

# GENE-APL5

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3.5" Subcompact Board

User's Manual 5<sup>th</sup> Ed

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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-APL5 MB | 1        |
| ● Heatsink     | 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.**

### **Warning!**



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

### **Caution:**

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

### **Attention:**

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



## China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

| 部件名称   | 有毒有害物质或元素 |           |           |                 |               |                 |
|--|-----------|-----------|-----------|-----------------|---------------|-----------------|
|  | 铅<br>(Pb) | 汞<br>(Hg) | 镉<br>(Cd) | 六价铬<br>(Cr(VI)) | 多溴联苯<br>(PBB) | 多溴二苯醚<br>(PBDE) |
| 印刷电路板<br>及其电子组件  | ○         | ○         | ○         | ○               | ○             | ○               |
| 外部信号<br>连接器及线材   | ○         | ○         | ○         | ○               | ○             | ○               |
| <p>O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。</p> <p>X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。</p> <p>备注: 此产品所标示之环保使用期限, 系指在一般正常使用状况下。</p> |           |           |           |                 |               |                 |

## China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Main Board/ Daughter Board/ Backplane

| Component   | Poisonous or Hazardous Substances or Elements |              |              |                              |                                |                                       |
|---|---|--------------|--------------|------------------------------|--------------------------------|---------------------------------------|
|   | Lead (Pb)                                     | Mercury (Hg) | Cadmium (Cd) | Hexavalent Chromium (Cr(VI)) | Polybrominated Biphenyls (PBB) | Polybrominated Diphenyl Ethers (PBDE) |
| PCB & Other Components  | ○   | ○            | ○            | ○                            | ○                              | ○                                     |
| Wires & Connectors for External Connections   | ○   | ○            | ○            | ○                            | ○                              | ○                                     |
| <p>O: The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.</p> <p>X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.</p> <p><b>Note:</b> The Environment Friendly Use Period as labeled on this product is applicable under normal usage only</p> |   |              |              |                              |                                |                                       |

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# Chapter 1

---

Product Specifications

## 1.1 Specifications

### System

|                      |  |
|----------------------|--|
| Form Factor          | 3.5" Subcompact Board  |
| CPU                  | Intel® Atom™/ Celeron®/ Pentium®<br>Processor:<br>Pentium® N4200 (4C/4T, 1.10GHz, up to 2.50GHz)<br>Celeron® N3350 (2C/2T, 1.10GHz, up to 2.40GHz)<br>Atom® E3950 (4C/4T, 1.60GHz, up to 2.00GHz)<br>Atom® E3940 (4C/4T, 1.60GHz, up to 1.80GHz)<br>Atom® E3930 (2C/2T, 1.30GH, up to 1.80GHz) |
| CPU TDP              | Pentium® N4200, Celeron® N3350: 6W<br>Atom® E3950: 12W<br>Atom® E3940 9.5W<br>Atom® E3930 6.5W   |
| Chipset              | Integrated with Intel® SoC   |
| Memory Type          | DDR3L up to 1866MHz, SODIMM x 1  |
| Max. Memory Capacity | 8GB  |
| BIOS                 | UEFI   |
| Wake on LAN          | Yes  |
| Watchdog Timer       | 255 Levels   |
| Security             | TPM 2.0 (Optional)   |
| RTC Battery          | Lithium Battery 3V/240mAh  |



## Power

|                             |  |
|-----------------------------|--|
| Power Requirement           | +12V (Optional: +9~19V)                                      |
| Power Supply Type           | AT/ATX   |
| Connector                   | Phoenix 2-pin Connector                                      |
| Power Consumption (Typical) | 2.03A at +12V with Intel® E3950, DDR3L<br>1866MHz 8GB memory |
| Power Consumption (Max)     | 2.45A at +12V with Intel® E3950, DDR3L<br>1866MHz 8GB memory |

## Display

|                   |   |
|-------------------|---|
| Controller        | Intel® HD Graphics 500/505  |
| LVDS/eDP          | LVDS1 Dual Channel 18/24-bit x 1<br>LVDS2 Dual Channel 18/24-bit x 1 (Optional:<br>HDMI 1.4b) |
| Display Interface | VGA x 1   |
| Multiple Display  | 3 Simultaneous Displays   |

## Audio

|                 |                      |
|-----------------|----------------------|
| Codec           | Realtek ALC897/892   |
| Audio Interface | Line-in/Line-out/MIC |
| Speaker         | —                    |

## External I/O

|             |   |
|-------------|---|
| Ethernet    | Intel® i210/I211, 10/100/1000Base-TX, RJ-45 x 2 |
| USB         | USB3.2 Gen 1 x 2                                |
| Serial Port | COM1 (RS232, supports RI)                       |
| Video       | VGA x 1   |
| Power Input | Phoenix 2-pin Connector                         |

## Internal I/O

|             |   |
|-------------|---|
| USB         | USB2.0 x 4  |
| Serial Port | COM2, COM3 (RS232/422/485, supports 5V/12V/RI)<br>COM4 (RS232, supports RI)                   |
| Video       | LVDS1 Dual Channel 18/24-bit x 1<br>LVDS2 Dual Channel 18/24-bit x 1 (Optional:<br>HDMI 1.4b) |
| SATA        | SATA III x 1<br>+5V SATA Power Connector x 1  |
| Audio       | Audio Header x 1  |
| DIO/GPIO    | 8-bit   |
| SMBus/ I2C  | I2C x 1<br>SMBus x 1  |
| Touch       | 4/5/8-wire Touch Controller x 1 (Optional)  |
| Fan         | DC Fan x 1 (Optional: Smart Fan)  |
| SIM         | Micro SIM x 1 (Optional)  |
| Front Panel | HDD LED, PWR LED, Power Button, Buzzer,<br>Reset  |
| Others      | Parallel Port(SPP/EPP/ECP) x 1 (optional, select<br>by BIOS)                                  |

## Expansion

|                  |  |
|------------------|--|
| Mini PCIe/ mSATA | mSATA x 1 (Full-Size)<br>Mini Card x 1 (Half-Size) |
| M.2              | —  |
| BIO              | —  |

## Mechanical

|                    |                              |
|--------------------|------------------------------|
| Dimensions (L x W) | 5.75" x 4" (146mm x 101.7mm) |
|--------------------|------------------------------|

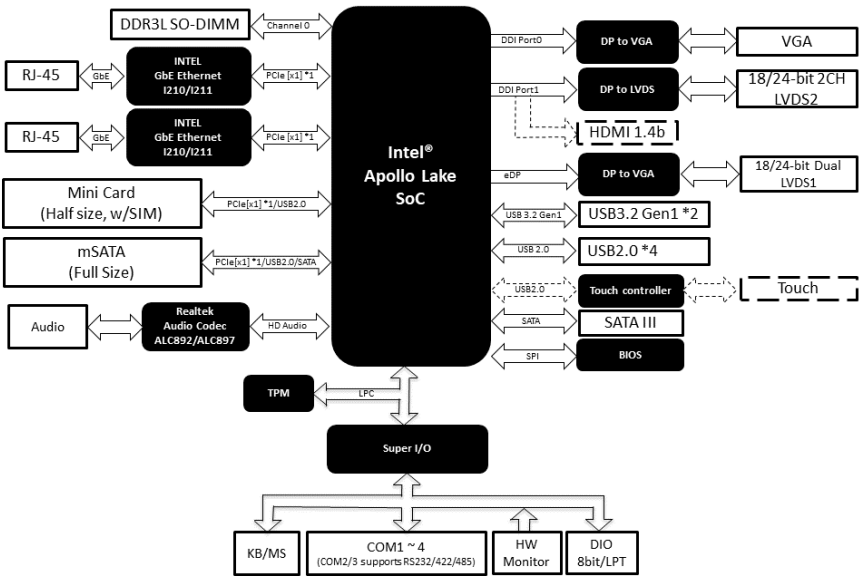
## Environment

|                       |  |
|-----------------------|--|
| Operating Temperature | 32°F ~ 140°F (0°C ~ 60°C)                  |
| Storage Temperature   | -40°F ~ 176°F (-40°C ~ 80°C)               |
| Operating Humidity    | 0% ~ 90% relative humidity, non-condensing |
| MTBF (Hours)          | 365,976                                    |

## Certification

|     |                 |
|-----|-----------------|
| EMC | CE/ FCC Class A |
|-----|-----------------|

## 1.2 Function Block Diagram



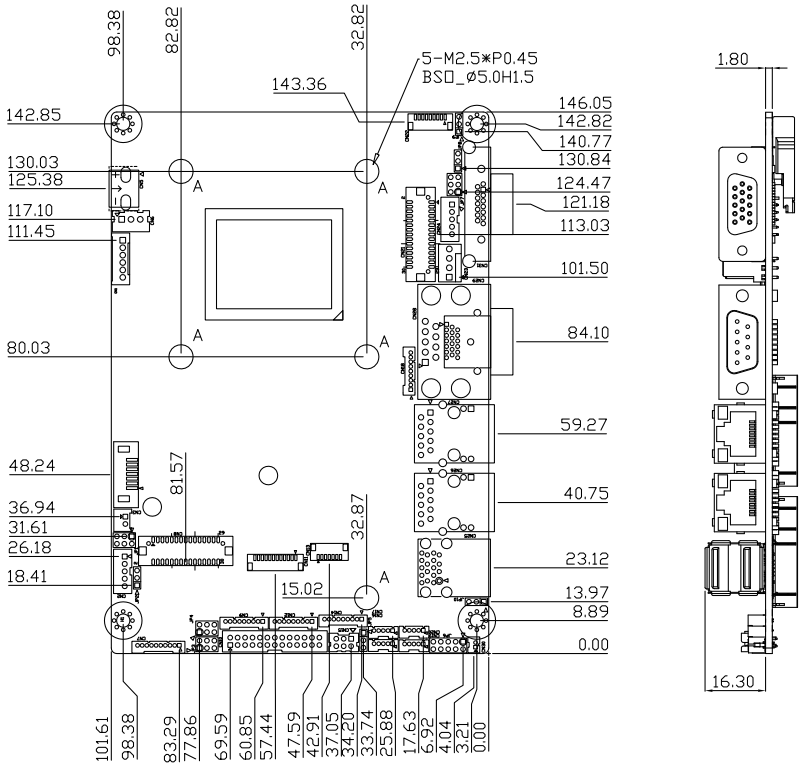
# Chapter 2

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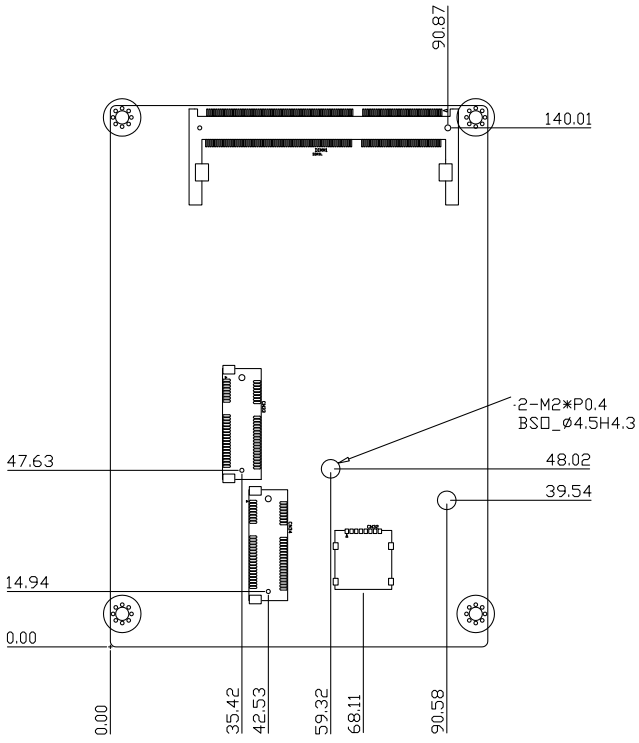
Hardware Information

## 2.1 Dimensions

### Component Side

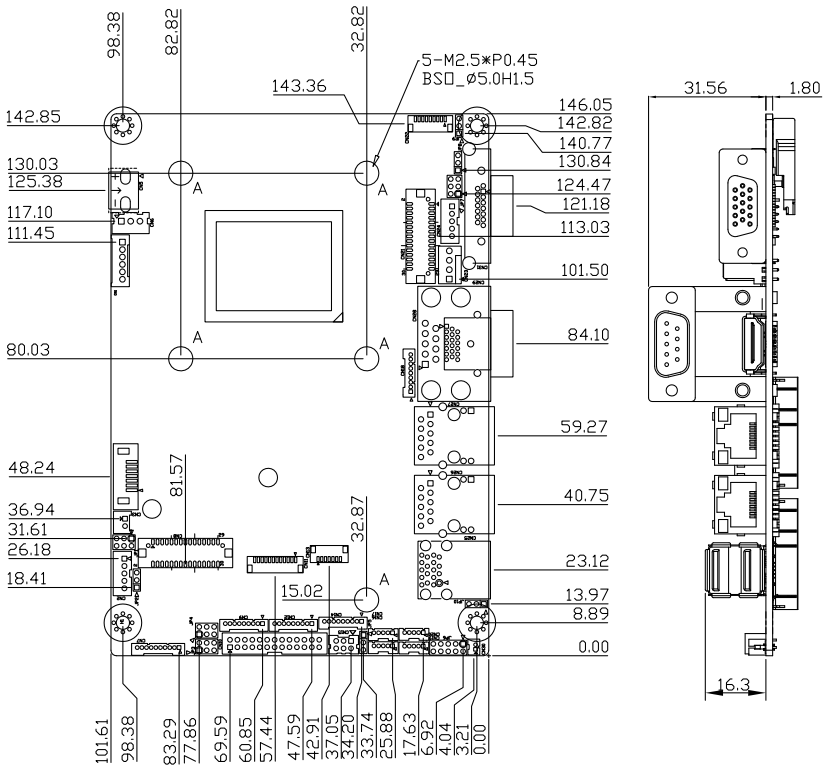


# Solder Side



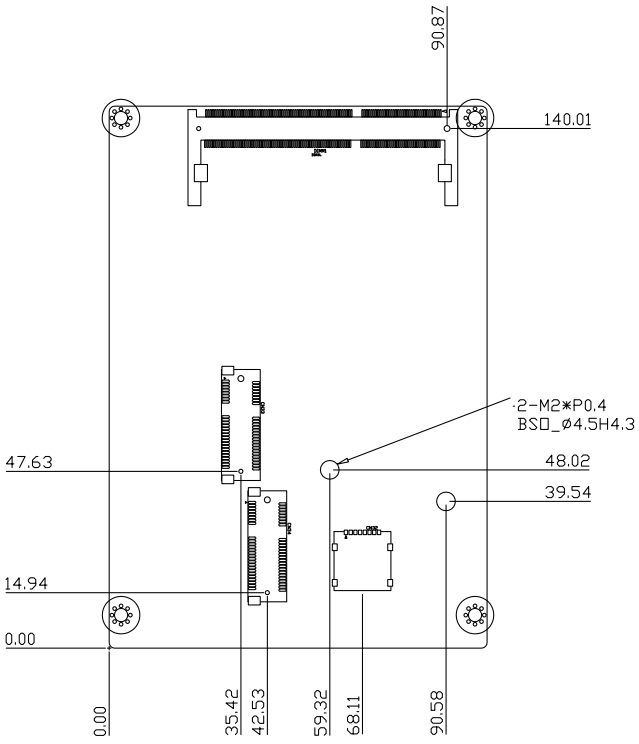
## 2.1.1 Dimensions (Optional HDMI SKU)

### Component Side

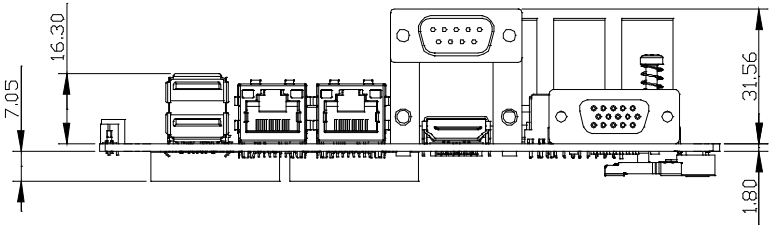
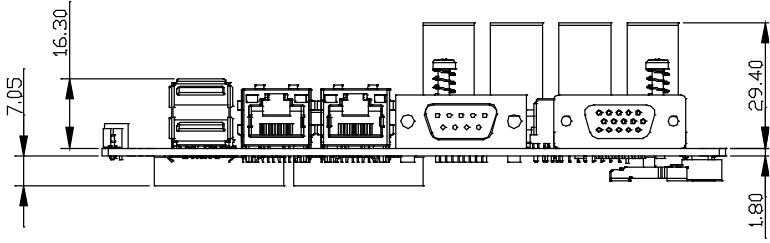




Solder Side

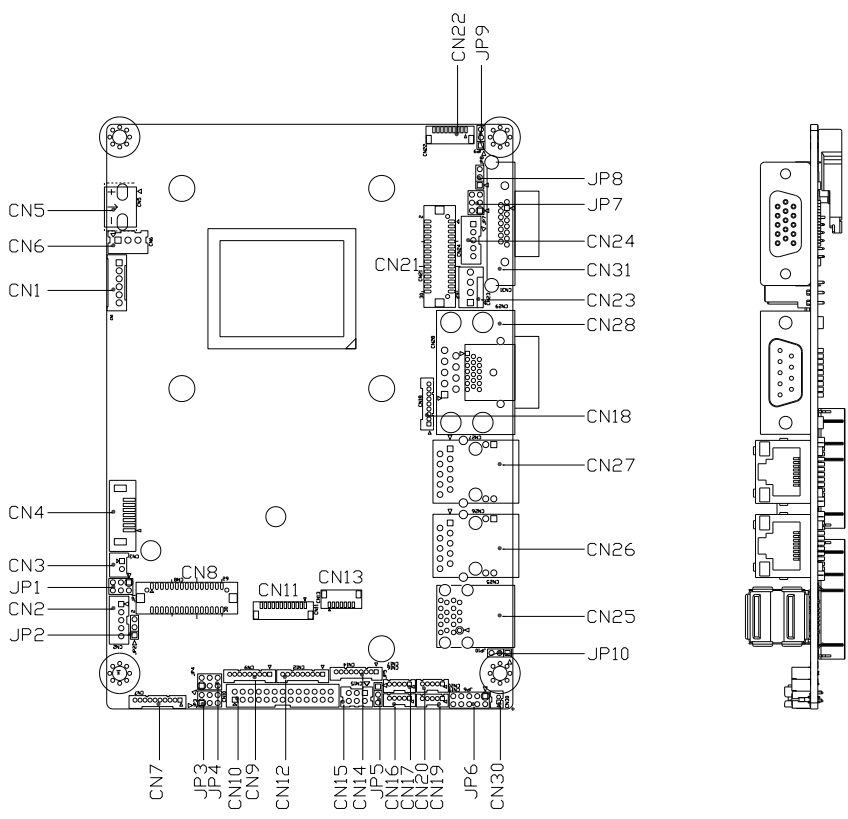


### With Heatsink

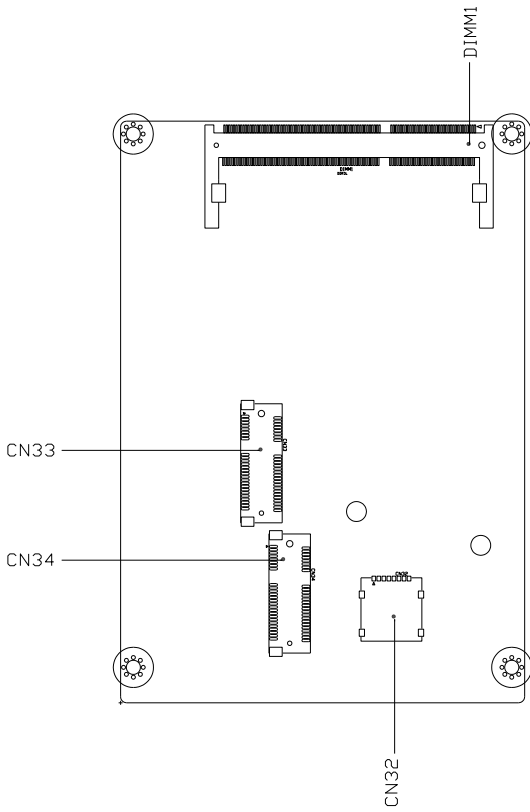


## 2.2 Jumpers and Connectors

### Component Side

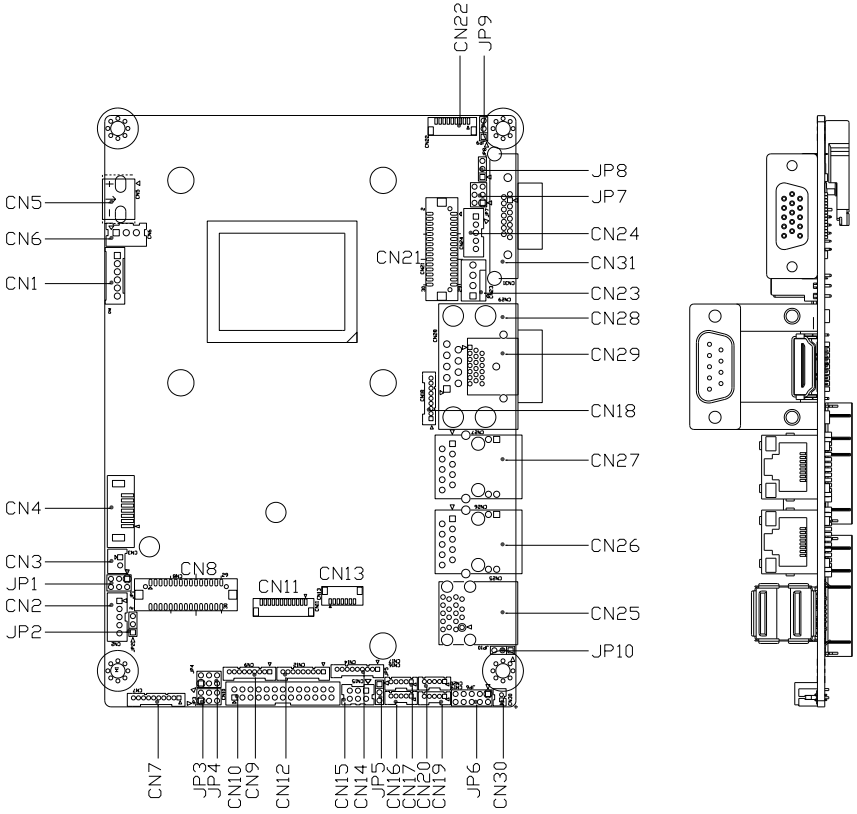


### Solder Side

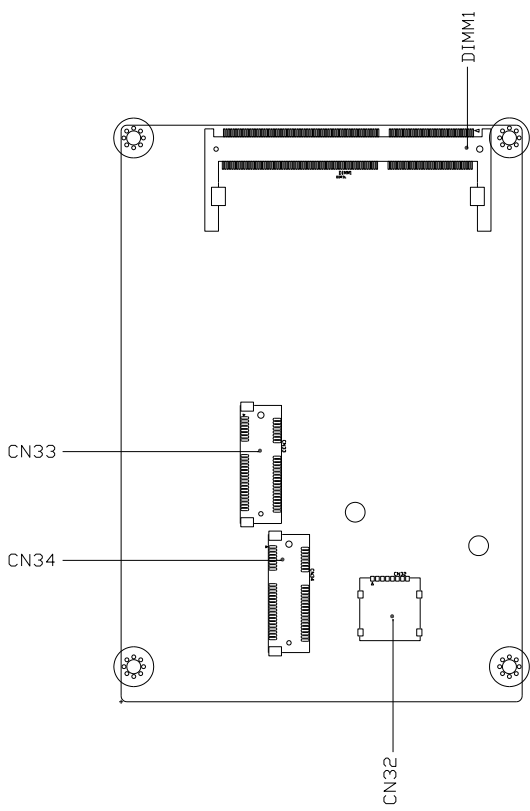


## 2.2.1 Jumpers and Connectors (Optional HDMI SKU)

### Component Side



### Solder Side

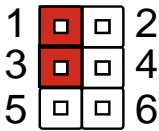


## 2.3 List of Jumpers

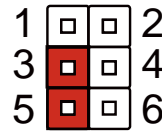
Please refer to the table below for all of the board's jumpers that you can configure for your application

| Label | Function.   |
|-------|---|
| JP1   | LVDS Port1 Backlight Inverter VCC Selection and Operating VDD Selection |
| JP2   | LVDS Port1 Backlight Lightness Control Mode Selection                   |
| JP3   | COM2 Pin8 Function Selection  |
| JP4   | COM3 Pin8 Function Selection  |
| JP5   | Auto Power Button Enable/Disable Selection                              |
| JP6   | Front Panel Connector   |
| JP7   | LVDS Port2 Backlight Inverter VCC Selection and Operating VDD Selection |
| JP8   | LVDS Port2 Backlight Lightness Control Mode Selection                   |
| JP9   | Touch Screen 4/5/8-wire Mode Selection                                  |
| JP10  | Clear CMOS Jumper   |

### 2.3.1 LVDS Port 1 Backlight Inverter VCC Selection (JP1)

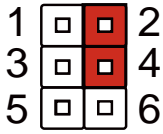


+12V

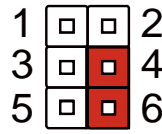


+5V (Default)

### 2.3.2 LVDS Port 1 Operating VDD Selection (JP1)



+3.3V (Default)



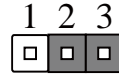
+5V

**Note:** To prevent damage to the system or unwanted operation, do not use any other configuration for JP1 than what is shown in Ch2.4.1 and Ch2.4.2.

### 2.3.3 LVDS Port 1 Backlight Lightness Control Mode Selection (JP2)

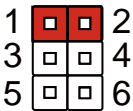


VR Mode (Default)

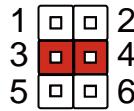


PWM Mode

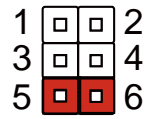
### 2.3.4 COM2 Pin8 Function Selection (JP3)



+12V



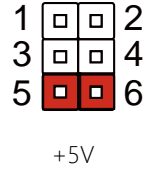
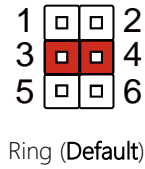
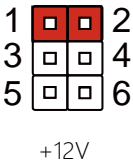
Ring (Default)



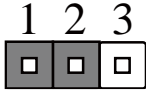
+5V



### 2.3.5 COM3 Pin8 Function Selection (JP4)



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



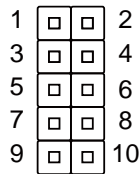
Disable/ ATX Mode



Enable/ AT Mode (Default)

**Note:** When disabled, the power button of JP6 (pins 1-2) must be used to power on the system.

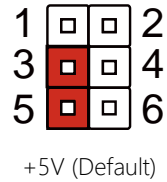
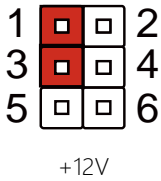
### 2.3.7 Front Panel Connector (JP6)



| Pin | Pin Name   | Pin | Pin Name   |
|-----|------------|-----|------------|
| 1   | PWR_BTN-   | 2   | PWR_BTN+   |
| 3   | HDD_LED-   | 4   | HDD_LED+   |
| 5   | SPEAKER-   | 6   | SPEAKER+   |
| 7   | PWR_LED-   | 8   | PWR_LED+   |
| 9   | H/W RESET- | 10  | H/W RESET+ |

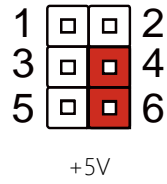
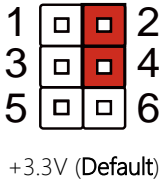
### 2.3.8 LVDS Port 2 Backlight Inverter VCC Selection (JP7)

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### 2.3.9 LVDS Port 2 Operating VDD Selection (JP7)

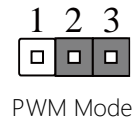
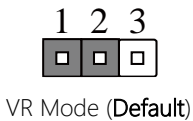
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**Note:** To prevent damage to the system or unwanted operation, do not use any other configuration for JP1 than what is shown in Ch2.4.1 and Ch2.4.2.

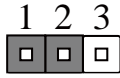
### 2.3.10 LVDS Port 2 Backlight Lightness Control Mode Selection (JP8)

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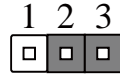


### 2.3.11 Touch Screen 4, 5, 8 Wire Selection (JP9)

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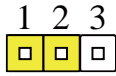
4/8-Wire Mode (Default)



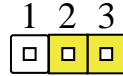
5-Wire Mode

### 2.3.12 Clear CMOS Jumper (JP10)

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Normal (Default)



Clear CMOS

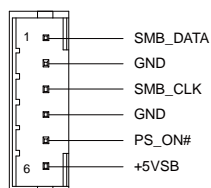
## 2.4 List of Connectors

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

| Label | Function                                  |
|-------|---|
| CN1   | +5VSB Output w/SMBus                      |
| CN2   | LVDS Port1 Inverter / Backlight Connector |
| CN3   | +5V Output for SATA HDD                   |
| CN4   | SATA Port                                 |
| CN5   | External Power Input                      |
| CN6   | External +5VSB Input (Optional)           |
| CN7   | Audio I/O Port                            |
| CN8   | LVDS Port1                                |
| CN9   | COM Port 2                                |
| CN10  | LPT Port or Digital I/O Port              |
| CN11  | LPC Port                                  |
| CN12  | COM Port 3                                |
| CN13  | SPI Debug Port                            |
| CN14  | COM Port 4                                |
| CN15  | PS/2 Keyboard/Mouse Combo Port            |
| CN16  | USB 2.0 Port 2                            |
| CN17  | USB 2.0 Port 3                            |
| CN18  | COM Port 1 (Wafer, Optional)              |
| CN19  | USB 2.0 Port 4                            |
| CN20  | USB 2.0 Port 5                            |
| CN21  | LVDS Port2                                |
| CN22  | Touch Screen Connector (Optional)         |
| CN23  | CPU FAN (Optional)                        |

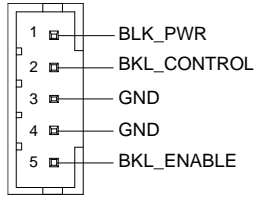
| Label | Function                                  |
|-------|---|
| CN24  | LVDS Port2 Inverter / Backlight Connector |
| CN25  | USB Ports 0 and 1                         |
| CN26  | LAN (RJ-45) Port2                         |
| CN27  | LAN (RJ-45) Port1                         |
| CN28  | COM Port 1 (D-SUB 9)                      |
| CN29  | HDMI Port (Optional)                      |
| CN30  | Battery                                   |
| CN31  | VGA Port                                  |
| CN32  | Micro SIM Card Socket                     |
| CN33  | Mini-Card Slot (Half-Size)                |
| CN34  | mSATA Slot (Full-Size)                    |
| DIMM1 | DDR3L SO-DIMM Slot                        |

### 2.4.1 +5VSB Output w/SMBus (CN1)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | SMB_DATA | I/O         | +3.3V        |
| 2   | GND      | GND         |              |
| 3   | SMB_CLK  | I/O         | +3.3V        |
| 4   | GND      | GND         |              |
| 5   | PS_ON#   | OUT         | +5V          |
| 6   | +5VSB    | PWR         | +5V          |

## 2.4.2 LVDS Port 1 Inverter / Backlight Connector (CN2)

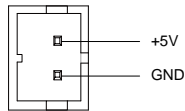


| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1   | BKL_PWR     | PWR         | +5V / +12V   |
| 2   | BKL_CONTROL | OUT         |              |
| 3   | GND         | GND         |              |
| 4   | GND         | GND         |          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

**Note 1:** LVDS BKL\_PWR can be set to +5V or +12V by JP1. Max current is 2A.

**Note 2:** LVDS BKL\_CONTROL can be set by JP2

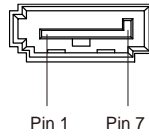
## 2.4.3 +5V Output for SATA HDD (CN3)



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

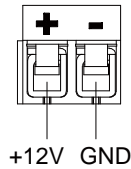
**Note:** Pin 1 max current is 2A

## 2.4.4 SATA Port (CN4)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | GND      | GND         |              |
| 2   | SATA_TX+ | DIFF        |              |
| 3   | SATA_TX- | DIFF        |              |
| 4   | GND      | GND         |              |
| 5   | SATA_RX- | DIFF        |              |
| 6   | SATA_RX+ | DIFF        |              |
| 7   | GND      | GND         |              |

## 2.4.5 External Power Input (CN5)

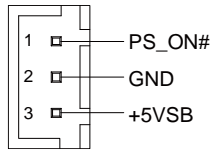


| Pin | Pin Name | Signal Type | Signal Level  |
|-----|----------|-------------|---------------|
| 1   | +VIN     | PWR         | 9V~19V or 12V |
| 2   | GND      | GND         |               |

**Note 1:** There are two types of power input, 9V~19V or 12V only, by BOM Change.

**Note 2:** Pin 1 +VIN max current is 8A

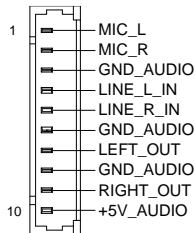
## 2.4.6 External +5VSB Input (CN6) (Optional)



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

**Caution:** When using CN6 power connector, ensure the ATX power supply is fully discharged when powering off, or before restarting the system. Discharge time depends on the power supply and can be 3 to 5 seconds or more.

## 2.4.7 Audio I/O Port (CN7)

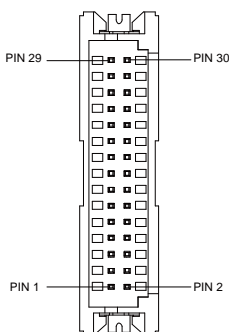


| Pin | Pin Name  | Signal Type | Signal Level |
|-----|-----------|-------------|--------------|
| 1   | MIC_L     | IN          |              |
| 2   | MIC_R     | IN          |              |
| 3   | GND_AUDIO | GND         |              |



| Pin | Pin Name  | Signal Type | Signal Level |
|-----|-----------|-------------|--------------|
| 4   | LINE_L_IN | IN          |              |
| 5   | LINE_R_IN | IN          |              |
| 6   | GND_AUDIO | GND         |              |
| 7   | LEFT_OUT  | OUT         |              |
| 8   | GND_AUDIO | GND         |              |
| 9   | RIGHT_OUT | OUT         |              |
| 10  | +5V_AUDIO | PWR         | +5V          |

## 2.4.8 LVDS Port 1 (CN8)

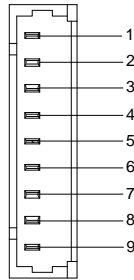


**Note 1:** LVDS LCD\_PWR can be set to +3.3V or +5V by JP1. Max current is 2A.

| 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         |              |
| 5   | LVDS_A_CLK- | DIFF        |              |
| 6   | LVDS_A_CLK+ | DIFF        |              |

| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 7   | LCD_PWR     | PWR         | +3.3V/+5V    |
| 8   | 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    | I/O         | +3.3V        |
| 18  | DDC_CLK     | I/O         | +3.3V        |
| 19  | LVDS_DB0-   | DIFF        |              |
| 20  | LVDS_DB0+   | DIFF        |              |
| 21  | LVDS_DB1-   | DIFF        |              |
| 22  | LVDS_DB1+   | DIFF        |              |
| 23  | LVDS_DB2-   | DIFF        |              |
| 24  | LVDS_DB2+   | DIFF        |              |
| 25  | LVDS_DB3-   | DIFF        |              |
| 26  | LVDS_DB3+   | DIFF        |              |
| 27  | LCD_PWR     | PWR         | +3.3V/+5V    |
| 28  | GND         | GND         |              |
| 29  | LVDS_B_CLK- | DIFF        |              |
| 30  | LVDS_B_CLK+ | DIFF        |              |

## 2.4.9 COM Port 2 (CN9)



**Note 1:** Pin 8 mode (Ring/+5V/+12V) can be set by JP3. Max current in power supply mode is 0.5A

**Note 2:** COM2 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

### RS-232 Mode

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

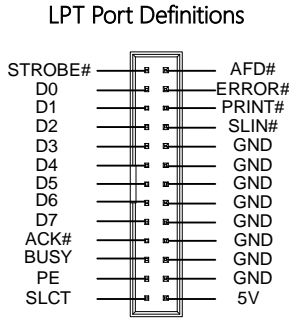
## RS-485 Mode

| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1   | RS485_D2-   | I/O         | ±5V          |
| 2   | NC          |             |              |
| 3   | RS485_D2+   | I/O         | ±5V          |
| 4   | NC          |             |              |
| 5   | NC          |             |              |
| 6   | NC          |             |              |
| 7   | NC          |             |              |
| 8   | NC/+5V/+12V | PWR         | +5V/+12V     |
| 9   | GND         | GND         |              |

## RS-422 Mode

| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1   | RS422_TX2-  | OUT         | ±5V          |
| 2   | NC          |             |              |
| 3   | RS422_TX2+  | OUT         | ±5V          |
| 4   | NC          |             |              |
| 5   | RS422_RX2+  | IN          |              |
| 6   | NC          |             |              |
| 7   | RS422_RX2-  | IN          |              |
| 8   | NC/+5V/+12V | PWR         | +5V/+12V     |
| 9   | GND         | GND         |              |

## 2.4.10 LPT Port or Digital I/O Port (CN10)



**Note 1:** LPT or Digital I/O function can be set by BIOS. Default is Digital I/O.

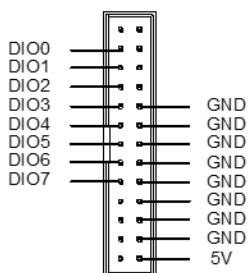
**Note 2:** +5V input max current 0.5A

### LPT Mode

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | STROBE#  | IN          |              |
| 2   | AFD#     | I/O         |              |
| 3   | PD0      | I/O         |              |
| 4   | ERROR#   | IN          |              |
| 5   | PD1      | I/O         |              |
| 6   | PRINT#   | I/O         |              |
| 7   | PD2      | I/O         |              |
| 8   | SLIN#    | I/O         |              |
| 9   | PD3      | I/O         |              |
| 10  | GND      | GND         |              |
| 11  | PD4      | I/O         |              |
| 12  | GND      | GND         |              |
| 13  | PD5      | I/O         |              |

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 14  | GND      | GND         |              |
| 15  | PD6      | I/O         |              |
| 16  | GND      | GND         |              |
| 17  | PD7      | I/O         |              |
| 18  | GND      | GND         |              |
| 19  | ACK#     | IN          |              |
| 20  | GND      | GND         |              |
| 21  | BUSY     | IN          |              |
| 22  | GND      | GND         |              |
| 23  | PE       | IN          |              |
| 24  | GND      | GND         |              |
| 25  | SLCT     | IN          |              |
| 26  | 5V       | PWR         | +5V          |

### Digital I/O Mode

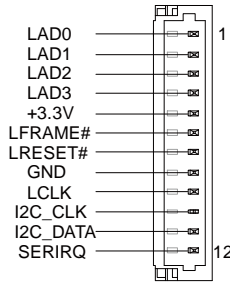


**Note:** +5V input max current 0.5A

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | NC       |             |              |
| 2   | NC       |             |              |

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 3   | DIO0     | I/O         | +5V          |
| 4   | NC       |             |              |
| 5   | DIO1     | I/O         | +5V          |
| 6   | NC       |             |              |
| 7   | DIO2     | I/O         | +5V          |
| 8   | NC       |             |              |
| 9   | DIO3     | I/O         | +5V          |
| 10  | GND      | GND         |              |
| 11  | DIO4     | I/O         | +5V          |
| 12  | GND      | GND         |              |
| 13  | DIO5     | I/O         | +5V          |
| 14  | GND      | GND         |              |
| 15  | DIO6     | I/O         | +5V          |
| 16  | GND      | GND         |              |
| 17  | DIO7     | I/O         | +5V          |
| 18  | GND      | GND         |              |
| 19  | NC       |             |              |
| 20  | GND      | GND         |              |
| 21  | NC       |             |              |
| 22  | GND      | GND         |              |
| 23  | NC       |             |              |
| 24  | GND      | GND         |              |
| 25  | NC       |             |              |
| 26  | 5V       | PWR         | +5V          |

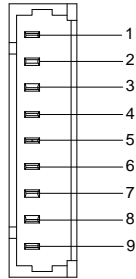
## 2.4.11 LPC Port (CN11)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | LAD0     | I/O         | +3.3V        |
| 2   | LAD1     | I/O         | +3.3V        |
| 3   | LAD2     | I/O         | +3.3V        |
| 4   | LAD3     | I/O         | +3.3V        |
| 5   | +3.3V    | PWR         | +3.3V        |
| 6   | LFRAME#  | IN          |              |
| 7   | LRESET#  | OUT         | +3.3V        |
| 8   | GND      | GND         |              |
| 9   | LCLK     | OUT         |              |
| 10  | I2C_CLK  | OUT         | +3.3V        |
| 11  | I2C_DATA | I/O         | +3.3V        |
| 12  | SERIRQ   | I/O         | +3.3V        |



## 2.4.12 COM Port 3 (CN12)



**Note 1:** Pin 8 mode (Ring/+5V/+12V) can be set by JP4. Max current in power supply mode is 0.5A

**Note 2:** COM2 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

### RS-232 Mode

| Pin | Pin Name     | Signal Type | Signal Level |
|-----|--------------|-------------|--------------|
| 1   | DCD3         | IN          |              |
| 2   | DSR3         | IN          |              |
| 3   | RX3          | IN          |              |
| 4   | RTS3         | OUT         | ±5V          |
| 5   | TX3          | OUT         | ±5V          |
| 6   | CTS3         | IN          |              |
| 7   | DTR3         | OUT         | ±5V          |
| 8   | RI3/+5V/+12V | IN          | +5V/+12V     |
| 9   | GND          | GND         |              |

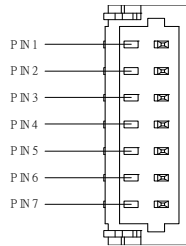
## RS-485 Mode

| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1   | RS485_D3-   | I/O         | ±5V          |
| 2   | NC          |             |              |
| 3   | RS485_D3+   | I/O         | ±5V          |
| 4   | NC          |             |              |
| 5   | NC          |             |              |
| 6   | NC          |             |              |
| 7   | NC          |             |              |
| 8   | NC/+5V/+12V | PWR         | +5V/+12V     |
| 9   | GND         | GND         |              |

## RS-422 Mode

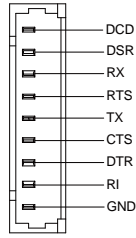
| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1   | RS422_TX3-  | OUT         | ±5V          |
| 2   | NC          |             |              |
| 3   | RS422_TX3+  | OUT         | ±5V          |
| 4   | NC          |             |              |
| 5   | RS422_RX3+  | IN          |              |
| 6   | NC          |             |              |
| 7   | RS422_RX3-  | IN          |              |
| 8   | NC/+5V/+12V | PWR         | +5V/+12V     |
| 9   | GND         | GND         |              |

## 2.4.13 BIOS Debug Port (CN13)



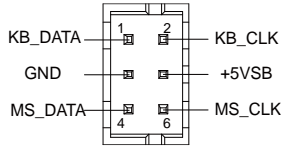
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | SPI_MISO | OUT         |              |
| 2   | GND      | GND         |              |
| 3   | SPI_CLK  | IN          |              |
| 4   | +3.3VSB  | PWR         | +3.3V        |
| 5   | SPI_MOSI | IN          |              |
| 6   | SPI_CS   | IN          |              |
| 7   | NC       |             |              |

## 2.4.14 COM Port 4 (CN14)



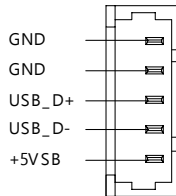
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | DCD4     | IN          |              |
| 2   | DSR4     | IN          |              |
| 3   | RX4      | IN          |              |
| 4   | RTS4     | OUT         | ±9V          |
| 5   | TX4 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

## 2.4.15 PS/2 Keyboard/Mouse Combo Port (CN15)



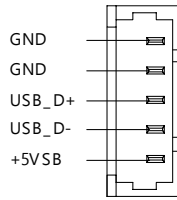
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | KB_DATA  | I/O         | +5V          |
| 2   | KB_CLK   | I/O         | +5V          |
| 3   | GND      | GND         |              |
| 4   | +5VSB    | PWR         | +5V          |
| 5   | MS_DATA  | I/O         | +5V          |
| 6   | MS_CLK   | I/O         | +5V          |

## 2.4.16 USB 2.0 Port 2 (CN16)



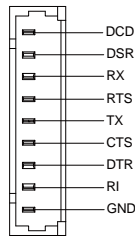
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | +5VSB    | PWR         | +5V          |
| 2   | USB_D-   | DIFF        |              |
| 3   | USB_D+   | DIFF        |              |
| 4   | GND      | GND         |              |
| 5   | GND 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

## 2.4.17 USB 2.0 Port 3 (CN17)



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

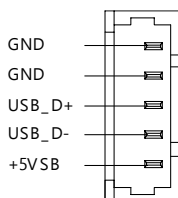
## 2.4.18 COM Port 1 (CN18) (Wafer, Optional)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | DCD1     | IN          |              |
| 2   | DSR1     | IN          |              |
| 3   | RX1      | IN          |              |
| 4   | RTS1     | OUT         | ±9V          |

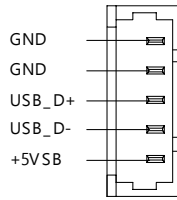
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 5   | TX1      | OUT         | ±9V          |
| 6   | CTS1     | IN          |              |
| 7   | DTR1     | OUT         | ±9V          |
| 8   | RI1      | IN          |              |
| 9   | GND      | GND         |              |

### 2.4.19 USB 2.0 Port 4 (CN19)



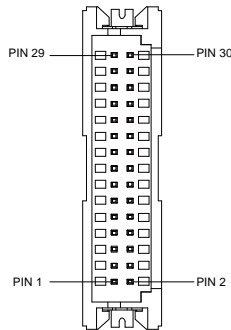
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | +5VSB    | PWR         | +5V          |
| 2   | USB_D-   | DIFF        |              |
| 3   | USB_D+   | DIFF        |              |
| 4   | GND      | GND         |              |
| 5   | GND 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

## 2.4.20 USB 2.0 Port 5 (CN20)



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

## 2.4.21 LVDS Port 2 (CN21)



**Note:** LVDS2 LCD\_PWR can be set to +3.3V or +5V by JP7. Max current is 2A

| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1   | BKL_ENABLE  | OUT         |              |
| 2   | BKL_CONTROL | OUT         |              |

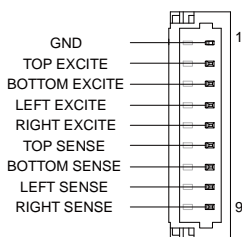


| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 3   | LCD_PWR     | PWR         | +3.3V/+5V    |
| 4   | GND         | GND         |              |
| 5   | LVDS_A_CLK- | DIFF        |              |
| 6   | LVDS_A_CLK+ | DIFF        |              |
| 7   | LCD_PWR     | PWR         | +3.3V/+5V    |
| 8   | 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    | I/O         | +3.3V        |
| 18  | DDC_CLK     | I/O         | +3.3V        |
| 19  | LVDS_DB0-   | DIFF        |              |
| 20  | LVDS_DB0+   | DIFF        |              |
| 21  | LVDS_DB1-   | DIFF        |              |
| 22  | LVDS_DB1+   | DIFF        |              |
| 23  | LVDS_DB2-   | DIFF        |              |
| 24  | LVDS_DB2+   | DIFF        |              |
| 25  | LVDS_DB3-   | DIFF        |              |
| 26  | LVDS_DB3+   | DIFF        |              |
| 27  | LCD_PWR     | PWR         | +3.3V/+5V    |
| 28  | GND         | GND         |              |

| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 29  | LVDS_B_CLK- | DIFF        |              |
| 30  | LVDS_B_CLK+ | DIFF        |              |

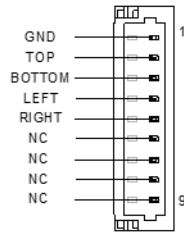
## 2.4.22 Touchscreen Connector (CN22)

### 8-Wire Mode



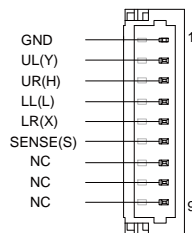
| Pin | Pin Name      | Signal Type | Signal Level |
|-----|---------------|-------------|--------------|
| 1   | GND           | GND         |              |
| 2   | TOP EXCITE    | IN          |              |
| 3   | BOTTOM EXCITE | IN          |              |
| 4   | LEFT EXCITE   | IN          |              |
| 5   | RIGHT EXCITE  | IN          |              |
| 6   | TOP SENSE     | IN          |              |
| 7   | BOTTOM SENSE  | IN          |              |
| 8   | LEFT SENSE    | IN          |              |
| 9   | RIGHT SENSE   | IN          |              |

## 4-Wire Mode



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | GND      | GND         |              |
| 2   | TOP      | IN          |              |
| 3   | BOTTOM   | IN          |              |
| 4   | LEFT     | IN          |              |
| 5   | RIGHT    | IN          |              |
| 6   | NC       |             |              |
| 7   | NC       |             |              |
| 8   | NC       |             |              |
| 9   | NC       |             |              |

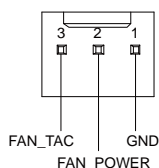
## 5-Wire Mode



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | GND      | GND         |              |
| 2   | UL(Y)    | IN          |              |

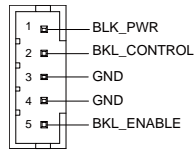
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 3   | UR(H)    | IN          |              |
| 4   | LL(L)    | IN          |              |
| 5   | LR(X)    | IN          |              |
| 6   | SENSE(S) | IN          |              |
| 7   | NC       |             |              |
| 8   | NC       |             |              |
| 9   | NC       |             |              |

### 2.4.23 CPU Fan (CN23, Optional)



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

## 2.4.24 LVDS Port 2 Inverter / Backlight Connector (CN24)

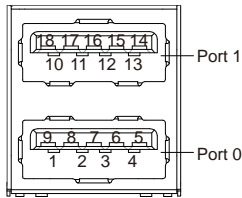


| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1   | BKL_PWR     | PWR         | +5V / +12V   |
| 2   | BKL_CONTROL | OUT         |              |
| 3   | GND         | GND         |              |
| 4   | GND         | GND         |          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

**Note 1:** LVDS2 BKL\_PWR can be set to +5V or +12V by JP7

**Note 2:** LVDS2 BKL\_CONTROL can be set by JP8

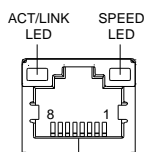
## 2.4.25 USB 3.0 Ports 0 and 1 (CN25)



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

| Pin | Pin Name  | Signal Type | Signal Level |
|-----|-----------|-------------|--------------|
| 5   | USB_SSRX- | DIFF        |              |
| 6   | USB_SSRX+ | DIFF        |              |
| 7   | GND       | GND         |              |
| 8   | USB_SSTX- | DIFF        |              |
| 9   | USB_SSTX+ | DIFF        |              |
| 10  | +5VSB     | PWR         | +5V          |
| 11  | USB_D-    | DIFF        |              |
| 12  | USB_D+    | DIFF        |              |
| 13  | GND       | GND         |              |
| 14  | USB_SSRX- | DIFF        |              |
| 15  | USB_SSRX+ | DIFF        |              |
| 16  | GND       | GND         |              |
| 17  | USB_SSTX- | DIFF        |              |
| 18  | USB_SSTX+ | DIFF        |              |

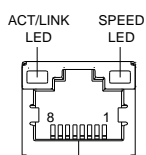
### 2.4.26 LAN (RJ-45) Port 2 (CN26)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | MDI0+    | DIFF        |              |
| 2   | MDI0-    | DIFF        |              |
| 3   | MDI1+    | DIFF        |              |
| 4   | MDI2+    | DIFF        |              |

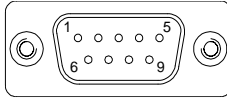
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 5   | MDI2-    | DIFF        |              |
| 6   | MDI1-    | DIFF        |              |
| 7   | MDI3+    | DIFF        |              |
| 8   | MDI3-    | DIFF        |              |

### 2.4.27 LAN (RJ-45) Port 1 (CN27)



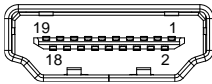
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | MDI0+    | DIFF        |              |
| 2   | MDI0-    | DIFF        |              |
| 3   | MDI1+    | DIFF        |              |
| 4   | MDI2+    | DIFF        |              |
| 5   | MDI2-    | DIFF        |              |
| 6   | MDI1-    | DIFF        |              |
| 7   | MDI3+    | DIFF        |              |
| 8   | MDI3-    | DIFF        |              |

## 2.4.28 COM Port 1 (CN28, D-SUB 9)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | DCD      | IN          |              |
| 2   | RX       | IN          |              |
| 3   | TX       | OUT         | ±9V          |
| 4   | DTR      | OUT         | ±9V          |
| 5   | GND      | GND         |              |
| 6   | DSR      | IN          |              |
| 7   | RTS      | OUT         | ±9V          |
| 8   | CTS      | IN          |              |
| 9   | RI       | IN          |              |

## 2.4.29 HDMI Port (CN29, Optional)



| Pin | Pin Name   | Signal Type | Signal Level |
|-----|------------|-------------|--------------|
| 1   | TMDS_DAT2+ | DIFF        |              |
| 2   | GND        | GND         |              |
| 3   | TMDS_DAT2- | DIFF        |              |
| 4   | TMDS_DAT1+ | DIFF        |              |
| 5   | GND        | GND         |              |

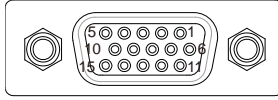


| Pin | Pin Name    | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 6   | TMDS_DAT1-  | DIFF        |              |
| 7   | TMDS_DAT0+  | DIFF        |              |
| 8   | GND         | GND         |              |
| 9   | TMDS_DAT0-  | DIFF        |              |
| 10  | TMDS_CLK+   | DIFF        |              |
| 11  | GND         | GND         |              |
| 12  | TMDS_CLK-   | DIFF        |              |
| 13  | NC          |             |              |
| 14  | NC          |             |              |
| 15  | DDC_CLK     | I/O         | +5V          |
| 16  | DDC_DATA    | I/O         | +5V          |
| 17  | GND         | GND         |              |
| 18  | +5V         | I/O         | +5V          |
| 19  | HPLG_DETECT | IN          |              |

### 2.4.30 Battery (CN30)

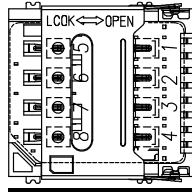
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | +3.3V    | PWR         | 3.3V         |
| 2   | GND      | GND         |              |

### 2.4.31 VGA Port (CN31)



| Pin | Pin Name      | Signal Type | Signal Level |
|-----|---------------|-------------|--------------|
| 1   | RED           | OUT         |              |
| 2   | GREEN         | OUT         |              |
| 3   | BLUE          | OUT         |              |
| 4   | NC            |             |              |
| 5   | GND           | GND         |              |
| 6   | RED_GND_RTN   | GND         |              |
| 7   | GREEN_GND_RTN | GND         |              |
| 8   | BLUE_GND_RTN  | GND         |              |
| 9   | +5V           | PWR         | +5V          |
| 10  | NC            |             |              |
| 11  | NC            |             |              |
| 12  | DDC_DATA      | I/O         | +5V          |
| 13  | HSYNC         | OUT         |              |
| 14  | VSYNC         | OUT         |              |
| 15  | DDC_CLK       | I/O         | +5V          |

### 2.4.32 Micro SIM Card Socket (CN32)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1   | UIM_PWR  | PWR         |              |
| 2   | UIM_RST  | IN          |              |
| 3   | UIM_CLK  | IN          |              |
| 4   | NC       |             |              |
| 5   | GND      | GND         |              |
| 6   | UIM_VPP  | PWR         |              |
| 7   | UIM_DATA | I/O         |              |
| 8   | NC       |             |              |

### 2.4.33 Mini-Card Slot (Half-Mini) (CN33)

| Pin | Pin Name      | Signal Type | Signal Level |
|-----|---------------|-------------|--------------|
| 1   | PCIE_WAKE#    | IN          |              |
| 2   | +3.3VSB       | PWR         | +3.3V        |
| 3   | NC            |             |              |
| 4   | GND           | GND         |              |
| 5   | NC            |             |              |
| 6   | +1.5V         | PWR         | +1.5V        |
| 7   | PCIE_CLK_REQ# | IN          |              |

| Pin | Pin Name      | Signal Type | Signal Level |
|-----|---------------|-------------|--------------|
| 8   | UIM_PWR       | PWR         |              |
| 9   | GND           | GND         |              |
| 10  | UIM_DATA      | I/O         |              |
| 11  | PCIE_REF_CLK- | DIFF        |              |
| 12  | UIM_CLK       | IN          |              |
| 13  | PCIE_REF_CLK+ | DIFF        |              |
| 14  | UIM_RST       | IN          |              |
| 15  | GND           | GND         |              |
| 16  | UIM_VPP       | PWR         |              |
| 17  | NC            |             |              |
| 18  | GND           | GND         |              |
| 19  | NC            |             |              |
| 20  | W_DISABLE#    | OUT         | +3.3V        |
| 21  | GND           | GND         |              |
| 22  | PCIE_RST#     | OUT         | +3.3V        |
| 23  | PCIE_RX-      | DIFF        |              |
| 24  | +3.3VSB       | PWR         | +3.3V        |
| 25  | PCIE_RX+      | DIFF        |              |
| 26  | GND           | GND         |              |
| 27  | GND           | GND         |              |
| 28  | +1.5V         | PWR         | +1.5V        |
| 29  | GND           | GND         |              |
| 30  | SMB_CLK       | I/O         | +3.3V        |
| 31  | PCIE_TX-      | DIFF        |              |
| 32  | SMB_DATA      | I/O         | +3.3V        |
| 33  | PCIE_TX+      | DIFF        |              |

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 34  | GND      | GND         |              |
| 35  | GND      | GND         |              |
| 36  | USB_D-   | DIFF        |              |
| 37  | GND      | GND         |              |
| 38  | USB_D+   | DIFF        |              |
| 39  | +3.3VSB  | PWR         | +3.3V        |
| 40  | GND      | GND         |              |
| 41  | +3.3VSB  | PWR         | +3.3V        |
| 42  | NC       |             |              |
| 43  | GND      | GND         |              |
| 44  | NC       |             |              |
| 45  | NC       |             |              |
| 46  | NC       |             |              |
| 47  | NC       |             |              |
| 48  | +1.5V    | PWR         | +1.5V        |
| 49  | NC       |             |              |
| 50  | GND      | GND         |              |
| 51  | NC       |             |              |
| 52  | +3.3VSB  | PWR         | +3.3V        |

#### 2.4.34 mSATA (Full-Size) (CN34)

**Note:** CN34 can be changed to Mini Card by BOM change.

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

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 3   | NC       |             |              |
| 4   | GND      | GND         |              |
| 5   | NC       |             |              |
| 6   | +1.5V    | PWR         | +1.5V        |
| 7   | NC       |             |              |
| 8   | NC       |             |              |
| 9   | GND      | GND         |              |
| 10  | NC       |             |              |
| 11  | NC       |             |              |
| 12  | NC       |             |              |
| 13  | NC       |             |              |
| 14  | NC       |             |              |
| 15  | GND      | GND         |              |
| 16  | NC       |             |              |
| 17  | NC       |             |              |
| 18  | GND      | GND         |              |
| 19  | NC       |             | GND          |
| 20  | NC       |             |              |
| 21  | GND      | GND         |              |
| 22  | NC       | OUT         |              |
| 23  | SATA_RX+ | DIFF        |              |
| 24  | +3.3V    | PWR         | +3.3V        |
| 25  | SATA_RX- | DIFF        |              |
| 26  | GND      | GND         |              |
| 27  | GND      | GND         |              |
| 28  | +1.5V    | PWR         | +1.5V        |

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 29  | GND      | GND         |              |
| 30  | SMB_CLK  | I/O         | +3.3V        |
| 31  | SATA_TX- | DIFF        |              |
| 32  | SMB_DATA | I/O         | +3.3V        |
| 33  | SATA_TX+ | DIFF        |              |
| 34  | GND      | GND         |              |
| 35  | GND      | GND         |              |
| 36  | NC       |             |              |
| 37  | GND      | GND         |              |
| 38  | NC       |             |              |
| 39  | +3.3V    | PWR         | +3.3V        |
| 40  | GND      | GND         |              |
| 41  | +3.3V    | PWR         | +3.3V        |
| 42  | NC       |             |              |
| 43  | GND      | GND         |              |
| 44  | NC       |             |              |
| 45  | NC       |             |              |
| 46  | NC       |             |              |
| 47  | NC       |             |              |
| 48  | +1.5V    | PWR         | +1.5V        |
| 49  | NC       |             |              |
| 50  | GND      | GND         |              |
| 51  | NC       |             |              |
| 52  | +3.3V    | PWR         | +3.3V        |

# Chapter 3

---

AMI BIOS Setup



## 3.1 System Test and Initialization

---

The system uses certain routines to perform testing and initialization during the boot up sequence. If an error, fatal or non-fatal, is encountered, the module will output a few short beeps or display an error message. The module can usually continue the boot up sequence with non-fatal errors.

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory and BIOS NVRAM. If a system configuration is not found or an error is detected, the module will load the default configuration and reboot 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 was reset by the Clear-CMOS jumper
4. The CMOS memory has lost power and the configuration information has been erased.

The system CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the battery unit when it 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** – Date and time can be set here. Press <Tab> to switch between date elements

**Advanced** – Access advanced hardware settings and options

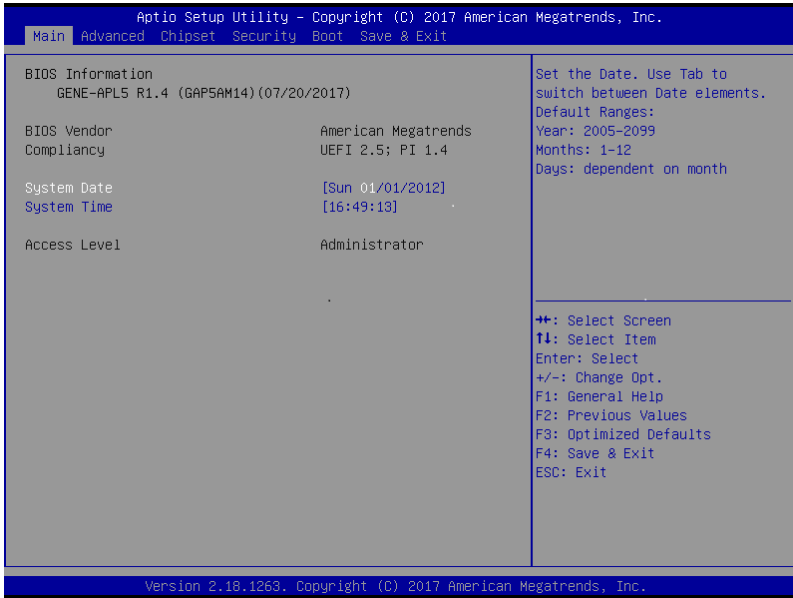
**Chipset** – Chipset Host Bridge settings and options

**Security** – Set setup administrator password.

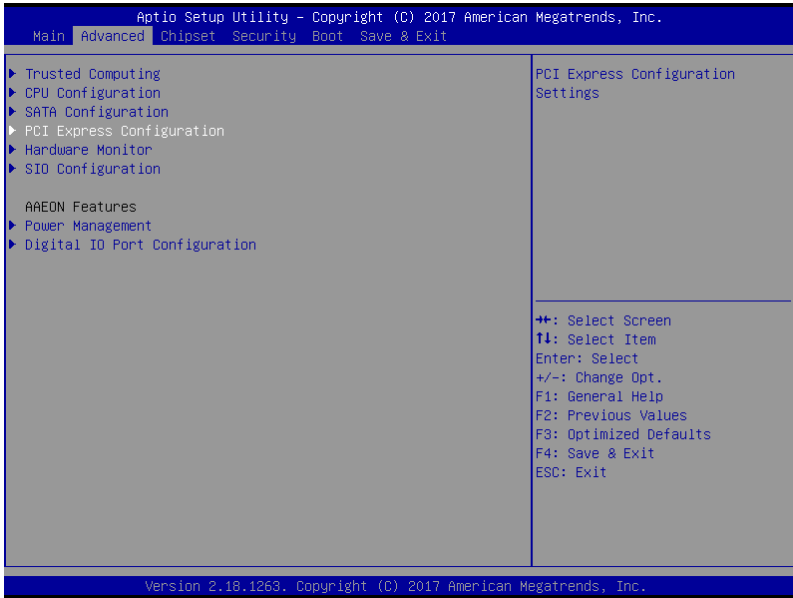
**Boot** – Boot options including BBS priority and Quiet Boot

**Save & Exit** – Save your changes and exit the program

### 3.3 Setup Submenu: Main



### 3.4 Setup Submenu: Advanced



### 3.4.1 Trusted Computing



| Options Summary   |           |                                   |
|---|-----------|-----------------------------------|
| Security Device Support   | Disable   |                                   |
|   | Enable    | Optimal Default, Failsafe Default |
| 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. |           |                                   |
| SHA-1 PCR Bank  | Disable   |                                   |
|   | Enable    | Optimal Default, Failsafe Default |
| Enable or Disable SHA-1 PCR Bank  |           |                                   |
| SHA256 PCR Bank   | Disable   |                                   |
|   | Enable    | Optimal Default, Failsafe Default |
| Enable or Disable SHA256 PCR Bank   |           |                                   |
| Pending Operation   | None      | Optimal Default, Failsafe Default |
|   | TPM Clear |                                   |
| Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.            |           |                                   |

| Options Summary  |          |                                   |
|--|----------|-----------------------------------|
| Platform Hierarchy   | Disabled |                                   |
|  | Enabled  | Optimal Default, Failsafe Default |
| Enable or disable Platform Hierarchy   |          |                                   |
| Storage Hierarchy  | Disabled |                                   |
|  | Enabled  | Optimal Default, Failsafe Default |
| Enable or Disable Storage Hierarchy  |          |                                   |
| Endorsement Hierarchy  | Disabled |                                   |
|  | Enabled  | Optimal Default, Failsafe Default |
| Enable or Disable Endorsement Hierarchy  |          |                                   |
| TPM2.0 UEFI Spec Version   | TCG_1_2  |                                   |
|  | TCG_2    | Optimal Default, Failsafe Default |
| Select the TCG2 Spec Version Support,<br>TCG_1_2: the Compatible mode for Win8/Win10<br>TCG_2: Support new TCG2 protocol and event format for Win10 or later |          |                                   |
| Physical Presence Spec Version   | 1.2      |                                   |
|  | 1.3      | Optimal Default, Failsafe Default |
| Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.   |          |                                   |

### 3.4.2 CPU Configuration

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Advanced

| CPU Configuration                         | Enable/Disable C States  |
|---|--|
| Intel(R) Celeron(R) CPU N3350 @ 1.10GHz   |  |
| CPU Signature 506C9                       |  |
| Microcode Patch 28                        |  |
| Max CPU Speed 1100 MHz                    |  |
| Min CPU Speed 800 MHz                     |  |
| Processor Cores 2                         |  |
| 64-bit Supported                          |  |
| Intel HT Technology Not Supported         |  |
| Intel VT-x Technology Supported           |  |
| L1 Data Cache 24 kB x 2                   |  |
| L1 Code Cache 32 kB x 2                   |  |
| L2 Cache 1024 kB x 2                      |  |
| L3 Cache Not Present                      |  |
| C-States [Enabled]                        |  |
| EIST [Enabled]                            |  |
| Turbo Mode [Enabled]                      |  |
| Power Limit 1 Enable [Disabled]           |  |
| Intel Virtualization Technology [Enabled] |  |
| VT-d [Disabled]                           |  |
|   | ++: Select Screen<br>!!: Select Item<br>Enter: Select<br>+/-: Change Opt.<br>F1: General Help<br>F2: Previous Values<br>F3: Optimized Defaults<br>F4: Save & Exit<br>ESC: Exit |

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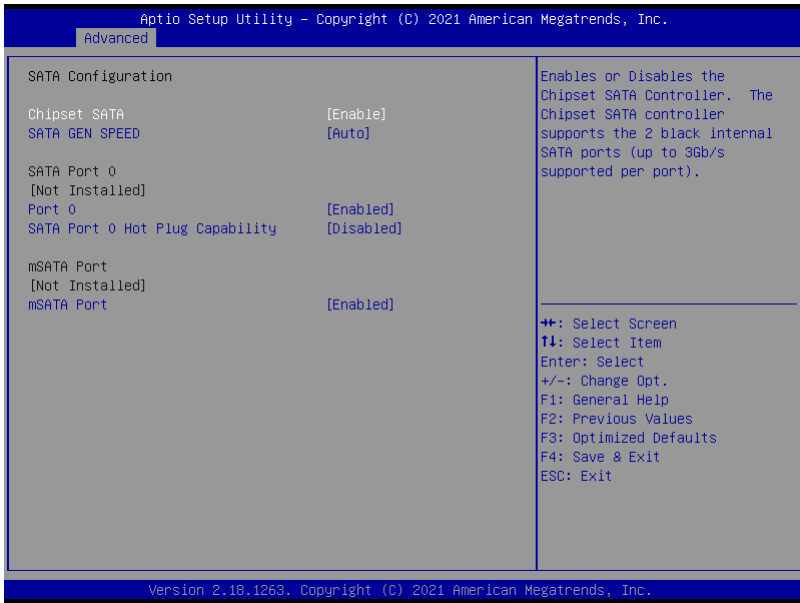
| Options Summary                 |          |                                   |
|---------------------------------|----------|-----------------------------------|
| <b>C-States</b>                 | Disabled |                                   |
|                                 | Enabled  | Optimal Default, Failsafe Default |
| Enable/Disable C States.        |          |                                   |
| <b>EIST™</b>                    | Disabled |                                   |
|                                 | Enabled  | Optimal Default, Failsafe Default |
| Enable/Disable Intel SpeedStep. |          |                                   |
| <b>Turbo Mode</b>               | Disabled |                                   |
|                                 | Enabled  | Optimal Default, Failsafe Default |
| Turbo Mode                      |          |                                   |
| <b>Power Limit 1 Enable</b>     | Disabled | Optimal Default, Failsafe Default |
|                                 | Enabled  |                                   |
| Enable/Disable Power Limit 1    |          |                                   |

Table Continues on Next Page...

| Options Summary   |          |                                   |
|---|----------|-----------------------------------|
| Intel Virtualization Technology   | Disabled |                                   |
|   | Enabled  | Optimal Default, Failsafe Default |
| When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology. |          |                                   |
| VT-d  | Disabled | Optimal Default, Failsafe Default |
|   | Enabled  |                                   |
| Enable/Disable CPU VT-d   |          |                                   |

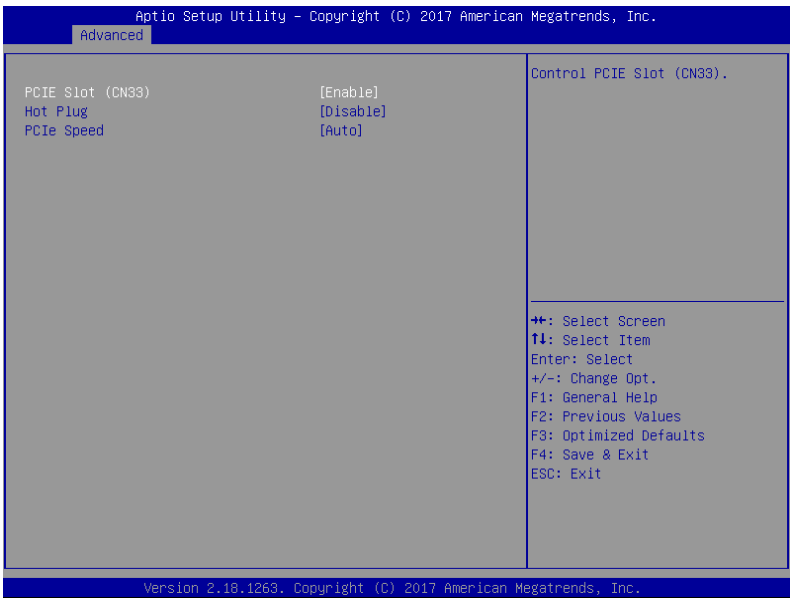


### 3.4.3 SATA Configuration



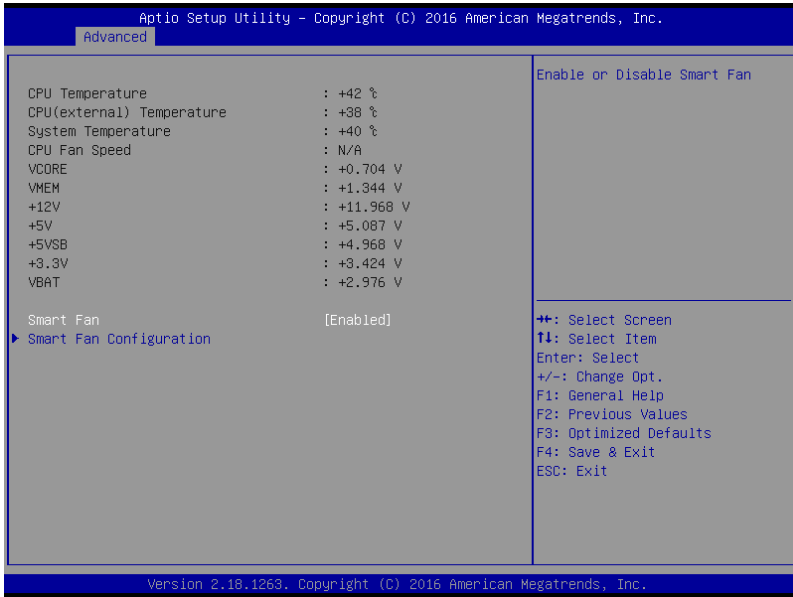
| Options Summary   |          |                                   |
|---|----------|-----------------------------------|
| Chipset SATA  | Disabled |                                   |
|   | Enabled  | Optimal Default, Failsafe Default |
| Enables or Disables the Chipset SATA Controller. The Chipset SATA controller supports the 2 black internal SATA ports (up to 3Gb/s supported per port). |          |                                   |
| SATA GEN SPEED  | Auto     | Optimal Default, Failsafe Default |
|   | GEN1     |                                   |
|   | GEN2     |                                   |
|   | GEN3     |                                   |
| SATA Gen Speed Selection  |          |                                   |
| Port 0/ mSATA   | Disabled |                                   |
|   | Enabled  | Optimal Default, Failsafe Default |
| Enables or Disables SATA Port   |          |                                   |
| SATA Port 0 Hot Plug Capability   | Disabled | Optimal Default, Failsafe Default |
|   | Enabled  |                                   |
| Enables or Disables SATA hot plug.  |          |                                   |

### 3.4.3.1 PCI Express Configuration



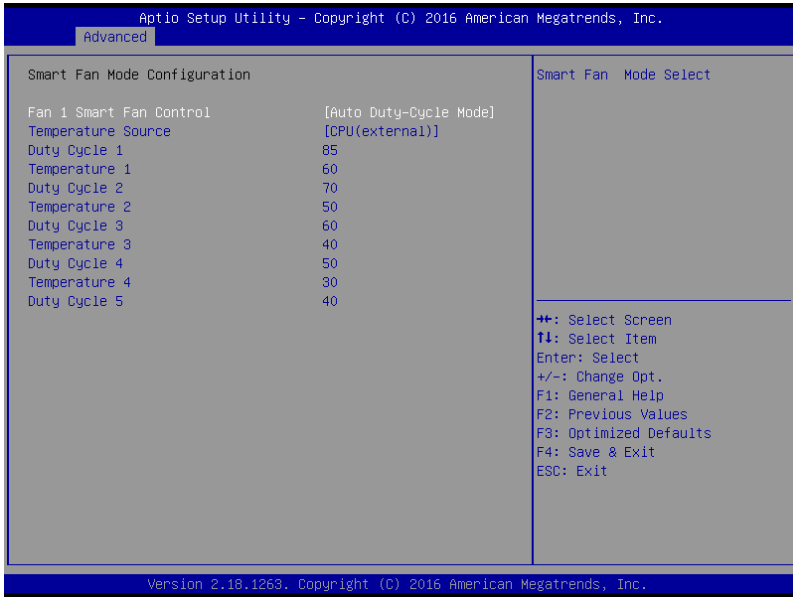
| Options Summary                      |          |                                   |
|--------------------------------------|----------|-----------------------------------|
| PCIe Slot (CN33)                     | Disabled |                                   |
|                                      | Enabled  | Optimal Default, Failsafe Default |
| Control PCIe Slot (CN33)             |          |                                   |
| Hot Plug                             | Disabled | Optimal Default, Failsafe Default |
|                                      | Enabled  |                                   |
| PCIe Express Hot Plug Enable/Disable |          |                                   |
| PCIe Speed                           | Auto     | Optimal Default, Failsafe Default |
|                                      | Gen 1    |                                   |
|                                      | Gen 2    |                                   |
| Configure PCIe Speed                 |          |                                   |

### 3.4.4 Hardware Monitor



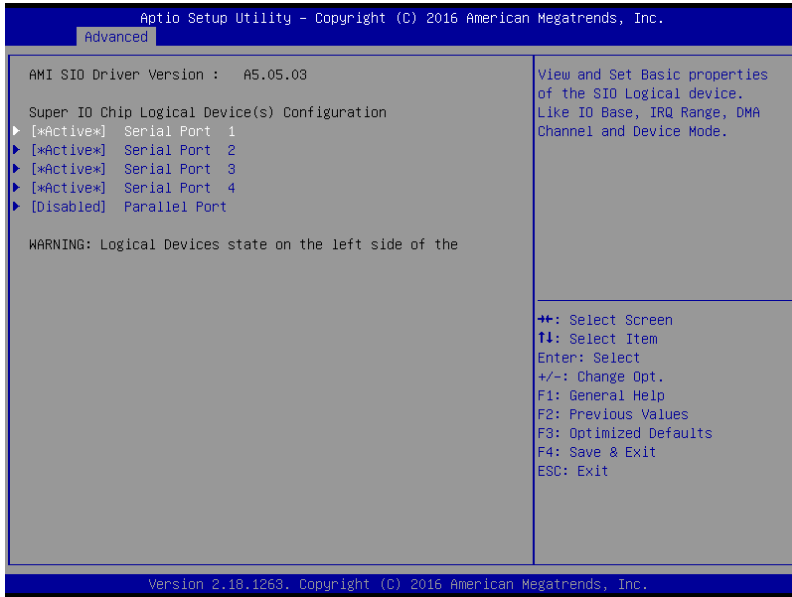
| Options Summary                |         |                                   |
|--------------------------------|---------|-----------------------------------|
| Smart Fan                      | Disable |                                   |
|                                | Enable  | Optimal Default,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

### 3.4.4.1 Smart Fan Configuration

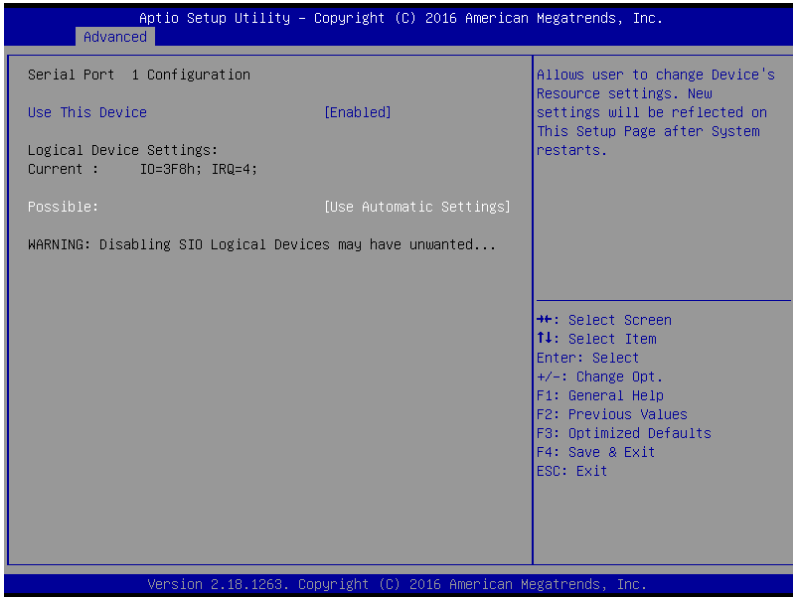


| Options Summary   |                      |                                   |
|---|----------------------|-----------------------------------|
| Fan 1 Smart Fan Control   | Manual Duty Mode     |                                   |
|   | Auto Duty-Cycle Mode | Optimal Default, Failsafe Default |
| Smart Fan Mode Select   |                      |                                   |
| Temperature Source  | CPU (external)       | Optimal Default, Failsafe Default |
|   | System               |                                   |
| Select the monitored temperature source for this fan.   |                      |                                   |
| Duty Cycle 1  | 85                   |                                   |
| Temperature 1   | 60                   |                                   |
| Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100 |                      |                                   |

### 3.4.5 SIO Configuration

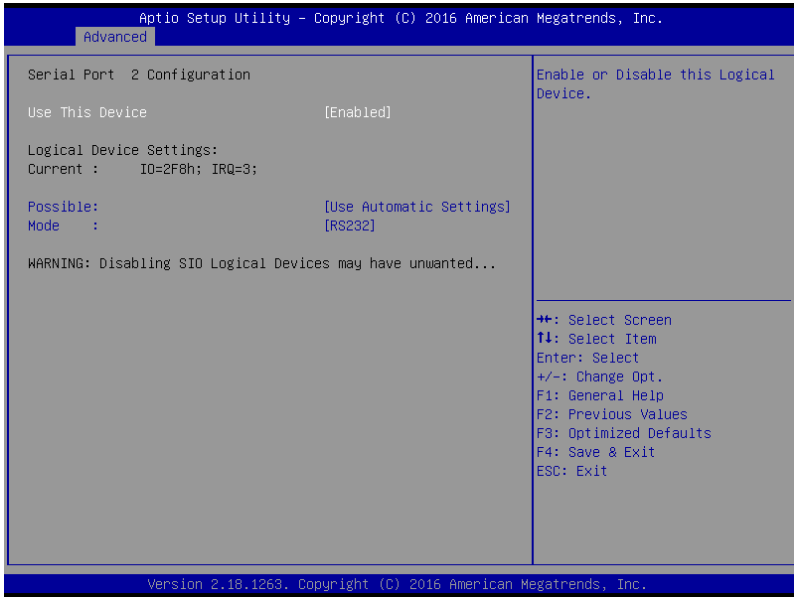


### 3.4.5.1 Serial Port 1 Configuration



| 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. |                        |                                   |

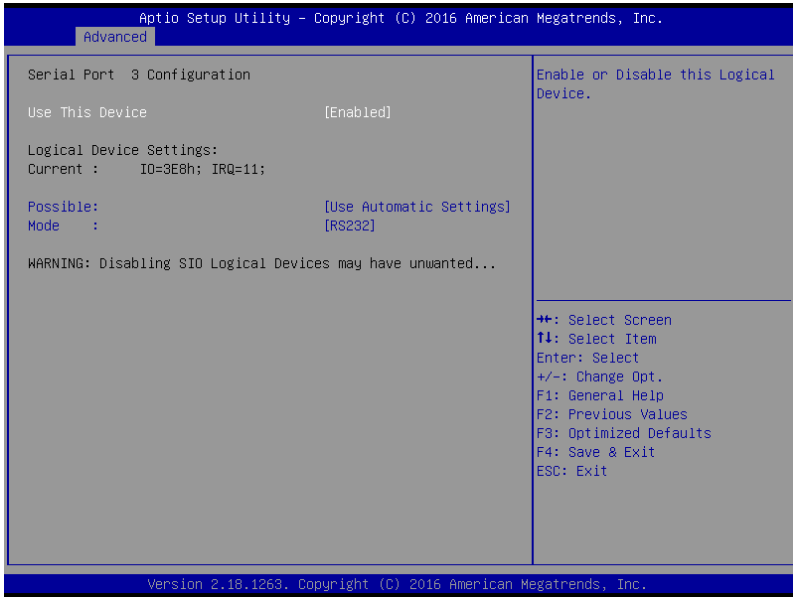
### 3.4.5.2 Serial Port 2 Configuration



| 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.  |                        |                                   |

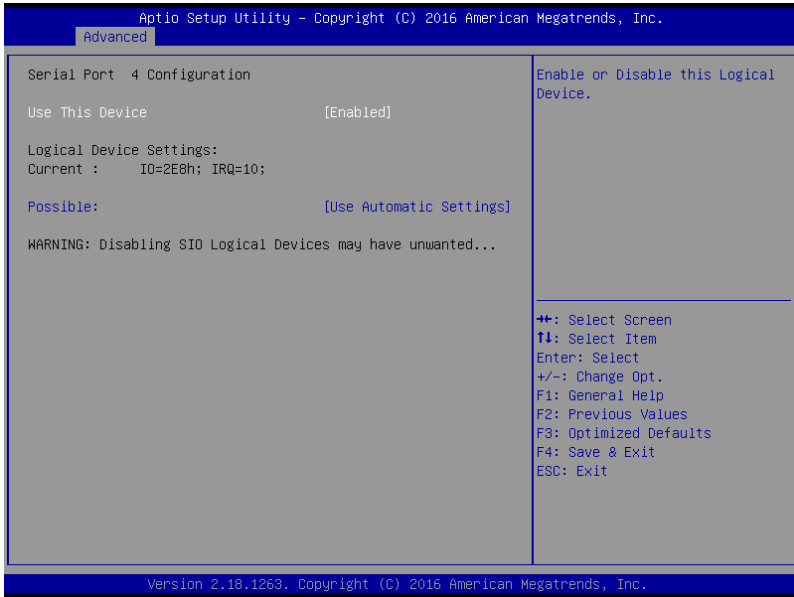


### 3.4.5.3 Serial Port 3 Configuration



| 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=11        |                                   |
|  | IO=2E8h; IRQ=11        |                                   |
| 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.  |                        |                                   |

### 3.4.5.4 Serial Port 4 Configuration



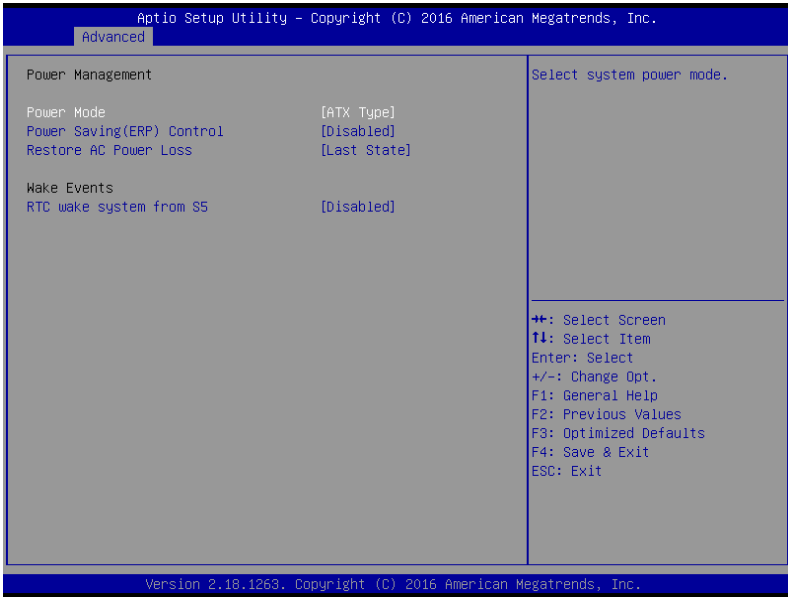
| Options Summary  |                        |                                   |
|--|------------------------|-----------------------------------|
| Use This Device  | Disable                |                                   |
|  | Enable                 | Optimal Default, Failsafe Default |
| Enable or Disable this Logical Device.   |                        |                                   |
| Possible:  | Use Automatic Settings | Optimal Default, Failsafe Default |
|  | IO=2E8h; IRQ=10        |                                   |
|  | IO=3E8h; IRQ=10        |                                   |
| Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts. |                        |                                   |

### 3.4.5.5 Parallel Port Configuration



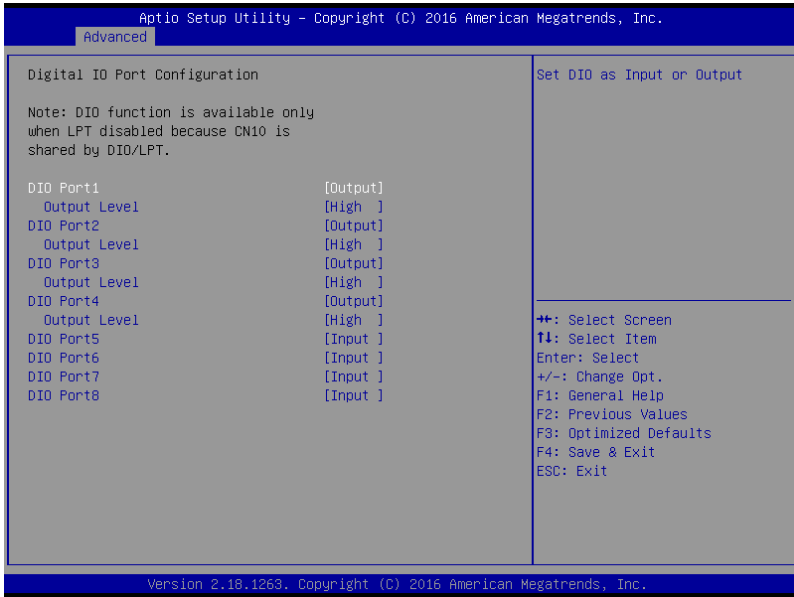
| Options Summary                        |         |                                   |
|--|---------|-----------------------------------|
| Use This Device                        | Disable |                                   |
|  | Enable  | Optimal Default, Failsafe Default |
| Enable or Disable this Logical Device. |         |                                   |

### 3.4.6 Power Management



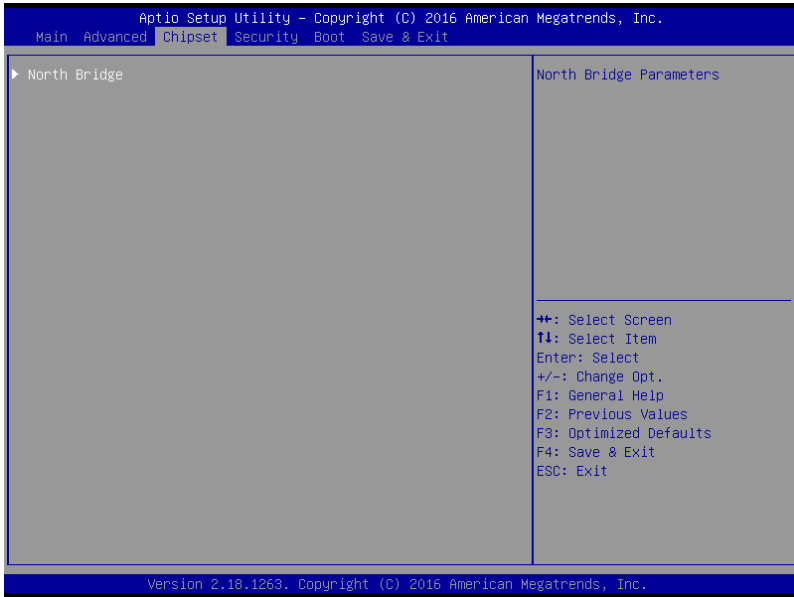
| Options Summary                                 |            |                                   |
|---|------------|-----------------------------------|
| Power Mode                                      | ATX Type   | Optimal Default, Failsafe Default |
|   | AT Type    |                                   |
| Select system power mode                        |            |                                   |
| Power Saving (ERP) Control                      | Disabled   | Optimal Default, Failsafe Default |
|   | Enabled    |                                   |
| Configure power mode for power saving function. |            |                                   |
| Restore AC Power Loss                           | Last State | Optimal Default, Failsafe Default |
|   | Always On  |                                   |
|   | Always Off |                                   |
|   |            |                                   |
| RTC wake system from S5                         | Disable    | Optimal Default, Failsafe Default |
|   | Fixed Time |                                   |
| Select system power mode                        |            |                                   |

### 3.4.7 Digital IO Port Configuration

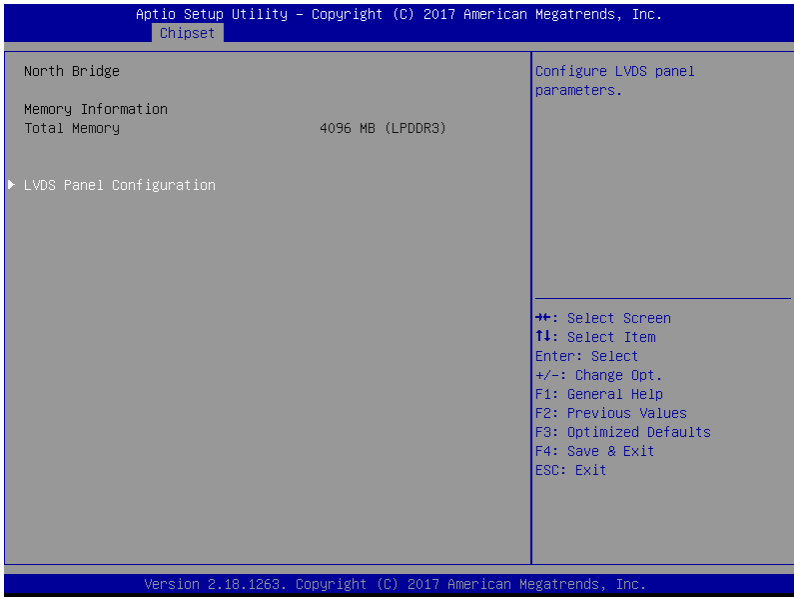


| Options Summary                         |        |                                   |
|---|--------|-----------------------------------|
| DIO Port*                               | Output |                                   |
|   | Input  |                                   |
| Set DIO as Input or Output              |        |                                   |
| Output Level                            | High   | Optimal Default, Failsafe Default |
|   | Low    |                                   |
| Set output level when DIO pin is output |        |                                   |

### 3.5 Setup Submenu: Chipset

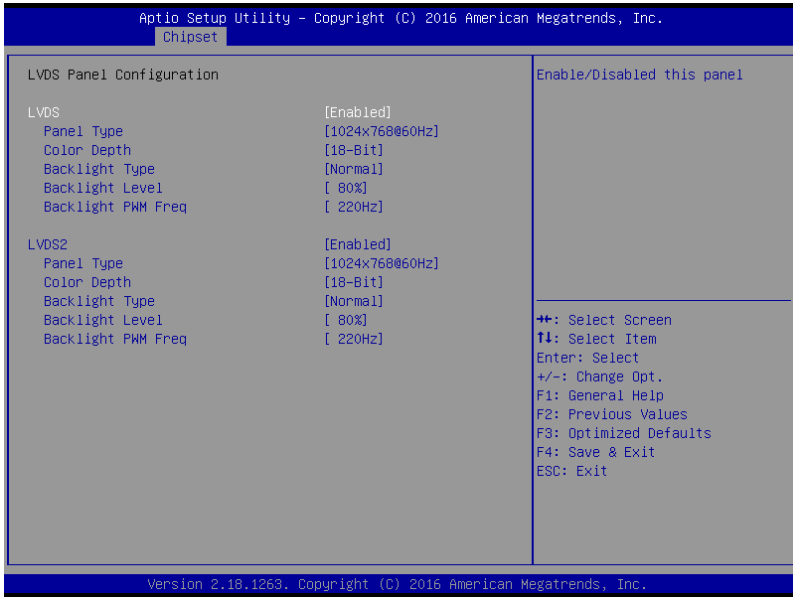


### 3.5.1 North Bridge



### 3.5.11 North Bridge: LVDS Panel Configuration

**Note:** LVDS2 only available for SKU with two LVDS ports

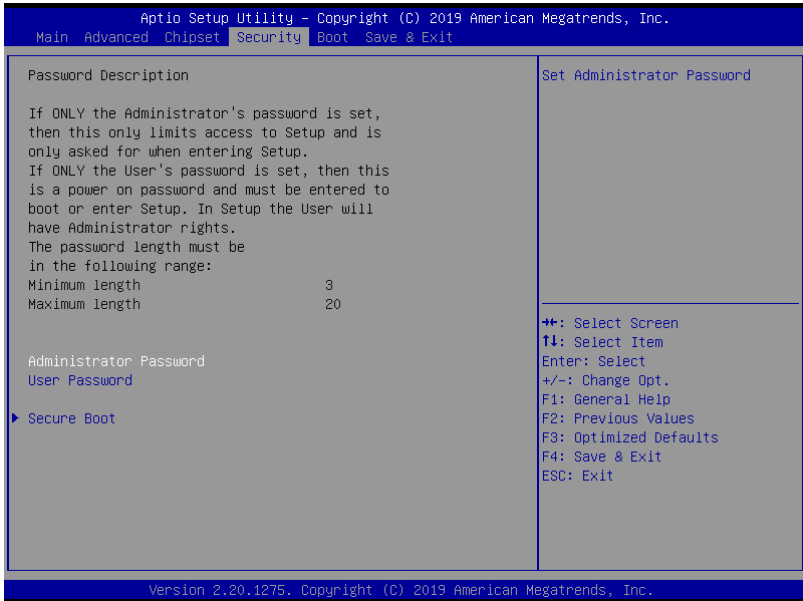


| Options Summary             |                |                                   |
|-----------------------------|----------------|-----------------------------------|
| LVDS                        | Disabled       | Optimal Default, Failsafe Default |
|                             | Enabled        |                                   |
| Enable/Disabled this panel. |                |                                   |
| LVDS Panel Type             | 640x480@60Hz   | Optimal Default, Failsafe Default |
|                             | 800x480@60Hz   |                                   |
|                             | 800x600@60Hz   |                                   |
|                             | 1024x600@60Hz  |                                   |
|                             | 1024x768@60Hz  |                                   |
|                             | 1280x768@60Hz  |                                   |
|                             | 1280x800@60Hz  |                                   |
|                             | 1280x1024@60Hz |                                   |
|                             | 1366x768@60Hz  |                                   |
|                             | 1440x900@60Hz  |                                   |
|                             | 1600x1200@60Hz |                                   |
|                             | 1920x1080@60Hz |                                   |
| 1920x1200@60Hz              |                |                                   |



| Options Summary  |          |                                   |
|--|----------|-----------------------------------|
| Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item. |          |                                   |
| <b>Color Depth</b>   | 18-bit   | Optimal Default, Failsafe Default |
|  | 24-bit   |                                   |
|  | 36-bit   |                                   |
|  | 48-bit   |                                   |
| Select panel type  |          |                                   |
| <b>Backlight Type</b>  | Normal   | Optimal Default, Failsafe Default |
|  | Inverted |                                   |
| Select backlight control signal type   |          |                                   |
| <b>Backlight Level</b>   | 0%       | Optimal Default, Failsafe Default |
|  | 10%      |                                   |
|  | 20%      |                                   |
|  | 30%      |                                   |
|  | 40%      |                                   |
|  | 50%      |                                   |
|  | 60%      |                                   |
|  | 70%      |                                   |
|  | 80%      |                                   |
|  | 90%      |                                   |
| 100%   |          |                                   |
| Select backlight control level   |          |                                   |
| <b>Backlight PWM Freq</b>  | 100Hz    | Optimal Default, Failsafe Default |
|  | 200Hz    |                                   |
|  | 220Hz    |                                   |
|  | 500Hz    |                                   |
|  | 1KHz     |                                   |
|  | 2.2KHz   |                                   |
|  | 6.5KHz   |                                   |
| Select PWM frequency of backlight control signal   |          |                                   |

## 3.6 Setup Submenu: Security



### Change User/Administrator Password

You can set an Administrator Password or User Password. An Administrator Password must be set before you can set a User Password. The password will be required during boot up, or when the user enters the Setup utility. A User Password does not provide access to many of the features in the Setup utility.

Select the password you wish to set, and press Enter. In the dialog box, enter your password (must be between 3 and 20 letters or numbers). Press Enter and retype your password to confirm. Press Enter again to set the password.

### Removing the Password

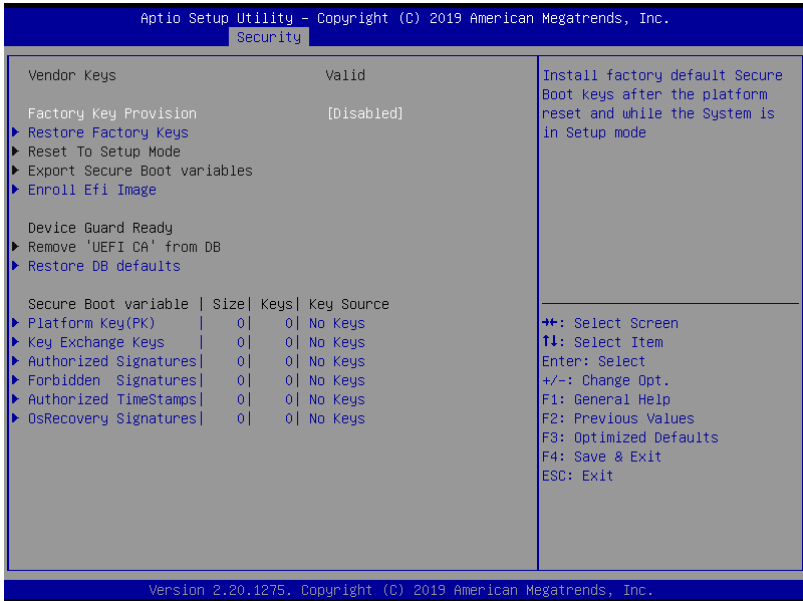
Select the password you want to remove and enter the current password. At the next dialog box press Enter to disable password protection.

### 3.6.1 Secure Boot



| Options Summary  |          |                                   |
|--|----------|-----------------------------------|
| <b>Secure Boot</b>   | 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           |          |                                   |
| <b>Secure Boot Mode</b>  | 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  |          |                                   |

### 3.6.1.1 Key Management

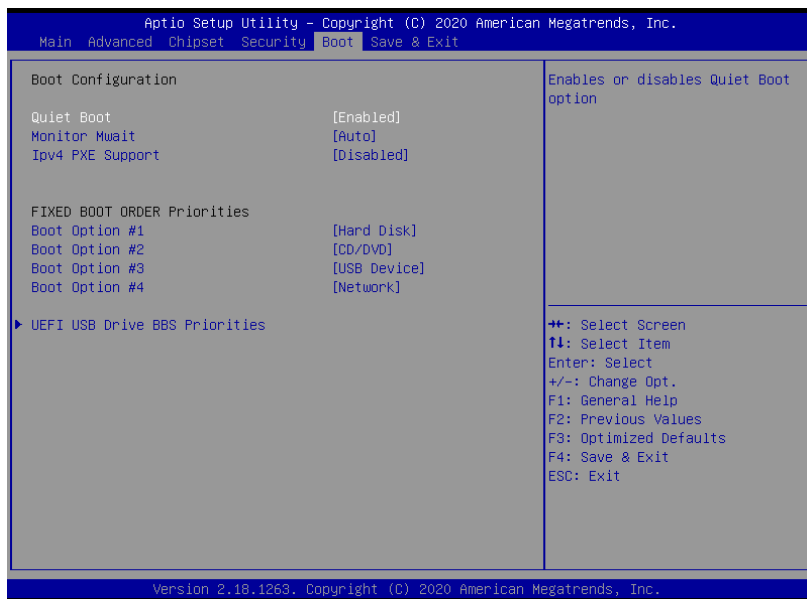


| Options Summary  |          |                                   |
|--|----------|-----------------------------------|
| Factory Key Provision  | Disabled | Optimal Default, Failsafe Default |
|  | Enabled  |                                   |
| Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. 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. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)                               |          |                                   |

Table Continues on Next Page...

| 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 Time Stamps  | 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  |         |  |

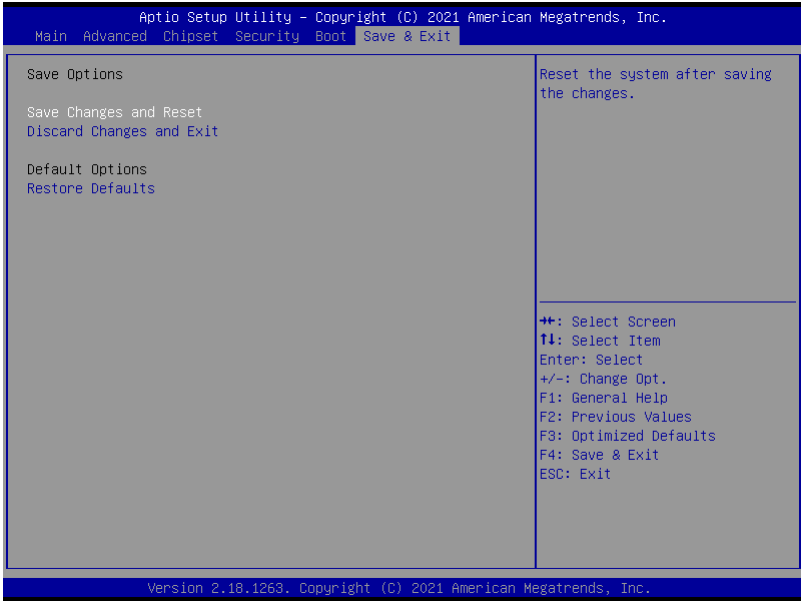
### 3.7 Setup Submenu: Boot



| Options Summary   |          |                                   |
|---|----------|-----------------------------------|
| Quiet Boot  | Disabled | Optimal Default, Failsafe Default |
|   | Enabled  |                                   |
| Enable/Disable showing boot logo.   |          |                                   |
| Monitor Mwait   | Disable  | Optimal Default, Failsafe Default |
|   | Enabled  |                                   |
|   | Auto     |                                   |
| Enable/Disable Monitor Mwait. To install Linux OS, please set this item to disable. |          |                                   |
| Ipv4 PXE Support  | Disabled | Optimal Default, Failsafe Default |
|   | Enabled  |                                   |
| Enable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot option will not be created. |          |                                   |

**Note:** When installing Linux OS, set the **Monitor Mwait** to Disabled

### 3.8 Setup Submenu: Save & Exit



## 3.9 User Notes

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When installing Linux OS, set the Monitor Mwait to Disabled (See Ch. 3.7 Boot)



# Chapter 4

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Drivers Installation

## 4.1 Drivers Download and Installation

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Drivers for the GENE-APL5 can be downloaded from the product page on the AAEON website by following this link:

<https://www.aaeon.com/en/p/embedded-single-board-computers-gene-apl5>

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

### Step 1 – Install Chipset Drivers

1. Open the **Step1 - Chipset** folder followed by **SetupChipset.exe**
2. Follow the instructions
3. Drivers will be installed automatically

### Step 2 – Install Graphics Drivers

1. Open the **Step2 - VGA** folder followed by **Setup.exe**
2. Follow the instructions
3. Drivers will be installed automatically

### Step 3 – Install LAN Drivers

1. Click on the **Step3 - LAN** folder and select your OS
2. Open the **.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

#### Step 4 – Install Audio Drivers

1. Open the **Step4 - Audio** folder followed by **0006-64bit\_Win7\_Win8\_Win81\_Win10\_R279.exe**
2. Follow the instructions
3. Drivers will be installed automatically

#### Step 5 – Install TXE Driver

1. Open the **Step5 - TXE** folder followed by **SetupTXE.exe**
2. Follow the instructions
3. Drivers will be installed automatically

#### Step 6 – Install Touch Driver

1. Open the **Step6 - Touch** folder followed by **Setup.exe**
2. Follow the instructions
3. Drivers will be installed automatically

#### Step 7 – Install GPIO Driver

1. Open the **Step6 - GPIO** folder followed by **SetupSerialIO.exe**
2. Follow the instructions
3. Drivers will be installed automatically




















# Appendix A

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I/O Information

## A.1 I/O Address Map

| DESKTOP-TGD04TV                       |                                   |
|---------------------------------------|-----------------------------------|
| Input/output (IO)                     |                                   |
| [0000000000000000 - 000000000000006F] | 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                      |
| [0000000000000060 - 0000000000000060] | Standard PS/2 Keyboard            |
| [0000000000000061 - 0000000000000061] | Motherboard resources             |
| [0000000000000063 - 0000000000000063] | Motherboard resources             |
| [0000000000000064 - 0000000000000064] | Standard PS/2 Keyboard            |
| [0000000000000065 - 0000000000000065] | Motherboard resources             |
| [0000000000000067 - 0000000000000067] | Motherboard resources             |
| [0000000000000070 - 0000000000000070] | Motherboard resources             |
| [0000000000000070 - 0000000000000077] | System CMOS/real time clock       |
| [0000000000000078 - 000000000000CF7]  | PCI Express Root Complex          |
| [0000000000000080 - 000000000000008F] | 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 - 0000000000002EF]  | Communications Port (COM4)  |
|  | [0000000000002F8 - 0000000000002FF]   | Communications Port (COM2)  |
|  | [0000000000003E8 - 0000000000003EF]   | Communications Port (COM3)  |
|  | [0000000000003F8 - 0000000000003FF]   | Communications Port (COM1)  |
|  | [000000000000400 - 00000000000047F]   | Motherboard resources   |
|  | [0000000000004D0 - 0000000000004D1]   | Programmable interrupt controller                                     |
|  | [000000000000500 - 0000000000005FE]   | Motherboard resources   |
|  | [000000000000680 - 00000000000069F]   | Motherboard resources   |
|  | [000000000000A00 - 000000000000A0F]   | Motherboard resources   |
|  | [000000000000A10 - 000000000000A1F]   | Motherboard resources   |
|  | [000000000000A20 - 000000000000A2F]   | Motherboard resources   |
|  | [000000000000D00 - 000000000000FFF]   | PCI Express Root Complex  |
|  | [000000000000D000 - 000000000000DFFF] | Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9 |
|  | [000000000000E000 - 000000000000EFFF] | Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8 |
|  | [000000000000F000 - 000000000000F03F] | Intel(R) HD Graphics  |
|  | [000000000000F040 - 000000000000F05F] | Intel(R) Celeron(R)/Pentium(R) Processor SMBUS - 5AD4                 |
|  | [000000000000F060 - 000000000000F07F] | Standard SATA AHCI Controller   |
|  | [000000000000F080 - 000000000000F083] | Standard SATA AHCI Controller   |
|  | [000000000000F090 - 000000000000F097] | Standard SATA AHCI Controller   |

## A.2 Memory Address Map



































| Address Range                           | Device Name   |
|---|---|
| [0000000000A0000 - 0000000000BFFFFF]    | PCI Express Root Complex  |
| [0000000000C0000 - 0000000000DFFFFF]    | PCI Express Root Complex  |
| [0000000000E0000 - 0000000000FFFFFF]    | PCI Express Root Complex  |
| [000000007B800001 - 000000007BFFFFFF]   | PCI Express Root Complex  |
| [000000007C000001 - 000000007CFFFFFF]   | PCI Express Root Complex  |
| [0000000080000000 - 000000008FFFFFFF]   | Intel(R) HD Graphics  |
| [0000000080000000 - 00000000CFFFFFFF]   | PCI Express Root Complex  |
| [0000000090000000 - 000000009FFFFFFF]   | Intel(R) HD Graphics  |
| [0000000091000000 - 0000000091FFFFFF]   | High Definition Audio Controller                                      |
| [0000000091100000 - 000000009111FFFFF]  | Intel(R) I211 Gigabit Network Connection                              |
| [0000000091100000 - 000000009111FFFFF]  | Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9 |
| [0000000091120000 - 0000000091123FFF]   | Intel(R) I211 Gigabit Network Connection                              |
| [0000000091200000 - 000000009121FFFFF]  | Intel(R) I211 Gigabit Network Connection #2                           |
| [0000000091200000 - 000000009122FFFFF]  | Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8 |
| [0000000091220000 - 0000000091223FFF]   | Intel(R) I211 Gigabit Network Connection #2                           |
| [0000000091300000 - 000000009130FFFFF]  | Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)         |
| [0000000091310000 - 0000000091313FFF]   | High Definition Audio Controller                                      |
| [0000000091314000 - 0000000091315FFF]   | Standard SATA AHCI Controller   |
| [0000000091318000 - 00000000913180FFF]  | Intel(R) Celeron(R)/Pentium(R) Processor SMBUS - 5AD4                 |
| [0000000091319000 - 00000000913197FFF]  | Standard SATA AHCI Controller   |
| [000000009131A000 - 000000009131A0FFF]  | Standard SATA AHCI Controller   |
| [000000009131E000 - 000000009131EFFF]   | Intel(R) Trusted Execution Engine Interface                           |
| [00000000D0C00000 - 00000000D0C00653]   | Intel(R) Serial IO GPIO Host Controller - INT3452                     |
| [00000000D0C40000 - 00000000D0C40763]   | Intel(R) Serial IO GPIO Host Controller - INT3452                     |
| [00000000D0C50000 - 00000000D0C5076B]   | Intel(R) Serial IO GPIO Host Controller - INT3452                     |
| [00000000D0C70000 - 00000000D0C70673]   | Intel(R) Serial IO GPIO Host Controller - INT3452                     |
| [00000000E0000000 - 00000000EFFFFFFF]   | Motherboard resources   |
| [00000000E0000000 - 00000000EFFFFFFF]   | PCI Express Root Complex  |
| [00000000FEA00000 - 00000000FEAFFFFFFF] | Motherboard resources   |
| [00000000FED00000 - 00000000FED003FF]   | High precision event timer  |
| [00000000FED01000 - 00000000FED01FFF]   | Motherboard resources   |
| [00000000FED03000 - 00000000FED03FFF]   | Motherboard resources   |
| [00000000FED06000 - 00000000FED06FFF]   | Motherboard resources   |
| [00000000FED08000 - 00000000FED09FFF]   | Motherboard resources   |
| [00000000FED1C000 - 00000000FED1CFFF]   | Motherboard resources   |
| [00000000FED40000 - 00000000FED44FFF]   | Trusted Platform Module 2.0   |
| [00000000FED80000 - 00000000FEDBFFFF]   | Motherboard resources   |
| [00000000FEE00000 - 00000000FEEFFFFFFF] | Motherboard resources   |

## A.3 IRQ Mapping Chart



































| IRQ | Device  |
|-----|---|
| 00  | System timer                                      |
| 01  | Standard PS/2 Keyboard                            |
| 03  | Communications Port (COM2)                        |
| 04  | Communications Port (COM1)                        |
| 08  | High precision event timer                        |
| 10  | Communications Port (COM4)                        |
| 11  | Communications Port (COM3)                        |
| 12  | PS/2 Compatible Mouse                             |
| 14  | Intel(R) Serial IO GPIO Host Controller - INT3452 |
| 14  | Intel(R) Serial IO GPIO Host Controller - INT3452 |
| 14  | Intel(R) Serial IO GPIO Host Controller - INT3452 |
| 14  | Intel(R) Serial IO GPIO Host Controller - INT3452 |
| 54  | Microsoft ACPI-Compliant System                   |
| 55  | Microsoft ACPI-Compliant System                   |
| 56  | Microsoft ACPI-Compliant System                   |
| 57  | Microsoft ACPI-Compliant System                   |
| 58  | Microsoft ACPI-Compliant System                   |
| 59  | Microsoft ACPI-Compliant System                   |
| 60  | Microsoft ACPI-Compliant System                   |
| 61  | Microsoft ACPI-Compliant System                   |
| 62  | Microsoft ACPI-Compliant System                   |
| 63  | Microsoft ACPI-Compliant System                   |
| 64  | Microsoft ACPI-Compliant System                   |
| 65  | Microsoft ACPI-Compliant System                   |
| 66  | Microsoft ACPI-Compliant System                   |
| 67  | Microsoft ACPI-Compliant System                   |
| 68  | Microsoft ACPI-Compliant System                   |
| 69  | Microsoft ACPI-Compliant System                   |
| 70  | Microsoft ACPI-Compliant System                   |
| 71  | Microsoft ACPI-Compliant System                   |
| 72  | Microsoft ACPI-Compliant System                   |
| 73  | Microsoft ACPI-Compliant System                   |
| 74  | Microsoft ACPI-Compliant System                   |



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|  |                        |                                 |
|--|------------------------|---------------------------------|
|   | (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) 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) 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 |


































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|  |                        |                                 |
|--|------------------------|---------------------------------|
|   | (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) 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) 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 |

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|   |                        |                                 |
|---|------------------------|---------------------------------|
|    | (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) 0x00000080 (128) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000081 (129) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000082 (130) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000083 (131) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000084 (132) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000085 (133) | Microsoft ACPI-Compliant System |
|    | (ISA) 0x00000086 (134) | Microsoft ACPI-Compliant System |
|   | (ISA) 0x00000087 (135) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000088 (136) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x00000089 (137) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x0000008A (138) | 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) 0x00000019 (25)  | High Definition Audio Controller                                      |
|  | (PCI) 0xFFFFFED (-19)  | Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)         |
|  | (PCI) 0xFFFFFEE (-18)  | Intel(R) I211 Gigabit Network Connection                              |
|  | (PCI) 0xFFFFFEF (-17)  | Intel(R) I211 Gigabit Network Connection                              |
|  | (PCI) 0xFFFFFFF0 (-16) | Intel(R) I211 Gigabit Network Connection                              |
|  | (PCI) 0xFFFFFFF1 (-15) | Intel(R) I211 Gigabit Network Connection                              |
|  | (PCI) 0xFFFFFFF2 (-14) | Intel(R) I211 Gigabit Network Connection                              |
|  | (PCI) 0xFFFFFFF3 (-13) | Intel(R) I211 Gigabit Network Connection                              |
|  | (PCI) 0xFFFFFFF4 (-12) | Intel(R) I211 Gigabit Network Connection #2                           |
|  | (PCI) 0xFFFFFFF5 (-11) | Intel(R) I211 Gigabit Network Connection #2                           |
|  | (PCI) 0xFFFFFFF6 (-10) | Intel(R) I211 Gigabit Network Connection #2                           |
|  | (PCI) 0xFFFFFFF7 (-9)  | Intel(R) I211 Gigabit Network Connection #2                           |
|  | (PCI) 0xFFFFFFF8 (-8)  | Intel(R) I211 Gigabit Network Connection #2                           |
|  | (PCI) 0xFFFFFFF9 (-7)  | Intel(R) I211 Gigabit Network Connection #2                           |
|  | (PCI) 0xFFFFFFFA (-6)  | Intel(R) Trusted Execution Engine Interface                           |
|  | (PCI) 0xFFFFFFFB (-5)  | Intel(R) HD Graphics  |
|  | (PCI) 0xFFFFFFFC (-4)  | Standard SATA AHCI Controller   |
|  | (PCI) 0xFFFFFFFD (-3)  | Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9 |
|  | (PCI) 0xFFFFFFE (-2)   | Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8 |

# Appendix B

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Mating Connectors

## B.1 List of Mating Connectors and Cables

The table notes mating connectors and available cables.

| Connector Label | Function                              | Mating Connector |                 | Available Cable           | Cable P/N  |
|-----------------|---------------------------------------|------------------|-----------------|---------------------------|------------|
|                 |                                       | Vendor           | Model No        |                           |            |
| CN1             | External AUX Power and PS_ON#         | JST              | PHR-6           | N/A                       | N/A        |
| CN2             | LVDS Port1 Inverter Connector         | JST              | PHR-5           | N/A                       | N/A        |
| CN3             | +5Vout Connector                      | JST              | PHR-2           | 2 Pins for SATA HDD Power | 1702150155 |
| CN4             | SATA Connector                        | Molex            | 887505318       | SATA Cable                | 1709070500 |
| CN5             | Power Input Connector                 | Molex            | 19211-0003      | Power Cable               | 170204010R |
| CN6             | External +5VSB Power Input and PS_ON# | JST              | XHP-3           | ATX Cable                 | 170220020B |
| CN7             | Audio Connector                       | Molex            | 51021-1000      | Audio Cable               | 1709100254 |
| CN8             | LVDS Port1 Connector                  | HIROSE           | DF13-30DS-1.25C | N/A                       | N/A        |
| CN9             | COM Port #2 Connector                 | Molex            | 51021-0900      | Serial Port Cable         | 1701090150 |

| Connector Label | Function                     | Mating Connector |                 | Available Cable     | Cable P/N  |
|-----------------|------------------------------|------------------|-----------------|---------------------|------------|
|                 |                              | Vendor           | Model No        |                     |            |
| CN10            | LPT or Digital I/O Connector | Molex            | 51110-2650      | Parallel Port Cable | 1701260200 |
| CN11            | LPC Connector                | JST              | SHR-12V-S-B     | AAEON LPC Cable     | 1703120130 |
| CN12            | COM Port #3 Connector        | Molex            | 51021-0900      | Serial Port Cable   | 1701090150 |
| CN14            | COM Port #4 Connector        | Molex            | 51021-0900      | Serial Port Cable   | 1701090150 |
| CN15            | PS/2 KB/MS Connector         | JST              | PHDR-06VS       | PS/2 KB/MS Cable    | 1700060152 |
| CN16            | USB Port #2 Connector        | Molex            | 51021-0500      | USB Cable           | 1700050207 |
| CN17            | USB Port #3 Connector        | Molex            | 51021-0500      | USB Cable           | 1700050207 |
| CN19            | USB Port #4 Connector        | Molex            | 51021-0500      | USB Cable           | 1700050207 |
| CN20            | USB Port #5 Connector        | Molex            | 51021-0500      | USB Cable           | 1700050207 |
| CN21            | LVDS Port2 Connector         | HIROSE           | DF13-30DS-1.25C | N/A                 | N/A        |
| CN22            | Touch Screen Connector       | JST              | SHR-9V-S-B      | N/A                 | N/A        |
| CN23            | CPU Fan Connector            | Molex            | 22-01-2035      | N/A                 | N/A        |

| Connector Label | Function                            | Mating Connector |            | Available Cable  | Cable P/N  |
|-----------------|-------------------------------------|------------------|------------|------------------|------------|
|                 |                                     | Vendor           | Model No   |                  |            |
| CN24            | LVDS Port1<br>Inverter<br>Connector | JST              | PHR-5      | N/A              | N/A        |
| CN30            | External RTC<br>Connector           | Molex            | 51021-0200 | Battery<br>Cable | 175011301C |



# Appendix C

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Electrical Specifications for I/O Ports

## C.1 Electrical Specifications for I/O Ports

| Connector Label | Signal Name      | Rate Output                | I/O                                       |
|-----------------|------------------|----------------------------|---|
| CN2             | +5V/+12V         | +5V/1.5A or +12V/1.5A      | LVDS Port1 Inverter / Backlight Connector |
| CN3             | +5V              | +5V/1A                     | +5V Output for SATA HDD                   |
| CN8             | +3.3V/+5V        | +3.3V/2A or +5V/2A         | LVDS Port1                                |
| CN9             | +5V/+12V         | +5V/1A or +12V/1A          | COM Port 2                                |
| CN10            | +5V              | +5V/1A                     | Digital IO Port                           |
| CN12            | +5V/+12V         | +5V/1A or +12V/1A          | COM Port 3                                |
| CN16            | +5VSB            | +5V/0.5A                   | USB 2.0 Ports 2                           |
| CN17            | +5VSB            | +5V/0.5A                   | USB 2.0 Ports 3                           |
| CN19            | +5VSB            | +5V/0.5A                   | USB 2.0 Ports 4                           |
| CN20            | +5VSB            | +5V/0.5A                   | USB 2.0 Ports 5                           |
| CN21            | +3.3V/+5V        | +3.3V/2A or +5V/2A         | LVDS Port2                                |
| CN23            | +12V             | +12V/0.5A                  | CPU FAN                                   |
| CN24            | +5V/+12V         | +5V/1.5A or +12V/1.5A      | LVDS Port2 Inverter / Backlight Connector |
| CN25            | +5VSB            | +5V/1A (per channel)       | USB Ports 0 and 1                         |
| CN34            | +3.3V            | +3.3V/1A                   | mSATA (Full-Mini Card)                    |
| CN33            | +3.3VSB<br>+1.5V | +3.3V/1.1A<br>+1.5V/0.375A | Mini-Card Slot (Half-Mini Card)           |