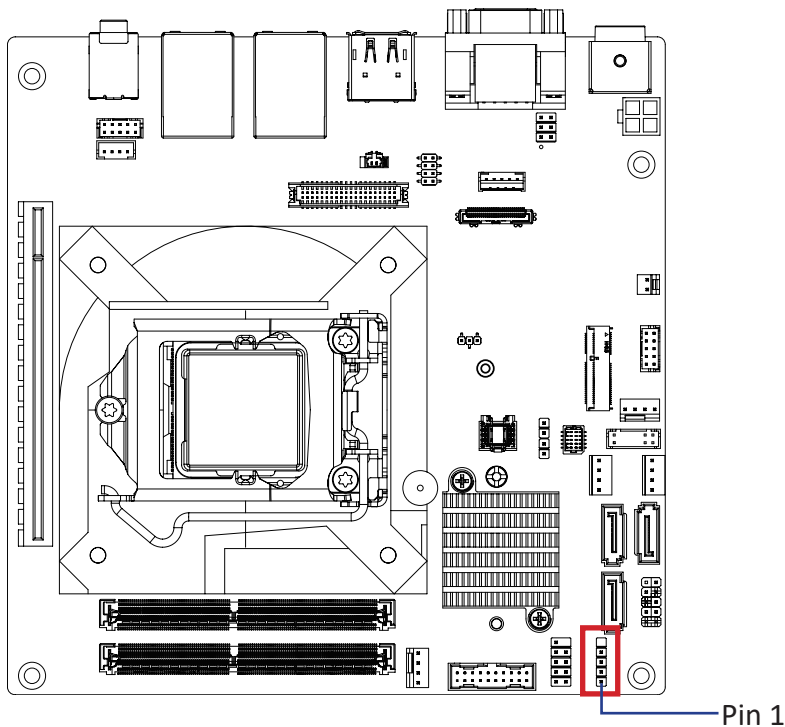
Vendor

PINREX

| 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         |

### 2.2.23 FUSB2\_1 (USB 2.0 header)

30



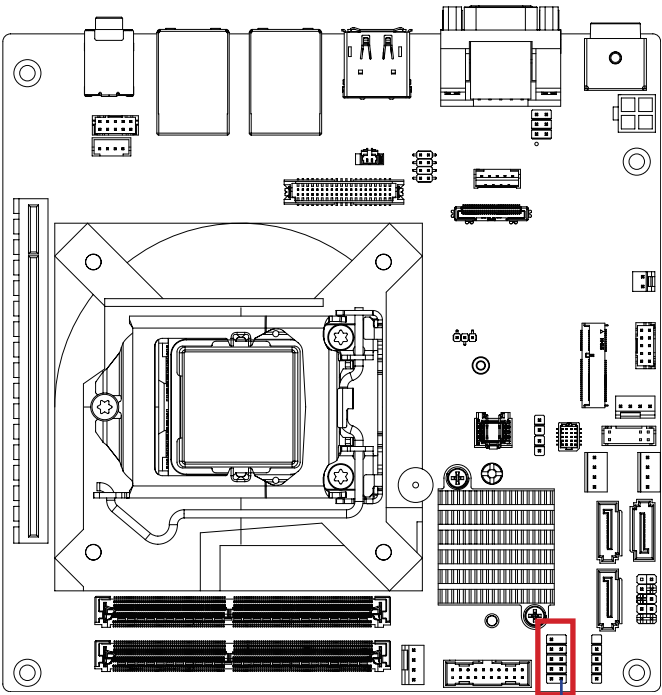
| USB 2.0 Header |                                                                                     |
|----------------|-------------------------------------------------------------------------------------|
|                |  |
|                | 1                                                                                   |

| Connector PN  | Vendor    |
|---------------|-----------|
| 210-91-05GB02 | PINREX    |
| PH05R23BAZ005 | HORNGTONG |

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

2.2.24 FUSB2\_2 (USB 2.0 header)

31



Pin 1

USB 2.0 Header

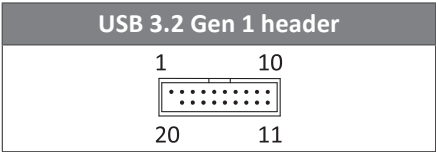
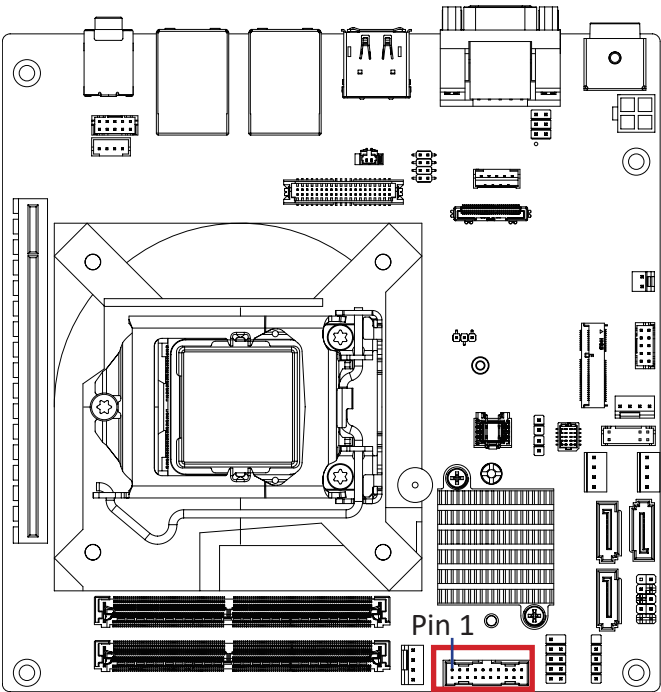


| Pin No. | Definition |
|---------|------------|
| 1       | 5V         |
| 2       | 5V         |
| 3       | D2n        |
| 4       | D1n        |
| 5       | D2p        |
| 6       | D1p        |
| 7       | GND        |
| 8       | GND        |
| 9       | No Pin     |
| 10      | NC         |

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

## 2.2.25 FUSB3 (USB 3.2 Gen 1 header)

32



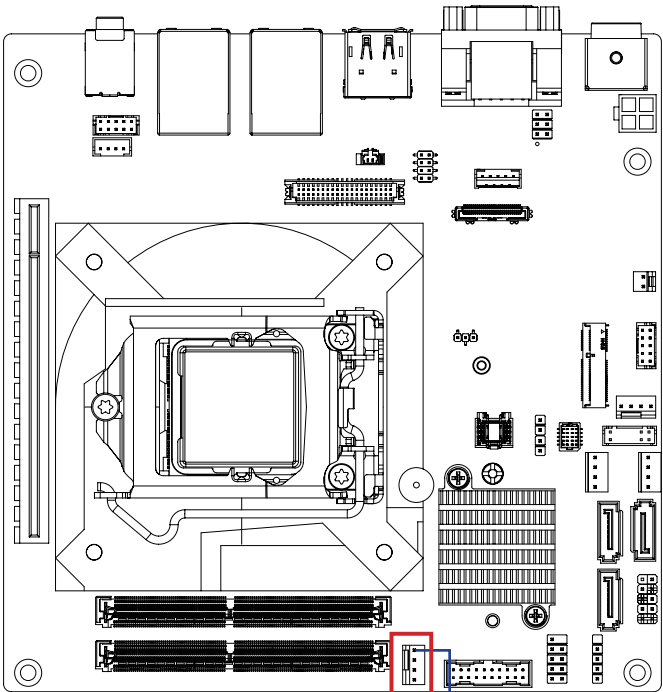
| Pin No. | Definition |
|---------|------------|
| 1       | 5V         |
| 2       | RX1n       |
| 3       | RX1p       |
| 4       | GND        |
| 5       | TX1n       |
| 6       | TX1p       |
| 7       | GND        |
| 8       | D1n        |
| 9       | D1p        |
| 10      | OC         |

| Pin No. | Definition |
|---------|------------|
| 11      | D2p        |
| 12      | D2n        |
| 13      | GND        |
| 14      | TX2p       |
| 15      | TX2n       |
| 16      | GND        |
| 17      | RX2p       |
| 18      | RX2n       |
| 19      | 5V         |
| 20      | NC         |

| Connector PN    | Vendor |
|-----------------|--------|
| 52X-80-20GU65   | PINREX |
| WUIR-19A9N4BU3W | WINWIN |

2.2.26 CPU\_FAN (CPU FAN Connector)

33



Pin 1

CPU Fan Connector



Connector PN

744-81-045W11

Vendor

PINREX

Pin No.

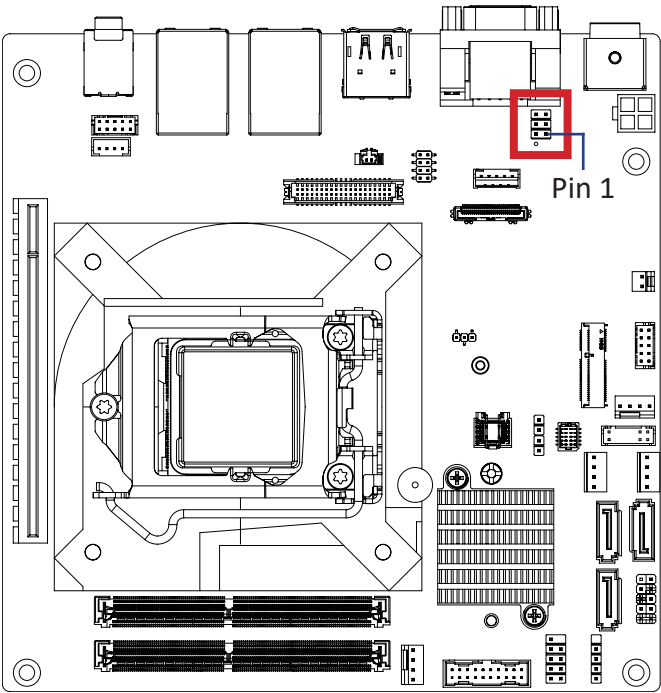
Definition

|   |               |
|---|---------------|
| 1 | GND           |
| 2 | 12V           |
| 3 | Detect        |
| 4 | Speed Control |



### 2.2.27 JCOM1 (RI pin RI/5V/12V select jumper for COM1 port)

34

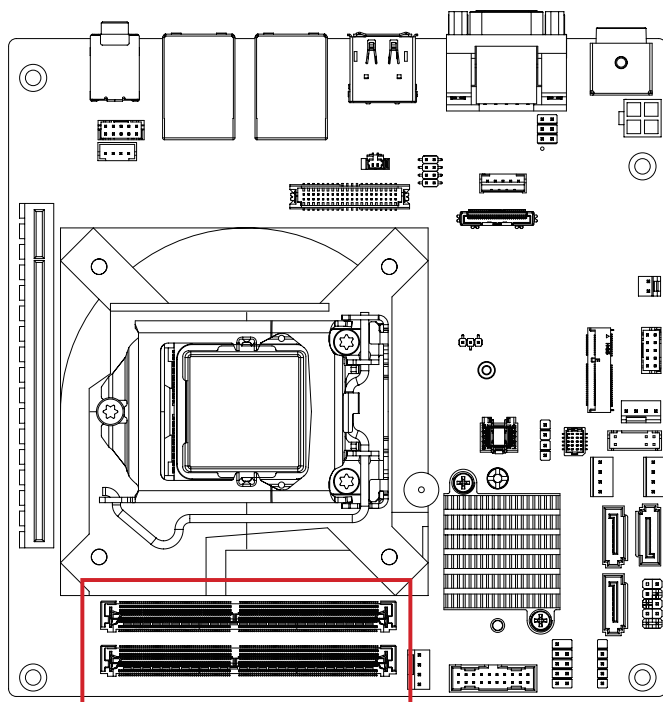


| JCOM1 Jumper Select |                               |
|---------------------|-------------------------------|
|                     | 1-2 Close:<br>5V (Power COM)  |
|                     | 3-4 Close:<br>RI (Stand COM)  |
|                     | 5-6 Close:<br>12V (Power COM) |

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

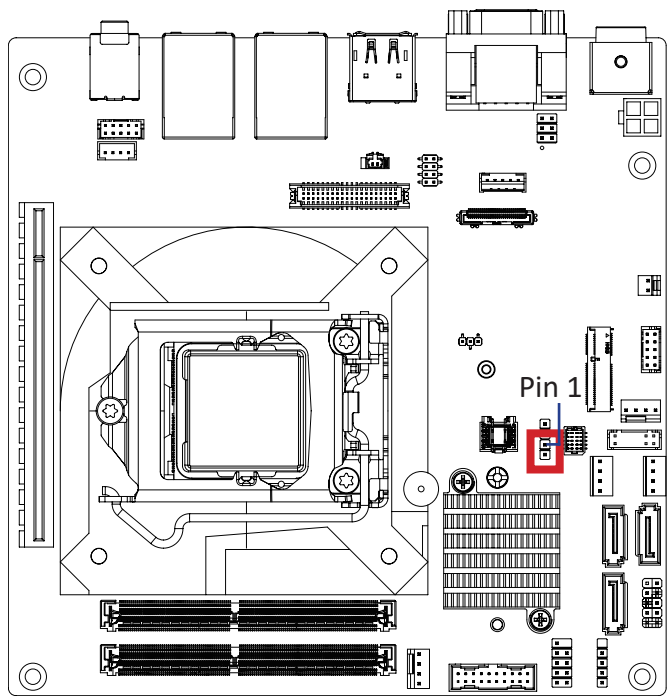
## 2.2.28 SODIMM1, SODIMM2 (2 x DDR4 SO-DIMM Sockets)

35



# 2.2.29 ME\_EN (ME Disable jumper)

36



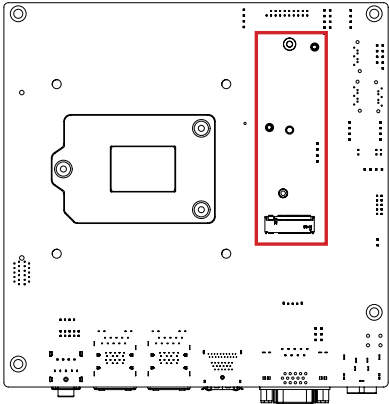
| ME Enable connector |  |
|---------------------|--|
|                     |  |

| Connector PN  | Vendor    |
|---------------|-----------|
| 210-91-02GBK2 | PINREX    |
| PH02R23BAZE11 | HORNGTONG |

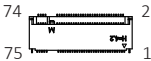
| ME Enable Jumper |         |
|------------------|---------|
|                  | Enable  |
|                  | Disable |

2.2.30 M2M (M.2 Slot, M-Key NGFF-2280)

37



M.2 M Key Connector



| Pin No. | Definition | Pin No. | Definition |
|---------|------------|---------|------------|
| 1       | GND        | 2       | 3.3V       |
| 3       | GND        | 4       | 3.3V       |
| 5       | PCIe3 RXn  | 6       | NC         |
| 7       | PCIe3 RXp  | 8       | NC         |
| 9       | GND        | 10      | NC         |
| 11      | PCIe3 TXn  | 12      | 3.3V       |
| 13      | PCIe3 TXp  | 14      | 3.3V       |
| 15      | GND        | 16      | 3.3V       |
| 17      | PCIe2 RXn  | 18      | 3.3V       |
| 19      | PCIe2 RXp  | 20      | NC         |
| 21      | GND        | 22      | NC         |
| 23      | PCIe2 TXn  | 24      | NC         |
| 25      | PCIe2 TXp  | 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      | PCIe2 TXp  | 38      | DEVSLP     |
| 39      | GND        | 40      | SMB Clock  |
| 41      | PCIe0 RXn  | 42      | SMB DATA   |

| Pin No. | Definition  | Pin No. | Definition         |
|---------|-------------|---------|--------------------|
| 43      | PCIe0 RXp   | 44      | SMB ALT            |
| 45      | GND         | 46      | NC                 |
| 47      | PCIe0 TXn   | 48      | NC                 |
| 49      | PCIe0 TXp   | 50      | PCI Reset          |
| 51      | GND         | 52      | PCIe Clock Request |
| 53      | PCIe Clock- | 54      | NC                 |
| 55      | PCIe Clock+ | 56      | NC                 |
| 57      | GND         | 58      | NC                 |

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

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

## Chapter 3

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### 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

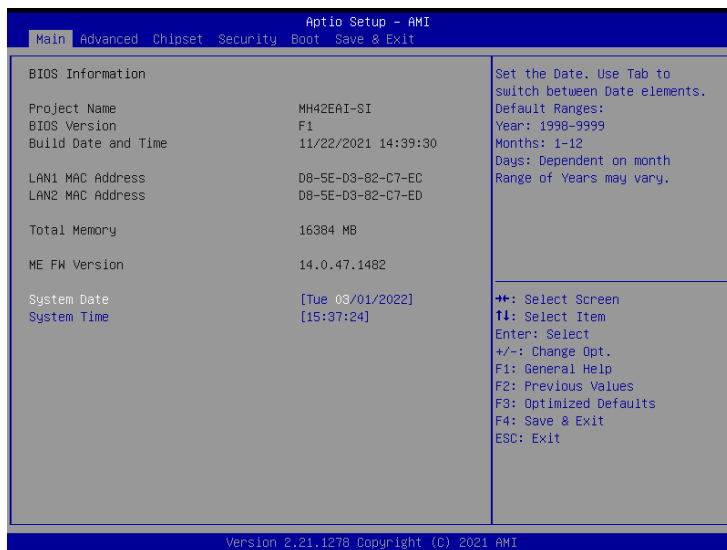
Once the system is power on, press the <DEL> key as soon as possible to access into BIOS Setup program.

## 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

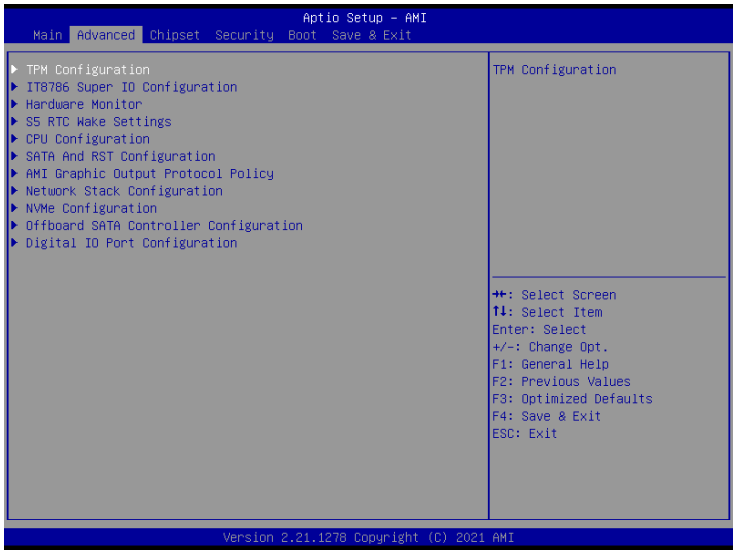
The main menu shows the basic system information.  
Use arrow keys to move among the items.



| Items                      | Description                                                                    |
|----------------------------|--------------------------------------------------------------------------------|
| <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 LAN MAC Address information</b>                                       |
| <b>LAN2 MAC Address</b>    | <b>Shows LAN 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 ME firmware version</b>                                               |
| <b>System Date</b>         | <b>Set the Date for the system<br/>(Format : Weekday - Month - Day - Year)</b> |
| <b>System Time</b>         | <b>Set the time for the system<br/>(Format : Hour - Minute - Second)</b>       |

### 3.3      **Advanced**

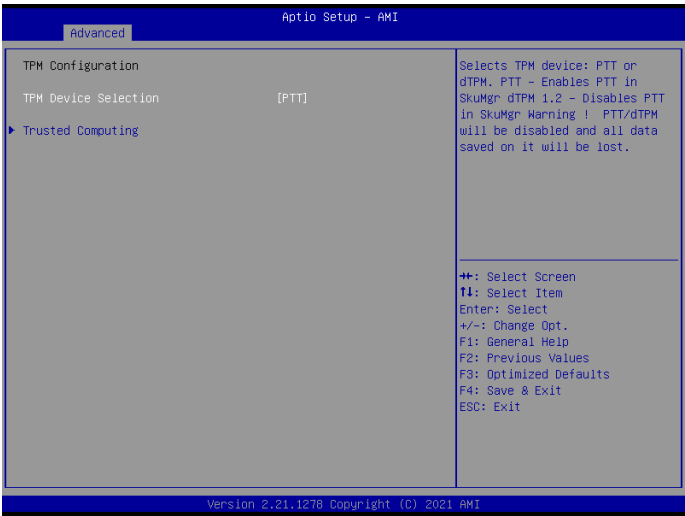
The Advanced menu is to configure the functions of hardware settings through submenu. Use arrow keys to move among the items, and press <Enter> to access into the related submenu.





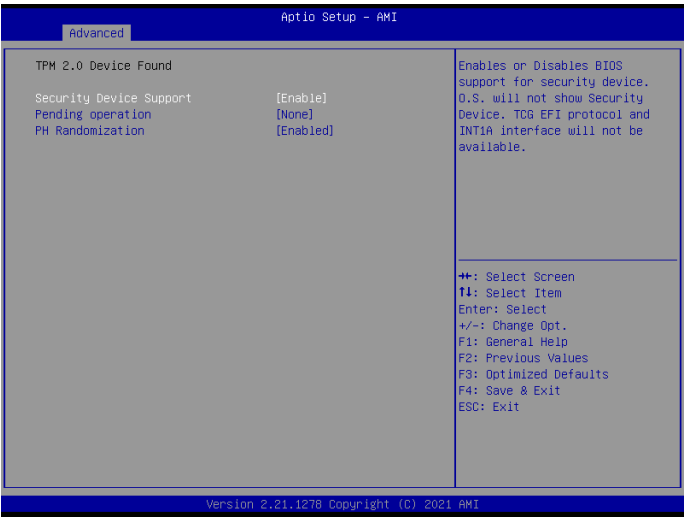
3.3.1 TPM Configuration

Use TPM Configuration submenu to choose TPM interface.



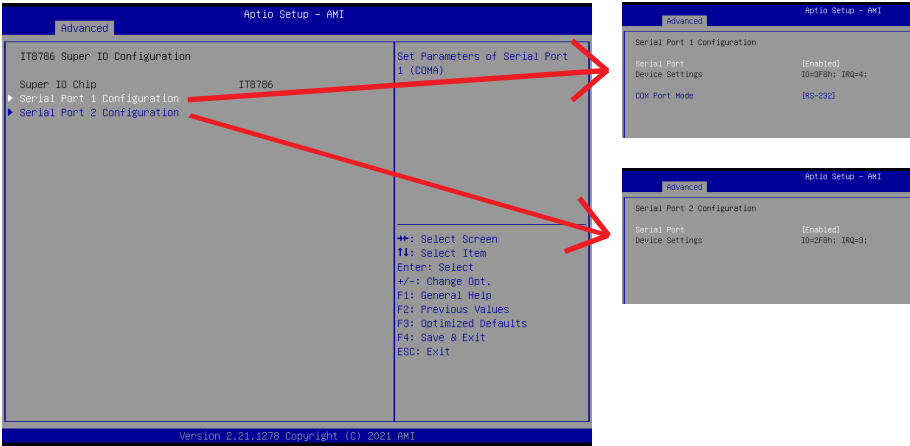
| Item                 | Description                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------|
| TPM Device Selection | PTT : Internal TPM (Default setting)<br>dTPM : External TPM (When using External TPM module or having TPM chip on MB) |

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



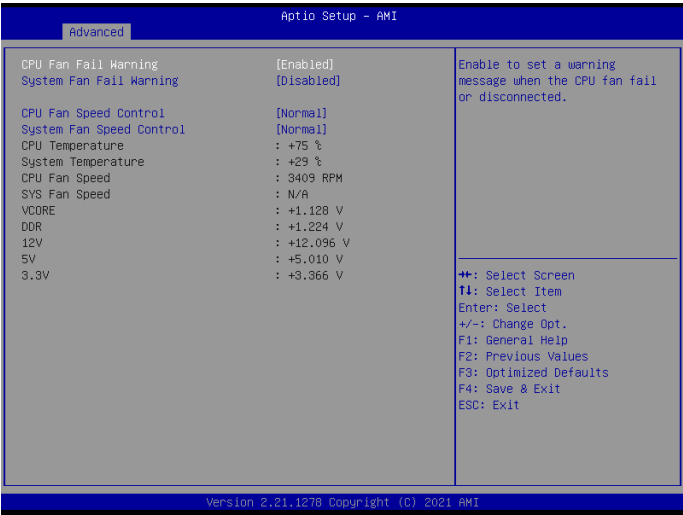
| Item                    | Description                                                                                                                              |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Security Device Support | Enabled : Enables TPM feature (Default setting)<br>Disabled : Disables TPM feature                                                       |
| Pending operation       | None : No execution will be conducted (Default setting)<br>TPM clear : Set to clear data on TPM                                          |
| PH Randomization        | Enabled : Enables Platform Hierarchy (PH) Randomization. (Default setting)<br>Disabled : Disables Platform Hierarchy (PH) Randomization. |

### 3.3.2 IT8786 Super IO Configuration



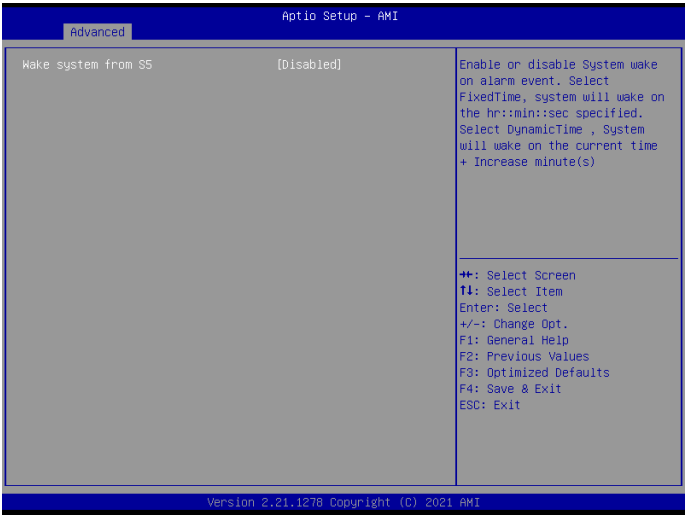
| Item                               | Description                                                                                                                                                                                                                                                          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

### 3.3.3 Hardware Monitor



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

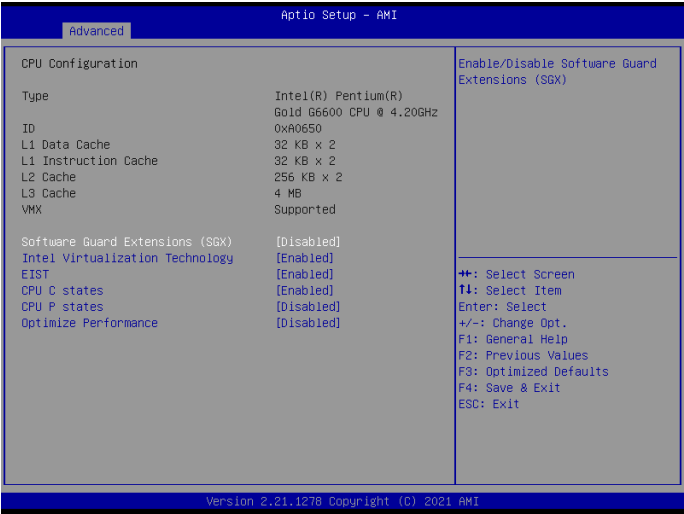
3.3.4 S5 RTC Wake Settings



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

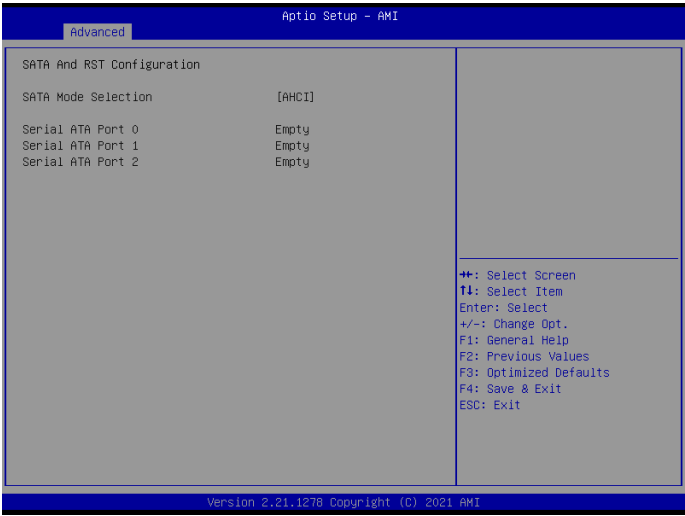
### 3.3.5 CPU Configuration

This submenu shows detailed CPU informations.



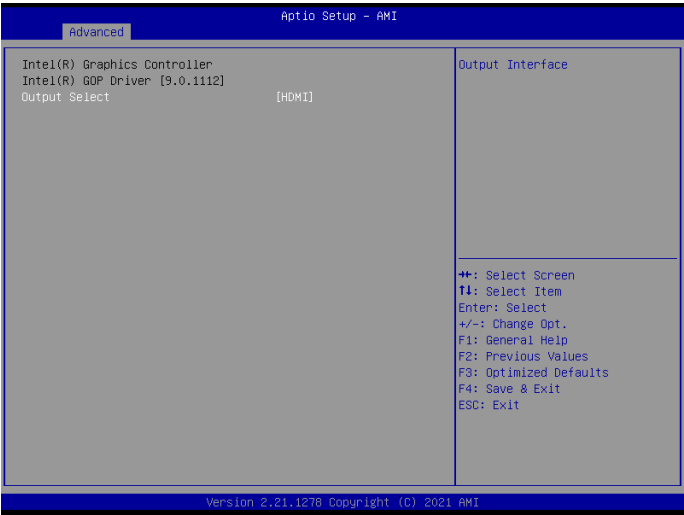
| Item                            | Description                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Software Guard Extensions (SGX) | <b>Disabled</b> : Disables Software Guard Extensions (SGX) (Default setting)<br><b>Enabled</b> : Enables Software Guard Extensions (SGX)<br><b>Software Controlled</b> : If this item is selected, SGX will be controlled by SGX application for UEFI boot OS                                                                                                                                  |
| 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><b>Enabled</b> : Enables Intel Virtualization Technology (Default setting)<br><b>Disabled</b> : Disables Intel Virtualization Technology |
| EIST                            | According to System loading, Enhanced Intel SpeedStep Technology (EIST) will automatically adjust the CPU voltage and core frequency to decrease heat and power consumption for power saving.<br><b>Enabled</b> : Enables EIST Technology (Default setting)<br><b>Disabled</b> : Disables EIST Technology                                                                                      |
| CPU C states                    | Command CPU to enter into low power consumption mode when CPU is under idle mode.<br><b>Enabled</b> : Enables CPU C states function (Default setting)<br><b>Disabled</b> : Disables CPU C states function                                                                                                                                                                                      |
| CPU P states                    | CPU will adjust frequency depends on it's loading.<br><b>Enabled</b> : Enables CPU P states function<br><b>Disabled</b> : Disables CPU P states function (Default setting)                                                                                                                                                                                                                     |
| Optimize Performance            | To optimize CPU performance.<br><b>Enabled</b> : Enables optimize performance function<br><b>Disabled</b> : Disables optimize performance function (Default setting)                                                                                                                                                                                                                           |

3.3.6 SATA And RST Configuration



| Item                | Description                         |
|---------------------|-------------------------------------|
| SATA Mode Selection | Set SATA controller to AHCI mode    |
| Serial ATA Port 0   | shows 2.5" SATA HDD/SSD information |
| Serial ATA Port 1   |                                     |
| Serial ATA Port 2   |                                     |

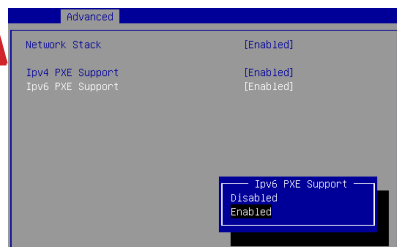
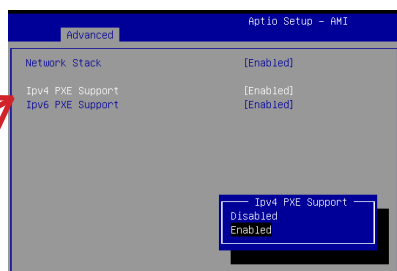
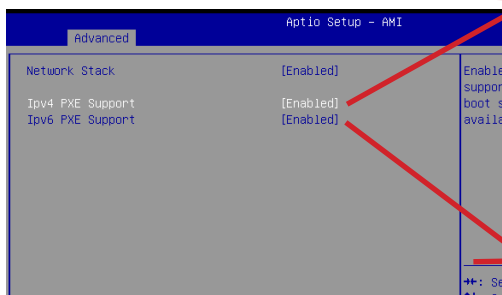
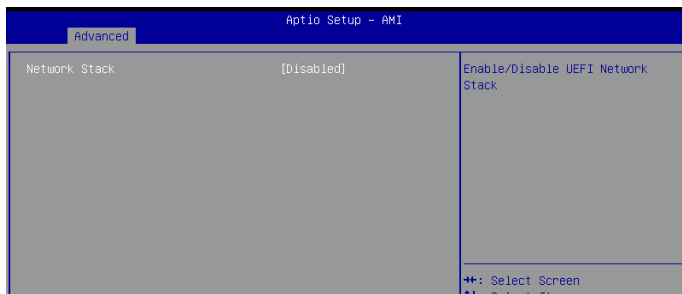
### 3.3.7 AMI Graphic Output Protocol Policy



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



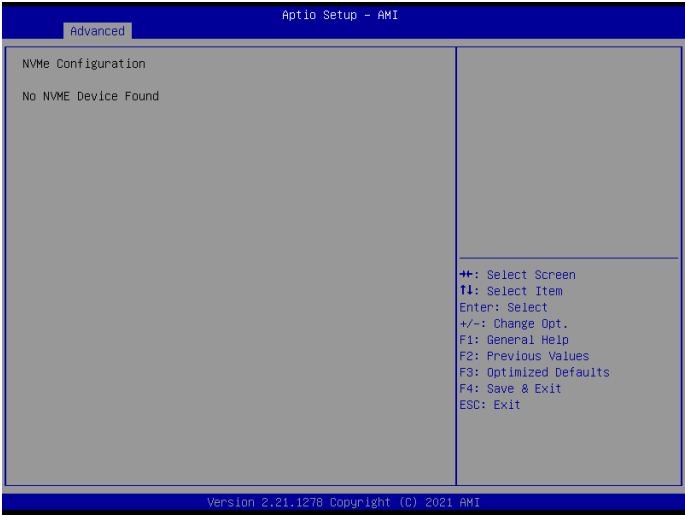
### 3.3.8 Network Stack Configuration



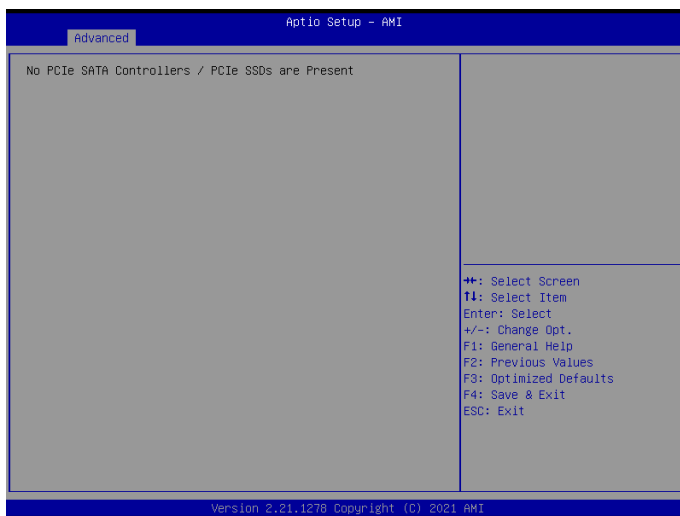
| Item                    | Description                                                                                                                                                                   |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------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

### 3.3.9 NVMe Configuration

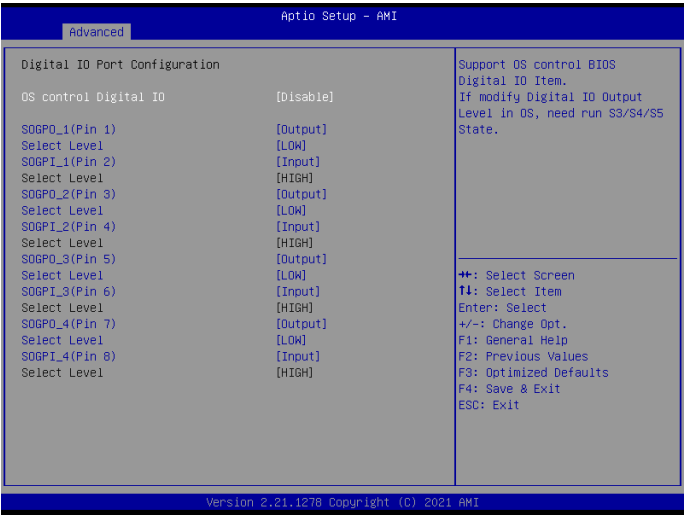
NVMe Configuration shows information when your M.2 NVMe PCIe SSD is installed.



### 3.3.10 Offboard SATA Controller Configuration

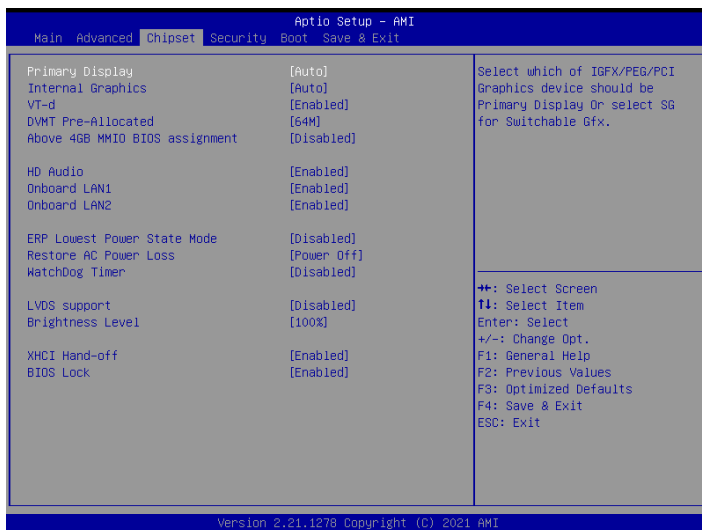


### 3.3.11 Digital IO Port Configuration



| 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.                                                                                                                                                               |

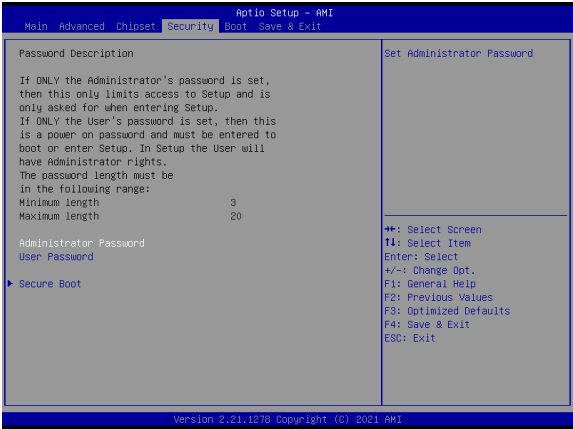
### 3.4 Chipset



| Item                           | Description                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary Display                | <b>Auto</b> : When detects PCIe Graphic card, primary display will set to PCIe (Default setting)<br><b>IGFX</b> : Force IGFX Graphic card as the primary display device<br><b>PEG</b> : Force PEG Graphic card as the primary display device                                                                                                                                      |
| Internal Graphics              | Enables or disables the onboard graphics function<br><b>Auto</b> : Detects display device automatically (Default setting)<br><b>Enabled</b> : Enables onboard graphics<br><b>Disabled</b> : Disables onboard graphics                                                                                                                                                             |
| VT-d                           | <b>Enabled</b> : Enables VT-d function (Default setting)<br><b>Disabled</b> : 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><b>Option items</b> : 32M , 64M(Default setting), 128M, 256M                                                                                                                                                                                                 |
| Above 4GB MMIO BIOS assignment | Enable or disable to re-allocate memory space for device cards when more than one external graphic cards installed.<br>(This function could be only used under 64 bit operating system with above 4 GB address space)<br><b>Enabled</b> : Enables Above 4GB MMIO BIOS assignment function<br><b>Disabled</b> : Disables Above 4GB MMIO BIOS assignment function (Default setting) |
| HD Audio                       | Enable/Disable onboard audio controller<br><b>Enabled</b> : Enables onboard audio controller (Default setting)<br><b>Disabled</b> : Disables onboard audio controller                                                                                                                                                                                                             |

|                                        |                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Onboard LAN1<br/>Onboard LAN2</b>   | Enable/Disable onboard LAN controller<br><b>Enabled : Enables onboard LAN controller (Default setting)</b><br><b>Disabled : Disables onboard LAN controller</b>                                                                                                                                          |
| <b>ERP Lowest Power<br/>State Mode</b> | Enable/Disable power saving funtion<br><b>Enabled : Enables ERP Lowest Power State Mode</b><br><b>Disabled : Disabled ERP Lowest Power State Mode (Default setting)</b>                                                                                                                                  |
| <b>Restore AC Power<br/>Loss</b>       | To set which option the system should returns if a sudden power loss occurred<br><b>Power off : Do not power on when the power is back (Default setting)</b><br><b>Power on : System power on when the power is back</b><br><b>Last state : Restore the system to the state before power loss occurs</b> |
| <b>Watchdog Timer</b>                  | Enable/Disable Watchdog Timer function<br><b>Disabled : Disabled Watchdog Timer function (Default setting)</b><br><b>30s : delay watchdog for 30 seconds.</b><br><b>60s : delay watchdog for 60 seconds.</b>                                                                                             |
| <b>LVDS Support</b>                    | <b>Disabled : Disables LVDS Support (Default setting)</b><br><b>Enabled : Enables LVDS Support</b>                                                                                                                                                                                                       |
| <b>Brightness Level</b>                | To modified the backlight brightness of the LVDS panel<br><b>Option items : 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100% (Default Setting)</b>                                                                                                                                                      |
| <b>XHCI Hand-off</b>                   | Enable/Disable XHCI Hand-off function<br><b>Enabled : Enables XHCI Hand-off function (Default setting)</b><br><b>Disabled : Disables XHCI Hand-off function</b>                                                                                                                                          |
| <b>BIOS Lock</b>                       | Enable/Disable BIOS Lock function<br><b>Enabled : Enables BIOS Lock function (Default setting)</b><br><b>Disabled : Disabled BIOS Lock funtion</b>                                                                                                                                                       |

3.5 Security

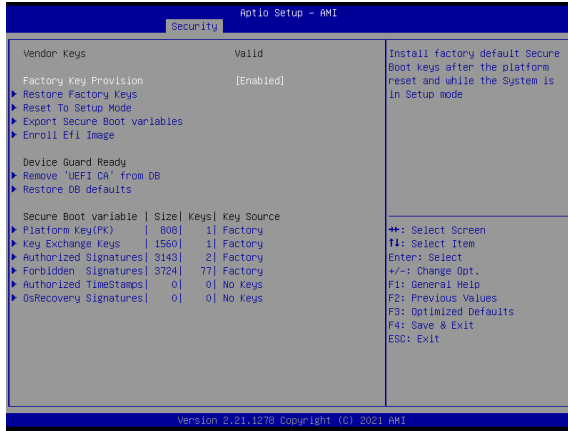


| Item                   | Description                                                                                   |
|------------------------|-----------------------------------------------------------------------------------------------|
| Administrator Password | To set up Administrator's password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



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



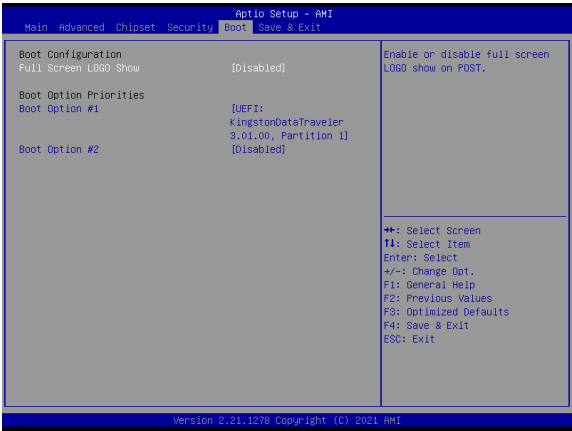


| Item                                | Description                                                                                                                                                                                                                     |
|-------------------------------------|-----------------------------------------------------------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

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

### 3.7 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<br><b>Yes : Agree to save and reset</b><br><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<br><b>Yes : Agree to discard changes and reset</b><br><b>No : Cancel to discard changes and reset</b>                                    |
| <b>Restore Defaults</b>          | Restore/Load default values for all the setup options<br><b>Yes : Agree to load optimized defaults</b><br><b>No : Cancel to load optimized defaults</b>                                                     |
| <b>Me FW Image Re-Flahs</b>      | Enable/Disable Me FW image re-flash function<br><b>Enabled : Enables Me FW image re-flash function</b><br><b>Disabled : Disables Me FW image re-flash function (Default setting)</b>                        |