

COM-TGHB6

COM Express Module

User's Manual 3rd Ed

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Packing List

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

| Item | Quantity |
|-------------|----------|
| ● COM-TGHB6 | 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 the contact our service personnel:
 - i. Damaged power cord or plug
 - ii. Liquid intrusion to the device
 - iii. Exposure to moisture
 - iv. Device is not working as expected or in a manner as described in this manual
 - v. The device is dropped or damaged
 - vi. Any obvious signs of damage displayed on the device
18. **DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.**

Warning!



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

Caution:

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

Attention:

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

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

| 部件名称 | 有毒有害物质或元素 | | | | | |
|--|-----------|-----------|-----------|-----------------|---------------|-----------------|
| | 铅 (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 | X | X | ○ | ○ | ○ | ○ |
| 外部信号 连接器及线材 | X | X | ○ | ○ | ○ | ○ |
| <p>○: 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。</p> <p>X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。</p> <p>备注: 此产品所标示之环保使用期限, 系指在一般正常使用状况下。</p> | | | | | | |

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

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

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Chapter 1

Product Specifications

1.1 Specifications

System

| | |
|-----------------|---|
| Form Factor | COM Express Basic Size, Type 6 |
| CPU | 11th Generation Intel® Core™ Processors: Intel® Core™ i7-11850HE (8C/16T, 2.1 GHz, 35W) Intel® Core™ i5-11500HE (6C/12T, 2.1 GHz, 35W) Intel® Core™ i3-11100HE (4C/8T, 1.9 GHz, 35W) Intel® Xeon® W Processors: Intel® Xeon® W-11865MRE (8C/16T, 2.1 GHz, 35W) Intel® Xeon® W-11865MLE (8C/16T, 1.5 GHz, 25W) |
| Chipset | Intel® QM580E Intel® RM590E |
| Memory | DDR4 3200MHz Dual Channel, SODIMM x 2, up to 64GB |
| Onboard Storage | — |
| BIOS | AMI UEFI |
| Wake on LAN | Yes |
| Watchdog Timer | 255 Levels |
| Dimension | 4.92" x 3.75" (125mm x 95mm) |
| Security | TPM 2.0 |

Power

| | |
|-----------------------------|--------------------------------------|
| Power Requirement | +12V and +5VSB for ATX, +12V for AT |
| Power Type | AT/ATX |
| Power Consumption (Typical) | Intel® Xeon® W-11865MRE, 5.26A @+12V |

Display

| | |
|---------------------|---|
| Graphics Controller | Intel® UHD Graphics |
| Video Output | 4 Simultaneous Displays: DDI x 3, up to 3840 x 2160 LVDS/eDP x 1, up to 1920 x 1080 VGA x 1, up to 1920 x 1080 |

I/O

| | |
|---------------|---|
| Ethernet | Intel® I226-LM, 2.5GbE x 1 |
| Audio | High Definition Audio Interface |
| USB Port | USB 2.0 x 8 USB 3.2 Gen 2 x 4 |
| Serial Port | 2-Wire UART x 2 (Tx/Rx) |
| HDD Interface | SATA 6Gb/s x 4 |
| Expansion | PEG 4.0 [x16] x 1 PCIe 3.0 [x1] x 8 LPC x 1 |
| GPIO | 8-bit |
| SMBus/I2C | I2C x 1 SMBus x 1 |

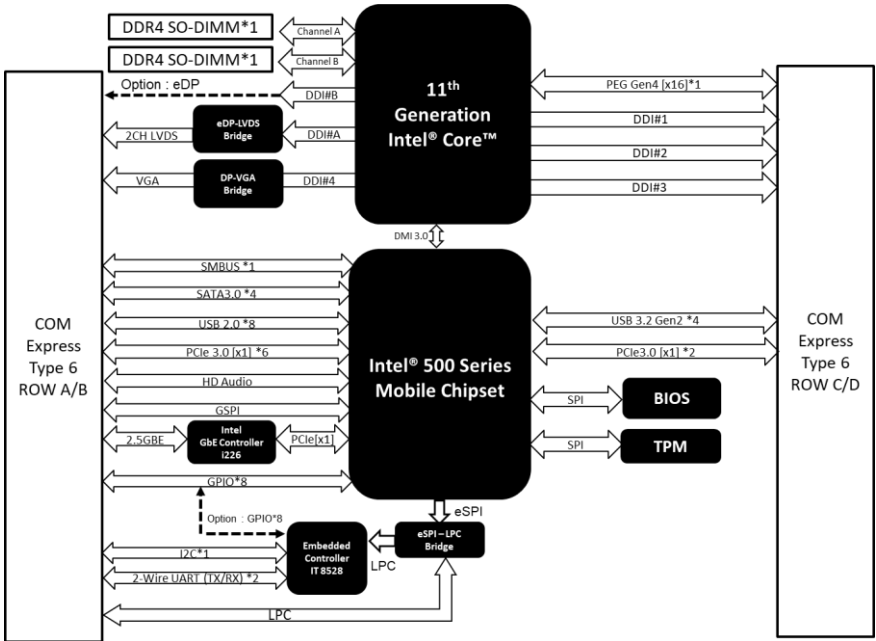
Environmental

| | |
|-----------------------|--|
| Operating Temperature | 32°F ~ 140°F (0°C ~ 60°C) |
| Storage Temperature | -40°F ~ 185°F (-40°C ~ 85°C) |
| Operating Humidity | 0% ~ 90% relative humidity, non-condensing |
| EMC | CE/FCC Class A |

Environmental

| | |
|------------|----------------------------------|
| OS Support | Windows® 10 (64-bit) |
| | Linux Ubuntu 20.04.4/Kernel 5.13 |
| Weight | 0.33 lb. (0.15Kg) |

1.2 Block Diagram



COM Express Module

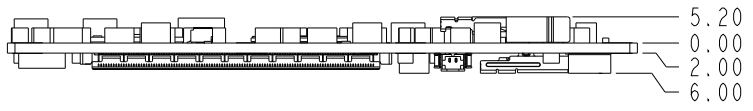
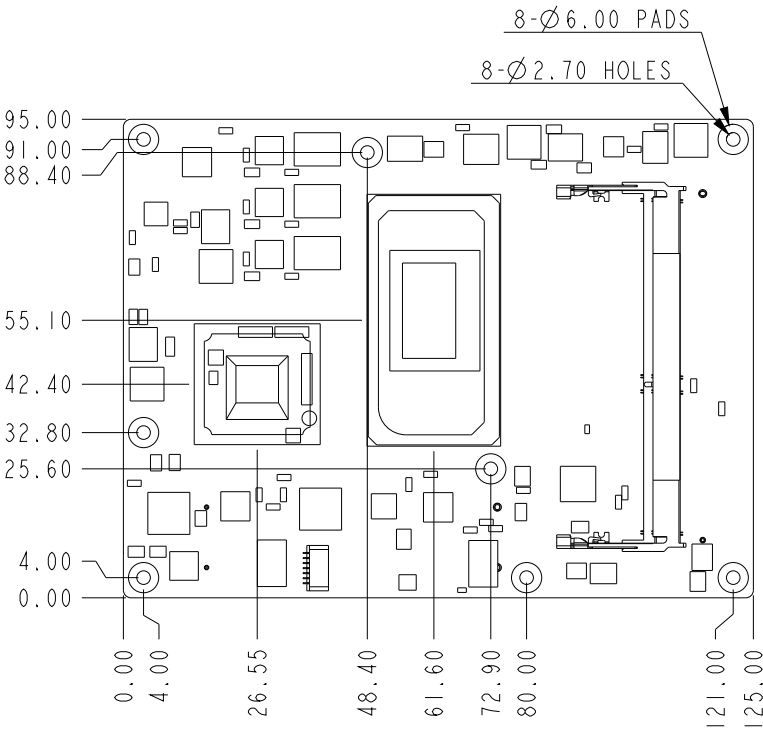
COM-TGHB6

Chapter 2

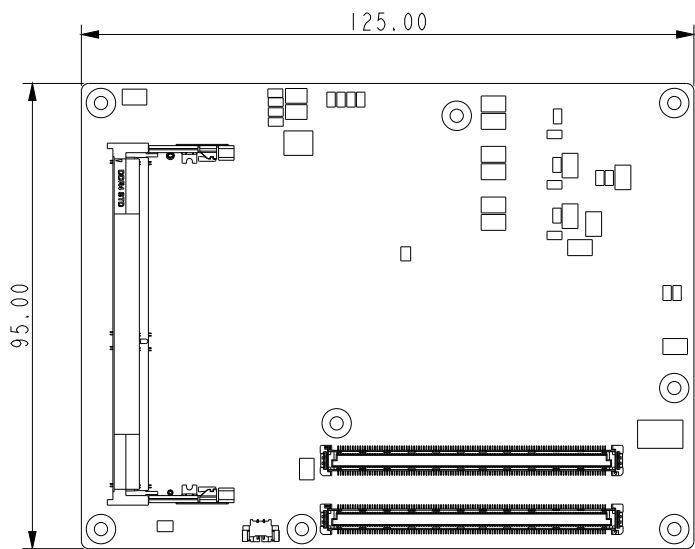
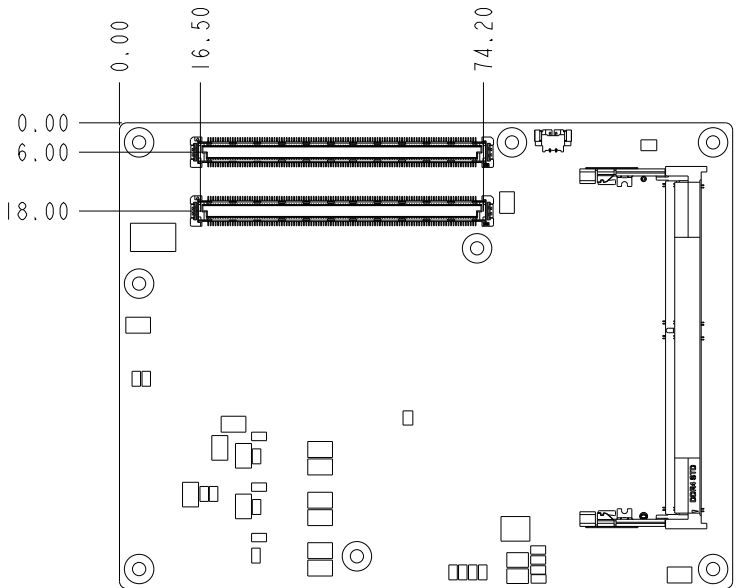
Hardware Information

2.1 Dimensions

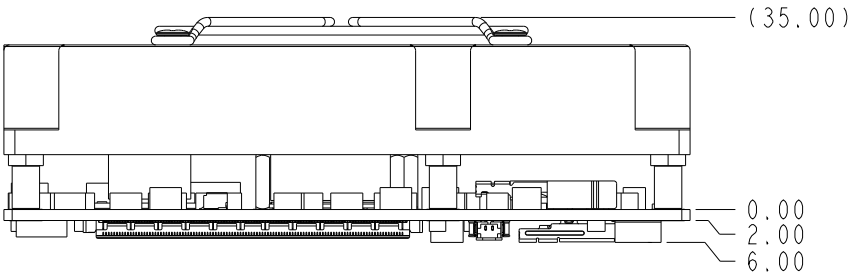
Component Side



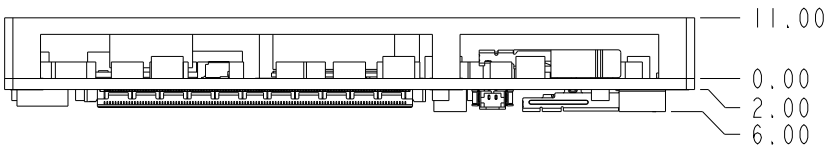
Solder Side



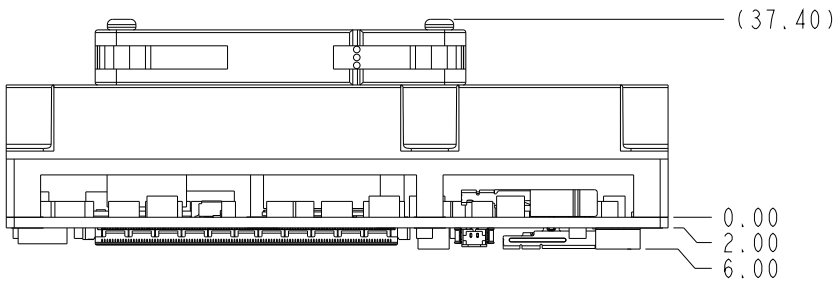
With Active Cooler (Part No: COM-TGHB6-FAN01)



With Heat Spreader (Part No: COM-TGHB6-HSP01)

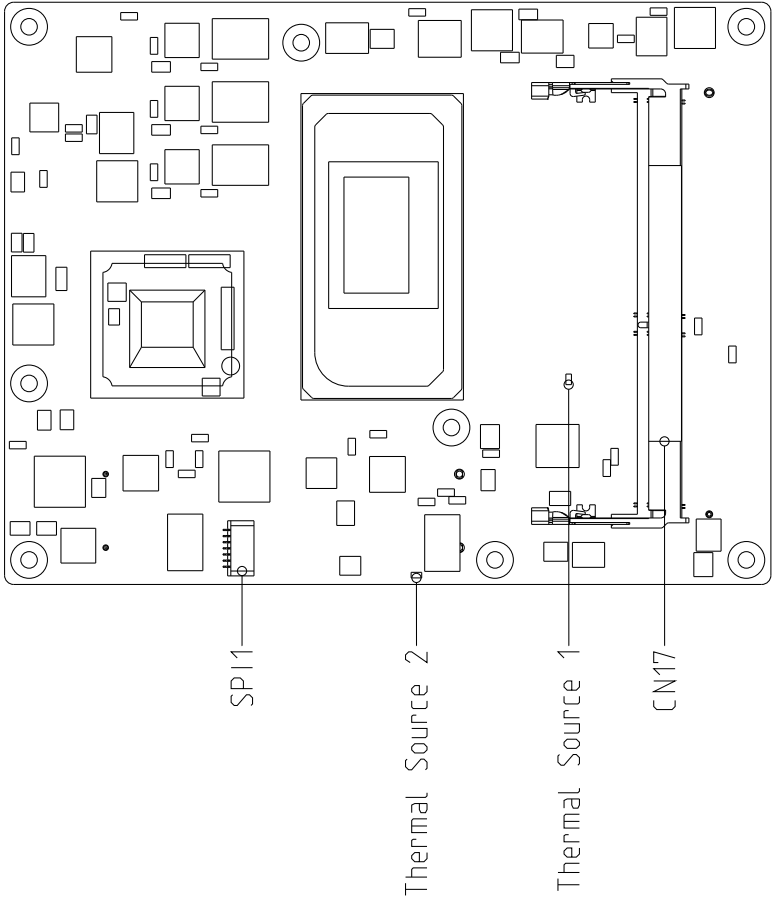


With Heat Spreader and Active Cooler (Part No: COM-TGHB6-HSP01 and COM-FAN01)

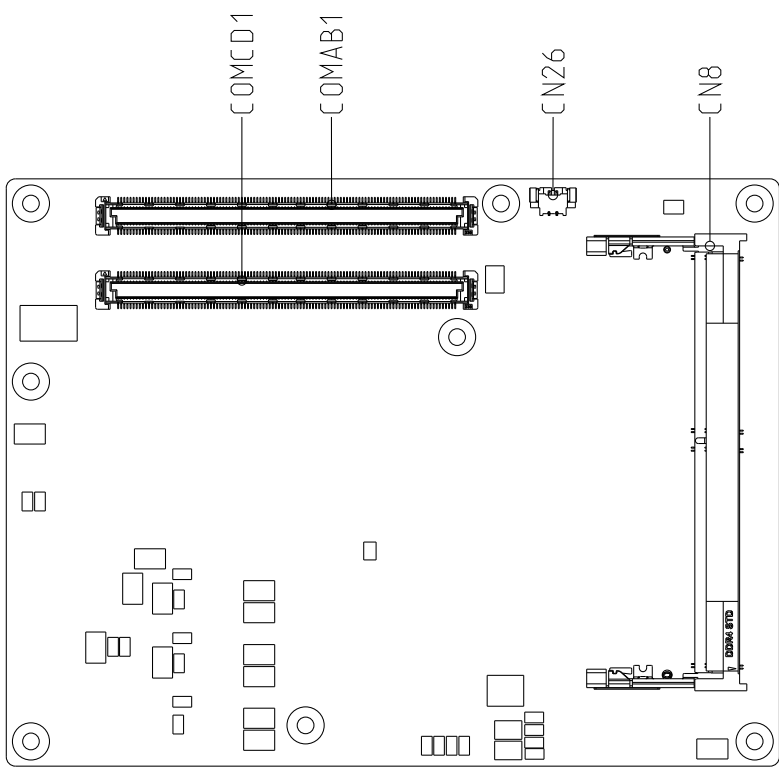


2.2 Jumpers and Connectors

Component Side



Solder Side



2.3 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 |
|--------|---------------------------------|
| CN8 | DDR4 SODIMM/CHA Slot 0 |
| CN17 | DDR4 SODIMM/CHA Slot 1 |
| COMAB1 | Express Row A/B Connector |
| COMCD1 | Express Row C/D Connector |
| SPI1 | SPI Flash Programming Connector |
| CN26 | RTC Battery Connector |

2.3.1 COM Express Row A/B Connector (COMAB1)

| Row A | | Row B | |
|-------|----------------|-------|----------------|
| Pin | Signal | Pin | Signal |
| A1 | GND (FIXED) | B1 | GND (FIXED) |
| A2 | GBE0_MDI3- | B2 | GBE0_ACT# |
| A3 | GBE0_MDI3+ | B3 | LPC_FRAME# |
| A4 | GBE0_LINK100# | B4 | LPC_AD0 |
| A5 | GBE0_LINK1000# | B5 | LPC_AD1 |
| A6 | GBE0_MDI2- | B6 | LPC_AD2 |
| A7 | GBE0_MDI2+ | B7 | LPC_AD3 |
| A8 | GBE0_LINK | B8 | LPC_DRQ0# (NC) |
| A9 | GBE0_MDI1- | B9 | LPC_DRQ1# (NC) |
| A1 | GBE0_MDI1+ | B10 | LPC_CLK |
| A11 | GND (FIXED) | B11 | GND (FIXED) |
| A12 | GBE0_MDI0- | B12 | PWRBTN# |

| Row A | | Row B | |
|-------|-----------------|-------|---------------|
| Pin | Signal | Pin | Signal |
| A13 | GBE0_MDI0+ | B13 | SMB_CK |
| A14 | GBE0_CTREF (NC) | B14 | SMB_DAT |
| A15 | SUS_S3# | B15 | SMB_ALERT# |
| A16 | SATA0_TX+ | B16 | SATA1_TX+ |
| A17 | SATA0_TX- | B17 | SATA1_TX- |
| A18 | SUS_S4# | B18 | SUS_STAT# |
| A19 | SATA0_RX+ | B19 | SATA1_RX+ |
| A20 | SATA0_RX- | B20 | SATA1_RX- |
| A21 | GND (FIXED) | B21 | GND (FIXED) |
| A22 | SATA2_TX+ | B22 | SATA3_TX+ |
| A23 | SATA2_TX- | B23 | SATA3_TX- |
| A24 | SUS_S5# | B24 | PWR_OK |
| A25 | SATA2_RX+ | B25 | SATA3_RX+ |
| A26 | SATA2_RX- | B26 | SATA3_RX- |
| A27 | BATLOW# | B27 | WDT |
| A28 | ATA_ACT# | B28 | AC_SDIN2 (NC) |
| A29 | AC_SYNC | B29 | AC_SDIN1 |
| A30 | AC_RST# | B30 | AC_SDIN0 |
| A31 | GND (FIXED) | B31 | GND (FIXED) |
| A32 | AC_BITCLK | B32 | SPKR |
| A33 | AC_SDOOUT | B33 | I2C_CK |
| A34 | BIOS_DIS0# | B34 | I2C_DAT |
| A35 | THRMTRIP# | B35 | THRM# |
| A36 | USB6- | B36 | USB7- |
| A37 | USB6+ | B37 | USB7+ |

| Row A | | Row B | |
|-------|--------------------------------------|-------|-----------------------------------|
| Pin | Signal | Pin | Signal |
| A38 | USB_6_7_OC# | B38 | USB_4_5_OC# |
| A39 | USB4- | B39 | USB5- |
| A40 | USB4+ | B40 | USB5+ |
| A41 | GND (FIXED) | B41 | GND (FIXED) |
| A42 | USB2- | B42 | USB3- |
| A43 | USB2+ | B43 | USB3+ |
| A44 | USB_2_3_OC# | B44 | USB_0_1_OC# |
| A45 | USB0- | B45 | USB1- |
| A46 | USB0+ | B46 | USB1+ |
| A47 | VCC_RTC | B47 | EXCD1_PERST# (BUF_CB_RST# Option) |
| A48 | EXCD0_PERST# (BUF_CB_RST# Option) | B48 | EXCD1_CPPE# (NC) |
| A49 | EXCD0_CPPE# (NC) | B49 | SYS_RESET# |
| A50 | LPC_SERIRQ | B50 | CB_RESET# |
| A51 | GND (FIXED) | B51 | GND (FIXED) |
| A52 | PCIE_TX5+ | B52 | PCIE_RX5+ |
| A53 | PCIE_TX5- | B53 | PCIE_RX5- |
| A54 | GPIO | B54 | GPO1 |
| A55 | PCIE_TX4+ | B55 | PCIE_RX4+ |
| A56 | PCIE_TX4- | B56 | PCIE_RX4- |
| A57 | GND | B57 | GPO2 |
| A58 | PCIE_TX3+ | B58 | PCIE_RX3+ |
| A59 | PCIE_TX3- | B59 | PCIE_RX3- |
| A60 | GND (FIXED) | B60 | GND (FIXED) |
| A61 | PCIE_TX2+ | B61 | PCIE_RX2+ |

| Row A | | Row B | |
|-------|--------------------|-------|----------------|
| Pin | Signal | Pin | Signal |
| A62 | PCIE_TX2- | B62 | PCIE_RX2- |
| A63 | GPI1 | B63 | GPO3 |
| A64 | PCIE_TX1+ | B64 | PCIE_RX1+ |
| A65 | PCIE_TX1- | B65 | PCIE_RX1- |
| A66 | GND | B66 | WAKE0# |
| A67 | GPI2 | B67 | WAKE1# |
| A68 | PCIE_TX0+ | B68 | PCIE_RX0+ |
| A69 | PCIE_TX0- | B69 | PCIE_RX0- |
| A70 | GND (FIXED) | B70 | GND (FIXED) |
| A71 | LVDS_A0+ | B71 | LVDS_B0+ |
| A72 | LVDS_A0- | B72 | LVDS_B0- |
| A73 | LVDS_A1+ | B73 | LVDS_B1+ |
| A74 | LVDS_A1- | B74 | LVDS_B1- |
| A75 | LVDS_A2+ | B75 | LVDS_B2+ |
| A76 | LVDS_A2- | B76 | LVDS_B2- |
| A77 | LVDS_VDD_EN | B77 | LVDS_B3+ |
| A78 | LVDS_A3+ | B78 | LVDS_B3- |
| A79 | LVDS_A3- | B79 | LVDS_BKLT_EN |
| A80 | GND (FIXED) | B80 | GND (FIXED) |
| A81 | LVDS_A_CK+ | B81 | LVDS_B_CK+ |
| A82 | LVDS_A_CK- | B82 | LVDS_B_CK- |
| A83 | LVDS_I2C_CK | B83 | LVDS_BKLT_CTRL |
| A84 | LVDS_I2C_DAT | B84 | VCC_5V_SBY |
| A85 | GPI3 | B85 | VCC_5V_SBY |
| A86 | RSVD(KBRST Option) | B86 | VCC_5V_SBY |

| Row A | | Row B | |
|-------|----------------|-------|--------------------|
| Pin | Signal | Pin | Signal |
| A87 | RSVD (EDP_HPD) | B87 | VCC_5V_SBY |
| A88 | PCIE0_CK_REF+ | B88 | BISO_DIS1# |
| A89 | PCIE0_CK_REF- | B89 | VGA_RED |
| A90 | GND (FIXED) | B90 | GND (FIXED) |
| A91 | SPI_POWER | B91 | VGA_GRN |
| A92 | SPI_MISO | B92 | VGA_BLU |
| A93 | GPO0 | B93 | VGA_HSYNC |
| A94 | SPI_CLK | B94 | VGA_VSYNC |
| A95 | SPI_MOSI | B95 | VGA_I2C_CK |
| A96 | TPM_PP | B96 | VGA_I2C_DAT |
| A97 | TYPE10# (NC) | B97 | SPI_CS# |
| A98 | SER0_TX | B98 | RSVD (SMI# Option) |
| A99 | SER0_RX | B99 | RSVD (SCI# Option) |
| A100 | GND (FIXED) | B100 | GND (FIXED) |
| A101 | SER1_TX | B101 | FAN_PWNOUT |
| A102 | SER1_RX | B102 | FAN_TACHIN |
| A103 | LID# | B103 | SLEEP# |
| A104 | VCC_12V | B104 | VCC_12V |
| A105 | VCC_12V | B105 | VCC_12V |
| A106 | VCC_12V | B106 | VCC_12V |
| A107 | VCC_12V | B107 | VCC_12V |
| A108 | VCC_12V | B108 | VCC_12V |
| A109 | VCC_12V | B109 | VCC_12V |
| A110 | GND (FIXED) | B110 | GND (FIXED) |

2.3.2 COM Express Row C/D Connector (COMCD1)

| Row C | | Row D | |
|-------|------------------|-------|--------------------|
| Pin | Signal | Pin | Signal |
| C1 | GND (FIXED) | D1 | GND (FIXED) |
| C2 | GND | D2 | GND |
| C3 | USB_SSRX0- | D3 | USB_SSTX0- |
| C4 | USB_SSRX0+ | D4 | USB_SSTX0+ |
| C5 | GND | D5 | GND |
| C6 | USB_SSRX1- | D6 | USB_SSTX1- |
| C7 | USB_SSRX1+ | D7 | USB_SSTX1+ |
| C8 | GND | D8 | GND |
| C9 | USB_SSRX2- | D9 | USB_SSTX2- |
| C10 | USB_SSRX2+ | D10 | USB_SSTX2+ |
| C11 | GND (FIXED) | D11 | GND (FIXED) |
| C12 | USB_SSRX3- | D12 | USB_SSTX3- |
| C13 | USB_SSRX3+ | D13 | USB_SSTX3+ |
| C14 | GND | D14 | GND |
| C15 | DDI1_PAIR6+ (NC) | D15 | DDI1_CTRLCLK_AUX+ |
| C16 | DDI1_PAIR6- (NC) | D16 | DDI1_CTRLDATA_AUX- |
| C17 | RSVD (NC) | D17 | RSVD (NC) |
| C18 | RSVD (NC) | D18 | RSVD (NC) |
| C19 | PCIE_RX6+ | D19 | PCIE_TX6+ |
| C20 | PCIE_RX6- | D20 | PCIE_TX6- |
| C21 | GND (FIXED) | D21 | GND (FIXED) |
| C22 | PCIE_RX7+ | D22 | PCIE_TX7+ |
| C23 | PCIE_RX7- | D23 | PCIE_TX7- |

| Row C | | Row D | |
|-------|--------------------|-------|------------------|
| Pin | Signal | Pin | Signal |
| C24 | DDI1_HPD | D24 | RSVD (NC) |
| C25 | DDI1_PAIR4+ (NC) | D25 | RSVD (NC) |
| C26 | DDI1_PAIR4- (NC) | D26 | DDI1_PAIR0+ |
| C27 | RSVD (NC) | D27 | DDI1_PAIR0- |
| C28 | RSVD (NC) | D28 | RSVD (NC) |
| C29 | DDI1_PAIR5+ (NC) | D29 | DDI1_PAIR1+ |
| C30 | DDI1_PAIR5- (NC) | D30 | DDI1_PAIR1- |
| C31 | GND (FIXED) | D31 | GND (FIXED) |
| C32 | DDI2_CTRLCLK_AUX+ | D32 | DDI1_PAIR2+ |
| C33 | DDI2_CTRLDATA_AUX- | D33 | DDI1_PAIR2- |
| C34 | DDI2_DDC_AUX_SEL | D34 | DDI1_DDC_AUX_SEL |
| C35 | RSVD (NC) | D35 | RSVD (NC) |
| C36 | DDI3_CTRLCLK_AUX+ | D36 | DDI1_PAIR3+ |
| C37 | DDI3_CTRLDATA_AUX- | D37 | DDI1_PAIR3- |
| C38 | DDI3_DDC_AUX_SEL | D38 | RSVD (NC) |
| C39 | DDI3_PAIR0+ | D39 | DDI2_PAIR0+ |
| C40 | DDI3_PAIR0- | D40 | DDI2_PAIR0- |
| C41 | GND (FIXED) | D41 | GND (FIXED) |
| C42 | DDI3_PAIR1+ | D42 | DDI2_PAIR1+ |
| C43 | DDI3_PAIR1- | D43 | DDI2_PAIR1- |
| C44 | DDI3_HPD | D44 | DDI2_HPD |
| C45 | RSVD (NC) | D45 | RSVD (NC) |
| C46 | DDI3_PAIR2+ | D46 | DDI2_PAIR2+ |
| C47 | DDI3_PAIR2- | D47 | DDI2_PAIR2- |
| C48 | RSVD (NC) | D48 | RSVD (NC) |

| Row C | | Row D | |
|-------|-------------|-------|-------------|
| Pin | Signal | Pin | Signal |
| C49 | DDI3_PAIR3+ | D49 | DDI2_PAIR3+ |
| C50 | DDI3_PAIR3- | D50 | DDI2_PAIR3- |
| C51 | GND (FIXED) | D51 | GND (FIXED) |
| C52 | PEG_RX0+ | D52 | PEG_TX0+ |
| C53 | PEG_RX0- | D53 | PEG_TX0- |
| C54 | TYPE0# (NC) | D54 | PEG_LAN_RV# |
| C55 | PEG_RX1+ | D55 | PEG_TX1+ |
| C56 | PEG_RX1- | D56 | PEG_TX1- |
| C57 | TYPE1# (NC) | D57 | TYPE2# |
| C58 | PEG_RX2+ | D58 | PEG_TX2+ |
| C59 | PEG_RX2- | D59 | PEG_TX2- |
| C60 | GND (FIXED) | D60 | GND (FIXED) |
| C61 | PEG_RX3+ | D61 | PEG_TX3+ |
| C62 | PEG_RX3- | D62 | PEG_TX3- |
| C63 | RSVD (NC) | D63 | RSVD (NC) |
| C64 | RSVD (NC) | D64 | RSVD (NC) |
| C65 | PEG_RX4+ | D65 | PEG_TX4+ |
| C66 | PEG_RX4- | D66 | PEG_TX4- |
| C67 | RSVD (NC) | D67 | GND (FIXED) |
| C68 | PEG_RX5+ | D68 | PEG_TX5+ |
| C69 | PEG_RX5- | D69 | PEG_TX5- |
| C70 | GND (FIXED) | D70 | GND (FIXED) |
| C71 | PEG_RX6+ | D71 | PEG_TX6+ |
| C72 | PEG_RX6- | D72 | PEG_TX6- |
| C73 | GND | D73 | GND |

| Row C | | Row D | |
|-------|-------------|-------|-------------|
| Pin | Signal | Pin | Signal |
| C74 | PEG_RX7+ | D74 | PEG_TX7+ |
| C75 | PEG_RX7- | D75 | PEG_TX7- |
| C76 | GND (FIXED) | D76 | GND (FIXED) |
| C77 | RSVD (NC) | D77 | RSVD (NC) |
| C78 | PEG_RX8+ | D78 | PEG_TX8+ |
| C79 | PEG_RX8- | D79 | PEG_TX8- |
| C80 | GND (FIXED) | D80 | GND (FIXED) |
| C81 | PEG_RX9+ | D81 | PEG_TX9+ |
| C82 | PEG_RX9- | D82 | PEG_TX9- |
| C83 | RSVD (NC) | D83 | RSVD (NC) |
| C84 | GND | D84 | GND |
| C85 | PEG_RX10+ | D85 | PEG_TX10+ |
| C86 | PEG_RX10- | D86 | PEG_TX10- |
| C87 | GND | D87 | GND |
| C88 | PEG_RX11+ | D88 | PEG_TX11+ |
| C89 | PEG_RX11- | D89 | PEG_TX11- |
| C90 | GND (FIXED) | D90 | GND (FIXED) |
| C91 | PEG_RX12+ | D91 | PEG_TX12+ |
| C92 | PEG_RX12- | D92 | PEG_TX12- |
| C93 | GND | D93 | GND |
| C94 | PEG_RX13+ | D94 | PEG_TX13+ |
| C95 | PEG_RX13- | D95 | PEG_TX13- |
| C96 | GND | D96 | GND |
| C97 | RSVD (NC) | D97 | RSVD (NC) |
| C98 | PEG_RX14+ | D98 | PEG_TX14+ |

| Row C | | Row D | |
|-------|-------------|-------|-------------|
| Pin | Signal | Pin | Signal |
| C99 | PEG_RX14- | D99 | PEG_TX14- |
| C100 | GND (FIXED) | D100 | GND (FIXED) |
| C101 | PEG_RX15+ | D101 | PEG_TX15+ |
| C102 | PEG_RX15- | D102 | PEG_TX15- |
| C103 | GND | D103 | GND |
| C104 | VCC_12V | D104 | VCC_12V |
| C105 | VCC_12V | D105 | VCC_12V |
| C106 | VCC_12V | D106 | VCC_12V |
| C107 | VCC_12V | D107 | VCC_12V |
| C108 | VCC_12V | D108 | VCC_12V |
| C109 | VCC_12V | D109 | VCC_12V |
| C110 | GND (FIXED) | D110 | GND (FIXED) |

Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

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

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

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

You are starting your system for the first time.

You have changed the hardware attached to your system.

The CMOS memory has lost power and the configuration information has been erased.

The COM-TGHB6 CMOS memory uses a backup battery for data retention. The battery must be replaced if it runs out of power.

3.2 AMI BIOS Setup

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

To enter Setup, power on the computer and press immediately.

The function of each menu is as follows:

Main – Date and time can be set here. Use <Tab> to switch between date elements.

Advanced – Enable/disable boot option for legacy network devices.

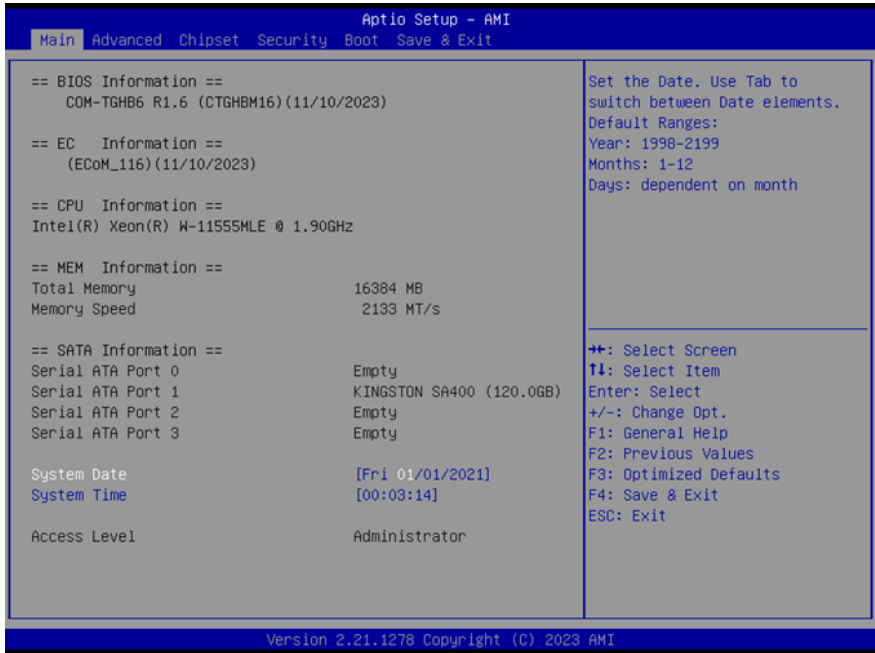
Chipset – Chipset information and configuration.

Security – Password for setup administrator can be set here.

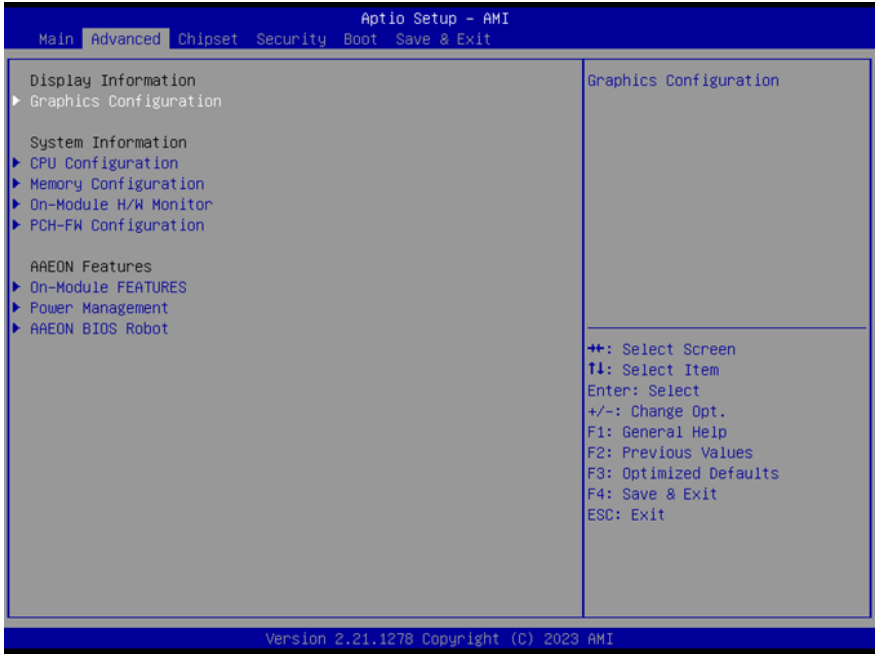
Boot – Enable/disable Quiet Boot option.

Save & Exit – Save changes and exit Setup.

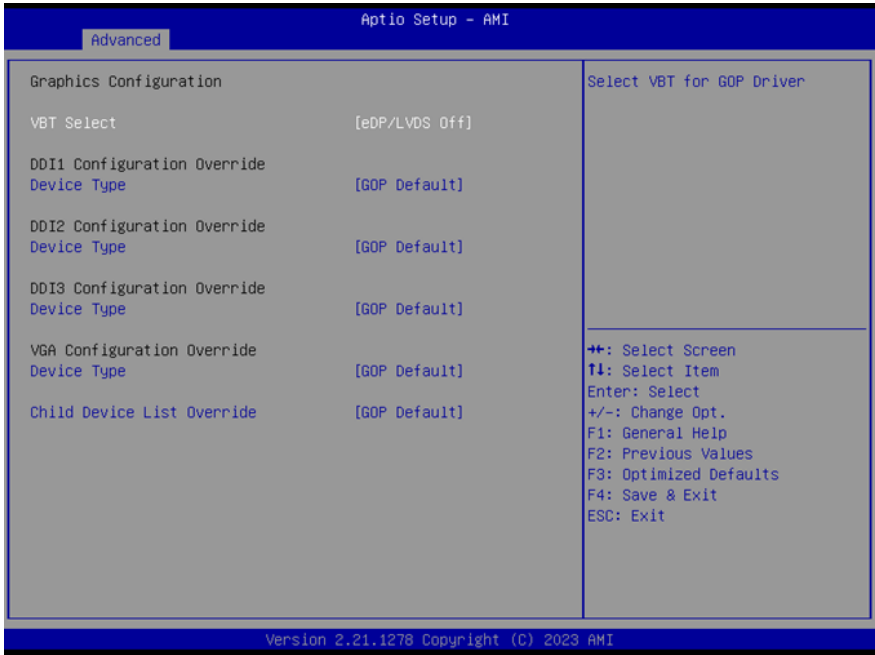
3.3 Setup Submenu: Main



3.4 Setup Submenu: Advanced

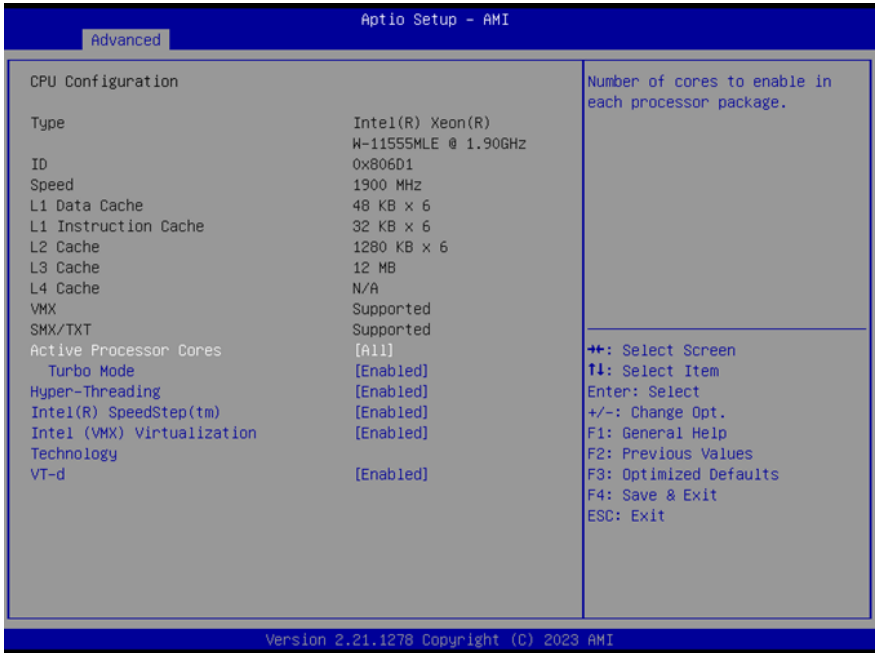


3.4.1 Graphics Configuration



| Options Summary | | |
|--|--------------|-----------------------------------|
| VBT Select | LVDS on | |
| | eDP on | |
| | eDP/LVDS Off | Optimal Default, Failsafe Default |
| Select VBT for GOP Driver. | | |
| Device Type | No Device | |
| | DP-HDMI | |
| | HDMI | |
| | GOP Default | Optimal Default, Failsafe Default |
| Select output type for this device. | | |
| Child Device List Override | Disabled | |
| | Enabled | |
| | GOP Default | Optimal Default, Failsafe Default |
| Enable for overriding Child Device List for changing display priority. | | |

3.4.2 CPU Configuration



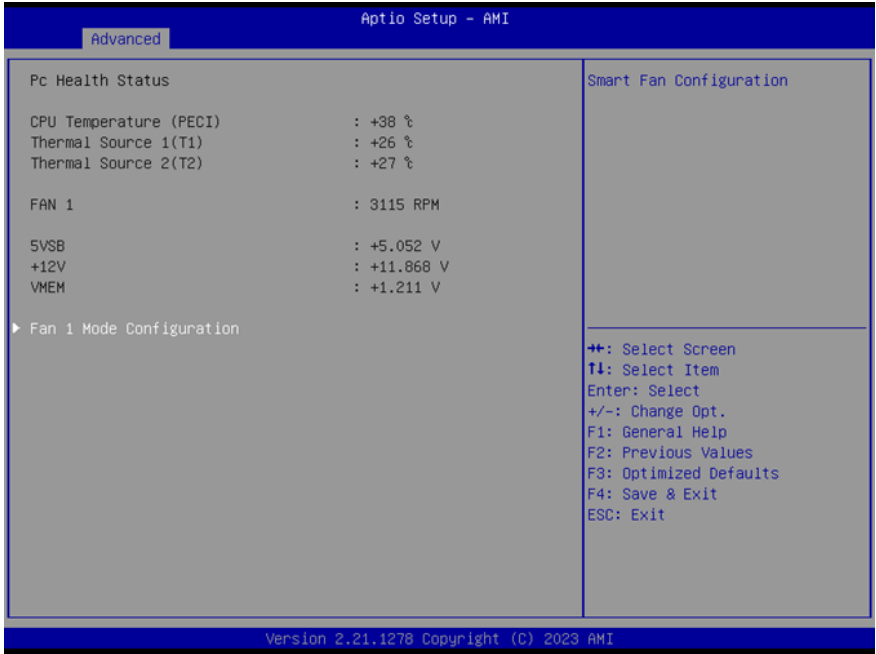
| Options Summary | | |
|--|----------|-----------------------------------|
| Active Processor Cores | All | Optimal Default, Failsafe Default |
| | 1 | |
| | 2 | |
| | 3 | |
| | 4 | |
| | 5 | |
| Number of cores to enable in each processor package. | | |
| Turbo Mode | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled. | | |
| Hyper-Threading | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable or Disable Hyper-Threading Technology. | | |

| Options Summary | | |
|---|----------|-----------------------------------|
| Intel(R) SpeedStep(tm) | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Allows more than two frequency ranges to be supported. | | |
| Intel (VMX) Virtualization Technology | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| When enabled, a VMX can utilize the additional hardware capabilities provided by Vanderpool Technology. | | |
| VT-d | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| VT-d capability. | | |

3.4.3 Memory Configuration

| Advanced | | Aptio Setup - AMI | |
|--|--------------------------|-------------------|--|
| Memory Configuration | | | |
| Memory RC Version | 2.0.2.0 | | |
| Memory Speed | 2133 MT/s | | |
| Memory Timings (tCL-tRCD-tRP-tRAS) | 15-15-15-36 | | |
| Controller 0 Channel 0 Slot 0 | Populated & Enabled | | |
| Size | 16384 MB (DDR4) | | |
| Number of Ranks | 2 | | |
| Manufacturer | UnKnown | | |
| Controller 0 Channel 0 Slot 1 | Not Populated / Disabled | | |
| Controller 1 Channel 0 Slot 0 | Not Populated / Disabled | | |
| Controller 1 Channel 0 Slot 1 | Not Populated / Disabled | | |
| | | | ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit |
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3.4.4 On-Module H/W Monitor



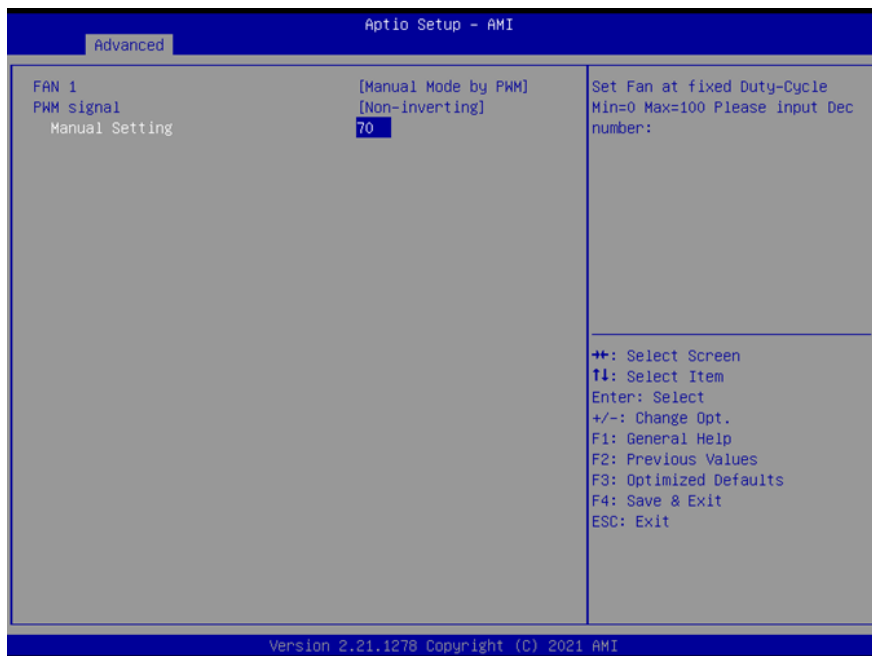
3.4.4.1 Smart Fan Mode Configuration

FAN 1: Full Mode



| Options Summary | | |
|---|--------------------|-----------------------------------|
| FAN 1 | Full Mode | Optimal Default, Failsafe Default |
| | Manual Mode by PWM | |
| | Auto Mode by PWM | |
| Smart Fan Mode Select. | | |
| PWM signal | Non-inverting | Optimal Default, Failsafe Default |
| | Inverting | |
| Select output PWM of inverting or non-inverting signal. | | |

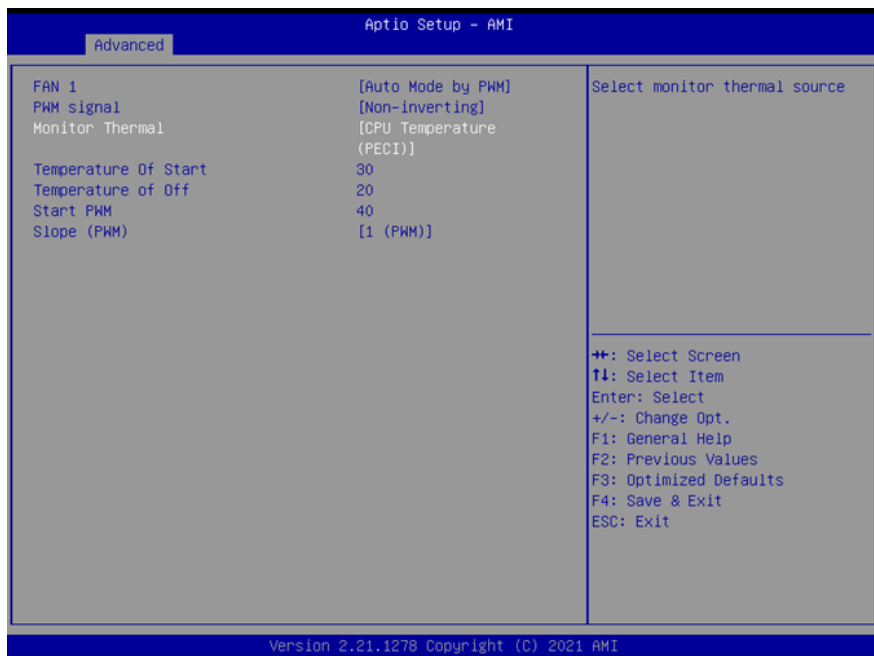
FAN 1: Manual Mode by PWM



Options Summary

| | | |
|--|-----|-----------------------------------|
| Manual Setting | 70% | Optimal Default, Failsafe Default |
| Set Fan at fixed Duty-Cycle Min=0 Max=100 Please input Dec number: | | |

FAN 1: Auto Mode by PWM



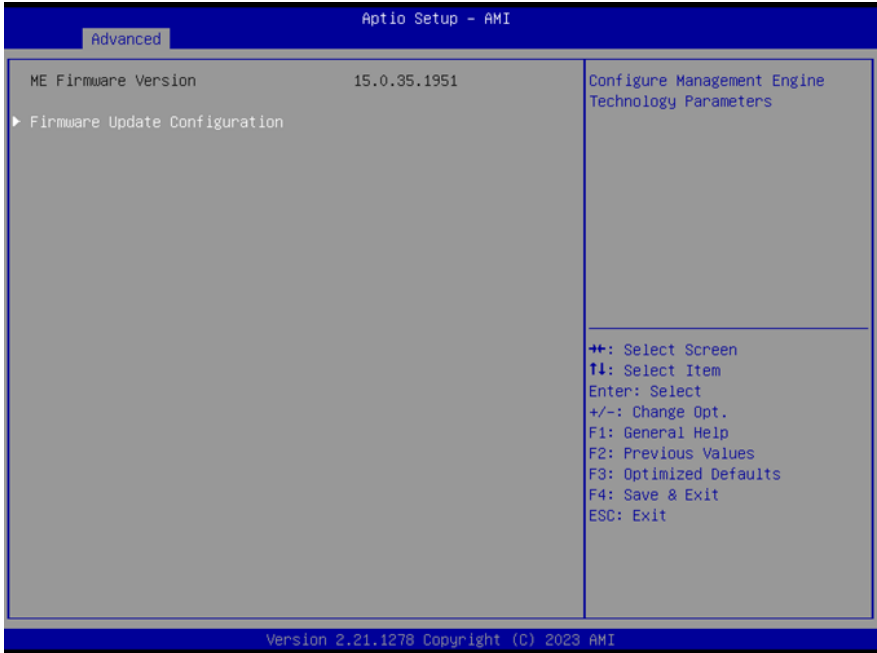
Options Summary

| | | |
|--------------------------------|------------------------|-----------------------------------|
| Monitor Thermal | CPU Temperature (PECI) | Optimal Default, Failsafe Default |
| | Thermal Source 1(T1) | |
| | Thermal Source 2(T2) | |
| Select monitor thermal source. | | |
| Temperature of Start | 30 | Optimal Default, Failsafe Default |
| Temperature of Start. | | |
| Temperature of Off | 20 | Optimal Default, Failsafe Default |
| Temperature of Off. | | |
| Start PWM | 40 | Optimal Default, Failsafe Default |
| Start PWM. | | |
| Slope (PWM) | 0 (PWM) | |
| | 1 (PWM) | Optimal Default, Failsafe Default |
| | 2 (PWM) | |
| | 4 (PWM) | |
| | 8 (PWM) | |
| | 16 (PWM) | |
| | 32 (PWM) | |

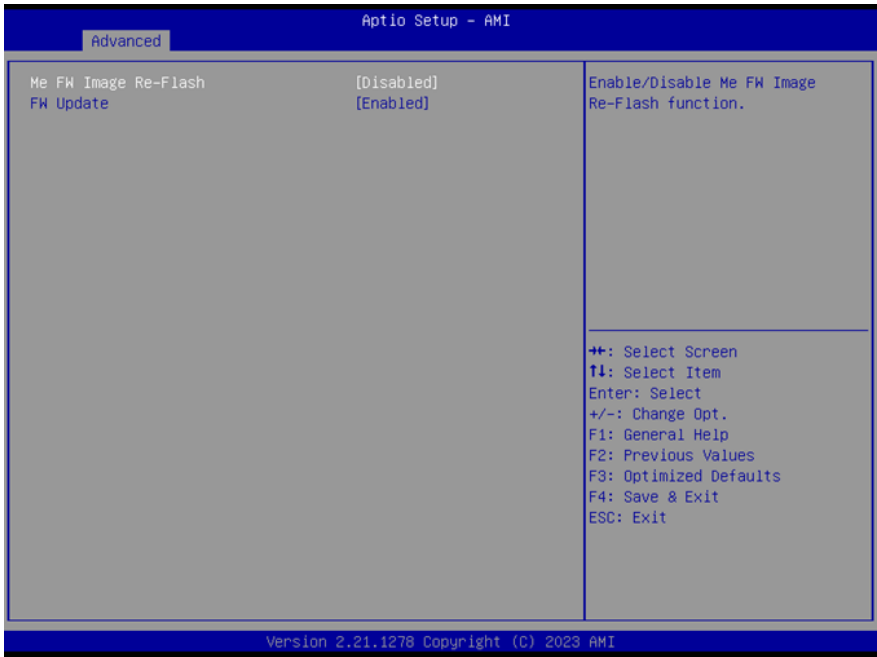
Options Summary

| | | |
|--------------|----------|--|
| Slope (PWM) | 64 (PWM) | |
| Slope (PWM). | | |

3.4.5 PCH-FW Configuration

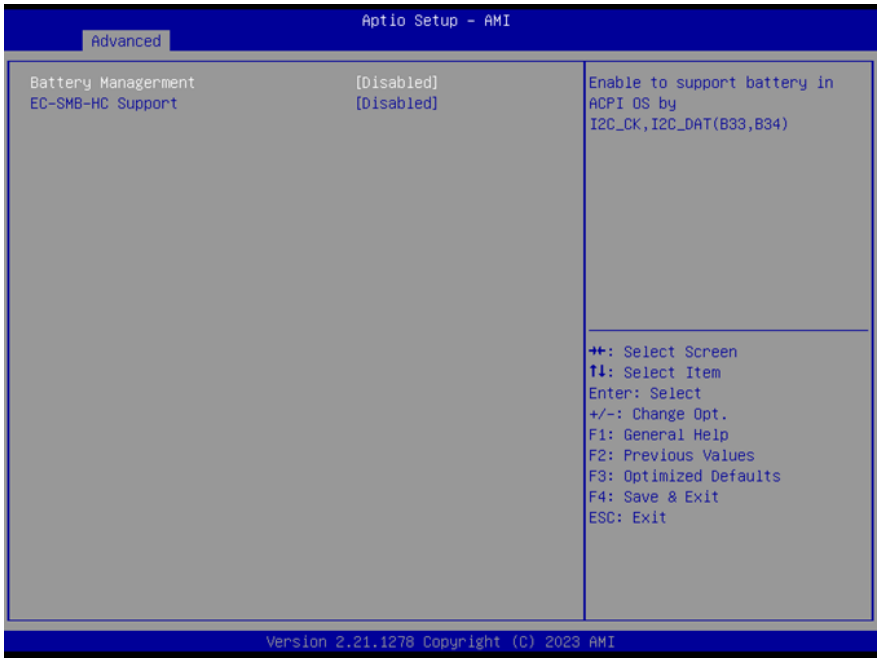


3.4.5.1 Firmware Update Configuration



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

3.4.6 On-Module Configuration



| Options Summary | | |
|---|-------------|-----------------------------------|
| Battery Management | Disabled | Optimal Default, Failsafe Default |
| | One Battery | |
| Enable to support battery in ACPI OS by I2C_CK, I2C_DAT (B33, B34). | | |
| EC-SMB-HC Support | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| I2C Host Controller Interface via Embedded Controller. | | |

3.4.7 Power Management



| Options Summary | | |
|--|--------------|-----------------------------------|
| Power Mode | ATX Type | Optimal Default, Failsafe Default |
| | AT Type | |
| Select system power mode. | | |
| Restore AC Power Loss | Last State | |
| | Always On | |
| | Always Off | Optimal Default, Failsafe Default |
| SIO Restore AC Power Loss: To decide the behavior after system power cut then resupply. Note: The CMOS battery must be present. | | |
| RTC wake system from S5 | Disabled | Optimal Default, Failsafe Default |
| | Fixed Time | |
| | Dynamic Time | |
| | Bypass | |
| Fixed Time: System will wake on the hr::mn::sec Specified. | | |
| Dynamic Time: System will wake on the current time + Increase minute(s). | | |
| Bypass: BIOS will not control RTC wake function during system shutdown. | | |

3.4.8 AAEON BIOS Robot



| Options Summary | | |
|--|----------|-----------------------------------|
| Sends watch dog before BIOS POST | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enabled - Robot set Watch Dog Timer (WDT) right after power on, before BIOS start POST process. And then Robot will clear WDT on completion of POST. WDT will reset system automatically if it is not cleared before its timer counts down to zero. | | |
| Sends watch dog before booting OS | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enabled - Robot set Watch Dog Timer (WDT) after POST completion before BIOS transfer control to OS. Warning: Before enabling this function, a program in OS must be in responsible for clearing WDT. Also, this function should be disabled if OS is going to update itself. | | |
| Delayed POST (PEI phase) | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enabled - Robot holds BIOS from starting POST, right after power on. This allows BIOS POST to start with stable power or start after system is physically warmed-up. | | |

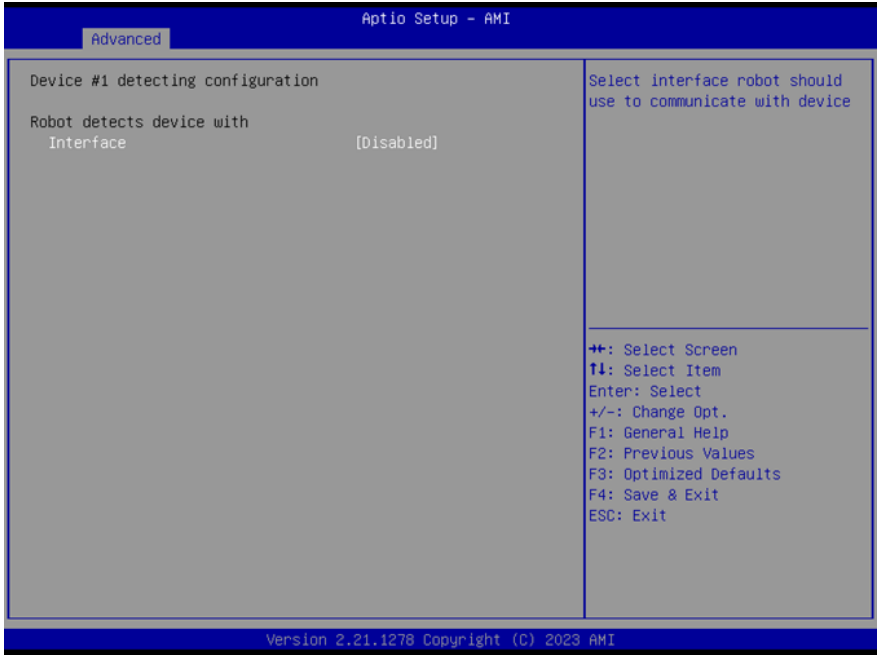
| Options Summary | | |
|---|----------|-----------------------------------|
| Note: Robot does this before 'Send watch dog'. | | |
| Delayed POST (DXE phase) | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enabled - Robot holds BIOS before POST completion. This allows BIOS POST to start with stable power or start after system is physically warmed-up. Note: Robot does this after 'Send watch dog before BIOS POST'. | | |
| Reset system once | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enabled - Robot resets system for one time on each boot. This will send a soft or hand reset to onboard devices, thus puts devices to more stable state. | | |

3.4.8.1 Device Detecting Configuration



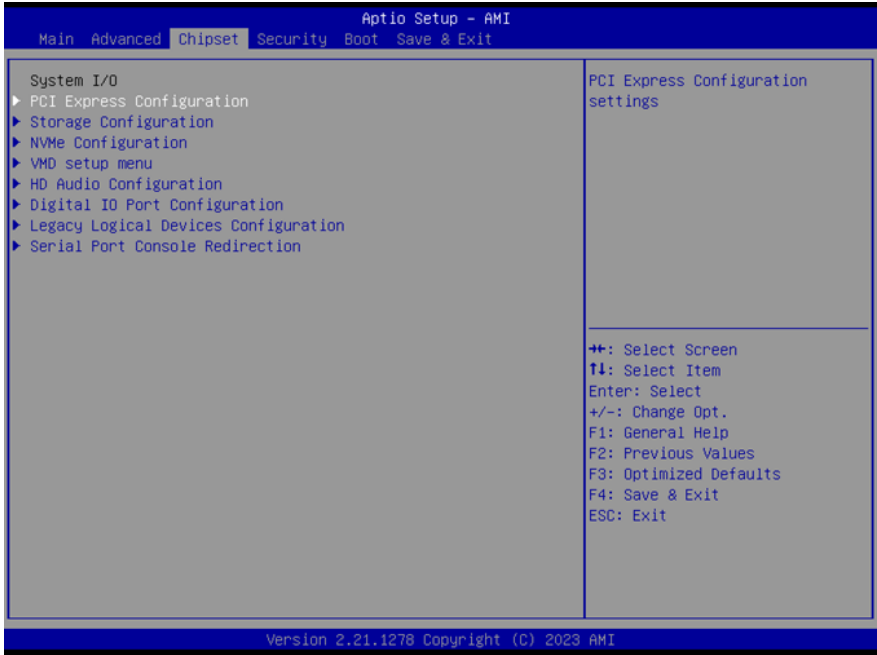
| Options Summary | | |
|--|------------------|-----------------------------------|
| Action | Reset System | Optimal Default, Failsafe Default |
| | Hold System | |
| Select action that robot should do. | | |
| Soft or hard reset | Soft | Optimal Default, Failsafe Default |
| | Hard | |
| Select reset type robot should send on each boot. | | |
| Retry-Count | 3 | Optimal Default, Failsafe Default |
| Fill retry counter here. Robot will reset system at most counter times, and then let system continue its POST. | | |
| At time | After show logo | Optimal Default, Failsafe Default |
| | Before show logo | |
| Select robot action time: After show logo – Robot will do action after logo is displayed. System devices are almost ready. | | |
| Before show logo – Robot will do action earlier before logo, but some devices may not be ready. | | |

3.4.8.2 Device #1~5 Detecting Configuration



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

3.5 Setup Submenu: Chipset



3.5.1 PCI Express Configuration

Aptio Setup - AMI

Chipset

| | | |
|---------------------------------|-------------------------------|--|
| System Agent PCIe Configuration | | ▲ Control the PCI Express Root Port. ◆ |
| PCI Express Root Port 1 | [Enabled] | |
| PCIe Speed | [Auto] | |
| Hot Plug | [Disabled] | |
| PCH PCIe Configuration | | |
| PCIe 0-3 Select | [PCIe Controller are four x1] | |
| PCI Express 0 | [Enabled] | |
| PCIe Speed | [Auto] | |
| Hot Plug | [Disabled] | |
| PCI Express 1 | [Enabled] | |
| PCIe Speed | [Auto] | |
| Hot Plug | [Disabled] | ▲+ : Select Screen ▲1 : Select Item Enter: Select +/-: Change Opt. F1: General Values F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit |
| PCI Express 2 | [Enabled] | |
| PCIe Speed | [Auto] | |
| Hot Plug | [Disabled] | |
| PCI Express 3 | [Enabled] | |
| PCIe Speed | [Auto] | |
| Hot Plug | [Disabled] | |

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| | | |
|-----------------|-------------------------------|--|
| PCIe 4-7 Select | [PCIe Controller are four x1] | ▲+ : Select Screen ▲1 : Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit |
| PCI Express 4 | [Enabled] | |
| PCIe Speed | [Auto] | |
| Hot Plug | [Disabled] | |
| PCI Express 5 | [Enabled] | |
| PCIe Speed | [Auto] | |
| Hot Plug | [Disabled] | |
| PCI Express 6 | [Enabled] | |
| PCIe Speed | [Auto] | |
| Hot Plug | [Disabled] | |
| PCI Express 7 | [Enabled] | |
| PCIe Speed | [Auto] | |
| Hot Plug | [Disabled] | |

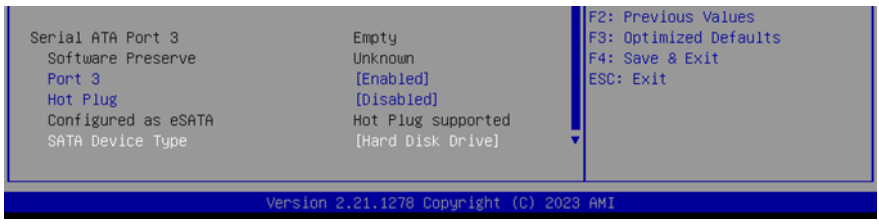
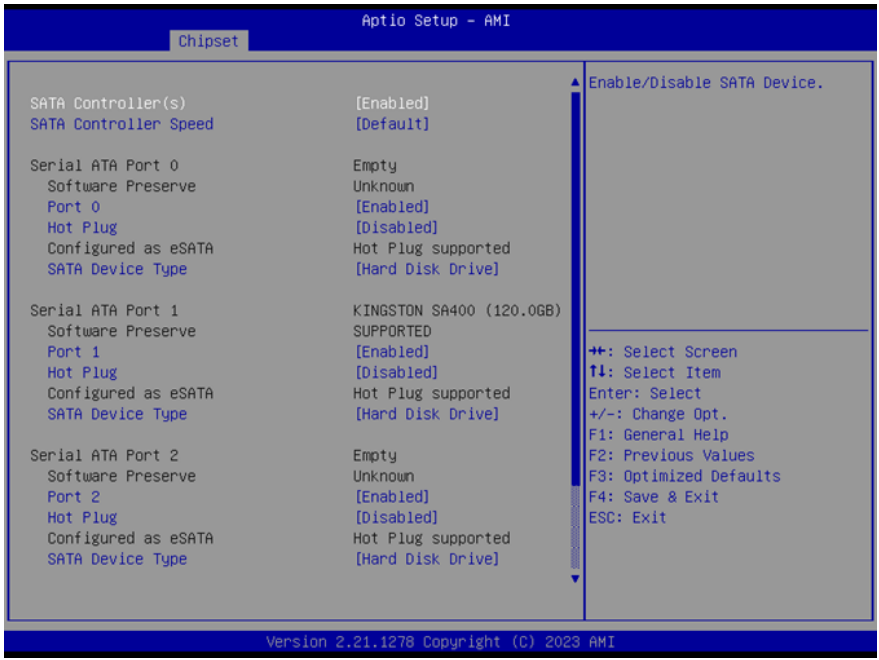
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| Options Summary | | |
|--------------------------------------|---------------------------------------|-----------------------------------|
| PCI Express Root Port 1 | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Control the PCI Express Root Port. | | |
| PCIe Speed | Auto | Optimal Default, Failsafe Default |
| | Gen1 | |
| | Gen2 | |
| | Gen3 | |
| | Gen4 | |
| Configure PCIe Speed. | | |
| Hot Plug | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| PCI Express Hot Plug Enable/Disable. | | |
| PCIe 0_3 Select | PCIe Controller are four x1 | Optimal Default, Failsafe Default |
| | PCIe Controller are one x2 and two x1 | |
| | PCIe Controller are two x2 | |
| | PCIe Controller is one x4 | |
| PCIe Controller Selection. | | |
| PCI Express 0 | Disable | |
| | Enable | Optimal Default, Failsafe Default |
| Control the PCI Express Root Port. | | |
| PCIe Speed | Auto | Optimal Default, Failsafe Default |
| | Gen1 | |
| | Gen2 | |
| | Gen3 | |
| Configure PCIe Speed. | | |
| Hot Plug | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| PCI Express Hot Plug Enable/Disable. | | |
| PCI Express 1 | Disable | |
| | Enable | Optimal Default, Failsafe Default |
| Control the PCI Express Root Port. | | |
| PCIe Speed | Auto | Optimal Default, Failsafe Default |
| | Gen1 | |
| | Gen2 | |
| | Gen3 | |
| Configure PCIe Speed. | | |

| Options Summary | | |
|--------------------------------------|--|-----------------------------------|
| Hot Plug | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| PCI Express Hot Plug Enable/Disable. | | |
| PCI Express 2 | Disable | |
| | Enable | Optimal Default, Failsafe Default |
| Control the PCI Express Root Port. | | |
| PCIe Speed | Auto | Optimal Default, Failsafe Default |
| | Gen1 | |
| | Gen2 | |
| | Gen3 | |
| Configure PCIe Speed. | | |
| Hot Plug | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| PCI Express Hot Plug Enable/Disable. | | |
| PCI Express 3 | Disable | |
| | Enable | Optimal Default, Failsafe Default |
| Control the PCI Express Root Port. | | |
| PCIe Speed | Auto | Optimal Default, Failsafe Default |
| | Gen1 | |
| | Gen2 | |
| | Gen3 | |
| Configure PCIe Speed. | | |
| Hot Plug | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| PCI Express Hot Plug Enable/Disable. | | |
| PCIe 4_7 Select | PCIe Controller are four ×1 | Optimal Default, Failsafe Default |
| | PCIe Controller are one ×2 and two ×1 | |
| | PCIe Controller are two ×2 | |
| | PCIe Controller is one ×4 | |
| PCIe Controller Selection. | | |
| PCI Express 4 | Disable | |
| | Enable | Optimal Default, Failsafe Default |
| Control the PCI Express Root Port. | | |
| PCIe Speed | Auto | Optimal Default, Failsafe Default |
| | Gen1 | |
| | Gen2 | |

| Options Summary | | |
|--------------------------------------|----------|-----------------------------------|
| PCI Speed | Gen3 | |
| Configure PCIe Speed. | | |
| Hot Plug | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| PCI Express Hot Plug Enable/Disable. | | |
| PCI Express 5 | Disable | |
| | Enable | Optimal Default, Failsafe Default |
| Control the PCI Express Root Port. | | |
| PCI Speed | Auto | Optimal Default, Failsafe Default |
| | Gen1 | |
| | | |
| | | |
| Configure PCIe Speed. | | |
| Hot Plug | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| PCI Express Hot Plug Enable/Disable. | | |
| PCI Express 6 | Disable | |
| | Enable | Optimal Default, Failsafe Default |
| Control the PCI Express Root Port. | | |
| PCI Speed | Auto | Optimal Default, Failsafe Default |
| | Gen1 | |
| | Gen2 | |
| | Gen3 | |
| Configure PCIe Speed. | | |
| Hot Plug | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| PCI Express Hot Plug Enable/Disable. | | |
| PCI Express 7 | Disable | |
| | Enable | Optimal Default, Failsafe Default |
| Control the PCI Express Root Port. | | |
| PCI Speed | Auto | Optimal Default, Failsafe Default |
| | Gen1 | |
| | Gen2 | |
| | Gen3 | |
| Configure PCIe Speed. | | |
| Hot Plug | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| PCI Express Hot Plug Enable/Disable. | | |

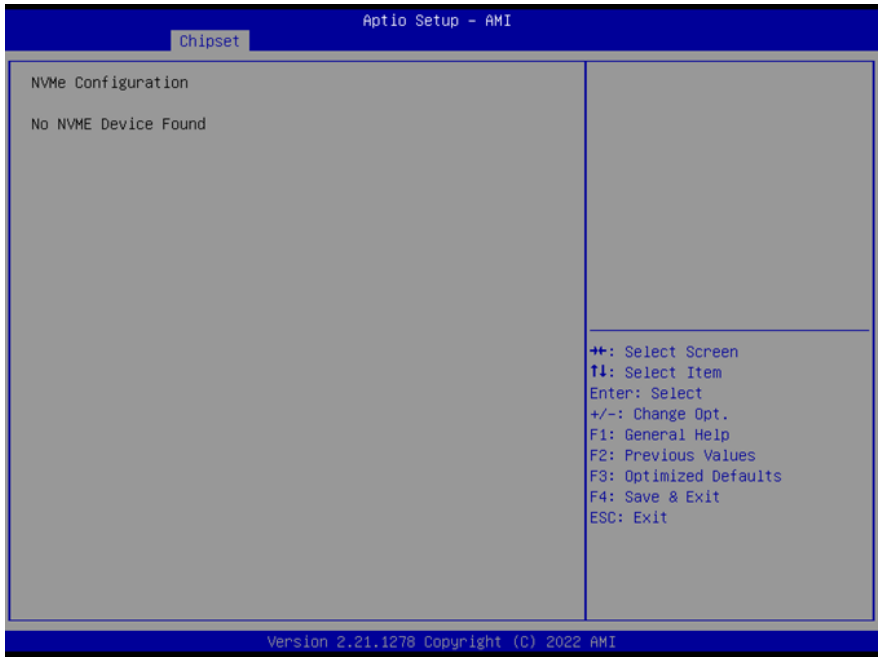
3.5.2 Storage Configuration



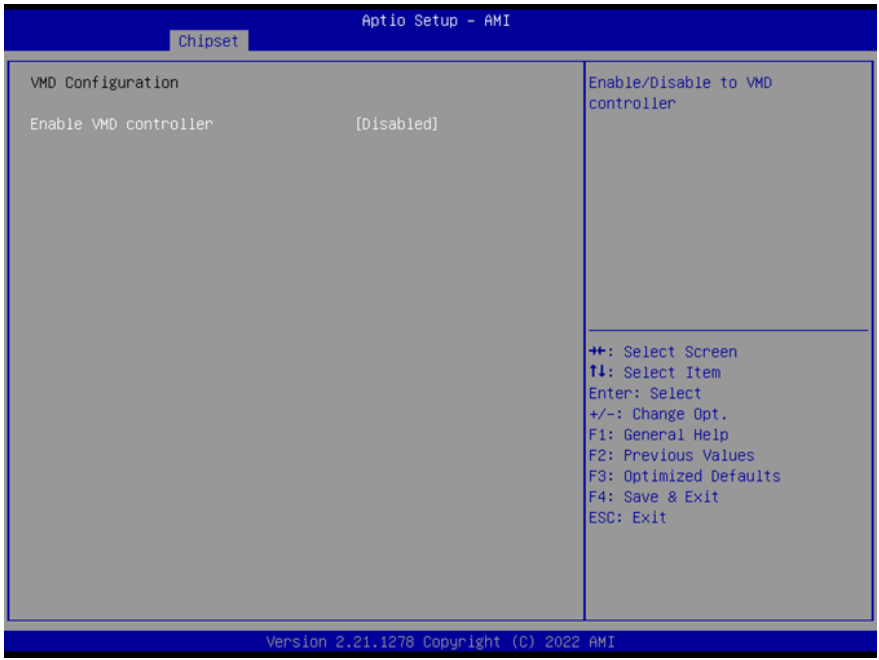
| Options Summary | | |
|-----------------------------|----------|-----------------------------------|
| SATA Controller(s) | Enabled | Optimal Default, Failsafe Default |
| | Disabled | |
| Enable/Disable SATA Device. | | |
| SATA Controller Speed | Default | Optimal Default, Failsafe Default |
| | Gen1 | |
| | Gen2 | |
| | Gen3 | |

| Options Summary | | |
|--|-------------------|-----------------------------------|
| Indicates the maximum speed the SATA controller can support. | | |
| Port 0 | 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. | | |
| SATA Device Type | Hard Disk Drive | Optimal Default, Failsafe Default |
| | Solid State Drive | |
| Identify the SATA port is connected to Solid State Drive or Hard Disk Drive. | | |
| Port 1 | 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. | | |
| SATA Device Type | Hard Disk Drive | Optimal Default, Failsafe Default |
| | Solid State Drive | |
| Identify the SATA port is connected to Solid State Drive or Hard Disk Drive. | | |
| Port 2 | 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. | | |
| SATA Device Type | Hard Disk Drive | Optimal Default, Failsafe Default |
| | Solid State Drive | |
| Identify the SATA port is connected to Solid State Drive or Hard Disk Drive. | | |
| Port 3 | 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. | | |
| SATA Device Type | Hard Disk Drive | Optimal Default, Failsafe Default |
| | Solid State Drive | |

3.5.3 NVMe Configuration



3.5.4 VMD Setup Menu



Options Summary

| | | |
|-----------------------------------|----------|-----------------------------------|
| Enable VMD controller | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enable/Disable to VMD controller. | | |

3.5.5 HD Audio Configuration



| Options Summary | | |
|---|----------|-----------------------------------|
| HD Audio | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled. Enabled = HDA will be unconditionally enabled. | | |

3.5.6 Digital IO Port Configuration

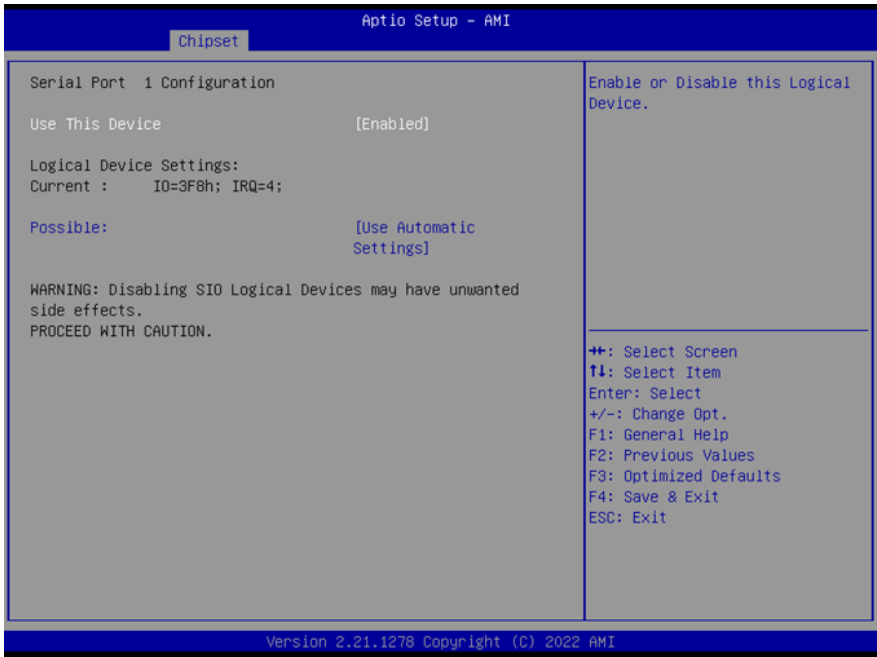


| Options Summary | | |
|--|--------|-----------------------------------|
| DIO 1-4 | Input | Optimal Default, Failsafe Default |
| | Output | |
| Set DIO as Input or Output. | | |
| DIO 5-8 | Input | |
| | Output | Optimal Default, Failsafe Default |
| Set DIO as Input or Output. | | |
| Output Level | Low | |
| | High | Optimal Default, Failsafe Default |
| Set output level when DIO pin is output. | | |

3.5.7 Legacy Logical Devices Configuration

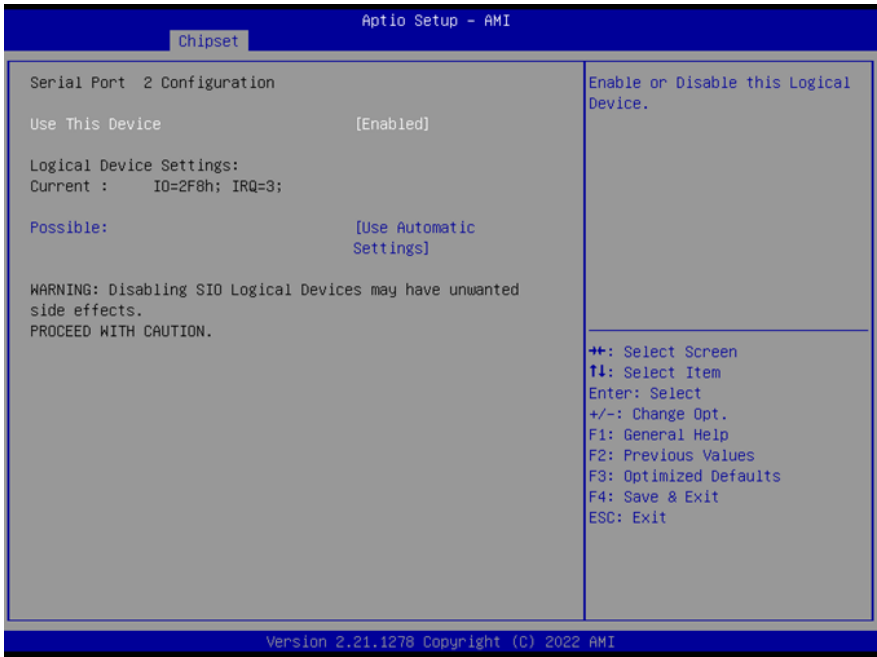


3.5.7.1 Serial Port 1 Configuration



| Options Summary | | |
|--|------------------------|-----------------------------------|
| Use This Device | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable or Disable this Logical Device. | | |
| Possible: | Use Automatic Settings | Optimal Default, Failsafe Default |
| | IO=3F8h; IRQ=4; DMA; | |
| | IO=2C8h; IRQ=11; DMA; | |
| Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts. | | |

3.5.7.2 Serial Port 2 Configuration



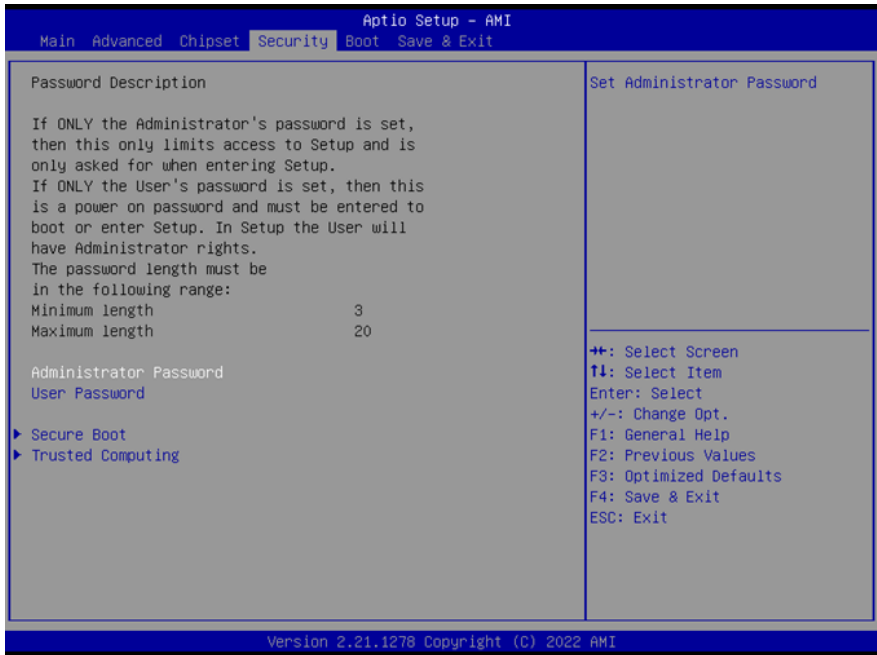
| Options Summary | | |
|--|------------------------|-----------------------------------|
| Use This Device | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable or Disable this Logical Device. | | |
| Possible: | Use Automatic Settings | Optimal Default, Failsafe Default |
| | IO=2F8h; IRQ=3 DMA; | |
| | IO=2D8h; IRQ=10; DMA; | |
| Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts. | | |

3.5.8 Serial Port Console Redirection



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

3.6 Setup Submenu: Security



Change Administrator/User Password

You can set an Administrator password. If you set an Administrator password, you can then set a User password. User passwords do not have access to many of the features in the Setup utility.

Select the password you want to set and press <Enter>. A dialog box will appear which lets you set the password. Passwords must be between 3 and 20 letters or numbers. Press <Enter> and re-enter the password into the next dialog box that appears. Press <Enter> after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Remove Password

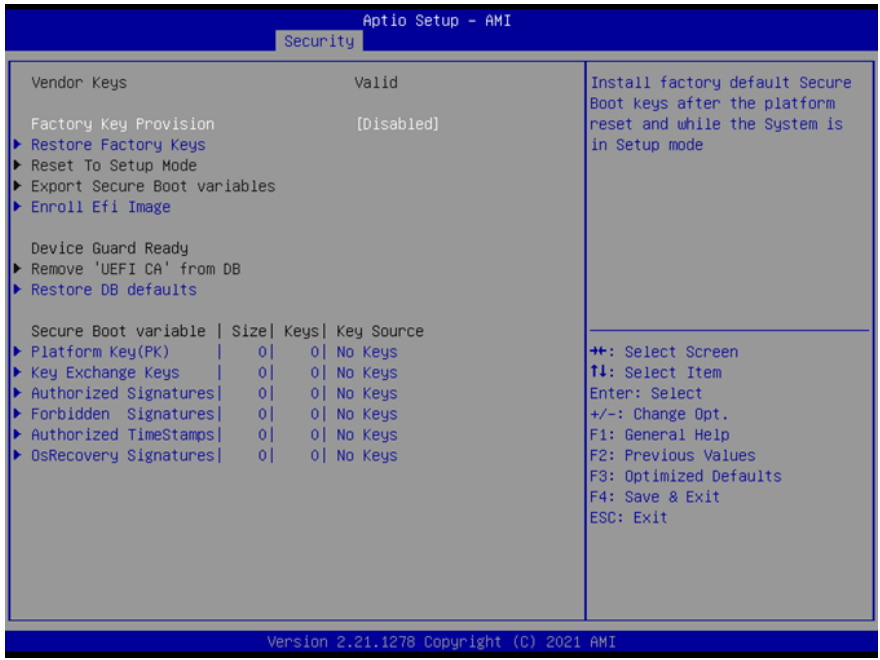
Highlight this item and type in the current password. At the next dialog box press <Enter> to disable password protection.

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 | Standard | |
| | Custom | Optimal Default, Failsafe Default |
| 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. | | |

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.

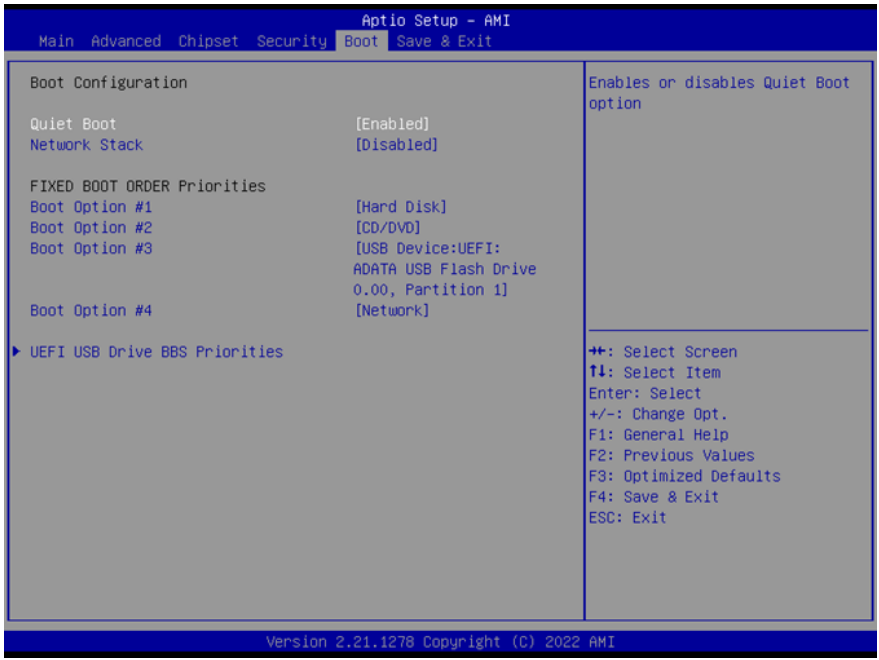
3.6.2 Trusted Computing



| Options Summary | | |
|---|----------|-----------------------------------|
| Security Device Support | Disable | |
| | Enable | Optimal Default, Failsafe Default |
| Enables or Disables BIOS support for security device. O.S. will not show Security Device. TGU 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. | | |
| SHA 256 PCR Bank | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable or Disable SHA256 PCR Bank. | | |
| SHA 384 PCR Bank | Disabled | Optimal Default, Failsafe Default |
| | Enabled | |
| Enable or Disable SHA384 PCR Bank. | | |

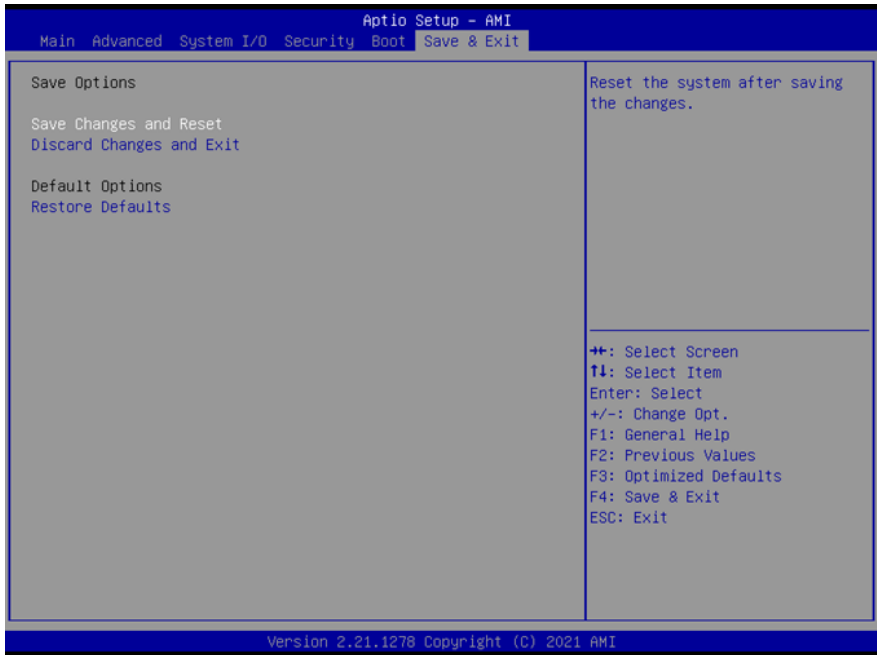
| Options Summary | | |
|---|-----------|-----------------------------------|
| Pending operation | None | Optimal Default, Failsafe Default |
| | TPM Clear | |
| Schedule an Operation for the Security Device. Note: Your Computer will reboot during restart in order to change State of Security Device. | | |
| Platform Hierarchy | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable or Disable Platform Hierarchy. | | |
| Storage Hierarchy | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable or Disable Storage Hierarchy. | | |
| Endorsement Hierarchy | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enable or Disable Endorsement Hierarchy. | | |
| TPM 2.0 UEFI Spec Version | TCG_1_2 | |
| | TCG_2 | Optimal Default, Failsafe Default |
| Select the TCG2 Spec Version Support, TCG_1_2: The Compatible mode for Win8/Win10, TCG_2: Support new TCG2 protocol and event format for win10 or later | | |
| Physical Presence Spec Version | 1.2 | |
| | 1.3 | Optimal Default, Failsafe Default |
| Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3. | | |
| Device Select | TPM 1.2 | |
| | TPM 2.0 | |
| | Auto | Optimal Default, Failsafe Default |
| 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. | | |

3.7 Setup Submenu: Boot



| Options Summary | | |
|--|----------|-----------------------------------|
| Quiet Boot | Disabled | |
| | Enabled | Optimal Default, Failsafe Default |
| Enables or Disables Quite Boot option. | | |
| Network Stack | Disabled | Optimal Default, Failsafe Default |
| | UEFI | |
| Enable/Disable UEFI Network Stack. | | |

3.8 Setup Submenu: Save & Exit



Chapter 4

Drivers Installation

4.1 Drivers Download and Installation

Drivers for the COM-TGHB6 can be downloaded from the product page on the AAEON website by following this link:

<https://www.aaeon.com/en/p/com-express-cpu-modules-com-tghb6>

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

Audio Driver (Windows 10)

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

Chipset Driver (Windows 10)

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

Graphics Driver (Windows 10)

1. Open the folder where you unzipped the **Graphics Drivers**
2. Run the **Installer.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically
5. Refer to the ReadMe.txt for any assistance.

LAN Drivers (Windows 10)

1. Open the folder where you unzipped the **LAN Drivers**
2. Read the ReadMe.txt file before proceeding. **Caution:** Be sure to install the driver package before installing the Intel® PROSet package.
3. Open the **Wired_driver_26.3_x64** folder
4. Run the **Wired_driver_26.3_x64.exe** file in the folder
5. Follow the instructions, drivers will be installed automatically.
6. After installing the LAN driver, install Intel® PROSet package (optional)
7. Open the **Wired_PROSet_26.3_x64** folder
8. Run the **Wired_PROSet_26.3_x64.exe** file in the folder
9. Follow the instructions
10. Drivers will be installed automatically

Peripheral Driver (Linux)

1. Open the folder where you unzipped the **Peripheral Drivers**
2. Follow the instructions contained within the user guides to install the related drivers.

ME & TXE Driver (Windows 10)

1. Open the **ME & TXE Driver** folder
2. Follow the instructions contained within the user guides to install the related drivers.

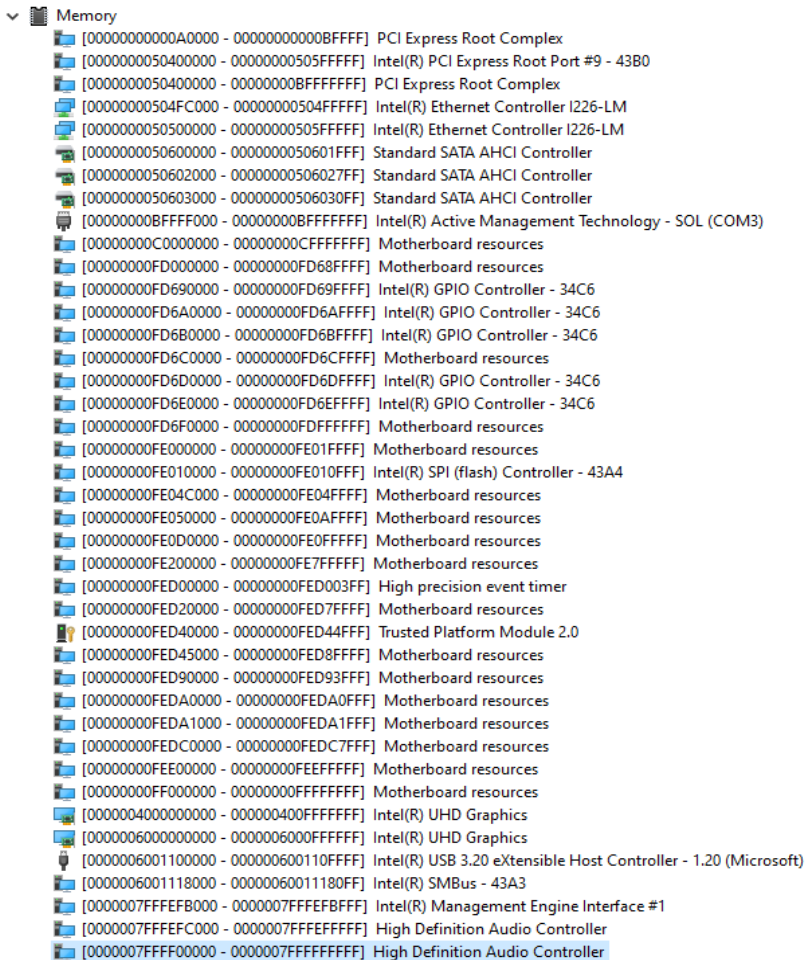
Appendix A

I/O Information

A.1 I/O Address Map



| Address Range | Device Name |
|---------------------------------------|--|
| [0000000000000000 - 000000000000CF7] | PCI Express Root Complex |
| [0000000000000020 - 0000000000000021] | Programmable interrupt controller |
| [0000000000000024 - 0000000000000025] | Programmable interrupt controller |
| [0000000000000028 - 0000000000000029] | Programmable interrupt controller |
| [000000000000002C - 000000000000002D] | Programmable interrupt controller |
| [000000000000002E - 000000000000002F] | Motherboard resources |
| [0000000000000030 - 0000000000000031] | Programmable interrupt controller |
| [0000000000000034 - 0000000000000035] | Programmable interrupt controller |
| [0000000000000038 - 0000000000000039] | Programmable interrupt controller |
| [000000000000003C - 000000000000003D] | Programmable interrupt controller |
| [0000000000000040 - 0000000000000043] | System timer |
| [000000000000004E - 000000000000004F] | Motherboard resources |
| [0000000000000050 - 0000000000000053] | System timer |
| [0000000000000061 - 0000000000000061] | Motherboard resources |
| [0000000000000063 - 0000000000000063] | Motherboard resources |
| [0000000000000065 - 0000000000000065] | Motherboard resources |
| [0000000000000067 - 0000000000000067] | Motherboard resources |
| [0000000000000068 - 0000000000000068] | Microsoft ACPI-Compliant Embedded Controller |
| [000000000000006C - 000000000000006C] | Microsoft ACPI-Compliant Embedded Controller |
| [0000000000000070 - 0000000000000070] | Motherboard resources |
| [0000000000000080 - 0000000000000080] | Motherboard resources |
| [0000000000000092 - 0000000000000092] | Motherboard resources |
| [00000000000000A0 - 00000000000000A1] | Programmable interrupt controller |
| [00000000000000A4 - 00000000000000A5] | Programmable interrupt controller |
| [00000000000000A8 - 00000000000000A9] | Programmable interrupt controller |
| [00000000000000AC - 00000000000000AD] | Programmable interrupt controller |
| [00000000000000B0 - 00000000000000B1] | Programmable interrupt controller |
| [00000000000000B2 - 00000000000000B3] | Motherboard resources |
| [00000000000000B4 - 00000000000000B5] | Programmable interrupt controller |
| [00000000000000B8 - 00000000000000B9] | Programmable interrupt controller |
| [00000000000000BC - 00000000000000BD] | Programmable interrupt controller |
| [00000000000000F0 - 00000000000000F0] | Numeric data processor |
| [00000000000002F8 - 00000000000002FF] | Communications Port (COM2) |
| [00000000000003F8 - 00000000000003FF] | Communications Port (COM1) |
| [00000000000004D0 - 00000000000004D1] | Programmable interrupt controller |
| [0000000000000680 - 000000000000069F] | Motherboard resources |
| [0000000000000D00 - 0000000000000FFF] | PCI Express Root Complex |
| [000000000000164E - 000000000000164F] | Motherboard resources |
| [0000000000001800 - 00000000000018FE] | Motherboard resources |
| [0000000000001854 - 0000000000001857] | Motherboard resources |
| [0000000000002000 - 00000000000020FE] | Motherboard resources |
| [0000000000003000 - 000000000000303F] | Intel(R) UHD Graphics |
| [0000000000003060 - 000000000000307F] | Standard SATA AHCI Controller |
| [0000000000003080 - 0000000000003083] | Standard SATA AHCI Controller |
| [0000000000003090 - 0000000000003097] | Standard SATA AHCI Controller |
| [000000000000EFA0 - 000000000000EFBF] | Intel(R) SMBus - 43A3 |
| [000000000000FFF8 - 000000000000FFFF] | Intel(R) Active Management Technology - SOL (COM3) |

A.2 Memory Address Map























































| Address Range | Device Name |
|---|---|
| [0000000000A0000 - 00000000000BFFFF] | PCI Express Root Complex |
| [000000005040000 - 00000000505FFFFF] | Intel(R) PCI Express Root Port #9 - 43B0 |
| [000000005040000 - 00000000BFFFFFFF] | PCI Express Root Complex |
| [00000000504FC000 - 00000000504FFFFF] | Intel(R) Ethernet Controller I226-LM |
| [000000005050000 - 00000000505FFFFF] | Intel(R) Ethernet Controller I226-LM |
| [000000005060000 - 000000005061FFFF] | Standard SATA AHCI Controller |
| [000000005062000 - 0000000050627FFF] | Standard SATA AHCI Controller |
| [000000005063000 - 0000000050630FFF] | Standard SATA AHCI Controller |
| [00000000BFFFFFF000 - 00000000BFFFFFFFFF] | Intel(R) Active Management Technology - SOL (COM3) |
| [00000000C0000000 - 00000000CFFFFFFF] | Motherboard resources |
| [00000000FD000000 - 00000000FD68FFFF] | Motherboard resources |
| [00000000FD690000 - 00000000FD69FFFF] | Intel(R) GPIO Controller - 34C6 |
| [00000000FD6A0000 - 00000000FD6AFFFF] | Intel(R) GPIO Controller - 34C6 |
| [00000000FD6B0000 - 00000000FD6BFFFF] | Intel(R) GPIO Controller - 34C6 |
| [00000000FD6C0000 - 00000000FD6CFFFF] | Motherboard resources |
| [00000000FD6D0000 - 00000000FD6DFFFF] | Intel(R) GPIO Controller - 34C6 |
| [00000000FD6E0000 - 00000000FD6EFFFF] | Intel(R) GPIO Controller - 34C6 |
| [00000000FD6F0000 - 00000000FD6FFFFF] | Motherboard resources |
| [00000000FED00000 - 00000000FED01FFFF] | Motherboard resources |
| [00000000FED10000 - 00000000FED10FFF] | Intel(R) SPI (flash) Controller - 43A4 |
| [00000000FED4C000 - 00000000FED4FFFF] | Motherboard resources |
| [00000000FED50000 - 00000000FEDAFFFF] | Motherboard resources |
| [00000000FED0D0000 - 00000000FED0FFFFF] | Motherboard resources |
| [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 |
| [00000000FEDC0000 - 00000000FEDC7FFF] | Motherboard resources |
| [00000000FEE00000 - 00000000FEEFFFFF] | Motherboard resources |
| [00000000FF000000 - 00000000FFFFFFF] | Motherboard resources |
| [0000004000000000 - 0000004000000000] | Intel(R) UHD Graphics |
| [0000006000000000 - 0000006000000000] | Intel(R) UHD Graphics |
| [000006001100000 - 000006001100000] | Intel(R) USB 3.2o eXtensible Host Controller - 1.20 (Microsoft) |
| [000006001118000 - 0000060011180FF] | Intel(R) SMBus - 43A3 |
| [00000077FFEFB000 - 00000077FFEFBFFF] | Intel(R) Management Engine Interface #1 |
| [00000077FFEF0000 - 00000077FFEF0FFF] | High Definition Audio Controller |
| [00000077FFF00000 - 00000077FFF00FFF] | High Definition Audio Controller |





















































A.3 Large Memory Address Map





















































- ▼  Large Memory
 -  [0000004000000000 - 000007FFFFFFFF] PCI Express Root Complex





















































A.4 IRQ Mapping Chart





















































| | | |
|---|-------------------------|---------------------------------|
| ▼ | Interrupt request (IRQ) | |
| | (ISA) 0x00000000 (00) | System timer |
| | (ISA) 0x00000003 (03) | Communications Port (COM2) |
| | (ISA) 0x00000004 (04) | Communications Port (COM1) |
| | (ISA) 0x0000000D (13) | Numeric data processor |
| | (ISA) 0x0000000E (14) | Intel(R) GPIO Controller - 34C6 |
| | (ISA) 0x0000001C (28) | Trusted Platform Module 2.0 |
| | (ISA) 0x00000037 (55) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000038 (56) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000039 (57) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000003A (58) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000003B (59) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000003C (60) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000003D (61) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000003E (62) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000003F (63) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000040 (64) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000041 (65) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000042 (66) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000043 (67) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000044 (68) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000045 (69) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000046 (70) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000047 (71) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000048 (72) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000049 (73) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000004A (74) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000004B (75) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000004C (76) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000004D (77) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000004E (78) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000004F (79) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000050 (80) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000051 (81) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000052 (82) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000053 (83) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000054 (84) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000055 (85) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000056 (86) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000057 (87) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000058 (88) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000059 (89) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000005A (90) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000005B (91) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000005C (92) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000005D (93) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000005E (94) | Microsoft ACPI-Compliant System |
| | (ISA) 0x0000005F (95) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000060 (96) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000061 (97) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000062 (98) | Microsoft ACPI-Compliant System |
| | (ISA) 0x00000063 (99) | Microsoft ACPI-Compliant System |





















































| | |
|--|---------------------------------|
|  (ISA) 0x00000064 (100) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000065 (101) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000066 (102) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000067 (103) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000068 (104) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000069 (105) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000006A (106) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000006B (107) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000006C (108) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000006D (109) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000006E (110) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000006F (111) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000070 (112) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000071 (113) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000072 (114) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000073 (115) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000074 (116) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000075 (117) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000076 (118) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000077 (119) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000078 (120) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000079 (121) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000007A (122) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000007B (123) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000007C (124) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000007D (125) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000007E (126) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000007F (127) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000080 (128) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000081 (129) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000082 (130) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000083 (131) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000084 (132) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000085 (133) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000086 (134) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000087 (135) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000088 (136) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000089 (137) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000008A (138) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000008B (139) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000008C (140) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000008D (141) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000008E (142) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000008F (143) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000090 (144) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000091 (145) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000092 (146) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000093 (147) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000094 (148) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000095 (149) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000096 (150) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000097 (151) | Microsoft ACPI-Compliant System |





















































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|  (ISA) 0x00000098 (152) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000099 (153) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000009A (154) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x0000009E (158) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000009F (159) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x000000A3 (163) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x000000A5 (165) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000A6 (166) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x000000A8 (168) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000A9 (169) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x000000AB (171) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x000000B5 (181) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x000000C9 (201) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000CA (202) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000000CB (203) | Microsoft ACPI-Compliant System |












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|  (ISA) 0x00000106 (262) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x00000108 (264) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x0000010B (267) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x0000010D (269) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000010E (270) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000010F (271) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x0000016F (367) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x0000017E (382) | Microsoft ACPI-Compliant System |
|  (ISA) 0x0000017F (383) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x0000018F (399) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x00000191 (401) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000192 (402) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000193 (403) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x00000195 (405) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000196 (406) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000197 (407) | Microsoft ACPI-Compliant System |
|  (ISA) 0x00000198 (408) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x0000019A (410) | Microsoft ACPI-Compliant System |

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|  (ISA) 0x000001AE (430) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x000001B0 (432) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x000001C9 (457) | Microsoft ACPI-Compliant System |
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|  (ISA) 0x000001CD (461) | Microsoft ACPI-Compliant System |
|  (ISA) 0x000001CE (462) | Microsoft ACPI-Compliant System |

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|  | (ISA) 0x000001DA (474) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001DB (475) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001DC (476) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001DD (477) | Microsoft ACPI-Compliant System |
|  | (ISA) 0x000001DE (478) | Microsoft ACPI-Compliant System |
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|  | (ISA) 0x000001F9 (505) | Microsoft ACPI-Compliant System |
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|  | (ISA) 0x000001FB (507) | Microsoft ACPI-Compliant System |
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|  | (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) 0x00000013 (19) | Intel(R) Active Management Technology - SOL (COM3) |
|  | (PCI) 0xFFFFFFF3 (-13) | Intel(R) Management Engine Interface #1 |

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|---|---|
|  (PCI) 0xFFFFFFFF4 (-12) | Intel(R) Ethernet Controller I226-LM |
|  (PCI) 0xFFFFFFFF5 (-11) | Intel(R) Ethernet Controller I226-LM |
|  (PCI) 0xFFFFFFFF6 (-10) | Intel(R) Ethernet Controller I226-LM |
|  (PCI) 0xFFFFFFFF7 (-9) | Intel(R) Ethernet Controller I226-LM |
|  (PCI) 0xFFFFFFFF8 (-8) | Intel(R) Ethernet Controller I226-LM |
|  (PCI) 0xFFFFFFFF9 (-7) | Intel(R) Ethernet Controller I226-LM |
|  (PCI) 0xFFFFFFFFFA (-6) | Intel(R) Ethernet Controller I226-LM |
|  (PCI) 0xFFFFFFFFFB (-5) | Intel(R) UHD Graphics |
|  (PCI) 0xFFFFFFFFFC (-4) | Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft) |
|  (PCI) 0xFFFFFFFFFD (-3) | Standard SATA AHCI Controller |
|  (PCI) 0xFFFFFFFFFE (-2) | Intel(R) PCI Express Root Port #9 - 43B0 |