

PICO-KBU4-SEMI

PICO-SEMI System

User's Manual 4th Ed

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Packing List

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

| Item | Quantity |
|------------------|----------|
| ● PICO-KBU4-SEMI | 1 |

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

About this Document

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

Users may refer to the product page at AAEON.com for the latest version of this document.

Safety Precautions

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

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any AC supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.

17. If any of the following situations arises, please 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 WHERE THE STORAGE TEMPERATURE IS BELOW -20°C (-4°F) OR ABOVE 60°C (140°F) 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.

产品中有毒有害物质或元素名称及含量

AAEON System

QO4-381 Rev.A0

| 部件名称 | 有毒有害物质或元素 | | | | | |
|-----------------|-----------|-----------|-----------|-----------------|---------------|-----------------|
| | 铅 (Pb) | 汞 (Hg) | 镉 (Cd) | 六价铬 (Cr(VI)) | 多溴联苯 (PBB) | 多溴二苯 醚(PBDE) |
| 印刷电路板 及其电子组件 | × | ○ | ○ | ○ | ○ | ○ |
| 外部信号 连接器及线材 | × | ○ | ○ | ○ | ○ | ○ |
| 外壳 | ○ | ○ | ○ | ○ | ○ | ○ |
| 中央处理器 与内存 | × | ○ | ○ | ○ | ○ | ○ |
| 硬盘 | × | ○ | ○ | ○ | ○ | ○ |
| 液晶模块 | × | × | ○ | ○ | ○ | ○ |
| 光驱 | × | ○ | ○ | ○ | ○ | ○ |
| 触控模块 | × | ○ | ○ | ○ | ○ | ○ |
| 电源 | × | ○ | ○ | ○ | ○ | ○ |
| 电池 | × | ○ | ○ | ○ | ○ | ○ |

本表格依据 SJ/T 11364 的规定编制。

○：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 GB/T 26572 标准规定的限量要求以下。

×：表示该有害物质的某一均质材料超出了 GB/T 26572 的限量要求，然而该部件仍符合欧盟指令 2011/65/EU 的规范。

备注：

一、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。

二、上述部件物质中央处理器、内存、硬盘、光驱、电源为选购品。

三、上述部件物质液晶模块、触控模块仅一体机产品适用。

Hazardous and Toxic Materials List

AAEON System

QO4-381 Rev.A0

| Component Name | Hazardous or Toxic Materials or Elements | | | | | |
|--|--|--------------|--------------|------------------------------|---------------------------------|--|
| | Lead (Pb) | Mercury (Hg) | Cadmium (Cd) | Hexavalent Chromium (Cr(VI)) | Polybrominated biphenyls (PBBs) | Polybrominated diphenyl ethers (PBDEs) |
| PCB and Components | X | O | O | O | O | O |
| Wires & Connectors for Ext.Connections | X | O | O | O | O | O |
| Chassis | O | O | O | O | O | O |
| CPU & RAM | X | O | O | O | O | O |
| HDD Drive | X | O | O | O | O | O |
| LCD Module | X | X | O | O | O | O |
| Optical Drive | X | O | O | O | O | O |
| Touch Control Module | X | O | O | O | O | O |
| PSU | X | O | O | O | O | O |
| Battery | X | O | O | O | O | O |

This form is prepared in compliance with the provisions of SJ/T 11364.
 O: The level of toxic or hazardous materials present in this component and its parts is below the limit specified by GB/T 26572.
 X: The level of toxic of hazardous materials present in the component exceed the limits specified by GB/T 26572, but is still in compliance with EU Directive 2011/65/EU (RoHS 2).

Notes:

1. The Environment Friendly Use Period indicated by labelling on this product is applicable only to use under normal conditions.
2. Individual components including the CPU, RAM/memory, HDD, optical drive, and PSU are optional.
3. LCD Module and Touch Control Module only applies to certain products which feature these components.

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Chapter 1

Product Specifications

1.1 Specifications

System

| | |
|---------------------|---|
| Form Factor | Pico-ITX |
| Processor | 7th Gen Intel® Core™ U series |
| System Memory | DDR4 SODIMM Slot x 1, up to 16 GB |
| Chipset | Intel® SoC |
| Ethernet | Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2 |
| BIOS | AMI BIOS |
| Wake on LAN | Yes |
| Watchdog Timer | 255 Level |
| Expansion Interface | M.2 2230 E-Key (For Wi-Fi/Bluetooth Module) |
| Power Requirement | Normal: +12V |
| Power Supply Type | Lockable |
| Power Consumption | I7-7600 with DDR4 16GB, 12V at 2.3A |
| System Size | 4.80" x 3.18" x 1.98" (122mm x 80.8mm x 50.4mm) |
| Gross Weight | 0.88 lb. (0.4 kg) |
| Operation Temp. | 32°F ~ 122°F (0°C ~ 50°C) |
| Storage Temperature | -40°F ~ 176°F (-40°C ~ 80°C) |
| Humidity | 0% ~ 90% relative humidity, non-condensing |
| MTBF | 163,000 |
| OS Support | Windows® 10 (64 bit) |

Display

| | |
|--------------|--------------|
| Chipset | Intel® SoC |
| Video Output | HDMI 1.4 x 1 |

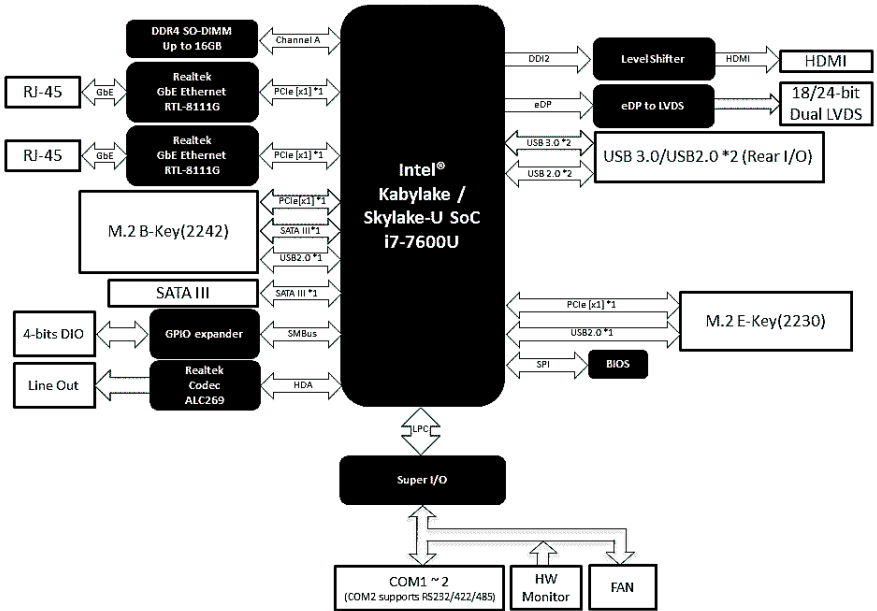
I/O

| | |
|----------------|---|
| Storage/SSD | M.2 2242 B-Key |
| USB Port | USB 3.2 Gen 1 x 2 (Rear IO) |
| Serial Port | Optional |
| Audio | — |
| Expansion Slot | RS-232 x 1, RS-232/422/485 x 1 (Optional) |

Certification

| | |
|---------------|---------|
| Certification | CE, FCC |
|---------------|---------|

1.2 Block Diagram

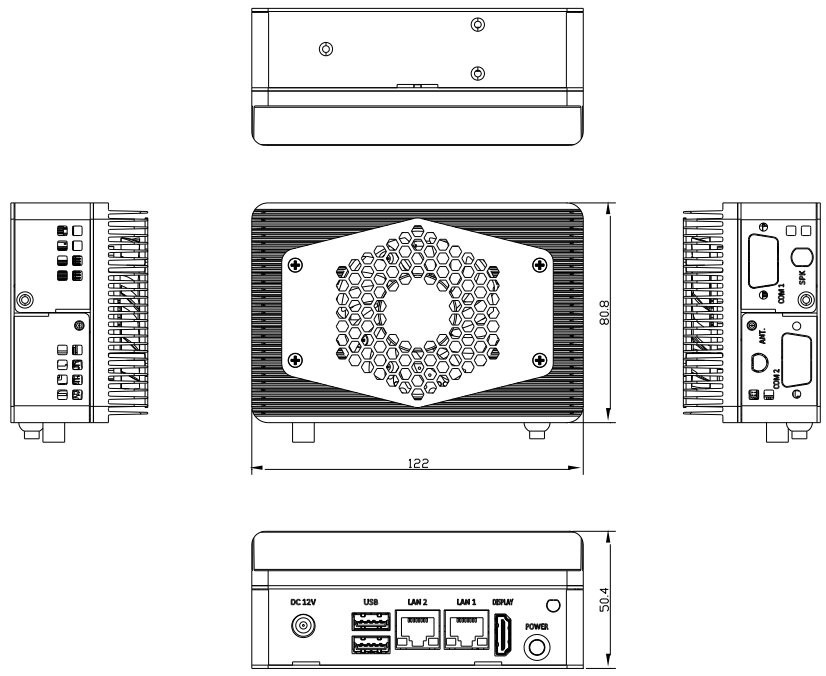


Chapter 2

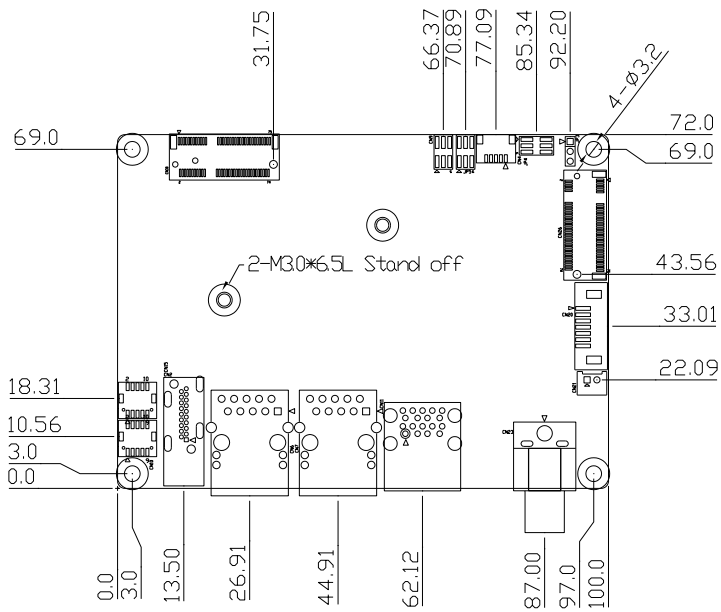
Hardware Information

2.1 Dimensions

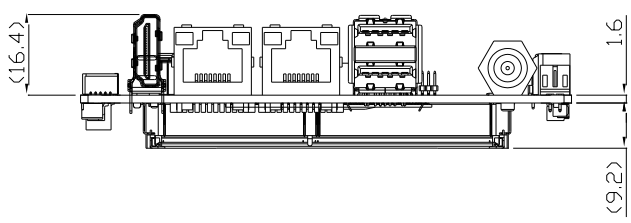
System



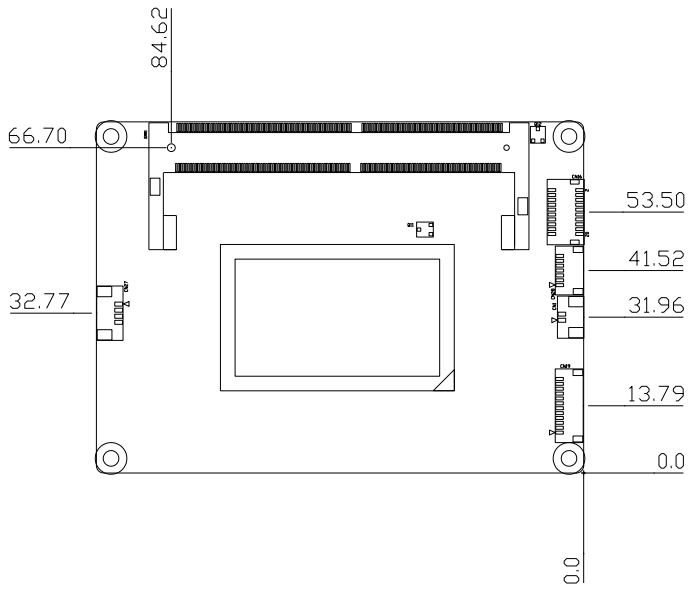
Board
Component Side



Component Side



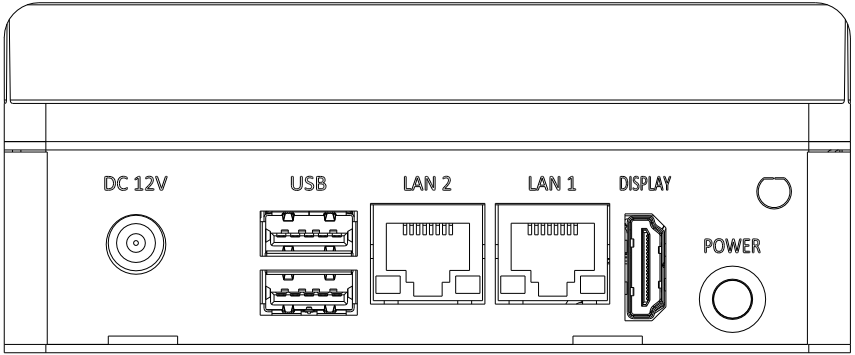
Solder Side



Solder Side

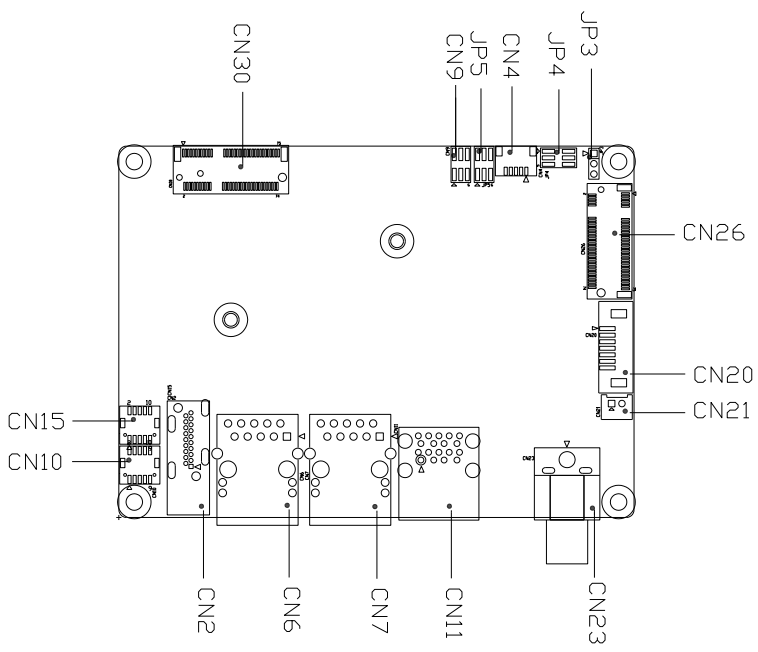
2.2 Jumpers and Connectors

System

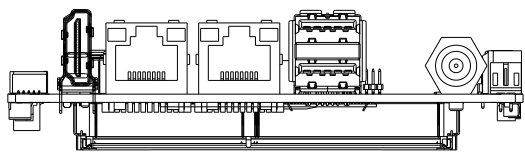


Board

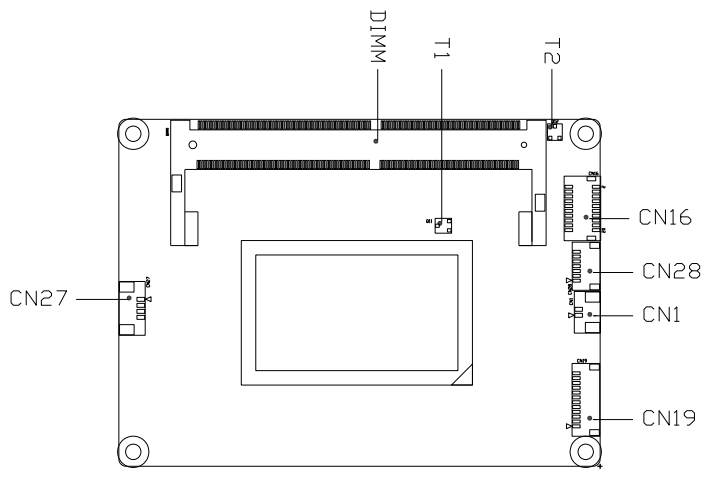
Component Side



Component Side



Solder Side



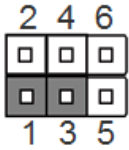
Solder Side

2.3 List of Jumpers

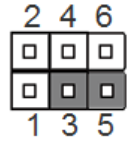
Please refer to the table below for all of the board's jumpers that you can configure for your application

| Label | Function |
|-------|---|
| JP5 | Clear CMOS Jumper Auto Power Button Enable/Disable Selection |

2.3.1 Clear CMOS Jumper (JP5)

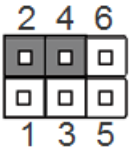


Normal (Default)

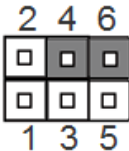


Clear CMOS

2.3.2 Auto Power Button Enable/Disable Selection (JP5)



Enable Auto Power Button



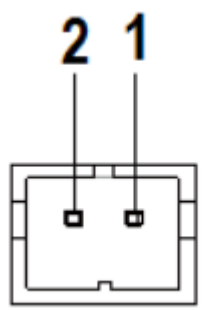
**Disable Auto Power Button
(Default)**

2.4 List of Connectors

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

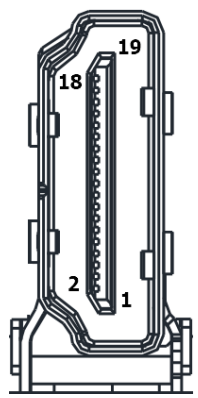
| Label | Function |
|-------|-----------------------------|
| CN1 | RTC Battery Connector |
| CN2 | HDMI |
| CN6 | LAN (RJ-45) Port 1 |
| CN7 | LAN (RJ-45) Port 2 |
| CN10 | USB 2.0 Port 1/2 |
| CN11 | USB 2.0/3.0 Port 3 Port 0/1 |
| CN15 | Front Panel |
| CN16 | COM Port 1/ COM Port 2 |
| CN19 | LPC Port |
| CN23 | +12V DC Jack |
| CN26 | M.2 (B-Key) Connector |
| CN27 | Smart FAN Connector |
| CN30 | M.2 (E-Key) Connector |
| DIMM1 | DDR4 SO-DIMM Slot |

2.4.1 RTC Battery Connector (CN1)



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

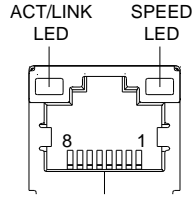
2.4.2 HDMI (CN2)



| Pin | Pin Name | Signal Type | Signal level |
|-----|-----------|-------------|--------------|
| 1 | HDMI_TX2+ | DIFF | |
| 2 | GND | GND | GND |
| 3 | HDMI_TX2- | DIFF | |

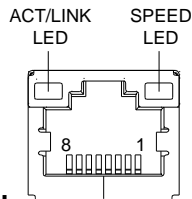
| Pin | Pin Name | Signal Type | Signal level |
|-----|-----------|-------------|--------------|
| 4 | HDMI_TX1+ | DIFF | |
| 5 | GND | GND | GND |
| 6 | HDMI_TX1- | DIFF | |
| 7 | HDMI_TX0+ | DIFF | |
| 8 | GND | GND | GND |
| 9 | HDMI_TX0- | DIFF | |
| 10 | HDMI_CLK+ | DIFF | |
| 11 | GND | GND | GND |
| 12 | HDMI_CLK- | DIFF | |
| 13 | NC | | |
| 14 | NC | | |
| 15 | DDC_CLK | I/O | +5V |
| 16 | DDC_DATA | I/O | +5V |
| 17 | GND | GND | GND |
| 18 | +5V | PWR | +5V |
| 19 | HDMI_HPD | | |

2.4.3 LAN (RJ-45) Port 1 (CN6)



| 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 | |

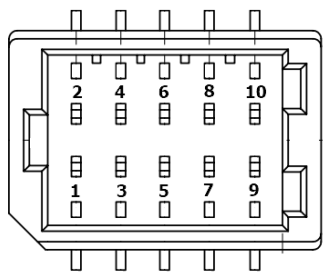
2.4.4 LAN (RJ-45) Port2 (CN7)



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

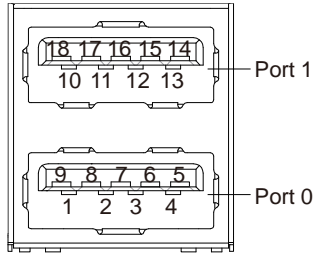
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 4 | MDI2+ | DIFF | |
| 5 | MDI2- | DIFF | |
| 6 | MDI1- | DIFF | |
| 7 | MDI3+ | DIFF | |
| 8 | MDI3- | DIFF | |

2.4.5 USB 2.0 Port 1/2 (CN10)



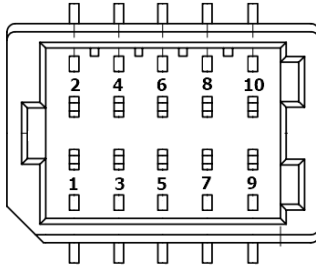
| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | +V5SB | PWR | +5V |
| 2 | +V5SB | PWR | +5V |
| 3 | USB1_D- | DIFF | |
| 4 | USB2_D- | DIFF | |
| 5 | USB1_D+ | DIFF | |
| 6 | USB2_D+ | DIFF | |
| 7 | GND | GND | GND |
| 8 | GND | GND | GND |
| 9 | GND | GND | GND |
| 10 | GND | GND | GND |

2.4.6 USB 2.0/3.0 Port 3 Port 3/4 (CN11)



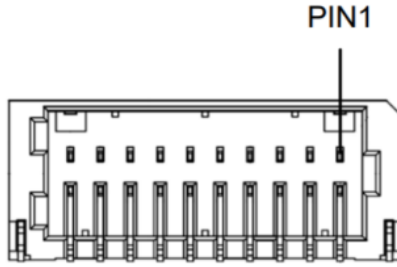
| Pin | Pin Name | Signal Type | Signal Level |
|-----|------------|-------------|--------------|
| 1 | +V5SB | PWR | +5V |
| 2 | USB3_D- | DIFF | |
| 3 | USB3_D+ | DIFF | |
| 4 | GND | GND | GND |
| 5 | USB3_SSRX- | DIFF | |
| 6 | USB3_SSRX+ | DIFF | |
| 7 | GND | GND | GND |
| 8 | USB3_SSTX- | DIFF | |
| 9 | USB3_SSTX+ | DIFF | |
| 10 | +V5SB | PWR | +5V |
| 11 | USB4_D- | DIFF | |
| 12 | USB4_D+ | DIFF | |
| 13 | GND | GND | GND |
| 14 | USB4_SSRX- | DIFF | |
| 15 | USB4_SSRX+ | DIFF | |
| 16 | GND | GND | GND |
| 17 | USB4_SSTX- | DIFF | |
| 18 | USB4_SSTX+ | DIFF | |

2.4.7 Front Panel Port (CN15)



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

2.4.8 COM Port1/ COM Port2 (CN16)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | LOUT_L | OUT | |
| 2 | LOUT_R | OUT | |
| 3 | GND | GND | GND |
| 4 | AGND | GND | GND |
| 5 | DCDA | IN | |
| 6 | DCDB | IN | |
| 7 | RXA | IN | |
| 8 | RXB | IN | |
| 9 | TXA | OUT | ±9V |
| 10 | TXB | OUT | ±9V |
| 11 | DTRA | OUT | ±9V |
| 12 | DTRB | OUT | ±9V |
| 13 | DSRA | IN | |
| 14 | DSRB | IN | |
| 15 | RTSA | OUT | ±9V |
| 16 | RTSB | OUT | ±9V |
| 17 | CTSA | IN | |
| 18 | CTSB | IN | |

| Pin | Pin Name | Signal Type | Signal Level |
|-----|--------------|-------------|--------------|
| 19 | RIA/+5V/+12V | IN/ PWR | +5V/+12V |
| 20 | RIB/+5V/+12V | IN/ PWR | +5V/+12V |

COM Port 2 RS-422

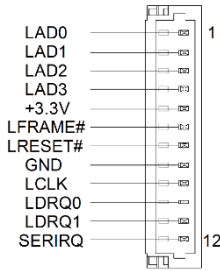
| Pin | Pin Name | Signal Type | Signal Level |
|-----|-----------|-------------|--------------|
| 3 | GND | GND | GND |
| 6 | RS422_TX- | OUT | ±5V |
| 8 | RS422_TX+ | OUT | ±5V |
| 10 | RS422_RX+ | IN | |
| 12 | RS422_RX- | IN | |

COM Port 2 RS-485

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 3 | GND | GND | GND |
| 6 | RS485_D- | I/O | ±5V |
| 8 | RS485_D+ | I/O | ±5V |

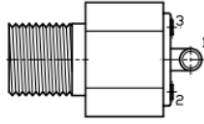
- ※ COM2 RS-232/422/485 can be set by BIOS setting. Default is RS-232.
- ※ COM2 RI/+5V/+12V function can be set by BOM (R317-RI/R316-+12V/R318-+5V)

2.4.9 LPC Port (CN19)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|-----------------------|-------------|--------------|
| 1 | LAD0 | IN/OUT | +3.3V |
| 2 | LAD1 | IN/OUT | +3.3V |
| 3 | LAD2 | IN/OUT | +3.3V |
| 4 | LAD3 | IN/OUT | +3.3V |
| 5 | +V3.3S | PWR | +3.3V |
| 6 | LFRAME# | IN | |
| 7 | LRESET# | OUT | +3.3V |
| 8 | GND | GND | GND |
| 9 | LCLK | OUT | |
| 10 | SMB_DATA/ I2C_SDA | IN/OUT | |
| 11 | SMB_CLK/ I2C_CLK | OUT | |
| 12 | SMB_ALERT/ INT_SERIRQ | IN | +3.3V |

2.4.10 +12V DC Jack (CN23)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | +12V | PWR | +12V |
| 2 | GND | GND | GND |

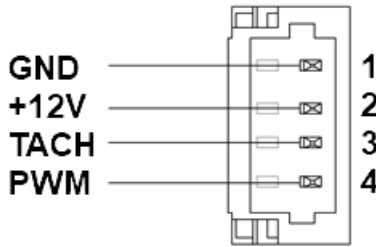
2.4.11 M.2 (B-Key) Connector (CN26)

| Pin | Pin Name | Signal Type | Signal Level |
|-----|-------------|-------------|--------------|
| 1 | GND | GND | GND |
| 2 | +V3.3S | PWR | +3.3V |
| 3 | GND | GND | GND |
| 4 | +V3.3S | PWR | +3.3V |
| 5 | GND | GND | GND |
| 6 | NC | NC | |
| 7 | USB2P_10 | IN/OUT | |
| 8 | W_DISABLE0# | OUT | |
| 9 | USB2N_10 | IN/OUT | |
| 10 | SSD_LED# | IN | |
| 11 | GND | GND | GND |
| 20 | NC | NC | |
| 21 | GND | GND | GND |
| 22 | NC | NC | |
| 23 | NC | NC | |

| Pin | Pin Name | Signal Type | Signal Level |
|-----|------------|-------------|--------------|
| 24 | NC | NC | |
| 25 | NC | NC | |
| 26 | NC | NC | |
| 27 | GND | GND | GND |
| 28 | NC | NC | |
| 29 | PCIE11_RXN | DIFF | |
| 30 | NC | NC | |
| 31 | PCIE11_RXP | DIFF | |
| 32 | NC | NC | |
| 33 | GND | GND | GND |
| 34 | NC | NC | |
| 35 | PCIE11_TXN | DIFF | |
| 36 | NC | NC | |
| 37 | PCIE11_TXP | DIFF | |
| 38 | NC | NC | |
| 39 | GND | GND | GND |
| 40 | NC | NC | |
| 41 | SATA2_RXP | DIFF | |
| 42 | NC | NC | |
| 43 | SATA2_RXN | DIFF | |
| 44 | NC | NC | |
| 45 | GND | GND | GND |
| 46 | NC | NC | |
| 47 | SATA2_TXN | DIFF | |
| 48 | NC | NC | |
| 49 | SATA2_TXP | DIFF | |

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------------|-------------|--------------|
| 50 | BUF_PLT_RST# | OUT | |
| 51 | GND | GND | GND |
| 52 | PCIE_CLK_REQ3# | IN | |
| 53 | PCIE3_CLKN | DIFF | |
| 54 | PCIE_WAKE# | IN | |
| 55 | PCIE3_CLKP | DIFF | |
| 56 | NC | NC | |
| 57 | GND | GND | GND |
| 58 | NC | NC | |
| 59 | NC | NC | |
| 60 | NC | NC | |
| 61 | NC | NC | |
| 62 | NC | NC | |
| 63 | NC | NC | |
| 64 | NC | NC | |
| 65 | NC | NC | |
| 66 | NC | NC | |
| 67 | NC | NC | |
| 68 | NC | NC | |
| 69 | GND | GND | GND |
| 70 | +V3.3S | PWR | +3.3V |
| 71 | GND | GND | GND |
| 72 | +V3.3S | PWR | +3.3V |
| 73 | GND | GND | GND |
| 74 | +V3.3S | PWR | +3.3V |
| 75 | NC | NC | |

2.4.12 Smart FAN Connector (CN27)



| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | GND | GND | GND |
| 2 | +V3.3S | PWR | +12V |
| 3 | TACH | IN | |
| 4 | PWM | OUT | |

2.4.13 M.2 (E-Key) Connector (CN30)

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 1 | GND | GND | GND |
| 2 | +V3.3A | PWR | +3.3V |
| 3 | USB2P_5 | IN/OUT | |
| 4 | +V3.3A | PWR | +3.3V |
| 5 | USB2N_5 | IN/OUT | |
| 6 | NC | NC | |
| 7 | GND | GND | GND |
| 8 | NC | NC | |
| 9 | NC | NC | |
| 10 | NC | NC | |

| Pin | Pin Name | Signal Type | Signal Level |
|-----|-----------|-------------|--------------|
| 11 | NC | NC | |
| 12 | NC | NC | |
| 13 | NC | NC | |
| 14 | NC | NC | |
| 15 | NC | NC | |
| 16 | NC | NC | |
| 17 | NC | NC | |
| 18 | NC | NC | |
| 19 | NC | NC | |
| 20 | NC | NC | |
| 21 | NC | NC | |
| 22 | NC | NC | |
| 23 | NC | NC | |
| 32 | NC | NC | |
| 33 | GND | GND | GND |
| 34 | NC | NC | |
| 35 | PCIE1_TXP | DIFF | |
| 36 | NC | NC | |
| 37 | PCIE1_TXN | DIFF | |
| 38 | NC | NC | |
| 39 | GND | GND | GND |
| 40 | NC | NC | |
| 41 | PCIE1_RXP | DIFF | |
| 42 | NC | NC | |
| 43 | PCIE1_RXN | DIFF | |
| 44 | NC | NC | |

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------------|-------------|--------------|
| 45 | GND | GND | GND |
| 46 | NC | NC | |
| 47 | PCIE1_CLKP | DIFF | |
| 48 | NC | NC | |
| 49 | PCIE1_CLKN | DIFF | |
| 50 | NC | NC | |
| 51 | GND | GND | GND |
| 52 | BUF_PLT_RST# | OUT | |
| 53 | PCIE_CLK_REQ1# | IN | |
| 54 | W_DISABLE1# | OUT | |
| 55 | PCIE_WAKE# | IN | |
| 56 | W_DISABLE2# | OUT | |
| 57 | GND | GND | GND |
| 58 | NC | NC | |
| 59 | NC | NC | |
| 60 | NC | NC | |
| 61 | NC | NC | |
| 62 | NC | NC | |
| 63 | GND | GND | GND |
| 64 | NC | NC | |
| 65 | NC | NC | |
| 66 | NC | NC | |
| 67 | NC | NC | |
| 68 | NC | NC | |
| 69 | GND | GND | GND |
| 70 | NC | NC | |

| Pin | Pin Name | Signal Type | Signal Level |
|-----|----------|-------------|--------------|
| 71 | NC | NC | |
| 72 | +V3.3S | PWR | +3.3V |
| 73 | NC | NC | |
| 74 | +V3.3S | PWR | +3.3V |
| 75 | GND | GND | GND |

2.4.14 DDR4 SO-DIMM Slot (DIMM1)

Standard specification

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 system will output a few short beeps or display an error message. The system 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 system 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 or <ESC> immediately. This will allow you to enter Setup.

Main

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

Advanced

Enable/disable boot option for legacy network devices.

Chipset

Host bridge parameters.

Security

Set setup administrator password.

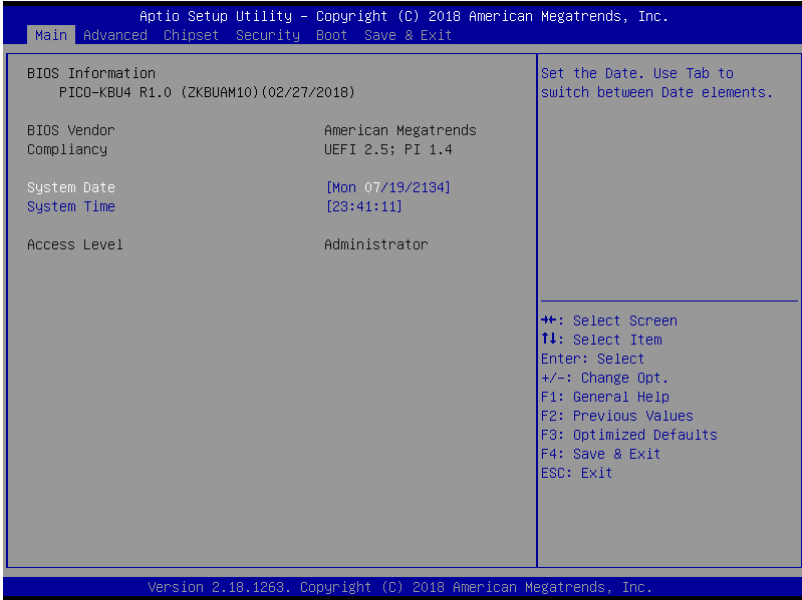
Boot

Enables/disables quiet boot option.

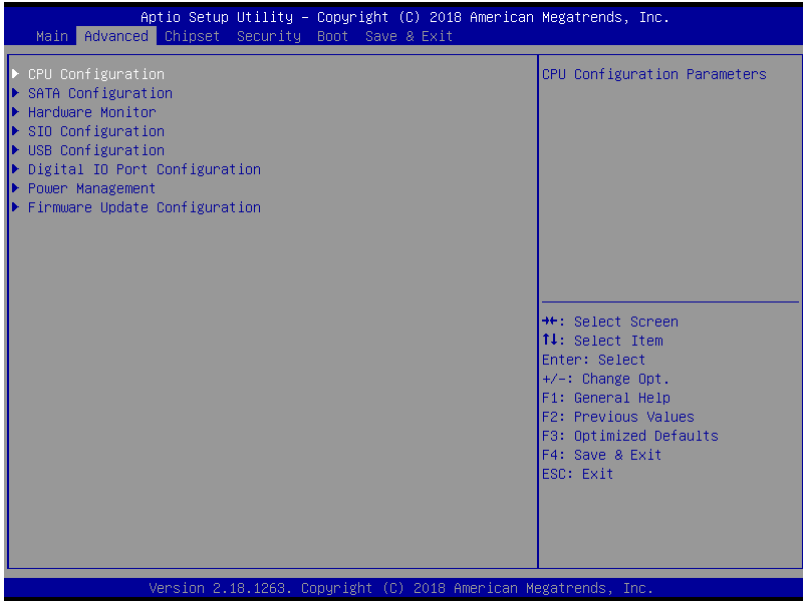
Save & Exit

Exit system setup after saving the changes.

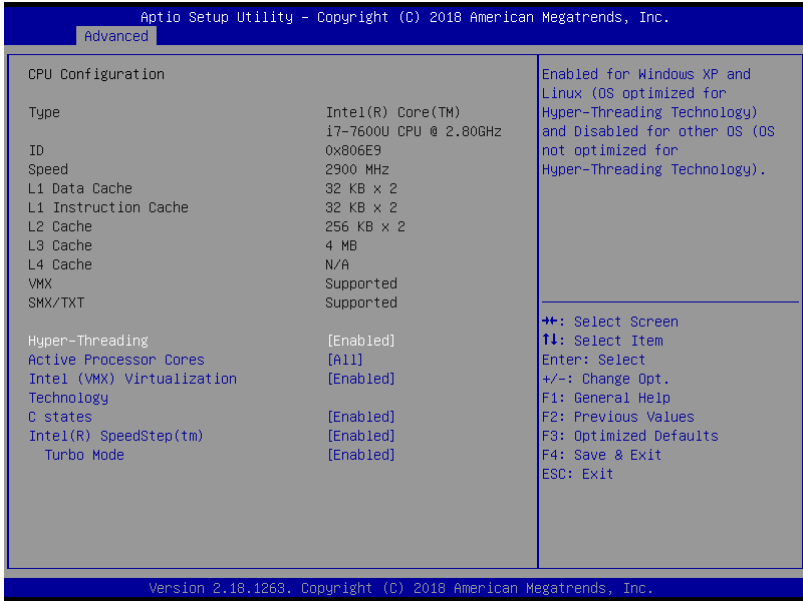
3.3 Setup Submenu: Main



3.4 Setup Submenu: Advanced



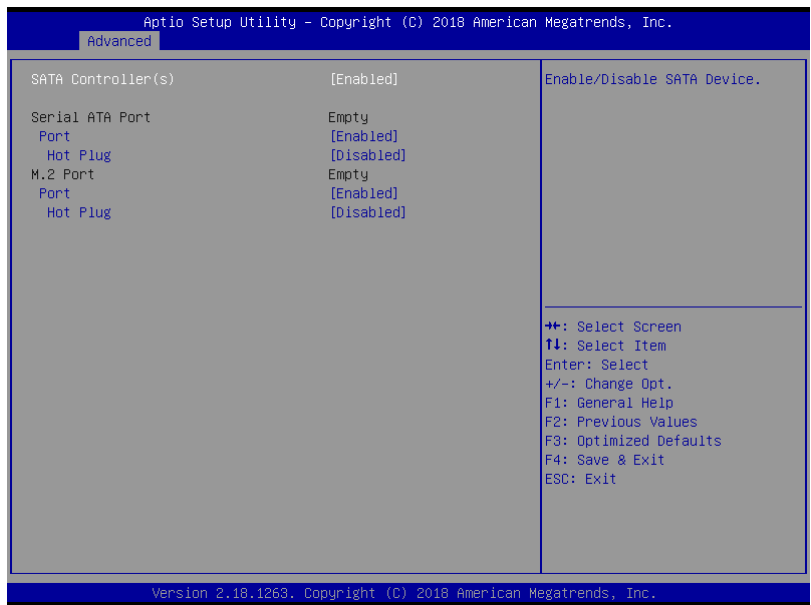
3.4.1 CPU configuration



| Options Summary | | |
|---|----------|-----------------------------------|
| Hyper-Threading | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable for Linux and Disabled for other OS. | | |
| Active Processor Cores | All | Optimal Default, Failsafe Default |
| | 1 | |
| Number of cores to enable in each processor package. | | |
| Intel (VMX) Virtualization Technology | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology. | | |
| CPU C states | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable/Disable CPU power Management. Allows CPU to go to C states when it's not 100% utilized. | | |
| Intel® SpeedStep™ | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Allows more than two frequency ranges to be supported. | | |

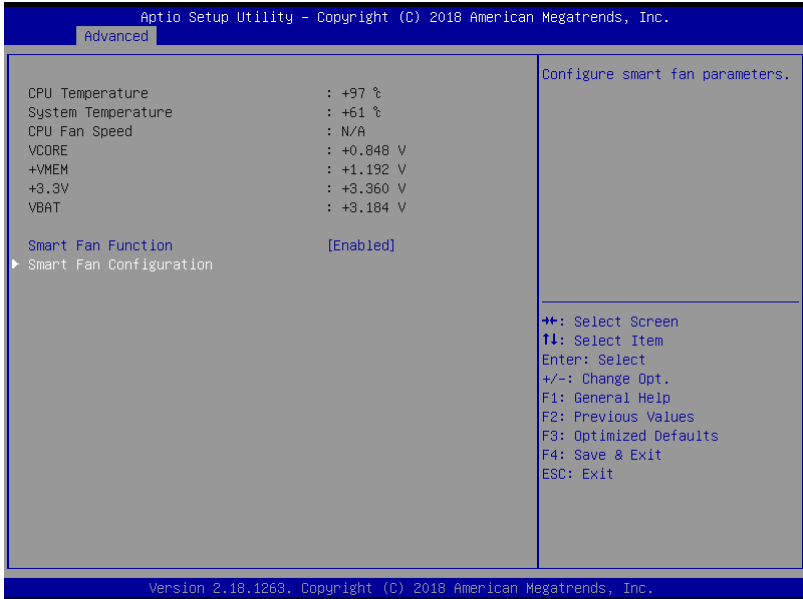
| Options Summary | | |
|--------------------------------------|----------|-----------------------------------|
| Turbo Mode | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable/Disable processor turbo mode. | | |

3.4.2 SATA Configuration

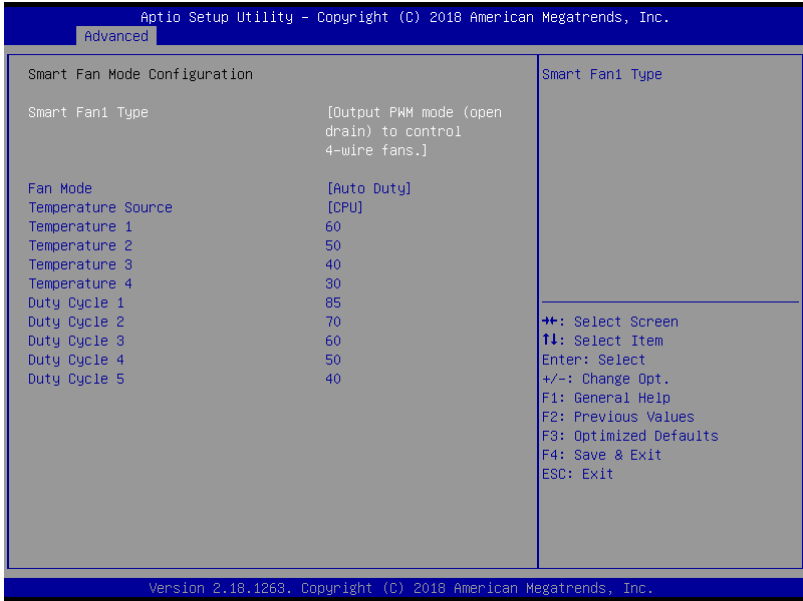


| Options Summary | | |
|--|----------|-----------------------------------|
| SATA Controller(s) | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| Enable or disable SATA Device. | | |
| Port X | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable or Disable SATA Port. | | |
| Hot Plug | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Designates this port as Hot Pluggable. | | |

3.4.3 Hardware Monitor



3.4.3.1 CPU Smart Fan Mode Configuration

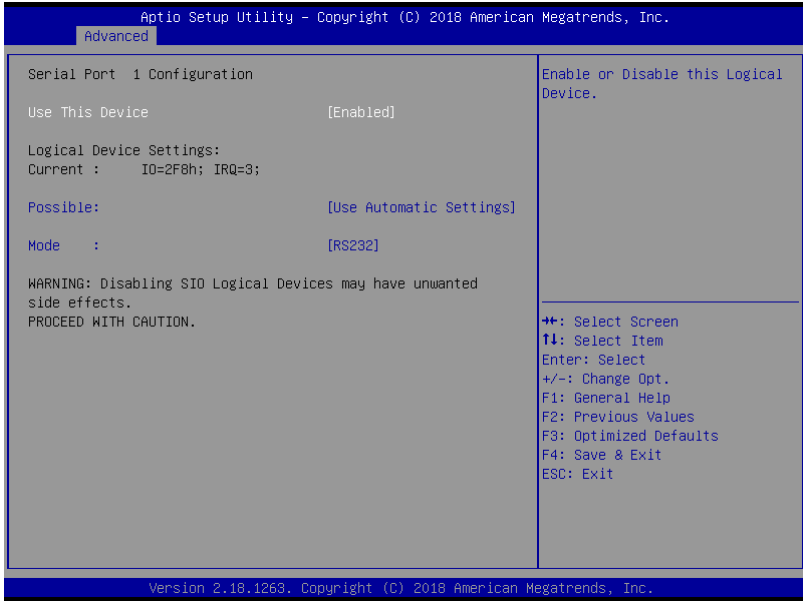


| Options Summary | | |
|---|--|-----------------------------------|
| Smart Fan1 Type | Use linear fan application circuit. | |
| | Output PWM mode (open drain) to control 4-wire fans. | Optimal Default, Failsafe Default |
| Smart fan type | | |
| Fan Mode | Manual Duty | |
| | Auto Duty | Optimal Default, Failsafe Default |
| Smart fan mode | | |
| Temperature Source | CPU | Optimal Default, Failsafe Default |
| Select the monitored temperature source for this fan. | | |

3.4.4 SIO Configuration

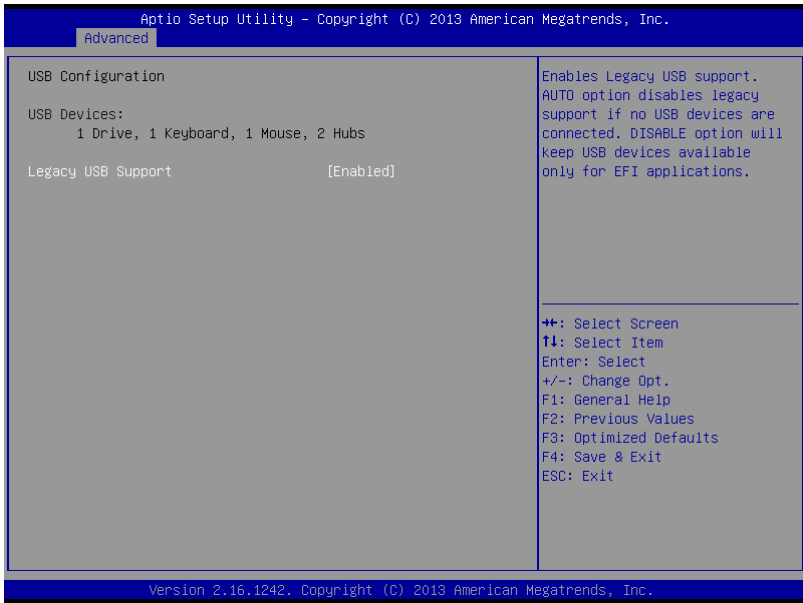


3.4.4.1 Serial Port Configuration



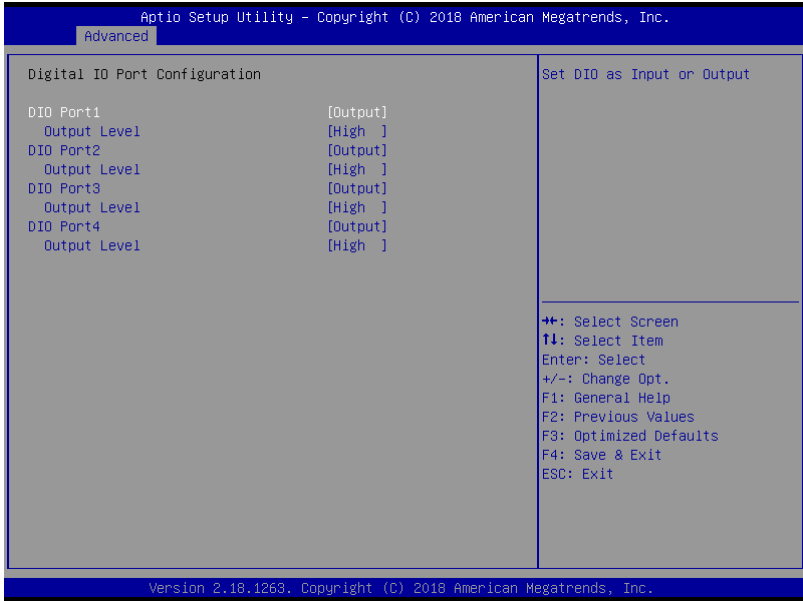
| Options Summary | | |
|---|------------------------|-----------------------------------|
| Use This Device | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable or Disable Serial Port (COM) | | |
| Possible: | Use Automatic Settings | Optimal Default, Failsafe Default |
| | IO=2F8; IRQ=3; | |
| | IO=3F8; IRQ=4; | |
| Select an optimal setting for IO device | | |
| Mode: | RS232 | Optimal Default, Failsafe Default |
| | RS422; | |
| | RS485 | |
| UART 232/422/485 selection | | |

3.4.5 USB Configuration



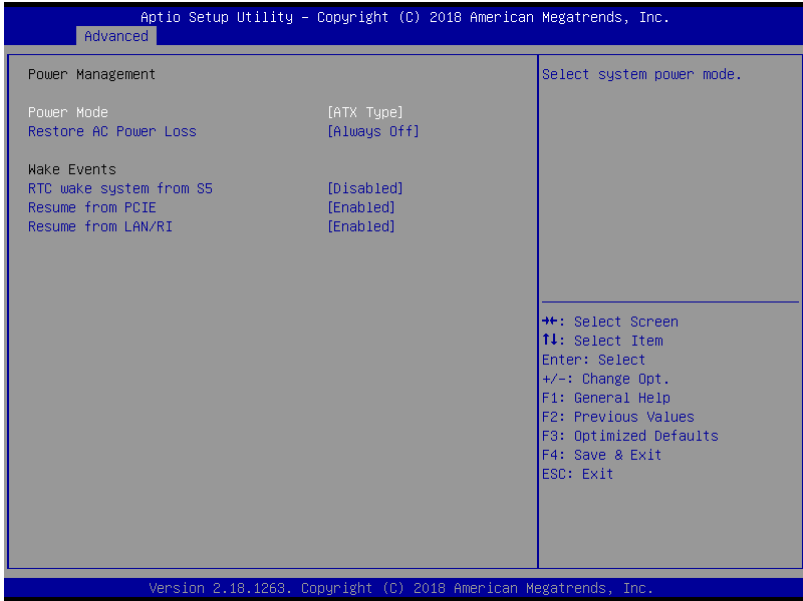
| Options Summary | | |
|--|------------------|-----------------------------------|
| Legacy USB Support | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| | Auto | |
| Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS. AUTO option disables legacy support if no USB devices are connected | | |
| Device Name (Emulation Type) | Auto | Optimal Default, Failsafe Default |
| | Floppy | |
| | Forced FDD | |
| | CDROM | |
| If Auto. USB devices less than 530MB will be emulated as Floppy and remaining as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD (Ex. ZIP drive) | | |
| USB Port 0/1 function routing | FCH USB port 8/9 | Optimal Default, Failsafe Default |
| | FCH USB port 0/1 | |

3.4.6 Digital IO Port Configuration



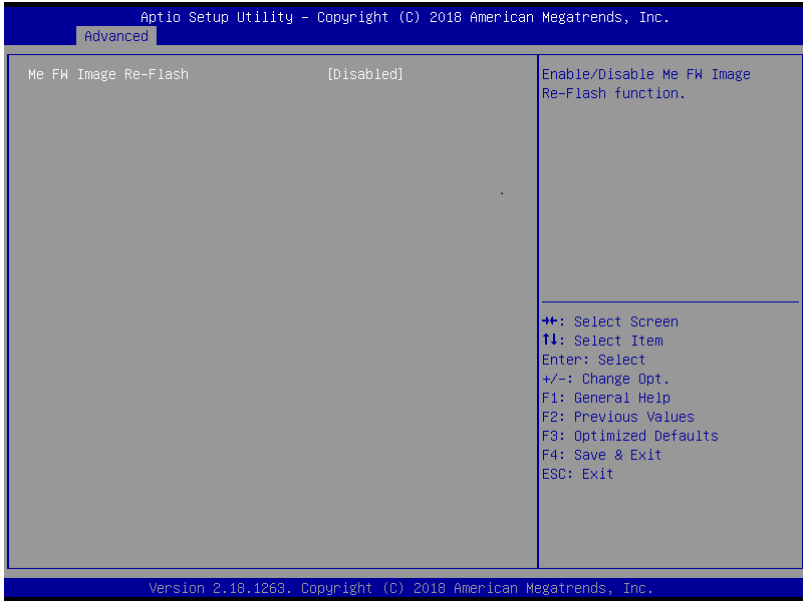
| Options Summary | | |
|---|--------|-----------------------------------|
| DIO Port | Output | |
| | Input | |
| Set DIO as Input or Output | | |
| Output Level | High | Optimal Default, Failsafe Default |
| | Low | |
| Set output level when DIO pin is output | | |

3.4.7 Power management



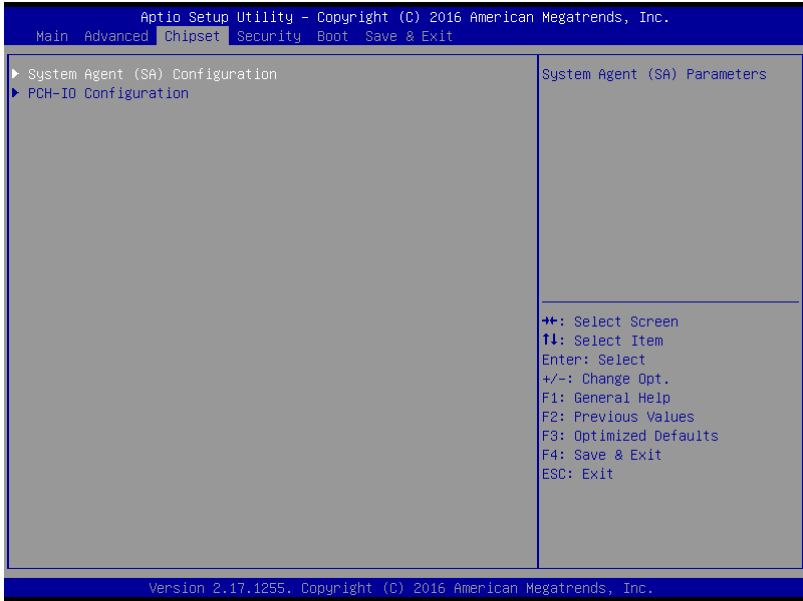
| Options Summary | | |
|---|------------|-----------------------------------|
| Power Mode | ATX Type | Optimal Default, Failsafe Default |
| | AT Type | |
| Select power supply mode. | | |
| Restore on Power Loss | Last State | |
| | Always On | |
| | Always Off | Optimal Default, Failsafe Default |
| Select power state when power is re-applied after a power failure. | | |
| RTC wake system from S5 | Disabled | Optimal Default, Failsafe Default |
| | Fixed Time | |
| Enable or disable System wake on alarm event. When enabled, System will wake on the hr:min::sec specified | | |
| Resume from PCIE | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable/Disable resume from PCIE | | |
| Resume form LAN/RI | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable/Disable resume from PCIE | | |

3.4.8 Firmware Update Configuration



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

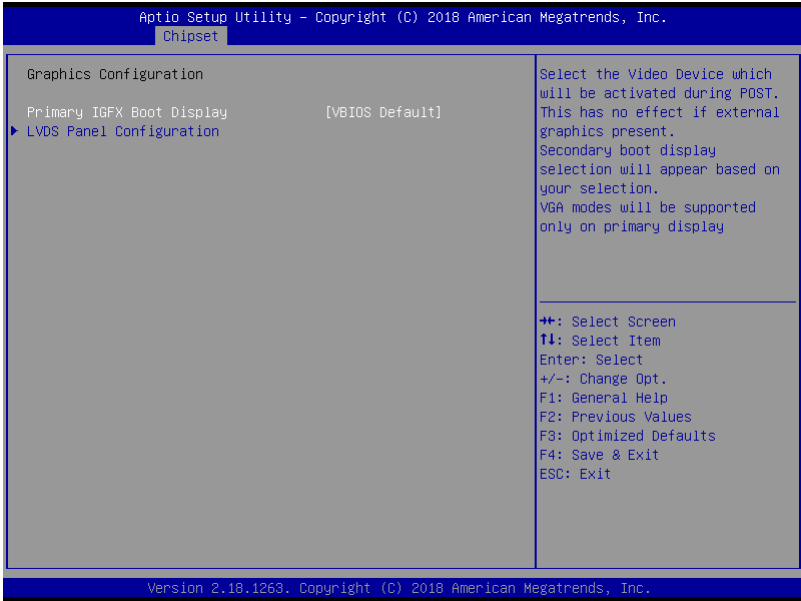
3.5 Setup Submenu: Chipset



3.5.1 System Agent (SA) Configuration

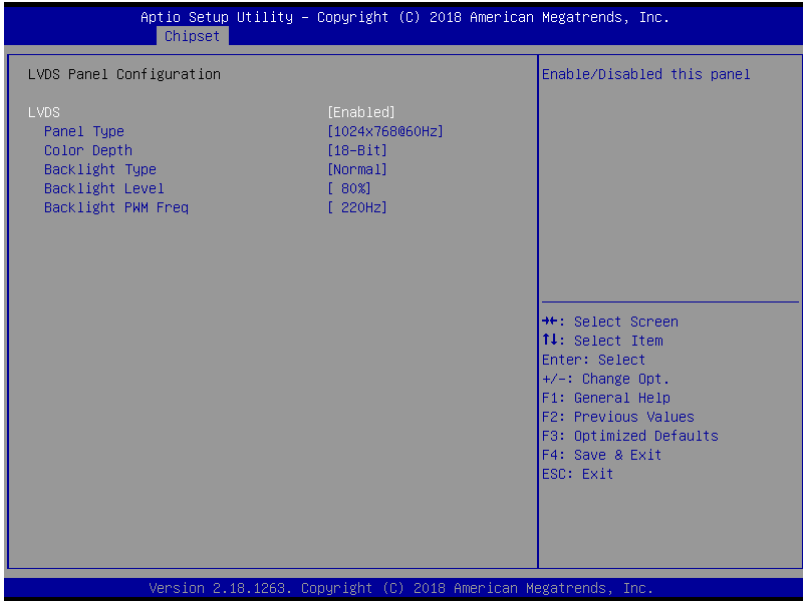


3.5.1.1 Graphics Configuration



| Options Summary | | |
|--|---------------|-----------------------------------|
| Primary IGFX Boot Display | VBIOS Default | Optimal Default, Failsafe Default |
| | HDMI | |
| | LVDS | |
| <p>Select the Video Device which will be activated during POST. This has no effect if external graphic present.</p> <p>Secondary boot display selection will appear based on your selection.</p> | | |

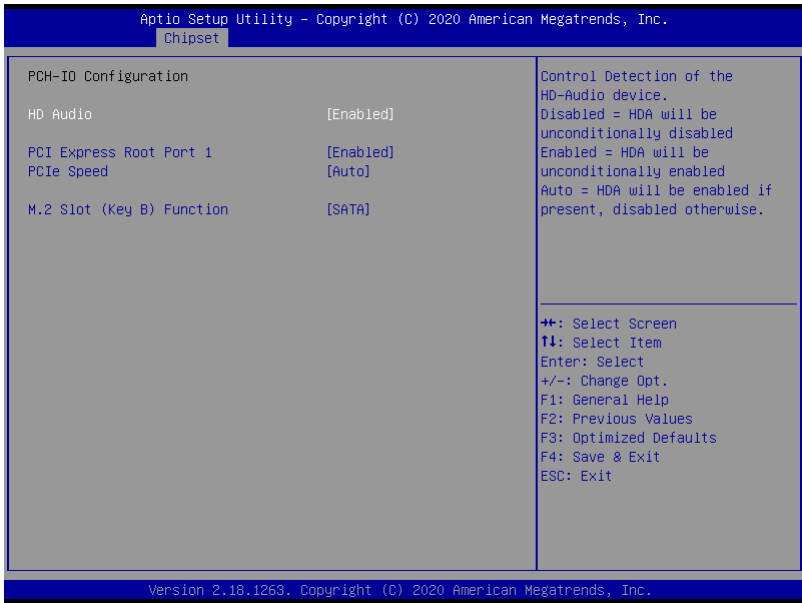
3.5.1.1.1 LVDS Panel Configuration



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

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

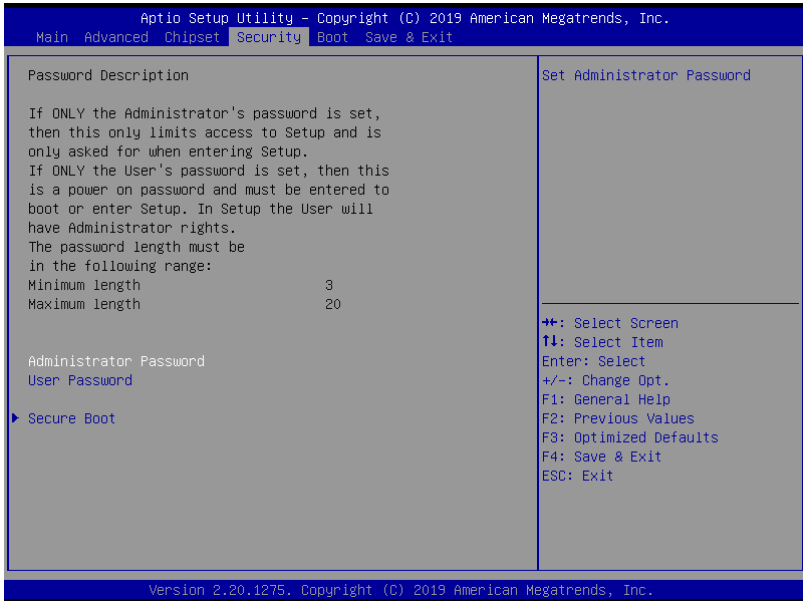
3.5.2 PCH-IO Configuration



| Options Summary | | |
|---|----------|-----------------------------------|
| HD Audio | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled Auto = HDA will be enabled if present, disabled otherwise. | | |
| PCI Express Root Port 1 | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| Enable or disable PCI Express Root Port 1 | | |
| PCIe Lane Gen Speed | Auto | Optimal Default, Failsafe Default |
| | Gen1 | |
| | Gen2 | |
| | Gen3 | |
| Select PCI Express port speed. | | |
| M.2 Slot (Key B) Function | SATA | Optimal Default, Failsafe Default |
| | PCIe | |
| Switch M.2 slot function | | |

| Options Summary | | |
|-------------------------------|----------|-----------------------------------|
| PCI Express Root 12 | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable/ Disable M.2 Slot PCIE | | |
| PCIE Speed | Auto | Optimal Default, Failsafe Default |
| | Gen1 | |
| | Gen1 | |
| | Gen1 | |
| Config PCIe speed | | |

3.6 Setup Submenu: Security



Change User/Administrator Password

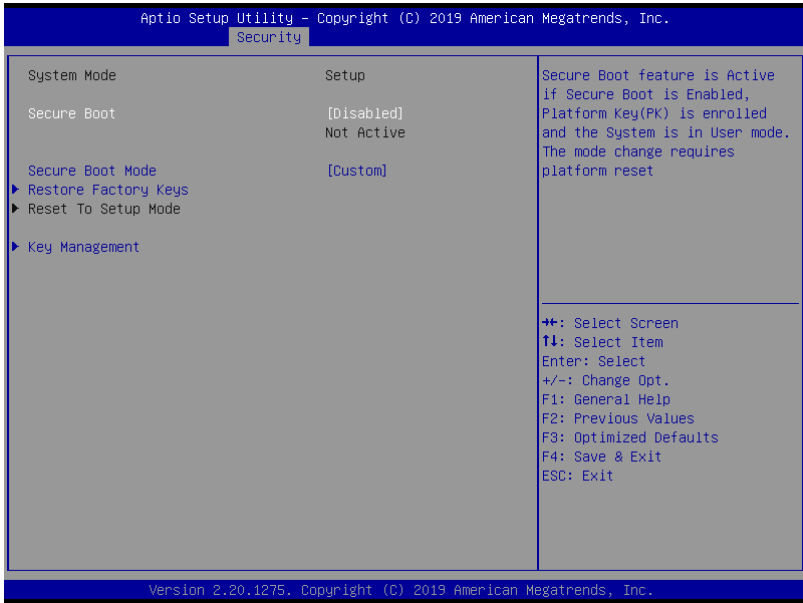
You can set an Administrator Password or User Password. An Administrator Password must be set before you can set a User Password. The password will be required during boot up, or when the user enters the Setup utility. A User Password does not provide access to many of the features in the Setup utility.

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

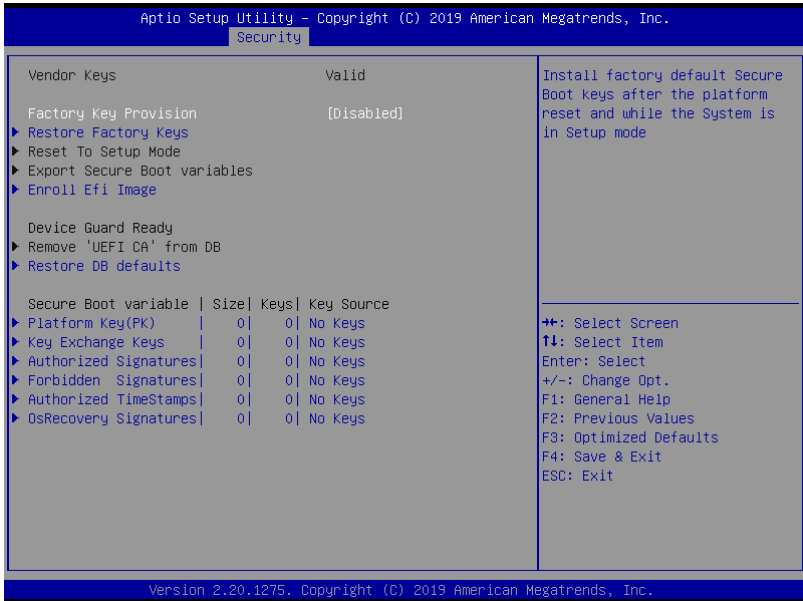
Select the password you want to remove and enter the current password. At the next dialog box press Enter to disable password protection.

3.6.1 Secure Boot



| Options Summary | | |
|--|----------|-----------------------------------|
| Secure Boot | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset | | |
| Secure Boot Mode | Custom | Optimal Default, Failsafe Default |
| | Standard | |
| Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication | | |
| 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 | | |

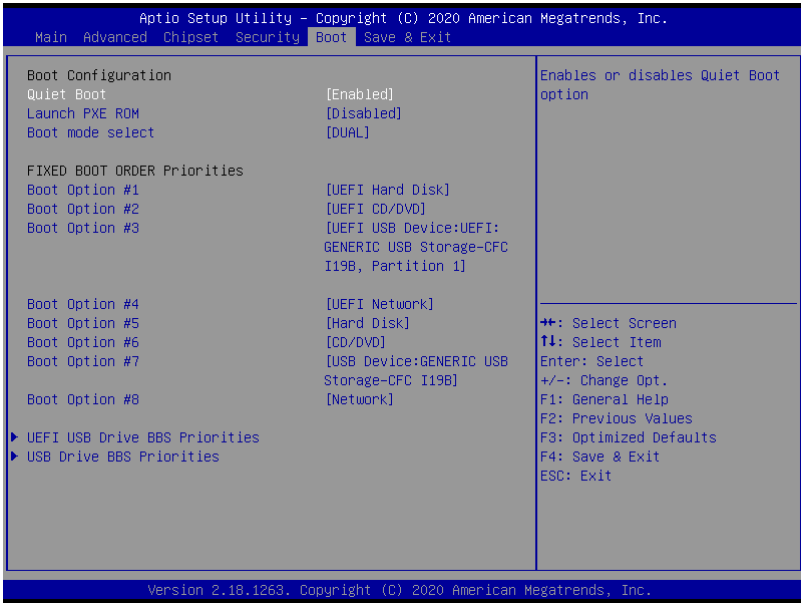
3.6.1.1 Key Management



| 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 Size 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) | | |

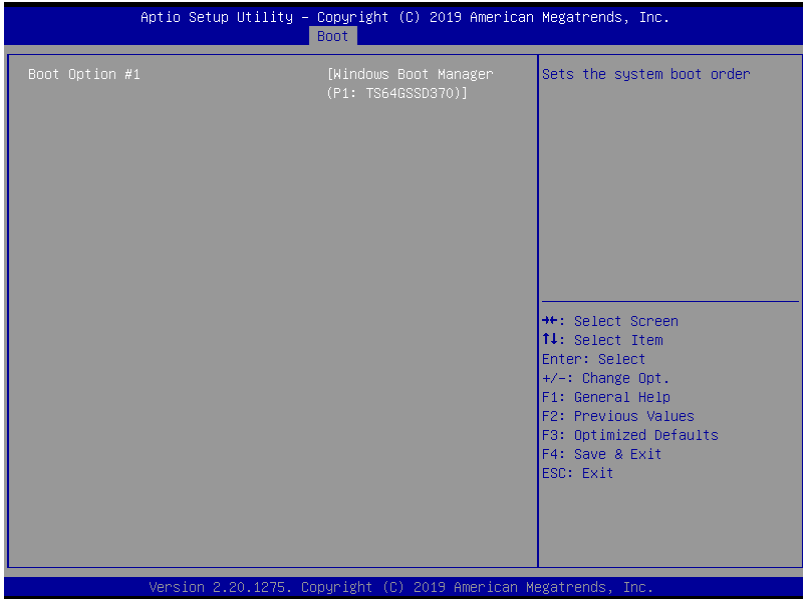
| Options Summary | | |
|--|---------|--|
| Remove 'UEFI CA' from DB | | |
| Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db) | | |
| Restore DB defaults | | |
| Restore DB variable to factory defaults | | |
| Platform Key(PK) | Details | |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

3.7 Setup Submenu: Boot

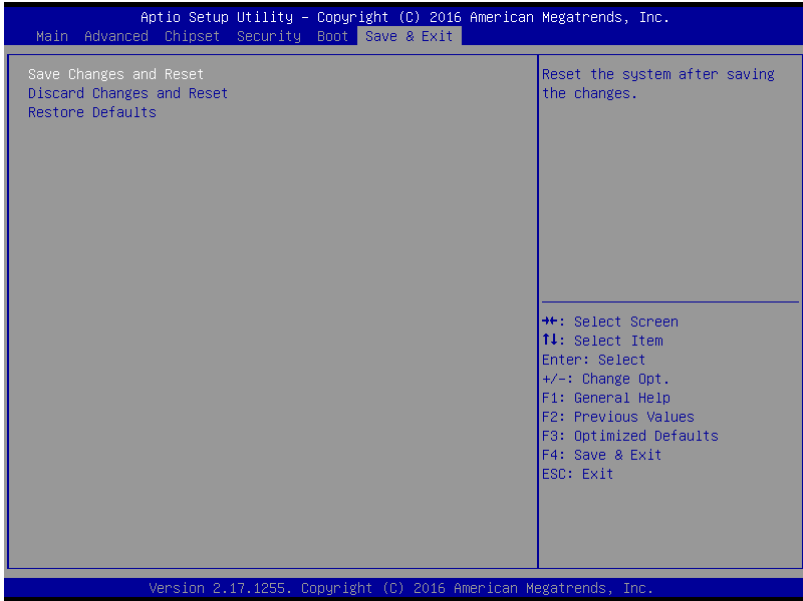


| Options Summary | | |
|--|----------|-----------------------------------|
| Quiet Boot | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable/ Disable showing boot logo. | | |
| Lunch PXE ROM | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Controls the execution of Legacy Network OpROM | | |
| Boot mode select | LEGACY | |
| | UEFI | |
| | DUAL | Optimal Default, Failsafe Default |
| Select boot mode | | |

3.7.1 BBS Priorities



3.8 Setup Submenu: Exit



Chapter 4

Drivers Installation

4.1 Driver Download/Installation

Drivers for the PICO-KBU4-SEMI can be downloaded from the product page on the AAEON website by following this link:

<https://www.aaeon.com/en/p/pico-itx-boards-pico-kbu4-semi>

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

Step 1 – Install Chipset Driver

1. Open the **STEP1 - CHIPSET** folder and open the **SetupChipset.exe** file
2. Follow the instructions
3. Drivers will be installed automatically

Step 2 – Install Graphic Driver

1. Open the **STEP2 - Graphic** folder and open the **Setup.exe** file
2. Follow the instructions
3. Driver will be installed automatically

Step 3 – Install LAN Driver

1. Open the **STEP3 - LAN** folder and select your OS
2. Open the **.exe** file in the folder
3. Follow the instructions
4. Driver will be installed automatically

Step 4 – Install Audio Driver

1. Open the **STEP4 - Audio** folder and select your OS
2. Open the Setup.exe file
3. Follow the instructions
4. Driver will be installed automatically

Step 5 – Install Serial Port Driver (Optional)

1. Open the **STEP5 – Serial Port Driver** folder and select your OS
2. Open the .exe file
3. Follow the instructions
4. Driver will be installed automatically

Step 6 – Install USB3.0 Driver

1. Open the **STEP6 – USB3.0** folder and select your OS
2. Open the .exe file
3. Follow the instructions
4. Driver will be installed automatically

Appendix A

I/O Information

A.1 I/O Address Map

| Input/output (IO) | |
|-------------------|---|
| ▼ | [0000000000000000 - 000000000000CF7] PCI Express Root Complex |
| ▶ | [0000000000000020 - 0000000000000021] Programmable interrupt controller |
| ▶ | [0000000000000024 - 0000000000000025] Programmable interrupt controller |
| ▶ | [0000000000000028 - 0000000000000029] Programmable interrupt controller |
| ▶ | [000000000000002C - 000000000000002D] Programmable interrupt controller |
| ▶ | [000000000000002E - 000000000000002F] Motherboard resources |
| ▶ | [0000000000000030 - 0000000000000031] Programmable interrupt controller |
| ▶ | [0000000000000034 - 0000000000000035] Programmable interrupt controller |
| ▶ | [0000000000000038 - 0000000000000039] Programmable interrupt controller |
| ▶ | [000000000000003C - 000000000000003D] Programmable interrupt controller |
| ▶ | [0000000000000040 - 0000000000000043] System timer |
| ▶ | [000000000000004E - 000000000000004F] Motherboard resources |
| ▶ | [0000000000000050 - 0000000000000053] System timer |
| ▶ | [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 - 0000000000000077] System CMOS/real time clock |
| ▶ | [0000000000000080 - 0000000000000080] Motherboard resources |
| ▶ | [0000000000000092 - 0000000000000092] Motherboard resources |
| ▶ | [00000000000000A0 - 00000000000000A1] Programmable interrupt controller |
| ▶ | [00000000000000A4 - 00000000000000A5] Programmable interrupt controller |
| ▶ | [00000000000000A8 - 00000000000000A9] Programmable interrupt controller |
| ▶ | [00000000000000AC - 00000000000000AD] Programmable interrupt controller |
| ▶ | [00000000000000B0 - 00000000000000B1] Programmable interrupt controller |
| ▶ | [00000000000000B2 - 00000000000000B3] Motherboard resources |
| ▶ | [00000000000000B4 - 00000000000000B5] Programmable interrupt controller |
| ▶ | [00000000000000B8 - 00000000000000B9] Programmable interrupt controller |
| ▶ | [00000000000000BC - 00000000000000BD] Programmable interrupt controller |
| ▶ | [00000000000002F8 - 00000000000002FF] Communications Port (COM2) |
| ▶ | [00000000000003B0 - 00000000000003BB] Intel(R) HD Graphics 620 |
| ▶ | [00000000000003C0 - 00000000000003DF] Intel(R) HD Graphics 620 |
| ▶ | [00000000000003F8 - 00000000000003FF] Communications Port (COM1) |
| ▶ | [00000000000004D0 - 00000000000004D1] Programmable interrupt controller |
| ▶ | [0000000000000680 - 000000000000069F] Motherboard resources |
| ▶ | [0000000000000A00 - 0000000000000A0F] Motherboard resources |
| ▶ | [0000000000000A10 - 0000000000000A1F] Motherboard resources |
| ▼ | [000000000000D00 - 000000000000FFFF] PCI Express Root Complex |
| ▶ | [000000000000164E - 000000000000164F] Motherboard resources |
| > | [0000000000001800 - 00000000000018FE] Motherboard resources |
| > | [000000000000D000 - 000000000000DFFF] Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #4 - 9D13 |
| > | [000000000000E000 - 000000000000EFFF] Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #3 - 9D12 |
| ▶ | [000000000000F000 - 000000000000F03F] Intel(R) HD Graphics 620 |
| ▶ | [000000000000F040 - 000000000000F05F] Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23 |
| ▶ | [000000000000F060 - 000000000000F07F] Standard SATA AHCI Controller |
| ▶ | [000000000000F080 - 000000000000F083] Standard SATA AHCI Controller |
| ▶ | [000000000000F090 - 000000000000F097] Standard SATA AHCI Controller |
| ▶ | [000000000000FF00 - 000000000000FFFE] Motherboard resources |
| > | [000000000000FFFF - 000000000000FFFF] Motherboard resources |








































A.2 Memory Address Map

PICO-SEMI System

PICO-KBU4-SEMI

| Address Range | Device Name |
|--|---|
| [0000000000A0000 - 0000000000BFFFFF] | Intel(R) HD Graphics 620 |
| [0000000000A0000 - 0000000000BFFFFF] | PCI Express Root Complex |
| [0000000090000000 - 00000000DFFFFFFF] | PCI Express Root Complex |
| [00000000C0000000 - 00000000CFFFFFFF] | Intel(R) HD Graphics 620 |
| [00000000D0000000 - 00000000D0003FFF] | Realtek PCIe GBE Family Controller #2 |
| [00000000D0000000 - 00000000D000FFFF] | Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #4 - 9D13 |
| [00000000D0100000 - 00000000D0103FFF] | Realtek PCIe GBE Family Controller |
| [00000000D0100000 - 00000000D01FFF7FFF] | Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #3 - 9D12 |
| [00000000DE000000 - 00000000DEFFFFFF] | Intel(R) HD Graphics 620 |
| [00000000DF000000 - 00000000DF000FFF] | Realtek PCIe GBE Family Controller #2 |
| [00000000DF000000 - 00000000DF0FFF7FFF] | Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #4 - 9D13 |
| [00000000DF100000 - 00000000DF100FFF] | Realtek PCIe GBE Family Controller |
| [00000000DF100000 - 00000000DF1FFF7FFF] | Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #3 - 9D12 |
| [00000000DF210000 - 00000000DF21FFF7FFF] | Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft) |
| [00000000DF228000 - 00000000DF229FFF] | Standard SATA AHCI Controller |
| [00000000DF22A000 - 00000000DF22A0FF] | Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23 |
| [00000000DF22B000 - 00000000DF22B7FF] | Standard SATA AHCI Controller |
| [00000000DF22C000 - 00000000DF22C0FF] | Standard SATA AHCI Controller |
| [00000000DF22D000 - 00000000DF22DFFF] | Mobile 6th/7th Generation Intel(R) Processor Family I/O Thermal subsystem - 9D31 |
| [00000000DFFE0000 - 00000000DFFFFFFF] | Motherboard resources |
| [00000000E0000000 - 00000000EFFFFFFF] | Motherboard resources |
| [00000000FD000000 - 00000000FDABFFFF] | Motherboard resources |
| [00000000FD000000 - 00000000FD0BFFFF] | PCI Express Root Complex |
| [00000000FDAC0000 - 00000000FDACFFFF] | Motherboard resources |
| [00000000FDAD0000 - 00000000FDADFFFF] | Motherboard resources |
| [00000000FDAE0000 - 00000000FDAEFFFF] | Motherboard resources |
| [00000000FDAF0000 - 00000000FDAFFFFF] | Motherboard resources |
| [00000000FDB00000 - 00000000FDBFFFFF] | Motherboard resources |
| [00000000FE000000 - 00000000FE01FFFF] | Motherboard resources |
| [00000000FE028000 - 00000000FE028FFF] | Motherboard resources |
| [00000000FE029000 - 00000000FE029FFF] | Motherboard resources |
| [00000000FE030000 - 00000000FE033FFF] | High Definition Audio Controller |
| [00000000FE036000 - 00000000FE03BFFF] | Motherboard resources |
| [00000000FE03D000 - 00000000FE3FFFFF] | Motherboard resources |
| [00000000FE400000 - 00000000FE40FFFF] | High Definition Audio Controller |
| [00000000FE410000 - 00000000FE7FFFFF] | Motherboard resources |
| [00000000FED00000 - 00000000FED003FF] | High precision event timer |
| [00000000FED10000 - 00000000FED17FFF] | Motherboard resources |
| [00000000FED18000 - 00000000FED18FFF] | Motherboard resources |
| [00000000FED19000 - 00000000FED19FFF] | Motherboard resources |
| [00000000FED20000 - 00000000FED3FFFF] | Motherboard resources |
| [00000000FED45000 - 00000000FED8FFFF] | Motherboard resources |
| [00000000FED90000 - 00000000FED93FFF] | Motherboard resources |
| [00000000FEE00000 - 00000000FEEFFFFFFF] | Motherboard resources |
| [00000000FF000000 - 00000000FFFFFFF7FFF] | Legacy device |
| [00000000FF000000 - 00000000FFFFFFF7FFF] | Motherboard resources |

A.3 IRQ Mapping Chart

| Interrupt request (IRQ) | | |
|---|------------------------|--|
|  | (ISA) 0x00000000 (00) | System timer |
|  | (ISA) 0x00000001 (01) | Standard PS/2 Keyboard |
|  | (ISA) 0x00000003 (03) | Communications Port (COM2) |
|  | (ISA) 0x00000004 (04) | Communications Port (COM1) |
|  | (ISA) 0x00000008 (08) | System CMOS/real time clock |
|  | (ISA) 0x0000000C (12) | PS/2 Compatible Mouse |
|  | (ISA) 0x0000000E (14) | Motherboard resources |
| <hr/> | | |
|  | (ISA) 0x000001E8 (488) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001E9 (489) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001EA (490) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001EB (491) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001EC (492) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001ED (493) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001EE (494) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001EF (495) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001F0 (496) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001F1 (497) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001F2 (498) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001F3 (499) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001F4 (500) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001F5 (501) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001F6 (502) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001F7 (503) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001F8 (504) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001F9 (505) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001FA (506) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001FB (507) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001FC (508) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001FD (509) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001FE (510) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001FF (511) | Microsoft ACPI-Compliant System |
|  | (PCI) 0x0000000B (11) | Mobile 6th/7th Generation Intel(R) Processor Family I/O Thermal subsystem - 9D31 |
|  | (PCI) 0x0000000B (11) | Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23 |
|  | (PCI) 0x00000010 (16) | High Definition Audio Controller |
|  | (PCI) 0x00000012 (18) | Realtek PCIe GBE Family Controller |
|  | (PCI) 0x00000013 (19) | Realtek PCIe GBE Family Controller #2 |
|  | (PCI) 0xFFFFFFFFC (-4) | Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft) |
|  | (PCI) 0xFFFFFFFFD (-3) | Intel(R) HD Graphics 620 |
|  | (PCI) 0xFFFFFFFFE (-2) | Standard SATA AHCI Controller |

Appendix B

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 | Battery | Molex | 51021-0200 | Battery Cable | 175011301C |
| CN2 | HDMI | Molex | 88768-9900 | NA | NA |
| CN6 | LAN Connector | Molex | 44915-0001 | NA | NA |
| CN7 | LAN Connector | Molex | 44915-0001 | NA | NA |
| CN10 | USB 2.0 Connector | JTC | 11002H00-2x5P | USB Cable | 170010010D |
| CN11 | USB 3.0 Connector | Wurth Electronics | 710-692112030100 | NA | NA |
| CN15 | Front Panel Connector | JTC | 11002H00-2x5P | Front Panel Cable | 1709100108 |
| CN16 | COM Port 1/2 & line out Connector | JTC | 11002H00-2x10P | COM Port Cable | 1701200101 |
| CN19 | LPC Port | JST | SHR-12V-S-B | AAEON LPC Cable | 1703120130 |
| CN23 | DC Jack | HUANG JI | 5525C257-3T00-R1-7.5 | Power Cable | 1702041004 |
| CN27 | FAN Connector | Molex | 51021-0400 | NA | NA |