# PICO-EHL4

PICO-ITX Single Board Computer

User's Manual 1st Ed

*Last Updated: October 21, 2021*

## Copyright Notice

## Acknowledgement

## Packing List

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

| Item | Quantity |
|---|---|
| ● PICO-EHL4 MB | 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 on 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 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 WHERE THE STORAGE TEMPERATURE IS BELOW -20° C (-4°F) OR ABOVE 60°C (140°F) TO PREVENT DAMAGE.

## FCC Statement


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

*Caution:*

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

*Attention:*

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

## China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

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

O：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。

备注：此产品所标示之环保使用期限，系指在一般正常使用状况下。

## China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

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 | O | O | O | O | O | O |
| Wires & Connectors for External Connections | O | O | O | O | O | O |

O: The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.

X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.

Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

# Table of Contents

# Chapter 1

Product Specifications

## 1.1 Specifications

| System | |
|---|---|
| Form Factor | PICO-ITX |
| CPU | Intel® Atom™ x6000E series, Intel® Pentium and Celeron® N and J series processors<br>Intel® Atom™ x6425RE (4C, 1.9GHz, TDP 12W)<br>Intel® Atom™ x6414RE (4C, 1.5GHz, TDP 9W)<br>Intel® Atom™ x6212RE (2C, 1.2GHz, TDP 6W)<br>Intel® Atom™ x6425E (4C, 1.8GHz, up to 3GHz, TDP 12W)<br>Intel® Atom™ x6413E (4C, 1.5GHz, up to 3GHz, TDP 9W)<br>Intel® Atom™ x6211E (2C, 1.2GHz, up to 3GHz, TDP 6W)<br>Intel® Pentium® J6426 (4C, 1.8GHz, up to 3GHz, TDP 10W)<br>Intel® Pentium® N6415 (4C, 1.2GHz, up to 3GHz, TDP-up 6.5W)<br>Intel® Celeron® J6412 (4C, 1.8GHz, up to 3GHz, TDP 10W)<br>Intel® Celeron® J6210 (2C, 1.2GHz, up to 3GHz, TDP 6.5W)<br>(Intel® Atom™ x6427FE/x6200FE by request) |
| CPU Frequency | Up to 3 GHz |
| Chipset | Intel® Elkhart Lake SoC Processor |
| Memory Type | LPDDR4x 3200 MHz on board memory |
| Max. Memory Capacity | Up to 16 GB |

## System

| | |
|---|---|
| BIOS | AMI UEFI |
| Wake On LAN | Yes |
| Watchdog Timer | 255 Levels |
| Power Requirement | +12V AT/ATX (default) |
| Power Supply Type | Lockable & Phoenix Terminal co-lay |
| Power Consumption (Typical) | Intel® Pentium® J6426, LPDDR4x onboard<br>8GB: 2.36A at +12V (balance), 2.81A at +12V (max)<br>Intel® Atom™ x6425E, LPDDR4x onboard<br>16GB: 2.56A at +12V (balance), 2.81A at +12V (max) |
| System Cooling | Heat-spreader, heatsink & cooler optional |
| Dimensions | 3.94" x 2.84" (100mm x 72mm) |
| Gross Weight | 0.55 lbs. (0.25 kg) |
| 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) | 461,744 |
| Certification | CE/FCC Class A |
| OS Support | Windows 10 (64 bit)<br>Ubuntu Linux (Version: TBC) |

## Display

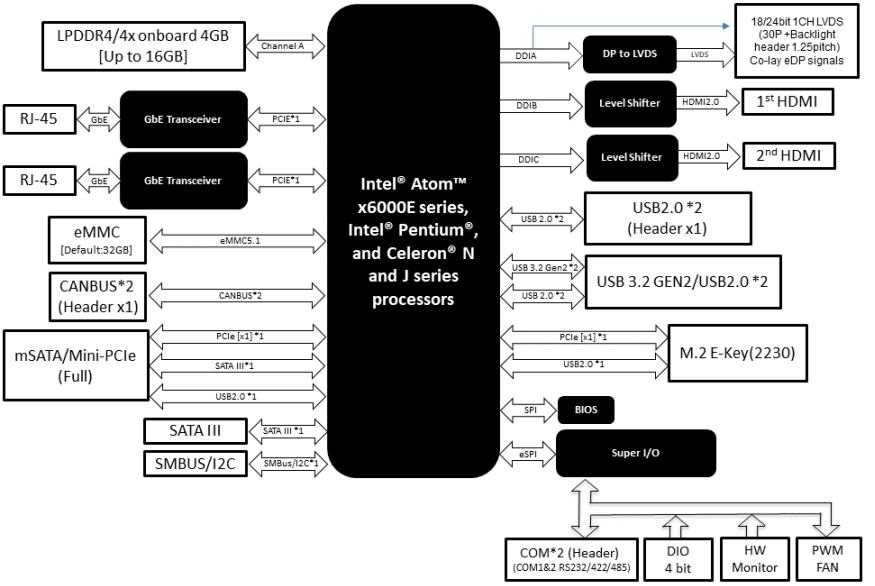
| | |
|---|---|
| **Chipset** | Intel® Atom™ x6000E series, Intel® Pentium and Celeron® N and J series processors |
| **Resolution** | HDMI2.0b x 2, 4K 60Hz<br>Single channel 12V/3.3V, 18/24-bit LVDS/eDP up to 4K |
| **LCD Interface** | 18/24-bit Single LVDS |

## I/O

| | |
|---|---|
| **Storage/SSD** | eMMC x 1 (32/64/128 GB)<br>SATA III (6.0 Gbps) x 1<br>SATA Power (5V) x 1 |
| **Ethernet** | RTL8111, 10/100/1000Base, RJ45 x 2<br>(Compatible with RJ45 x 1) |
| **USB Port** | 2 x USB3.2 Gen 2 rear IO<br>2 x USB2.0 header |
| **Serial Port** | RS-232/422/485 x 2 |
| **Audio** | — |
| **DIO** | 4-bit |
| **Expansion Slot** | M.2 2230 E-key x 1 (for Wi-Fi/Bluetooth, PCIe/USB signal only)<br>Mini PCIe (Full-Sized) x 1 (Default mSATA or USB2.0, PCIe set by BIOS)<br>SMBUS/I2C + eSPI x 1 (SMBUS as default, I2C selected by HW BOM)<br>CANBus x 2 (see note) |
| **SIM** | — |
| **TPM** | Intel® PTT (Integrated TPM) |

**Note:** CANBus not supported by Celeron J6412 or Celeron N6210 processors.

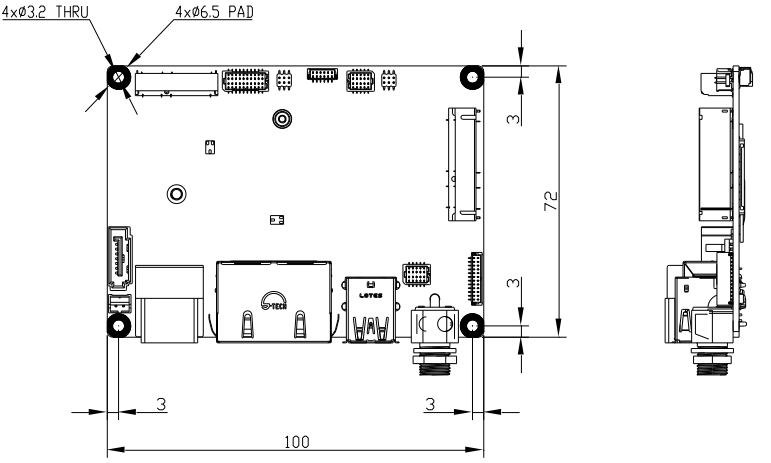
## 1.2 Function Block Diagram



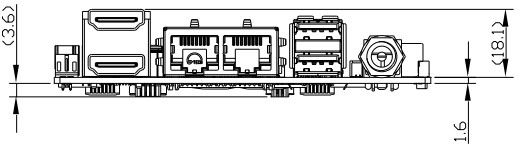
# Chapter 2

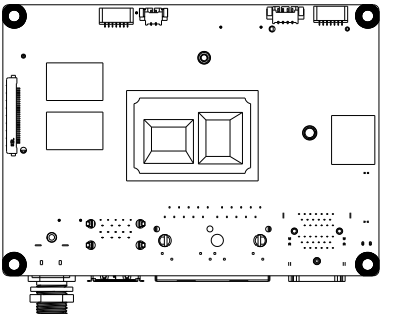
Hardware Information

## 2.1 Dimensions

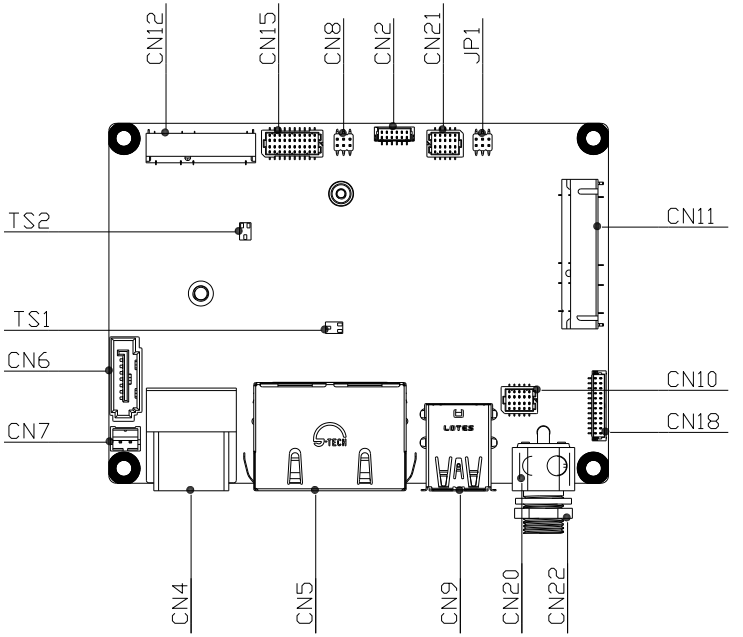



Component Side

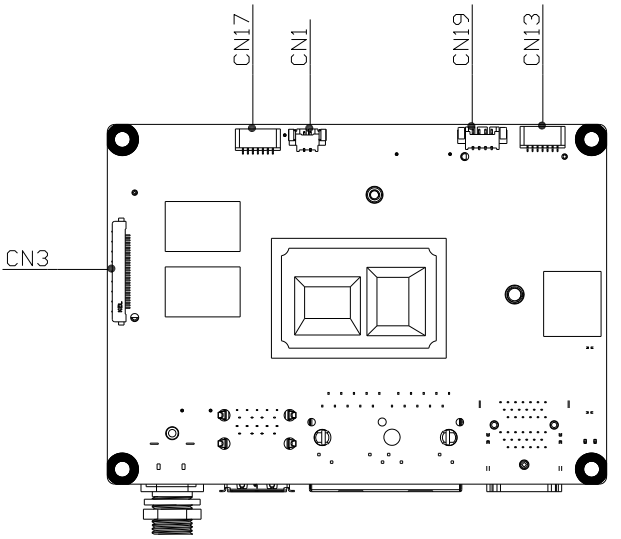


## 2.2 Jumpers and Connectors




Component Side




Solder Side

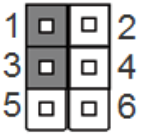
## 2.3 List of Jumpers

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

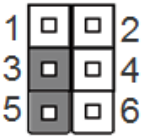
| Label | Function |
|---|---|
| JP1 | Clear CMOS Jumper, Auto Power Button Selection |

### 2.3.1 Clear CMOS Jumper, Auto Power Button Selection (JP1)

Clear CMOS Jumper

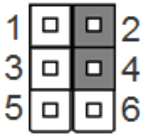



Normal (**Default**)

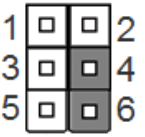



Clear CMOS

Auto Power Button Enable/Disable Selection




Disable Auto Power Button/ ATX Mode




Enable Auto Power Button/ AT Mode (**Default**)

**Note:** To avoid damage to the system, do not connect pins 1,3,5 with pins 2,4,6.

## 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 | LVDS Back Light Inverter |
| CN3 | LVDS/eDP [Reserved] |
| CN4 | Dual HDMI Connector |
| CN5 | Dual RJ45 Connector |
| CN6 | SATA Connector |
| CN7 | SATA Power +5V Connector |
| CN8 | 4-bit DIO Header |
| CN9 | USB2.0/USB3.2 Gen2 Dual Connector Port1, Port2 |
| CN10 | USB2.0 Header (Supports 2 Ports) |
| CN11 | mSATA/ Mini Card Slot |
| CN12 | M.2 E-Key Slot |
| CN13 | CAN Bus Header (Supports 2 Ports) |
| CN15 | COM Header (Supports 2 Ports |
| CN17 | SPI |
| CN18 | eSPI/SMbus/I2C |
| CN19 | 4-pin Smart FAN |
| CN20 | Power Input 12V |
| CN21 | Front Panel Header |
| CN22 | DC Jack Power Input [Reserved] |
| CN23 | RJ45 Connector [Reserved] |

### 2.4.1 RTC Battery Connector (CN1)

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

### 2.4.2 LVDS Back Light Inverter (CN2)

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

**Note 1:** Backlight Power can be 12V or 5V, set by BOM: SKU R466 for 12V and SKU R2679 for 5V (Default is 12V).

**Note 2:** CN2 max current 2A.

### 2.4.3 LVDS/eDP (Reserved) (CN3)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +VDD | PWR | +3.3V |
| 2 | +VDD | PWR | +3.3V |
| 3 | +VDD | PWR | +3.3V |
| 4 | GND | GND | |

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 5 | LVD1_CA_2_DN/ EDP_LANE2_DN | DIFF | |
| 6 | LVD1_CA_2_DP/ EDP_LANE2_DP | DIFF | |
| 7 | GND | GND | |
| 8 | LVD1_CA_1_DN/ EDP_LANE1_DN | DIFF | |
| 9 | LVD1_CA_1_DP/ EDP_LANE1_DP | DIFF | |
| 10 | GND | GND | |
| 11 | LVD1_CA_0_DN/ EDP_LANE0_DN | DIFF | |
| 12 | LVD1_CA_0_DP/ EDP_LANE0_DP | DIFF | |
| 13 | GND | GND | |
| 14 | LVD1_CA_3_DN/ EDP_LANE3_DN | DIFF | |
| 15 | LVD1_CA_3_DP/ EDP_LANE3_DP | DIFF | |
| 16 | GND | GND | |
| 17 | LVD1_CA_CLKN/ EDP_AUX_DN | DIFF | |
| 18 | LVD1_CA_CLKP/ EDP_ AUX _DP | DIFF | |
| 19 | GND | GND | |
| 20 | LVD1_BKLCTL/ DDI0_BKLTCTL_R | | |
| 21 | LVD1_DDC_DATA | | |
| 22 | LVD1_BKLTEN/ DDI0_BKLTEN_R | | |
| 23 | LVD1_DDC_CLK/ DDI0_HPD | | |
| 24 | GND | GND | |
| 25 | GND | GND | |
| 26 | GND | GND | |

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 27 | +VCC_EDP_BKLT | PWR | +12V (Default) / +5V |
| 28 | +VCC_EDP_BKLT | PWR | +12V (Default) / +5V |
| 29 | +VCC_EDP_BKLT | PWR | +12V (Default) / +5V |
| 30 | +VCC_EDP_BKLT | PWR | +12V (Default) / +5V |

**Note 1:** Backlight Power can be 12V or 5V, set by BOM: SKU R466 for 12V and SKU R2679 for 5V (Default is 12V).

**Note 2:** CN3 Backlight power max current 1.2A. VDD power max current 1A

### 2.4.4 Dual HDMI Connector (CN4)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | HDMI_TX2+ | DIFF | |
| 2 | GND | GND | |
| 3 | HDMI_TX2- | DIFF | |
| 4 | HDMI_TX1+ | DIFF | |
| 5 | GND | GND | |
| 6 | HDMI_TX1- | DIFF | |
| 7 | HDMI_TX0+ | DIFF | |
| 8 | GND | GND | |
| 9 | HDMI_TX0- | DIFF | |
| 10 | HDMI_CLK+ | DIFF | |
| 11 | GND | GND | |
| 12 | HDMI_CLK- | DIFF | |
| 13 | NC | | |
| 14 | NC | | |

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 15 | DDC_CLK | I/O | +5V |
| 16 | DDC_DATA | I/O | +5V |
| 17 | GND | GND | |
| 18 | +5V | PWR | +5V |
| 19 | HDMI_HPD | | |
| 20 | HDMI_TX2+ | DIFF | |
| 21 | GND | GND | |
| 22 | HDMI_TX2- | DIFF | |
| 23 | HDMI_TX1+ | DIFF | |
| 24 | GND | GND | |
| 25 | HDMI_TX1- | DIFF | |
| 26 | HDMI_TX0+ | DIFF | |
| 27 | GND | GND | |
| 28 | HDMI_TX0- | DIFF | |
| 29 | HDMI_CLK+ | DIFF | |
| 30 | GND | GND | |
| 31 | HDMI_CLK- | DIFF | |
| 32 | NC | | |
| 33 | NC | | |
| 34 | DDC_CLK | I/O | +5V |
| 35 | DDC_DATA | I/O | +5V |
| 36 | GND | GND | |
| 37 | +5V | PWR | +5V |
| 38 | HDMI_HPD | | |

### 2.4.5 Dual LAN Connector (CN5)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1P1 | LAN1_MDI0+ | DIFF | |
| 1P2 | LAN1_MDI0- | DIFF | |
| 1P3 | LAN1_MDI1+ | DIFF | |
| 1P4 | LAN1_MDI1- | DIFF | |
| 1P5 | GND | GND | |
| 1P6 | GND | GND | |
| 1P7 | LAN1_MDI2+ | DIFF | |
| 1P8 | LAN1_MDI2- | DIFF | |
| 1P9 | LAN1_MDI3+ | DIFF | |
| 1P10 | LAN1_MDI3- | DIFF | |
| 1L1 | LAN1_LED_LNK#_ACT | Signal | |
| 1L2 | +V3P3A | VDD | 3.3V |
| 1L3 | LAN1_LED_100# | Signal | |
| 1L4 | LAN1_LED_1000# | Signal | |
| 2P1 | LAN2_MDI0+ | DIFF | |
| 2P2 | LAN2_MDI0- | DIFF | |
| 2P3 | LAN2_MDI1+ | DIFF | |
| 2P4 | LAN2_MDI1- | DIFF | |
| 2P5 | GND | GND | |
| 2P6 | GND | GND | |
| 2P7 | LAN2_MDI2+ | DIFF | |
| 2P8 | LAN2_MDI2- | DIFF | |
| 2P9 | LAN2_MDI3+ | DIFF | |
| 2P10 | LAN2_MDI3- | DIFF | |

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 2L1 | LAN2_LED_LNK#_ACT | Signal | |
| 2L2 | +V3P3A | VDD | 3.3V |
| 2L3 | LAN2_LED_100# | Signal | |
| 2L4 | LAN2_LED_1000# | Signal | |

### 2.4.6 SATA Port (CN6)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | GND | GND | |
| 2 | SATA_1_TXP | DIFF | |
| 3 | SATA_1_TXN | DIFF | |
| 4 | GND | GND | |
| 5 | SATA_1_RXN | DIFF | |
| 6 | SATA_1_RXP | DIFF | |
| 7 | GND | GND | |

### 2.4.7 +5V SATA Power Connector (CN7)

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

**Note:** CN7 SATA Power max current 1.5A.

### 2.4.8 DIO 4-bit Header (CN8)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +V5S | VDD | 5V |
| 2 | DIO_0 | Signal | |
| 3 | DIO_1 | Signal | |
| 4 | DIO_2 | Signal | |
| 5 | DIO_3 | Signal | |
| 6 | GND | GND | GND |

**Note:** CN8 DIO power max current: 0.5A.

### 2.4.9 USB2.0/ USB3.2 Dual Port (Port 1/ Port 2) (CN9)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +V5A_USB12 | PWR | +5V |
| 2 | USB2_0_DN | DIFF | |
| 3 | USB2_0_DP | DIFF | |
| 4 | GND | GND | |
| 5 | USB3_0_RXN | DIFF | |
| 6 | USB3_0_RXP | DIFF | |
| 7 | GND | GND | |
| 8 | USB3_0_TXN | DIFF | |
| 9 | USB3_0_TXP | DIFF | |
| 10 | +V5A_USB12 | PWR | +5V |
| 11 | USB2_1_DN | DIFF | |
| 12 | USB2_1_DP | DIFF | |

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 13 | GND | GND | |
| 14 | USB3_1_RXN | DIFF | |
| 15 | USB3_1_RXP | DIFF | |
| 16 | GND | GND | |
| 17 | USB3_1_TXN | DIFF | |
| 18 | USB3_1_TXP | DIFF | |

**Note:** CN9 USB Power max current: 2.0A, 1.0A for each port.

### 2.4.10 USB2.0 Dual Port Header (CN10)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +V5A_USB34 | PWR | +5V |
| 2 | +V5A_USB34 | PWR | +5V |
| 3 | USB2_2_DN | DIFF | |
| 4 | USB2_3_DN | DIFF | |
| 5 | USB2_2_DP | DIFF | |
| 6 | USB2_3_DP | DIFF | |
| 7 | GND | GND | |
| 8 | GND | GND | |
| 9 | GND | GND | |
| 10 | GND | GND | |

**Note:** CN10 USB Power max current: 2.0A, 1.0A for each port.

### 2.4.11 mSATA/ Mini Card Slot (CN11)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | PCIE_WAKE# | IN | |
| 2 | +3.3V | PWR | +3.3V |
| 3 | NC | | |
| 4 | GND | GND | |
| 5 | NC | | |
| 6 | +1.5V | PWR | +1.5V |
| 7 | PCIE_CLK_REQ# | IN | |
| 8 | NC | | |
| 9 | GND | GND | |
| 10 | NC | | |
| 11 | PCIE_REF_CLK- | DIFF | |
| 12 | NC | | |
| 13 | PCIE_REF_CLK+ | DIFF | |
| 14 | NC | | |
| 15 | GND | GND | |
| 16 | NC | | |
| 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-/SATA_RX+ | DIFF | |
| 24 | +3.3V | PWR | +3.3V |

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 25 | PCIE_RX+/SATA_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-/SATA_TX- | DIFF | |
| 32 | SMB_DATA | I/O | +3.3V |
| 33 | PCIE_TX+/SATA_TX+ | DIFF | |
| 34 | GND | GND | |
| 35 | GND | GND | |
| 36 | USB_D- | DIFF | |
| 37 | GND | GND | |
| 38 | USB_D+ | DIFF | |
| 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 | |

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 51 | NC | | |
| 52 | +3.3V | PWR | +3.3V |

### 2.4.12 M.2 E-Key Slot (CN12)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | GND | GND | |
| 2 | +V3P3A | PWR | 3.3V |
| 3 | USB2_4_DP | DIFF | |
| 4 | +V3P3A | PWR | 3.3V |
| 5 | USB2_4_DN | DIFF | |
| 6 | NC | | |
| 7 | GND | GND | |
| 8 | NC | | |
| 9 | NC | | |
| 10 | NC | | |
| 11 | NC | | |
| 12 | NC | | |
| 13 | NC | | |
| 14 | NC | | |
| 15 | NC | | |
| 16 | NC | | |
| 17 | NC | | |
| 18 | GND | GND | |
| 19 | NC | | |
| 20 | NC | | |

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 21 | NC | | |
| 22 | NC | | |
| 23 | NC | | |
| 32 | NC | | |
| 33 | GND | GND | |
| 34 | NC | | |
| 35 | PCIE_2_TXP | DIFF | |
| 36 | NC | | |
| 37 | PCIE_2_TXN | DIFF | |
| 38 | NC | | |
| 39 | GND | GND | |
| 40 | NC | | |
| 41 | PCIE_2_RXP | DIFF | |
| 42 | NC | | |
| 43 | PCIE_2_RXN | GND | |
| 44 | NC | | |
| 45 | GND | GND | |
| 46 | NC | | |
| 47 | PCIE_0_CLK_DP | DIFF | |
| 48 | NC | | |
| 49 | PCIE_0_CLK_DN | DIFF | |
| 50 | NC | | |
| 51 | GND | GND | |
| 52 | BUF_PLT_RST# | Signal | |
| 53 | PCIE_CLKREQ#0 | Signal | |
| 54 | SOC_BT_EN | Signal | |

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 55 | PCIE_WAKE# | Signal | |
| 56 | SOC_WIFI_EN | Signal | |
| 57 | GND | GND | |
| 58 | NC | | |
| 59 | NC | | |
| 60 | NC | | |
| 61 | NC | | |
| 62 | NC | | |
| 63 | GND | GND | |
| 64 | NC | | |
| 65 | NC | | |
| 66 | NC | | |
| 67 | NC | | |
| 68 | NC | | |
| 69 | GND | GND | |
| 70 | NC | | |
| 71 | NC | | |
| 72 | +V3P3A | PWR | 3.3V |
| 73 | NC | | |
| 74 | +V3P3A | PWR | 3.3V |
| 75 | GND | GND | |

### 2.4.13 CAN Bus Dual Port Header (CN13)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +V5A | PWR | +5V |
| 2 | +V3P3A | PWR | +3.3V |
| 3 | CAN0_TX | | |
| 4 | CAN0_RX | | |
| 5 | GND | GND | |
| 6 | CAN1_TX | | |
| 7 | CAN1_RX | | |

### 2.4.14 COM Dual Port Header (CN15)

| Pin | RS232 Signal | RS422 Signal | RS485 Signal |
|---|---|---|---|
| 1 | DCD_1 | TX_1- | DATA_1- |
| 2 | DCD_2 | TX_2- | DATA_2- |
| 3 | RX_1 | TX_1+ | DATA_1+ |
| 4 | RX_2 | TX_2+ | DATA_2+ |
| 5 | TX_1 | RX_1+ | |
| 6 | TX_2 | RX_2+ | |
| 7 | DTR_1 | RX_1- | |
| 8 | DTR_2 | RX_2- | |
| 9 | GND | GND | GND |
| 10 | GND | GND | GND |
| 11 | DSR_1 | | |
| 12 | DSR_2 | | |
| 13 | RTS_1 | | |
| 14 | RTS_2 | | |

| Pin | RS232 Signal | RS422 Signal | RS485 Signal |
|---|---|---|---|
| 15 | CTS_1 | | |
| 16 | CTS_2 | | |
| 17 | RI_1/12V/5V | | |
| 18 | RI_2/12V/5V | | |
| 19 | UART_TX | | |
| 20 | UART_RX | | |

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

**Note 2:** RI1/+5V/+12V can be set by BOM (R423 RI/ R369 +12V/ R370 +5V). Default is RING.

**Note 3:** RI2/+5V/+12V can be set by BOM (R424 RI/ R372 +12V/ R373 +5V). Default is RING.

**Note 4:** Max current: 0.5A for each port.

### 2.4.15 SPI Port (CN17)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | SPI_SO | Signal | |
| 2 | GND | GND | |
| 3 | SPI_CLK | Signal | |
| 4 | +V3P3A_SPI | PWR | +3.3V |
| 5 | SPI_SI | Signal | |
| 6 | SPI_CS | Signal | |
| 7 | NC | | |

### 2.4.16 eSPI/ SMBus/ I2C

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | ESPI_IO0 | IN/OUT | +1.8V |
| 2 | ESPI_IO1 | IN/OUT | +1.8V |
| 3 | ESPI_IO2 | IN/OUT | +1.8V |
| 4 | ESPI_IO3 | IN/OUT | +1.8V |
| 5 | +V3.3S | PWR | +3.3V |
| 6 | ESPI_CS | Signal | |
| 7 | ESPI_RESET# | OUT | +1.8V |
| 8 | GND | GND | |
| 9 | ESPI_CLK | OUT | 1.8V |
| 10 | SMB_DATA/ I2C_SDA | IN/OUT | +3.3V |
| 11 | SMB_CLK/ I2C_CLK | OUT | +3.3V |
| 12 | SMB_ALERT/ INT_SERIRQ | IN | +3.3V |

### 2.4.17 4-pin Smart Fan Connector (CN19)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | GND | GND | GND |
| 2 | +V12S | PWR | +12V |
| 3 | FAN_TAC | Signal | |
| 4 | FAN_CTL | Signal | |

**Note**: CN19 Smart Fan power max current: 1.0A.

### 2.4.18 Power Input +12V (CN20)

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

### 2.4.19 Front Panel (CN21)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | GND | GND | |
| 2 | EXT_PWRBTN# | Signal | |
| 3 | FP_IDELED# | Signal | |
| 4 | +V3P3S | PWR | +3.3V |
| 5 | FP_BUZZER | Signal | |
| 6 | +V5S | PWR | +5V |
| 7 | GND | | |
| 8 | +V3P3S | PWR | +3.3V |
| 9 | GND | | |
| 10 | HWRST# | Signal | |

### 2.4.20 DC Jack Power Input (Reserved) (CN22)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1 | +V_IN | PWR | +12V |
| 2 | GND | GND | |
| 3 | GND | GND | |

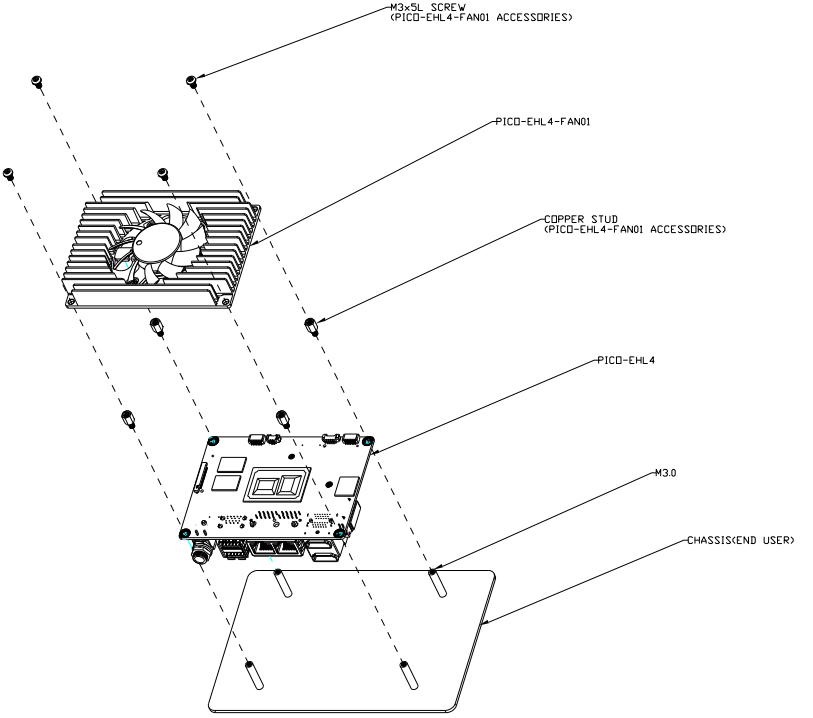
### 2.4.21 RJ45 Connector (Reserved)

| Pin | Pin Name | Signal Type | Signal Level |
|---|---|---|---|
| 1P1 | LAN1_MDI0+ | DIFF | |
| 1P2 | LAN1_MDI0- | DIFF | |
| 1P3 | LAN1_MDI1+ | DIFF | |
| 1P4 | LAN1_MDI1- | DIFF | |
| 1P5 | GND | GND | |
| 1P6 | GND | GND | |
| 1P7 | LAN1_MDI2+ | DIFF | |
| 1P8 | LAN1_MDI2- | DIFF | |
| 1P9 | LAN1_MDI3+ | DIFF | |
| 1P10 | LAN1_MDI3- | DIFF | |
| 1L1 | LAN1_LED_LNK#_ACT | Signal | |
| 1L2 | +V3P3A | VDD | 3.3V |
| 1L3 | LAN1_LED_100# | Signal | |
| 1L4 | LAN1_LED_1000# | Signal | |

## 2.5 Thermal Assembly Options

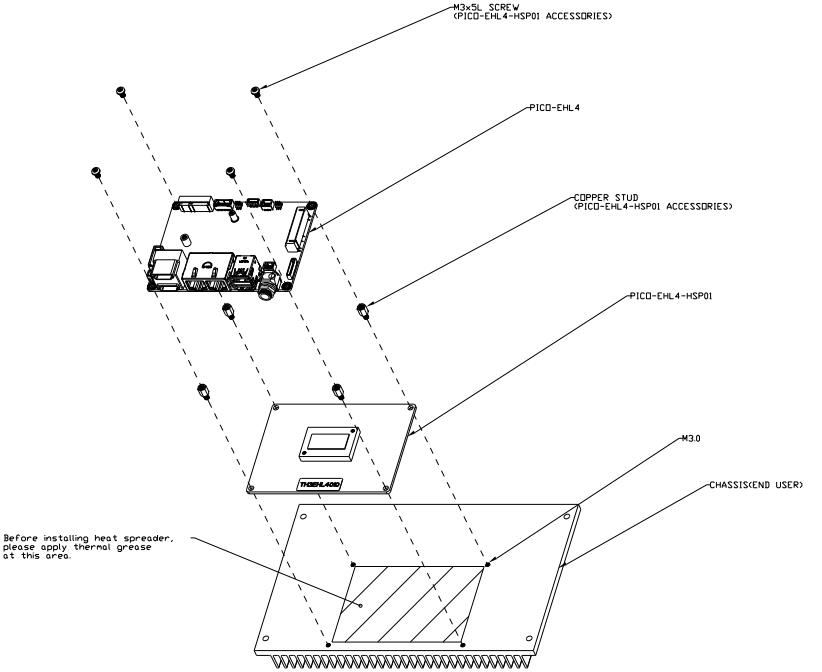
### 2.5.1 Active Cooling Fan FAN01

Active Cooling Fan, Part Number: PICO-EHL4-FAN01



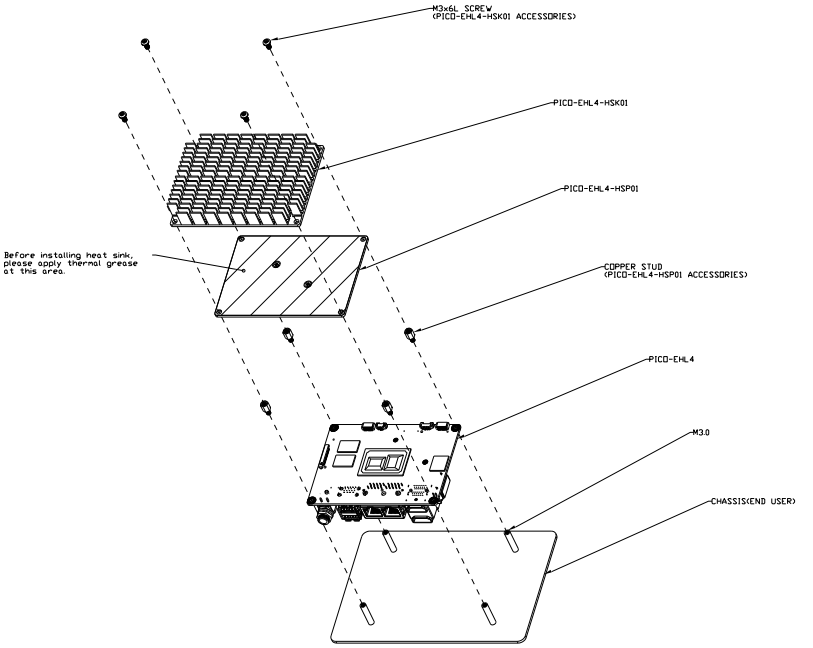
## 2.5.2 Fan-less Heatspreader HSP01

Heat spreader/ fan-less assembly, Part Number: PICO-EHL4-HSP01



## 2.5.3 Heatsink HSK01 (with Heatspreader)

Heatsink with Heatspreader, Part Number: PICO-EHL4-HSK01



# Chapter 3

AMI BIOS Setup

## 3.1 System Test and Initialization

The PICO-EHL4 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 board 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 PICO-EHL4 CMOS memory has an integrated lithium battery backup for data retention. The battery must be replaced when it runs down.

## 3.2 AMI BIOS Setup

The AMI BIOS ROM has a pre-installed Setup program that allows users to modify basic system configurations. These configurations are stored in the battery-backed CMOS RAM and BIOS NVRAM so the information is retained when power is turned off.

To enter BIOS Setup, turn on the system and immediately press <Del> or <ESC>.

The following BIOS menus and their functions are listed below.

**Main:** Set the date and time, use tab to switch between date elements.

**Advanced:** Access advanced hardware options and settings.

**Chipset** – Chipset settings and options, including memory and graphics settings.

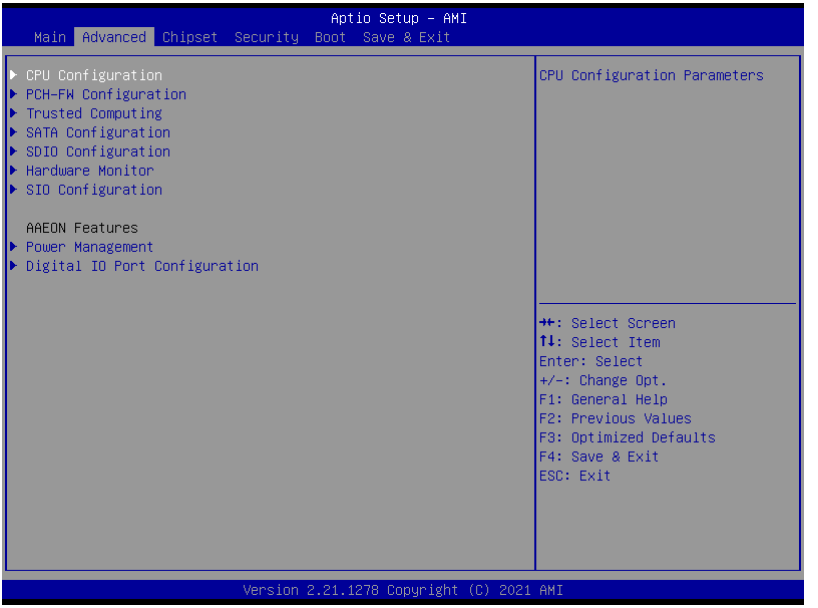
**Security:** Set setup administrator password and manage Secure Boot settings.

**Boot:** Boot Options, including Quiet Boot and BBS Priorities.

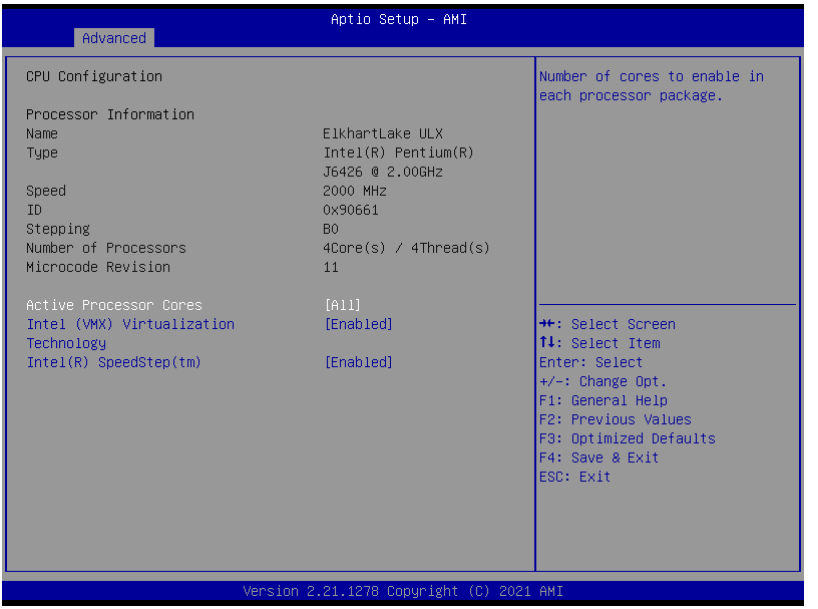
**Save & Exit:** Save changes to BIOS settings and exit BIOS program. Note: The system may need to restart for changes to take effect.

## 3.3 Setup Submenu: Main

## 3.4 Setup Submenu: Advanced

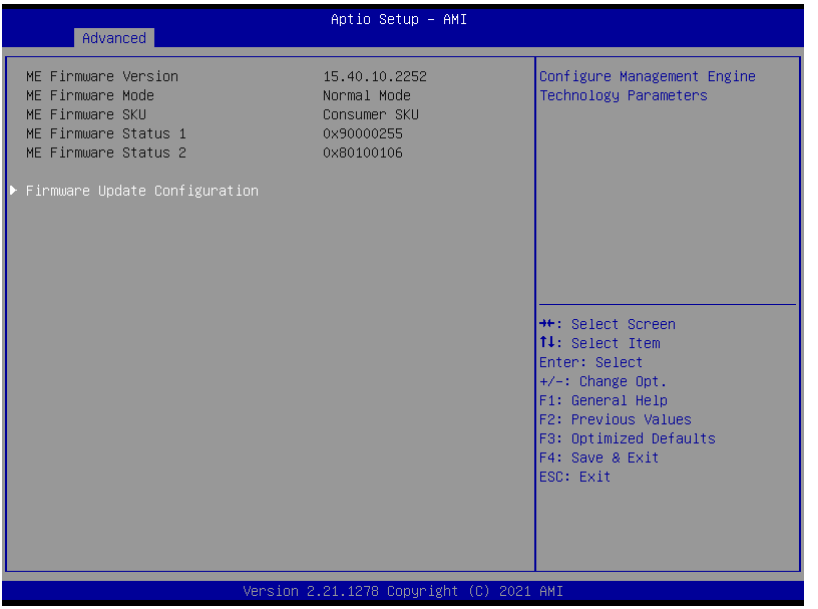


### 3.4.1 CPU Configuration




| Options Summary | | |
|---|---|---|
| Active Processor Cores | All | Optimal Default, Failsafe Default |
| | 1~N | |
| Number of cores to enable in each processor package. | | |
| Intel (VMX) Virtualization Technology | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology. | | |

### 3.4.2 PCH-FW Configuration



### 3.4.2.1 Firmware Update Configuration


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

## 3.4.3 Trusted Computing

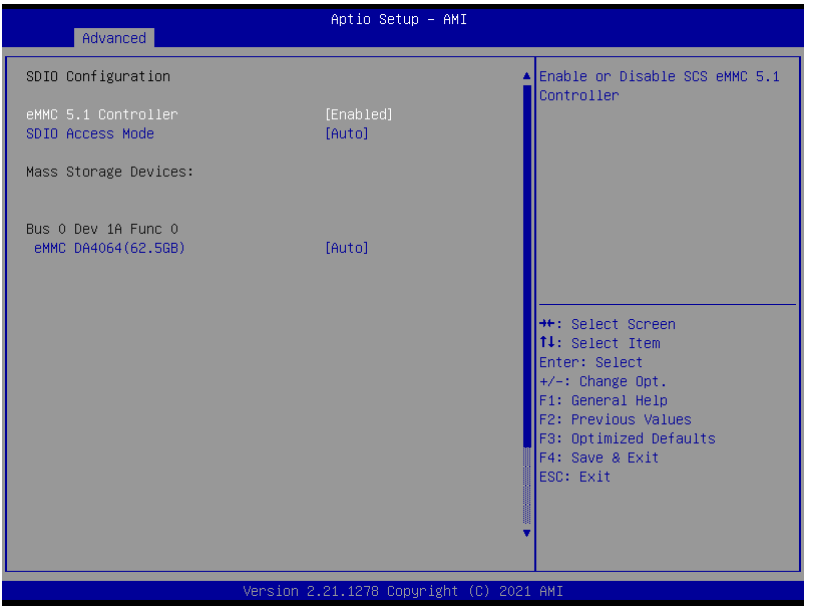

| Options Summary | | |
|---|---|---|
| Security Deice Support | Enable | Optimal Default, Failsafe Default |
| | Disable | |
| Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available. | | |
| SHA-1 PCR Bank | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enable or Disable SHA-1 PCR Bank | | |
| SHA256 PCR Bank | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| Enable or Disable SHA256 PCR Bank. | | |
| SHA384 PCR Bank | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| Enable or Disable SHA384 PCR Bank. | | |
| SM3_256 PCR Bank | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| Enable or Disable SM3_256 PCR Bank | | |

| Options Summary | | |
|---|---|---|
| **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. | | |
| **Platform Hierarchy** | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| Enable or Disable Platform Hierarchy | | |
| **Storage Hierarchy** | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| Enable or Disable Storage Hierarchy | | |
| **Endorsement Hierarchy** | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| Enable or Disable Endorsement Hierarchy | | |
| **TPM 2.0 UEFI Spec Version** | TCG_2 | Optimal Default, Failsafe Default |
| | TCG_1_2 | |
| Select the TCH2 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** | 1.3 | Optimal Default, Failsafe Default |
| | 1.2 | |
| Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3 | | |
| **Device Select** | Auto | Optimal Default, Failsafe Default |
| | TPM 1.2 | |
| | TPM 2.0 | |
| TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated. | | |

### 3.4.4 SATA Configuration

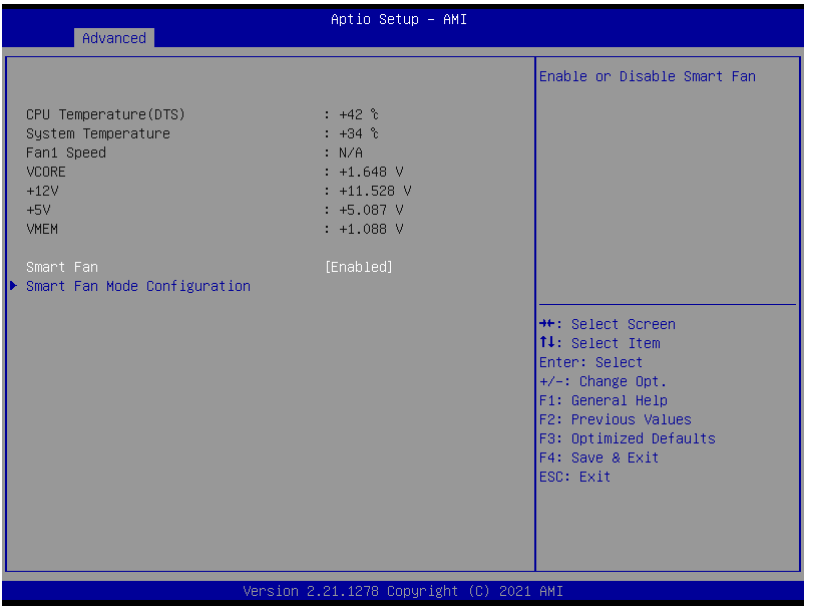

| Options Summary | | |
|---|---|---|
| SATA Controller(s) | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| Enable/Disable SATA Device. | | |
| Port* | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| Enable or Disable SATA Port. | | |

### 3.4.5 SDIO Configuration

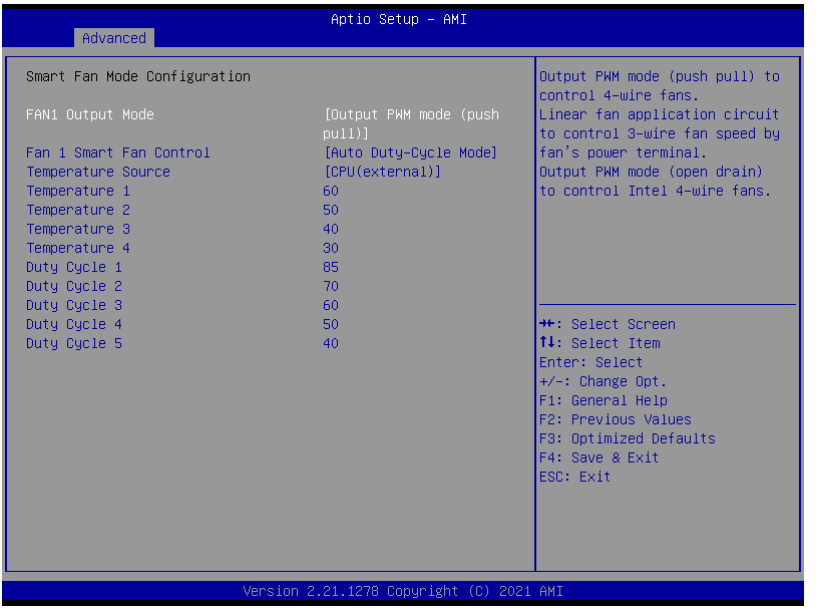



| Options Summary | | |
|---|---|---|
| **eMMC 5.1 Controller** | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| Enable or Disable SCS eMMC 5.1 Controller | | |
| **SDIO Access Mode** | Auto | Optimal Default, Failsafe Default |
| | ADMA | |
| | SDMA | |
| Auto Option: Access SD device in DMA mode if controller supports it, otherwise in PIO mode.<br>DMA Option: Access SD device in DMA mode.<br>PIO Option: Access SD device in PIO mode. | | |

## 3.4.6 Hardware Monitor



### 3.4.6.1 Smart Fan Mode Configuration




| Options Summary | | |
|---|---|---|
| Fan1 Output Mode | Output PWM mode (open drain) | Optimal Default, Failsafe Default |
| | Output PWM mode (push pull) | |
| Output PWM mode (push pull) to control 4-wire fans.\nLinear fan application circuit to control 3-wire fan speed by fan's power terminal.\nOutput PWM mode (open drain) to control Intel 4-wire fans. | | |
| Fan1 Smart Fan control | Manual Duty Mode | Optimal Default, Failsafe Default |
| | Auto Duty-Cycle Mode | |
| Smart Fan Mode select | | |
| Manual Duty Mode | 60 | Optimal Default, Failsafe Default |
| Manual mode fan control, user can write expected duty cycle (PWM fan type) 1-100 | | |

### 3.4.7 SIO Configuration

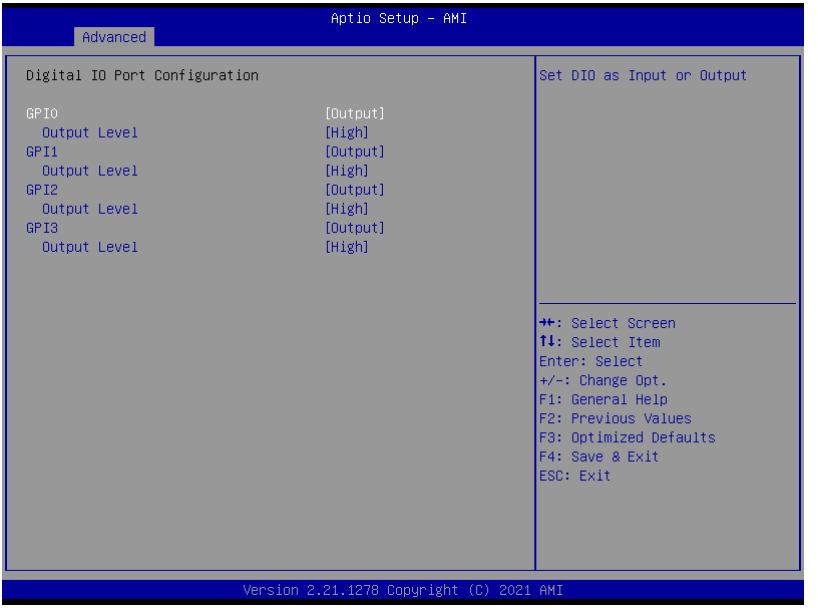
### 3.4.7.1 Serial Port Configuration


| 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 RS232/422/485 selection | | |

## 3.4.8 Power Management


| Options Summary | | |
|---|---|---|
| Power Mode | ATX Type | Optimal Default, Failsafe Default |
| | AT Type | |
| Select power supply mode. | | |
| Restore AC Power Loss | Last State | Optimal Default, Failsafe Default |
| | Always On | |
| | Always Off | |
| Select power state when power is re-applied after a power failure. | | |
| RTC wake system from S5 | Disabled | Optimal Default, Failsafe Default |
| | Fixed Time | |
| | Dynamic Time | |
| | Bypass | |
| Fixed Time: System will wake on the hr :: min :: sec specified<br>Dynamic Time : System will wake on the current time + Increase minutes(s).<br>Bypass: BIOS will not control RTC wake function during system shutdown | | |

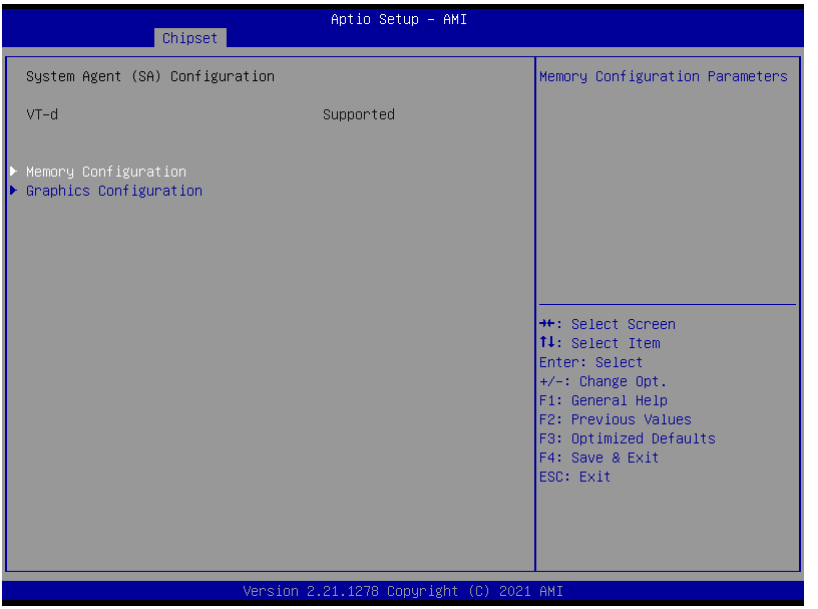
## 3.4.9 Digital IO Port Configuration



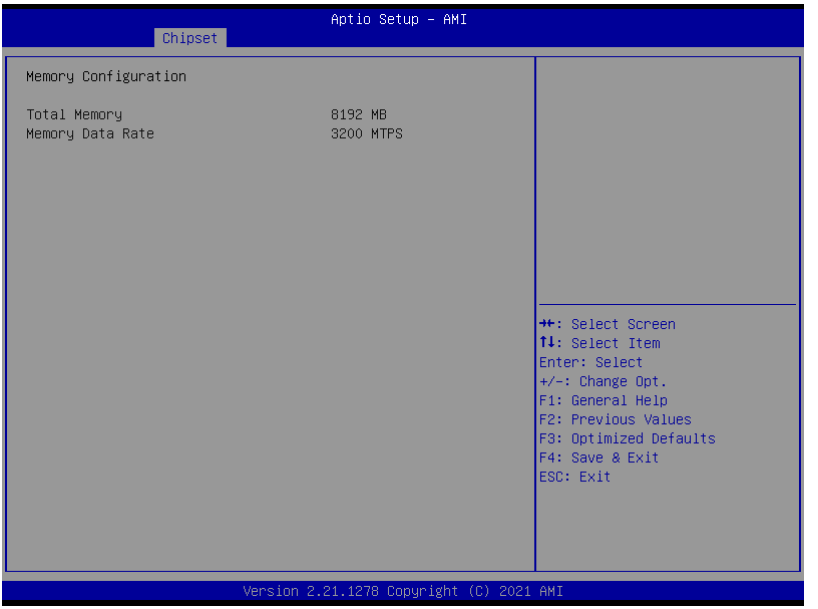

| Options Summary | | |
|---|---|---|
| DIO Port0~3 | Output | Optimal Default, Failsafe Default |
| | Input | |
| Set DIO as Input or Output | | |
| Output Level | High | Optimal Default, Failsafe Default |
| | Low | |
| Set output level when DIO pin is output | | |

## 3.5 Setup Submenu: Chipset

### 3.5.1 System Agent (SA) Configuration



### 3.5.1.1 Memory Configuration



### 3.5.1.2 Graphics Configuration


| Options Summary | | |
|---|---|---|
| Internal Graphics | Auto | Optimal Default, Failsafe Default |
| | Disabled | |
| | Enabled | |
| Keep IGFX enabled based on the setup options. | | |

### 3.5.1.2.1 LVDS Panel Configuration


| Options Summary | | |
|---|---|---|
| LVDS | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enable/Disable 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 | |
| Select panel type | | |

*Table Continues on Next Page...*

| Options Summary | | |
|---|---|---|
| Color Depth | 18-bit | Optimal Default, Failsafe Default |
| | 24-bit | |
| Select Color Depth | | |
| Backlight Mode | Windows Slider | Optimal Default, Failsafe Default |
| | BIOS & Application | |
| Select backlight control signal type | | |
| Backlight Type | Normal | Optimal Default, Failsafe Default |
| | Inverted | |
| Select backlight control signal type | | |
| Backlight Level | 0% | Optimal Default, Failsafe Default |
| | 10% | |
| | 20% | |
| | 30% | |
| | 40% | |
| | 50% | |
| | 60% | |
| | 70% | |
| | 80% | |
| | 90% | |
| | 100% | |
| Select backlight control level | | |
| Backlight PWM Freq | 100Hz | Optimal Default, Failsafe Default |
| | 200Hz | |
| | 220Hz | |
| | 500Hz | |
| | 1KHz | |
| | 2.2KHz | |
| | 6.5KHz | |
| Select PWM frequency of backlight control signal | | |

## 3.5.2 PCH-IO Configuration


| Options Summary | | |
|---|---|---|
| HD Audio | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| Control Detection of the HD-Audio device.<br>Disabled = HDA will be unconditionally disabled<br>Enabled = HDA will be unconditionally enabled. | | |
| Full-MiniCard Slot Function(CN11) | SATA | Optimal Default, Failsafe Default |
| | PCIe | |
| Select function enabled for Full-MiniCard(CN11) Slot | | |

## 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.

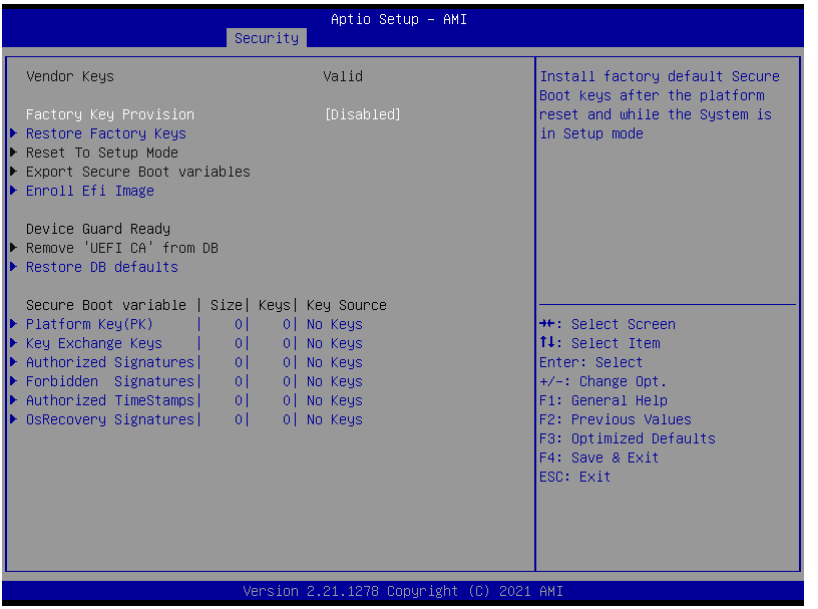
### Removing the Password

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.<br>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 | |
| Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode | | |
| 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 | |

Secure Boot Variables

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

   a) EFI_SIGNATURE_LIST

   b) EFI_CERT_X509 (DER encoded)

   c) EFI_CERT_RSA2048 (bin)

   d) EFI_CERT_SHAXXX

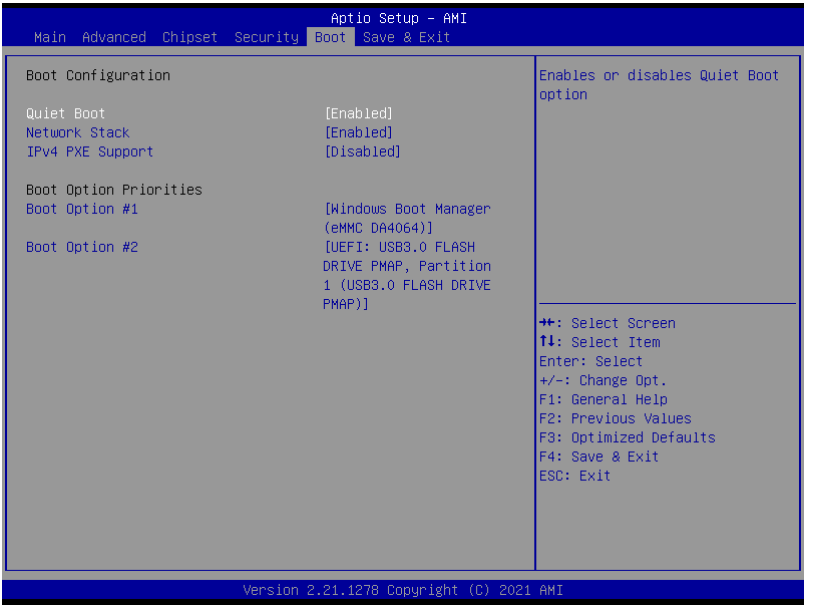
2. Authenticated UEFI Variable

3. EFI PE/COFF Image (SHA256)

Key Source:

   Default, External, Mixed

## 3.7 Setup Submenu: Boot




| Options Summary | | |
|---|---|---|
| Quiet Boot | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enable or Disable Quiet Boot option. | | |
| Network Stack | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enable/Disable UEFI Network Stack. | | |
| IPv4 PXE Support | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enable/Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available. | | |
| FIXED BOOT ORDER Priorities | Sets the system boot order | |

## 3.8 Setup Submenu: Save & Exit

# Chapter 4

Drivers Installation

## 4.1 Drivers Download and Installation

Drivers for the PICO-EHL4 can be downloaded from the product page on the AAEON website by following this link:

https://www.aaeon.com/en/p/pico-itx-turnkit-pico-EHL4

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

### Step 1 – Install Chipset Driver

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

### Step 2 – Install Graphics Driver

1. Open the **Intel Graphics** folder.
2. Run the **igxpin.exe** file.
3. Follow the instructions
4. Driver will be installed automatically

### Step 3 – Install Serial IO Driver

1. Open the **Serial IO** folder.
2. Serial IO Driver .inf files will need to be installed manually.

### Step 4 – Install ME Driver

1. Open the **ME** folder.
2. Run the **SetupME.exe** file
3. Follow the instructions
4. Driver will be installed automatically

### Step 5 – Install LAN Driver

1. Open the **LAN** folder.
2. Run the **Install_Win10_10050_08132021.exe** file
3. Follow the instructions
4. Driver will be installed automatically

### Step 6 – Peripheral Drivers

1. Open the **Peripheral Drivers** folder.
2. Peripheral Drivers .inf files will need to be installed manually.

For Linux Peripheral Drivers, follow the instructions included in the file to download and install the relevant drivers.

# Appendix A

Mating Connectors

## A.1 List of Mating Connectors and Cables

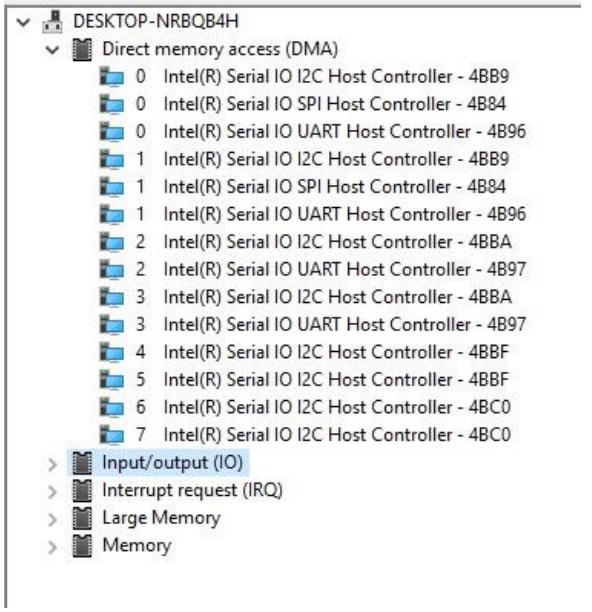
The following table lists mating connectors and available cables.

| Connector Label | Function | Mating Connector | | Available Cable | Cable P/N |
|---|---|---|---|---|---|
| | | Vendor | Model no | | |
| CN1 | RTC Battery | Molex | 51021-0200 | Battery Cable | 175011301C |
| CN2 | LVDS Back Light Inverter | SHR | WL1010H-6P Terminal: KB901-10T | LVDS Inverter Cable | 170X000152 |
| CN3 | LVDS | KEL | SSL20-30S | LVDS Cable | 170X000314 |
| | EDP | | | EDP Cable | 170X000313 |
| CN6 | SATA | Molex | 887505318 | SATA Cable | 1709070500 |
| CN7 | SATA Power | JST | PHR-2 | SATA Power Cable | 1702150155 |
| CN8 | 4-bit DIO Header | Molex | 78120-0607 | N/A | N/A |
| CN10 | USB2.0 Header | ACES | 50247-010H0H0-001 | USB2.0 Cable | 170010010D |
| CN13 | CAN Bus Header | JCTC | HSG: 11002H00-7P TER: 11002TOP-2E | CAN Bus Cable | 170X000316 |
| CN15 | COM Header | JST | SHDR-20V-S-B | COM Port Cable | 170X000231 |
| CN18 | eSPI/SMBUS/ I2C | JST | SHR-12V-S-B | LPC/eSPI Cable | 1703120130 |
| CN19 | 4-pin Smart FAN | Molex | 51021-0400 | N/A | N/A |
| CN20 | Power Input | Molex | 19211-0003 | Power Cable | 170204010R |
| CN21 | Front Panel | ACES | 50247-010H0H0-001 | Front Panel Cable | 1709100108 |
| CN22 | DC Jack Power Input | HUANG JI | 5525C257-3T00-R1-7.5 | Power Cable | 1702041004 |

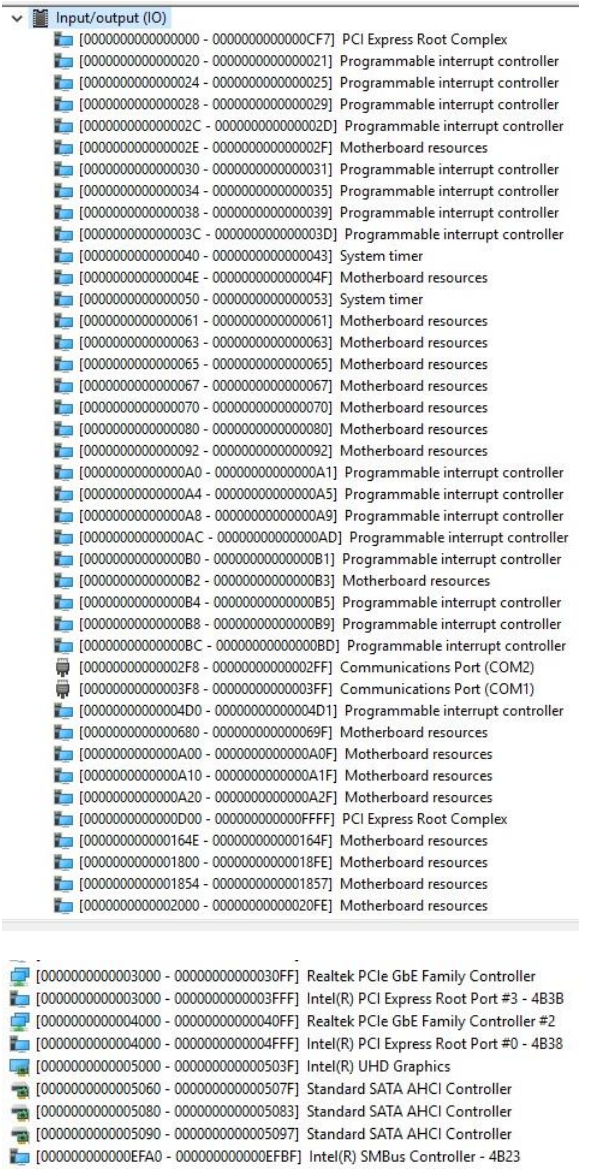
# Appendix B

I/O Information

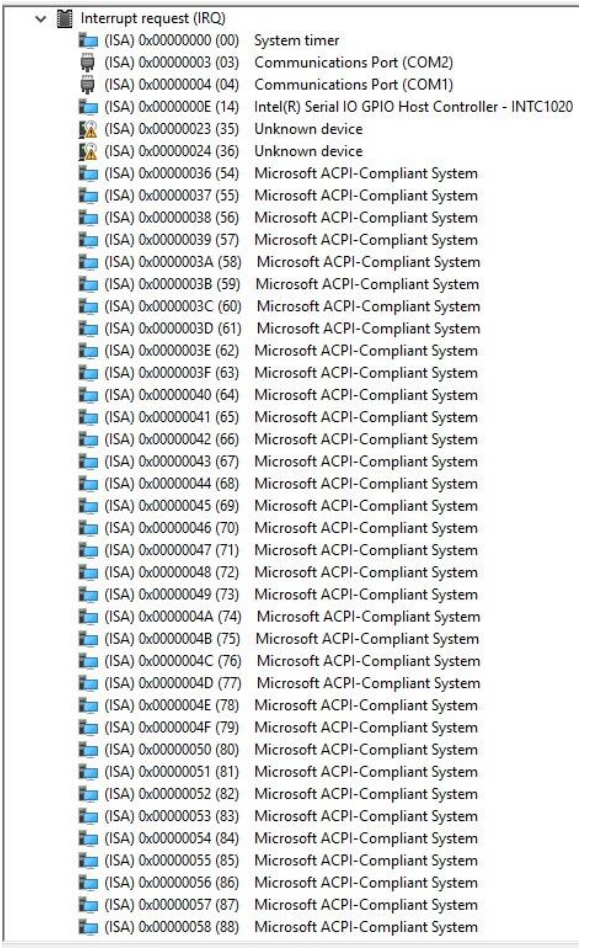
## B.1 Direct Memory Access (DMA) Map

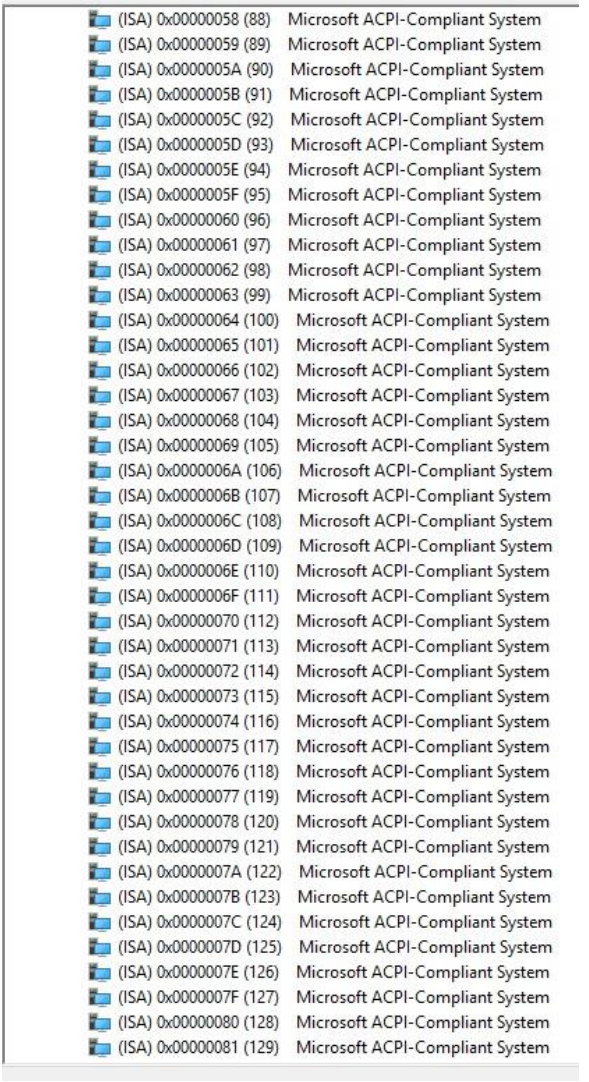


## B.2 I/O Address Map



## B.3 IRQ Mapping Chart

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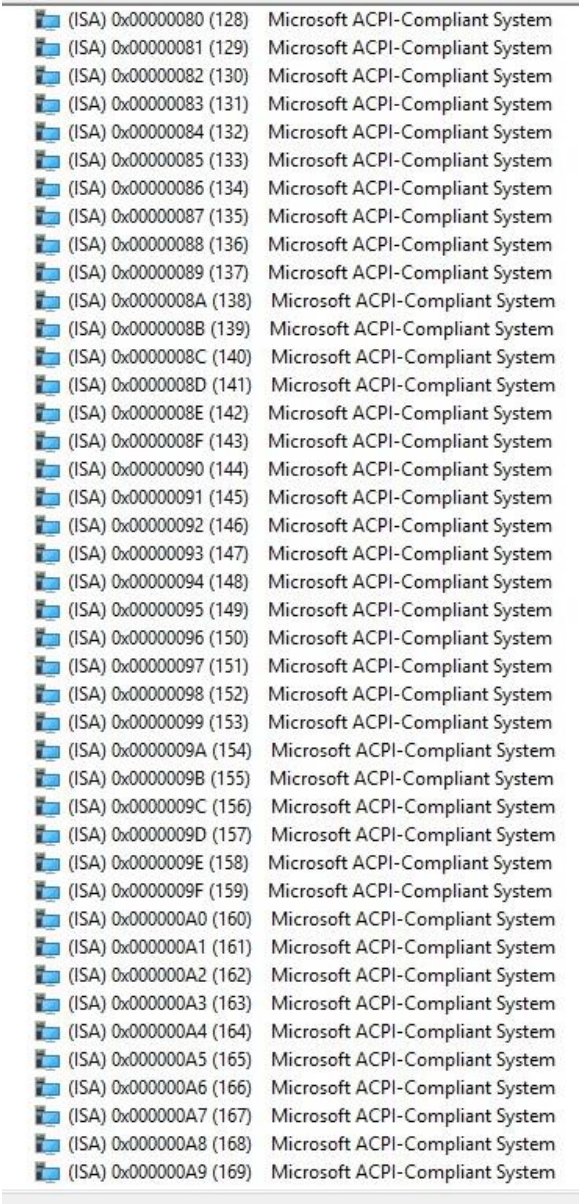
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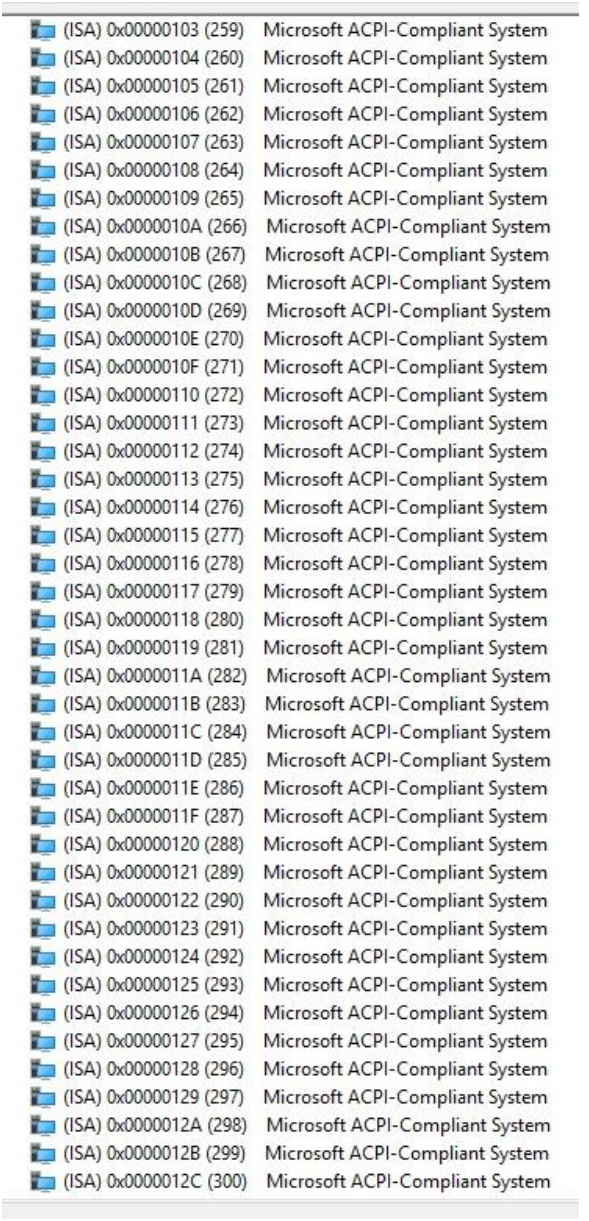
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| (ISA) 0x0000016E (366) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000016F (367) | Microsoft ACPI-Compliant System |
| (ISA) 0x00000170 (368) | Microsoft ACPI-Compliant System |
| (ISA) 0x00000171 (369) | Microsoft ACPI-Compliant System |
| (ISA) 0x00000172 (370) | Microsoft ACPI-Compliant System |
| (ISA) 0x00000173 (371) | Microsoft ACPI-Compliant System |
| (ISA) 0x00000174 (372) | Microsoft ACPI-Compliant System |
| (ISA) 0x00000175 (373) | Microsoft ACPI-Compliant System |
| (ISA) 0x00000176 (374) | Microsoft ACPI-Compliant System |
| (ISA) 0x00000177 (375) | Microsoft ACPI-Compliant System |
| (ISA) 0x00000178 (376) | Microsoft ACPI-Compliant System |
| (ISA) 0x00000179 (377) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000017A (378) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000017B (379) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000017C (380) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000017D (381) | Microsoft ACPI-Compliant System |

| | |
|---|---|
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| (ISA) 0x0000017D (381) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000017E (382) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000017F (383) | Microsoft ACPI-Compliant System |
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| (ISA) 0x0000018C (396) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000018D (397) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000018E (398) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000018F (399) | Microsoft ACPI-Compliant System |
| (ISA) 0x00000190 (400) | Microsoft ACPI-Compliant System |
| (ISA) 0x00000191 (401) | Microsoft ACPI-Compliant System |
| (ISA) 0x00000192 (402) | Microsoft ACPI-Compliant System |
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| (ISA) 0x00000199 (409) | Microsoft ACPI-Compliant System |
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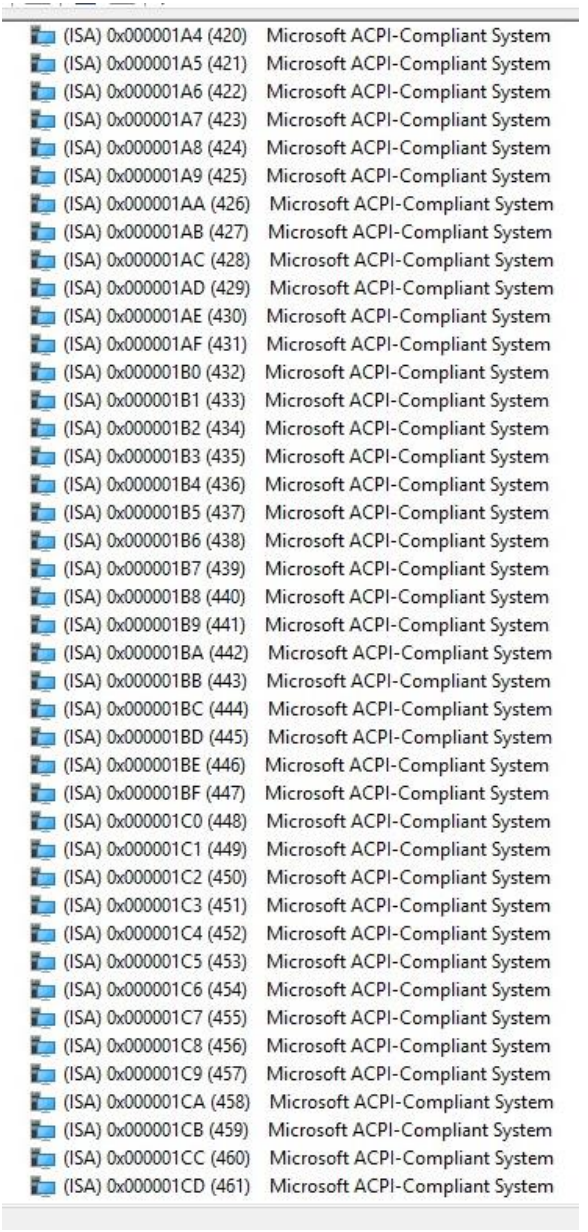
| (ISA) 0x0000019B (411) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000019C (412) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000019D (413) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000019E (414) | Microsoft ACPI-Compliant System |
| (ISA) 0x0000019F (415) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001A0 (416) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001A1 (417) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001A2 (418) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001A3 (419) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001A4 (420) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001A5 (421) | Microsoft ACPI-Compliant System |



| | |
|---|---|
| (ISA) 0x000001A4 (420) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001A5 (421) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001A6 (422) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001A7 (423) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001A8 (424) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001A9 (425) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001AA (426) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001AB (427) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001AC (428) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001AD (429) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001AE (430) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001AF (431) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001B0 (432) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001B1 (433) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001B2 (434) | Microsoft ACPI-Compliant System |
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| (ISA) 0x000001B4 (436) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001B5 (437) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001B6 (438) | Microsoft ACPI-Compliant System |
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| (ISA) 0x000001B9 (441) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001BA (442) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001BB (443) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001BC (444) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001BD (445) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001BE (446) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001BF (447) | Microsoft ACPI-Compliant System |
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| (ISA) 0x000001C1 (449) | Microsoft ACPI-Compliant System |
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| (ISA) 0x000001C3 (451) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001C4 (452) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001C5 (453) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001C6 (454) | Microsoft ACPI-Compliant System |
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| (ISA) 0x000001CA (458) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001CB (459) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001CC (460) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001CD (461) | Microsoft ACPI-Compliant System |

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|---|---|
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| (ISA) 0x000001CD (461) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001CE (462) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001CF (463) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001D0 (464) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001D1 (465) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001D2 (466) | Microsoft ACPI-Compliant System |
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| (ISA) 0x000001E0 (480) | Microsoft ACPI-Compliant System |
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| (ISA) 0x000001E2 (482) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001E3 (483) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001E4 (484) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001E5 (485) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001E6 (486) | Microsoft ACPI-Compliant System |
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| (ISA) 0x000001E8 (488) | Microsoft ACPI-Compliant System |
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| (ISA) 0x000001EA (490) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001EB (491) | Microsoft ACPI-Compliant System |
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| (ISA) 0x000001F1 (497) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001F2 (498) | Microsoft ACPI-Compliant System |
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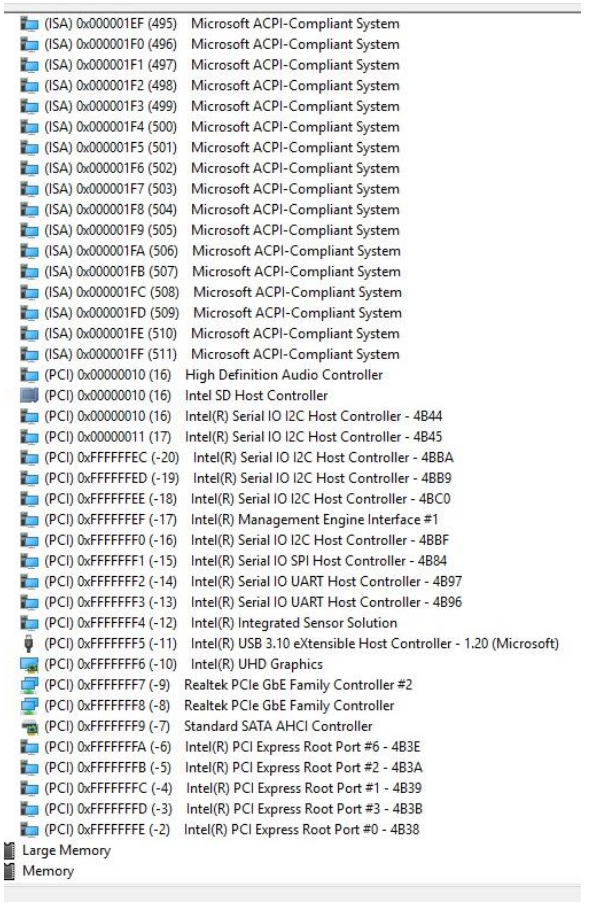
| (ISA) 0x000001F4 (500) | Microsoft ACPI-Compliant System |
| (ISA) 0x000001F5 (501) | Microsoft ACPI-Compliant System |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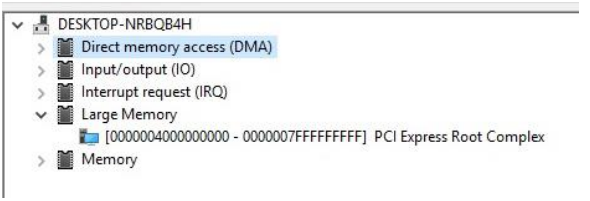
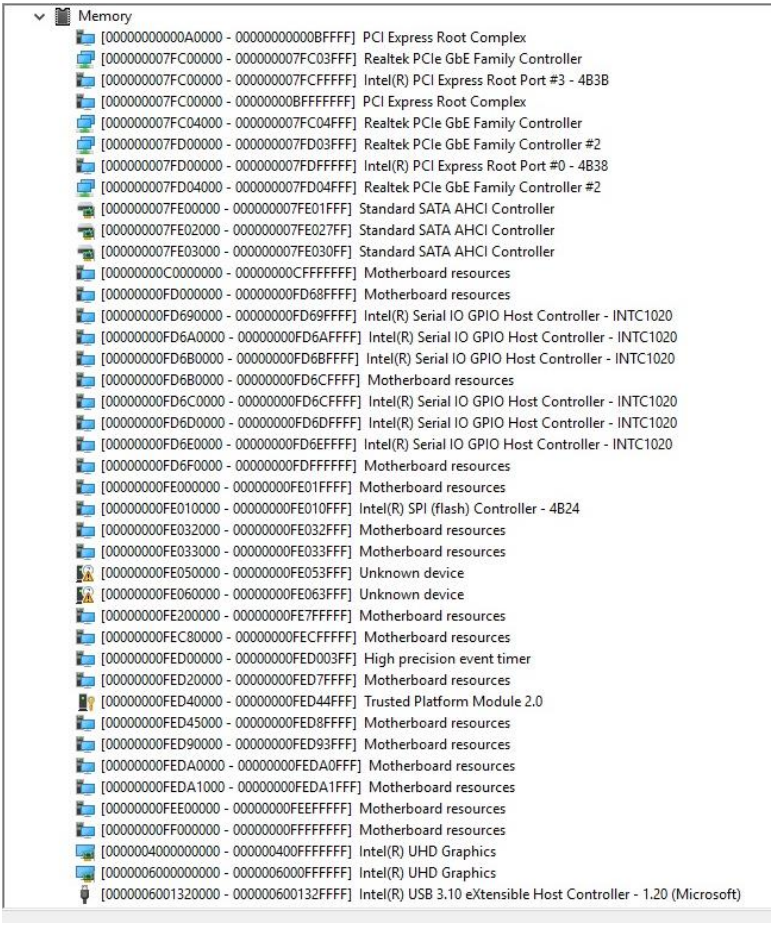
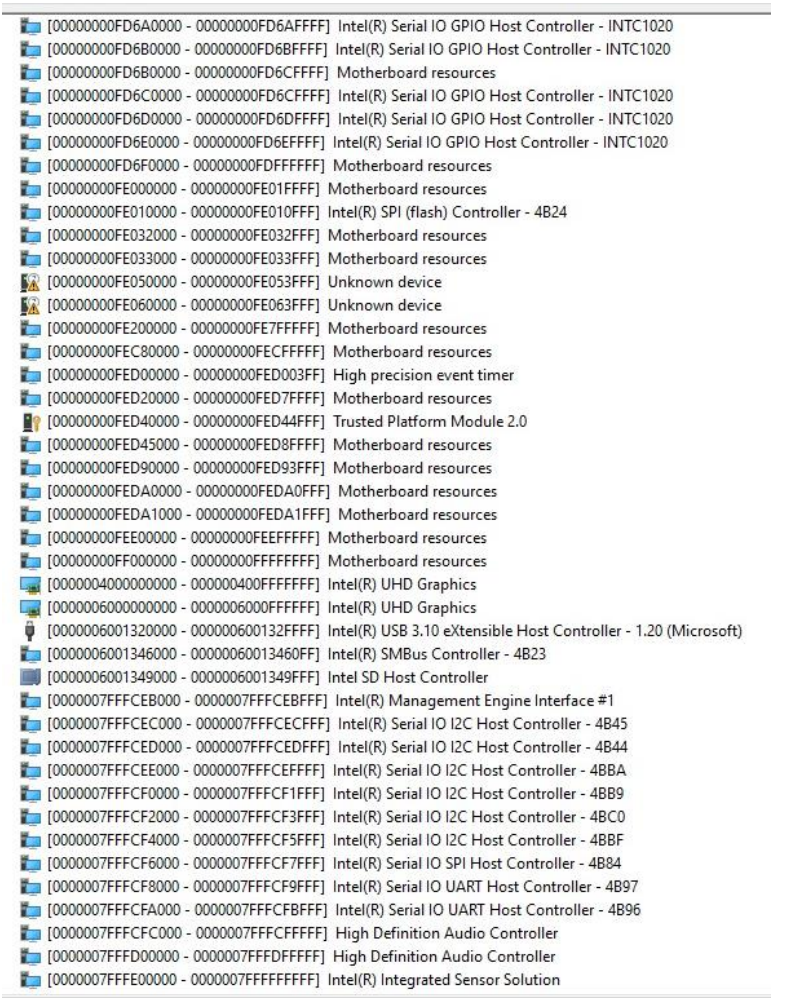
(ISA) 0x000001F0 (496) Microsoft ACPI-Compliant System
(ISA) 0x000001F1 (497) Microsoft ACPI-Compliant System
(ISA) 0x000001F2 (498) Microsoft ACPI-Compliant System
(ISA) 0x000001F3 (499) Microsoft ACPI-Compliant System
(ISA) 0x000001F4 (500) Microsoft ACPI-Compliant System
(ISA) 0x000001F5 (501) Microsoft ACPI-Compliant System
(ISA) 0x000001F6 (502) Microsoft ACPI-Compliant System
(ISA) 0x000001F7 (503) Microsoft ACPI-Compliant System
(ISA) 0x000001F8 (504) Microsoft ACPI-Compliant System
(ISA) 0x000001F9 (505) Microsoft ACPI-Compliant System
(ISA) 0x000001FA (506) Microsoft ACPI-Compliant System
(ISA) 0x000001FB (507) Microsoft ACPI-Compliant System
(ISA) 0x000001FC (508) Microsoft ACPI-Compliant System
(ISA) 0x000001FD (509) Microsoft ACPI-Compliant System
(ISA) 0x000001FE (510) Microsoft ACPI-Compliant System
(ISA) 0x000001FF (511) Microsoft ACPI-Compliant System
(PCI) 0x00000010 (16) High Definition Audio Controller
(PCI) 0x00000010 (16) Intel SD Host Controller
(PCI) 0x00000010 (16) Intel(R) Serial IO I2C Host Controller - 4B44
(PCI) 0x00000011 (17) Intel(R) Serial IO I2C Host Controller - 4B45
(PCI) 0xFFFFFFEC (-20) Intel(R) Serial IO I2C Host Controller - 4BBA
(PCI) 0xFFFFFFED (-19) Intel(R) Serial IO I2C Host Controller - 4BB9
(PCI) 0xFFFFFFEE (-18) Intel(R) Serial IO I2C Host Controller - 4BC0
(PCI) 0xFFFFFFEF (-17) Intel(R) Management Engine Interface #1
(PCI) 0xFFFFFFF0 (-16) Intel(R) Serial IO I2C Host Controller - 4BBF
(PCI) 0xFFFFFFF1 (-15) Intel(R) Serial IO SPI Host Controller - 4B84
(PCI) 0xFFFFFFF2 (-14) Intel(R) Serial IO UART Host Controller - 4B97
(PCI) 0xFFFFFFF3 (-13) Intel(R) Serial IO UART Host Controller - 4B96
(PCI) 0xFFFFFFF4 (-12) Intel(R) Integrated Sensor Solution
(PCI) 0xFFFFFFF5 (-11) Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
(PCI) 0xFFFFFFF6 (-10) Intel(R) UHD Graphics
(PCI) 0xFFFFFFF7 (-9) Realtek PCIe GbE Family Controller #2
(PCI) 0xFFFFFFF8 (-8) Realtek PCIe GbE Family Controller
(PCI) 0xFFFFFFF9 (-7) Standard SATA AHCI Controller
(PCI) 0xFFFFFFFA (-6) Intel(R) PCI Express Root Port #6 - 4B3E
(PCI) 0xFFFFFFFB (-5) Intel(R) PCI Express Root Port #2 - 4B3A
(PCI) 0xFFFFFFFC (-4) Intel(R) PCI Express Root Port #1 - 4B39
(PCI) 0xFFFFFFFD (-3) Intel(R) PCI Express Root Port #3 - 4B3B
(PCI) 0xFFFFFFFE (-2) Intel(R) PCI Express Root Port #0 - 4B38
Large Memory
Memory

## B.4 Large Memory Map



## B.5 Memory Address Map




[00000000FD6A0000 - 00000000FD6AFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1020
[00000000FD6B0000 - 00000000FD6BFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1020
[00000000FD6B0000 - 00000000FD6CFFFF] Motherboard resources
[00000000FD6C0000 - 00000000FD6CFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1020
[00000000FD6D0000 - 00000000FD6DFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1020
[00000000FD6E0000 - 00000000FD6EFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1020
[00000000FD6F0000 - 00000000FDFFFFFF] Motherboard resources
[00000000FE000000 - 00000000FE01FFFF] Motherboard resources
[00000000FE010000 - 00000000FE010FFF] Intel(R) SPI (flash) Controller - 4B24
[00000000FE032000 - 00000000FE032FFF] Motherboard resources
[00000000FE033000 - 00000000FE033FFF] Motherboard resources
[00000000FE050000 - 00000000FE053FFF] Unknown device
[00000000FE060000 - 00000000FE063FFF] Unknown device
[00000000FE200000 - 00000000FE7FFFFF] Motherboard resources
[00000000FEC80000 - 00000000FECFFFFF] Motherboard resources
[00000000FED00000 - 00000000FED003FF] High precision event timer
[00000000FED20000 - 00000000FED7FFFF] Motherboard resources
[00000000FED40000 - 00000000FED44FFF] Trusted Platform Module 2.0
[00000000FED45000 - 00000000FED8FFFF] Motherboard resources
[00000000FED90000 - 00000000FED93FFF] Motherboard resources
[00000000FEDA0000 - 00000000FEDA0FFF] Motherboard resources
[00000000FEDA1000 - 00000000FEDA1FFF] Motherboard resources
[00000000FEE00000 - 00000000FEEFFFFF] Motherboard resources
[00000000FF000000 - 00000000FFFFFFFF] Motherboard resources
[0000004000000000 - 000000400FFFFFFF] Intel(R) UHD Graphics
[0000006000000000 - 0000006000FFFFFF] Intel(R) UHD Graphics
[0000006001320000 - 0000006001320FFF] Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
[0000006001346000 - 0000006001346FFF] Intel(R) SMBus Controller - 4B23
[0000006001349000 - 0000006001349FFF] Intel SD Host Controller
[0000007FFFCEB000 - 0000007FFFCEBFFF] Intel(R) Management Engine Interface #1
[0000007FFFCEC000 - 0000007FFFCECFFF] Intel(R) Serial IO I2C Host Controller - 4B45
[0000007FFFCED000 - 0000007FFFCEDFFF] Intel(R) Serial IO I2C Host Controller - 4B44
[0000007FFFCEE000 - 0000007FFFCEFFFF] Intel(R) Serial IO I2C Host Controller - 4BBA
[0000007FFFCF0000 - 0000007FFFCF1FFF] Intel(R) Serial IO I2C Host Controller - 4BB9
[0000007FFFCF2000 - 0000007FFFCF3FFF] Intel(R) Serial IO I2C Host Controller - 4BC0
[0000007FFFCF4000 - 0000007FFFCF5FFF] Intel(R) Serial IO I2C Host Controller - 4BBF
[0000007FFFCF6000 - 0000007FFFCF7FFF] Intel(R) Serial IO SPI Host Controller - 4B84
[0000007FFFCF8000 - 0000007FFFCF9FFF] Intel(R) Serial IO UART Host Controller - 4B97
[0000007FFFCFA000 - 0000007FFFCFBFFF] Intel(R) Serial IO UART Host Controller - 4B96
[0000007FFFCFC000 - 0000007FFFCFFFFF] High Definition Audio Controller
[0000007FFFD00000 - 0000007FFFDFFFFF] High Definition Audio Controller
[0000007FFFE00000 - 0000007FFFFFFFFF] Intel(R) Integrated Sensor Solution

# Appendix C

Watchdog Timer Programming

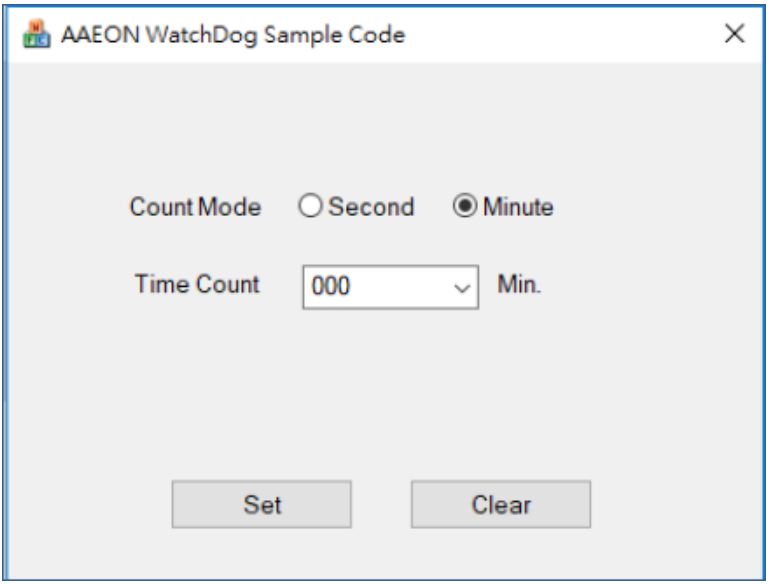
## C.1 Introduction to Watchdog Timer

This section details how to set up and program the Watchdog Timer for your AAEON system or board. The watchdog timer is used to automatically detect malfunctions and recover the system. During normal operation, the system will regularly send a signal to reset the watchdog timer. If the system does not reset the watchdog timer, it will timeout and force the system into recovery and/or reboot.

The following sections refer to additional software used for programming your board, such as the AAEON Framework, AAEON SDK and AAEON Windows EAPI. If you need assistance with utilizing these tools, programming your Watchdog Timer, or would like additional documentation on these resources, contact your AAEON representative or visit our support page at https://www.aaeon.com/en/support/

## C.2 Programing the Watchdog Timer with AAEON SDK

If you have installed the AAEON Framework, you can program the Watchdog Timer using the AAEON SDK. Simply locate where the SDK is installed, and double click the icon. The following dialog box will appear:




**Count Mode:** Set Watchdog Timer to count in minutes or seconds.

**Time Count:** The length of time (in minutes or seconds) before the Watchdog Timer will initiate a system recovery/ reboot.

**Set:** After selecting Count Mode and Time Count, this will save your changes and enable the Watchdog Timer function.

**Clear:** This will reset settings and disable the Watchdog Timer function.

## C.3 Programing Watchdog Timer with AAEON Windows EAPI

AAEON Framework (KMDF Driver) must be installed before calling these functions.

**EapiLibInitialize()** should be the first to call before calling other EAPI functions.

**EApiLibUnInitialize()** should be called to release resources before program exit.

When building C/C++ apps, Lib (Library, aaeonEAPI.lib) is needed.

aaeonEAPI.lib is needed for C/C++ based app, make sure the lib files and executable files are in the same folder.

The following shows how to build and run codes:

There are two scenarios to invoke Watchdog Timer functions:

1. Use **EApiWDogStart**

   After EAPiWDogStart

   **|<- Delay ->|<- Event Timeout ->|<- Reset Timeout ->|**

   **A------------B--------------------C--------------------D**

2. Use **EApiWDogTrigger**

   After EApiWDogTrigger

   **|<- Event Timeout ->|<- Reset Timeout ->|**

   **E--------------------F--------------------G**

Stage A: Watchdog is started.

Stage B: Initial Delay Period.

Stage C/F: Event is triggered, NMI, IRQ, or PIN is Triggered. This allows for possible Software Recovery.

Stage D/G: System is reset.

Stage E: Watchdog is Triggered.

**EApiWDogStop** must be called before Stage C/F to prevent event from being generated.

**EApiWDogStop** must be called before Stage D/G to prevent system from being reset.

## C.3.1 Watchdog Timer Functions

### C.3.1.1 EapiWDogGetCap()

Command Line:

```
EApiWDogGetCap(…)
    __OUTOPT uint32_t *pMaxDelay,
    __OUTOPT uint32_t *pMaxEventTimeout,
    __OUTOPT uint32_t *pMaxResetTimeout
 )
```

Use this command to get maximum Supported Delay / Supported Event Timeout / Supported Reset Timeout of the watchdog timer.

| Parameters | Function Parameters |
|---|---|
| *pMaxDelay | Maximum Supported Delay in milliseconds |
| *pMaxEvenTimeout | Maximum Supported Event Timeout in milliseconds; 0 = Unsupported |
| *pMaxResetTimeout | Maximum Supported Reset Timeout in milliseconds |
| **Condition** | **Return Values** |
| Library Uninitialized | EAPI_STATUS_NOT_INITIALIZED |
| pMaxDelay == NULL && pMaxResetTimeout == NULL && pMaxEventTimeout == NULL | EAPI_STATUS_INVALID_PARAMETER |
| Common Error | Common Error Code |
| Others | EAPI_STATUS_SUCCESS |

### C.3.1.2 EapiWDogStart()

Command Line:

```
EApiWDogStart(
    __IN uint32_t Delay,
    __IN uint32_t Minute,
    __IN uint32_t EventTimeout,
    __IN uint32_t ResetTimeout
 )
```

Use this command to start the Watchdog Timer and set the timeout values.

To stop the Watchdog Timer, issue the command **EApiWDogStop**. After issuing EAPiWDogStop, the command EApiWDogStart must be called again with new values to restart.

If the hardware implementation of the watchdog timer does not allow the user to select the exact time they want, the EAPI will select the next longer time setting available.

| Parameters | Function Parameters |
|---|---|
| Delay | Delay in milliseconds |
| Minute | Control minutes or seconds |
| EventTimeout | Event Timeout in milliseconds |
| ResetTimeout | Reset Timeout in milliseconds |
| **Condition** | **Return Values** |
| Library Uninitialized | EAPI_STATUS_NOT_INITIALIZED |
| (Delay > gMaxDelay)<br>(EventTimeout > gMaxEventTimeout)<br>(ResetTimeout > gMaxResetTimeout) | EAPI_STATUS_INVALID_PARAMETER |
| Common Error | Common Error Code |
| Others | EAPI_STATUS_SUCCESS |

### C.3.1.3 EapiWDogTrigger()

Command Line:

```
EapiWDogTrigger()
```

Use this command to trigger the Watchdog Timer.

| Parameters | Function Parameters |
|---|---|
| None | |
| **Condition** | **Return Values** |
| Library Uninitialized | EAPI_STATUS_NOT_INITIALIZED |
| Watchdog Not Started | EAPI_STATUS_ERROR |
| Common Error | Common Error Code |
| Others | EAPI_STATUS_SUCCESS |

### C.3.1.4 EapiWDogStop()

Command Line:

```
EapiWDogStop()
```

Use this command to close the Watchdog Instance. This will disable the Watchdog Timer and clear previous settings.

| Parameters | Function Parameters |
|---|---|
| None | |
| **Condition** | **Return Values** |
| Library Uninitialized | EAPI_STATUS_NOT_INITIALIZED |
| Common Error | Common Error Code |
| Others | EAPI_STATUS_SUCCESS |

### C.3.1.5 EapiWDogReloadTimer()

Command Line:

```
EapiWDogReloadTimer()
```

Use this command to reload the Timeout count

| Parameters | Function Parameters |
|---|---|
| None | |
| **Condition** | **Return Values** |
| Library Uninitialized | EAPI_STATUS_NOT_INITIALIZED |
| Common Error | Common Error Code |
| Others | EAPI_STATUS_SUCCESS |

### C.3.1.6 EapiWDogGetStatus()

Command Line:

```
EapiWDogGetStatus(
    __OUTOPT uint32_t *pwdtMinute,
    __OUTOPT uint32_t *pwdtCountTime,
    __OUTOPT uint32_t *pwdtReloadTime
 )
```

Use this command to get the Watchdog Timer mode, time count value and reload timer.

| Parameters | Function Parameters |
|---|---|
| *pwdtMinute | Get the mode of minute or second |
| *pwdtCountTime | Get WDT time count |
| *pwdtReloadTime | Get WDT ReloadTime |
| **Condition** | **Return Values** |
| Library Uninitialized | EAPI_STATUS_NOT_INITIALIZED |
| Common Error | Common Error Code |
| Others | EAPI_STATUS_SUCCESS |

### C.3.1.7 EapiWDogSetStatus()

Command Line:

```
EApiWDogSetStatus(
    __IN uint32_t wdtMinute,
    __IN uint32_t wdtCountTime,
    __IN uint32_t wdtReloadTime
)
```

Use this command to set Watchdog Timer mode, time count value and reload timer.

| Parameters | Function Parameters |
|---|---|
| wdtMinute | Set the mode of minute or second |
| wdtCountTime | Set WDT time count |
| wdtReloadTime | Set WDT ReloadTime |
| **Condition** | **Return Values** |
| Library Uninitialized | EAPI_STATUS_NOT_INITIALIZED |
| Common Error | Common Error Code |
| Others | EAPI_STATUS_SUCCESS |