

# GENE-MTH6

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3.5" Subcompact Board

User's Manual 1<sup>st</sup> 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 |
|-----------|----------|
| GENE-MTH6 | 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 product page at [AAEON.com](http://AAEON.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)

产品中有害有毒物质或元素名称及含量

AAEON 主板/子板/背板

QQ4-381 Rev.A2

| 部件名称                                                                                                                                                                                                                                                              | 有害有毒物质或元素 |           |           |                 |               |                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|-----------|-----------------|---------------|-----------------|
|                                                                                                                                                                                                                                                                   | 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>及其电子组件                                                                                                                                                                                                                                                   | ×         | ○         | ○         | ○               | ○             | ○               |
| 外部信号<br>连接器及线材                                                                                                                                                                                                                                                    | ×         | ○         | ○         | ○               | ○             | ○               |
| <p>本表格依据 SJ/T 11364 的规定编制。</p> <p>○：表示该有害有毒物质在该部件所有均质材料中的含量均在GB/T 26572标准规定的限量要求以下。</p> <p>×：表示该有害物质的某一均质材料超出了GB/T 26572的限量要求，然而该部件仍符合欧盟指令2011/65/EU 的规范。</p> <p>环保使用期限(EFUP (Environmental Friendly Use Period)) : 10年</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)

Name and content of hazardous substances in product

AAEON Main Board/Daughter Board/Backplane

QO4-381 Rev.A2

| Part Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Hazardous Substances |           |           |                 |               |                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------|-----------|-----------------|---------------|-----------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 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) |
| PCB Assemblies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ×                    | ○         | ○         | ○               | ○             | ○               |
| Connector and Cable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ×                    | ○         | ○         | ○               | ○             | ○               |
| <p>The table is prepared in accordance with the provisions of SJ/T 11364.</p> <p>○: Indicates that said hazardous substance contained in all of the homogenous materials for this product is below the limit requirement of GB/T 26572.</p> <p>×: Indicates that said hazardous substance contained in at least one of the homogenous materials used for this part is above the limit requirement of GB/T 26572.</p> <p>But this product still be compliance with 2011/65/EU Directive (allowed with 2011/65/EU Annex III of RoHS exemption with number 6(c),7(a),7(c)-1).</p> <p>EFUP (Environment Friendly Use Period) value: 10 years</p> <p>Notes: This product defined period of use is under normal condition.</p> |                      |           |           |                 |               |                 |

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# Chapter 1

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Product Specifications

# 1.1 Specifications

| System         |                                                                                                                                                                                                                                                                                                                                                |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Form Factor    | 3.5" SubCompact Board                                                                                                                                                                                                                                                                                                                          |
| CPU            | Intel® Core™ Ultra Processors:<br><br>Intel® Core™ Ultra 7 Processor 155H<br>(16C/22T, up to 4.8 GHz, 28W)<br><br>Intel® Core™ Ultra 5 Processor 125H<br>(14C/18T, up to 4.5 GHz, 28W)<br><br>Intel® Core™ Ultra 7 Processor 155U<br>(12C/14T, up to 4.8 GHz, 15W)<br><br>Intel® Core™ Ultra 5 Processor 125U<br>(12C/14T, up to 4.3 GHz, 15W) |
| Chipset        | Integrated with Intel® SoC                                                                                                                                                                                                                                                                                                                     |
| Memory Type    | DDR5 5600, Dual-Channel SODIMM x 2, up to 96GB,<br>Non-ECC                                                                                                                                                                                                                                                                                     |
| BIOS           | UEFI                                                                                                                                                                                                                                                                                                                                           |
| Wake on LAN    | Yes                                                                                                                                                                                                                                                                                                                                            |
| Watchdog Timer | 255 Levels                                                                                                                                                                                                                                                                                                                                     |
| Security       | TPM 2.0                                                                                                                                                                                                                                                                                                                                        |
| RTC Battery    | Lithium Battery 3V/240mAH                                                                                                                                                                                                                                                                                                                      |
| Dimensions     | 5.75" x 4" (146mm x 101.7mm)                                                                                                                                                                                                                                                                                                                   |
| Weight         | 0.88 lb. (0.4Kg)                                                                                                                                                                                                                                                                                                                               |
| OS Support     | Windows® 10 (64-bit)<br><br>Windows® 11 (64-bit)<br><br>Linux Ubuntu 22.04.3 (kernel 6.2.0-26-generic)                                                                                                                                                                                                                                         |

Power

|                   |                                                                                                                                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Power Requirement | +9V ~ 36V (Optional: +12V), ERP support                                                                                        |
| Power Supply Type | AT/ATX, support 3pin ATX                                                                                                       |
| Connector         | Phoenix 2-pin Connector (Colay 4 pin connector)                                                                                |
| Power Consumption | Intel® Core™ Ultra 7, DDR5 32GB x 2, 5.78A @+12V<br>(Typical)<br><br>Intel® Core™ Ultra 7, DDR5 32GB x 1, 8.42A @+12V<br>(Max) |

Display

|                   |                                                                                                                      |
|-------------------|----------------------------------------------------------------------------------------------------------------------|
| Controller        | Intel® Arc™ Graphics                                                                                                 |
| LVDS/eDP          | LVDS x 1, Dual-Channel 18/24-bit, up to 1920 x 1080<br><br>eDP 1.4b HBR3 x 1, up to 3840 x 2160 @60Hz                |
| Display Interface | HDMI 2.1 x 1, up to 8K x 4K @60Hz or 4K x 2K @120Hz<br><br>DP 2.0 x 1, up to 7680 x 4320 @60Hz 30bpp (supports DP++) |
| Multiple Display  | Up to 4 Simultaneous Displays                                                                                        |

Audio

|                 |                                                                   |
|-----------------|-------------------------------------------------------------------|
| Codec           | Realtek ALC897                                                    |
| Audio Interface | Line-in/Line-out/Mic (Audio function not available on WiTAS SKUs) |
| Speaker         | —                                                                 |

External I/O

|          |                                                   |
|----------|---------------------------------------------------|
| Ethernet | Intel® Ethernet Controller I226, 2.5GbE RJ-45 x 2 |
|          | Intel® Ethernet Connection I219, 1GbE RJ-45 x 1   |

**Note:** vPro only supported with Intel® Core™ Ultra 7 Processor 165U/165H, Intel® Core™ Ultra 5 Processor 135U/135H), LAN 2 & LAN 3 support PXE

|             |                        |
|-------------|------------------------|
| USB         | USB 3.2 Gen 2 x 2 Port |
| Serial Port | —                      |
| Video       | HDMI 2.1 x 1           |
|             | DP 2.0++ x 1           |

Internal I/O

|             |                                                                         |
|-------------|-------------------------------------------------------------------------|
| USB         | USB 2.0 x 4                                                             |
| Serial Port | COM 1, COM 2 (RS-232/422/485, supports 5V/12V/RI)                       |
|             | COM 3, COM 4 (RS-232)                                                   |
| Video       | LVDS x 1                                                                |
|             | Inverter x 1 (12V/2A)                                                   |
|             | eDP x 1                                                                 |
| SATA        | SATA 6Gb/s x 1                                                          |
|             | +5V SATA Power Connector x 1                                            |
| Audio       | Audio Header x 1 (Optional, audio function not available on WiTAS SKUs) |
| DIO/GPIO    | GPIO 8-bit                                                              |
| SMBus/I2C   | SMBus/I2C x 1 (Default: SMBus)                                          |
| Touch       | —                                                                       |
| Fan         | 4-wire Smart Fan x 1                                                    |
| Sim         | Nano SIM x 1                                                            |
| Front Panel | HDD LED, PWR LED, Power Button, Buzzer, Reset                           |

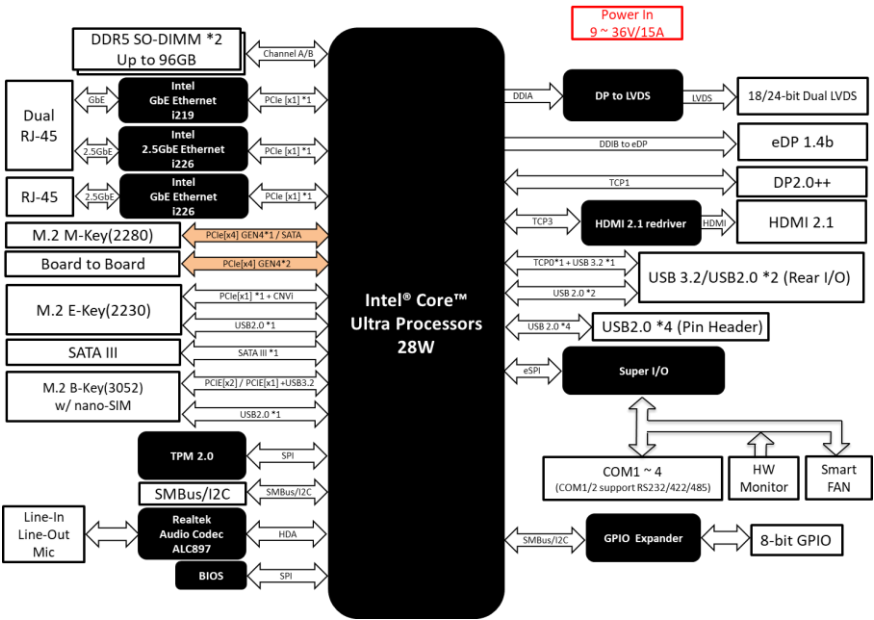
Expansion

|                 |                                                                                                                                                                                                                                                                                                                 |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mini PCIe/mSATA | —                                                                                                                                                                                                                                                                                                               |
| M.2             | M.2 2280 M-Key x 1 (PCIe 4.0 [x4]/SATA) Default :<br>PCIe 4.0 [x4] (selected by BOM)<br>M.2 3052 B-Key x 1 (PCIe 3.0 [x1] + USB 3.2/PCIe 3.0 [x2]) Default: PCIe 3.0 [x1] (selected by BOM)<br>M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0), supports Wi-Fi 6E CNVi<br>(RAID 0, RAID 1 support on PCIe storage) |
| Others          | FPC2 x 1 (PCIe Gen 4 [x4] x 2, RAID 0/1 support)<br>PER-SB2B A0.1                                                                                                                                                                                                                                               |

Environmental

|                    |                                            |
|--------------------|--------------------------------------------|
| Operating Temp.    | -4°F ~ 158°F (-20°C ~ 70°C)                |
| Storage Temp.      | -40°F ~ 176°F (-40°C ~ 81°C)               |
| Operating Humidity | 0% ~ 90% relative humidity, non-condensing |
| MTBF (Hours)       | 753,493                                    |
| EMC                | CE/FCC Class A                             |

## 1.2 Block Diagram

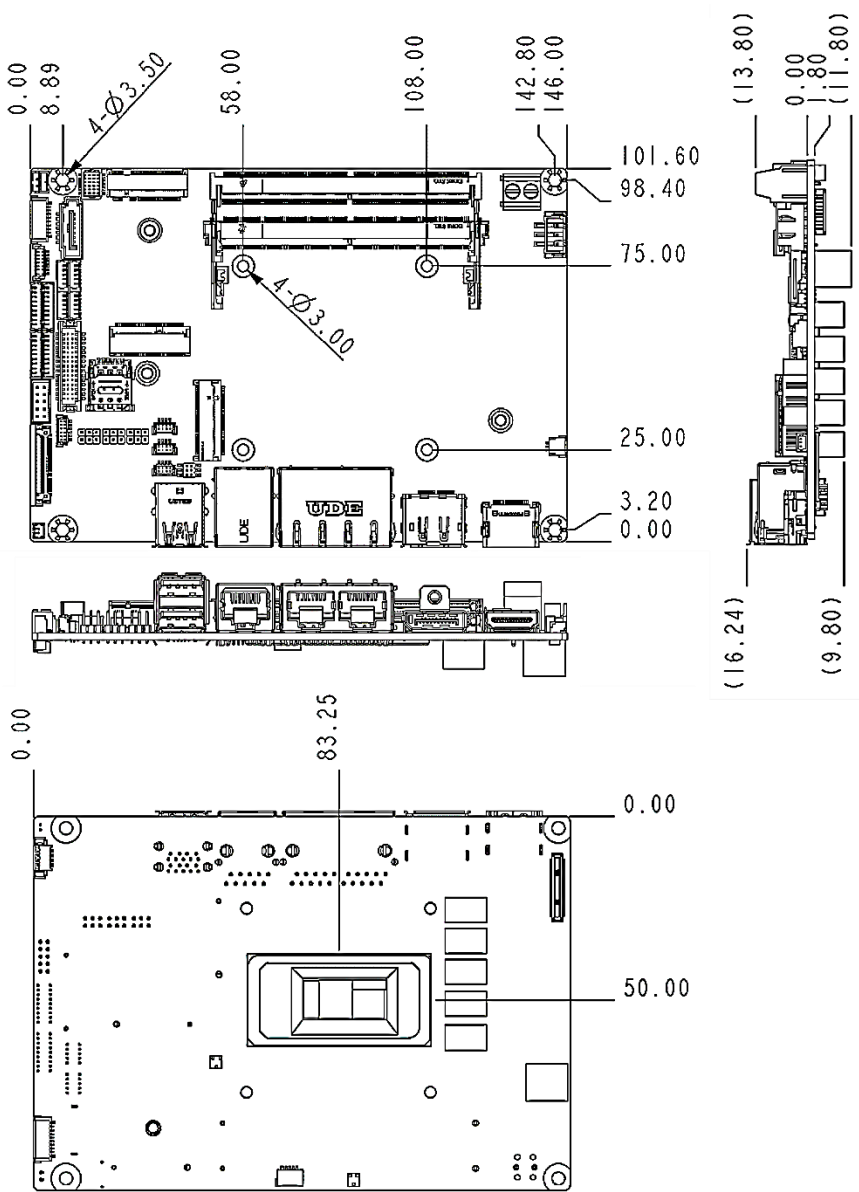


# Chapter 2

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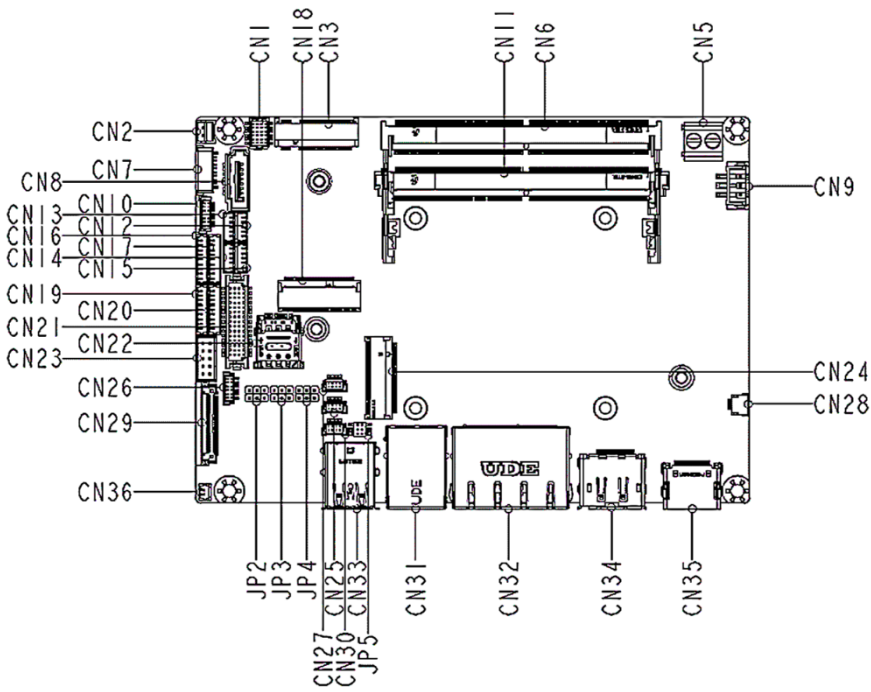
Hardware Information

## 2.1 Dimensions

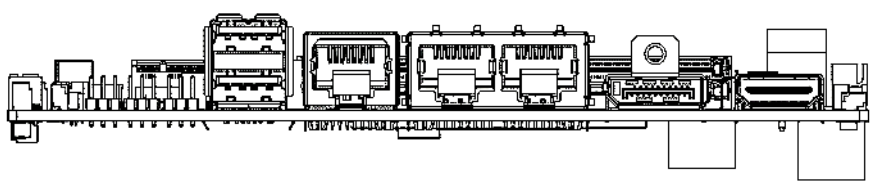


# 2.2 Jumpers and Connectors

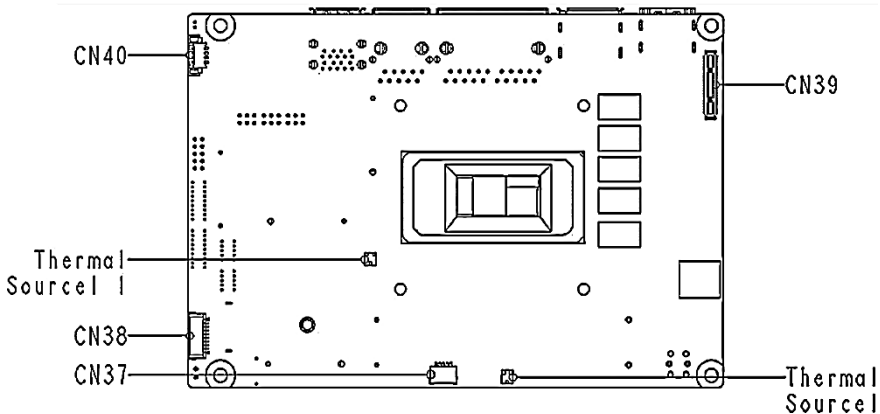
Top View



Front I/O View



Bottom View

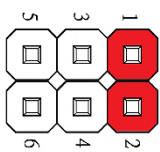
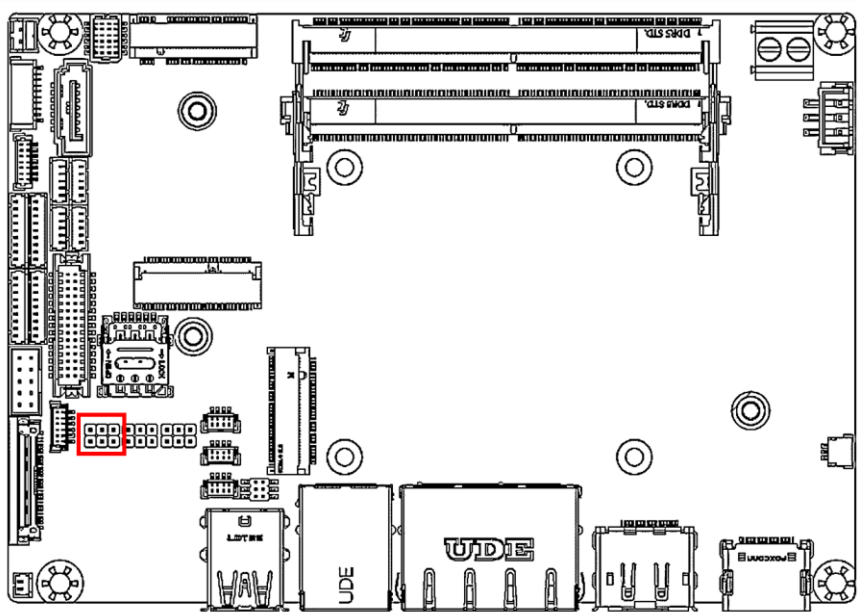


## 2.3 List of Jumpers

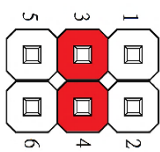
Please refer to the table below for all of the board's jumpers that you can configure for your application

| Label | Function                                   |
|-------|--------------------------------------------|
| JP2   | COM 1 Pin 9 Function Selection             |
| JP3   | COM 2 Pin 9 Function Selection             |
| JP4   | LVDS Operating Voltage Selection           |
|       | LVDS Backlight Inverter Voltage Selection  |
| JP5   | Clear CMOS Jumper                          |
|       | Auto Power Button Enable/Disable Selection |

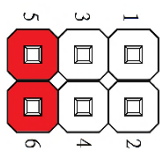
### 2.3.1 COM 1 Pin 9 Function Selection (JP2)



+12V

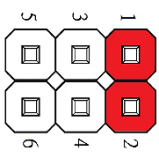
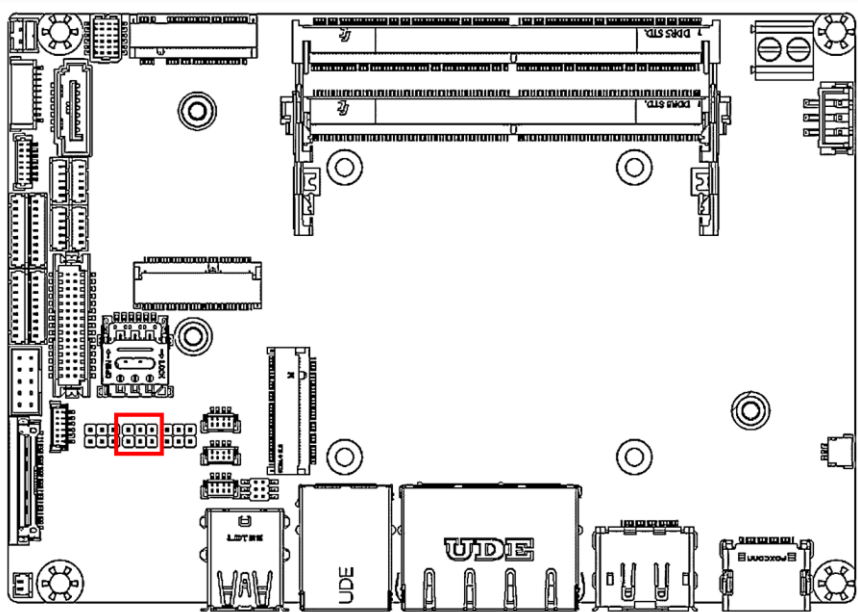


Ring (Default)

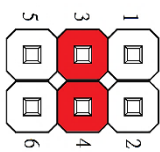


+5V

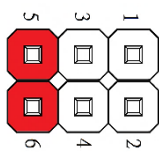
### 2.3.2 COM 2 Pin 9 Function Selection (JP3)



+12V

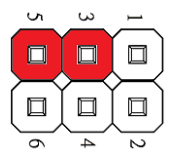
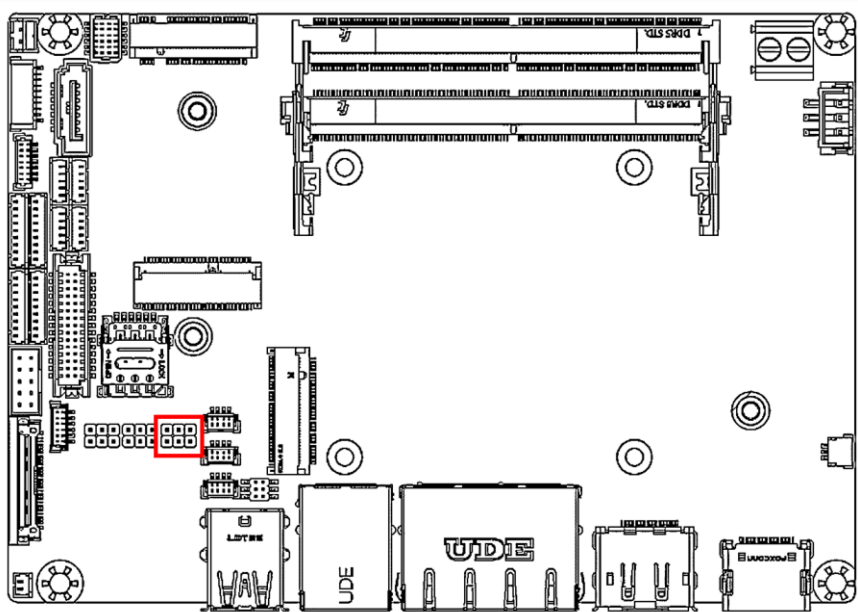


Ring (Default)

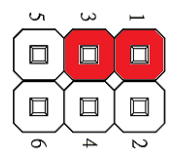


+5V

### 2.3.3 LVDS Backlight Inverter Voltage Selection (JP4)

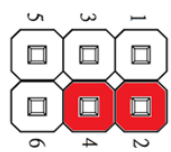
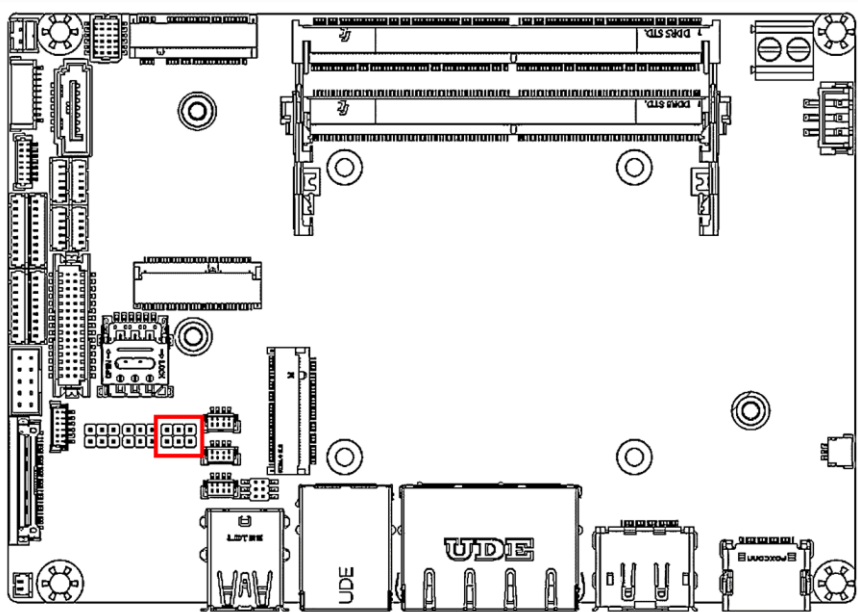


+5V (Default)

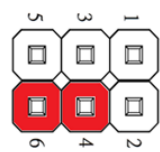


+12V

### 2.3.4 LVDS Operating Voltage Selection (JP4)

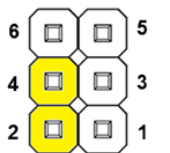
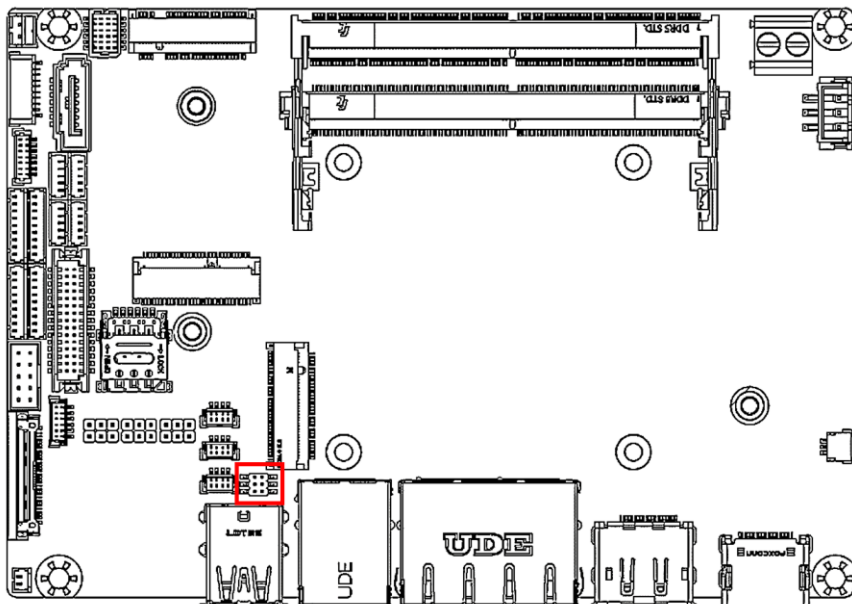


+3.3V (Default)

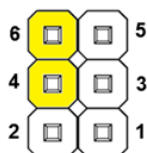


+5V

### 2.3.5 Clear CMOS Jumper (JP5)

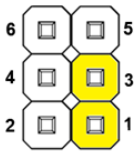
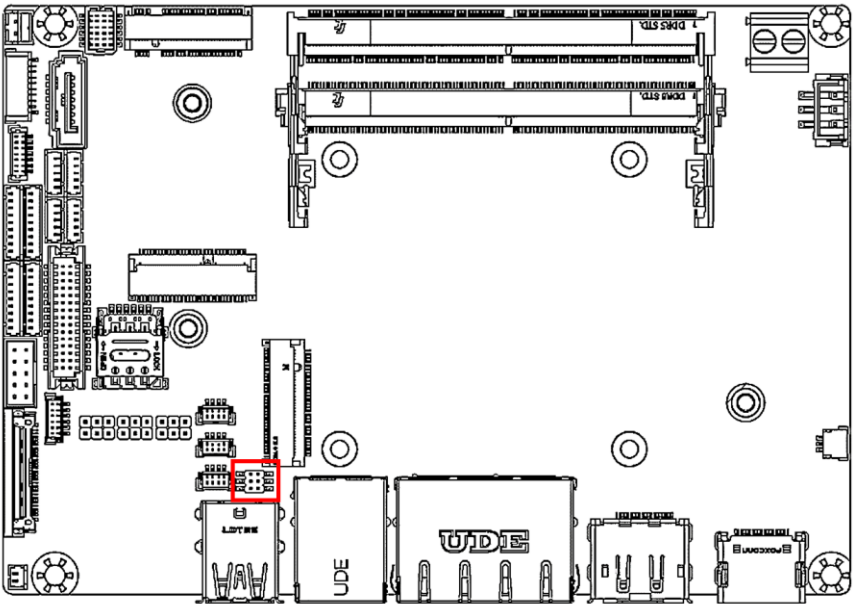


Normal (Default)

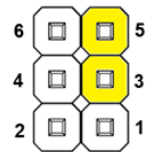


Clear CMOS

### 2.3.6 Auto Power Button Enable/Disable Selection (JP5)



Disable Auto Power Button



Enable Auto Power Button (Default)

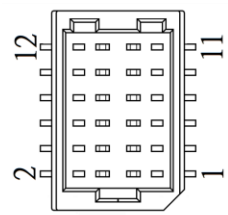
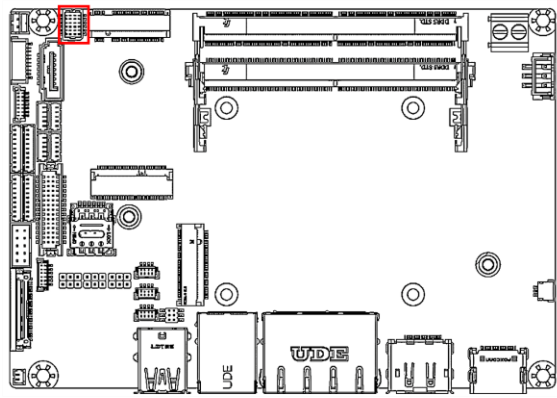
## 2.4 List of Connectors

Please refer to the table below for all of the board's connectors that you can configure for your application

| Label | Function                          |
|-------|-----------------------------------|
| CN1   | Audio I/O Port                    |
| CN2   | +5V Output for SATA HDD           |
| CN3   | M.2 3052 B-Key Slot               |
| CN5   | External Power Input              |
| CN6   | DDR5 SODIMM Channel 1             |
| CN7   | Front Panel                       |
| CN8   | SATA Port                         |
| CN9   | External +5VSB Input              |
| CN10  | SPI Flash Programming Port        |
| CN11  | DDR5 SODIMM Channel 2             |
| CN12  | USB 2.0 Port 6                    |
| CN13  | USB 2.0 Port 5                    |
| CN14  | USB 2.0 Port 4                    |
| CN15  | USB 2.0 Port 3                    |
| CN16  | COM Port 1                        |
| CN17  | COM Port 2                        |
| CN18  | M.2 2230 E-Key Slot               |
| CN19  | COM Port 3                        |
| CN20  | COM Port 4                        |
| CN21  | LVDS Connector                    |
| CN22  | Nano SIM Card Socket              |
| CN23  | GPIO                              |
| CN24  | M.2 2280 M-Key Slot               |
| CN25  | LAN Port 2 LED Connector          |
| CN26  | LVDS Inverter/Backlight Connector |
| CN27  | LAN Port 1 LED Connector          |
| CN29  | eDP Connector                     |
| CN30  | LAN Port 3 LED Connector          |
| CN31  | RJ-45 LAN Port 3                  |
| CN32  | RJ-45 LAN Port 1/Port 2           |
| CN33  | USB 3.2/USB 2.0 Port 1/Port 2     |
| CN34  | DP Port                           |
| CN35  | HDMI Port                         |

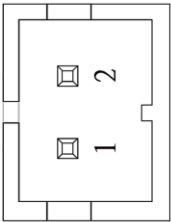
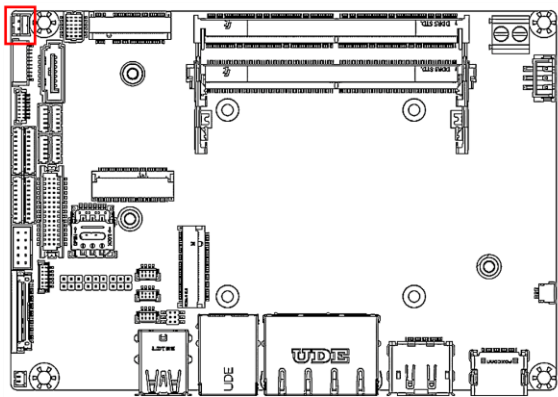
| Label | Function                     |
|-------|------------------------------|
| CN36  | RTC Battery Connector        |
| CN37  | I2C/SMBus Connector          |
| CN38  | Port 80 Debug Port Connector |
| CN39  | Board to Board Connector     |
| CN40  | 4-pin Fan Connector          |

### 2.4.1 Audio I/O Port (CN1)



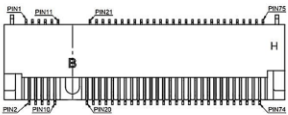
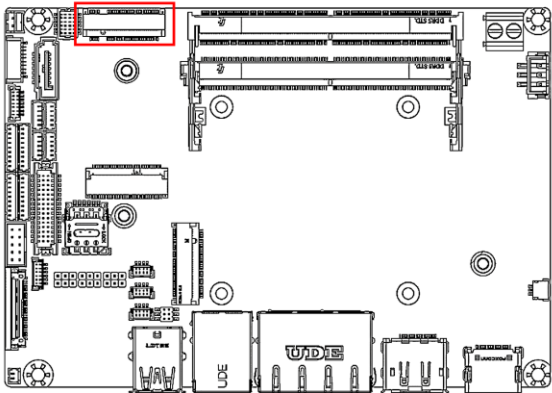
| Pin | Pin Name   | Signal Type | Signal Level |
|-----|------------|-------------|--------------|
| 1   | RIGHT_OUT  | OUT         | -            |
| 2   | MIC_R      | IN          | -            |
| 3   | LEFT_OUT   | OUT         | -            |
| 4   | MIC_L      | IN          | -            |
| 5   | JD_LOUT    | IN          | -            |
| 6   | JD_MIC     | IN          | -            |
| 7   | GND_AUDIO  | GND         | GND          |
| 8   | GND_AUDIO  | GND         | GND          |
| 9   | JD_LIN     | IN          | -            |
| 10  | LINE_R_IN  | IN          | -            |
| 11  | +VDD_AUDIO | PWR         | +5V          |
| 12  | LINE_L_IN  | IN          | -            |

### 2.4.2 +5V Output for SATA HDD (CN2)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | +VSS     | PWR         | +5V          |
| 2   | GND      | GND         | GND          |

### 2.4.3 M.2 3052 B-Key Slot (CN3)

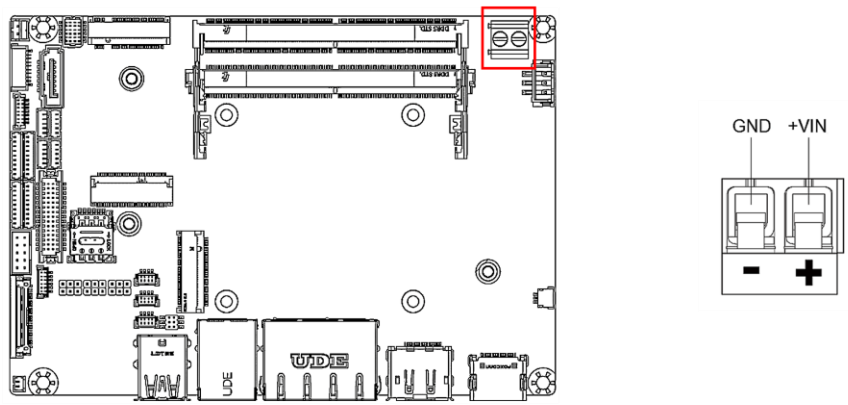


| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | NC       |             |              |
| 2   | +V3P3S   | PWR         | +3.3V        |
| 3   | GND      | GND         | GND          |

| Pin | Pin Name                   | Signal Type | Signal Level |
|-----|----------------------------|-------------|--------------|
| 4   | +V3P3S                     | PWR         | +3.3V        |
| 5   | GND                        | GND         | GND          |
| 6   | NC                         |             |              |
| 7   | USB2_2_DP                  | DIFF        | -            |
| 8   | KEYB_DISABLE_N             | IN          |              |
| 9   | USB2_2_DN                  | DIFF        | -            |
| 10  | PCH_SATA_LED_N             | OUT         | +3.3V        |
| 11  | GND                        | GND         | GND          |
| 20  | NC                         | -           | -            |
| 21  | NC                         | -           | -            |
| 22  | NC                         | -           | -            |
| 23  | NC                         | -           | -            |
| 24  | NC                         | -           | -            |
| 25  | NC                         | -           | -            |
| 26  | NC                         | -           | -            |
| 27  | GND                        | GND         | GND          |
| 28  | NC                         | -           | -            |
| 29  | PCIE_4_RXN/<br>USB3_2_RXN  | DIFF        | -            |
| 30  | UIM_RST_M2B                | OUT         | -            |
| 31  | PCIE4_1_RXP/<br>USB3_2_RXP | DIFF        | -            |
| 32  | UIM_CLK_M2B                | -           | -            |
| 33  | GND                        | GND         | GND          |
| 34  | UIM_DAT_M2B                | IN/OUT      | -            |
| 35  | PCIE4_TXN/ SB3_2_TXN       | DIFF        | -            |
| 36  | UIM_PWR                    | PWR         | -            |
| 37  | PCIE4_TXP/ SB3_2_TXP       | DIFF        | -            |
| 38  | NC                         | -           | -            |
| 39  | GND                        | GND         | GND          |
| 40  | NC                         | -           | -            |
| 41  | PCIE_3_RXN                 | DIFF        | -            |
| 42  | NC                         | -           | -            |
| 43  | PCIE_3_RXP                 | DIFF        | -            |
| 44  | NC                         | -           | -            |
| 45  | GND                        | GND         | GND          |
| 46  | NC                         | -           | -            |
| 47  | PCIE_3_TXN                 | DIFF        | -            |
| 48  | NC                         | -           | -            |

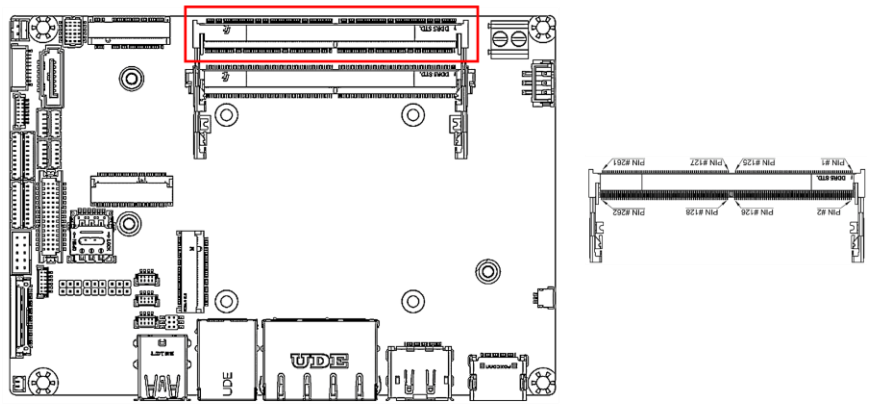
| Pin | Pin Name        | Signal Type | Signal Level |
|-----|-----------------|-------------|--------------|
| 49  | PCIE_3_TXP      | DIFF        | -            |
| 50  | BUF_PLT_RST#    | OUT         |              |
| 51  | GND             | GND         | GND          |
| 52  | M2B_CLKREQ#     | IN          | -            |
| 53  | PCIE_4_CLK_DN   | DIFF        | -            |
| 54  | KEYB_WAKE_N     | IN          | -            |
| 55  | PCIE_4_CLK_DN   | DIFF        | -            |
| 56  | NC              | -           | -            |
| 57  | GND             | GND         | GND          |
| 58  | NC              | -           | -            |
| 59  | NC              | -           | -            |
| 60  | NC              | -           | -            |
| 61  | NC              | -           | -            |
| 62  | NC              | -           | -            |
| 63  | NC              | -           | -            |
| 64  | NC              | -           | -            |
| 65  | NC              | -           | -            |
| 66  | SIM_Detect      | IN          | -            |
| 67  | KEYB_WWAN_RST_N | OUT         | -            |
| 68  | PCH_SUS_CLK     | IN          | -            |
| 69  | NC              | -           | -            |
| 70  | +V3P3A          | PWR         | +3.3V        |
| 71  | GND             | GND         | GND          |
| 72  | +V3P3A          | PWR         | +3.3V        |
| 73  | GND             | GND         | GND          |
| 74  | +V3P3A          | PWR         | +3.3V        |
| 75  | NC              | -           | -            |

2.4.4 External Power Input (CN5)



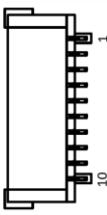
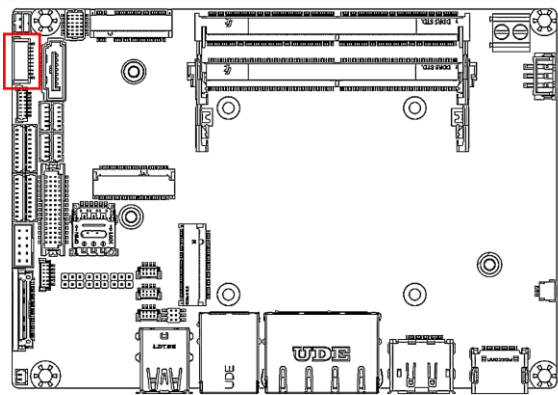
| Pin | Pin Name | Signal Type | Signal Level    |
|-----|----------|-------------|-----------------|
| 1   | +VIN     | PWR         | +12V or +9~+36V |
| 2   | GND      | GND         | GND             |

2.4.5 DDR5 SODIMM Channel 1 (CN6)



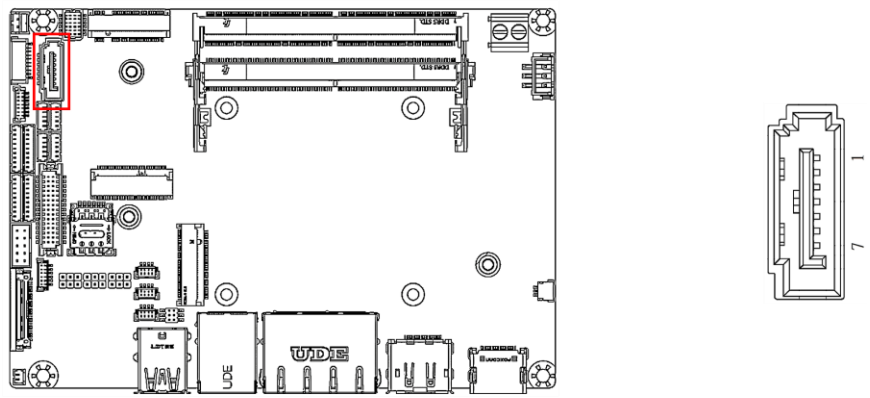
Standard specification.

### 2.4.6 Front Panel (CN7)



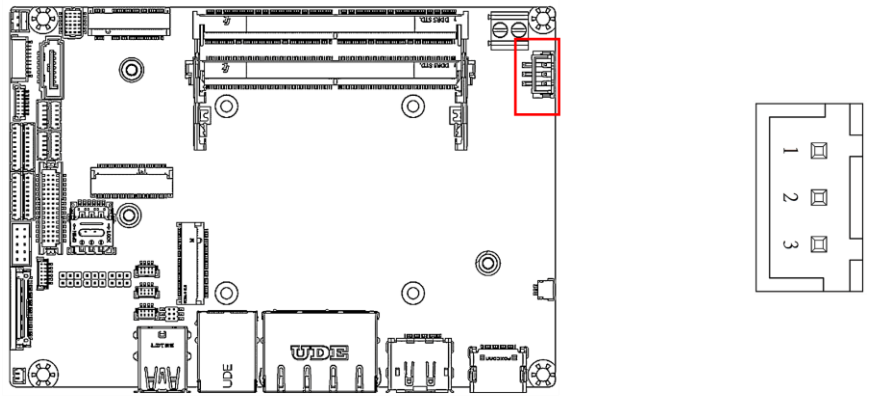
| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1   | GND         | GND         | GND          |
| 2   | EXT_PWRBTN# | IN          | -            |
| 3   | SATA_LED-   | OUT         | -            |
| 4   | SATA_LED+   | OUT         | -            |
| 5   | BUZZER-     | OUT         | -            |
| 6   | BUZZER+     | OUT         | -            |
| 7   | GND         | GND         | GND          |
| 8   | PWR_LED+    | OUT         | -            |
| 9   | GND         | GND         | GND          |
| 10  | HWRST#      | IN          | -            |

### 2.4.7 SATA Port (CN8)



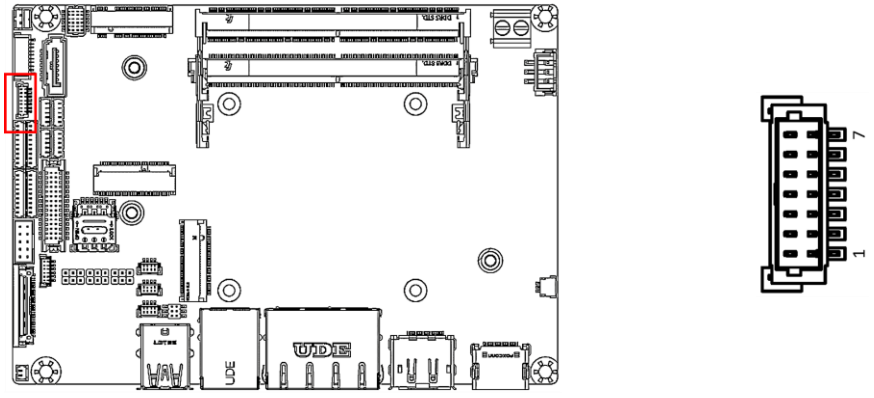
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | GND      | GND         | GND          |
| 2   | SATA_TXP | DIFF        | -            |
| 3   | SATA_TXN | DIFF        | -            |
| 4   | GND      | GND         | GND          |
| 5   | SATA_RXN | DIFF        | -            |
| 6   | SATA_RXP | DIFF        | -            |
| 7   | GND      | GND         | GND          |

### 2.4.8 External +5VSB Input (CN9)



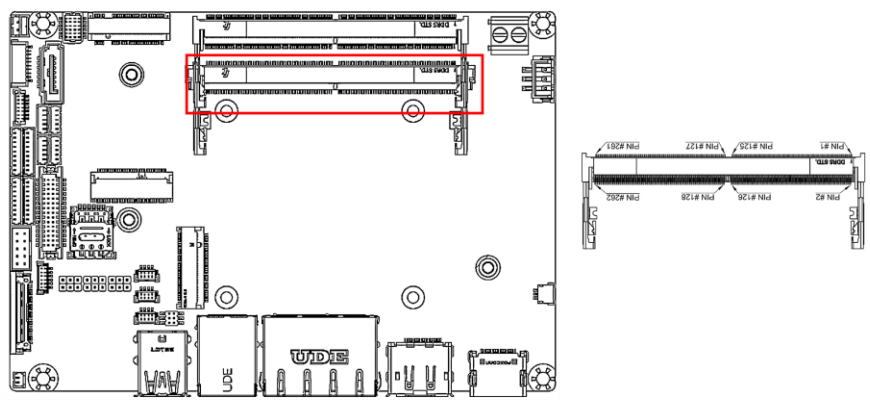
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | PS_ON#   | OUT         | +5V          |
| 2   | GND      | GND         | GND          |
| 3   | +5VSB    | PWR         | +5V(2.5A)    |

2.4.9 SPI Flash Programming Port (CN10)



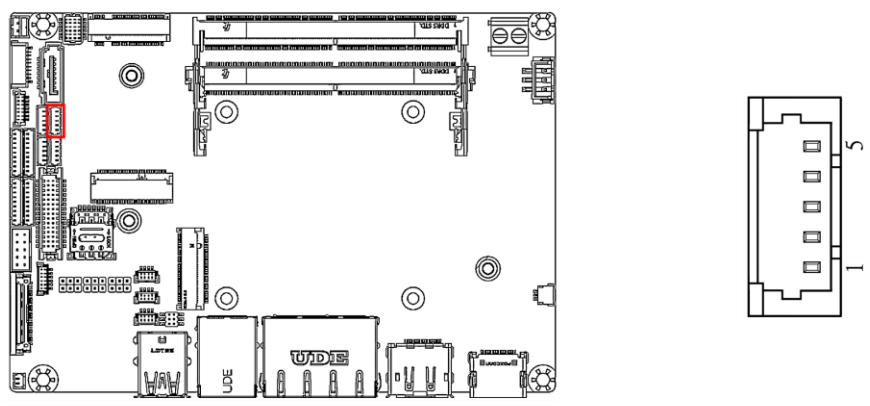
| Pin | Pin Name   | Signal Type | Signal Level |
|-----|------------|-------------|--------------|
| 1   | SPI_MISO   | OUT         | -            |
| 2   | GND        | GND         | GND          |
| 3   | SPI_CLK    | IN          | -            |
| 4   | +V1P8A_SPI | PWR         | +1.8V        |
| 5   | SPI_MOSI   | IN          | -            |
| 6   | SPI_CS     | IN          | -            |
| 7   | NC         | -           | -            |

2.4.10 DDR5 SODIMM Channel 2 (CN11)



Standard specification.

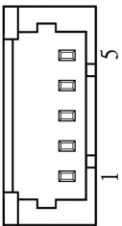
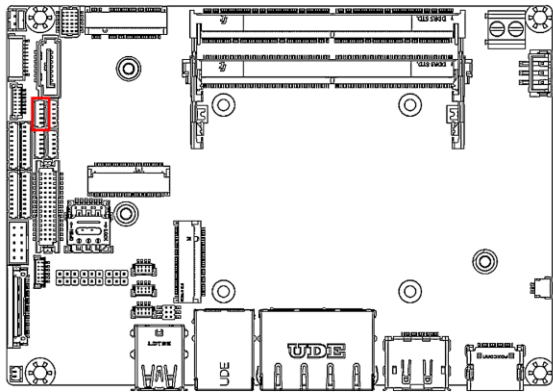
2.4.11 USB 2.0 Port 6 (CN12)



| Pin | Pin Name  | Signal Type | Signal Level |
|-----|-----------|-------------|--------------|
| 1   | +5VSB     | PWR         | +5V          |
| 2   | USB2_6_DN | DIFF        | -            |
| 3   | USB2_6_DP | DIFF        | -            |

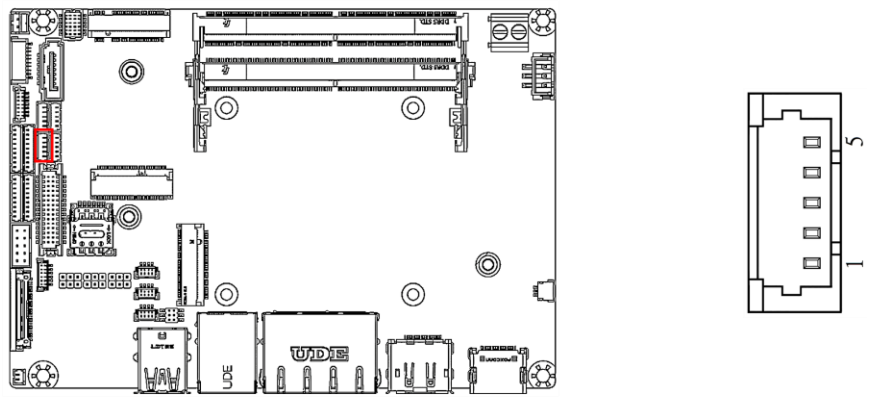
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 4   | GND      | GND         | GND          |
| 5   | GND      | GND         | GND          |

2.4.12 USB 2.0 Port 5 (CN13)



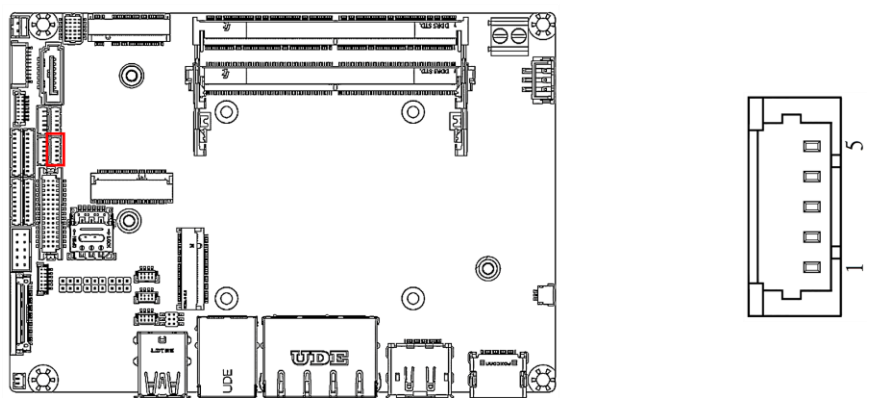
| Pin | Pin Name  | Signal Type | Signal Level |
|-----|-----------|-------------|--------------|
| 1   | +5VSB     | PWR         | +5V          |
| 2   | USB2_5_DN | DIFF        | -            |
| 3   | USB2_5_DP | DIFF        | -            |
| 4   | GND       | GND         | GND          |
| 5   | GND       | GND         | GND          |

2.4.13 USB 2.0 Port 4 (CN14)



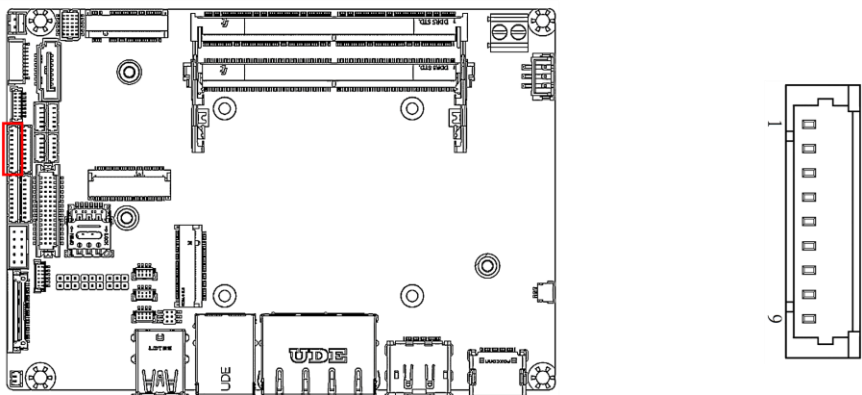
| Pin | Pin Name  | Signal Type | Signal Level |
|-----|-----------|-------------|--------------|
| 1   | +5VSB     | PWR         | +5V          |
| 2   | USB2_4_DN | DIFF        | -            |
| 3   | USB2_4_DP | DIFF        | -            |
| 4   | GND       | GND         | GND          |
| 5   | GND       | GND         | GND          |

2.4.14 USB 2.0 Port 3 (CN15)



| Pin | Pin Name  | Signal Type | Signal Level |
|-----|-----------|-------------|--------------|
| 1   | +5VSB     | PWR         | +5V          |
| 2   | USB2_3_DN | DIFF        | -            |
| 3   | USB2_3_DP | DIFF        | -            |
| 4   | GND       | GND         | GND          |
| 5   | GND       | GND         | GND          |

2.4.15 COM Port 1 (CN16)



| RS-232 (Default) |                |             |              |
|------------------|----------------|-------------|--------------|
| Pin              | Pin Name       | Signal Type | Signal Level |
| 1                | DCD1           | IN          | -            |
| 2                | DSR1           | IN          | -            |
| 3                | RX1            | IN          | -            |
| 4                | RTS1           | OUT         | ±9V          |
| 5                | TX1            | OUT         | ±9V          |
| 6                | CTS1           | IN          | -            |
| 7                | DTR1           | OUT         | ±9V          |
| 8                | RI1/ +5V/ +12V | IN/ PWR     | +5V/+12V     |
| 9                | GND            | GND         | GND          |

| RS-422 |           |             |              |
|--------|-----------|-------------|--------------|
| Pin    | Pin Name  | Signal Type | Signal Level |
| 1      | RS422_TX- | OUT         | ±9V          |
| 2      | NC        |             |              |

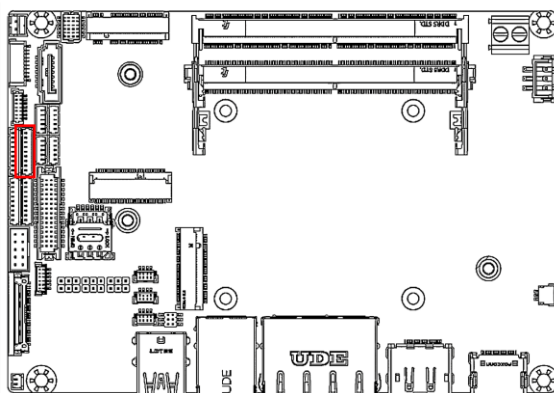
| RS-422 |           |             |              |
|--------|-----------|-------------|--------------|
| Pin    | Pin Name  | Signal Type | Signal Level |
| 3      | RS422_TX+ | OUT         | ±9V          |
| 4      | NC        |             |              |
| 5      | RS422_RX+ | IN          | -            |
| 6      | NC        |             |              |
| 7      | RS422_RX- | IN          | -            |
| 8      | NC        |             |              |
| 9      | GND       | GND         | GND          |

| RS-485 |          |             |              |
|--------|----------|-------------|--------------|
| Pin    | Pin Name | Signal Type | Signal Level |
| 1      | RS485_D- | IN/OUT      | ±9V          |
| 2      | NC       |             |              |
| 3      | RS485_D+ | IN/OUT      | ±9V          |
| 4      | NC       |             |              |
| 5      | NC       |             |              |
| 6      | NC       |             |              |
| 7      | NC       |             |              |
| 8      | NC       |             |              |
| 9      | GND      | GND         | GND          |

**Note:** COM 1 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

**Note:** Pin 8 function can be set by JP2.

## 2.4.16 COM Port 2 (CN17)



| RS-232 (Default) |                |             |              |
|------------------|----------------|-------------|--------------|
| Pin              | Pin Name       | Signal Type | Signal Level |
| 1                | DCD2           | IN          | -            |
| 2                | DSR2           | IN          | -            |
| 3                | RX2            | IN          | -            |
| 4                | RTS2           | OUT         | ±9V          |
| 5                | TX2            | OUT         | ±9V          |
| 6                | CTS2           | IN          | -            |
| 7                | DTR2           | OUT         | ±9V          |
| 8                | RI2/ +5V/ +12V | IN/ PWR     | +5V/+12V     |
| 9                | GND            | GND         | GND          |

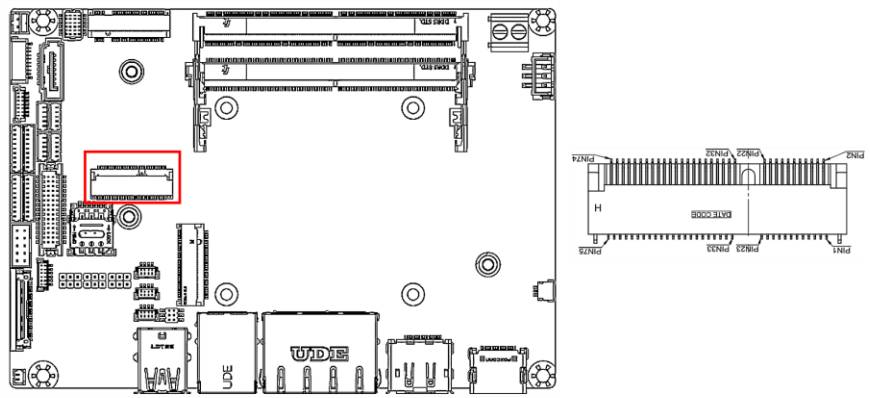
| RS-422 |           |             |              |
|--------|-----------|-------------|--------------|
| Pin    | Pin Name  | Signal Type | Signal Level |
| 1      | RS422_TX- | OUT         | ±9V          |
| 2      | NC        |             |              |
| 3      | RS422_TX+ | OUT         | ±9V          |
| 4      | NC        |             |              |
| 5      | RS422_RX+ | IN          | -            |
| 6      | NC        |             |              |
| 7      | RS422_RX- | IN          | -            |
| 8      | NC        |             |              |
| 9      | GND       | GND         | GND          |

| RS-485 |          |             |              |
|--------|----------|-------------|--------------|
| Pin    | Pin Name | Signal Type | Signal Level |
| 1      | RS485_D- | IN/OUT      | ±9V          |
| 2      | NC       |             |              |
| 3      | RS485_D+ | IN/OUT      | ±9V          |
| 4      | NC       |             |              |
| 5      | NC       |             |              |
| 6      | NC       |             |              |
| 7      | NC       |             |              |
| 8      | NC       |             |              |
| 9      | GND      | GND         | GND          |

**Note:** COM 2 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

**Note:** Pin 8 function can be set by JP3.

2.4.17 M.2 2230 E-Key Slot (CN18)

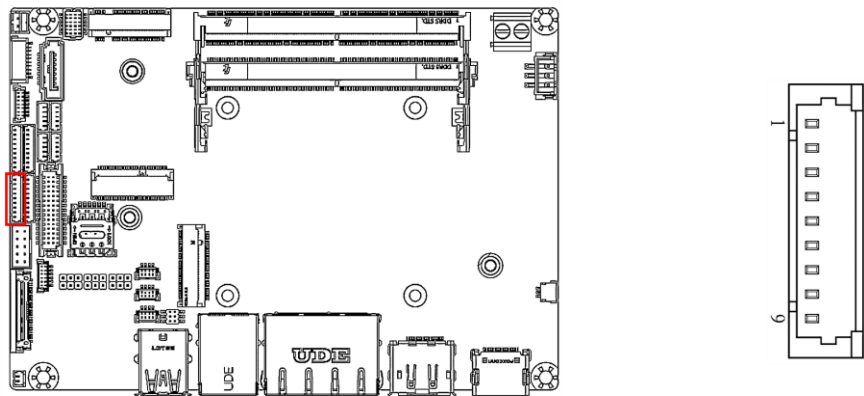


| Pin | Pin Name         | Signal Type | Signal Level |
|-----|------------------|-------------|--------------|
| 1   | GND              | GND         | GND          |
| 2   | +V3P3A           | PWR         | +3.3V        |
| 3   | USB2_10_DP       | DIFF        | -            |
| 4   | +V3P3A           | PWR         | +3.3V        |
| 5   | USB2_10_DN       | DIFF        | -            |
| 6   | NC               | -           | -            |
| 7   | GND              | GND         | GND          |
| 8   | NC               | -           | -            |
| 9   | CNV_WR_D1_DN     | DIFF        | -            |
| 10  | KEYE_CNV_RF_RST  | IN          | -            |
| 11  | CNV_WR_D1_DP     | DIFF        | -            |
| 12  | NC               | -           | -            |
| 13  | GND              | GND         | GND          |
| 14  | KEYE_CNV_CLKREQ  | OUT         | -            |
| 15  | CNV_WR_D0_DN     | DIFF        | -            |
| 16  | NC               | -           | -            |
| 17  | CNV_WR_D0_DP     | DIFF        | -            |
| 18  | GND              | GND         | GND          |
| 19  | GND              | GND         | GND          |
| 20  | KEYE_UART_WAKE_N | IN          | -            |
| 21  | CNV_WR_CLK_DN    | DIFF        | -            |
| 22  | CNV_BRI_RSP      | IN          | -            |
| 23  | CNV_WR_CLK_DP    | DIFF        | -            |

| Pin | Pin Name      | Signal Type | Signal Level |
|-----|---------------|-------------|--------------|
| 32  | CNV_RGI_DT    | IN          | -            |
| 33  | GND           | GND         | GND          |
| 34  | CNV_RGI_RSP   | OUT         | -            |
| 35  | PCIE_8_TXP    | DIFF        | -            |
| 36  | CNV_BRI_DT    | -           | -            |
| 37  | PCIE_8_TXN    | DIFF        | -            |
| 38  | MLK_RST_N     | IN          | -            |
| 39  | GND           | GND         | GND          |
| 40  | MLK_DATA      | IN/OUT      | -            |
| 41  | PCIE_8_RXP    | DIFF        | -            |
| 42  | MLK_CLK       | IN          | -            |
| 43  | PCIE_8_RXN    | DIFF        | -            |
| 44  | NC            | -           | -            |
| 45  | GND           | GND         | GND          |
| 46  | NC            | -           | -            |
| 47  | PCIE_3_CLK_DP | DIFF        | -            |
| 48  | NC            | -           | -            |
| 49  | PCIE_3_CLK_DN | DIFF        | -            |
| 50  | SUS_CLK       | IN          | -            |
| 51  | GND           | GND         | GND          |
| 52  | BUF_PLT_RST#  | IN          | -            |
| 53  | PCIE_CLKREQ#3 | OUT         | -            |
| 54  | NC            | -           | -            |
| 55  | PCIE_WAKE#    | IN/OUT      | -            |
| 56  | NC            | -           | -            |
| 57  | GND           | GND         | GND          |
| 58  | NC            | -           | -            |
| 59  | CNV_WT_D1_DN  | DIFF        | -            |
| 60  | NC            | -           | -            |
| 61  | CNV_WT_D1_DP  | DIFF        | -            |
| 62  | NC            | -           | -            |
| 63  | GND           | GND         | GND          |
| 64  | NC            | -           | -            |
| 65  | CNV_WT_D0_DN  | DIFF        | -            |
| 66  | NC            | -           | -            |
| 67  | CNV_WT_D0_DP  | DIFF        | -            |
| 68  | NC            | -           | -            |
| 69  | GND           | GND         | GND          |
| 70  | NC            | -           | -            |

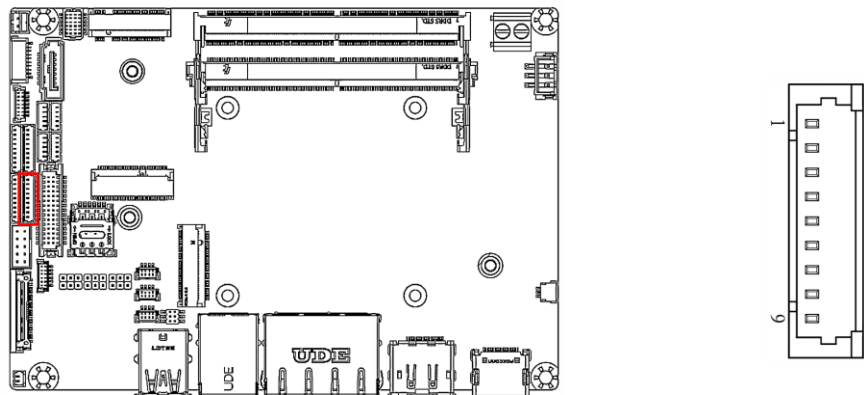
| Pin | Pin Name      | Signal Type | Signal Level |
|-----|---------------|-------------|--------------|
| 71  | CNV_WT_CLK_DN | DIFF        | -            |
| 72  | +V3P3A        | PWR         | +3.3V        |
| 73  | CNV_WT_CLK_DP | DIFF        | -            |
| 74  | +V3P3A        | PWR         | +3.3V        |
| 75  | GND           | GND         | GND          |

2.4.18 COM Port 3 (CN19)



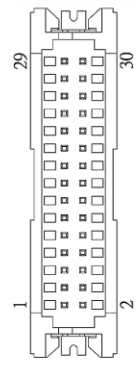
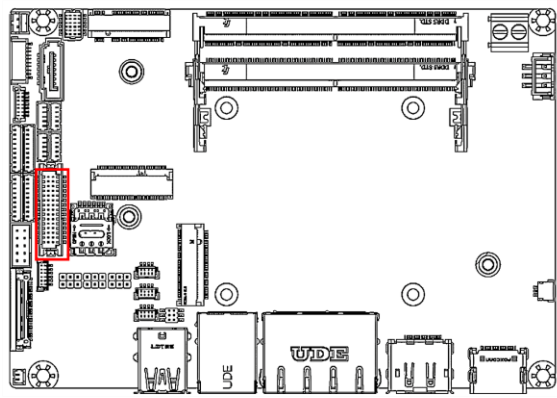
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | DCD3     | IN          | -            |
| 2   | DSR3     | IN          | -            |
| 3   | RX3      | IN          | -            |
| 4   | RTS3     | OUT         | ±9V          |
| 5   | TX3      | OUT         | ±9V          |
| 6   | CTS3     | IN          | -            |
| 7   | DTR3     | OUT         | ±9V          |
| 8   | RI3      | IN          | -            |
| 9   | GND      | GND         | GND          |

2.4.19 COM Port 4 (CN20)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | DCD4     | IN          | -            |
| 2   | DSR4     | IN          | -            |
| 3   | RX4      | IN          | -            |
| 4   | RTS4     | OUT         | ±9V          |
| 5   | TX4      | OUT         | ±9V          |
| 6   | CTS4     | IN          | -            |
| 7   | DTR4     | OUT         | ±9V          |
| 8   | RI4      | IN          | -            |
| 9   | GND      | GND         | GND          |

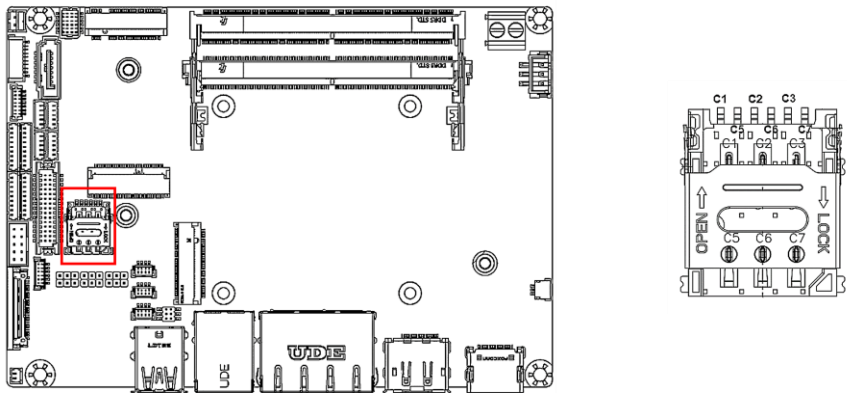
2.4.20 LVDS Connector (CN21)



| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1   | BKL_ENABLE  | OUT         | -            |
| 2   | BKL_CONTROL | OUT         | -            |
| 3   | LCD_PWR     | PWR         | +3.3V/+5V    |
| 4   | GND         | GND         | GND          |
| 5   | LVDS_A_CLK- | DIFF        | -            |
| 6   | LVDS_A_CLK+ | DIFF        | -            |
| 7   | LCD_PWR     | PWR         | +3.3V/+5V    |
| 8   | GND         | GND         | GND          |
| 9   | LVDS_DA0-   | DIFF        | -            |
| 10  | LVDS_DA0+   | DIFF        | -            |
| 11  | LVDS_DA1-   | DIFF        | -            |
| 12  | LVDS_DA1+   | DIFF        | -            |
| 13  | LVDS_DA2-   | DIFF        | -            |
| 14  | LVDS_DA2+   | DIFF        | -            |
| 15  | LVDS_DA3-   | DIFF        | -            |
| 16  | LVDS_DA3+   | DIFF        | -            |
| 17  | DDC_DATA    | IN/OUT      | +3.3V        |
| 18  | DDC_CLK     | IN/OUT      | +3.3V        |
| 19  | LVDS_DB0-   | DIFF        | -            |
| 20  | LVDS_DB0+   | DIFF        | -            |
| 21  | LVDS_DB1-   | DIFF        | -            |
| 22  | LVDS_DB1+   | DIFF        | -            |
| 23  | LVDS_DB2-   | DIFF        | -            |

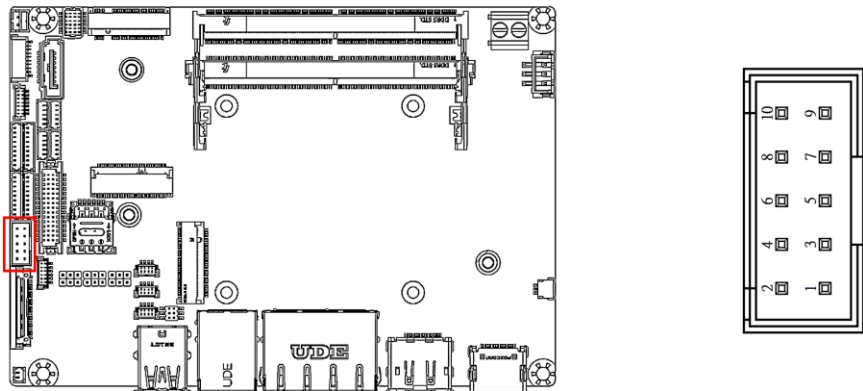
| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 24  | LVDS_DB2+   | DIFF        | -            |
| 25  | LVDS_DB3-   | DIFF        | -            |
| 26  | LVDS_DB3+   | DIFF        | -            |
| 27  | LCD_PWR     | PWR         | +3.3V/+5V    |
| 28  | GND         | GND         | GND          |
| 29  | LVDS_B_CLK- | DIFF        | -            |
| 30  | LVDS_B_CLK+ | DIFF        | -            |

2.4.21 Nano SIM Card Socket (CN22)



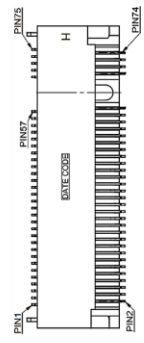
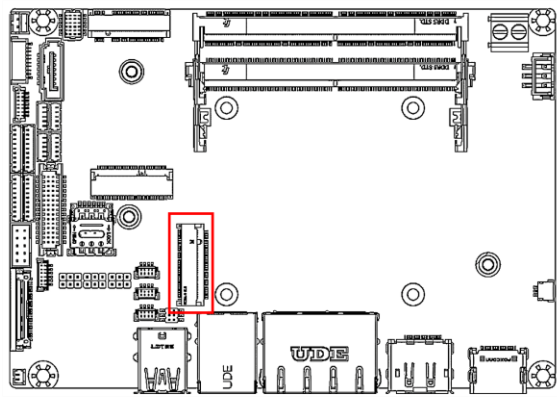
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| C1  | UIM_PWR  | PWR         | -            |
| C2  | UIM_RST  | IN          | -            |
| C3  | UIM_CLK  | IN          | -            |
| C5  | GND      | GND         | GND          |
| C6  | UIM_VPP  | PWR         | -            |
| C7  | UIM_DATA | IN/OUT      | -            |

2.4.22 GPIO (CN23)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | GPIO_0   | IN/OUT      | -            |
| 2   | GPIO_1   | IN/OUT      | -            |
| 3   | GPIO_2   | IN/OUT      | -            |
| 4   | GPIO_3   | IN/OUT      | -            |
| 5   | GPIO_4   | IN/OUT      | -            |
| 6   | GPIO_5   | IN/OUT      | -            |
| 7   | GPIO_6   | IN/OUT      | -            |
| 8   | GPIO_7   | IN/OUT      | -            |
| 9   | +V5S     | PWR         | +5V          |
| 10  | GND      | GND         | GND          |

2.4.23 M.2 2280 M-Key Slot (CN24)

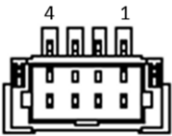
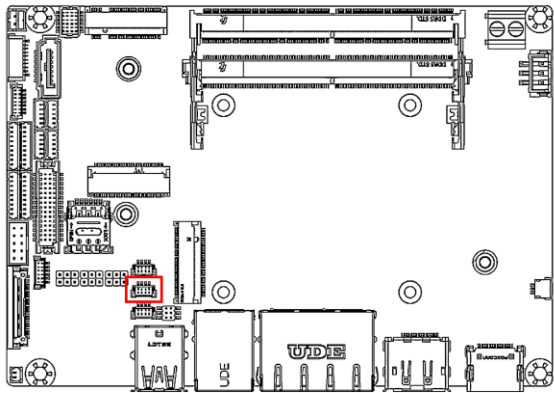


| Pin | Pin Name       | Signal Type | Signal Level |
|-----|----------------|-------------|--------------|
| 1   | GND            | GND         | GND          |
| 2   | +V3P3S         | PWR         | +3.3V        |
| 3   | GND            | GND         | GND          |
| 4   | +V3P3S         | PWR         | +3.3V        |
| 5   | PCIE_12_RXN    | DIFF        | -            |
| 6   | CARD_PWR_OFF_N | IN          | -            |
| 7   | PCIE_12_RXP    | DIFF        | -            |
| 8   | NC             | -           | -            |
| 9   | GND            | GND         | GND          |
| 10  | PCH_SATA_LED_N | OUT         | +3.3V        |
| 11  | PCIE_12_TXN    | DIFF        | -            |
| 12  | +V3P3S         | PWR         | +3.3V        |
| 13  | PCIE_12_TXP    | DIFF        | -            |
| 14  | +V3P3S         | PWR         | +3.3V        |
| 15  | GND            | GND         | GND          |
| 16  | +V3P3S         | PWR         | +3.3V        |
| 17  | PCIE_11_RXN    | DIFF        | -            |
| 18  | +V3P3S         | PWR         | +3.3V        |
| 19  | PCIE_11_RXP    | DIFF        | -            |
| 20  | NC             | -           | -            |
| 21  | GND            | GND         | GND          |
| 22  | KEYM_SSD_VIO   | IN          | -            |
| 23  | PCIE_11_TXN    | DIFF        | -            |

| Pin | Pin Name                  | Signal Type | Signal Level |
|-----|---------------------------|-------------|--------------|
| 24  | NC                        | -           | -            |
| 25  | PCIE_11_TXP               | DIFF        | -            |
| 26  | NC                        | -           | -            |
| 27  | GND                       | GND         | GND          |
| 28  | NC                        | -           | -            |
| 29  | PCIE_10_RXN               | DIFF        | -            |
| 30  | NC                        | -           | -            |
| 31  | PCIE_10_RXP               | DIFF        | -            |
| 32  | NC                        | -           | -            |
| 33  | GND                       | GND         | GND          |
| 34  | NC                        | -           | -            |
| 35  | PCIE_10_TXN               | DIFF        | -            |
| 36  | NC                        | -           | -            |
| 37  | PCIE_10_TXP               | DIFF        | -            |
| 38  | NC                        | -           | -            |
| 39  | GND                       | GND         | GND          |
| 40  | NC                        | -           | -            |
| 41  | PCIE_9_RXN/<br>SATA_1_RXP | DIFF        | -            |
| 42  | NC                        | -           | -            |
| 43  | PCIE_9_RXP/<br>SATA_1_RXN | DIFF        | -            |
| 44  | NC                        | -           | -            |
| 45  | GND                       | GND         | GND          |
| 46  | NC                        | -           | -            |
| 47  | PCIE_9_TXN/<br>SATA_1_TXN | DIFF        | -            |
| 48  | NC                        | -           | -            |
| 49  | PCIE_9_TXP/<br>SATA_1_TXP | DIFF        | -            |
| 50  | BUF_PLT_RST#              | IN          | -            |
| 51  | GND                       | GND         | GND          |
| 52  | M2M_CLKREQ#               | OUT         | -            |
| 53  | PCIE_5_CLK_DN             | DIFF        | -            |
| 54  | PCIE_WAKE#                | OUT         | -            |
| 55  | PCIE_5_CLK_DP             | DIFF        | -            |
| 56  | NC                        | -           | -            |
| 57  | GND                       | GND         | GND          |
| 58  | NC                        | -           | -            |

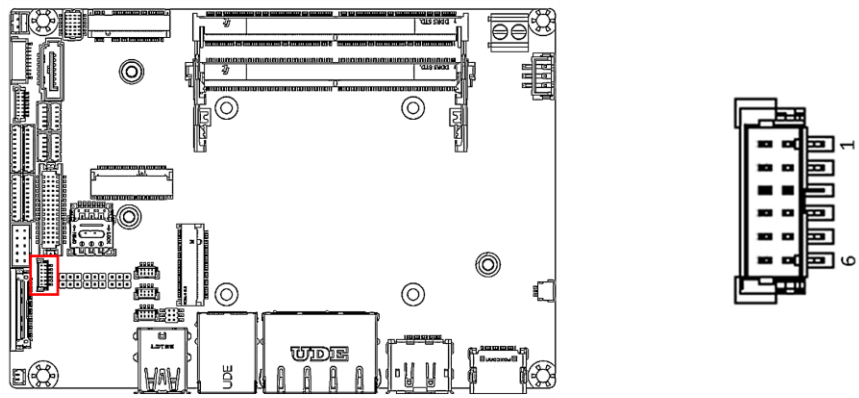
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 67  | NC       | -           | -            |
| 68  | SUS_CLK  | IN          | -            |
| 69  | KEYM_DET | IN          | -            |
| 70  | +V3P3S   | PWR         | +3.3V        |
| 71  | GND      | GND         | GND          |
| 72  | +V3P3S   | PWR         | +3.3V        |
| 73  | GND      | GND         | GND          |
| 74  | +V3P3S   | PWR         | +3.3V        |
| 75  | GND      | GND         | GND          |

### 2.4.24 LAN Port 2 LED Connector (CN25)



| Pin | Pin Name          | Signal Type | Signal Level |
|-----|-------------------|-------------|--------------|
| 1   | +V3P3A_LAN        | PWR         | +3.3V        |
| 2   | LAN2_LED_1000#    | OUT         | +3.3V        |
| 3   | LAN2_LED_LNK#_ACT | OUT         | +3.3V        |
| 4   | LAN2_LED_2500#    | OUT         | +3.3V        |

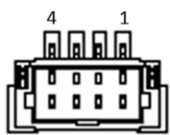
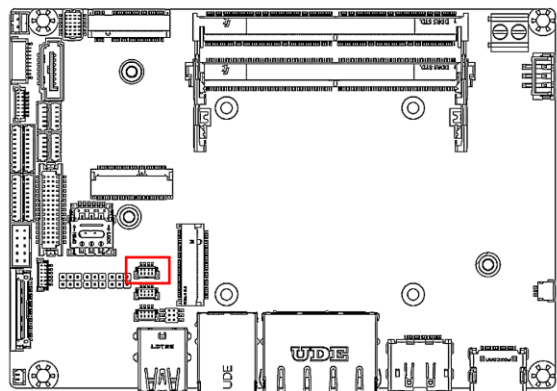
2.4.25 LVDS Inverter/Backlight Connector (CN26)



| Pin | Pin Name    | Signal Type | Signal Level      |
|-----|-------------|-------------|-------------------|
| 1   | BKL_PWR     | PWR         | +5V(Default)/+12V |
| 2   | BKL_PWR     | PWR         | +5V(Default)/+12V |
| 3   | BKL_CONTROL | OUT         | -                 |
| 4   | GND         | GND         | GND               |
| 5   | GND         | GND         | GND               |
| 6   | BKL_ENABLE  | OUT         | +3.3V             |

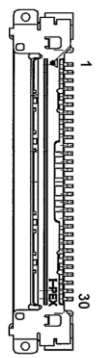
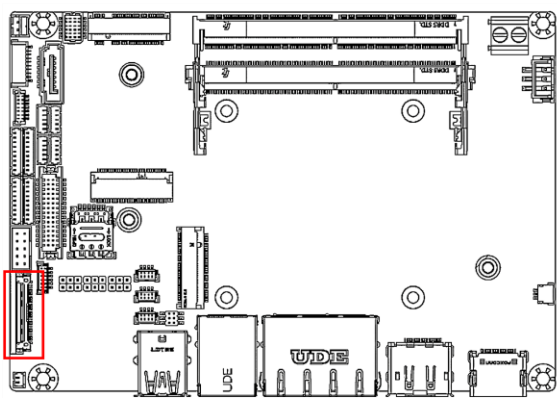
**Note:** LVDS/BKL\_PWR & LVDS/BKL\_CONTROL can be set to +12V or +5V by JP4.  
**Note:** The driving current of BKL\_PWR supports up to 2A.

### 2.4.26 LAN Port 1 LED Connector (CN27)



| Pin | Pin Name          | Signal Type | Signal Level |
|-----|-------------------|-------------|--------------|
| 1   | +V3P3A_LAN        | PWR         | +3.3V        |
| 2   | LAN1_LED_1000#    | OUT         | +3.3V        |
| 3   | LAN1_LED_LNK#_ACT | OUT         | +3.3V        |
| 4   | LAN1_LED_100#     | OUT         | +3.3V        |

### 2.4.27 eDP Connector (CN29)



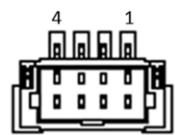
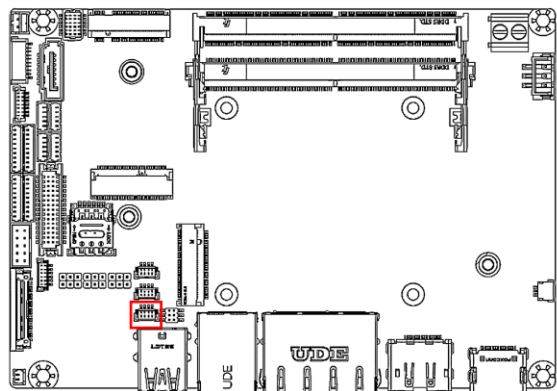
| Pin | Pin Name      | Signal Type | Signal Level |
|-----|---------------|-------------|--------------|
| 1   | +VCC_EDP_BKLT | PWR         | +12V         |

| Pin | Pin Name      | Signal Type | Signal Level |
|-----|---------------|-------------|--------------|
| 2   | +VCC_EDP_BKLT | PWR         | +12V         |
| 3   | +VCC_EDP_BKLT | PWR         | +12V         |
| 4   | +VCC_EDP_BKLT | PWR         | +12V         |
| 5   | GND           | GND         | GND          |
| 6   | GND           | GND         | GND          |
| 7   | GND           | GND         | GND          |
| 8   | EDP_HPDP      | -           | -            |
| 9   | EDP_BKLT_EN   | -           | -            |
| 10  | NC            |             |              |
| 11  | EDP_BKLTCTL   | -           | -            |
| 12  | GND           | GND         | GND          |
| 13  | EDP_AUX_DP    | DIFF        | -            |
| 14  | EDP_AUX_DN    | DIFF        | -            |
| 15  | GND           | GND         | GND          |
| 16  | EDP_LANE3_DP  | DIFF        | -            |
| 17  | EDP_LANE3_DN  | DIFF        | -            |
| 18  | GND           | GND         | GND          |
| 19  | EDP_LANE0_DP  | DIFF        | -            |
| 20  | EDP_LANE0_DN  | DIFF        | -            |
| 21  | GND           | GND         | GND          |
| 22  | EDP_LANE1_DP  | DIFF        | -            |
| 23  | EDP_LANE1_DN  | DIFF        | -            |
| 24  | GND           | GND         | GND          |
| 25  | EDP_LANE2_DP  | DIFF        | -            |
| 26  | EDP_LANE2_DN  | DIFF        | -            |
| 27  | GND           | GND         | GND          |
| 28  | +VDD          | PWR         | +3.3V        |
| 29  | +VDD          | PWR         | +3.3V        |
| 30  | +VDD          | PWR         | +3.3V        |

**Note:** The driving current of +VCC\_EDP\_BKLT supports up to 1.2A.

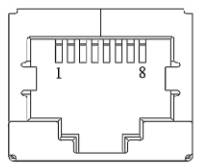
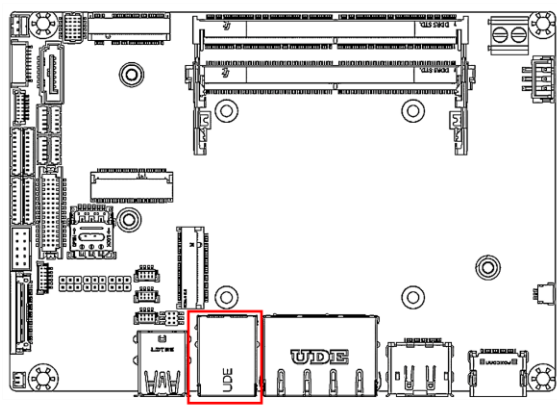
**Note:** The driving current of +VDD supports up to 1A.

2.4.28 LAN Port 3 LED Connector (CN30)



| Pin | Pin Name          | Signal Type | Signal Level |
|-----|-------------------|-------------|--------------|
| 1   | +V3P3A_LAN        | PWR         | +3.3V        |
| 2   | LAN3_LED_1000#    | OUT         | +3.3V        |
| 3   | LAN3_LED_LNK#_ACT | OUT         | +3.3V        |
| 4   | LAN3_LED_2500#    | OUT         | +3.3V        |

2.4.29 RJ-45 LAN Port 3 (CN31)

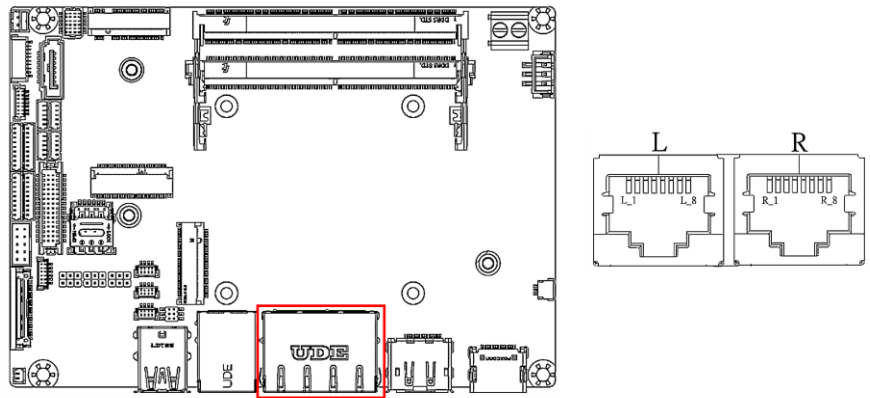


| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1   | LAN3_MDIO_P | DIFF        | -            |

| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 2   | LAN3_MDI0_N | DIFF        | -            |
| 3   | LAN3_MDI1_P | DIFF        | -            |
| 4   | LAN3_MDI1_N | DIFF        | -            |
| 5   | LAN3_MDI2_P | DIFF        | -            |
| 6   | LAN3_MDI2_N | DIFF        | -            |
| 7   | LAN3_MDI3_P | DIFF        | -            |
| 8   | LAN3_MDI3_N | DIFF        | -            |

**Note:** The chip used for LAN 3 is Intel® Ethernet Controller I226.

2.4.30 RJ-45 LAN Port 1/Port 2 (CN32)



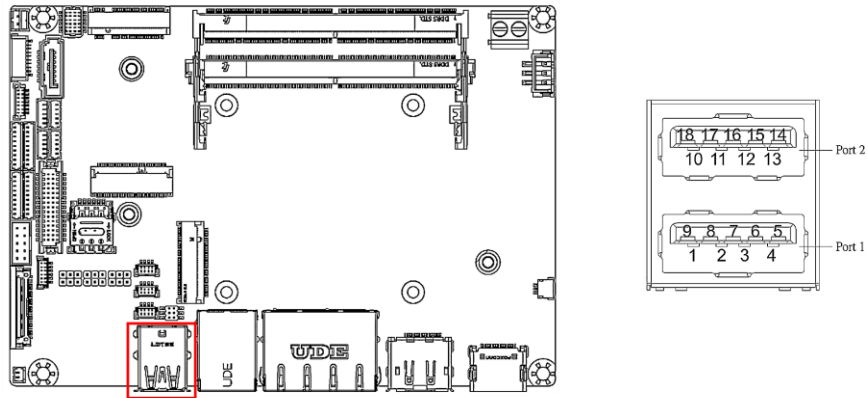
| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| L_1 | LAN1_MDI0_P | DIFF        | -            |
| L_2 | LAN1_MDI0_N | DIFF        | -            |
| L_3 | LAN1_MDI1_P | DIFF        | -            |
| L_4 | LAN1_MDI1_N | DIFF        | -            |
| L_5 | LAN1_MDI2_P | DIFF        | -            |
| L_6 | LAN1_MDI2_N | DIFF        | -            |
| L_7 | LAN1_MDI3_P | DIFF        | -            |
| L_8 | LAN1_MDI3_N | DIFF        | -            |
| R_1 | LAN2_MDI0_P | DIFF        | -            |
| R_2 | LAN2_MDI0_N | DIFF        | -            |
| R_3 | LAN2_MDI1_P | DIFF        | -            |
| R_4 | LAN2_MDI1_N | DIFF        | -            |

| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| R_5 | LAN2_MDI2_P | DIFF        | -            |
| R_6 | LAN2_MDI2_N | DIFF        | -            |
| R_7 | LAN2_MDI3_P | DIFF        | -            |
| R_8 | LAN2_MDI3_N | DIFF        | -            |

**Note:** The chip used for LAN 1 is Intel® Ethernet Connection I219.

**Note:** The chip used for LAN 2 is Intel® Ethernet Controller I226.

### 2.4.31 USB 3.2/USB 2.0 Port 1/Port 2 (CN33)

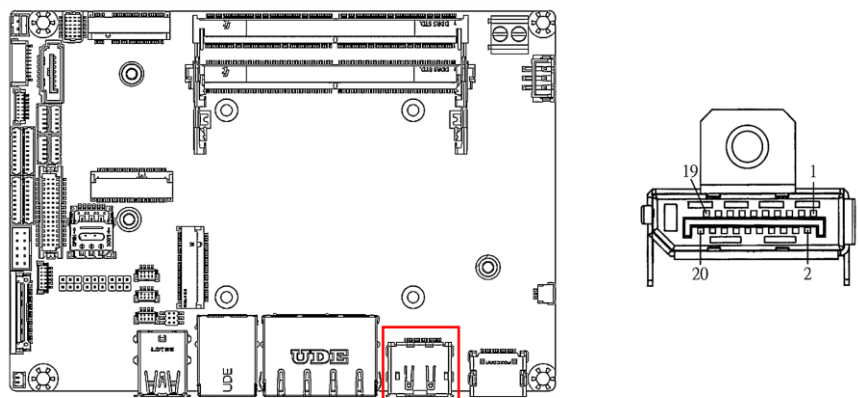


| Pin | Pin Name   | Signal Type | Signal Level |
|-----|------------|-------------|--------------|
| 1   | +5VSB      | PWR         | +5V          |
| 2   | USB2_1_DN  | DIFF        | -            |
| 3   | USB2_1_DP  | DIFF        | -            |
| 4   | GND        | GND         | GND          |
| 5   | USB3_1_RXN | DIFF        | -            |
| 6   | USB3_1_RXP | DIFF        | -            |
| 7   | GND        | GND         | GND          |
| 8   | USB3_1_TXN | DIFF        | -            |
| 9   | USB3_1_TXP | DIFF        | -            |
| 10  | +5VSB      | PWR         | +5V          |
| 11  | USB2_8_DN  | DIFF        | -            |
| 12  | USB2_8_DP  | DIFF        | -            |
| 13  | GND        | GND         | GND          |
| 14  | USB3_2_RXN | DIFF        | -            |

| Pin | Pin Name   | Signal Type | Signal Level |
|-----|------------|-------------|--------------|
| 15  | USB3_2_RXP | DIFF        | -            |
| 16  | GND        | GND         | GND          |
| 17  | USB3_2_TXN | DIFF        | -            |
| 18  | USB3_2_TXP | DIFF        | -            |

**Note:** The driving current of +5VSB supports up to 0.9A/Port

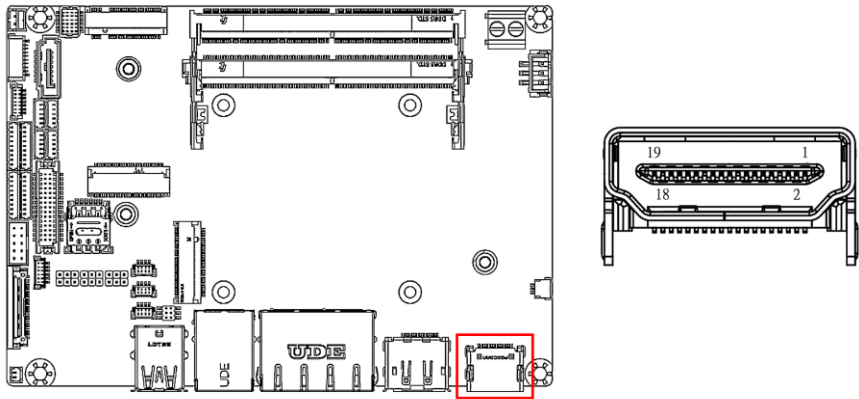
### 2.4.32 DP Port (CN34)



| Pin | Pin Name        | Signal Type | Signal Level |
|-----|-----------------|-------------|--------------|
| 1   | GND             | GND         | GND          |
| 2   | +V3P3A          | PWR         | +3.3V        |
| 3   | USB2_10_DP      | DIFF        | -            |
| 4   | +V3P3A          | PWR         | +3.3V        |
| 5   | USB2_10_DN      | DIFF        | -            |
| 6   | NC              | -           | -            |
| 7   | GND             | GND         | GND          |
| 8   | NC              | -           | -            |
| 9   | CNV_WR_D1_DN    | DIFF        | -            |
| 10  | KEYE_CNV_RF_RST | IN          | -            |
| 11  | CNV_WR_D1_DP    | DIFF        | -            |
| 12  | NC              | -           | -            |
| 13  | GND             | GND         | GND          |
| 14  | KEYE_CNV_CLKREQ | OUT         | -            |
| 15  | CNV_WR_D0_DN    | DIFF        | -            |

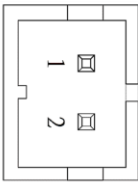
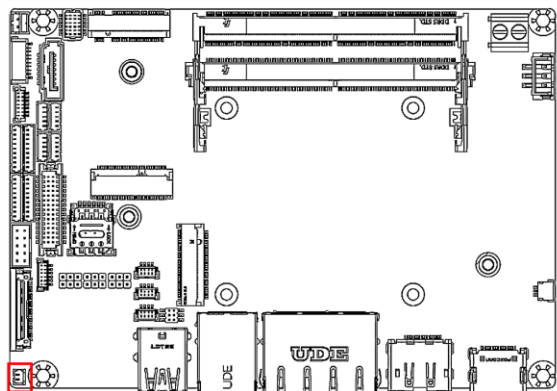
| Pin | Pin Name     | Signal Type | Signal Level |
|-----|--------------|-------------|--------------|
| 16  | NC           | -           | -            |
| 17  | CNV_WR_D0_DP | DIFF        | -            |

### 2.4.33 HDMI Port (CN35)



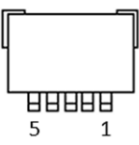
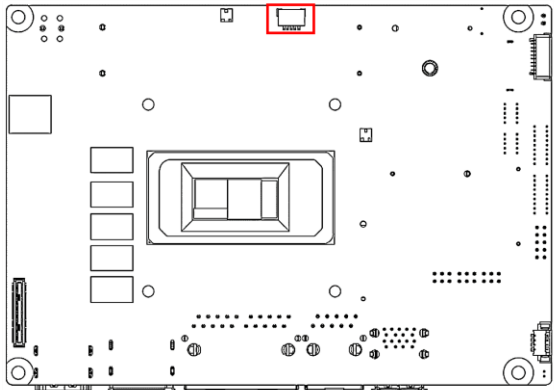
| Pin | Pin Name  | Signal Type | Signal Level |
|-----|-----------|-------------|--------------|
| 1   | HDMI_TX2+ | DIFF        | -            |
| 2   | GND       | GND         | GND          |
| 3   | HDMI_TX2- | DIFF        | -            |
| 4   | HDMI_TX1+ | DIFF        | -            |
| 5   | GND       | GND         | GND          |
| 6   | HDMI_TX1- | DIFF        | -            |
| 7   | HDMI_TX0+ | DIFF        | -            |
| 8   | GND       | GND         | GND          |
| 9   | HDMI_TX0- | DIFF        | -            |
| 10  | HDMI_CLK+ | DIFF        | -            |
| 11  | GND       | GND         | GND          |
| 12  | HDMI_CLK- | DIFF        | -            |
| 13  | N/A       | N/A         | N/A          |
| 14  | N/A       | N/A         | N/A          |
| 15  | DDC_CLK   | IN/OUT      | -            |
| 16  | DDC_DATA  | IN/OUT      | -            |
| 17  | GND       | GND         | GND          |
| 18  | +V5S      | PWR         | +5V          |
| 19  | HDMI_HPD  | IN          | -            |

### 2.4.34 RTC Battery Connector (CN36)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | +3.3V    | PWR         | +3.3V        |
| 2   | GND      | GND         | GND          |

### 2.4.35 I2C/SMBus Connector (CN37)

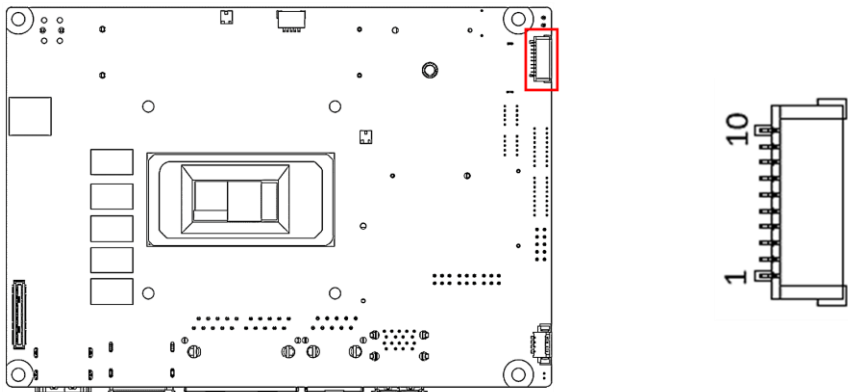


| Pin | Pin Name                       | Signal Type | Signal Level |
|-----|--------------------------------|-------------|--------------|
| 1   | +V3P3S                         | PWR         | +3.3V        |
| 2   | SMB_CLK/<br>I2C_CLK/TIME_SYNC0 | OUT         | +3.3V        |

| Pin | Pin Name                         | Signal Type | Signal Level |
|-----|----------------------------------|-------------|--------------|
| 3   | SMB_DAT/<br>I2C_DAT/TIME_SYNC1   | OUT         | +3.3V        |
| 4   | SMB_ALERT/<br>INT_SERIRQ/LAN_SDP | IN          | +3.3V        |
| 5   | GND                              | GND         | GND          |

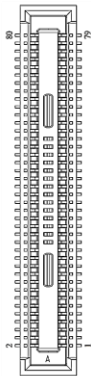
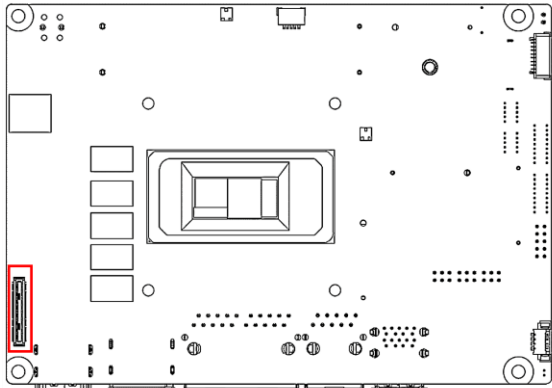
**Note:** Default function is SMBus.

2.4.36 Port 80 Debug Port Connector (CN38)



| Pin | Pin Name        | Signal Type | Signal Level |
|-----|-----------------|-------------|--------------|
| 1   | ESPI_IO0_EC_R   | IN/OUT      | +3.3V        |
| 2   | ESPI_IO1_EC_R   | IN/OUT      | +1.8V        |
| 3   | ESPI_IO2_EC_R   | IN/OUT      | +1.8V        |
| 4   | ESPI_IO3_EC_R   | IN/OUT      | +1.8V        |
| 5   | +V3P3S          | PWR         | +3.3V        |
| 6   | ESPI_CS_EC_R_N  | OUT         | +3.3V        |
| 7   | ESPI_RST_EC_R_N | OUT         | +1.8V        |
| 8   | GND             | GND         | GND          |
| 9   | ESPI_CLK_EC_R   | OUT         | +1.8V        |
| 10  | +V3P3A          | PWR         | +3.3V        |

2.4.37 Board to Board Connector (CN39)

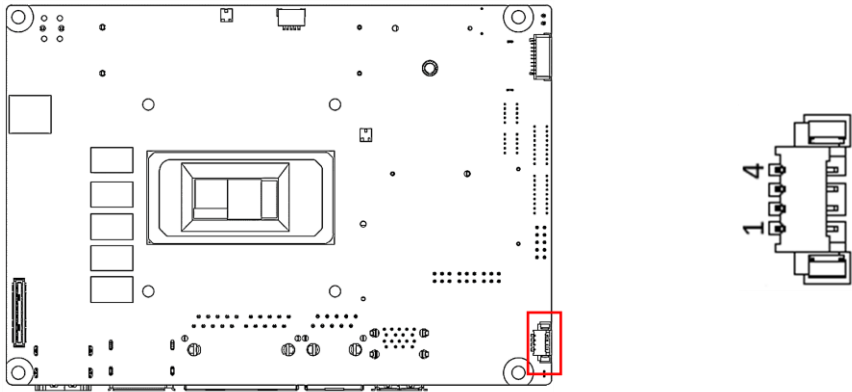


| Pin | Pin Name       | Signal Type | Signal Level |
|-----|----------------|-------------|--------------|
| 1   | +V12S          | PWR         | +12V         |
| 2   | +V12S          | PWR         | +12V         |
| 3   | +V12S          | PWR         | +12V         |
| 4   | +V12S          | PWR         | +12V         |
| 5   | +V12S          | PWR         | +12V         |
| 6   | +V12S          | PWR         | +12V         |
| 7   | +V12S          | PWR         | +12V         |
| 8   | +V12S          | PWR         | +12V         |
| 9   | +V12S          | PWR         | +12V         |
| 10  | +V12S          | PWR         | +12V         |
| 11  | GND            | GND         | GND          |
| 12  | GND            | GND         | GND          |
| 13  | PCIE_13_TXP    | DIFF        | -            |
| 14  | PCIE_17_TXP    | DIFF        | -            |
| 15  | PCIE_13_TXN    | DIFF        | -            |
| 16  | PCIE_17_TXN    | DIFF        | -            |
| 17  | GND            | GND         | GND          |
| 18  | GND            | GND         | GND          |
| 19  | PCIE_7_CLK_TXP | DIFF        | -            |
| 20  | PCIE_8_CLK_TXP | DIFF        | -            |
| 21  | PCIE_7_CLK_TXN | DIFF        | -            |
| 22  | PCIE_8_CLK_TXN | DIFF        | -            |
| 23  | GND            | GND         | GND          |
| 24  | GND            | GND         | GND          |

| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 25  | PCIE_14_TXP | DIFF        | -            |
| 26  | PCIE_18_TXP | DIFF        | -            |
| 27  | PCIE_14_TXN | DIFF        | -            |
| 28  | PCIE_18_TXN | DIFF        | -            |
| 29  | GND         | GND         | GND          |
| 30  | GND         | GND         | GND          |
| 31  | PCIE_15_TXP | DIFF        | -            |
| 32  | PCIE_19_TXP | DIFF        | -            |
| 33  | PCIE_15_TXN | DIFF        | -            |
| 34  | PCIE_19_TXN | DIFF        | -            |
| 35  | GND         | GND         | GND          |
| 36  | GND         | GND         | GND          |
| 37  | PCIE_16_TXP | DIFF        | -            |
| 38  | PCIE_20_TXP | DIFF        | -            |
| 39  | PCIE_16_TXN | DIFF        | -            |
| 40  | PCIE_20_TXN | DIFF        | -            |
| 41  | GND         | GND         | GND          |
| 42  | GND         | GND         | GND          |
| 43  | PCIE_13_RXN | DIFF        | -            |
| 44  | PCIE_17_RXN | DIFF        | -            |
| 45  | PCIE_13_RXP | DIFF        | -            |
| 46  | PCIE_17_RXP | DIFF        | -            |
| 47  | GND         | GND         | GND          |
| 48  | GND         | GND         | GND          |
| 49  | PCIE_14_RXN | DIFF        | -            |
| 50  | PCIE_18_RXN | DIFF        | -            |
| 51  | PCIE_14_RXP | DIFF        | -            |
| 52  | PCIE_18_RXP | DIFF        | -            |
| 53  | GND         | GND         | GND          |
| 54  | GND         | GND         | GND          |
| 55  | PCIE_15_RXN | DIFF        | -            |
| 56  | PCIE_19_RXN | DIFF        | -            |
| 57  | PCIE_15_RXP | DIFF        | -            |
| 58  | PCIE_19_RXP | DIFF        | -            |
| 59  | GND         | GND         | GND          |
| 60  | GND         | GND         | GND          |
| 61  | PCIE_16_RXN | DIFF        | -            |
| 62  | PCIE_20_RXN | DIFF        | -            |
| 63  | PCIE_16_RXP | DIFF        | -            |

| Pin | Pin Name     | Signal Type | Signal Level |
|-----|--------------|-------------|--------------|
| 64  | PCIE_20_RXP  | DIFF        | -            |
| 65  | GND          | GND         | GND          |
| 66  | GND          | GND         | GND          |
| 67  | +V3P3A       | PWR         | +3.3V        |
| 68  | +V3P3A       | PWR         | +3.3V        |
| 69  | BUF_PLT_RST# | OUT         | -            |
| 70  | BUF_PLT_RST# | OUT         | -            |
| 71  | SMB_CLK      | OUT         | -            |
| 72  | SMB_CLK      | OUT         | -            |
| 73  | SMB_DATA     | IN/OUT      | -            |
| 74  | SMB_DATA     | IN/OUT      | -            |
| 75  | +V3P3S       | PWR         | +3.3V        |
| 76  | +V3P3S       | PWR         | +3.3V        |
| 77  | +V3P3S       | PWR         | +3.3V        |
| 78  | +V3P3S       | PWR         | +3.3V        |
| 79  | +V3P3S       | PWR         | +3.3V        |
| 80  | +V3P3S       | PWR         | +3.3V        |

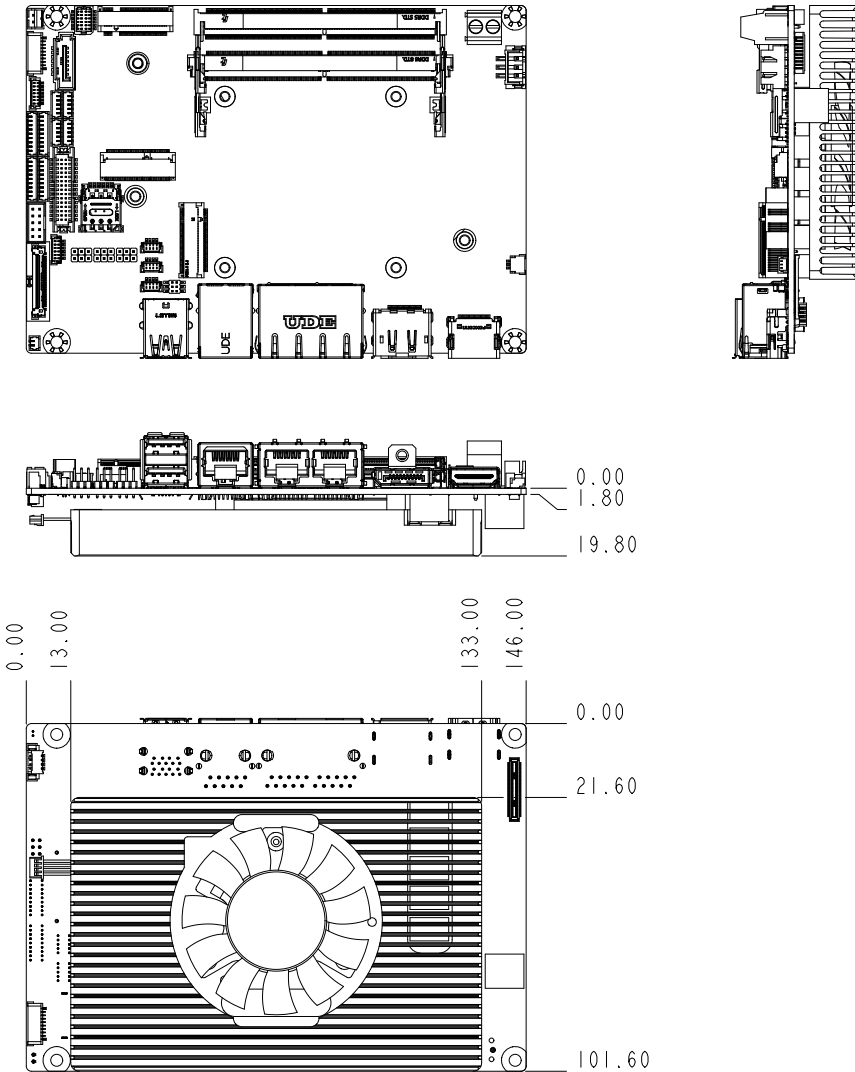
2.4.38 4-pin Fan Connector (CN40)



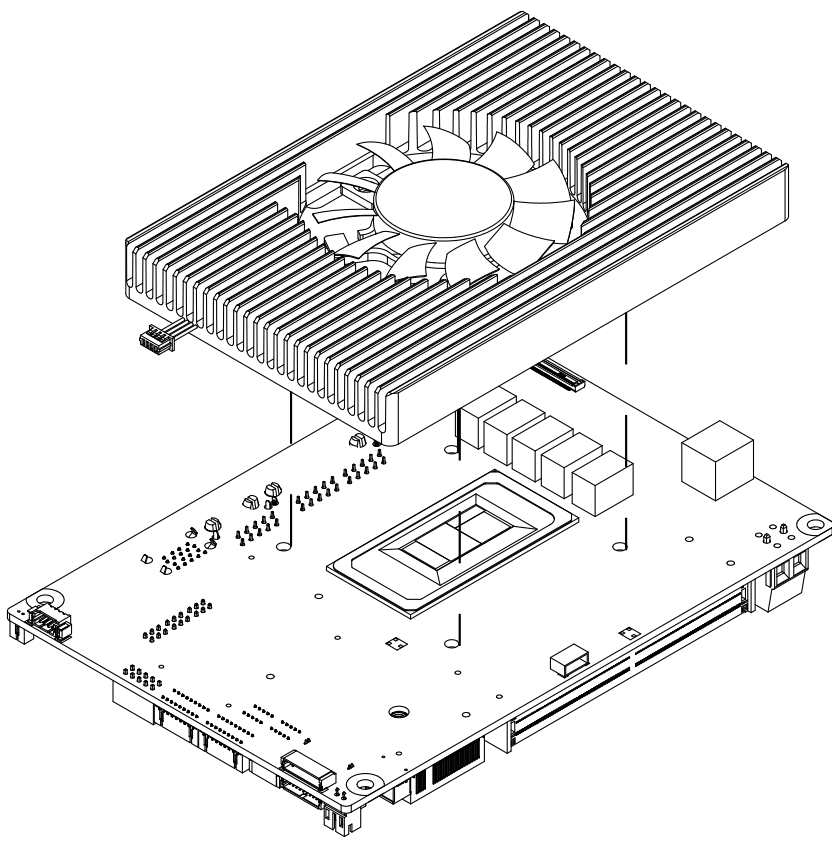
| Pin | Pin Name  | Signal Type | Signal Level |
|-----|-----------|-------------|--------------|
| 1   | GND       | GND         | GND          |
| 2   | FAN_POWER | PWR         | +12V         |
| 3   | FAN_TAC   | IN          | -            |
| 4   | FAN_CTL   | OUT         | -            |

## 2.5 Thermal Solutions

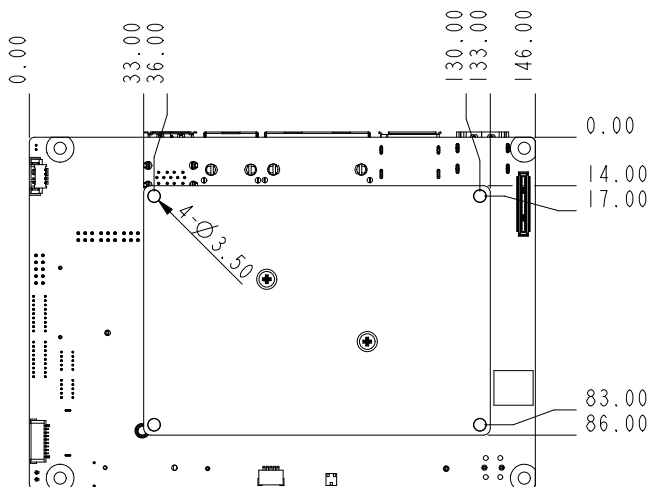
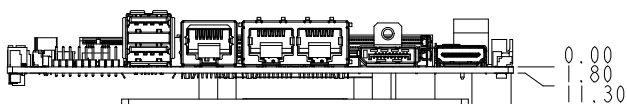
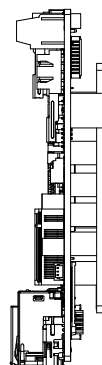
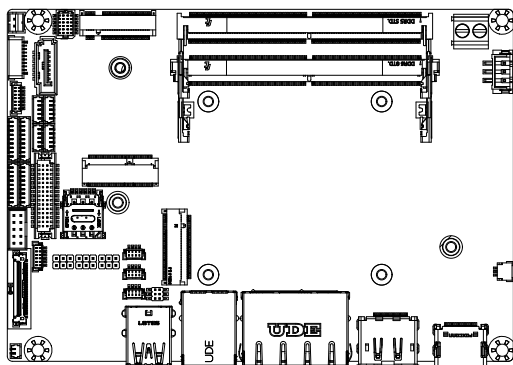
### 2.5.1 Active Cooling Fan - GENE-MTH6-FAN01



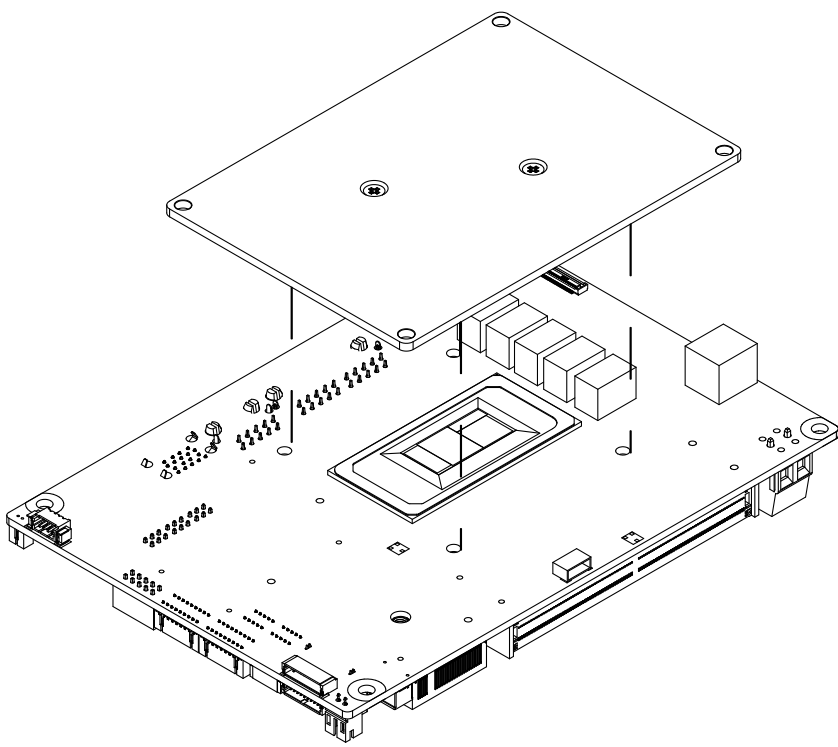
GENE-MTH6-FAN01 Assembly



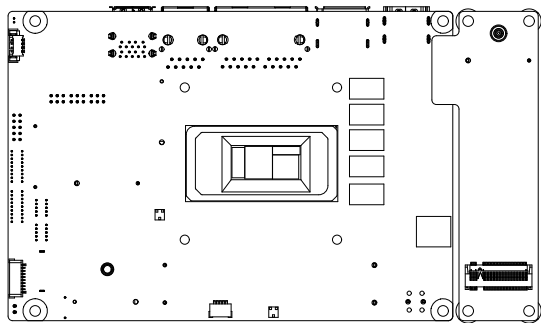
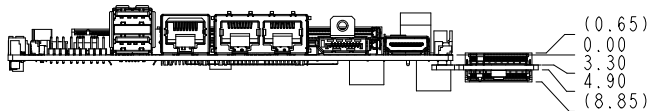
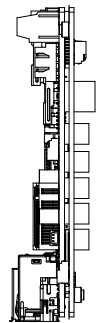
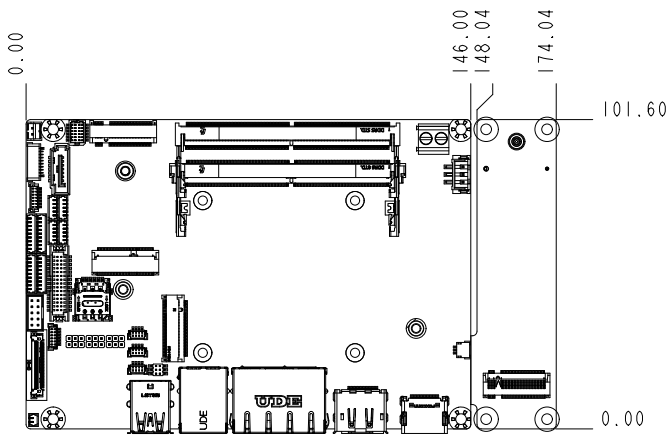
## 2.5.2 Heatspreader - GENE-MTH6-HSP01



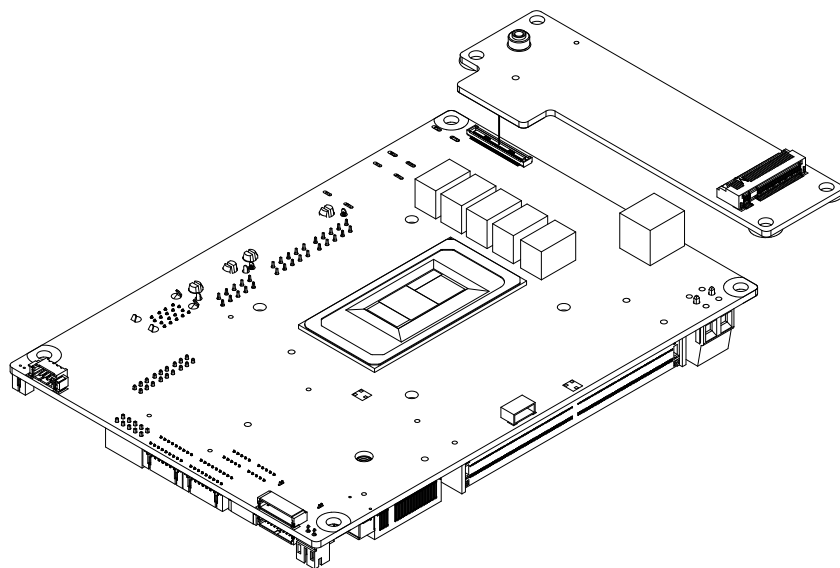
# GENE-MTH6-HSP01 Assembly



2.5.3 FPC2 - PER-SB2B-A01-0001



# PER-SB2B-A01-0001 Assembly



# Chapter 3

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AMI BIOS Setup

## 3.1 System Test and Initialization

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These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

### System configuration verification

These routines check the current system configuration stored in the CMOS memory and BIOS NVRAM. If system configuration is not found or system configuration data error is detected, system will load optimized default and re-boot with this default system configuration automatically.

There are four situations in which you will need to setup system configuration:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The system configuration is reset by Clear-CMOS jumper
4. The CMOS memory has lost power and the configuration information has been erased.

The GENE-MTH6 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

## 3.2 AMI BIOS Setup

---

AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM and BIOS NVRAM so that it retains the Setup information when the power is turned off.

### Entering Setup

Power on the computer and press <Del> or <ESC> immediately. This will allow you to enter Setup.

### Main

Set the date, use tab to switch between date elements.

### Advanced

Enable/disable boot option for legacy network devices.

### Chipset

Host bridge parameters.

### Boot

Enables/disables quiet boot option.

### Security

Set setup administrator password.

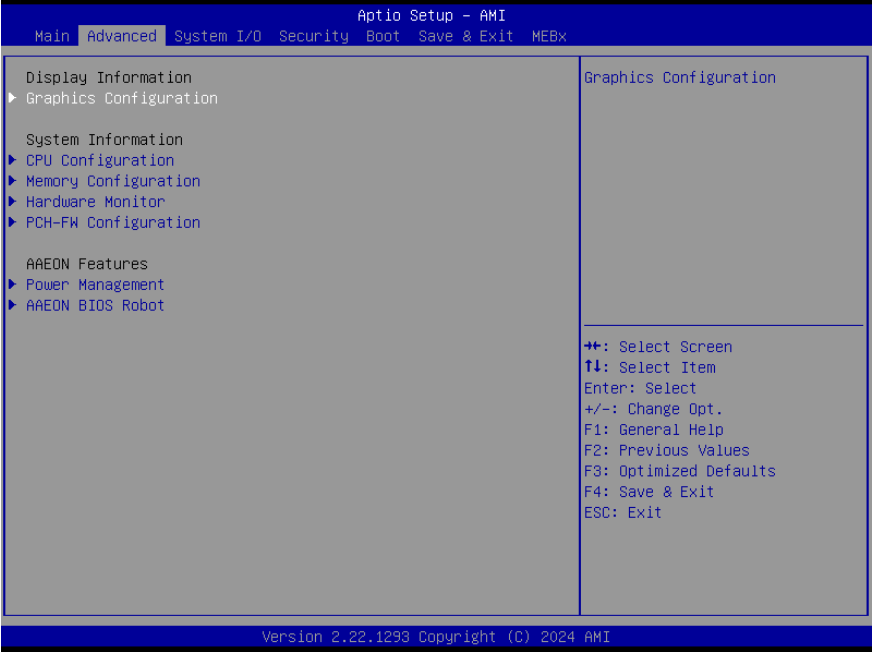
### Save & Exit

Exit system setup after saving the changes.

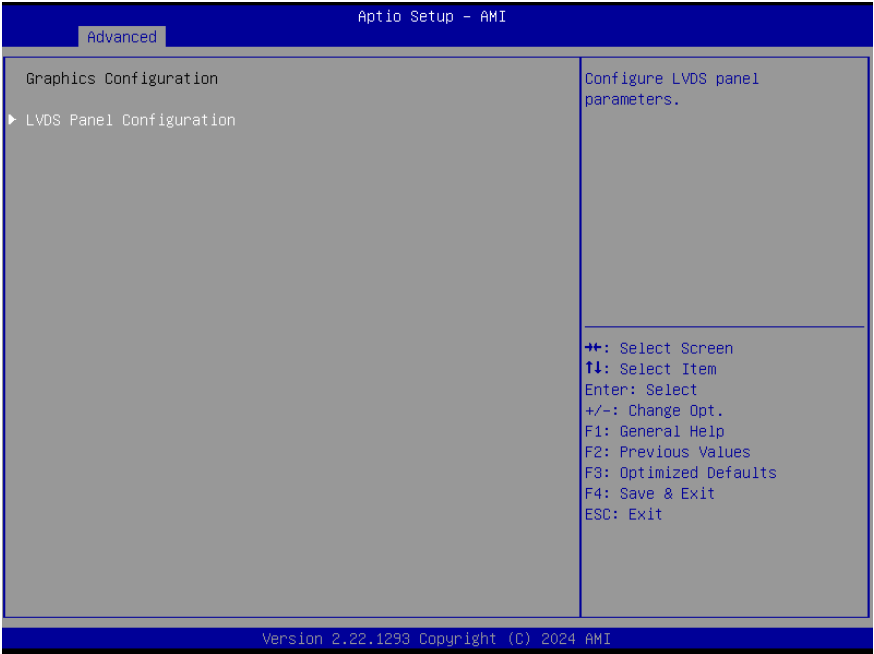
### 3.3 Setup Submenu: Main



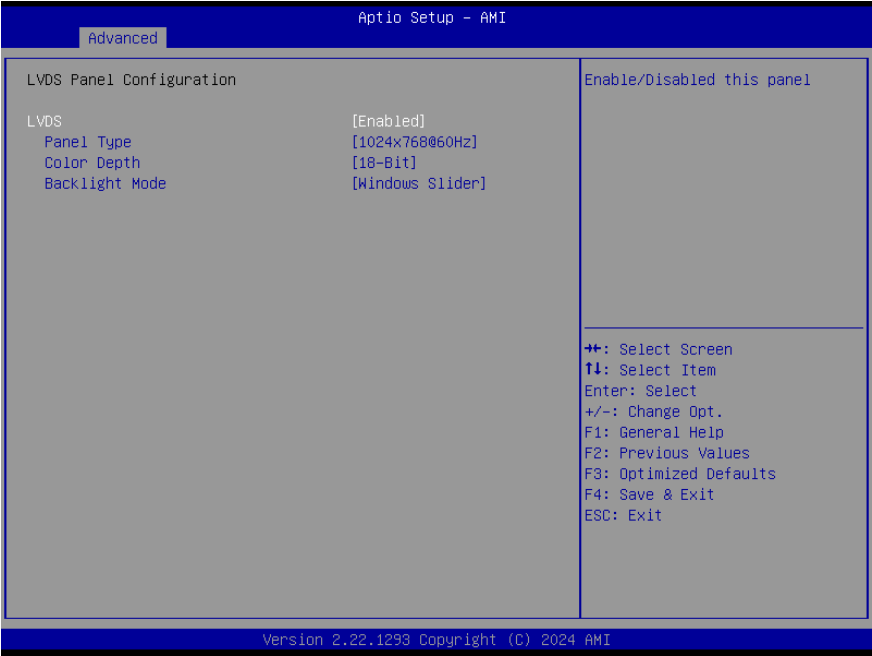
### 3.4 Setup Submenu: Advanced



### 3.4.1 Graphics Configuration



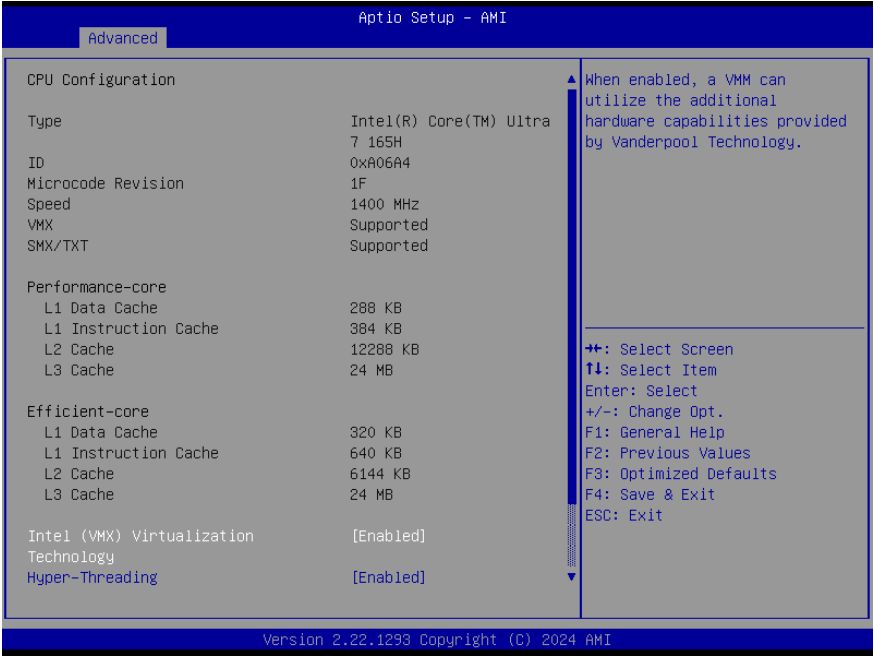
### 3.4.2 LVDS Panel Configuration

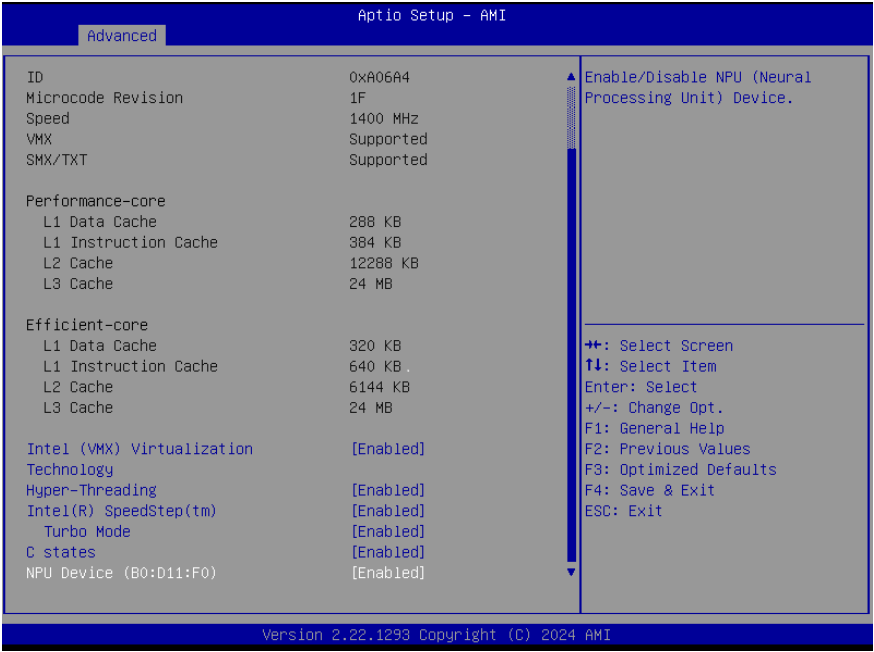


| Options Summary             |                      |                                   |
|-----------------------------|----------------------|-----------------------------------|
| LVDS                        | Disabled             |                                   |
|                             | Enabled              | Optimal Default, Failsafe Default |
| Enable/Disabled this panel. |                      |                                   |
| LVDS Panel Type             | 640x480,18bit,60Hz   |                                   |
|                             | 800x480,18bit,60Hz   |                                   |
|                             | 800x600,18bit,60Hz   |                                   |
|                             | 1024x600,18bit,60Hz  |                                   |
|                             | 1024x768,18bit,60Hz  |                                   |
|                             | 1024x768,24bit,60Hz  | Optimal Default, Failsafe Default |
|                             | 1280x768,24bit,60Hz  |                                   |
|                             | 1280x1024,48bit,60Hz |                                   |
|                             | 1366x768,24bit,60Hz  |                                   |
|                             | 1440x900,48bit,60Hz  |                                   |
|                             | 1600x1200,48bit,60Hz |                                   |
|                             | 1920x1080,48bit,60Hz |                                   |

| Options Summary                                                                            |                      |                                   |
|--------------------------------------------------------------------------------------------|----------------------|-----------------------------------|
| LVDS Panel Type (Cont.)                                                                    | 1920x1200,48bit,60Hz |                                   |
| Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item. |                      |                                   |
| Color Depth                                                                                | 18-bit               | Optimal Default, Failsafe Default |
|                                                                                            | 24-bit               |                                   |
|                                                                                            | 36-bit               |                                   |
|                                                                                            | 48-bit               |                                   |
| Select panel type                                                                          |                      |                                   |
| Backlight Mode                                                                             | BIOS & Application   |                                   |
|                                                                                            | Windows Slider       | Optimal Default, Failsafe Default |
| Select backlight control signal type                                                       |                      |                                   |

3.4.3 CPU Configuration





| Options Summary                                                                                         |          |                                   |
|---------------------------------------------------------------------------------------------------------|----------|-----------------------------------|
| Intel (VMX) Virtualization Technology                                                                   | Disabled |                                   |
|                                                                                                         | Enabled  | Optimal Default, Failsafe Default |
| When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology. |          |                                   |
| Hyper-Threading                                                                                         | Disabled |                                   |
|                                                                                                         | Enabled  | Optimal Default, Failsafe Default |
| Enable or Disable Hyper-Threading Technology.                                                           |          |                                   |
| Intel® SpeedStep™                                                                                       | Disabled |                                   |
|                                                                                                         | Enabled  | Optimal Default, Failsafe Default |
| Allows more than two frequency ranges to be supported.                                                  |          |                                   |
| Turbo Mode                                                                                              | Disabled |                                   |
|                                                                                                         | Enabled  | Optimal Default, Failsafe Default |
| Enable or Disable processor Turbo Mode (requires EMTTM enable too). AUTO means enabled                  |          |                                   |
| C states                                                                                                | Disabled |                                   |
|                                                                                                         | Enabled  | Optimal Default, Failsafe Default |
| Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100 utilized.           |          |                                   |

| Options Summary                                    |          |                                   |
|----------------------------------------------------|----------|-----------------------------------|
| NPU Device (B0:D11:F0)                             | Disabled |                                   |
|                                                    | Enabled  | Optimal Default, Failsafe Default |
| Enable/Disable NPU (Neural Processing Unit) Device |          |                                   |

### 3.4.4 Memory Configuration

Advanced

Aptio Setup - AMI

Total Memory8192 MB

Memory Frequency5600 MHz

MC 1 Ch 0 DIMM 0  
SizePopulated & Enabled  
8192 MB (DDR5)

++: Select Screen

f1: Select Item

Enter: Select

+/-: Change Opt.

F1: General Help

F2: Previous Values

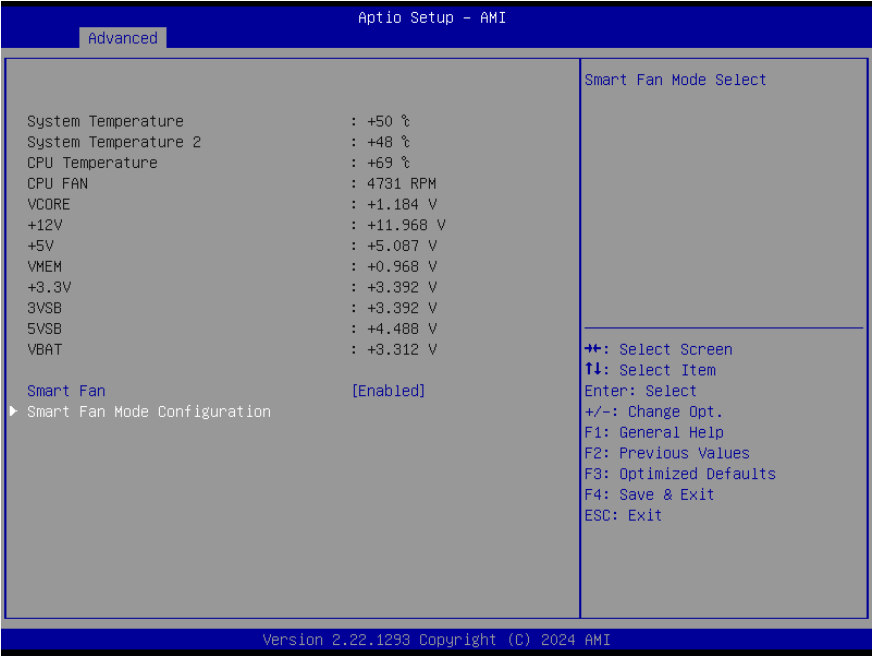
F3: Optimized Defaults

F4: Save & Exit

ESC: Exit

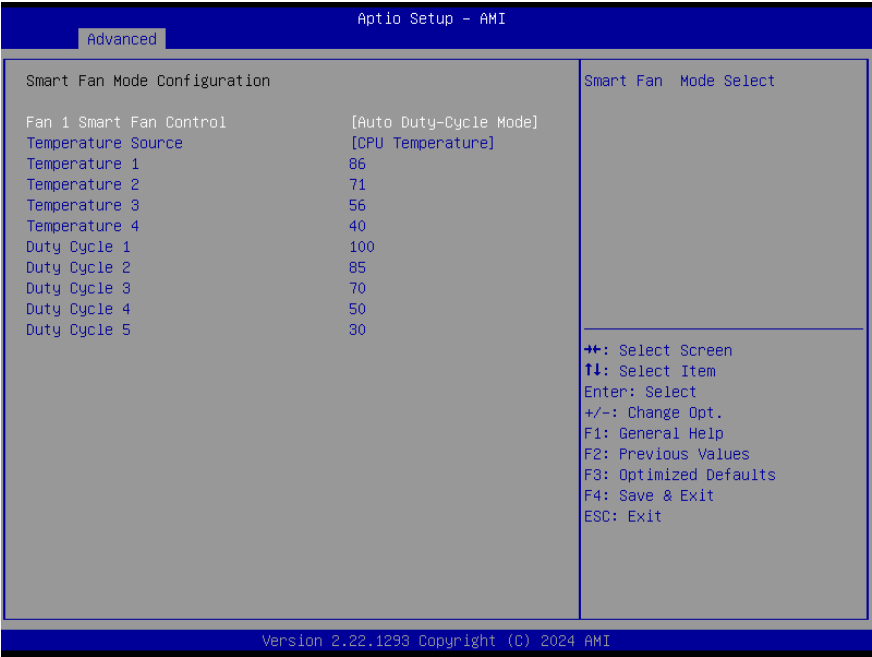
Version 2.22.1293 Copyright (C) 2024 AMI

3.4.5 Hardware Monitor



| Options Summary                |         |                                   |
|--------------------------------|---------|-----------------------------------|
| Smart Fan                      | Disable |                                   |
|                                | Enable  | Optimal Default, Failsafe Default |
| Enables or Disables Smart Fan. |         |                                   |

### 3.4.6 Smart Fan Mode Configuration



| Options Summary                                                                                   |                      |                                   |
|---------------------------------------------------------------------------------------------------|----------------------|-----------------------------------|
| Fan 1 Smart Fan Control                                                                           | Manual Duty Mode     |                                   |
|                                                                                                   | Auto Duty-Cycle Mode | Optimal Default, Failsafe Default |
| Smart Fan Mode Select                                                                             |                      |                                   |
| Temperature Source                                                                                | CPU Temperature      | Optimal Default, Failsafe Default |
|                                                                                                   | System Temperature   |                                   |
|                                                                                                   | System Temperature 2 |                                   |
| Select the monitored temperature source for this fan.                                             |                      |                                   |
| Temperature 1                                                                                     | 86                   |                                   |
| Duty Cycle 1                                                                                      | 100                  |                                   |
| Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100 |                      |                                   |

3.4.7 PCH-FW Configuration



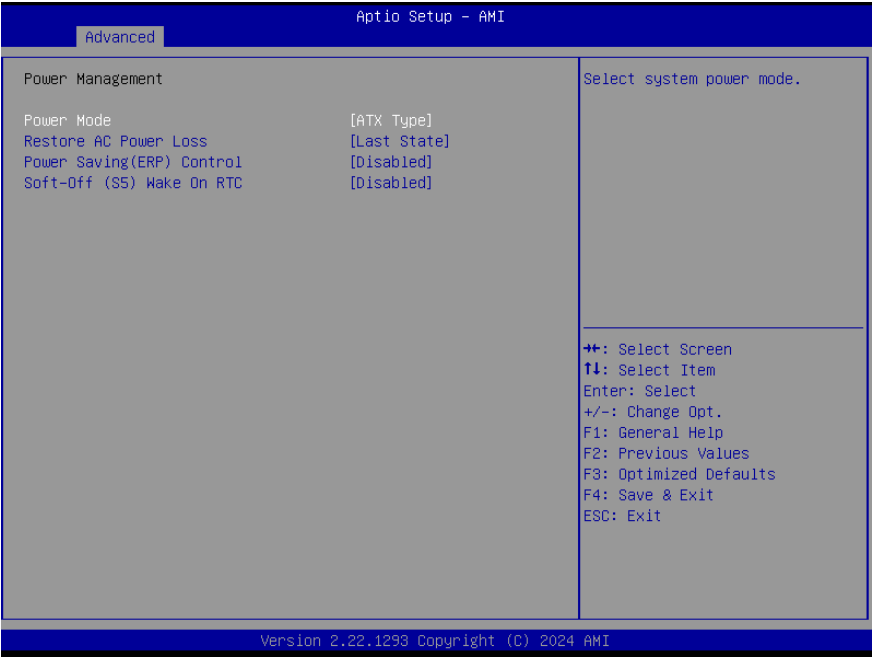
| Options Summary                                                                                                                                                                       |      |                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------|
| TPM Device Selection                                                                                                                                                                  | dTPM | Optimal Default, Failsafe Default |
|                                                                                                                                                                                       | PTT  |                                   |
| Selects TPM device: PTT or discrete TPM.<br>PTT - enables PTT in SkuMgr<br>dTPM - disables PTT is SkuMgr<br>Warning! PTT/dTPM will be disabled and all data saved on it will be lost. |      |                                   |

### 3.4.8     Firmware Update Configuration



| Options Summary                               |          |                                   |
|-----------------------------------------------|----------|-----------------------------------|
| Me FW Image Re-Flash                          | Enabled  |                                   |
|                                               | Disabled | Optimal Default, Failsafe Default |
| Enable/Disable Me FW Image Re-Flash function. |          |                                   |
| FW Update                                     | Disabled |                                   |
|                                               | Enabled  | Optimal Default, Failsafe Default |
| Enable/Disable ME FW Update function.         |          |                                   |

### 3.4.9 Power Management



| Options Summary                                                    |            |                                   |
|--------------------------------------------------------------------|------------|-----------------------------------|
| Power Mode                                                         | ATX Type   | Optimal Default, Failsafe Default |
|                                                                    | AT Type    |                                   |
| Select system power mode.                                          |            |                                   |
| Restore AC Power Loss                                              | Last State | Optimal Default, Failsafe Default |
|                                                                    | Always On  |                                   |
|                                                                    | Always Off |                                   |
| Select power state when power is re-applied after a power failure. |            |                                   |
| Power Saving(ERP) Control                                          | Disabled   | Optimal Default, Failsafe Default |
|                                                                    | Enabled    |                                   |
| Select Power saving control.                                       |            |                                   |
| Soft-Off (S5) Wake On RTC                                          | Disable    | Optimal Default, Failsafe Default |
|                                                                    | By Date    |                                   |
|                                                                    | By Weekday |                                   |
|                                                                    | Bypass     |                                   |

Options Summary

By Date: System will wake on the with hr::min::sec specified./n By Weekday: System will wake on the enabled weekday with hr::min::sec specified./n Bypass: BIOS will not control RTC wake function.

3.4.10   AAEON BIOS Robot

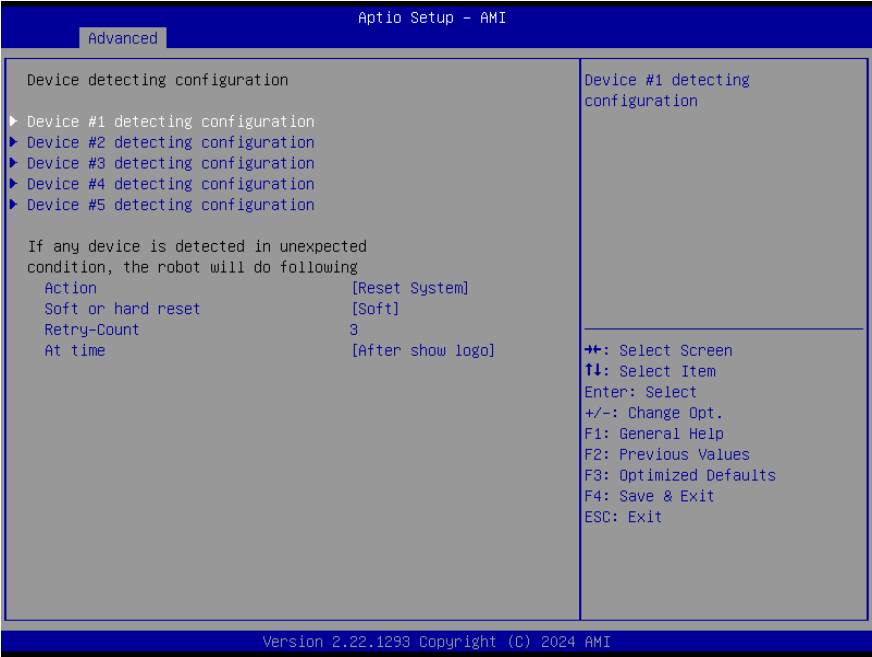


Options Summary

|                                                                                                                                                                                                                                                     |          |                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------|
| Sends watch dog before BIOS POST                                                                                                                                                                                                                    | Disabled | Optimal Default, Failsafe Default |
|                                                                                                                                                                                                                                                     | Enabled  |                                   |
| Enabled - Robot set Watch Dog Timer (WDT) right after power on, before BIOS start POST process. And then Robot will clear WDT on completion of POST. WDT will reset system automatically if it is not cleared before its timer counts down to zero. |          |                                   |
| POST Timer (second)                                                                                                                                                                                                                                 | 30       | Optimal Default, Failsafe Default |
| Timer count set to Watch Dog Timer for POST. <b>WARNING:</b> Do not set to a value equal or shorter than normal POST time, otherwise system may never complete POST unless clearing BIOS settings. More than 2x normal POST time is suggested.      |          |                                   |

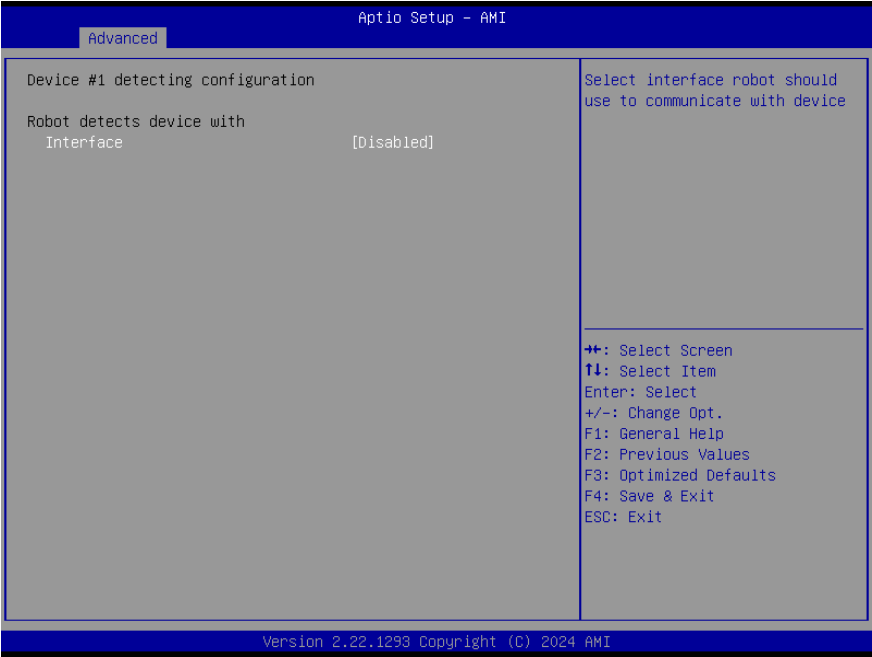
| Options Summary                                                                                                                                                                                                                                                                      |             |                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------|
| Sends watch dog before booting OS                                                                                                                                                                                                                                                    | Disabled    | Optimal Default, Failsafe Default |
|                                                                                                                                                                                                                                                                                      | Enabled     |                                   |
| Enabled - Robot set Watch Dog Timer (WDT) after POST completion, before BIOS transfer control to OS. <b>WARNING:</b> Before enabling this function, a program in OS must be in responsible for clearing WDT. Also, this function should be disabled if OS is going to update itself. |             |                                   |
| OS Timer (minute)                                                                                                                                                                                                                                                                    | 3           | Optimal Default, Failsafe Default |
| Timer count set to Watch Dog Timer for OS loading.                                                                                                                                                                                                                                   |             |                                   |
| Delayed POST (PEI phase)                                                                                                                                                                                                                                                             | Disabled    | Optimal Default, Failsafe Default |
|                                                                                                                                                                                                                                                                                      | Enabled     |                                   |
| Enabled - Robot holds BIOS from starting POST, right after power on. This allows BIOS POST to start with stable power or start after system is physically warmed-up.<br><b>Note:</b> Robot does this before 'Sends watch dog'.                                                       |             |                                   |
| Delayed time (second)                                                                                                                                                                                                                                                                | 10          | Optimal Default, Failsafe Default |
| Period of time for Robot to hold BIOS from POST.                                                                                                                                                                                                                                     |             |                                   |
| Delayed POST (DXE phase)                                                                                                                                                                                                                                                             | Disabled    | Optimal Default, Failsafe Default |
|                                                                                                                                                                                                                                                                                      | Enabled     |                                   |
| Enabled - Robot holds BIOS before POST completion. This allows BIOS POST to start with stable power or start after system is physically warmed-up.<br><b>Note:</b> Robot does this after 'Sends watch dog before BIOS POST'.                                                         |             |                                   |
| Delayed time (second)                                                                                                                                                                                                                                                                | 10          | Optimal Default, Failsafe Default |
| Period of time for Robot to hold BIOS from POST.                                                                                                                                                                                                                                     |             |                                   |
| Reset system once                                                                                                                                                                                                                                                                    | Disabled    | Optimal Default, Failsafe Default |
|                                                                                                                                                                                                                                                                                      | Enabled     |                                   |
| Enabled - Robot resets system for one time on each boot. This will send a soft or hard reset to onboard devices, thus puts devices to more stable state.                                                                                                                             |             |                                   |
| Soft or hard reset                                                                                                                                                                                                                                                                   | Soft reset  | Optimal Default, Failsafe Default |
|                                                                                                                                                                                                                                                                                      | Hard reset" |                                   |
| Select reset type robot should send on each boot.                                                                                                                                                                                                                                    |             |                                   |

### 3.4.11 Device Detecting Configuration



| Options Summary                                                                                                                                                                                                            |                  |                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------------|
| Action                                                                                                                                                                                                                     | Reset System     | Optimal Default, Failsafe Default |
|                                                                                                                                                                                                                            | Hold System      |                                   |
| Select action that robot should do.                                                                                                                                                                                        |                  |                                   |
| Soft or hard reset                                                                                                                                                                                                         | Soft             | Optimal Default, Failsafe Default |
|                                                                                                                                                                                                                            | Hard             |                                   |
| Select reset type robot should send on each boot.                                                                                                                                                                          |                  |                                   |
| Retry-Count                                                                                                                                                                                                                | 30               | Optimal Default, Failsafe Default |
| Fill retry counter here. Robot will reset system at most counter times, and then let system continue its POST.                                                                                                             |                  |                                   |
| At time                                                                                                                                                                                                                    | After show logo  | Optimal Default, Failsafe Default |
|                                                                                                                                                                                                                            | Before show logo |                                   |
| Select robot action time: After show logo - Robot will do action after logo is displayed. System devices are almost ready. Before show logo - Robot will do action earlier before logo, but some devices may not be ready. |                  |                                   |

3.4.11.1 Device #1~#5 Detecting Configuration



| Options Summary                                               |            |                                   |
|---------------------------------------------------------------|------------|-----------------------------------|
| Interface                                                     | Disable    | Optimal Default, Failsafe Default |
|                                                               | PCI        |                                   |
|                                                               | DIO        |                                   |
|                                                               | SMBUS      |                                   |
|                                                               | Legacy I/O |                                   |
|                                                               | Super I/O  |                                   |
|                                                               | MMIO       |                                   |
| Select interface robot should use to communicate with device. |            |                                   |

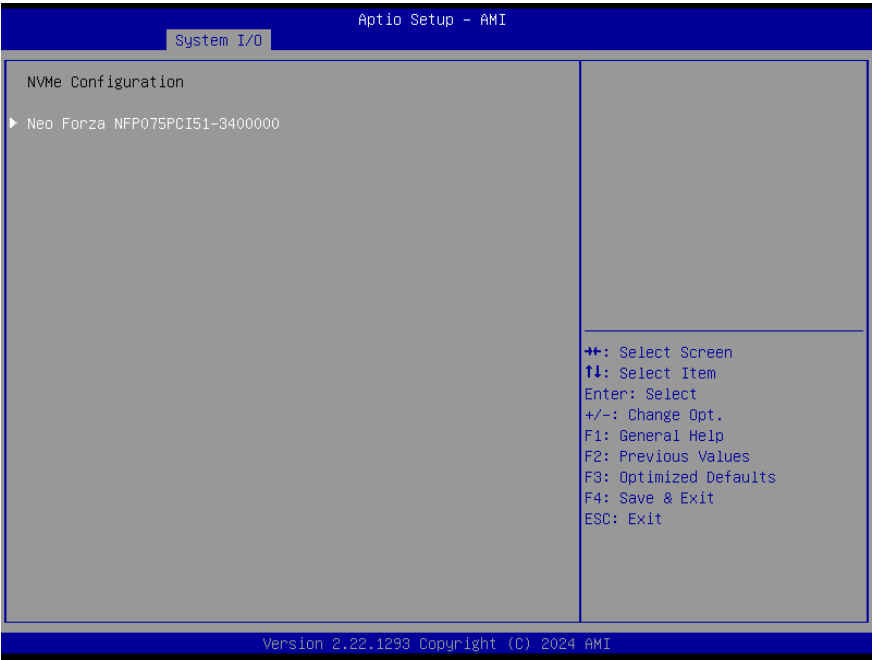
### 3.5 Setup Submenu: System I/O

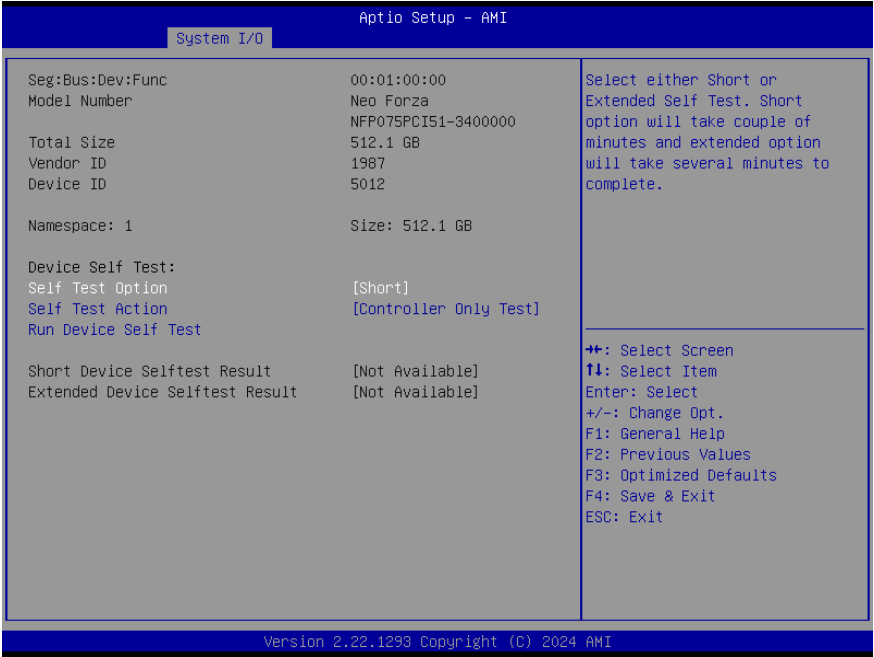


### 3.5.1 Storage Configuration



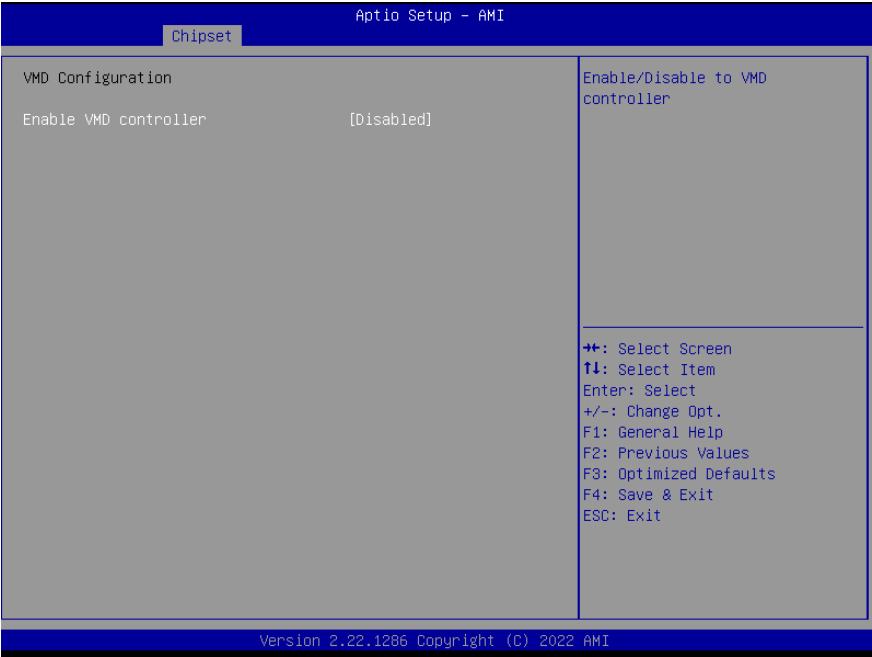
### 3.5.2 NVMe Configuration





| Options Summary                                                                                                                                                                          |                               |                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------|
| Self Test Option                                                                                                                                                                         | Short                         | Optimal Default, Failsafe Default |
|                                                                                                                                                                                          | Extended                      |                                   |
| Select either Short or Extended Self Test. Short option will take couple of minutes and extended option will take several minutes to complete.                                           |                               |                                   |
| Self Test Action                                                                                                                                                                         | Controller Only Test          | Optimal Default, Failsafe Default |
|                                                                                                                                                                                          | Controller and NameSpace Test |                                   |
| Select either to test Controller alone or Controller and NameSpace. Selecting Controller and NameSpace option will take lot longer to complete the test.                                 |                               |                                   |
| Run Device Self Test                                                                                                                                                                     | N/A                           | N/A                               |
| Perform device self test for the corresponding option and action selected by user. Pressing 'Esc' key will abort the test. Result shown below is the recent result logged in the device. |                               |                                   |

### 3.5.3 VMD Setup Menu



| Options Summary                  |          |                                   |
|----------------------------------|----------|-----------------------------------|
| Enable VMD Controller            | Disabled | Optimal Default, Failsafe Default |
|                                  | Enabled  |                                   |
| Enable/Disable to VMD Controller |          |                                   |

### 3.5.4 HD Audio Configuration

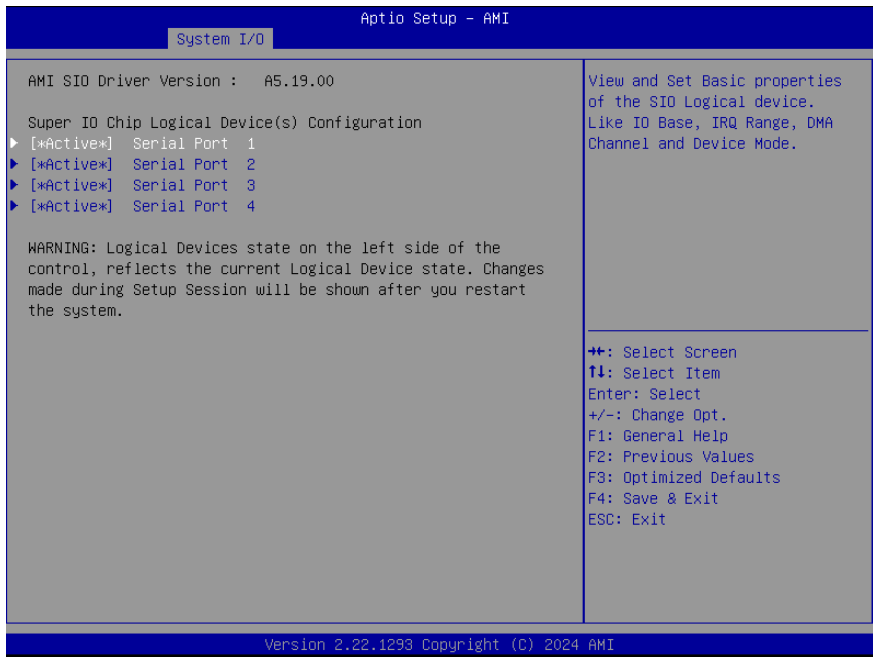


### 3.5.5 GPIO Port Configuration

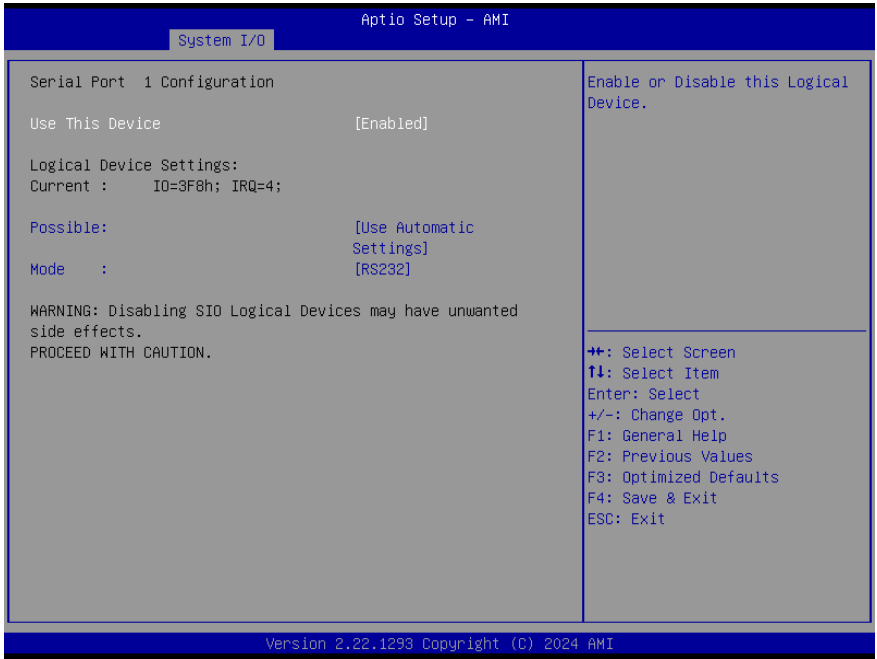


| Options Summary                          |        |  |
|------------------------------------------|--------|--|
| GPIO Port*                               | Output |  |
|                                          | Input  |  |
| Set GPIO as Input or Output              |        |  |
| Output Level                             | High   |  |
|                                          | Low    |  |
| Set output level when GPIO pin is output |        |  |

### 3.5.6 Legacy Devices Configuration

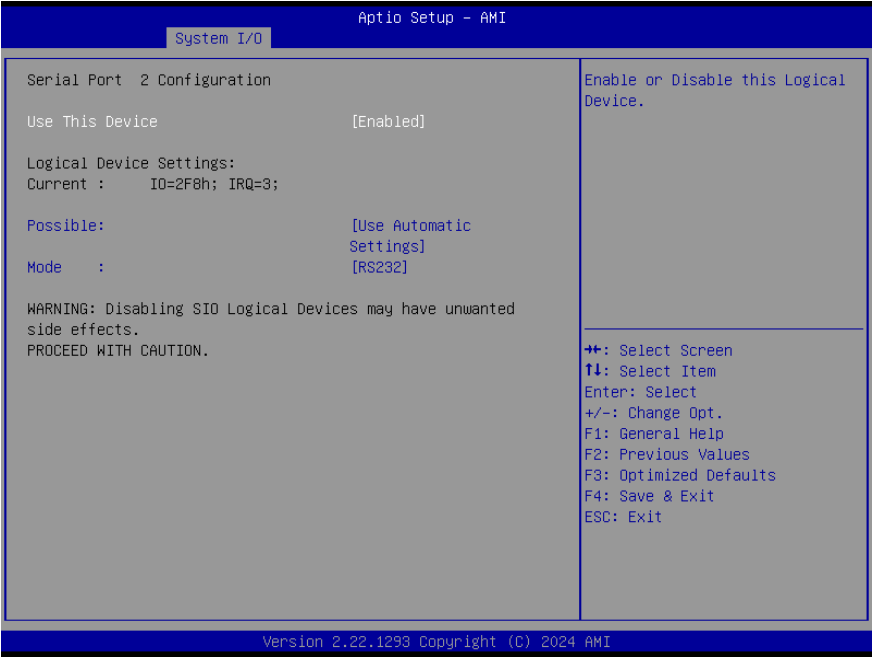


### 3.5.6.1 Serial Port 1 Configuration



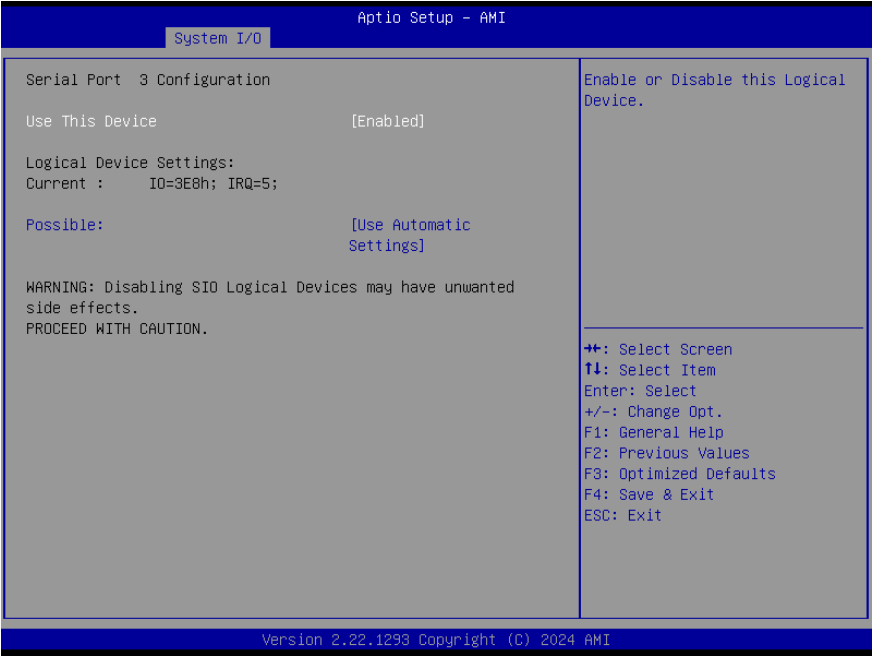
| Options Summary                                                                                                            |                        |                                   |
|----------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------|
| Use This Device                                                                                                            | Disable                |                                   |
|                                                                                                                            | Enable                 | Optimal Default, Failsafe Default |
| Enable or Disable this Logical Device.                                                                                     |                        |                                   |
| Possible:                                                                                                                  | Use Automatic Settings | Optimal Default, Failsafe Default |
|                                                                                                                            | IO=3F8h; IRQ=4         |                                   |
|                                                                                                                            | IO=2F8h; IRQ=3         |                                   |
| Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts. |                        |                                   |
| Mode:                                                                                                                      | RS232                  | Optimal Default, Failsafe Default |
|                                                                                                                            | RS422                  |                                   |
|                                                                                                                            | RS485                  |                                   |
| UART RS232, 422, 485 selection.                                                                                            |                        |                                   |

### 3.5.6.2 Serial Port 2 Configuration



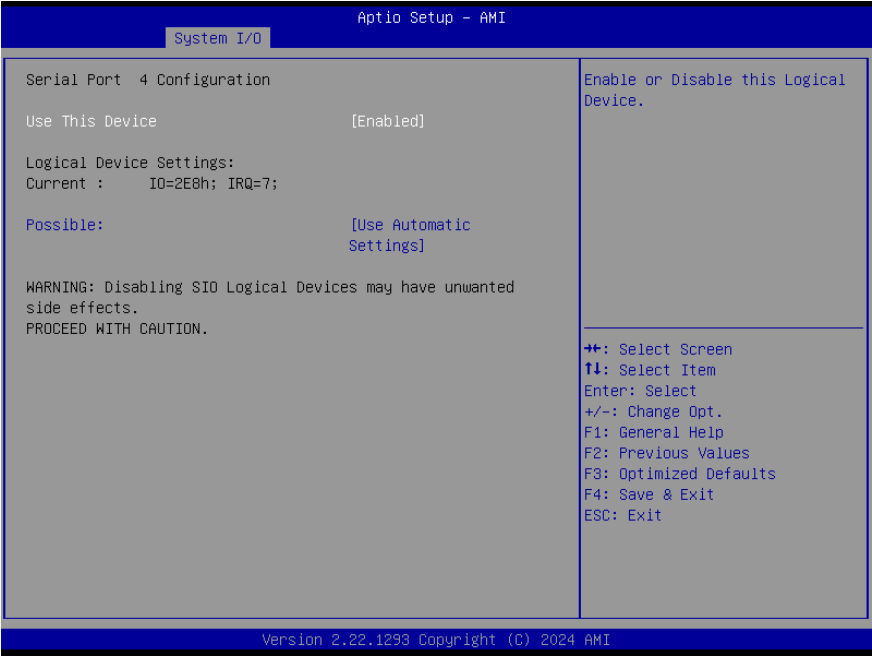
| Options Summary                                                                                                            |                        |                                   |
|----------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------|
| Use This Device                                                                                                            | Disable                |                                   |
|                                                                                                                            | Enable                 | Optimal Default, Failsafe Default |
| Enable or Disable this Logical Device.                                                                                     |                        |                                   |
| Possible:                                                                                                                  | Use Automatic Settings | Optimal Default, Failsafe Default |
|                                                                                                                            | IO=2F8h; IRQ=3         |                                   |
|                                                                                                                            | IO=3F8h; IRQ=4         |                                   |
| Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts. |                        |                                   |
| Mode:                                                                                                                      | RS232                  | Optimal Default, Failsafe Default |
|                                                                                                                            | RS422                  |                                   |
|                                                                                                                            | RS485                  |                                   |
| UART RS232, 422, 485 selection.                                                                                            |                        |                                   |

3.5.6.3 Serial Port 3 Configuration



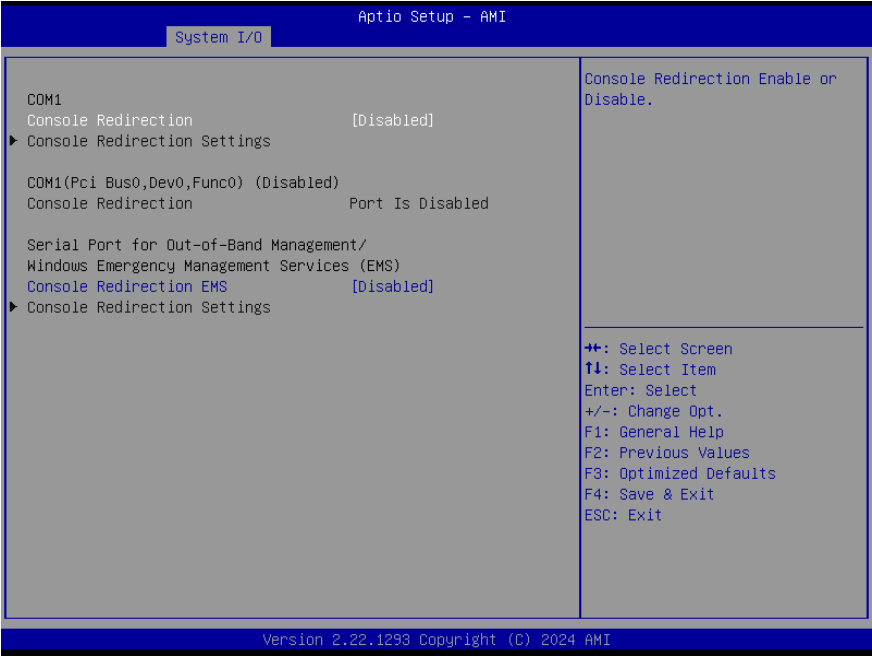
| Options Summary                                                                                                            |                        |                                   |
|----------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------|
| Use This Device                                                                                                            | Disable                |                                   |
|                                                                                                                            | Enable                 | Optimal Default, Failsafe Default |
| Enable or Disable this Logical Device.                                                                                     |                        |                                   |
| Possible:                                                                                                                  | Use Automatic Settings | Optimal Default, Failsafe Default |
|                                                                                                                            | IO=3E8h; IRQ=5         |                                   |
|                                                                                                                            | IO=2E8h; IRQ=7         |                                   |
| Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts. |                        |                                   |

3.5.6.4 Serial Port 4 Configuration



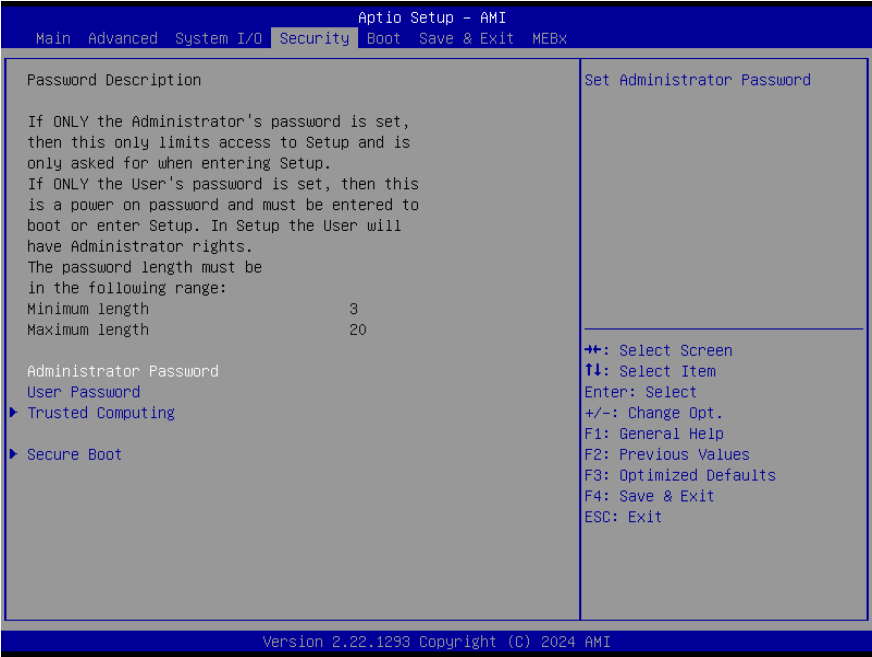
| Options Summary                                                                                                            |                        |                                   |
|----------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------|
| Use This Device                                                                                                            | Disable                |                                   |
|                                                                                                                            | Enable                 | Optimal Default, Failsafe Default |
| Enable or Disable this Logical Device.                                                                                     |                        |                                   |
| Possible:                                                                                                                  | Use Automatic Settings | Optimal Default, Failsafe Default |
|                                                                                                                            | IO=2E8h; IRQ=7         |                                   |
|                                                                                                                            | IO=3E8h; IRQ=5         |                                   |
| Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts. |                        |                                   |

### 3.5.7 Serial Port Console Redirection



| Options Summary                        |          |                                   |
|----------------------------------------|----------|-----------------------------------|
| Console Redirection                    | Disabled | Optimal Default, Failsafe Default |
|                                        | Enabled  |                                   |
| Console Redirection Enable or Disable. |          |                                   |
| Console Redirection EMS                | Disabled | Optimal Default, Failsafe Default |
|                                        | Enabled  |                                   |
| Console Redirection Enable or Disable. |          |                                   |

### 3.6 Setup Submenu: Security



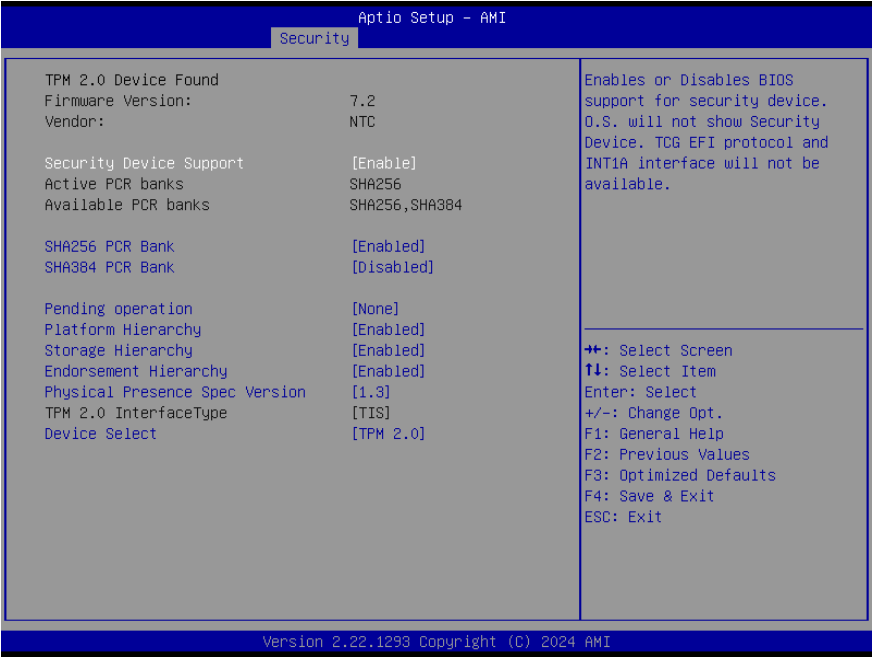
#### Change User/Supervisor Password

You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility. If you highlight these items and press Enter, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

#### Removing the Password

Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.

### 3.6.1 Trusted Computing



| Options Summary                                                                                                                                       |           |                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------|
| Security Device Support                                                                                                                               | Enable    | Optimal Default, Failsafe Default |
|                                                                                                                                                       | Disable   |                                   |
| Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available. |           |                                   |
| SHA256 PCR Bank                                                                                                                                       | Enabled   | Optimal Default, Failsafe Default |
|                                                                                                                                                       | Disabled  |                                   |
| Enable or Disable SHA256 PCR Bank.                                                                                                                    |           |                                   |
| SHA384 PCR Bank                                                                                                                                       | Enabled   | Optimal Default, Failsafe Default |
|                                                                                                                                                       | Disabled  |                                   |
| Enable or Disable SHA384 PCR Bank.                                                                                                                    |           |                                   |
| Pending operation                                                                                                                                     | None      | Optimal Default, Failsafe Default |
|                                                                                                                                                       | TPM Clear |                                   |
| Schedule an Operation for the Security Device.                                                                                                        |           |                                   |
| <b>NOTE:</b> Your Computer will reboot during restart in order to change State of Security Device.                                                    |           |                                   |

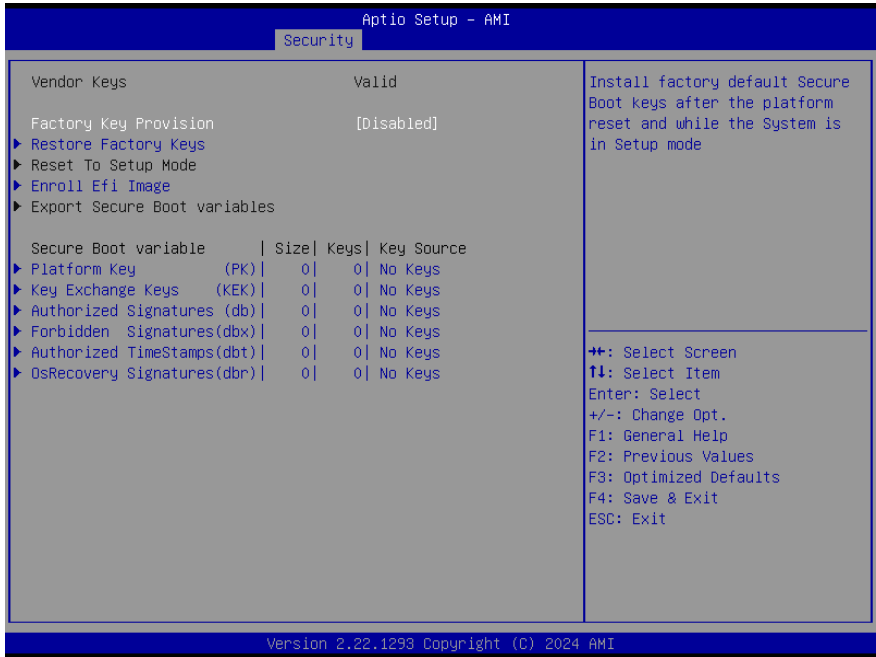
| Options Summary                                                                                                                                                                                                               |          |                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------|
| Platform Hierarchy                                                                                                                                                                                                            | Enabled  | Optimal Default, Failsafe Default |
|                                                                                                                                                                                                                               | Disabled |                                   |
| Enable or Disable Platform Hierarchy                                                                                                                                                                                          |          |                                   |
| Storage Hierarchy                                                                                                                                                                                                             | Enabled  | Optimal Default, Failsafe Default |
|                                                                                                                                                                                                                               | Disabled |                                   |
| Enable or Disable Storage Hierarchy                                                                                                                                                                                           |          |                                   |
| Endorsement Hierarchy                                                                                                                                                                                                         | Enabled  | Optimal Default, Failsafe Default |
|                                                                                                                                                                                                                               | Disabled |                                   |
| Enable or Disable Endorsement Hierarchy                                                                                                                                                                                       |          |                                   |
| Physical Presence Spec Version                                                                                                                                                                                                | 1.3      | Optimal Default, Failsafe Default |
|                                                                                                                                                                                                                               | 1.2      |                                   |
| Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3                                                                                                                         |          |                                   |
| Device Select                                                                                                                                                                                                                 | Auto     |                                   |
|                                                                                                                                                                                                                               | TPM 1.2  |                                   |
|                                                                                                                                                                                                                               | TPM 2.0  | Optimal Default, Failsafe Default |
| TPM 1.2 will restrict support to TPM 1.2 devices.<br>TPM 2.0 will restrict support to TPM 2.0 devices.<br>Auto will support both with the default set to TPM 2.0 devices if not found.<br>TPM 1.2 devices will be enumerated. |          |                                   |

### 3.6.2 Secure Boot



| Options Summary                                                                                                                                                          |          |                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------|
| Secure Boot                                                                                                                                                              | Disabled | Optimal Default, Failsafe Default |
|                                                                                                                                                                          | Enabled  |                                   |
| Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset            |          |                                   |
| Secure Boot Mode                                                                                                                                                         | Custom   | Optimal Default, Failsafe Default |
|                                                                                                                                                                          | Standard |                                   |
| Secure Boot mode options: Standard or Custom.<br>In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication |          |                                   |
| <b>Restore Factory Keys</b>                                                                                                                                              |          |                                   |
| Force System to User Mode. Install factory default Secure Boot key databases                                                                                             |          |                                   |
| <b>Reset To Setup Mode</b>                                                                                                                                               |          |                                   |
| Delete all Secure Boot key databases from NVRAM                                                                                                                          |          |                                   |

### 3.6.3 Expert Key Management



| Options Summary                                                                                                                                                  |          |                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------|
| Factory Key Provision                                                                                                                                            | Disabled | Optimal Default, Failsafe Default |
|                                                                                                                                                                  | Enabled  |                                   |
| Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode.<br>The mode change requires platform reset |          |                                   |
| Restore Factory Keys                                                                                                                                             |          |                                   |
| Force System to User Mode. Install factory default Secure Boot key databases                                                                                     |          |                                   |
| Reset To Setup Mode                                                                                                                                              |          |                                   |
| Delete all Secure Boot key databases from NVRAM                                                                                                                  |          |                                   |
| Export Secure Boot variables                                                                                                                                     |          |                                   |
| Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device                                                                    |          |                                   |
| Enroll Efi Image                                                                                                                                                 |          |                                   |
| Allow the image to run in Secure Boot mode.<br>Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)                              |          |                                   |

| Options Summary                                                                                               |         |
|---------------------------------------------------------------------------------------------------------------|---------|
| Remove 'UEFI CA' from DB                                                                                      |         |
| Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db) |         |
| Restore DB defaults                                                                                           |         |
| Restore DB variable to factory defaults                                                                       |         |
| Platform Key(PK)                                                                                              | Details |
|                                                                                                               | Export  |
|                                                                                                               | Update  |
|                                                                                                               | Delete  |
| Key Exchange Keys                                                                                             | Details |
|                                                                                                               | Export  |
|                                                                                                               | Update  |
|                                                                                                               | Append  |
|                                                                                                               | Delete  |
| Authorized Signatures                                                                                         | Details |
|                                                                                                               | Export  |
|                                                                                                               | Update  |
|                                                                                                               | Append  |
|                                                                                                               | Delete  |
| Forbidden Signatures                                                                                          | Details |
|                                                                                                               | Export  |
|                                                                                                               | Update  |
|                                                                                                               | Append  |
|                                                                                                               | Delete  |
| Authorized TimeStamps                                                                                         | Update  |
|                                                                                                               | Append  |
| OsRecovery Signatures                                                                                         | Update  |
|                                                                                                               | Append  |
| Enroll Factory Defaults or load certificates from a file:                                                     |         |
| 1.Public Key Certificate:                                                                                     |         |
| a) EFI_SIGNATURE_LIST                                                                                         |         |
| b) EFI_CERT_X509 (DER)                                                                                        |         |
| c) EFI_CERT_RSA2048 (bin)                                                                                     |         |
| d) EFI_CERT_SHAXXX                                                                                            |         |
| 2.Authenticated UEFI Variable                                                                                 |         |
| 3.EFI PE/COFF Image (SHA256)                                                                                  |         |
| Key Source: Factory, External, Mixed.                                                                         |         |

3.7 Setup Submenu: Boot



| Options Summary                      |          |                                   |
|--------------------------------------|----------|-----------------------------------|
| Quiet Boot                           | Disabled |                                   |
|                                      | Enabled  | Optimal Default, Failsafe Default |
| Enable or Disable Quiet Boot option. |          |                                   |
| Network Stack                        | Disabled | Optimal Default, Failsafe Default |
|                                      | Enabled  |                                   |
| Enable/Disable UEFI Network Stack.   |          |                                   |
| <b>BOOT Option Priorities</b>        |          |                                   |
| Sets the system boot order.          |          |                                   |

### 3.7.1 BBS Priorities



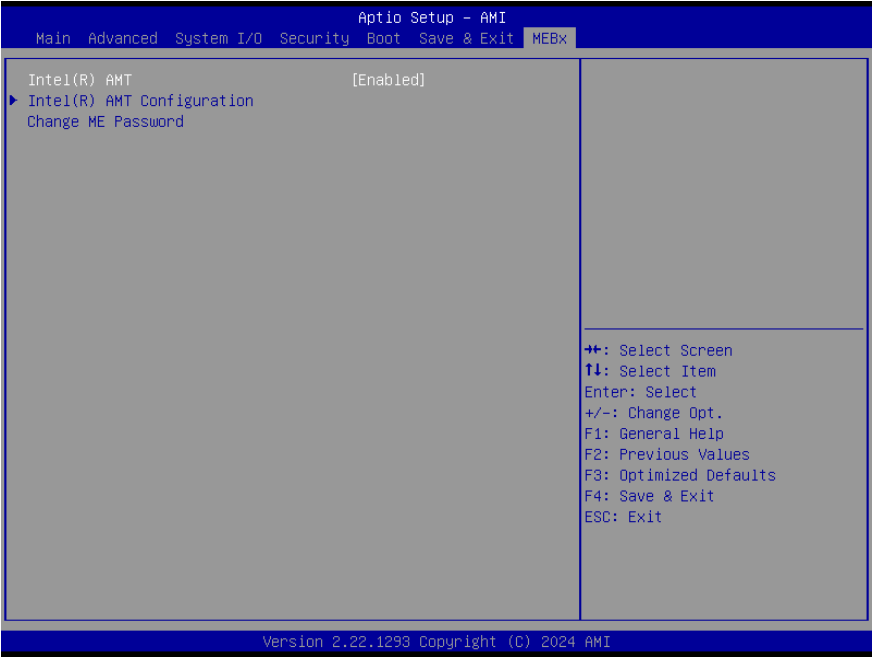


### 3.8 Setup Submenu: Save & Exit



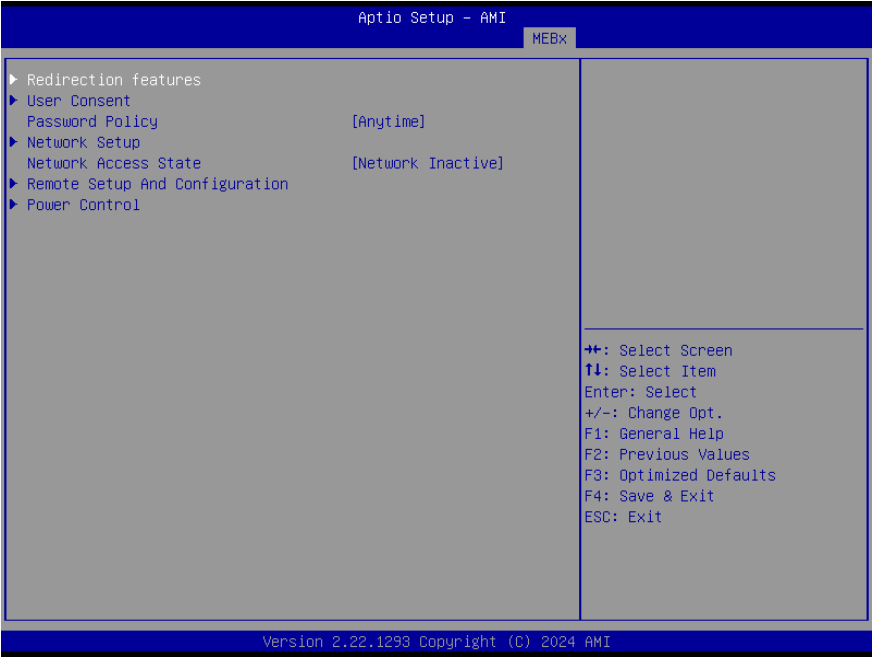
| Options Summary          |                                                        |
|--------------------------|--------------------------------------------------------|
| Save Changes and Reset   | Reset the system after saving the changes.             |
| Discard Changes and Exit | Exit system setup without saving any changes.          |
| Restore Defaults         | Restore/Load Default values for all the setup options. |

3.9 Setup Submenu: MEBx



| Options Summary                      |          |                                   |
|--------------------------------------|----------|-----------------------------------|
| Intel (R) AMT                        | Disabled |                                   |
|                                      | Enabled  | Optimal Default, Failsafe Default |
| Enable or Disable Intel® AMT option. |          |                                   |
| Change ME Password                   |          |                                   |
| Change Password for entering MEBx    |          |                                   |

### 3.9.1 Intel(R) AMT Configuration



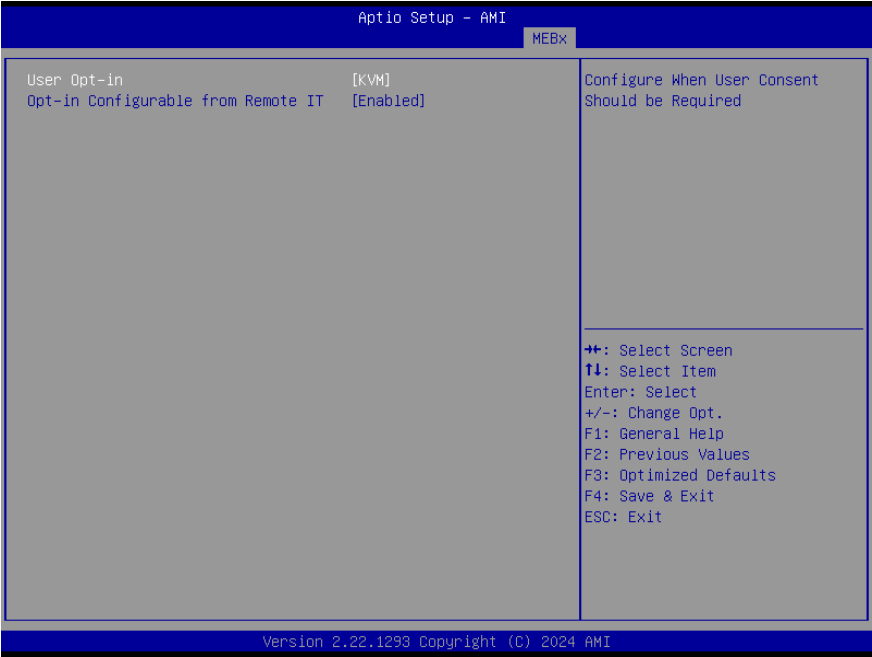
| Options Summary                                                                      |                                |                                   |
|--------------------------------------------------------------------------------------|--------------------------------|-----------------------------------|
| Password Policy                                                                      | Default Password Only          |                                   |
|                                                                                      | During Setup and Configuration |                                   |
|                                                                                      | Anytime                        | Optimal Default, Failsafe Default |
|                                                                                      |                                |                                   |
| Network Access State                                                                 | Network Active                 |                                   |
|                                                                                      | Network Inactive               | Optimal Default, Failsafe Default |
|                                                                                      | Full Unprovision               |                                   |
| Changes network state of ME. When disabling, it will also clear some other settings. |                                |                                   |

### 3.9.2     Redirection Features



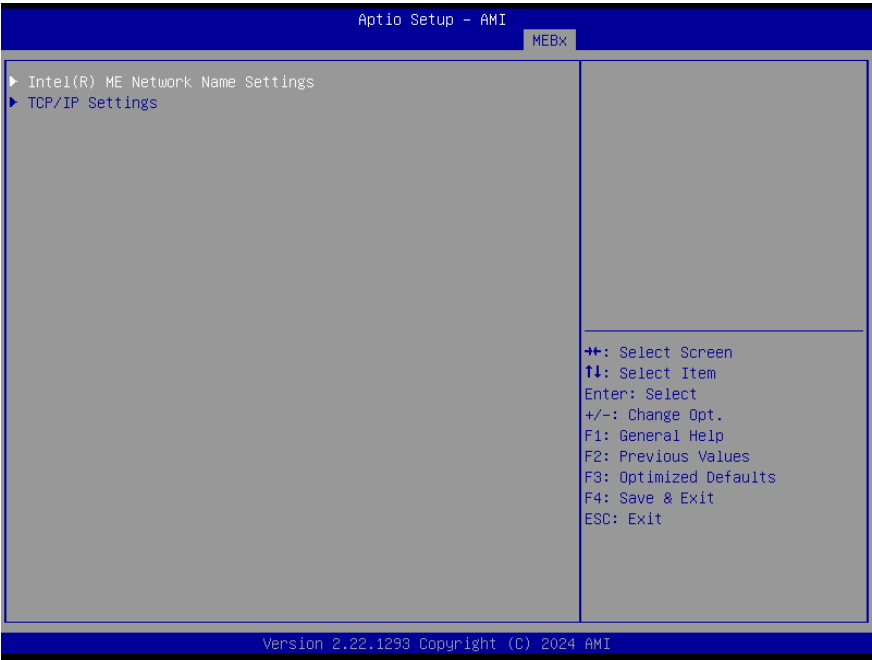
| Options Summary                         |          |                                   |
|-----------------------------------------|----------|-----------------------------------|
| SOL                                     | Disabled |                                   |
|                                         | Enabled  | Optimal Default, Failsafe Default |
| Enable FW SOL Interface                 |          |                                   |
| Storage Redirection                     | Disabled |                                   |
|                                         | Enabled  | Optimal Default, Failsafe Default |
| Enable FW Remote – Storage Redirection. |          |                                   |
| KVM Features Selection                  | Disabled |                                   |
|                                         | Enabled  | Optimal Default, Failsafe Default |
| Enable FW KVM Feature.                  |          |                                   |

3.9.3 User Consent

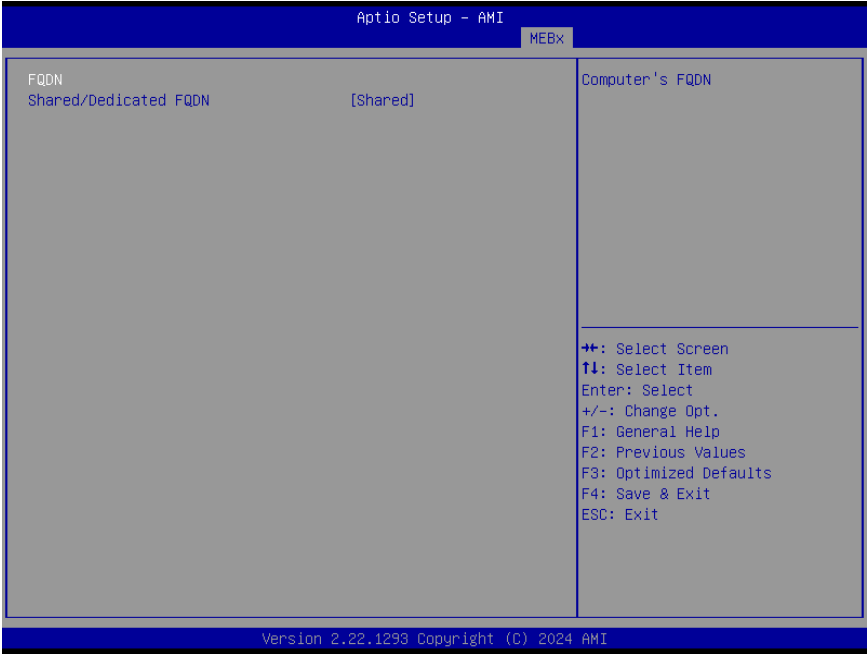


| Options Summary                                                 |          |                                   |
|-----------------------------------------------------------------|----------|-----------------------------------|
| User Opt-in                                                     | None     |                                   |
|                                                                 | KVM      | Optimal Default, Failsafe Default |
|                                                                 | ALL      |                                   |
| Configure when User Consent Should be Required.                 |          |                                   |
| Opt-in Configurable from Remote IT                              | Disabled |                                   |
|                                                                 | Enabled  | Optimal Default, Failsafe Default |
| Enable/Disable Remote Change Capability of User Consent Feature |          |                                   |

### 3.9.4 Network Setup



3.9.5 Intel® ME Network Name Settings



| Options Summary       |           |                                   |
|-----------------------|-----------|-----------------------------------|
| FQDN                  |           |                                   |
| Computer's FQDN       |           |                                   |
| Shared/Dedicated FQDN | Dedicated |                                   |
|                       | Shared    | Optimal Default, Failsafe Default |
|                       |           |                                   |

3.9.6 TCP/IP Settings



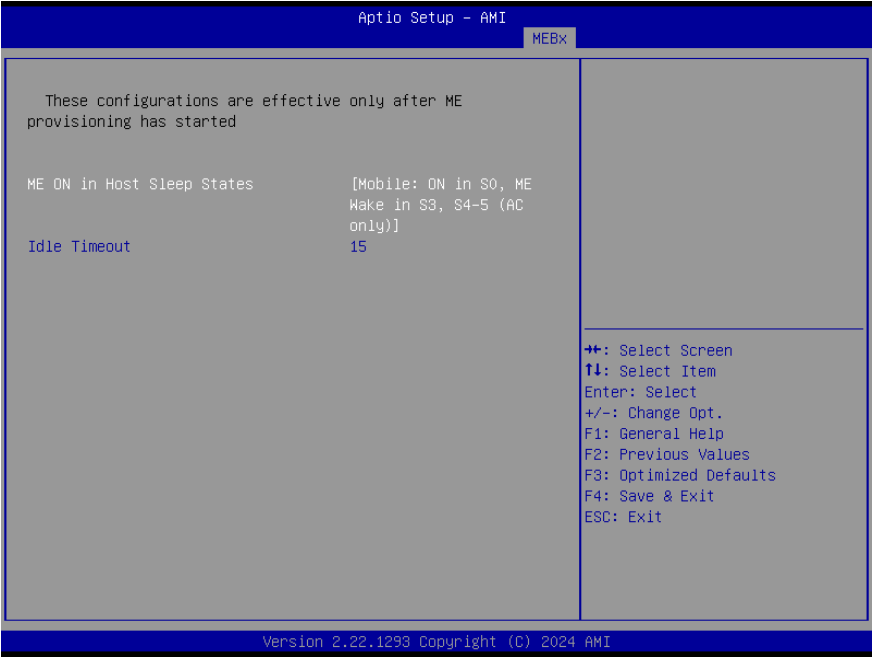
| Options Summary                |          |                                   |
|--------------------------------|----------|-----------------------------------|
| DHCP Mode                      | Disabled |                                   |
|                                | Enabled  | Optimal Default, Failsafe Default |
| Enable/Disable IPV4 DHCP Mode. |          |                                   |

### 3.9.7 Remote Setup and Configuration



| Options Summary                                                        |          |                                   |
|------------------------------------------------------------------------|----------|-----------------------------------|
| Provisioning Server Address                                            |          |                                   |
| Provisioning server address. Either host name or IPv4 or IPv6 address. |          |                                   |
| Provisioning Server Port number                                        |          |                                   |
| Provisioning server port number (0-65535)                              |          |                                   |
| Remote Configuration **                                                | Enabled  | Optimal Default, Failsafe Default |
|                                                                        | Disabled |                                   |

3.9.8 Power Control



| Options Summary            |                                                 |                                   |
|----------------------------|-------------------------------------------------|-----------------------------------|
| ME ON in Host Sleep States | Mobile: ON in S0                                |                                   |
|                            | Mobile: ON in S0, ME Wake in S3, S4-5 (AC only) | Optimal Default, Failsafe Default |
|                            |                                                 |                                   |
| Idle Timeout               | 15                                              | Optimal Default, Failsafe Default |
| Timeout Value (1-65535).   |                                                 |                                   |

# Chapter 4

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Driver Installation

## 4.1 Driver Download/Installation

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Drivers for the GENE-MTH6 can be downloaded from the product page on the AAEON website by following this link:

<https://www.aaeon.com/en/>

Download the driver(s) you need and follow the steps below to install them.

### Chipset Driver

1. Open the folder where you unzipped the **Chipset Drivers**.
2. Run the **SetupChipset.exe** file in the folder.
3. Follow the instructions.
4. Drivers will be installed automatically.

### Graphics Driver

1. Open the **Graphics Driver** folder
2. Run the **gfx\_win\_101.5590.exe** file in the folder.
3. Follow the instructions.
4. Drivers will be installed automatically.
5. Refer to the ReadMe.txt for any assistance.

### LAN Drivers

- a) **Install Intel® Ethernet Controller I225/ I226 Series Drivers:**
  1. Open the folder where you unzipped the **LAN Drivers**.
  2. Open the Device Manager by pressing Win + X and selecting "Device Manager."
  3. Find the network adapter that corresponds to Intel I225/I226. It may be listed under "Network adapters."
  4. Right-click on the network adapter and select "Update driver."
  5. Choose "Browse my computer for drivers."
  6. Navigate to the location where you extracted the driver files.
  7. Follow the instructions.
  8. Drivers will be installed automatically.

**b) Install Intel® Ethernet Connection I219 Driver:**

1. Open the folder where you unzipped the **LAN Drivers**.
2. Open the Device Manager by pressing Win + X and selecting "Device Manager."
3. Find the network adapter that corresponds to Intel I219. It may be listed under "Network adapters."
4. Right-click on the network adapter and select "Update driver."
5. Choose "Browse my computer for drivers."
6. Navigate to the location where you extracted the driver files.
7. Follow the instructions.
8. Drivers will be installed automatically.

**Intel Platform Monitoring Technology Driver**

1. Open the folder where you unzipped the **Intel Platform Monitoring Technology Driver**.
2. Open the Device Manager by pressing Win + X and selecting "Device Manager."
3. Find the device that corresponds to Intel Platform Monitoring Technology. It may be listed under "System devices" or "Other devices."
4. Right-click on the device and select "Update driver."
5. Choose "Browse my computer for drivers."
6. Navigate to the location where you extracted the driver files.
7. Select the folder containing the files **intcpmt.cat**, **intcpmt.inf**, and **IntcPMT.sys**, then click "Next."
8. Follow the on-screen instructions to complete the driver installation.

**ME & TXE Drivers (Windows 10)**

1. Open the folder where you unzipped the **ME & TXE Drivers**.
2. Run the **SetupME.exe** file in the folder.
3. Follow the instructions.
4. Drivers will be installed automatically.

Intel NPU Driver

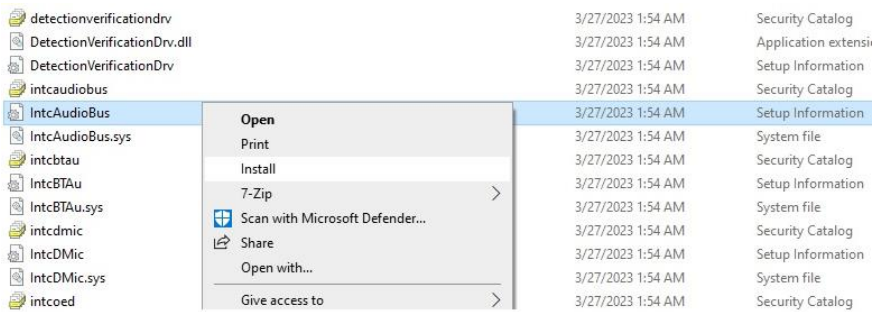
- 1. Open the Device Manager by pressing Win + X and selecting "Device Manager."
- 2. Find the device that corresponds to the Intel NPU. It may be listed under "Processors," "System devices," or "Other devices."
- 3. Right-click on the device and select "Update driver."
- 4. Choose "Browse my computer for drivers."
- 5. Navigate to the location where you extracted the driver files.
- 6. Select the folder containing all the extracted files and click "Next."
- 7. Follow the on-screen instructions to complete the driver installation.

Install Intel Smart Sound Driver

- 1. Open the **Intel Smart Sound** folder
- 2. Navigate the folder as follows: **Production** > **Driver**, then follow the below instructions to install the BUS Driver (IntcAudioBus.inf) and OED Driver (IntcOED.inf).

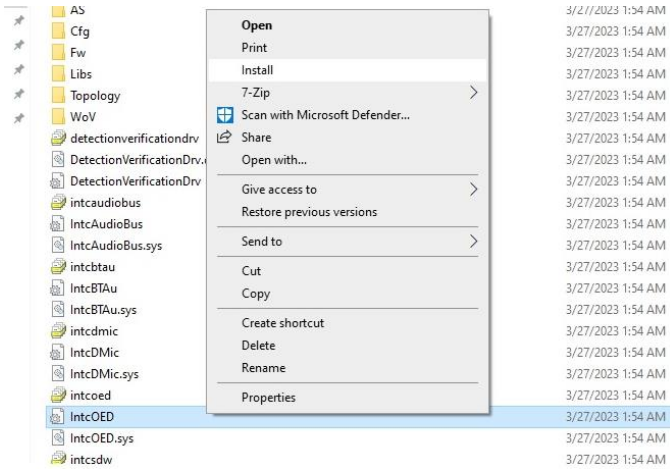
Install BUS driver (IntcAudioBus.inf)

- a. Press Right Key -> Install



Install OED driver (IntcOED.inf)

- b. Press Right Key -> Install



### Install Realtek Audio Driver

1. Open the **Windows Audio** folder followed by **Setup.exe**
2. Follow the instructions
3. Drivers will be installed automatically

### Install Intel ME & TXE Driver

1. Open the **Intel CSME** folder
2. Open the **SetupME.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

### Install Peripheral Driver

1. Open the **Peripheral Driver** folder
2. Open the **SetupSerialO.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

# Appendix A

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I/O Information

## A.1 I/O Address Map

|                                                                                     |                                                                                   |                                   |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------|
| ▼                                                                                   |  | Input/output (IO)                 |
|    | [0000000000000000 - 000000000000CF7]                                              | PCI Express Root Complex          |
|    | [0000000000000020 - 0000000000000021]                                             | Programmable interrupt controller |
|    | [0000000000000024 - 0000000000000025]                                             | Programmable interrupt controller |
|    | [0000000000000028 - 0000000000000029]                                             | Programmable interrupt controller |
|    | [000000000000002C - 000000000000002D]                                             | Programmable interrupt controller |
|    | [000000000000002E - 000000000000002F]                                             | Motherboard resources             |
|    | [0000000000000030 - 0000000000000031]                                             | Programmable interrupt controller |
|    | [0000000000000034 - 0000000000000035]                                             | Programmable interrupt controller |
|    | [0000000000000038 - 0000000000000039]                                             | Programmable interrupt controller |
|    | [000000000000003C - 000000000000003D]                                             | Programmable interrupt controller |
|    | [0000000000000040 - 0000000000000043]                                             | System timer                      |
|    | [000000000000004E - 000000000000004F]                                             | Motherboard resources             |
|    | [0000000000000050 - 0000000000000053]                                             | System timer                      |
|    | [0000000000000061 - 0000000000000061]                                             | Motherboard resources             |
|    | [0000000000000063 - 0000000000000063]                                             | Motherboard resources             |
|    | [0000000000000065 - 0000000000000065]                                             | Motherboard resources             |
|    | [0000000000000067 - 0000000000000067]                                             | Motherboard resources             |
|    | [0000000000000070 - 0000000000000070]                                             | Motherboard resources             |
|    | [0000000000000080 - 0000000000000080]                                             | Motherboard resources             |
|    | [0000000000000092 - 0000000000000092]                                             | Motherboard resources             |
|    | [00000000000000A0 - 00000000000000A1]                                             | Programmable interrupt controller |
|    | [00000000000000A4 - 00000000000000A5]                                             | Programmable interrupt controller |
|   | [00000000000000A8 - 00000000000000A9]                                             | Programmable interrupt controller |
|  | [00000000000000AC - 00000000000000AD]                                             | Programmable interrupt controller |
|  | [00000000000000B0 - 00000000000000B1]                                             | Programmable interrupt controller |
|  | [00000000000000B2 - 00000000000000B3]                                             | Motherboard resources             |
|  | [00000000000000B4 - 00000000000000B5]                                             | Programmable interrupt controller |
|  | [00000000000000B8 - 00000000000000B9]                                             | Programmable interrupt controller |
|  | [00000000000000BC - 00000000000000BD]                                             | Programmable interrupt controller |
|  | [00000000000002E8 - 00000000000002EF]                                             | Communications Port (COM4)        |
|  | [00000000000002F8 - 00000000000002FF]                                             | Communications Port (COM2)        |
|  | [00000000000003E8 - 00000000000003EF]                                             | Communications Port (COM3)        |
|  | [00000000000003F8 - 00000000000003FF]                                             | Communications Port (COM1)        |
|  | [00000000000004D0 - 00000000000004D1]                                             | Programmable interrupt controller |
|  | [0000000000000680 - 000000000000069F]                                             | Motherboard resources             |
|  | [0000000000000A00 - 0000000000000A0F]                                             | Motherboard resources             |
|  | [0000000000000A10 - 0000000000000A1F]                                             | Motherboard resources             |
|  | [0000000000000A20 - 0000000000000A2F]                                             | Motherboard resources             |
|  | [0000000000000D00 - 000000000000FFFF]                                             | PCI Express Root Complex          |
|  | [000000000000164E - 000000000000164F]                                             | Motherboard resources             |

|                                                                                   |                                                                     |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------------|
|  | [000000000000D00 - 000000000000FFFF] PCI Express Root Complex       |
|  | [000000000000164E - 000000000000164F] Motherboard resources         |
|  | [0000000000001854 - 0000000000001857] Motherboard resources         |
|  | [0000000000002000 - 00000000000020FE] Motherboard resources         |
|  | [0000000000003020 - 000000000000303F] Standard SATA AHCI Controller |
|  | [0000000000003040 - 0000000000003043] Standard SATA AHCI Controller |
|  | [0000000000003050 - 0000000000003057] Standard SATA AHCI Controller |
|  | [000000000000EFA0 - 000000000000EFBF] Intel(R) SMBus - 7E22         |

## A.2 Memory Address Map

|   |                                                                                                        |
|---|--------------------------------------------------------------------------------------------------------|
| ▼ | Memory                                                                                                 |
|   | [0000000000000000 - 000000000000FFFF] Motherboard resources                                            |
|   | [0000000000000000 - 000000000000FFFF] Motherboard resources                                            |
|   | [0000000000A00000 - 0000000000BFFFFF] PCI Express Root Complex                                         |
|   | [0000000008000000 - 000000000800FFFF] Intel(R) Ethernet Controller I226-LM #2                          |
|   | [0000000008000000 - 000000000801FFFF] PCI Express Root Port                                            |
|   | [0000000008000000 - 00000000BFFFFFFF] PCI Express Root Complex                                         |
|   | [0000000008010000 - 00000000080103FF] Intel(R) Ethernet Controller I226-LM #2                          |
|   | [0000000008020000 - 000000000802FFFF] Intel(R) Ethernet Controller I226-LM                             |
|   | [0000000008020000 - 000000000803FFFF] PCI Express Root Port                                            |
|   | [0000000008030000 - 00000000080303FF] Intel(R) Ethernet Controller I226-LM                             |
|   | [0000000008042000 - 00000000080421FF] Standard SATA AHCI Controller                                    |
|   | [0000000008042200 - 000000000804227F] Standard SATA AHCI Controller                                    |
|   | [0000000008042300 - 000000000804230F] Standard SATA AHCI Controller                                    |
|   | [00000000BFFF0000 - 00000000BFFFFFFF] Intel(R) Ethernet Connection (18) I219-LM                        |
|   | [00000000C0000000 - 00000000CFFFFFFF] Motherboard resources                                            |
|   | [00000000E0D10000 - 00000000E0D1FFFF] Intel(R) Serial IO GPIO Host Controller - INTC1083               |
|   | [00000000E0D20000 - 00000000E0D2FFFF] Intel(R) Serial IO GPIO Host Controller - INTC1083               |
|   | [00000000E0D30000 - 00000000E0D3FFFF] Intel(R) Serial IO GPIO Host Controller - INTC1083               |
|   | [00000000E0D40000 - 00000000E0D4FFFF] Intel(R) Serial IO GPIO Host Controller - INTC1083               |
|   | [00000000E0D50000 - 00000000E0D5FFFF] Intel(R) Serial IO GPIO Host Controller - INTC1083               |
|   | [00000000FC800000 - 00000000FC81FFFF] Motherboard resources                                            |
|   | [00000000FE010000 - 00000000FE010FFF] Intel(R) SPI - 7E23                                              |
|   | [00000000FED00000 - 00000000FED003FF] High precision event timer                                       |
|   | [00000000FED20000 - 00000000FED7FFFF] Motherboard resources                                            |
|   | [00000000FED40000 - 00000000FED44FFF] Trusted Platform Module 2.0                                      |
|   | [00000000FED45000 - 00000000FED8FFFF] Motherboard resources                                            |
|   | [00000000FEDC0000 - 00000000FEDC7FFF] Motherboard resources                                            |
|   | [00000000FEE00000 - 00000000FEEFFFFF] Motherboard resources                                            |
|   | [0000000400000000 - 0000000400FFFFFF] Intel(R) Graphics                                                |
|   | [0000000401700000 - 00000004017FFFFFFF] Intel(R) Graphics                                              |
|   | [0000000402024000 - 0000000402024FFFF] Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft) |
|   | [0000000402025000 - 0000000402025FFFF] Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft) |
|   | [0000000402026800 - 000000040202680F] Intel(R) SMBus - 7E22                                            |
|   | [0000000402026A00 - 0000000402026AFFF] Intel(R) Management Engine Interface #1                         |
|   | [0000000402026B00 - 0000000402026BFFF] Intel(R) Serial IO I2C Host Controller - 7E79                   |
|   | [0000000402026C00 - 0000000402026CFFF] Intel(R) Serial IO I2C Host Controller - 7E78                   |
|   | [000003FFB0000000 - 000003FFB7FFFFFF] Intel(R) AI Boost                                                |
|   | [000003FFBFC00000 - 000003FFBFDFFFFF] Intel® Smart Sound Technology BUS                                |
|   | [000003FFBFFBA000 - 000003FFBFFBBAFFF] Intel(R) Serial IO UART Host Controller - 7E25                  |



[000003FFBFFBB000 - 000003FFBFFBBFFF] Intel(R) AI Boost



[000003FFBFFBC000 - 000003FFBFFBFFFF] Intel® Smart Sound Technology BUS



[000003FFBFFC0000 - 000003FFBFFFFFFF] Intel(R) Platform Monitoring Technology (PMT) Driver

### A.3 Large Memory

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- ✓  Large Memory
  -  [0000004000000000 - 000003FFBFFFFFFF] PCI Express Root Complex

## A.4 IRQ Mapping Chart

|                                                                                     |                         |                                                    |
|-------------------------------------------------------------------------------------|-------------------------|----------------------------------------------------|
| ▼  | Interrupt request (IRQ) |                                                    |
|    | (ISA) 0x00000000 (00)   | System timer                                       |
|    | (ISA) 0x00000003 (03)   | Communications Port (COM2)                         |
|    | (ISA) 0x00000004 (04)   | Communications Port (COM1)                         |
|    | (ISA) 0x00000005 (05)   | Communications Port (COM3)                         |
|    | (ISA) 0x00000007 (07)   | Communications Port (COM4)                         |
|    | (ISA) 0x0000000E (14)   | Intel(R) Serial IO GPIO Host Controller - INTC1083 |
|    | (ISA) 0x00000037 (55)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x00000038 (56)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x00000039 (57)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x0000003A (58)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x0000003B (59)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x0000003C (60)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x0000003D (61)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x0000003E (62)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x0000003F (63)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x00000040 (64)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x00000041 (65)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x00000042 (66)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x00000043 (67)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x00000044 (68)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x00000045 (69)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x00000046 (70)   | Microsoft ACPI-Compliant System                    |
|    | (ISA) 0x00000047 (71)   | Microsoft ACPI-Compliant System                    |
|   | (ISA) 0x00000048 (72)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x00000049 (73)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x0000004A (74)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x0000004B (75)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x0000004C (76)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x0000004D (77)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x0000004E (78)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x0000004F (79)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x00000050 (80)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x00000051 (81)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x00000052 (82)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x00000053 (83)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x00000054 (84)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x00000055 (85)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x00000056 (86)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x00000057 (87)   | Microsoft ACPI-Compliant System                    |
|  | (ISA) 0x00000058 (88)   | Microsoft ACPI-Compliant System                    |

|                                                                                     |                        |                                 |
|-------------------------------------------------------------------------------------|------------------------|---------------------------------|
|    | (ISA) 0x00000058 (88)  | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000059 (89)  | Microsoft ACPI-Compliant System |
|    | (ISA) 0x0000005A (90)  | Microsoft ACPI-Compliant System |
|    | (ISA) 0x0000005B (91)  | Microsoft ACPI-Compliant System |
|    | (ISA) 0x0000005C (92)  | Microsoft ACPI-Compliant System |
|    | (ISA) 0x0000005D (93)  | Microsoft ACPI-Compliant System |
|    | (ISA) 0x0000005E (94)  | Microsoft ACPI-Compliant System |
|    | (ISA) 0x0000005F (95)  | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000060 (96)  | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000061 (97)  | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000062 (98)  | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000063 (99)  | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000063 (99)  | Trusted Platform Module 2.0     |
|    | (ISA) 0x00000064 (100) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000065 (101) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000066 (102) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000067 (103) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000068 (104) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000069 (105) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x0000006A (106) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x0000006B (107) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x0000006C (108) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x0000006D (109) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x0000006E (110) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x0000006F (111) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000070 (112) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000071 (113) | Microsoft ACPI-Compliant System |
|   | (ISA) 0x00000072 (114) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000073 (115) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000074 (116) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000075 (117) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000076 (118) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000077 (119) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000078 (120) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000079 (121) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000007A (122) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000007B (123) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000007C (124) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000007D (125) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000007E (126) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000007F (127) | Microsoft ACPI-Compliant System |

|                                                                                     |                        |                                                |
|-------------------------------------------------------------------------------------|------------------------|------------------------------------------------|
|    | (ISA) 0x000001DE (478) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001DF (479) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001E0 (480) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001E1 (481) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001E2 (482) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001E3 (483) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001E4 (484) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001E5 (485) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001E6 (486) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001E7 (487) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001E8 (488) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001E9 (489) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001EA (490) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001EB (491) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001EC (492) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001ED (493) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001EE (494) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001EF (495) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001F0 (496) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001F1 (497) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001F2 (498) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001F3 (499) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001F4 (500) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001F5 (501) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001F6 (502) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001F7 (503) | Microsoft ACPI-Compliant System                |
|    | (ISA) 0x000001F8 (504) | Microsoft ACPI-Compliant System                |
|   | (ISA) 0x000001F9 (505) | Microsoft ACPI-Compliant System                |
|  | (ISA) 0x000001FA (506) | Microsoft ACPI-Compliant System                |
|  | (ISA) 0x000001FB (507) | Microsoft ACPI-Compliant System                |
|  | (ISA) 0x000001FC (508) | Microsoft ACPI-Compliant System                |
|  | (ISA) 0x000001FD (509) | Microsoft ACPI-Compliant System                |
|  | (ISA) 0x000001FE (510) | Microsoft ACPI-Compliant System                |
|  | (ISA) 0x000001FF (511) | Microsoft ACPI-Compliant System                |
|  | (PCI) 0x00000010 (16)  | Intel(R) Serial IO UART Host Controller - 7E25 |
|  | (PCI) 0x00000020 (32)  | Intel(R) Serial IO I2C Host Controller - 7E78  |
|  | (PCI) 0x00000021 (33)  | Intel(R) Serial IO I2C Host Controller - 7E79  |
|  | (PCI) 0xFFFFFDD3 (-45) | Intel® Smart Sound Technology BUS              |
|  | (PCI) 0xFFFFFDD4 (-44) | Intel(R) Ethernet Connection (18) I219-LM      |
|  | (PCI) 0xFFFFFDD5 (-43) | Intel(R) AI Boost                              |
|  | (PCI) 0xFFFFFDD6 (-42) | Intel(R) Ethernet Controller I226-LM           |

|                                                                                     |                        |                                                                 |
|-------------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------|
|    | (PCI) 0xFFFFFD8 (-40)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFD9 (-39)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFDA (-38)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFDB (-37)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFDC (-36)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFDD (-35)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFDE (-34)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFDF (-33)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFE0 (-32)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFE1 (-31)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFE2 (-30)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFE3 (-29)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFE4 (-28)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFE5 (-27)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFE6 (-26)  | Intel(R) Ethernet Controller I226-LM                            |
|    | (PCI) 0xFFFFFE7 (-25)  | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFE8 (-24)  | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFE9 (-23)  | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFEA (-22)  | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFEB (-21)  | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFEC (-20)  | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFED (-19)  | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFEE (-18)  | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFEF (-17)  | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFFF0 (-16) | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFFF1 (-15) | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFFF2 (-14) | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFFF3 (-13) | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFFF4 (-12) | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFFF5 (-11) | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFFF6 (-10) | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFFF7 (-9)  | Intel(R) Ethernet Controller I226-LM #2                         |
|    | (PCI) 0xFFFFFFF8 (-8)  | Intel(R) Management Engine Interface #1                         |
|   | (PCI) 0xFFFFFFF9 (-7)  | Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft) |
|  | (PCI) 0xFFFFFFFA (-6)  | Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft) |
|  | (PCI) 0xFFFFFFFB (-5)  | Intel(R) Graphics                                               |
|  | (PCI) 0xFFFFFFFC (-4)  | Standard SATA AHCI Controller                                   |
|  | (PCI) 0xFFFFFFFD (-3)  | PCI Express Root Port                                           |
|  | (PCI) 0xFFFFFFFE (-2)  | PCI Express Root Port                                           |

# Appendix B

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Mating Connectors and Cables

# B.1 Mating Connectors and Cables

| Label | Function                              | Mating Connector |                     | Mating Cable P/N |
|-------|---------------------------------------|------------------|---------------------|------------------|
|       |                                       | Vendor           | Model no.           |                  |
| CN1   | Audio with detect                     | Aces             | 50247-012H0H0-001   | 170X000156       |
| CN2   | SATA Power                            | JST              | PHR-2               | 1702150155       |
| CN5   | Power                                 | N/A              | N/A                 | 170204010R       |
| CN7   | Front Panel                           | JST              | SHR-10V-S-B         | 170X000603       |
| CN8   | SATA                                  | Molex            | 887505318           | N/A              |
| CN9   | External +5VSB Power Input and PS_ON# | JST              | XHP-3               | 170220020B       |
| CN12  | USB 2.0 Port6                         | Molex            | 51021-0500          | 1700050207       |
| CN13  | USB 2.0 Port6                         | Molex            | 51021-0500          | 1700050207       |
| CN14  | USB 2.0 Port6                         | Molex            | 51021-0500          | 1700050207       |
| CN15  | USB 2.0 Port6                         | Molex            | 51021-0500          | 1700050207       |
| CN16  | COM Port1                             | Molex            | 51021-0900          | 1701090150       |
| CN17  | COM Port4                             | Molex            | 51021-0900          | 1701090150       |
| CN19  | COM Port3                             | Molex            | 51021-0900          | 1701090150       |
| CN20  | COM Port2                             | Molex            | 51021-0900          | 1701090150       |
| CN21  | LVDS                                  | Hirose           | DF13-30DS-1.25C     | N/A              |
| CN23  | GPIO                                  | MOLEX            | 51110-1050          | N/A              |
| CN25  | LAN2 LED                              | JST              | SHR-04V-S-B         | 170X000634       |
| CN26  | LVDS Inverter                         | ACES             | 50236-006H0H0-001   | 170X000152       |
| CN27  | LAN1 LED                              | JST              | SHR-04V-S-B         | 170X000634       |
| CN29  | eDP                                   | I-PEX            | 20453-030T-01S      | N/A              |
| CN30  | LAN3 LED                              | JST              | SHR-04V-S-B         | 170X000634       |
| CN36  | External RTC                          | Molex            | 51021-0200          | 175011301K       |
| CN37  | I2C/SMBUS                             | JST              | SHR-05V-S-B         | 170X000743       |
| CN38  | Port 80 Debug Port                    | JST              | SHR-10V-S-B         | 1703100133       |
| CN39  | Board to Board                        | Hirose           | DF40C-80DP-0.4V(51) | N/A              |