# MTX-ARS2
# User's Manual

**Revision: 3.0**
**Release Date: August 13, 2026**

## Trademark:

* **Specifications and Information contained in this documentation are furnished for information use only, and are subject to change at any time without notice, and should not be construed as a commitment by manufacturer.**



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# Environmental Protection and Safety Announcement

- Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.

- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.

- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.

# China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

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 | O | O | O | O |
| 外部信号连接器及线材 | X | X | 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/T11363-2006 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。**



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# China RoHS Requirements (EN)

Poisonous or Hazardous Substances or Elements in Products

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

# User's Notice

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# Manual Revision Information

| Reversion | Revision History | Date |
|---|---|---|
| 3.0 | Third Edition | August 13, 2026 |

# Packing List

| Part Number | Description | QTY per Board |
|---|---|---|
| MTX-ARS2-H810 MB | MTX-ARS2-H810 MB | 1 |
| G01-COM-H2M22-1F | COM Port Cable, 22cm, Pitch 2.0 | 1 |
| G01-SATA3-BL-1F | SATA Cable, 50cm | 1 |
| G01-PW4PS2S-322-1F | SATA Power Y cable, 5.0pitch for 32cm, 2.54pitch for 20cm | 1 |
| F04-MB-119-F | I/O Shield | 1 |
| F01-SP-A-BK-3F | Jumper | 2 |

| Part Number | Description | QTY per Board |
|---|---|---|
| MTX-ARS2-Q870 MB | MTX-ARS2-Q870 MB | 1 |
| G01-COM-H2M22-1F | COM Port Cable, 22cm, Pitch 2.0 | 1 |
| G01-SATA3-BL-1F | SATA Cable, 50cm | 1 |
| G01-PW4PS2S-322-1F | SATA Power Y cable, 5.0pitch for 32cm, 2.54pitch for 20cm | 1 |
| F04-MB-119-F | I/O Shield | 1 |
| F01-SP-A-BK-3F | Jumper | 2 |

| Part Number | Description | QTY per Board |
|---|---|---|
| MTX-ARS2-W880 MB | MTX-ARS2-W880 MB | 1 |
| G01-COM-H2M22-1F | COM Port Cable, 22cm, Pitch 2.0 | 1 |
| G01-SATA3-BL-1F | SATA Cable, 50cm | 1 |
| G01-PW4PS2S-322-1F | SATA Power Y cable, 5.0pitch for 32cm, 2.54pitch for 20cm | 1 |
| F04-MB-119-F | I/O Shield | 1 |
| F01-SP-A-BK-3F | Jumper | 2 |

# Chapter 1 Introduction of the Motherboard

## 1-1 Specifications

## MTX-ARS2-H810

| | |
|---|---|
| **SYSTEM** | |
| MB FORM FACTOR | Mini-ITX |
| CPU | Intel® LGA1851 Core™ Ultra Socket Processor (Formerly Arrow Lake-S, TDP 65W) |
| CHIPSET | Intel® H810 |
| MEMORY | 2 x DDR5 6400MT/s, Dual Channel CSO-DIMM, up to 128GB |
| BIOS | AMI 256Mb Flash ROM |
| WAKE ON LAN | Yes |
| WATCHDOG TIMER | 255 Levels |
| SECURITY | TPM2.0 (Optional) |
| DIMENSION (W X D) | 170.0 (W) x 170.0 (D) mm (6.7" x 6.7") |
| OS SUPPORT | Windows® 11 (64bit), Linux |
| **POWER** | |
| POWER REQUIREMENT | ATX Power Supply |
| POWER ON MODE | AT / ATX |
| CONNECTOR | 24+4-pin ATX PWR |
| **DISPLAY** | |
| GPU | Intel® Graphics |
| LVDS | 1 x 24-bit Dual Channel LVDS (Max. Resolution: 1920 x 1200 @60Hz, Co-lay eDP) |
| DP | 1 x DP1.4a (Max Resolution: 4096 x 2160@60Hz) |
| HDMI® | 2 x HDMI® 2.1 TMDS (Max Resolution: 4096 x 2160@60Hz) |
| MULTIPLE DISPLAY | Support 3 Displays |
| **AUDIO** | |
| CODEC | Realtek Audio Codec |
| Line-in | 1 x Audio Jack for Line-In |
| Line-out | 1 x Audio Jack for Line-Out |
| MIC-in | 1 x Audio Jack for MIC-In |
| **LAN** | |
| ETHERNET | 2 x RJ45 for Intel® I226-V 2.5GbE |
| **USB PORT** | |



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| | |
|---|---|
| USB | 2 x USB 3.2 Gen 2x1 (10Gbps, Formerly USB 3.1 Gen 2)<br>4 x USB 2.0<br>Internal Header for 4 x USB 2.0 |
| **SERIAL PORT** | |
| COM | 1 x DB-9 for RS-232/422/485<br>1 x DB-9 for RS-232<br>Internal Header for 4 x RS-232 |
| **INTERNAL I/O** | |
| GPIO | 8-Bit |
| SMBUS | Yes |
| ADDITIONAL | 1 x Chassis Intrusion<br>1 x PS/2<br>1 x Audio Header |
| **STORAGE** | |
| SATA | 4 x SATA III |
| **PCIE & PCI** | |
| PCIe | 1 x PCIe Gen 5 x16 |
| **M.2 & MINI CARD** | |
| M.2 | 1 x M-Key 2280 (PCIe Gen 4x4) support NVMe<br>1 x E-Key 2230 (USB 2.0/PCIe Gen 4 x1) support CNVio<br>1 x B-Key 3042 (PCIe Gen 4 x1/USB3.2 Gen 1/USB2.0 interface) support 4G/5G Module |
| SIM | 1 x SIM Card Slot |
| **OTHERS**<br>**ENVIRONMENT & CERTIFICATION** | |
| SHOCK | 15G, 11ms duration |
| VIBRATION | 1 Grms/ 5~ 500Hz/ Operation |
| OPERATING TEMPERATURE | -20°C ~ 60°C (-4°F ~ 140°F) |
| STORAGE TEMPERATURE | -20°C ~ 85°C (-4°F ~ 185°F) |
| OPERATING HUMIDITY | 10 ~ 90% Relative Humidity, Non-condensing |
| CERTIFICATION | CE/FCC Class A<br>LVD |
| ESG DECLARATION | EU RoHS, China RoHS, REACH, WEEE, Minerals Conflict-Free, PRO65 Declaration, CMRT Report |



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# MTX-ARS2-Q870

| | |
|---|---|
| **SYSTEM** | |
| MB FORM FACTOR | Mini-ITX |
| CPU | Intel® LGA1851 Core™ Ultra Socket Processor (Formerly Arrow Lake-S, TDP 65W) |
| CHIPSET | Intel® Q870 |
| MEMORY | 2 x DDR5 6400MT/s, Dual Channel CSO-DIMM, up to 128GB |
| BIOS | AMI 256Mb Flash ROM |
| WAKE ON LAN | Yes |
| WATCHDOG TIMER | 255 Levels |
| SECURITY | TPM2.0 (Optional) |
| DIMENSION (W X D) | 170.0 (W) x 170.0 (D) mm (6.7" x 6.7") |
| OS SUPPORT | Windows® 11 (64bit), Linux |
| **POWER** | |
| POWER REQUIREMENT | ATX Power Supply |
| POWER ON MODE | AT / ATX |
| CONNECTOR | 24+4-pin ATX PWR |
| **DISPLAY** | |
| GPU | Intel® Graphics |
| LVDS | 1 x 24-bit Dual Channel LVDS (Max. Resolution: 1920 x 1200 @60Hz, co-layout eDP) |
| DP | 1 x DP1.4a (Max Resolution: 4096 x 2160@60Hz) |
| HDMI® | 2 x HDMI® 2.1 TMDS (Max Resolution: 4096 x 2160@60Hz) |
| MULTIPLE DISPLAY | Support 4 Displays |
| **AUDIO** | |
| CODEC | Realtek Audio Codec |
| Line-in | 1 x Audio Jack for Line-In |
| Line-out | 1 x Audio Jack for Line-Out |
| MIC-in | 1 x Audio Jack for MIC-In |
| **LAN** | |
| ETHERNET | 1 x RJ45 for Intel® I226-V 2.5GbE<br>1 x RJ45 for Intel® I226-LM 2.5GbE |
| **USB PORT** | |
| USB | 6 x USB 3.2 Gen 2x1 (10Gbps, Formerly USB 3.1 Gen 2)<br>Internal Header for 2 x USB 3.2 Gen 1x1<br>Internal Header for 4 x USB 2.0 |
| **SERIAL PORT** | |



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| | |
|---|---|
| COM | 1 x DB-9 for RS-232/422/485<br>1 x DB-9 for RS-232<br>Internal Header for 4 x RS-232 |
| **INTERNAL I/O** | |
| GPIO | 8-Bit |
| SMBUS | Yes |
| ADDITIONAL | 1 x Chassis Intrusion<br>1 x PS/2<br>1 x Audio Header |
| **STORAGE** | |
| SATA | 4 x SATA III |
| RAID | RAID 0, 1, 5, 10 |
| **PCIE & PCI** | |
| PCIe | 1 x PCIe Gen 5 x16 |
| **M.2 & MINI CARD** | |
| M.2 | 1 x M-Key 2280 (PCIe Gen 4x4) support NVMe<br>1 x M-Key 2242 (PCIe Gen 4 x4/SATA interface) support NVMe<br>1 x E-Key 2230 (USB 2.0/PCIe Gen 4 x1) support CNVio<br>1 x B-Key 3042 (PCIe Gen 4 x1/USB3.2 Gen 1/USB2.0 interface) support 4G/5G Module |
| SIM | 1 x SIM Card Slot |
| **OTHERS ENVIRONMENT & CERTIFICATION** | |
| SHOCK | 15G, 11ms duration |
| VIBRATION | 1 Grms/ 5~ 500Hz/ Operation |
| OPERATING TEMPERATURE | -20°C ~ 60°C (-4°F ~ 140°F) |
| STORAGE TEMPERATURE | -20°C ~ 85°C (-4°F ~ 185°F) |
| OPERATING HUMIDITY | 10 ~ 90% Relative Humidity, Non-condensing |
| CERTIFICATION | CE/FCC Class A<br>LVD |
| ESG DECLARATION | EU RoHS, China RoHS, REACH, WEEE, Minerals Conflict-Free, PRO65 Declaration, CMRT Report |

# MTX-ARS2-W880

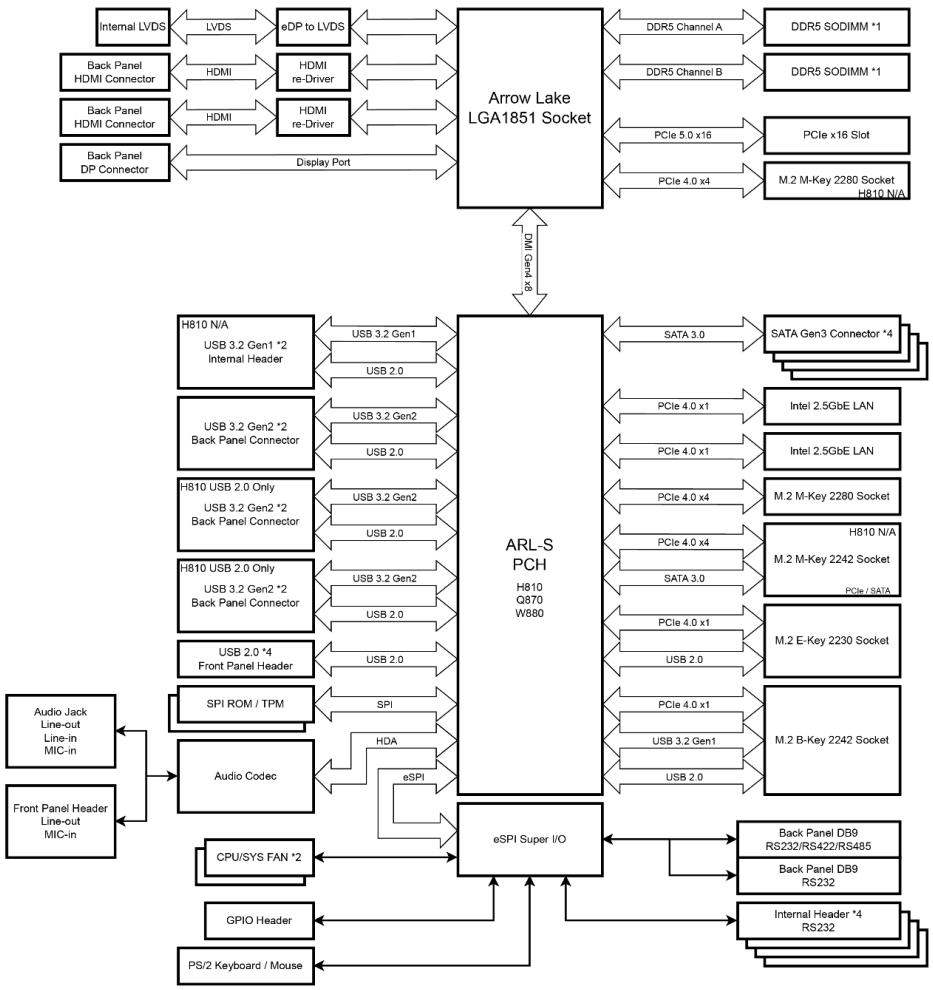
| | |
|---|---|
| **SYSTEM** | |
| MB FORM FACTOR | Mini-ITX |
| CPU | Intel® LGA1851 Core™ Ultra Socket Processor (Formerly Arrow Lake-S, TDP 65W) |
| CHIPSET | Intel® W880 |
| MEMORY | 2 x DDR5 6400MT/s, Dual Channel CSO-DIMM, up to 128GB, ECC supported |
| BIOS | AMI 256Mb Flash ROM |
| WAKE ON LAN | Yes |
| WATCHDOG TIMER | 255 Levels |
| SECURITY | TPM2.0 (Optional) |
| DIMENSION (W X D) | 170.0 (W) x 170.0 (D) mm (6.7" x 6.7") |
| OS SUPPORT | Windows® 11 (64bit), Linux |
| **POWER** | |
| POWER REQUIREMENT | ATX Power Supply |
| POWER ON MODE | AT / ATX |
| CONNECTOR | 24+4-pin ATX PWR |
| **DISPLAY** | |
| GPU | Intel® Graphics |
| LVDS | 1 x 24-bit Dual Channel LVDS (Max. Resolution: 1920 x 1200 @60Hz, co-layout eDP) |
| DP | 1 x DP1.4a (Max Resolution: 4096 x 2160@60Hz) |
| HDMI® | 2 x HDMI® 2.1 TMDS (Max Resolution: 4096 x 2160@60Hz) |
| MULTIPLE DISPLAY | Support 4 Displays |
| **AUDIO** | |
| CODEC | Realtek Audio Codec |
| Line-in | 1 x Audio Jack for Line-In |
| Line-out | 1 x Audio Jack for Line-Out |
| MIC-in | 1 x Audio Jack for MIC-In |
| **LAN** | |
| ETHERNET | 1 x RJ45 for Intel® I226-V 2.5GbE<br>1 x RJ45 for Intel® I226-LM 2.5GbE |
| **USB PORT** | |
| USB | 6 x USB 3.2 Gen 2x1 (10Gbps, Formerly USB 3.1 Gen 2)<br>Internal Header for 2 x USB 3.2 Gen 1x1<br>Internal Header for 4 x USB 2.0 |
| **SERIAL PORT** | |

| | |
|---|---|
| COM | 1 x DB-9 for RS-232/422/485<br>1 x DB-9 for RS-232<br>Internal Header for 4 x RS-232 |
| **INTERNAL I/O** | |
| GPIO | 8-Bit |
| SMBUS | Yes |
| ADDITIONAL | 1 x Chassis Intrusion<br>1 x PS/2<br>1 x Audio Header |
| **STORAGE** | |
| SATA | 4 x SATA III |
| RAID | RAID 0, 1, 5, 10 |
| **PCIE & PCI** | |
| PCIe | 1 x PCIe Gen 5 x16 |
| **M.2 & MINI CARD** | |
| M.2 | 1 x M-Key 2280 (PCIe Gen 4x4) support NVMe<br>1 x M-Key 2242 (PCIe Gen 4 x4/SATA interface) support NVMe<br>1 x E-Key 2230 (USB 2.0/PCIe Gen 4 x1) support CNVio<br>1 x B-Key 3042 (PCIe Gen 4 x1/USB3.2 Gen 1/USB2.0 interface) support 4G/5G Module |
| SIM | 1 x SIM Card Slot |
| **OTHERS ENVIRONMENT & CERTIFICATION** | |
| SHOCK | 15G, 11ms duration |
| VIBRATION | 1 Grms/ 5~ 500Hz/ Operation |
| OPERATING TEMPERATURE | -20°C ~ 60°C (-4°F ~ 140°F) |
| STORAGE TEMPERATURE | -20°C ~ 85°C (-4°F ~ 185°F) |
| OPERATING HUMIDITY | 10 ~ 90% Relative Humidity, Non-condensing |
| CERTIFICATION | CE/FCC Class A<br>LVD |
| ESG DECLARATION | EU RoHS, China RoHS, REACH, WEEE, Minerals Conflict-Free, PRO65 Declaration, CMRT Report |

# Order Information

| Item | MTX-ARS2-H8100010 | MTX-ARS2-H8100210 | MTX-ARS2-Q8700010 | MTX-ARS2-Q8700210 | MTX-ARS2-W8800010 | MTX-ARS2-W8800210 |
|---|---|---|---|---|---|---|
| CPU | Intel® Socket LGA1851 CPU | Intel® Socket LGA1851 CPU | Intel® Socket LGA1851 CPU | Intel® Socket LGA1851 CPU | Intel® Socket LGA1851 CPU | Intel® Socket LGA1851 CPU |
| MEMORY | – | – | – | – | – | – |
| SECURITY | Intel® PTT (fTPM) | Intel® PTT (fTPM) & TPM (dTPM) Default | Intel® PTT (fTPM) | Intel® PTT (fTPM) & TPM (dTPM) Default | Intel® PTT (fTPM) | Intel® PTT (fTPM) & TPM (dTPM) Default |

# 1-2 Block Diagram

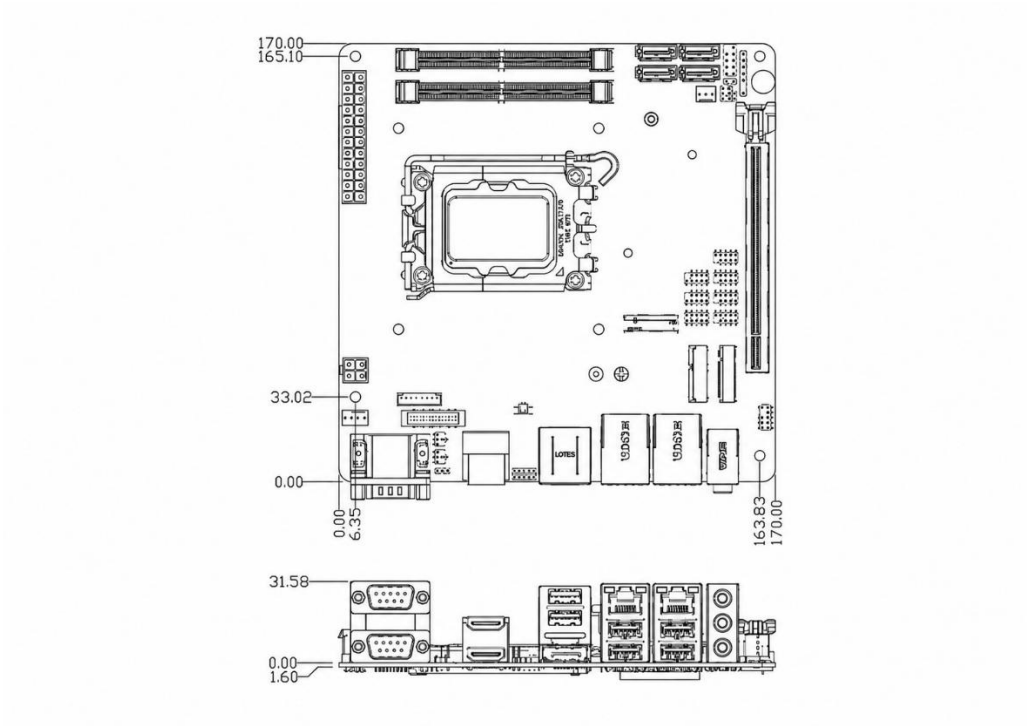




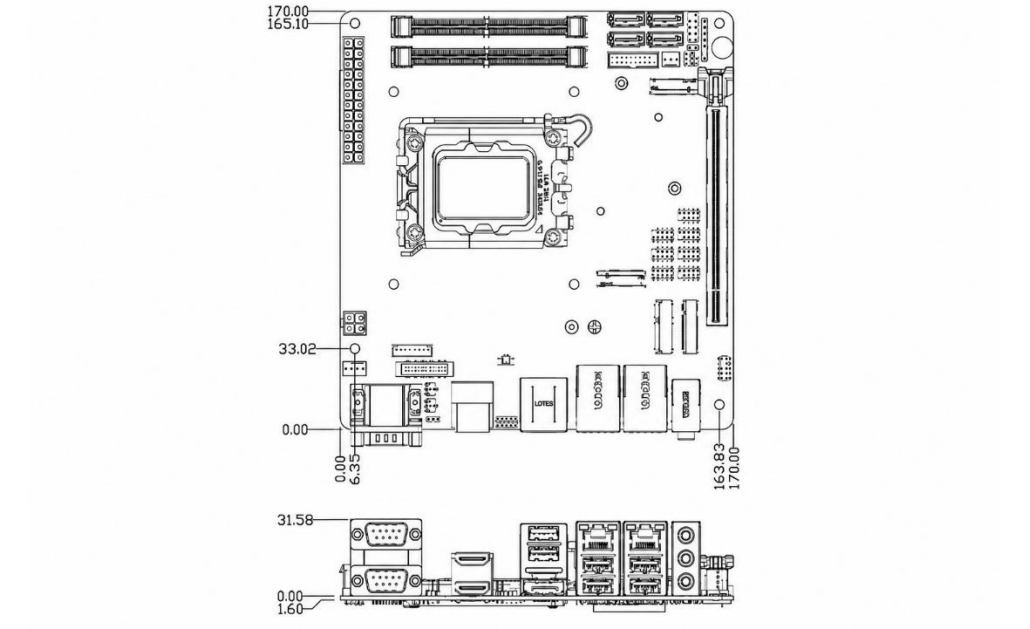

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# 1-3 Dimension

## MTX-ARS2-H810




## MTX-ARS2-Q870/W880

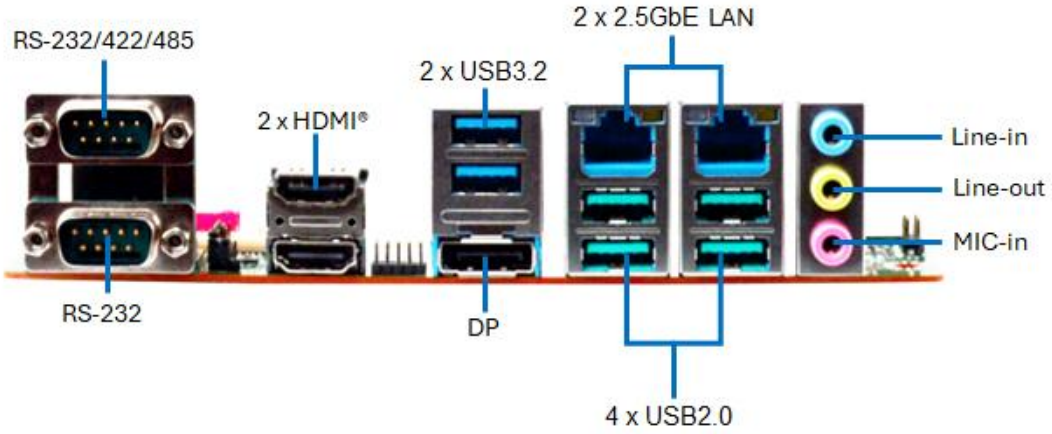




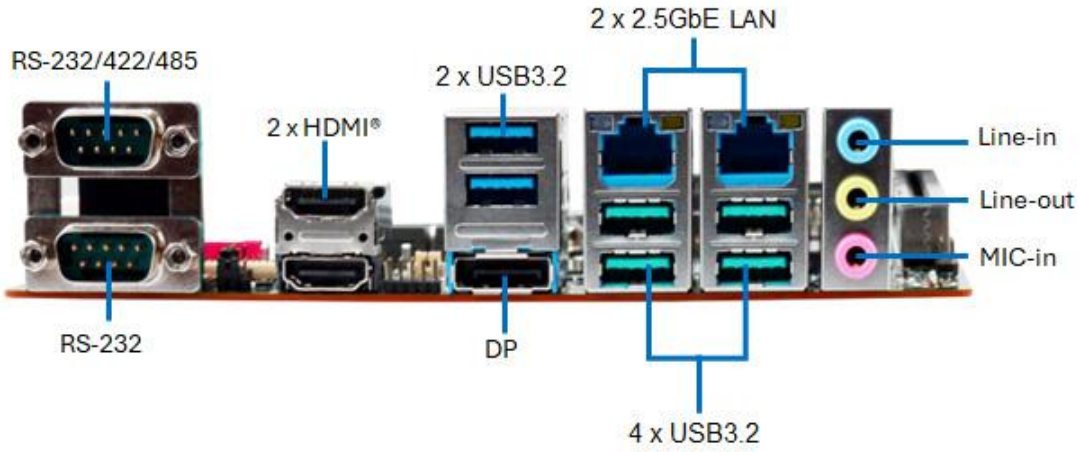

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# 1-4 I/O Placement

## MTX-ARS2-H810




## MTX-ARS2-Q870/ W880

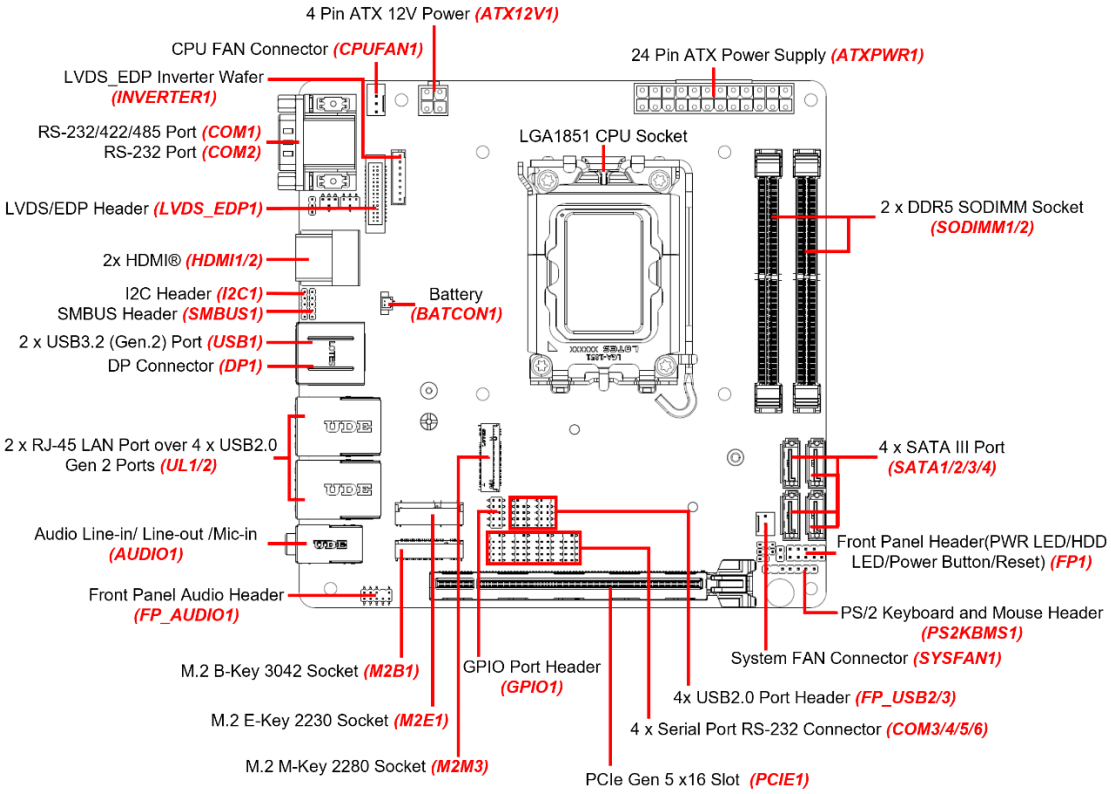




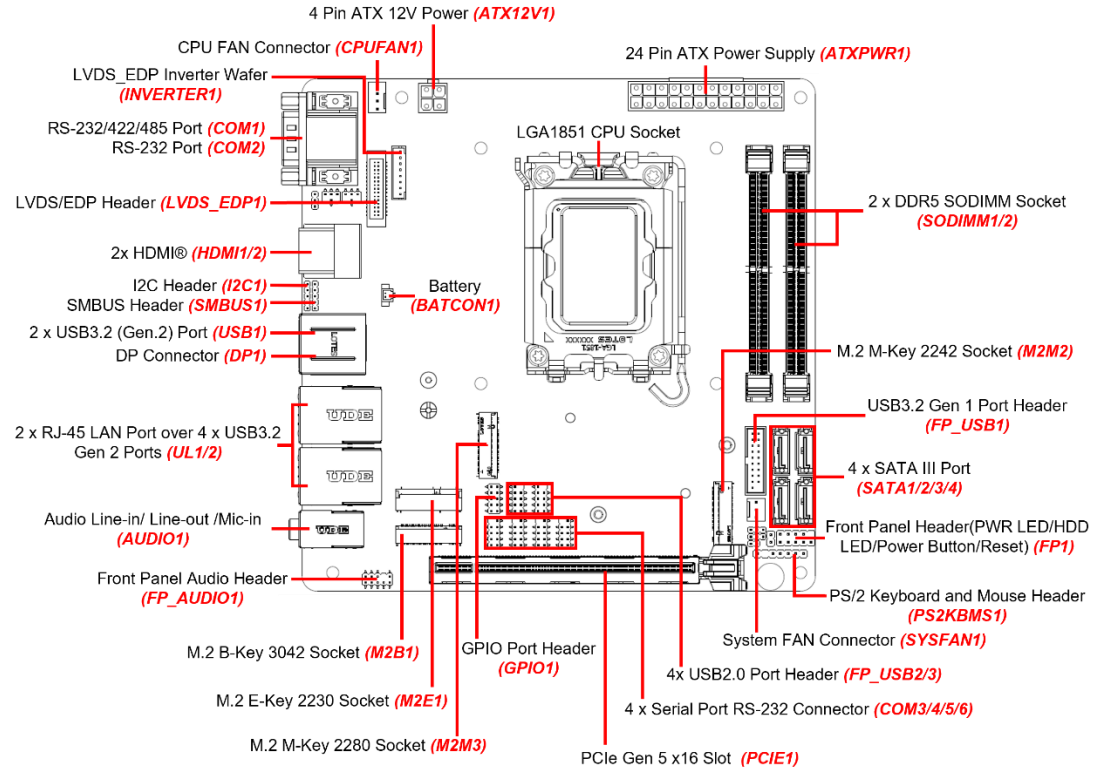

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# 1-5 Motherboard Placement

## MTX-ARS2-H810




## MTX-ARS2-Q870、W880

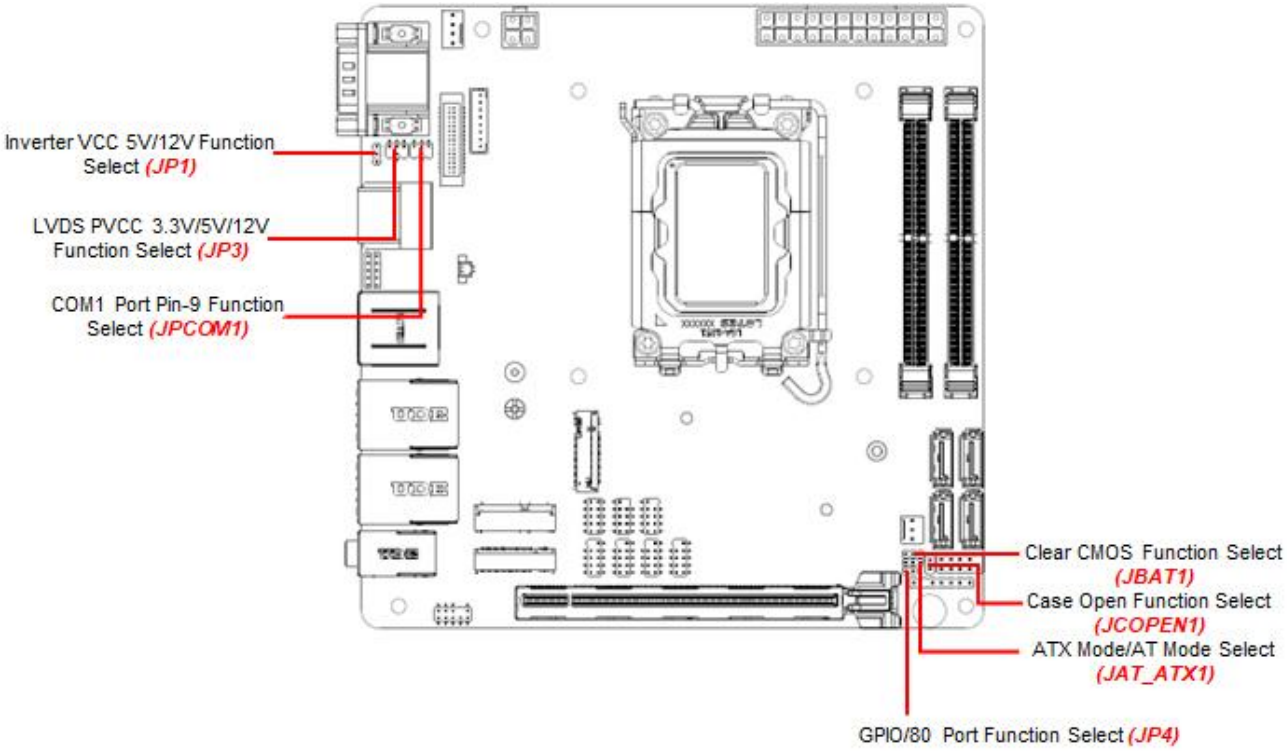




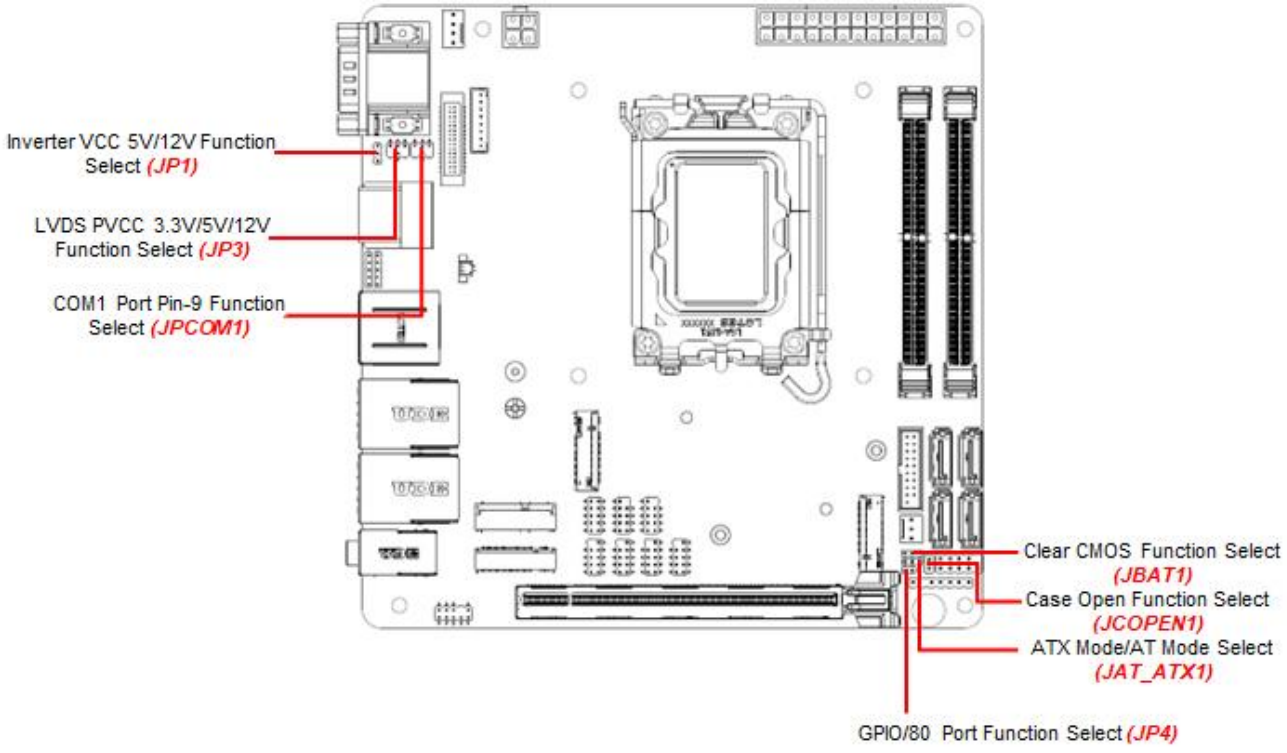

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# 1-6 Jumper Positions

## MTX-ARS2-H810




## MTX-ARS2-Q870、W880






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# Chapter 2 Hardware Information

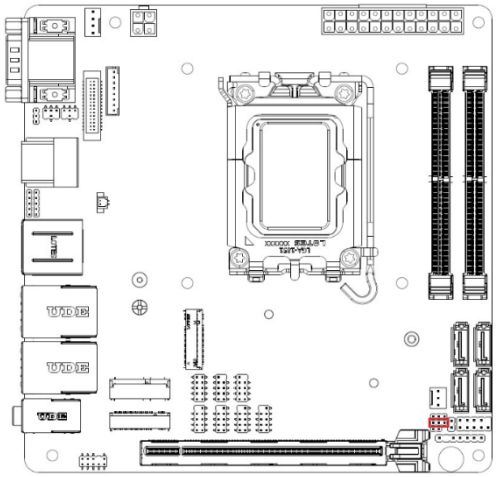
## 2-1 List of Jumpers

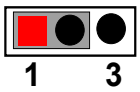
Please refer to the table below for all of the board's jumpers that you can configure for your application.

| Location Printing | Function |
|---|---|
| **JAT_ATX** | ATX Mode/AT Mode Select |
| **JBAT1** | Clear CMOS Function Select |
| **JCOPEN1** | Case Open Function Select |
| **JP1** | Inverter VCC 5V/12V Function Select |
| **JP3** | LVDS PVCC 3.3V/5V/12V Function Select |
| **JP4** | GPIO/80 Port Function Select |
| **JPCOM1** | COM1 Header Pin-9 Function Select |

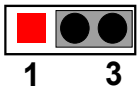
## 2-2 Jumper Settings

***(1) ATX Mode/AT Mode Select (JAT_ATX)***






**1-2 Closed: ATX Mode Selected**

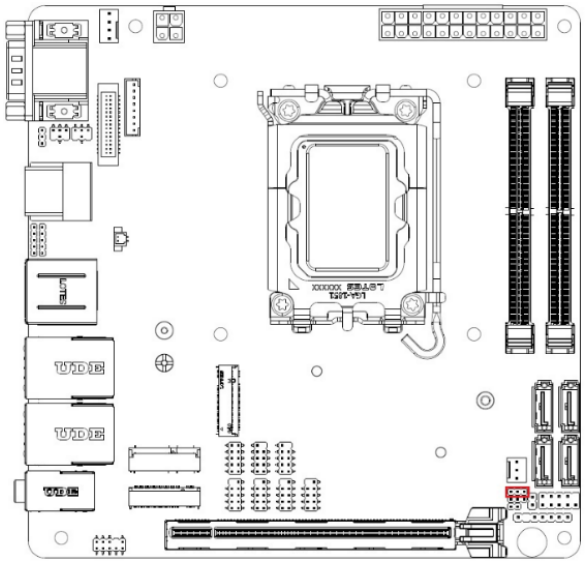


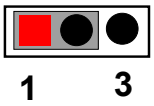

**2-3 Closed: AT Mode Selected**



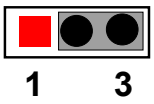
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### *(2) Clear CMOS Function Select (JBAT1)*



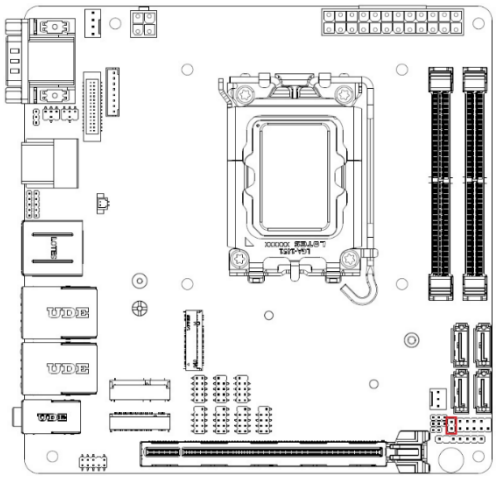


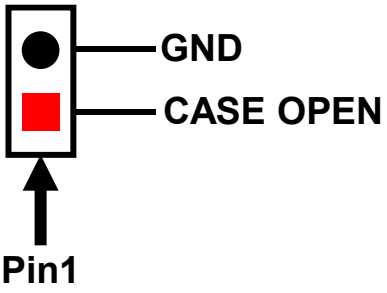

**1-2 Closed: Normal**



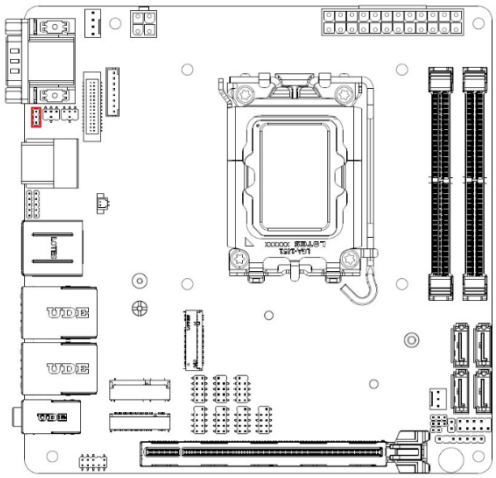

**2-3 Closed: Clear CMOS**

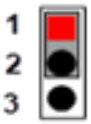
### *(3) Case Open Function Select (JCOPEN1)*



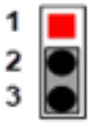



### *(4) Inverter VCC 5V/12V Function Select (JP1)*






**1-2 Closed: Inverter VCC=5V;**

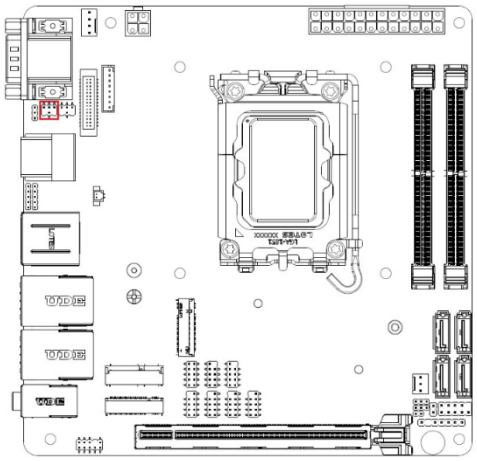


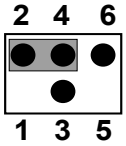

**2-3 Closed: Inverter VCC=12V.**



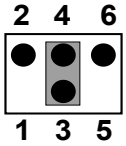
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### *(5) LVDS PVCC 3.3V/5V/12V Function Select (JP3)*

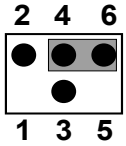





2-4 Closed
VCC= 3.3V

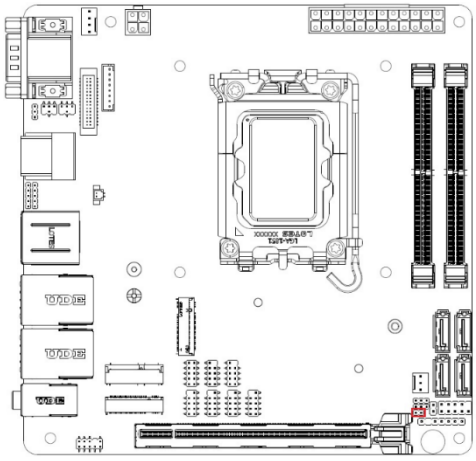


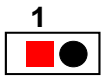

3-4 Closed
VCC= 5V



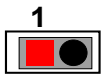

4-6 Closed
VCC= 12V

### *(6) GPIO/80 Port Function Select (JP4)*



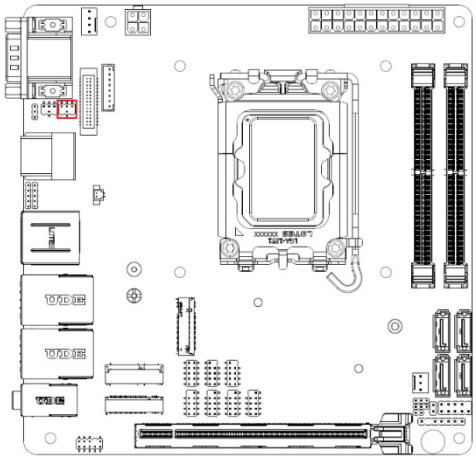


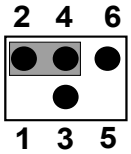

1-2 Open: GPIO_CON=80 Port



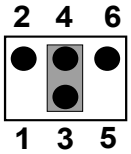

1-2 Closed: GPIO_CON=GPIO Port

### *(7) COM1 Header Pin-9 Function Select (JPCOM1)*

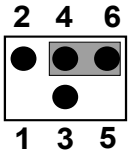





2-4 Closed
Pin9= RI#




3-4 Closed
Pin9= 5V




6-4 Closed
Pin9= 12V



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# 2-3 List of Connectors

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

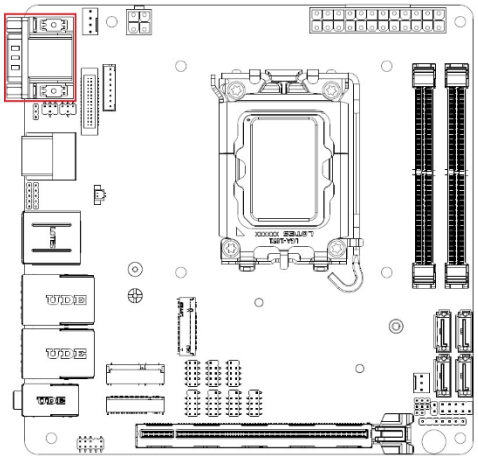
| Location Printing | Function |
|---|---|
| **COM1** | RS232/RS422/RS485 Serial Port Header *Support 5V/12V on RI# |
| **COM2** | RS-232 Serial Port Header |
| **HDMI1/2** | HDMI 2.1 TMDS Connector |
| **USB1** | USB3.2 Gen.2 Connector |
| **DP1** | Display Port Connector |
| **UL1 (LAN)** | RJ45 2.5GbE LAN Port Connector |
| **UL1 (USB 2.0)** | USB2.0 Port Connector |
| **UL2 (LAN)** | RJ45 2.5GbE LAN Port Connector |
| **UL2 (USB 2.0)** | USB2.0 Port Connector |
| **AUDIO1** | Audio Header Line-In / Line-Out / MIC-In |
| **PCIE1** | PCIe Gen5 x16 Slot |
| **M2E1** | M.2 2230 E-Key Slot |
| **M2B1** | M.2 3042 B-Key Slot |
| **M2M3** | M.2 2280 M-Key Slot |
| **SATA1/2/3/4** | SATA 3.0 Port Connector |
| **SODIMM1/2** | DDR5 SODIMM Socket |
| **I2C1** | I2C Header |
| **SMBUS1** | SMBUS Header |
| **LVDS_EDP1** | LVDS/EDP Header |
| **INVERTER1** | LVDS_EDP Inverter Wafer |
| **COM3/4/5/6** | RS-232 Serial Port Header |
| **FP_USB2/3** | USB2.0 Port Header |
| **F_AUDIO1** | Front Panel Audio Header Line-In/Line-Out |
| **PS2KBMS1** | PS/2 Keyboard and Mouse Header |
| **GPIO1** | 8-Bit GPIO Port/80 Port Header |
| **FP1** | Front Panel Header (PWR LED / HDD LED / Power Button / Reset) |
| **SIMCARD1** | Nano-SIM Card Socket |
| **CPUFAN1** | CPU FAN Connector |
| **SYSFAN1** | System FAN Connector |
| **ATXPWR1** | 24 Pin ATX Power Supply Connector |
| **ATX12V1** | 4 Pin ATX 12V Power Connector |
| **BATCON1** | Coin Battery Connector |

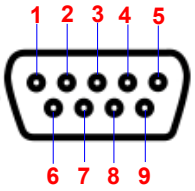


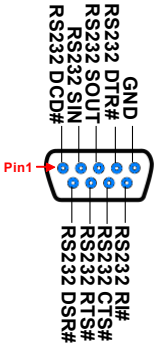
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# 2-4 Connector Settings

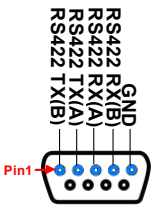
## *(1) Serial Port (RS232/422/485) Connector (COM1)*



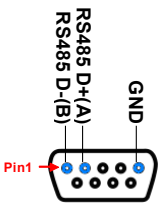



*RS232 Mode*



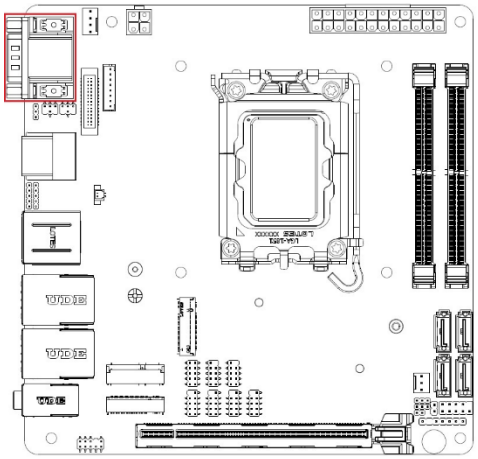

*RS422 Mode*

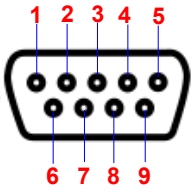


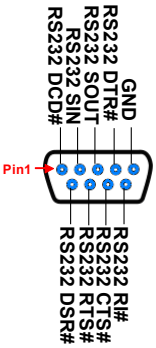

*RS485 Mode*

**Note:** Standard specifications.

## *(2) Serial Port (RS232) Connector (COM2)*



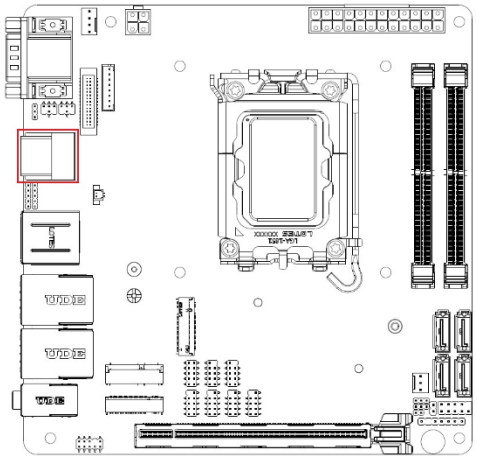


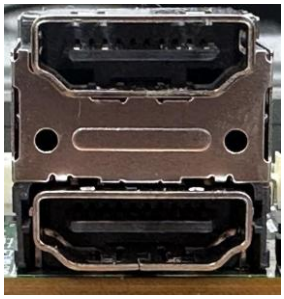




*RS232 Mode*

**Note:** Standard specifications.

## *(3) HDMI2.1 TMDS Connector (HDM1/2)*



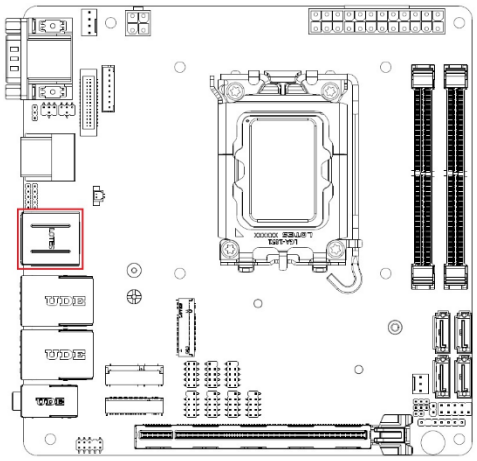


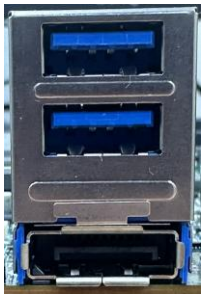
**Note:** Standard specifications.



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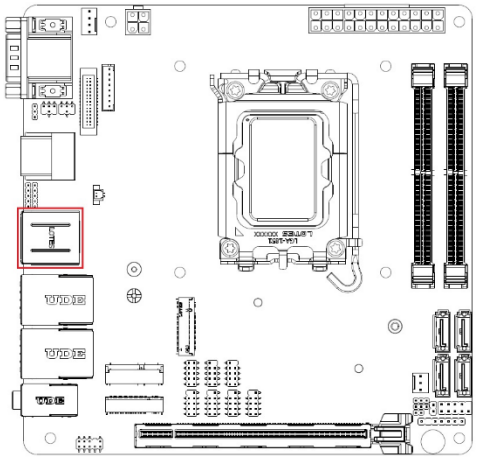
## *(4) USB3.2 Gen.2 Port Connector (USB1)*





**Note:** Standard specifications.

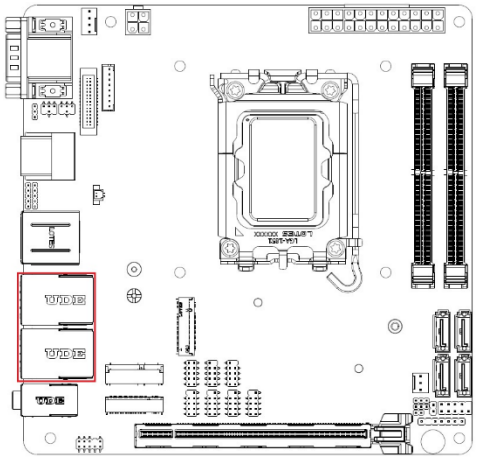
## *(5) Display Port Connector (DP1)*

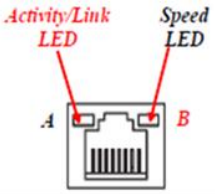




**Note:** Standard specifications.

## *(6) RJ-45 LAN Port Connector (UL1)*






| A: Activity/Link LED | | B: Speed LED | |
|---|---|---|---|
| **Status** | **Description** | **Status** | **Description** |
| Off | No Link | Off | 10/100Mbps connection |
| **Blinking** | Data Activity | Orange | 1000Mbps connection |
| **On** | Link | Green | 2.5Gbps connection |

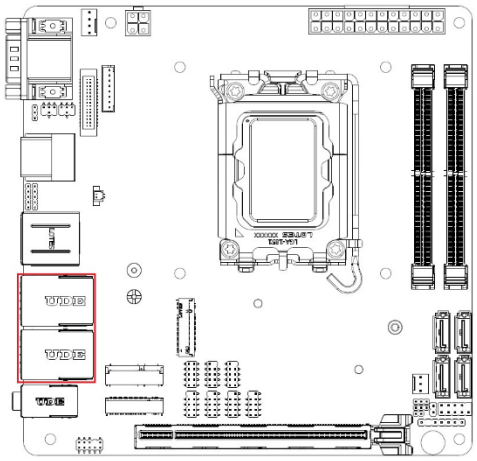
**Note:* ***2.5Gbps*** *high-speed transmission rate is* ***only*** *supported over* ***CAT 5e UTP cable****.*

**Note:** Standard specifications.

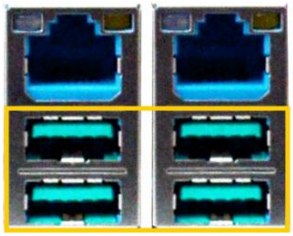


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## *(7) USB2.0/ USB3.2 (Gen.2) Port Connector (UL1)*



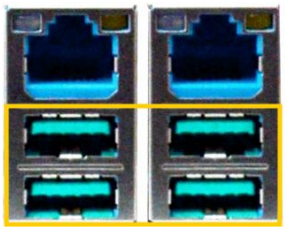
UL1 UL2



USB2.0 Port Connector

**Only for H810**

UL1 UL2

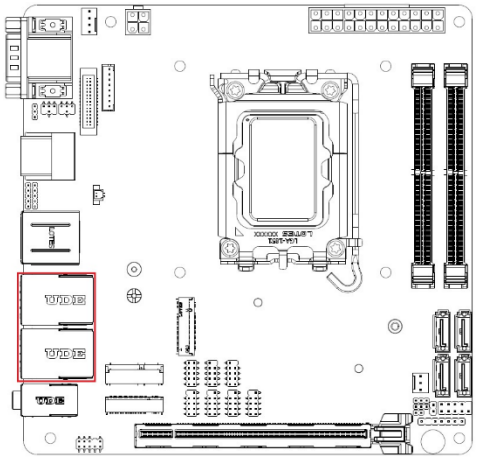


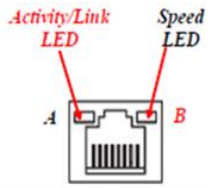
USB3.2(Gen.2) Port Connector

**Only for W880& Q870**

**Note:** Standard specifications.

## *(8) RJ-45 LAN Port Connector (UL2)*



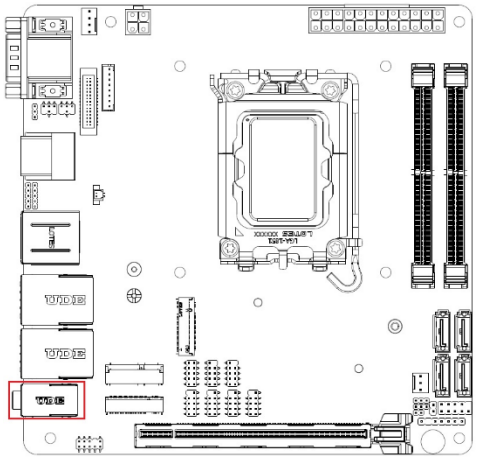



| A: Activity/Link LED | | B: Speed LED | |
|---|---|---|---|
| Status | Description | Status | Description |
| Off | No Link | Off | 10/100Mbps connection |
| Blinking | Data Activity | Orange | 1000Mbps connection |
| On | Link | Green | 2.5Gbps connection |

*Note: 2.5Gbps high-speed transmission rate is only supported over CAT 5e UTP cable.

**Note:** Standard specifications.

## *(9) Audio Header Line-In / Line-Out / MIC-In (AUDIO1)*



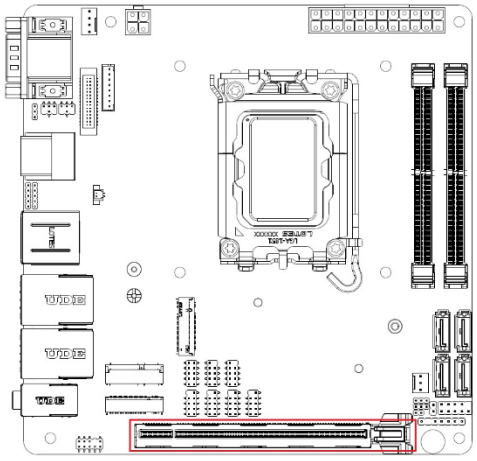


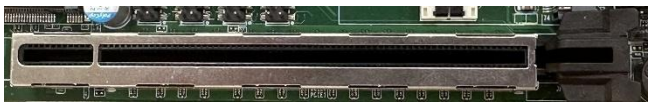
**Note:** Standard specifications.



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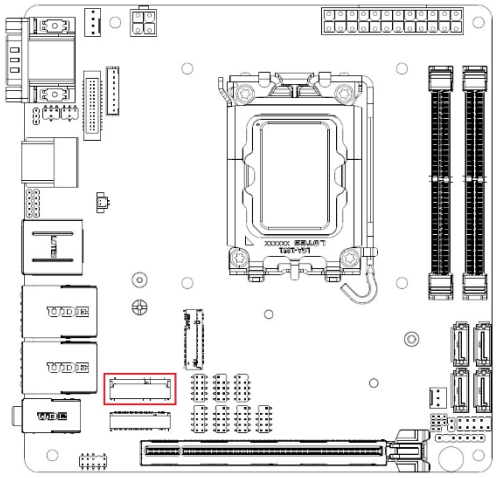
### *(10) PCIe Gen5 x16 Slot (PCIE1)*





**Note:** Standard specifications.

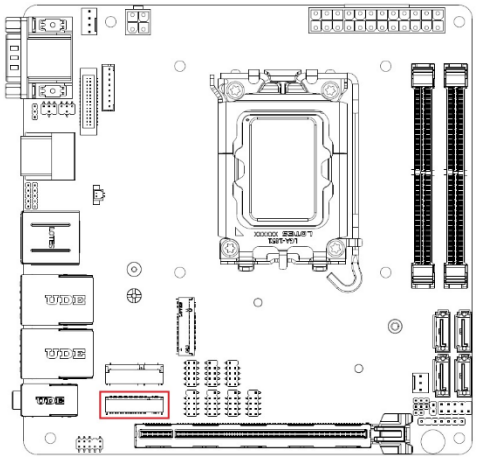
### *(11) M.2 2230 E-Key Slot (M2E1)*






**Note:** Standard specifications.

### *(12) M.2 3042 B-Key Slot (M2B1)*



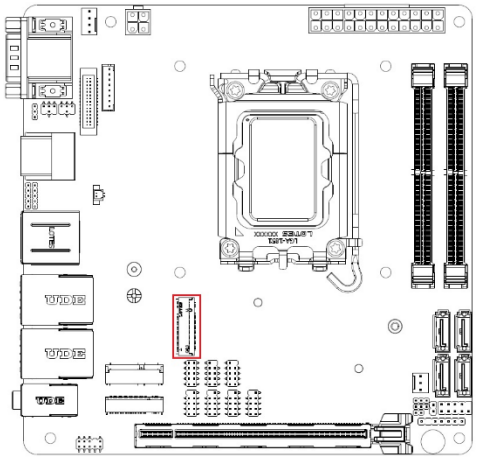



**Note:** Standard specifications.



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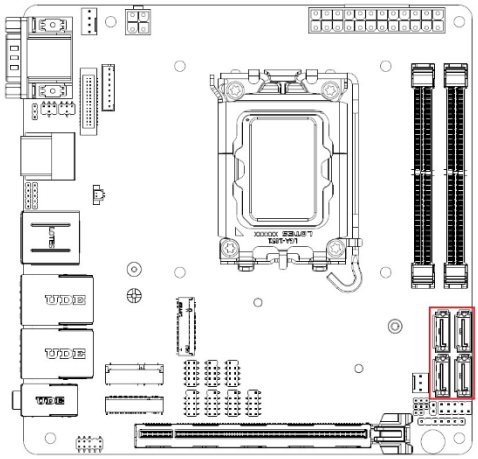
### *(13) M.2 2280 M-Key Slot (M2M3)*






**Note:** Standard specifications.

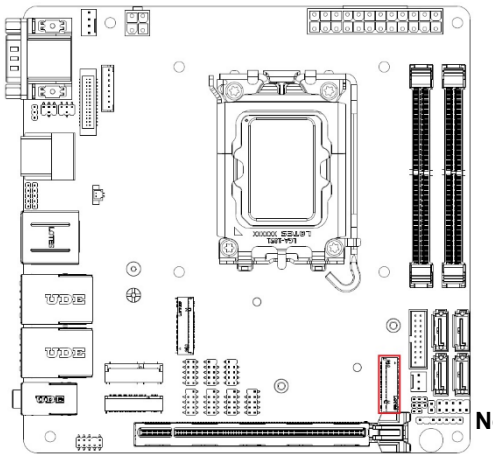
### *(14) SATA 3.0 Port Connector (SATA1/2/3/4)*



**Note:** Standard specifications.

| Pin No. | Definition |
|---|---|
| 1 | GND |
| 2 | TXP |
| 3 | TXN |
| 4 | GND |
| 5 | RXN |
| 6 | RXP |
| 7 | GND |

### *(15) M.2 2242 Key M Socket (M2M2)*



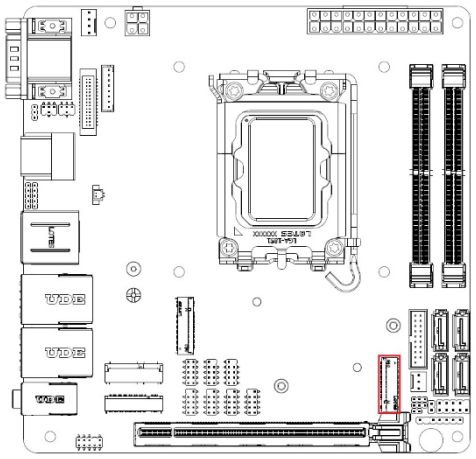
**Note:** Standard specifications.






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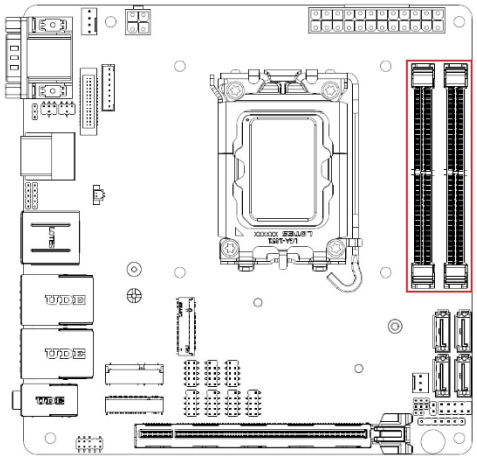
## *(16) M.2 2242 Key M Socket (M2M2) *Only for W880/Q870 Chipset*






**Note:** Standard specifications.

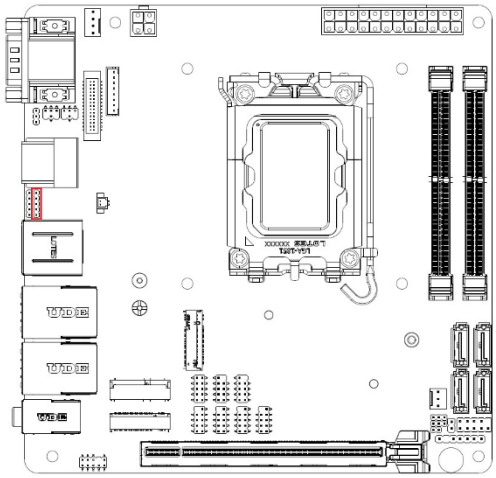
## *(17) DDR5 SO-DIMM Socket (SODIMM1/2)*

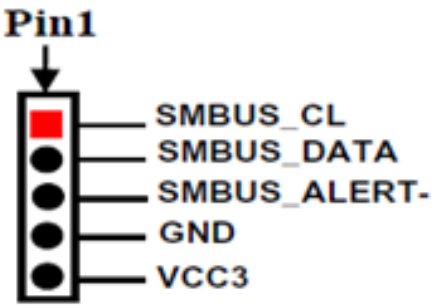




**Note:** Standard specifications.

## *(18) SMBUS Header (SMBUS1)*



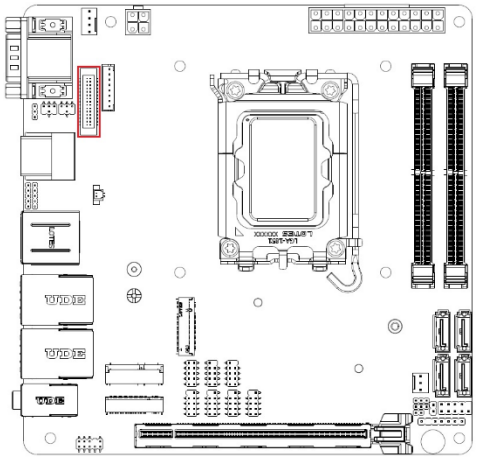



**Note:** Standard specifications.

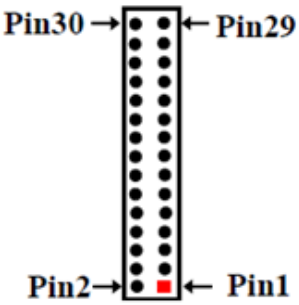


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## *(19) LVDS/EDP Header (LVDS_EDP1)*

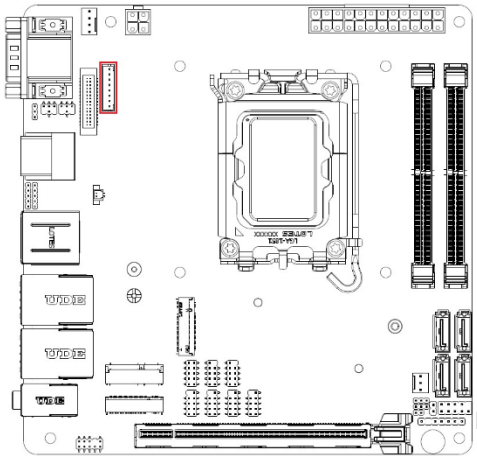


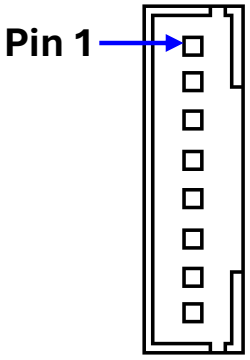
| Pin Define | Pin NO. | Pin NO. | Pin Define |
|---|---|---|---|
| LCD_VCC | Pin 30 | Pin 29 | LCD_VCC |
| LCD_VCC | Pin 28 | Pin 27 | LCD_VCC |
| LVDSA_DATAN0 | Pin 26 | Pin 25 | LVDSA_DATAP0 |
| LVDSA_DATAN1_eDP_TX1N | Pin 24 | Pin 23 | LVDSA_DATAP1_eDP_TX1P |
| LVDSA_DATAN2_eDP_TX0N | Pin 22 | Pin 21 | LVDSA_DATAP2_eDP_TX0P |
| LVDS_CLKAN_eDP_AUXN | Pin 20 | Pin 19 | LVDS_CLKAP_eDP_AUXP |
| LVDSA_DATAN3 | Pin 18 | Pin 17 | LVDSA_DATAP3 |
| GND | Pin 16 | Pin 15 | GND |
| GND | Pin 14 | Pin 13 | GND |
| LVDS_DDC_SCL | Pin 12 | Pin 11 | LVDS_DDC_SDA |
| LVDSB_DATAP0 | Pin 10 | Pin 9 | LVDSB_DATAN0 |
| LVDSB_DATAP1 | Pin 8 | Pin 7 | LVDSB_DATAN1 |
| LVDSB_DATAP2 | Pin 6 | Pin 5 | LVDSB_DATAN2 |
| LVDS_CLKBP | Pin 4 | Pin 3 | LVDS_CLKBN |
| LVDSB_DATAP3 | Pin 2 | Pin 1 | LVDSB_DATAN3 |




**Note:** Standard specifications.

## *(20) LVDS/EDP Inverter Wafer (INVERTER1)*

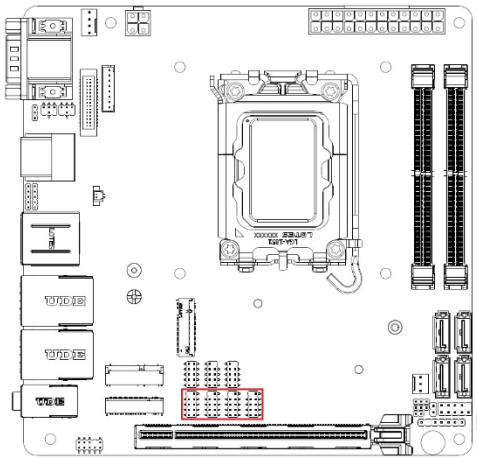


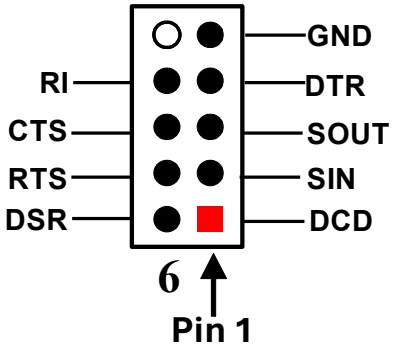



| Pin No. | Definition |
|---|---|
| 1 | LCD_BKLT_EN |
| 2 | LCD_BKLT_PWM |
| 3 | Backlight VCC |
| 4 | Backlight VCC |
| 5 | GND |
| 6 | GND |
| 7 | BRTNSS_UP |
| 8 | BRTNSS_DOWN |

**Note:** Standard specifications.

## *(21) RS-232 Serial Port Header (COM3/4/5/6)*



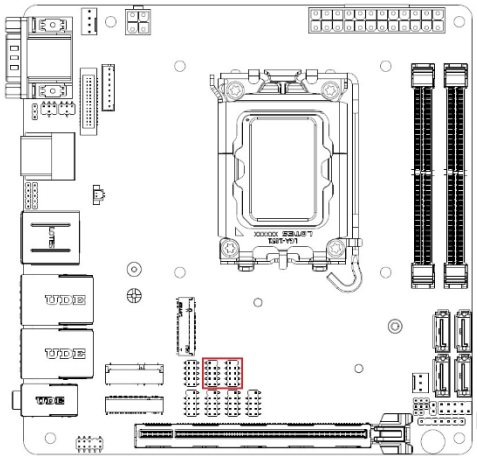


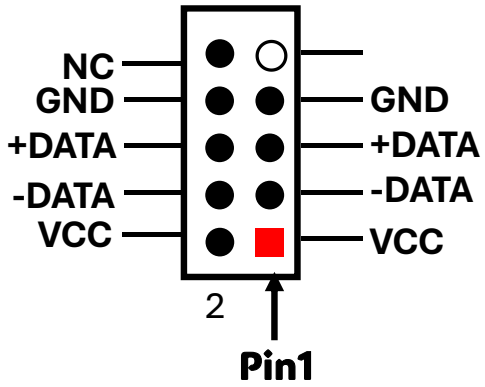

**Note:** Standard specifications.



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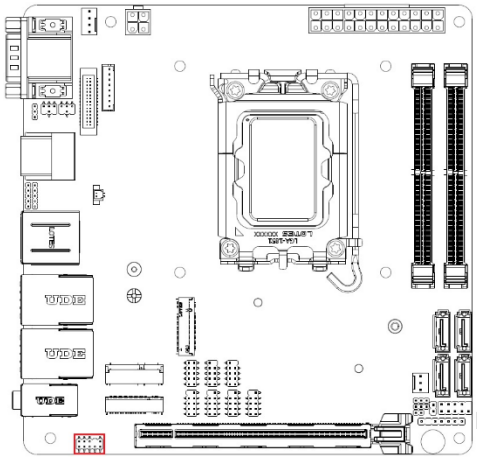
### *(22) USB2.0 Port Header (FP_USB2/3)*

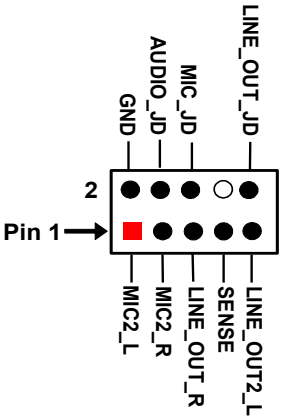





**Note:** Standard specifications.

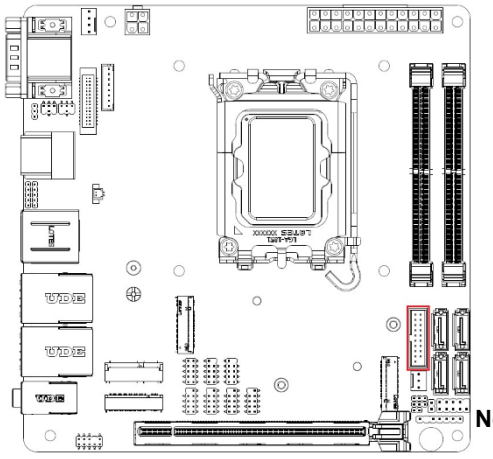
### *(23) Front Panel Audio Line-Out / MIC-In Header (FP_AUDIO1)*

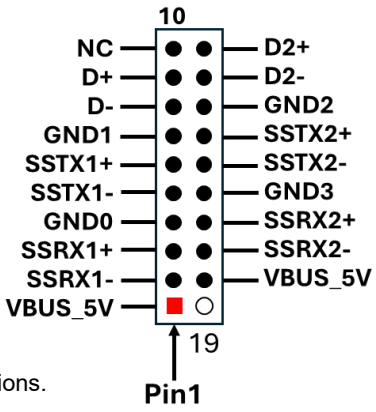





**Note:** Standard specifications.

### *(24) USB3.2 Gen1 Port Header (FP_USB1) *Only for W880/Q870 Chipset*



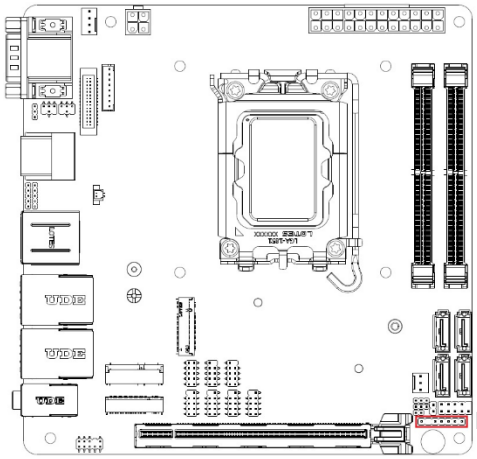


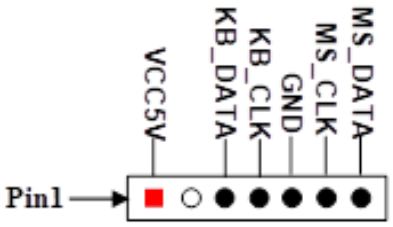

**Note:** Standard specifications.



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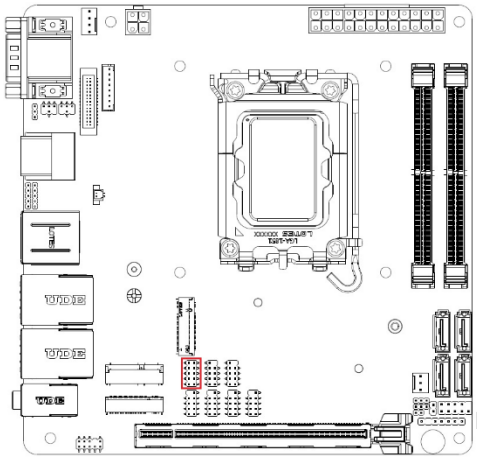
### *(25) PS/2 Keyboard and Mouse Header (PS2KBMS1)*

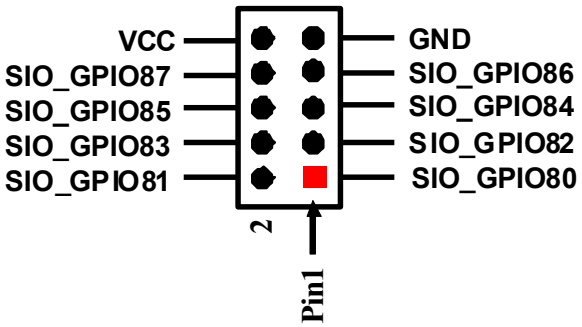





**Note:** Standard specifications.

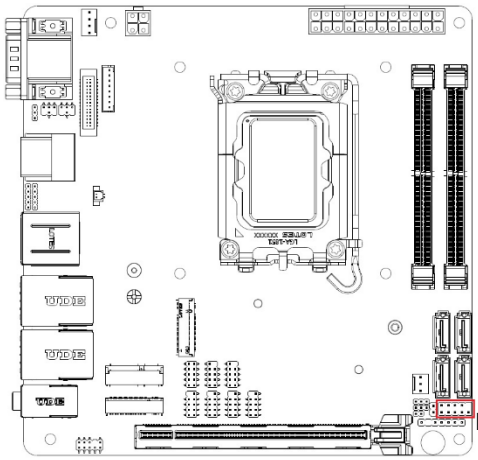
### *(26) 8 Bit GPIO Port / 80 Port Header (GPIO1)*

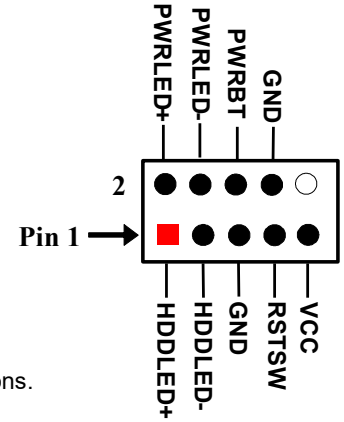





**Note:** Standard specifications.

### *(27) Front Panel Header (PWR LED / HDD LED / Power Button / Reset) (FP1)*



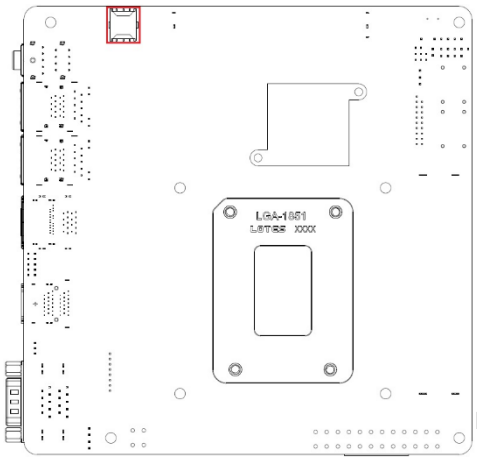


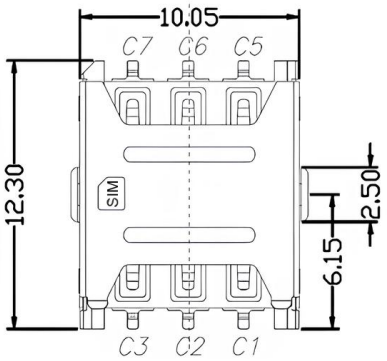

**Note:** Standard specifications.



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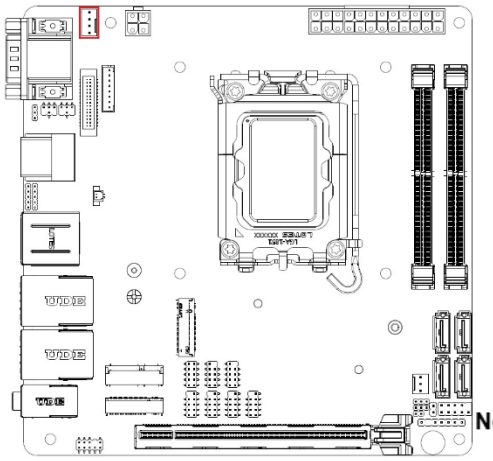
### *(28) Nano-SIM Card Socket (SIMCARD1)*

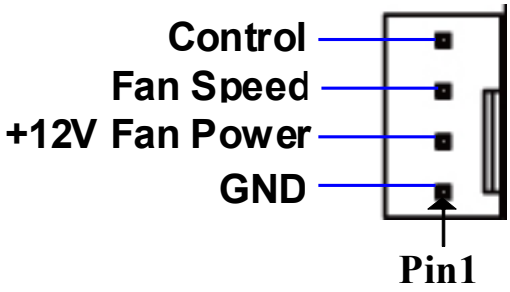





**Note:** Standard specifications.

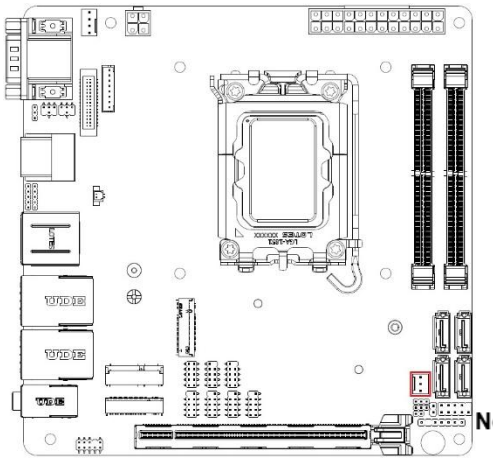
### *(29) CPU FAN Connector (CPUFAN1)*

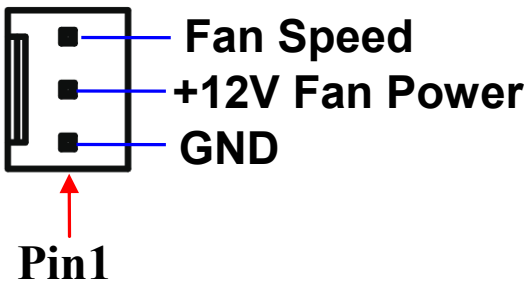





**Note:** Standard specifications.

### *(30) System FAN Connector (SYSFAN1)*



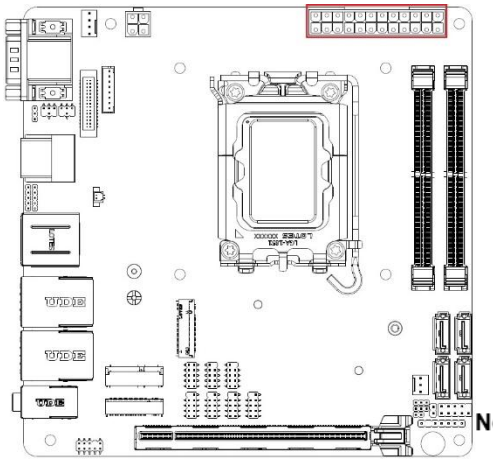



**Note:** Standard specifications.

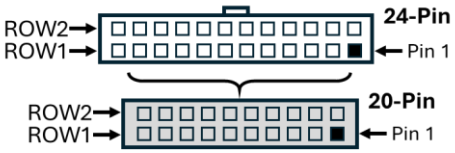


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## *(31) 24 Pin ATX Power Supply Connector (ATXPWR1)*

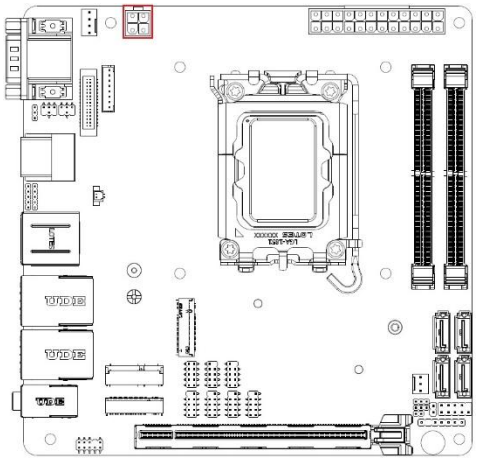


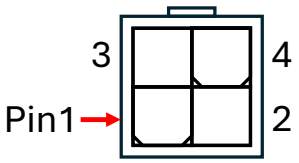
**Note:** Standard specifications.




| PIN | ROW1 | ROW2 |
|---|---|---|
| 1 | +3.3V | +3.3V |
| 2 | +3.3V | -12V |
| 3 | GND | GND |
| 4 | +5V | Soft Power on |
| 5 | GND | GND |
| 6 | +5V | GND |
| 7 | GND | GND |
| 8 | Power OK | -5V |
| 9 | +5V Stand by | +5V |
| 10 | +12V | +5V |
| 11 | +12V | +5V |
| 12 | +3.3V | GND |

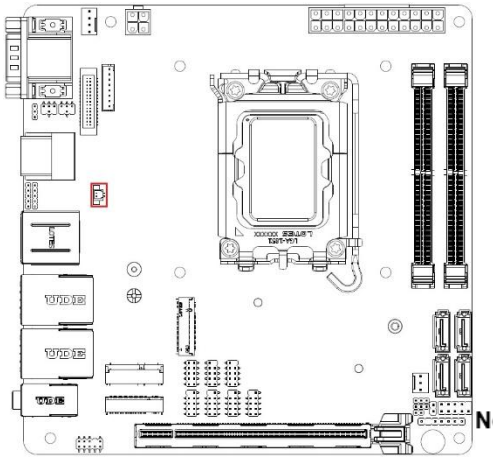
## *(32) 4 Pin ATX 12V Power Connector (ATX12V1)*



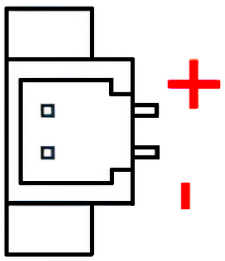



| Pin No. | Definition |
|---|---|
| 1 | GND |
| 2 | GND |
| 3 | +12V |
| 4 | +12V |

## *(33) Coin Battery Connector (BATCON1)*



**Note:** Standard specifications.





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## 2-5 Maximum Voltage & Current Limit

Below is a list of maximum voltage & Current Limit specification for motherboard interface (including but not limited to slots, connectors and headers) for setup reference:

| Parts | | Working Voltage | Current Support |
|---|---|---|---|
| USB Port | USB1 | 5V | 900mA x2 |
| | UL1 | 5V | 500mA x2 *Only for H810 Chipset |
| | | | 900mA x2 *Only for W880/Q870 Chipset |
| | UL2 | 5V | 500mA x2 *Only for H810 Chipset |
| | | | 900mA x2 *Only for W880/Q870 Chipset |
| | FP_USB1 | 5V | 900mA x2 |
| | FP_USB2 | 5V | 500mA x2 |
| | FP_USB3 | 5V | 500mA x2 |
| FP1 | | 5V | 1A |
| LVDS_EDP1 | | 3.3V/5V/12V (via jumper setting) | 2A |
| INVERTER1 | | 5V/12V (via jumper setting) | 2A |
| SYSFAN1 | | 12V | 1.5A |
| GPIO1 | | 5V | 1A |
| SMBUS1 | | 3.3V | 500mA |
| I2C1 | | 3.3V | 500mA |
| COM1 | | 5V/12V | 500mA |

# Chapter 3 Introducing BIOS

| | |
|---|---|
| **Notice!** | The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download the latest BIOS version form our official website. |

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will



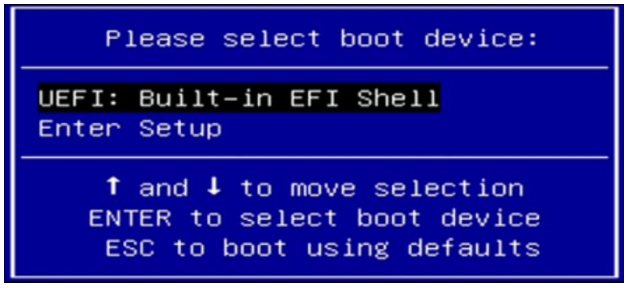
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gain control. The BIOS first operates an auto-diagnostic test called POST (power on self-test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

# 3-1 Entering Setup

Power on the computer and by pressing <Del> immediately allows you to enter Setup.
If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press **<Del>** to enter Setup; press < **F7**> to enter pop-up Boot menu.



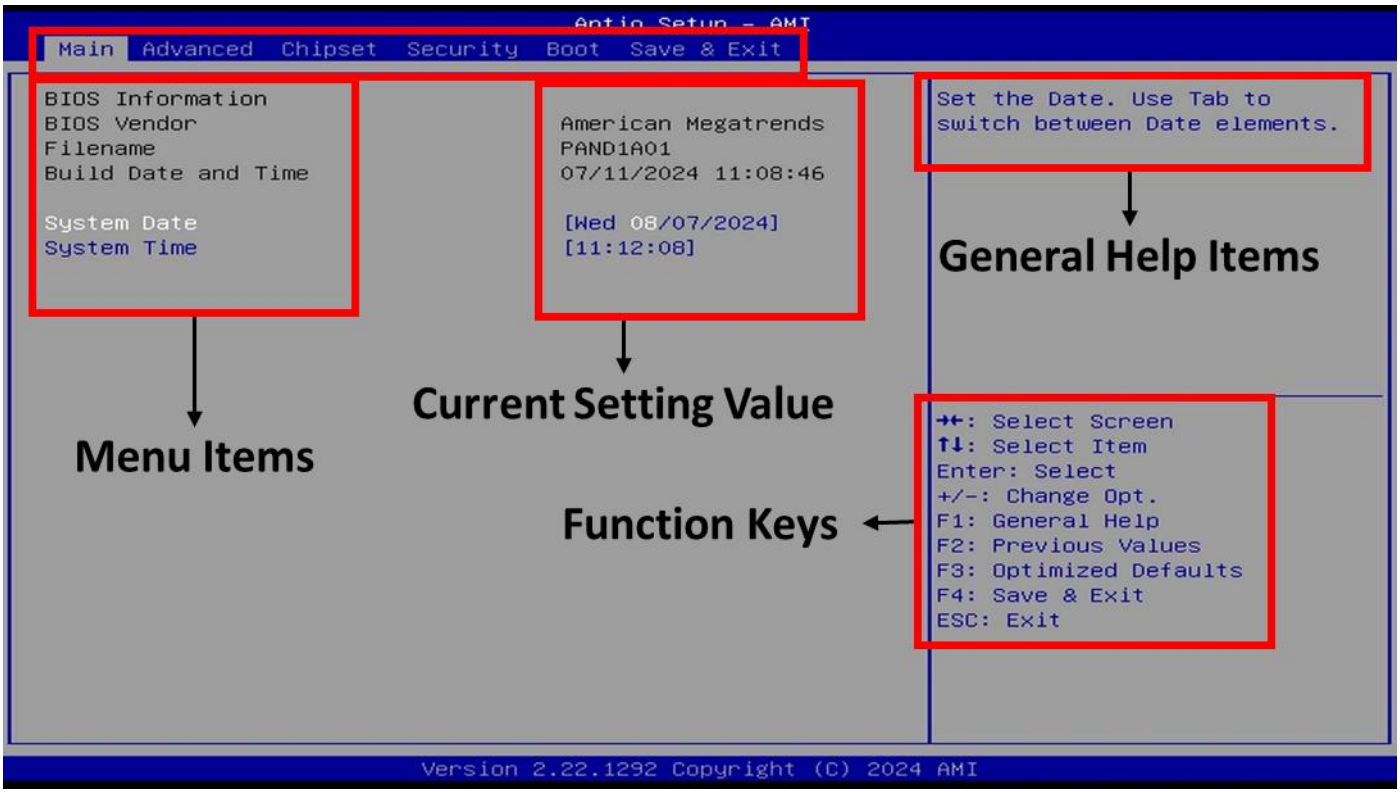

BIOS Boot Menu Screen (boot device options please refer to actual configuration)



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## 3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:




## 3-3 Function Keys

In the above BIOS Setup main menu of, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press←→ (left, right) to select screen.
- Press ↑↓ (up, down) to choose, in the main menu, the option you want to confirm or to modify.
- Press <Enter> to select.
- Press <+>/<–> keys when you want to modify the BIOS parameters for the active option.
- [F1]: General help.
- [F2]: Previous values.
- [F3]: Optimized defaults.
- [F4]: Save & Exit.
- Press <Esc> to exit from BIOS Setup.



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# 3-4 Getting Help

### Main Menu

The on-line description of the highlighted setup function is displayed at the top right corner the screen.

### Status Page Setup Menu/Option Page Setup Menu

Press 【F1】 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <**Esc**>.

# 3-5 Menu Bars

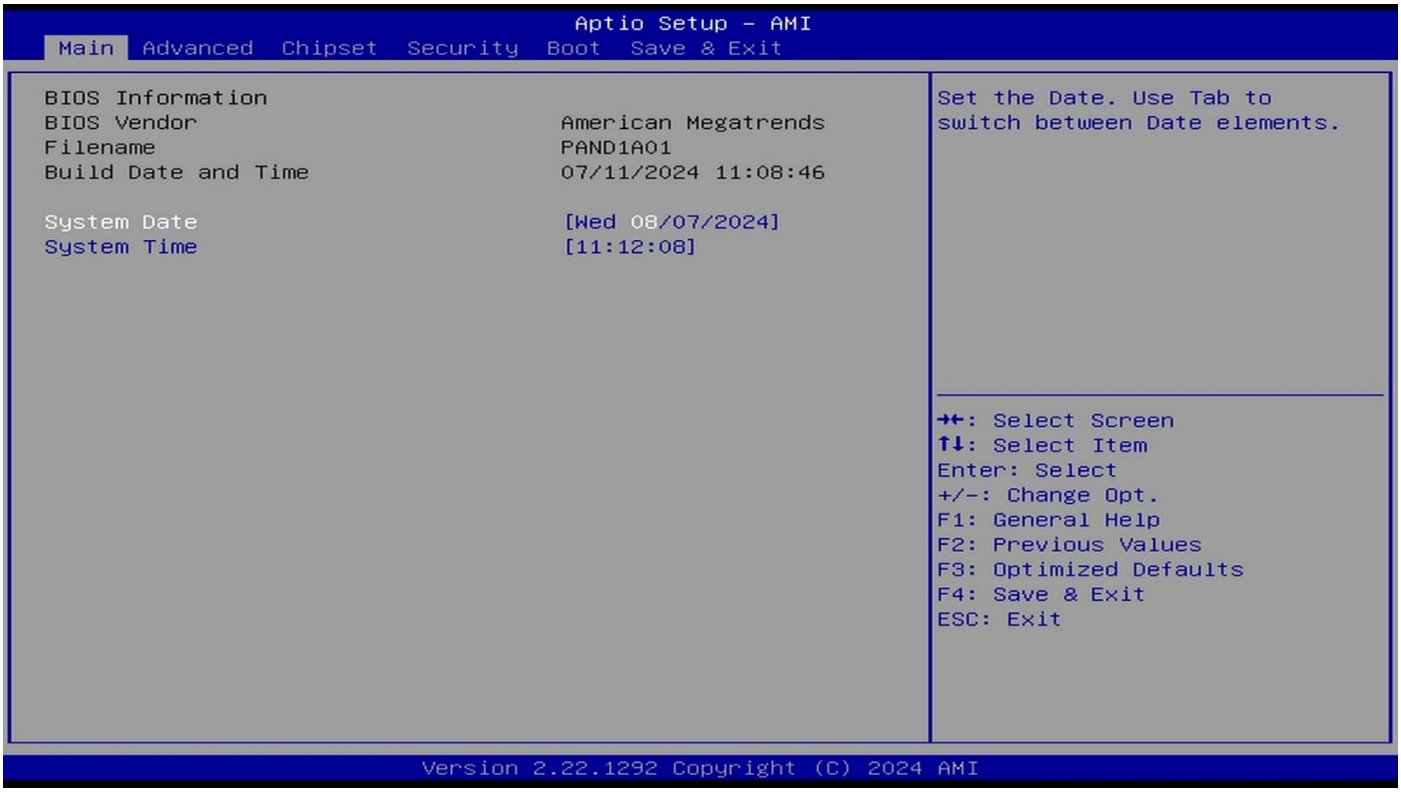
### There are six menu bars on top of BIOS screen:

| | |
|---|---|
| **Main** | To change system basic configuration |
| **Advanced** | To change system advanced configuration |
| **Chipset** | To change chipset configuration |
| **Security** | Password settings |
| **Boot** | To change boot settings |
| **Save & Exit** | Save setting, loading and exit options. |

User can press the right or left arrow key on the keyboard to switch from menu bar. The selected one is highlighted.

# 3-6 Main Menu

Main menu screen includes some basic system information. Highlight the item and then use the <+> or <-> and numerical keyboard keys to select the value you want in each item.




**System Date**

Set the date. Please use [Tab] to switch between date elements.

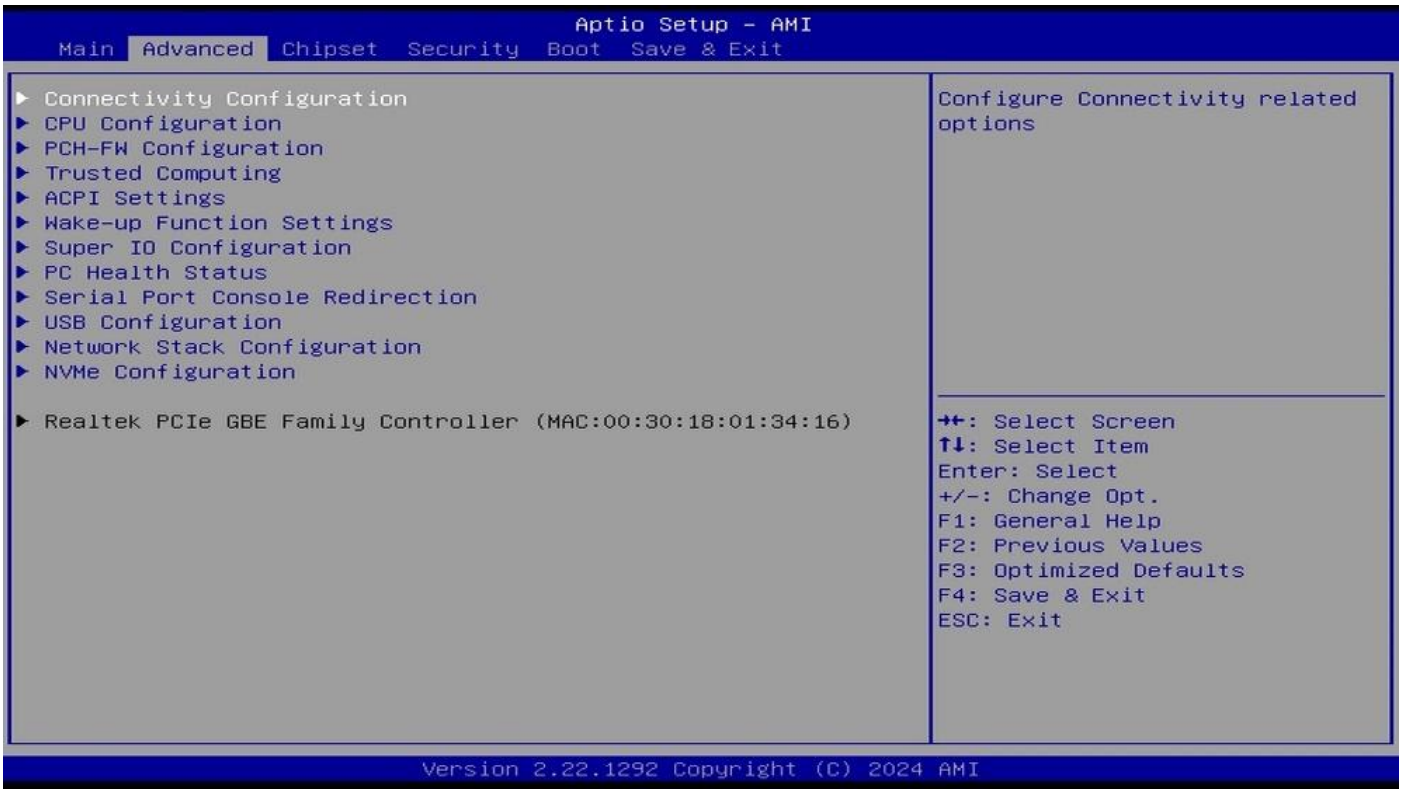
**System Time**

Set the time. Please use [Tab] to switch between time elements.

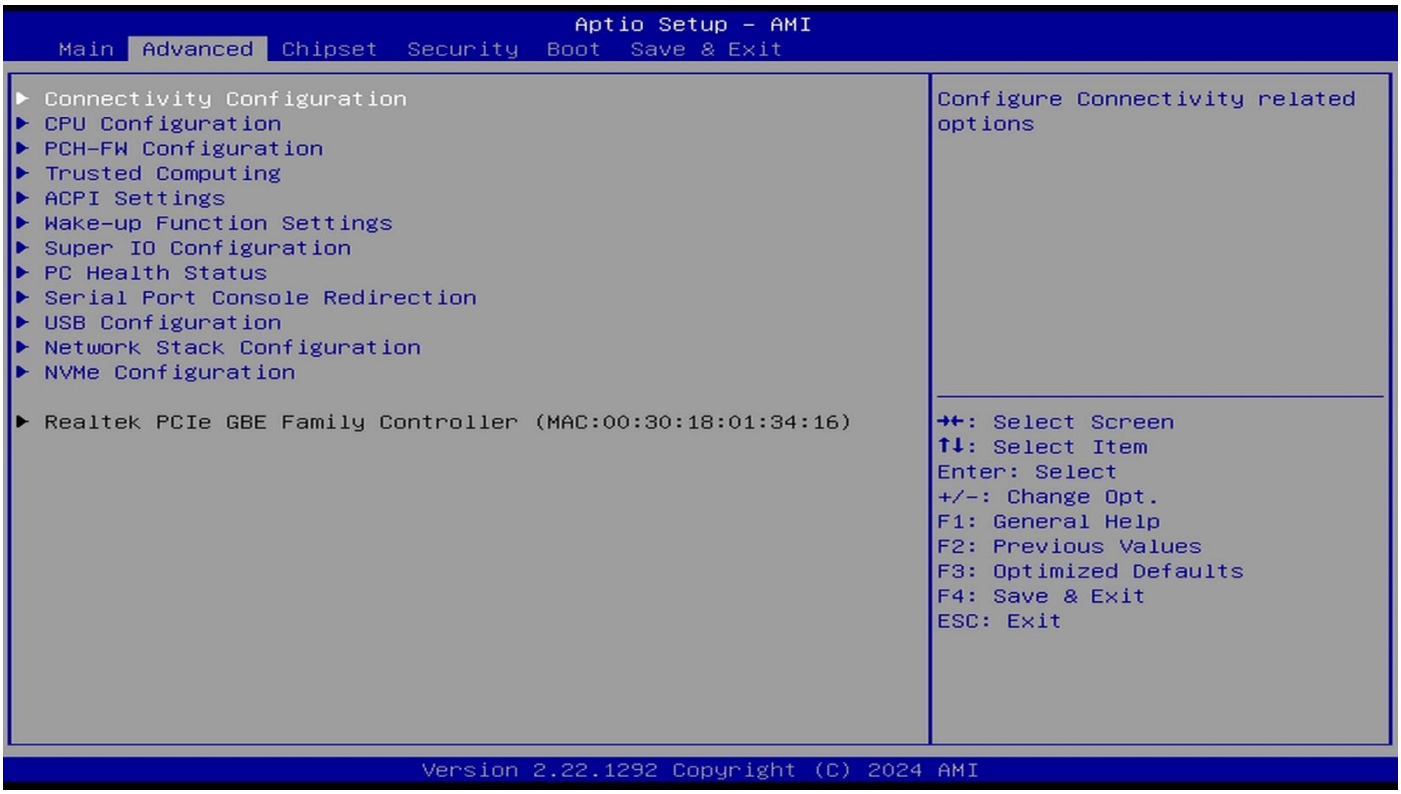


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# 3-7 Advanced Menu




### ▸ Connectivity Configuration

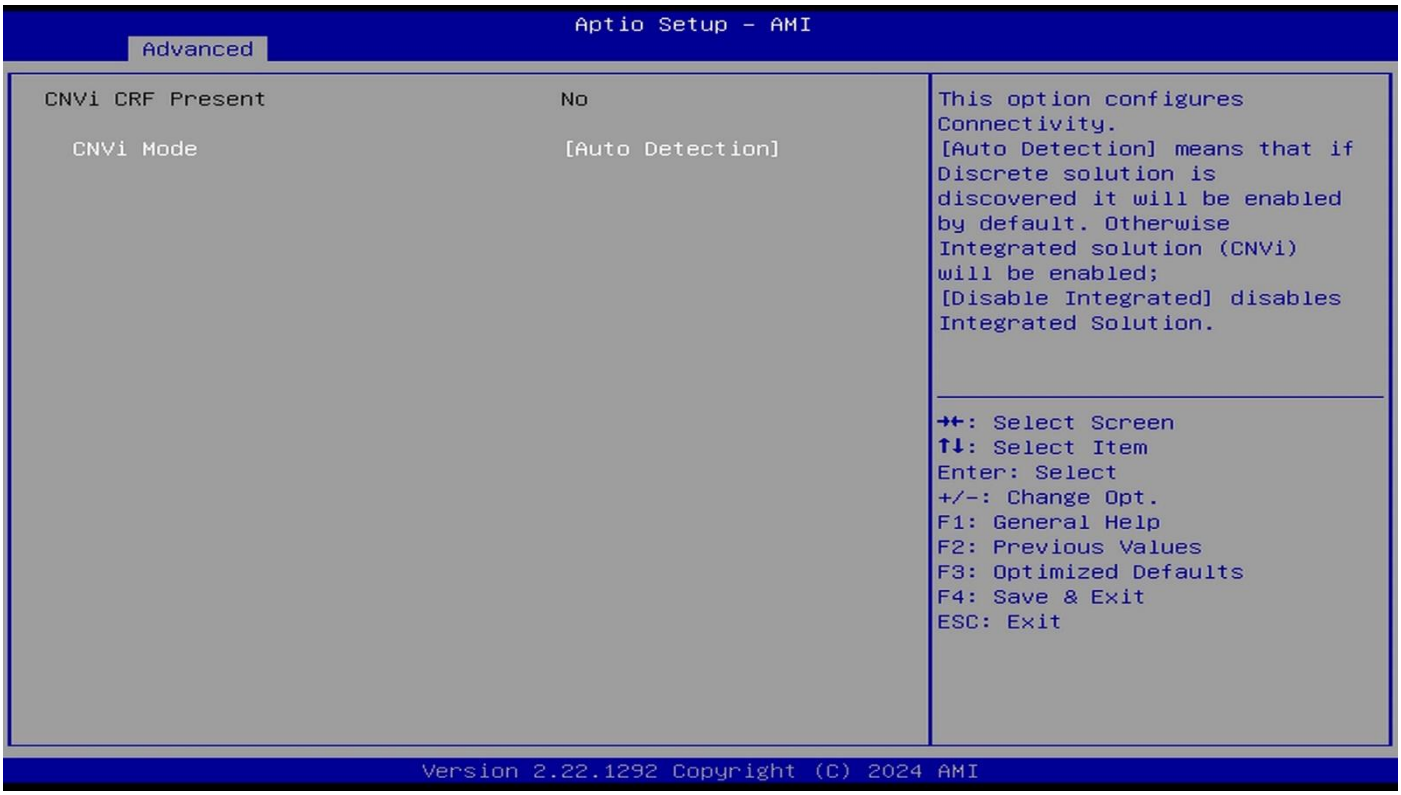



Use this item to configure Connectivity related options. Press [Enter] to make settings for the following sub-items:



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- ***CNVi CRF Present***

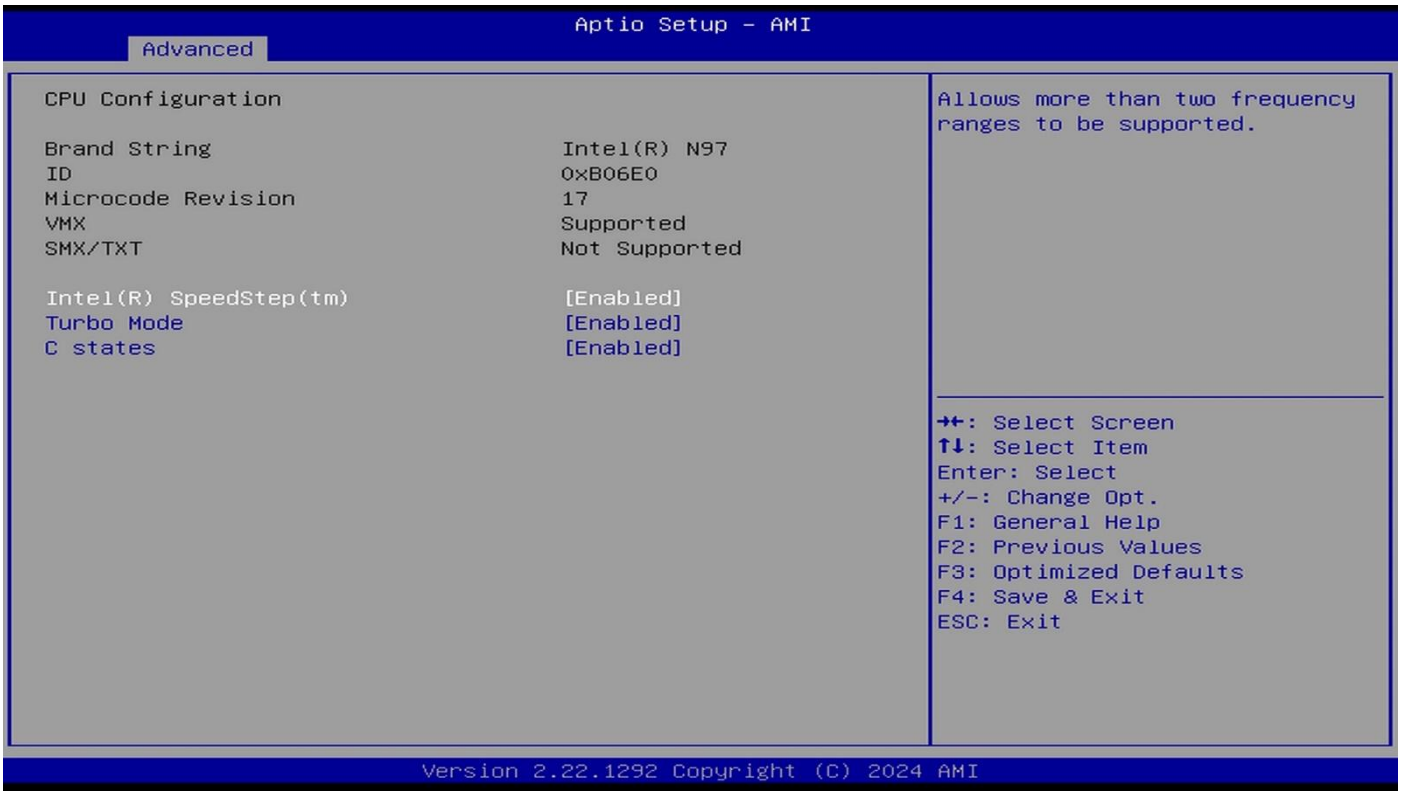



**CNVi Mode**
This option configures Connectivity.
CNVi Mode Set the default value to: [Auto Detection]
The optional settings: [Disabled Integrated]; [Auto Detection].
**[Auto Detection]** means that if Discrete solution is discovered it will be enabled by default. Otherwise Integrated solution (CNVi) will be enabled;
**[Disabled Integrated]** disables Integrated Solution.



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## CPU Configuration




Press [Enter] to view current CPU configuration and make settings for the following sub-items:

**Intel(R) SpeedStep(tm)**

This item allows more than two frequency ranges to be supported.

Intel(R) SpeedStep(tm) Set the default value to: [Enabled]

The optional settings: [Disabled]; [Enabled].

**Turbo Mode**

Use this item to enable or disable processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled).

Turbo Mode Set the default value to: [Enabled]

The optional settings: [Disabled]; [Enabled]

**C states**

Use this item to enable or disable CPU Power Management. When set as [Enabled], it allows CPU to go to C states when it's not 100% utilized.

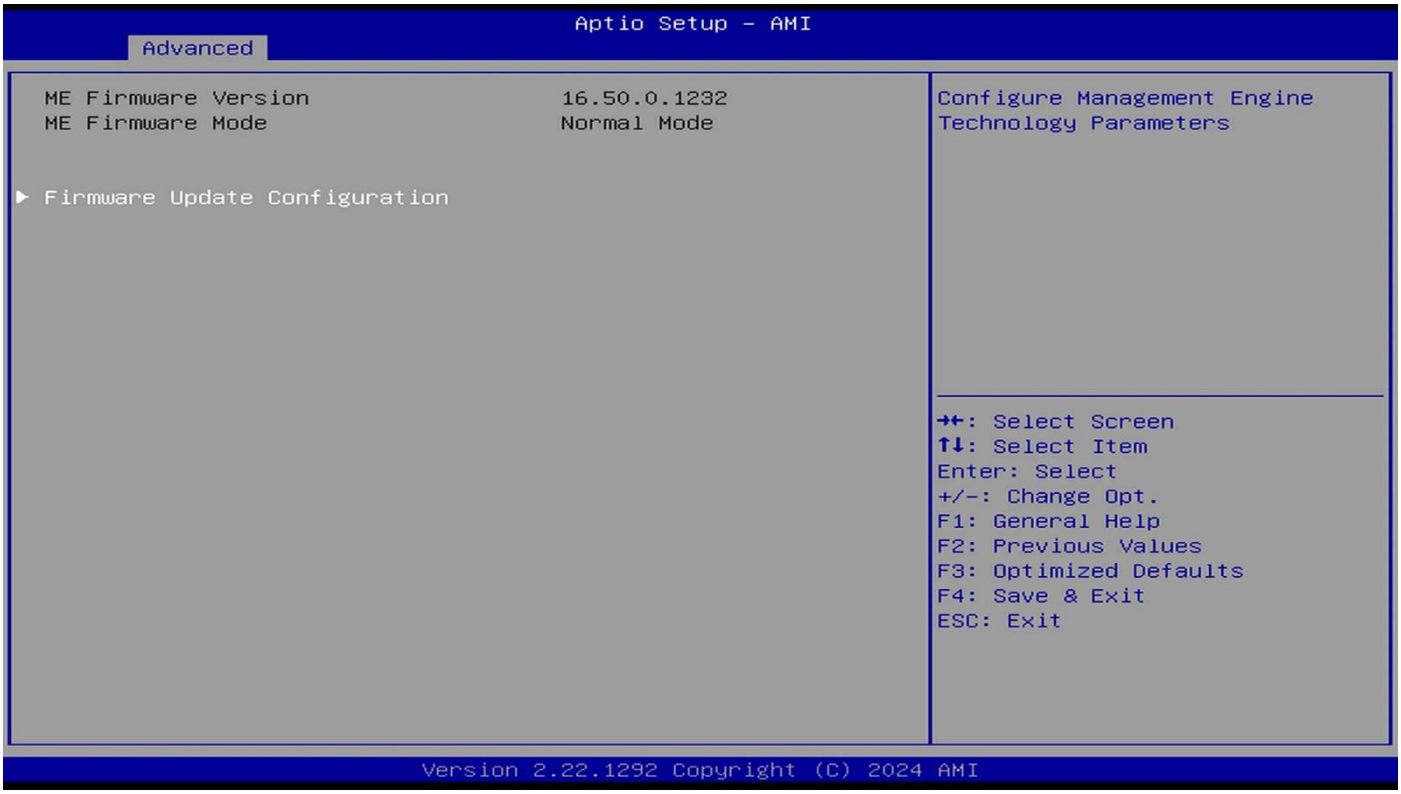
C states Set the default value to: [Enabled]

The optional settings: [Disabled]; [Enabled].

► **PCH-FW Configuration**

Press [Enter] to view ME information and make settings in the following sub-items:

► **Firmware Update Configuration**




Press [Enter] to make settings for '**ME FW Image RE-Flash**'.

**ME FW Image Re-Flash**

Use this item to enable or disable ME FW Image Re-Flash function.

ME FW Image Re-Flash Set the default value to: [Disabled]

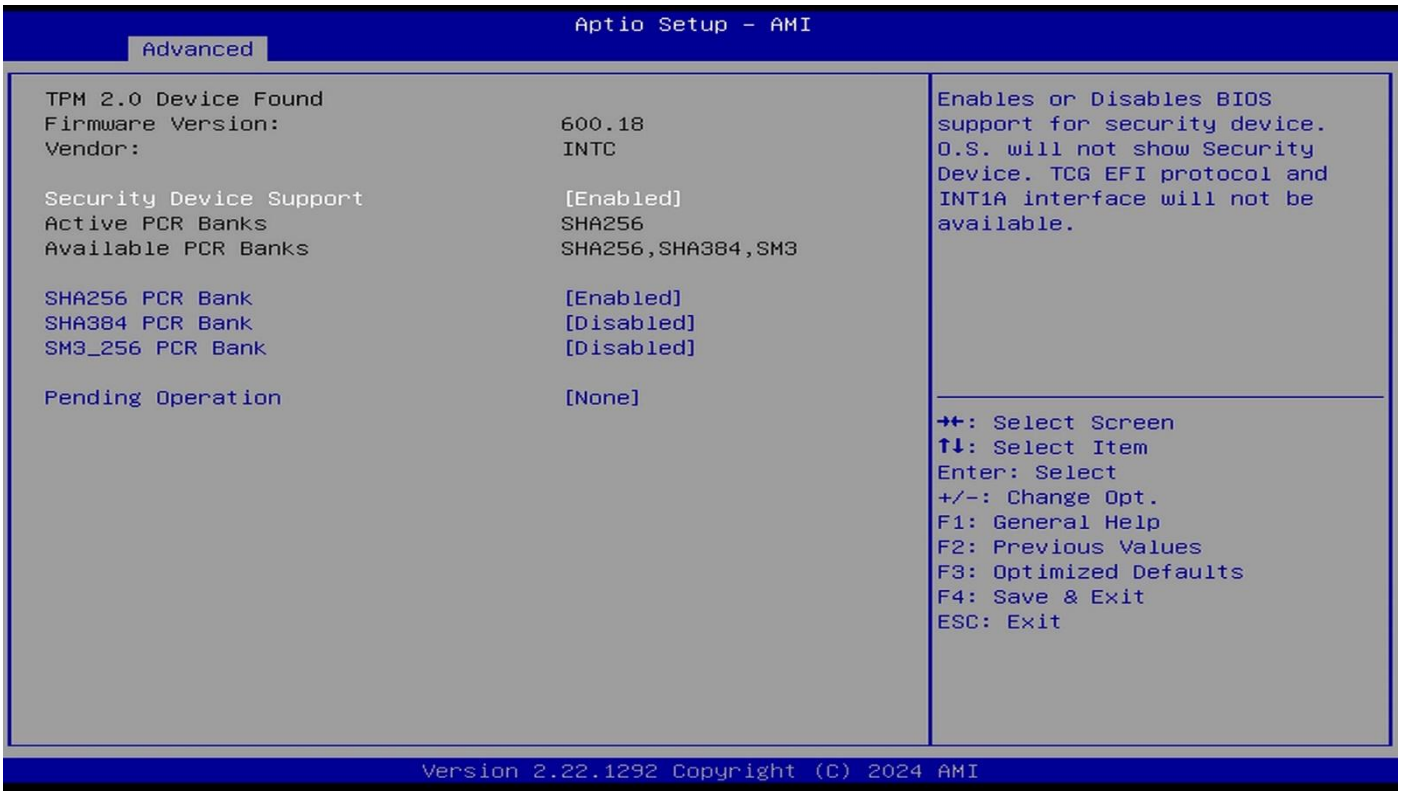
The optional settings: [Disabled]; [Enabled].

** In the case that user needs to update ME firmware, user should set **'ME FW Image Re-Flash**' as **[Enabled]**, save the settings and exit. The system will turn off and reboot after 4 seconds. If the user goes to BIOS screen again will find this item is set again as **[Disabled]**, but user can still re-flash to update firmware next time.*



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## Trusted Computing




Press [Enter] to make settings in the following sub-items:

**Security Device Support**

Use this item to 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.

The optional settings: [Disabled]; [Enabled].

Security Device Support Set the default value to: [Enabled]

When set as [Enabled], user can make setting in the following items that appear:

**SHA256 PCR Bank**

Use this item to enable or disable SHA256 PCR Bank.

The optional settings: [Disabled]; [Enabled].

SHA256 PCR Bank Set the default value to: [Enabled]

**SHA384 PCR Bank**

Use this item to enable or disable SHA384 PCR Bank.

The optional settings: [Disabled]; [Enabled].

SHA384 PCR Bank Set the default value to: [Disabled]

**SM3_256 PCR Bank**

Use this item to enable or disable SM3_256 PCR Bank.

The optional settings: [Disabled]; [Enabled].

SHA384 PCR Bank Set the default value to: [Disabled]

**Pending Operation**

Use this item to schedule an operation for security device.



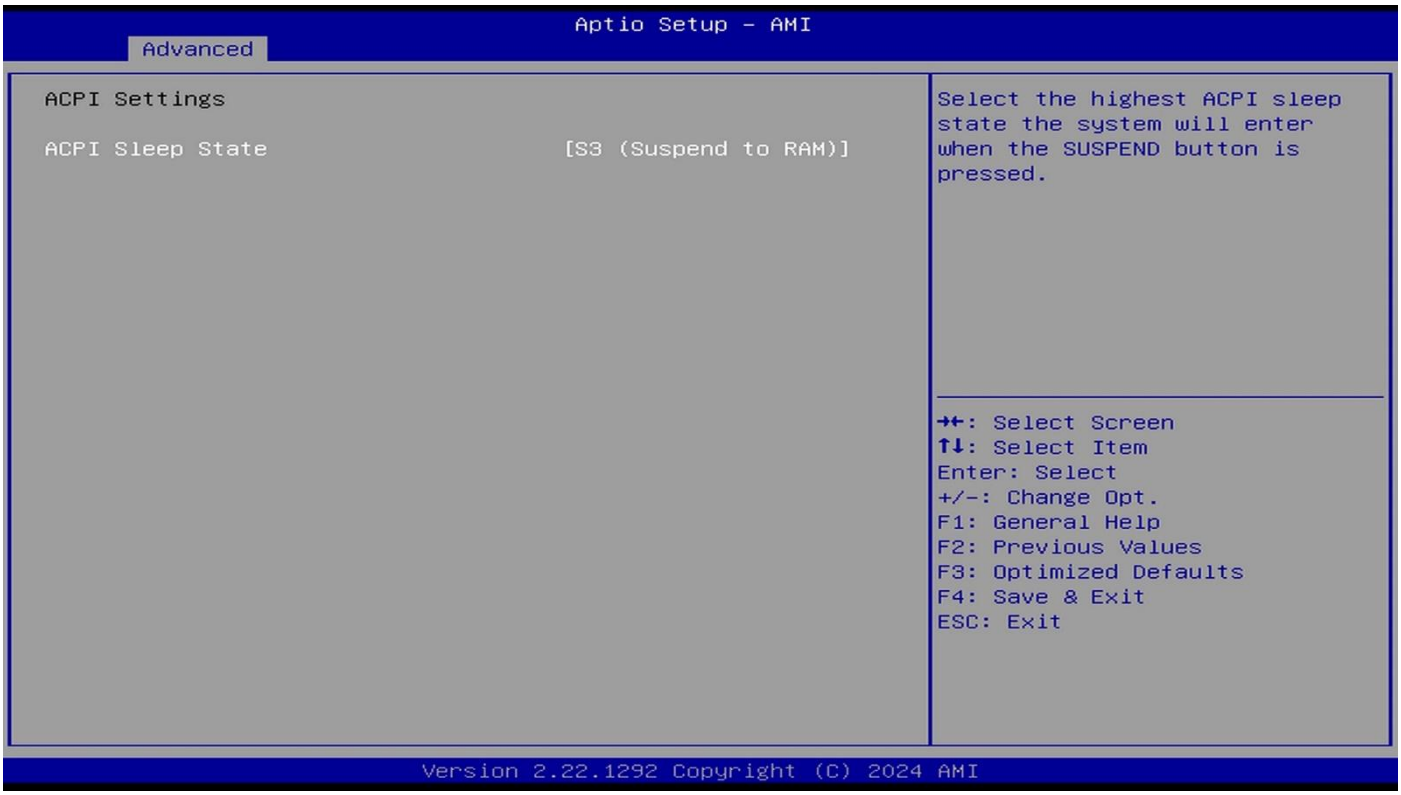
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The optional settings: [None]; [TPM Clear].

Pending Operation Set the default value to: [None]

***Note: Your computer will reboot during restart in order to change State of Security Device.***

- **ACPI Settings**




Press [Enter] to make settings for the following sub-items:

PCH-FW **ACPI Sleep State**

Use this item to select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

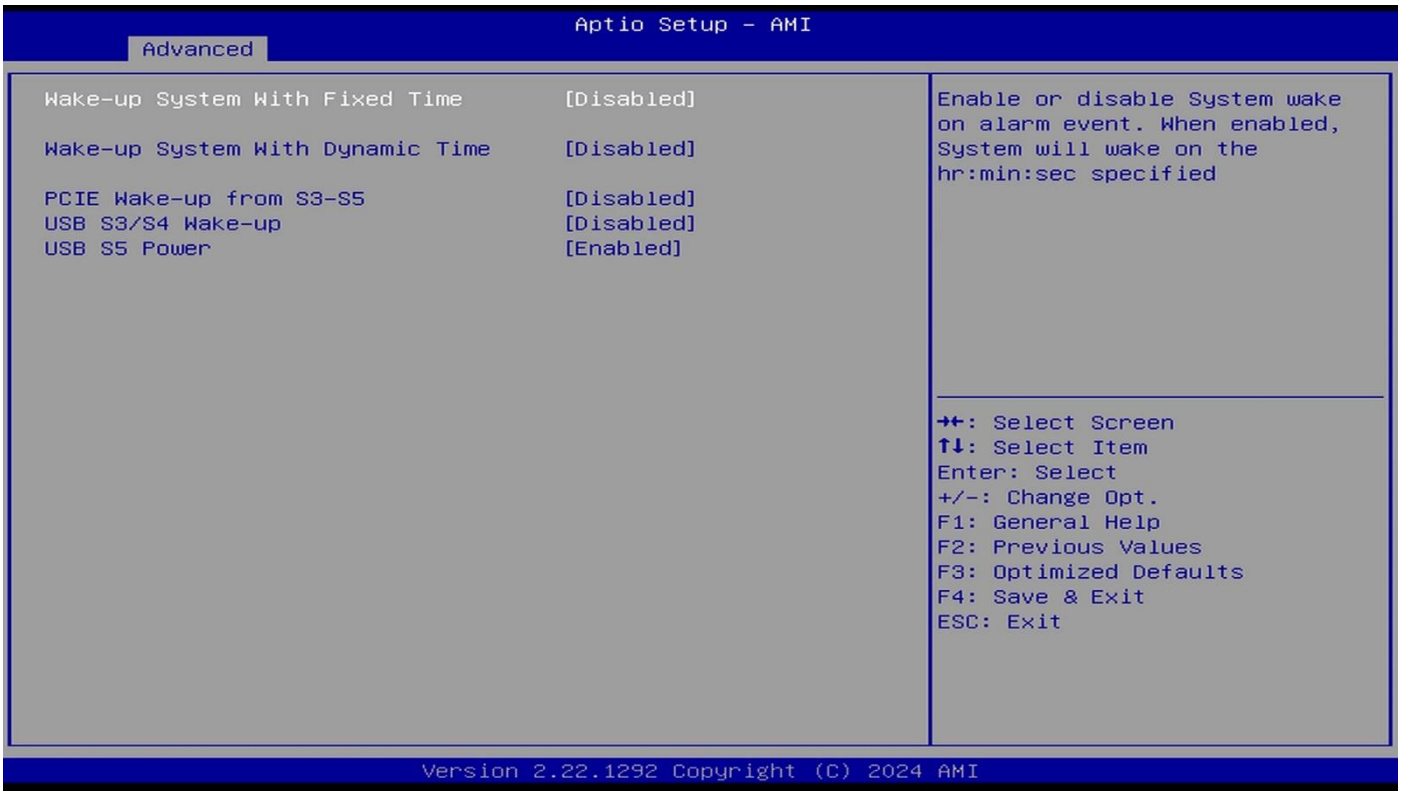
The optional settings are: [Suspend Disabled]; [S3 (Suspend to RAM)].

ACPI Sleep State Set the default value to: [S3 (Suspend to RAM)]



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## Wake-up Function Settings




**Wake-up System With Fixed Time**

**This item will only show when* ***'Wake-up System with Dynamic Time'*** *is set as [Disabled].*

Use this item to enable or disable system wake-up by RTC alarm. When this function is enabled, system will wake on the time (hr::min::sec) specified.

The optional settings: [Disabled]; [Enabled].

Wake-up System With Fixed Time Set the default value to: [Disabled]

When set as [Enabled], user can make settings in the following items that appear:

**Wake-up Hour**

Use this item to select 0-23 for example enter 3 for 3am and 15 for 3pm.

Wake-up Hour Set the default value to: [0]

**Wake-up Minute**

Use this item to select 0-59.

Wake-up Minute Set the default value to: [0]

**Wake-up Second**

Use this item to select 0-59.

Wake-up Second Set the default value to: [0]

**Wake-up System with Dynamic Time**

**This item will only show when* ***'Wake-up System with Fixed Time'*** *is set as [Disabled].*

Use this item to enable or disable system wake-up by RTC alarm. When enabled, system will wake on the current time + Increase minute(s).

Wake-up System with Dynamic Time Set the default value to: [Disabled]



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When set as [Enabled], user can make settings in the following items that appear:

**Wake-up Minute Increase**

Use this item to select 1-60 minute(s).

Wake-up Minute Increase Set the default value to: [1]

**PCIE Wake-up from S3-S5**

Enable or Disable PCIE Wake-up Support.

The optional settings: [Disabled]; [Enabled].

PCIE Wake-up from S3-S5 Set the default value to: [Disabled]

**USB S3/S4 Wake-up**

Enable or Disable USB S3/S4 Wake-up Support Only Disable ERP Function.

The optional settings: [Disabled]; [Enabled].

USB S3/S4 Wake-up Set the default value to: [Disabled]

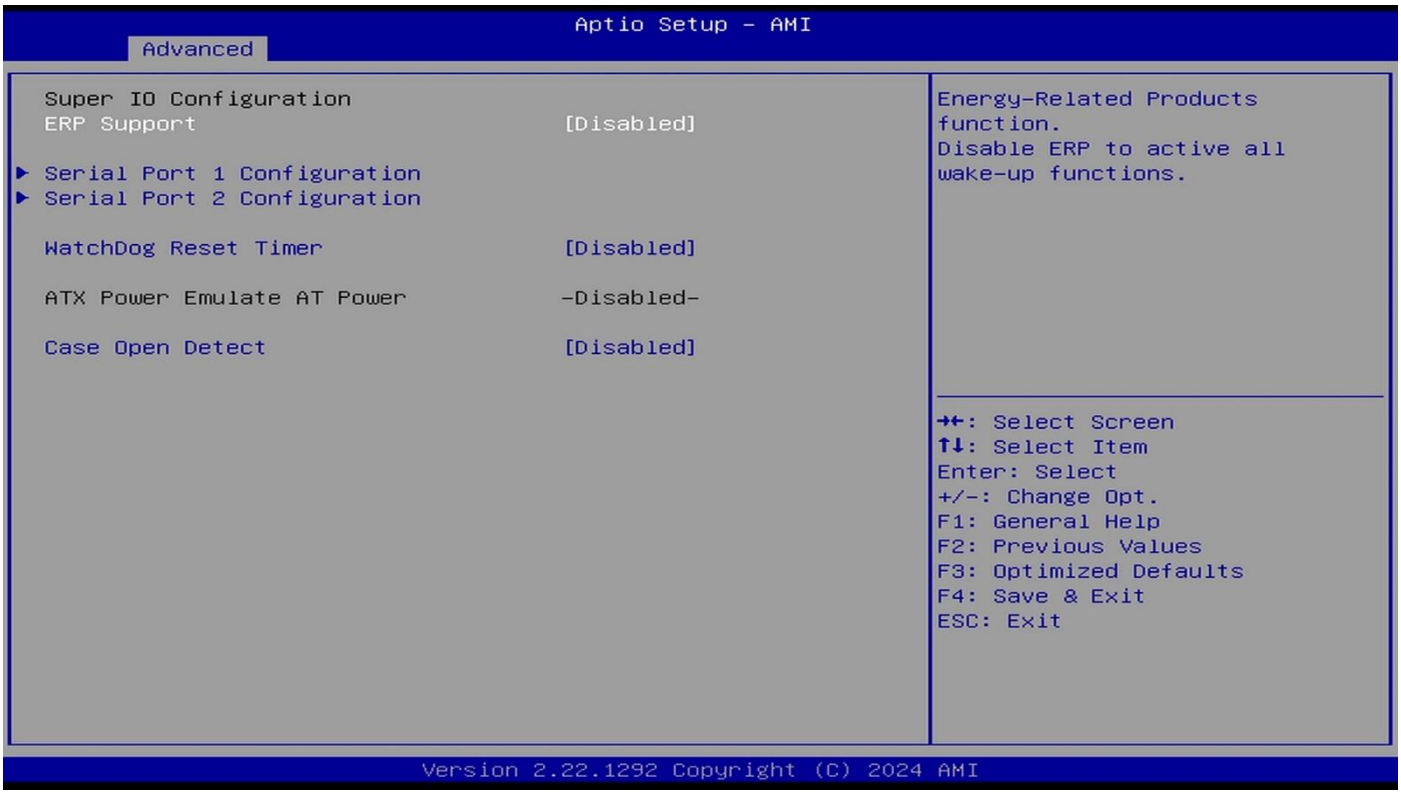
**USB S5 Power**

USB Power after System Shutdown Support Only Disable ERP Function

The optional settings: [Disabled]; [Enabled].

USB S5 Power Set the default value to: [Enabled]

- **Super IO Configuration**



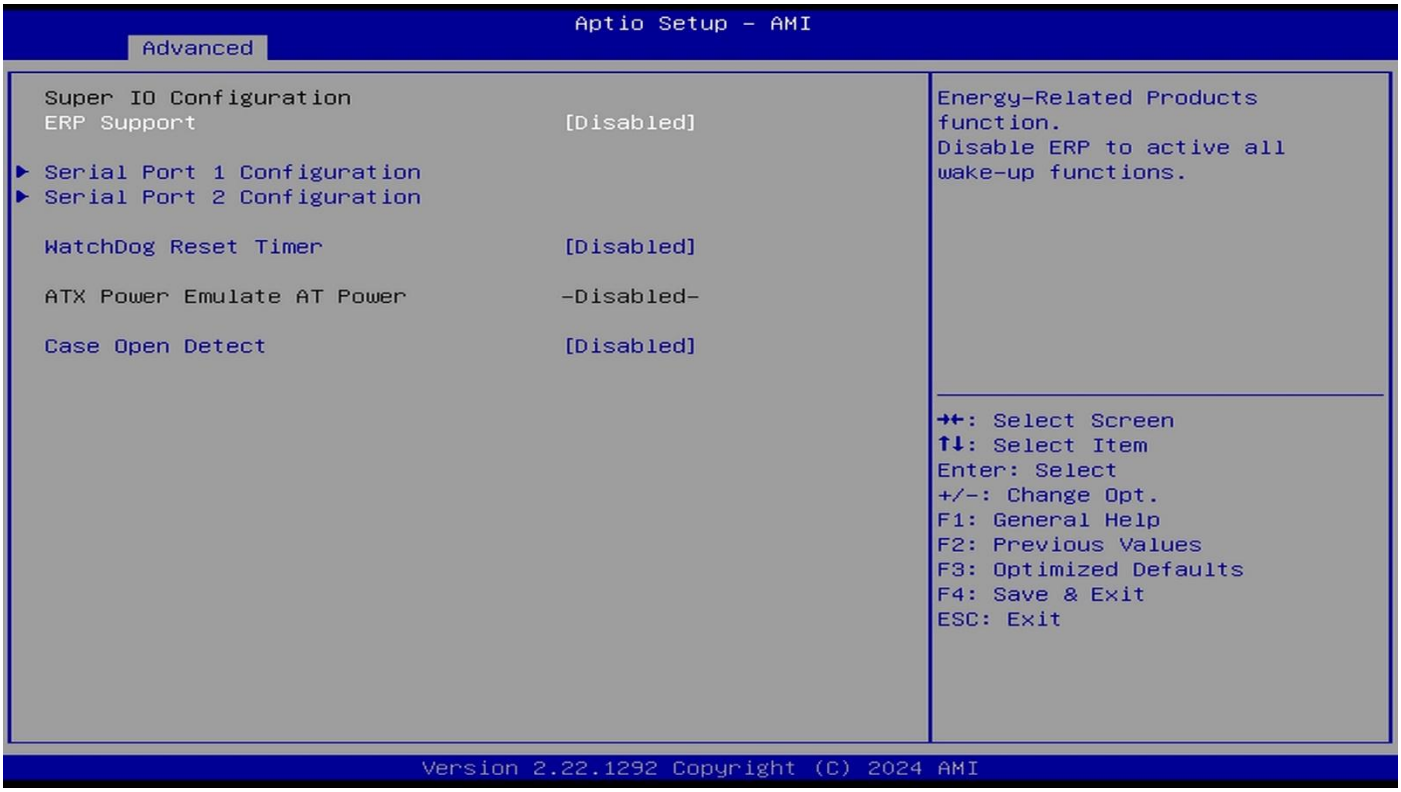

Press [Enter] to make settings for the following sub-items:

***Super IO Configuration***



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## ERP Support




Use this item to make setting for energy-related products function. Disable ERP to active all wake-up function.

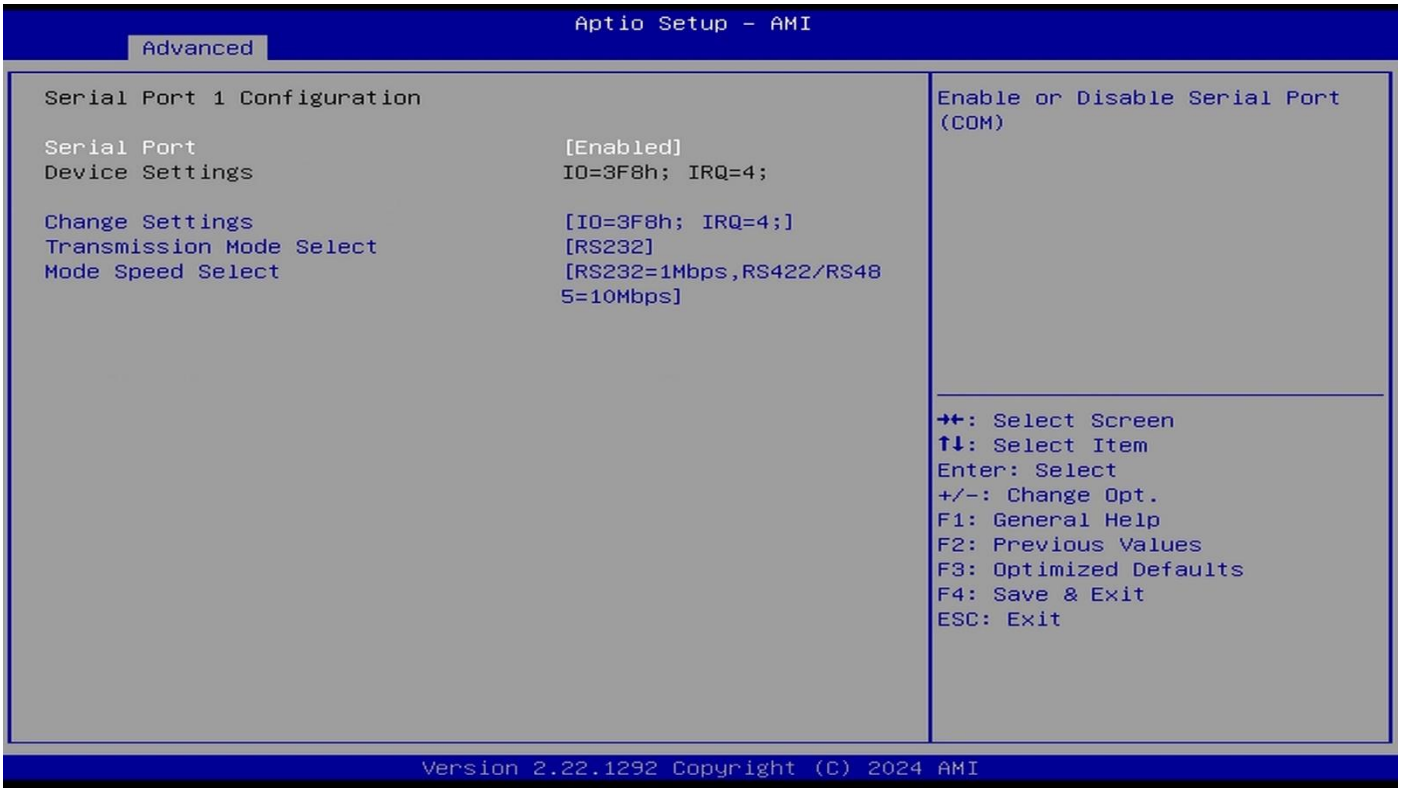
The optional settings: [Disabled]; [Enabled].

ERP Support Set the default value to: [Disabled]



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## Serial Port 1 Configuration




Press [Enter] to make settings for the following items:

**Serial Port**

Use this item to enable or disable serial port (COM).

The optional settings: [Disabled]; [Enabled].

Serial Port Set the default value to: [Enabled]

When set as [Enabled], user can make settings in the following items that appear:

**Change Settings**

Use this item to select an optimal settings for super IO device.

The optional settings are:[IO=3F8h;IRQ=4];[IO=3F8h;IRQ=3,4,5,7,10,11];
[IO=2F8h;IRQ=3,4,5,7,10,11];[IO=3E8h;IRQ=3,4,5,7,10,11];[IO=2E8h;IRQ=3,4,5,7,10,11].

Change Settings Set the default value to: [IO=3F8h;IRQ=4]

**Transmission Mode Select**

The optional settings are: [RS422]; [RS232]; [[RS485].

Transmission Mode Select Set the default value to: [RS232]

**Mode Speed Select**

Use this item to RS232/RS422/RS485 Speed Select.

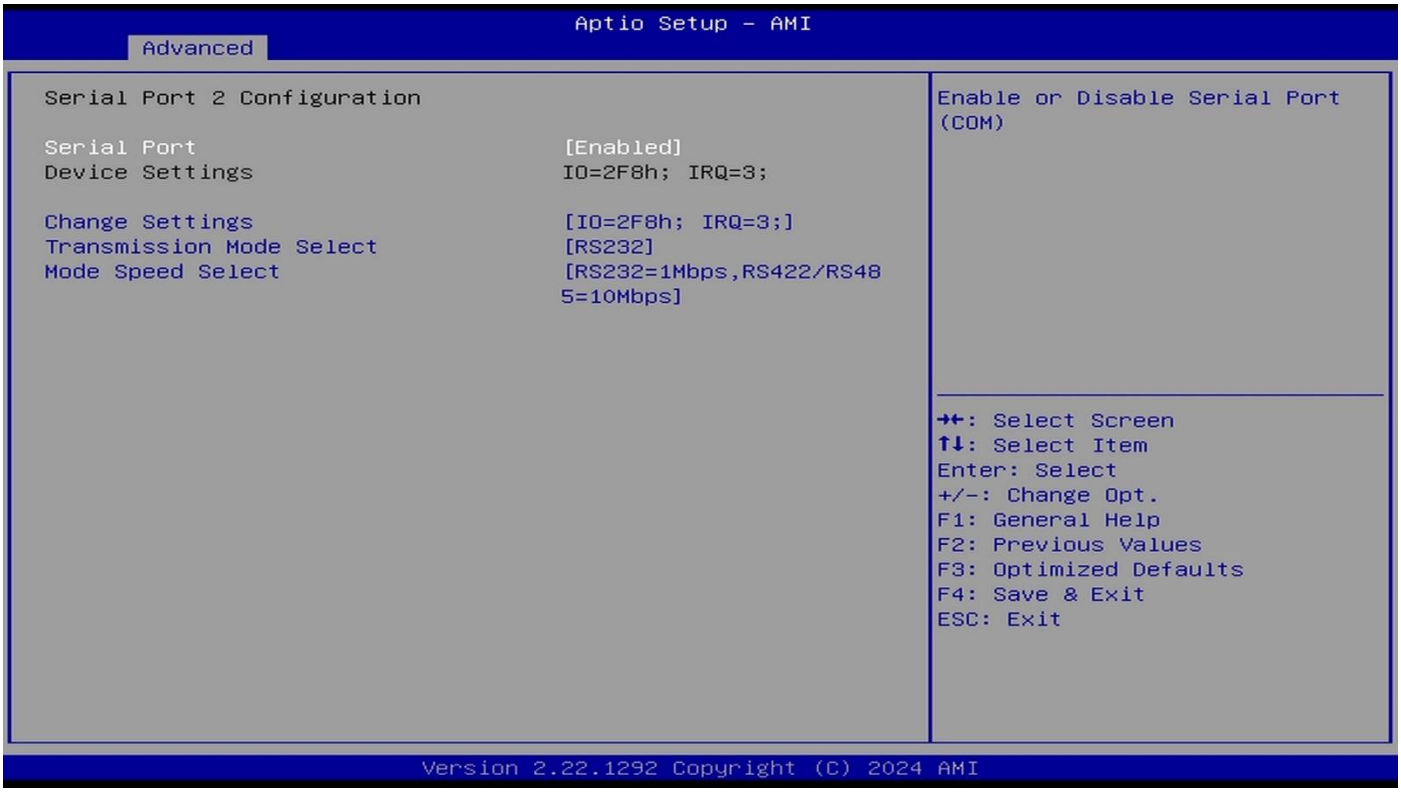
The optional settings are: [RS232/RS422/RS485=250Kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].

Mode Speed Select Set the default value to: [RS232=1Mbps, RS422/RS485=10Mbps]



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## Serial Port 2 Configuration




Press [Enter] to make settings for the following items:

**Serial Port**

Use this item to enable or disable serial port (COM).

The optional settings: [Disabled]; [Enabled].

Serial Port Select Set the default value to: [Enabled]

When set as [Enabled], user can make settings in the following items that appear:

**Change Settings**

Use this item to select an optimal setting for super IO device.

The optional settings are:

[IO=2F8h;IRQ=3]; [IO=3F8h;IRQ=3,4,5,7,10,11]; [IO=2F8h;IRQ=3,4,5,7,10,11]; [IO=3E8h;IRQ=3,4,5,7,10,11] ; [IO=2E8h;IRQ=3,4,5,7,10,11].

Change Settings Set the default value to: [IO=2F8h;IRQ=3]

**Transmission Mode Select**

The optional settings are: [RS422]; [RS232]; [[RS485].

Transmission Mode Select Set the default value to: [RS232]

**Mode Speed Select**

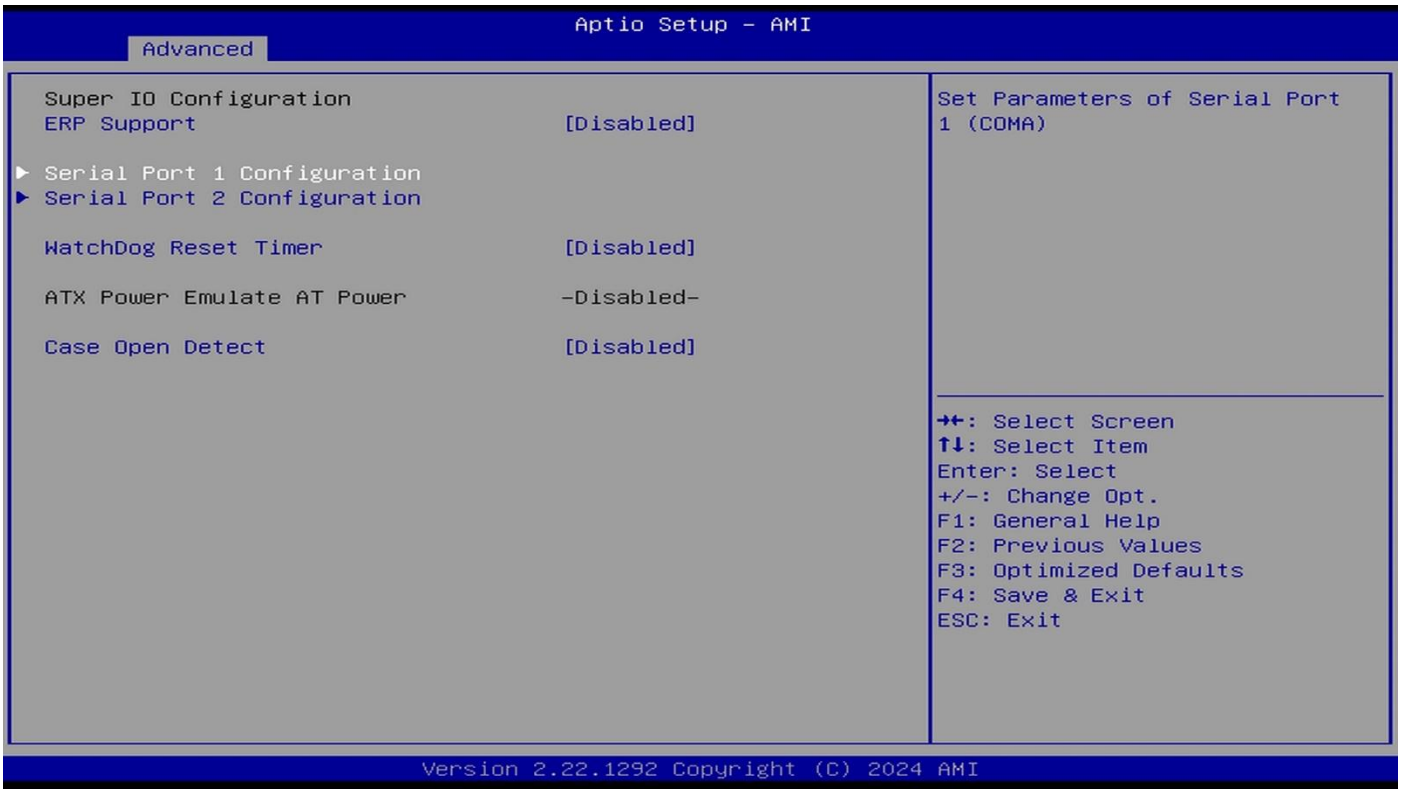
Use this item to RS232/RS422/RS485 Speed Select.

The optional settings are: [RS232/RS422/RS485=250Kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].

Mode Speed Select Set the default value to: [RS232=1Mbps, RS422/RS485=10Mbps]



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**WatchDog Reset Timer**

Use this item to support WDT reset function.

The optional settings: [Disabled]; [Enabled].

WatchDog Reset Timer Set the default value to: [Disabled]

When set as [Enabled], user can make settings in the following items that appear:

**WatchDog Reset Timer Value**

User can set a value in the range of [10] to [255] seconds or [1] to [255] minutes.

WatchDog Reset Timer Value Set the default value to: [10]

**WatchDog Reset Timer Unit**

The optional settings are: [Sec.]; [Min.].

WatchDog Reset Timer Unit Set the default value to: [Sec]

**ATX Power Emulate AT Power**

This item support Emulate AT power function, MB power On/Off control by power supply. Use needs to select 'AT or ATX Mode' on MB jumper at first (refer to J**PAT1** jumper setting Pin 1&2 of for **ATX Mode** & Pin 2&3 of **AT Mode** Select).

**Case Open Detect**

Use this item to detect if case have ever been opened. Show message in POST.

The optional settings: [Disabled]; [Enabled].

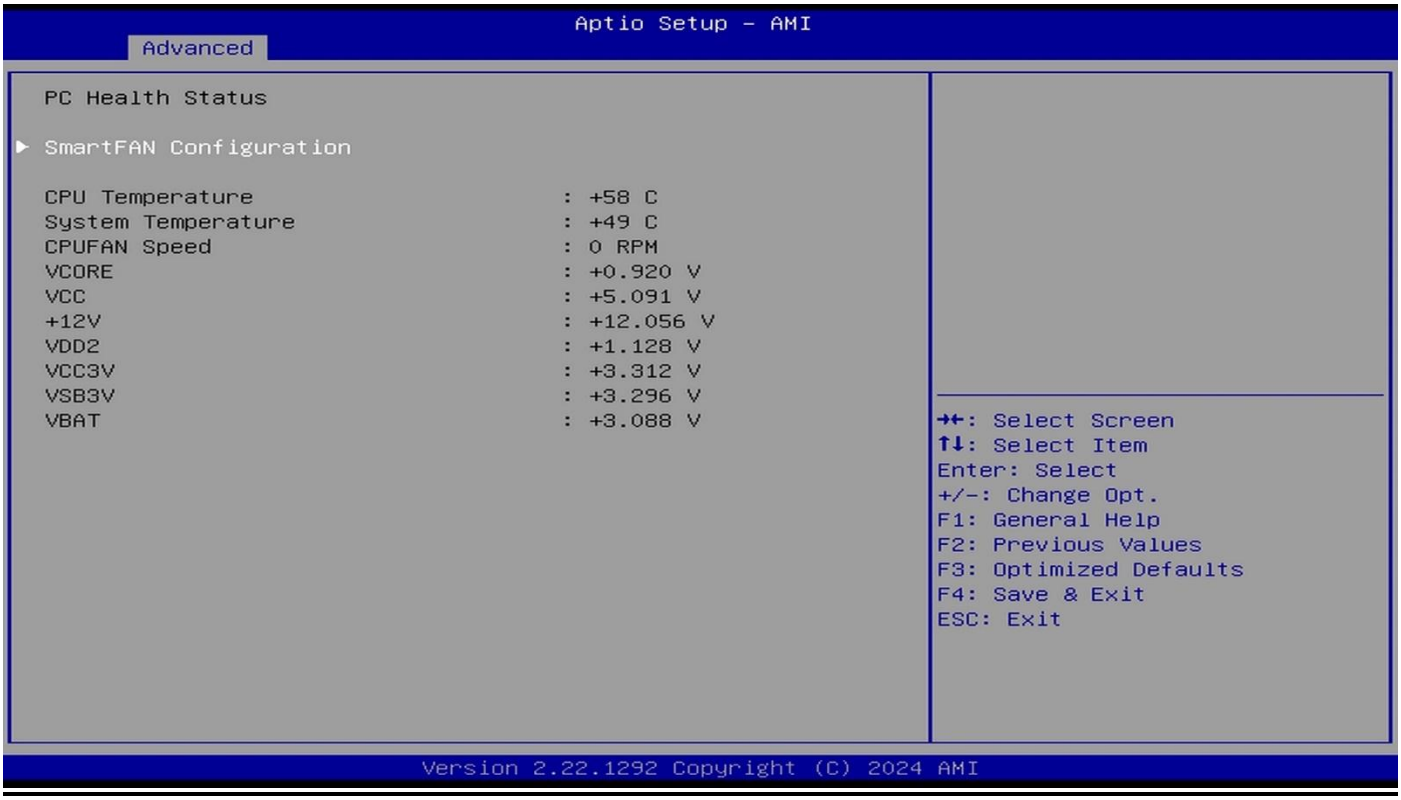
Case Open Detect Set the default value to: [Disabled]

- When set as [Enabled], system will detect if COPEN has been short or not (*refer to **JCLR1** jumper setting for Case Open Detection*); if Pin 7&8 of ***JCLR1*** are short, system will show Case Open Message during POST.



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## PC Health Status

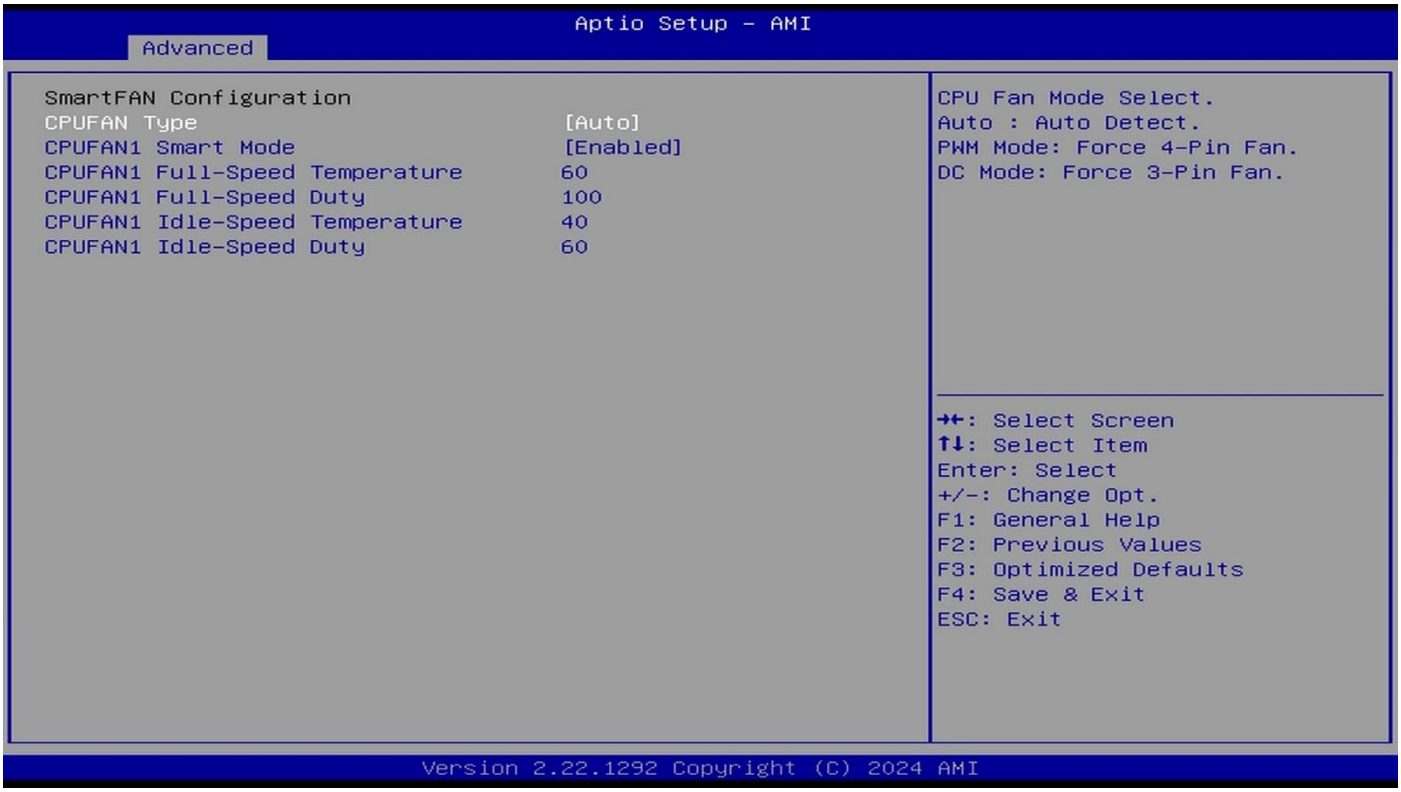



Press [Enter] to view current hardware health status, make further settings in '**SmartFAN Configuration**'.



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## SmartFAN Configuration




Press [Enter] to make settings for SmartFAN Configuration:

***SmartFAN Configuration***

**CPUFAN Type**

CPU Fan Mode Select. Auto: Auto Detect; PWM Mode: Force 4-Pin Fan;
DC Mode: Force 3-Pin Fan.
The optional settings: [Auto]; [PWM Mode]; [DC Mode].
CPUFAN Smart Mode Set the default value to: [Enabled]

**CPUFAN1 Smart Mode**

The optional settings: [Disabled]; [Enabled].
CPUFAN Smart Mode Set the default value to: [Enabled]
When set as [Enabled], the following sub-items shall appear:

**CPUFAN1 Full-Speed Temperature**

Use this item to set CPUFAN full speed temperature. Fan will run at full speed when above this pre-set temperature.
CPUFAN Full-Speed Temperature Set the default value to: [60]

**CPUFAN1 Full-Speed Duty**

Use this item to set CPUFAN full-speed duty. Fan will run at full speed when above this pre-set duty.
CPUFAN Full-Speed Duty Set the default value to: [100]

**CPUFAN1 Idle-Speed Temperature**



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Use this item to set CPUFAN idle speed temperature. Fan will run at idle speed when below this pre-set temperature.

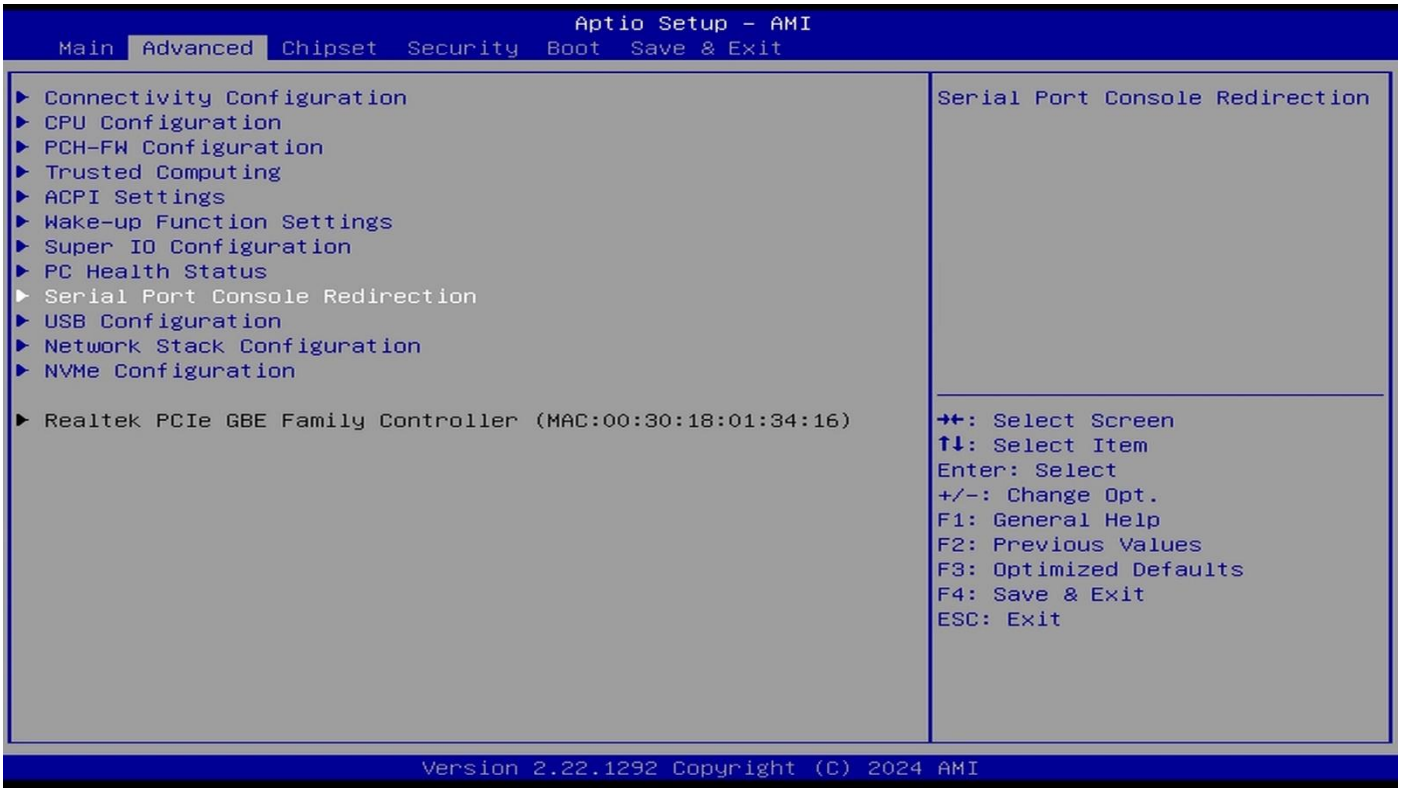
CPUFAN Idle-Speed Temperature Set the default value to: [40]

**CPUFAN1 Idle-Speed Duty**

Use this item to set CPUFAN idle speed duty. Fan will run at idle speed when below this pre-set duty.

CPUFAN Idle-Speed Duty Set the default value to: [60]

- **Serial Port Console Redirection**



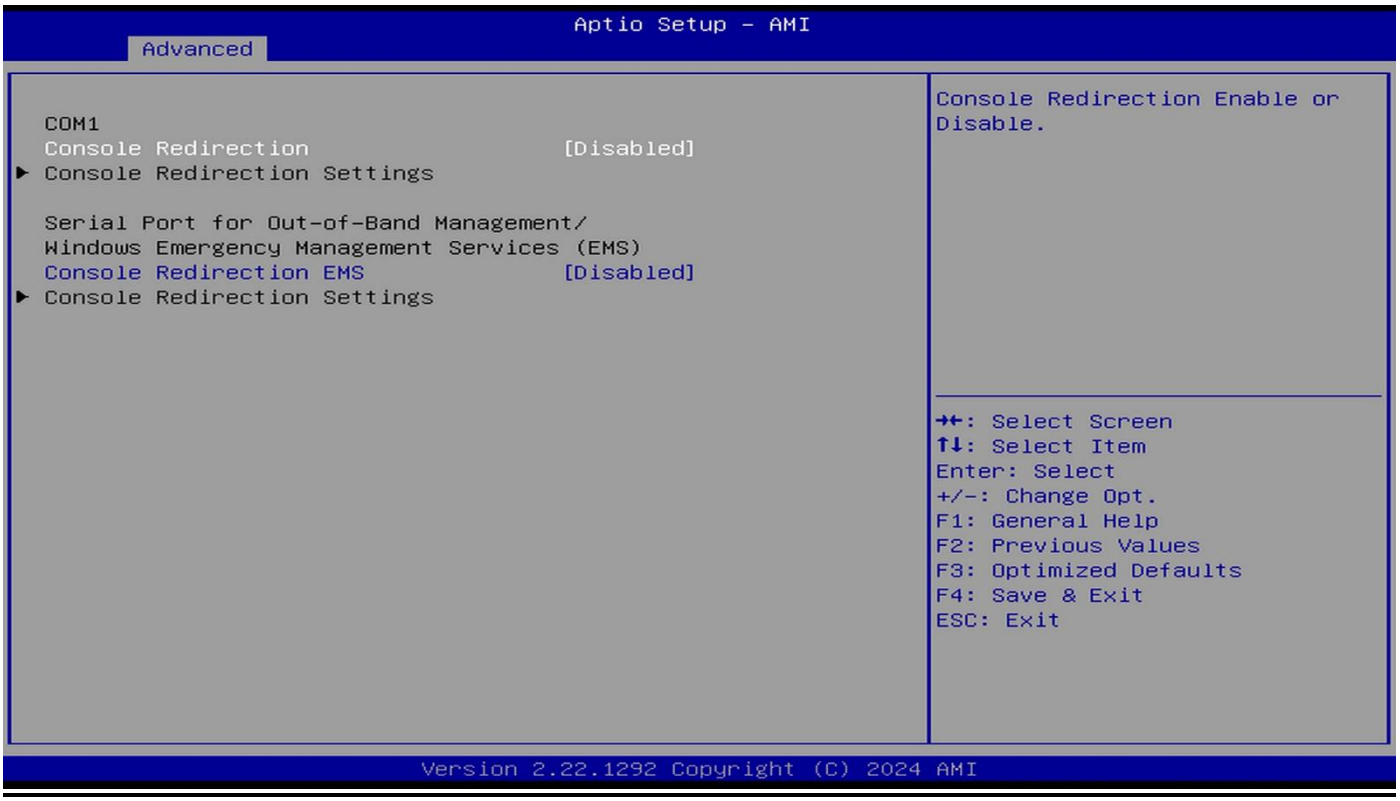



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Press [Enter] to make settings for the following sub-items:

***COM1***

**Console Redirection**




Console Redirection enable or disable.

The optional settings: [Disabled]; [Enabled].

Console Redirection Set the default value to: [Disabled]

When set as **[Enabled]**, user can make further settings in the '**Console Redirection Settings**' screen:

- **Console Redirection Settings**

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

Press [Enter] to make settings for the following sub-items：

**Terminal Type**

The optional settings: [VT100]; [VT100Plus]; [VT-UTF8]; [ANSI].
**[ANSI]:** Extended ASCII char set;
**[VT100]:** ASCII char set;
**[VT100Plus]:** Extends VT100 to support color, function keys, etc.
**[VT-UTF8]:** Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Terminal Type Set the default value to: [ANSI]

**Bits per second**

Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

The optional settings: [9600]; [19200]; [38400]; [57600]; [115200].

Bits per second Set the default value to: [115200]



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**Data Bits**

The optional settings: [7]; [8].

Data Bits Set the default value to: [8]

**Parity**

A parity bit can be sent with the data bits to detect some transmission errors.
The optional settings: [None]; [Even]; [Odd]; [Mark]; [Space].
**[Even]:** parity bit is 0 if the num of 1's in the data bits is even;
**[Odd]:** parity bit is 0 if num of 1's in the data bits is odd;
**[Mark]:** parity bit is always 1;
**[Space]:** parity bit is always 0;
Parity Set the default value to: [None]
**[Mark]** and **[Space]**: parity do not allow for error detection. They can be used as an additional data bit.

**Stop Bits**

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
The optional settings: [1]; [2].
Stop Bits Set the default value to: [1]

**Flow Control**

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
The optional settings: [None]; [Hardware RTS/CTS].
Flow Control Set the default value to: [None]

**VT-UTF8 Combo Key Support**

Use this item to enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.
The optional settings: [Disabled]; [Enabled].
VT-UTF8 Combo Key Support Set the default value to: [Enabled]

**Recorder Mode**

With this mode enabled only text will be sent. This is to capture Terminal data.
The optional settings: [Disabled]; [Enabled].
Recorder Mode Set the default value to: [Disabled]

**Resolution 100x31**

Use this item to enable or disable extended terminal resolution.
The optional settings: [Disabled]; [Enabled].
Resolution 100x31 Set the default value to: [Disabled]

**Putty KeyPad**

Use this item to select FunctionKey and KeyPad on Putty.
The optional settings: [VT100]; [LINUX]; [XTERMR6]; [SCO]; [ESCN]; [VT400].
Putty KeyPad Set the default value to: [VT100]

***Serial Port for Out-of-Band Management/***

***Windows Emergency Management Services (EMS)***

**Console Redirection EMS**

Use this item to enable or disable console redirection.

The optional settings: [Disabled]; [Enabled].

Console Redirection EMS Set the default value to: [Disabled]

When set as **[Enabled]**, user can make further settings in '**Console Redirection Settings**' screen:

- **Console Redirection Settings**

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

Press [Enter] to make settings for the following sub-items.

**Terminal Type EMS**

The optional settings: [VT100]; [VT100Plus]; [VT-UTF8]; [ANSI].

**[VT-UTF8]** is the preferred terminal type for out-of-band management. The next best choice is **[VT100+]** and then **[VT100]**. See above, in Console Redirection Settings page, for more help with Terminal Type/Emulation.

Terminal Type EMS Set the default value to: [VT-UTF8]

**Bits per second EMS**

Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

The optional settings: [9600]; [19200]; [57600]; [115200].

Bits per second EMS Set the default value to: [115200]

**Flow Control EMS**

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

The optional settings: [None]; [Hardware RTS/CTS]; [Software Xon/Xoff].

Flow Control EMS Set the default value to: [None]

***Data Bits EMS***

The default setting is: [8].

**This item may or may not show up, depending on different configuration.*

***Parity EMS***

The default setting is: [None].

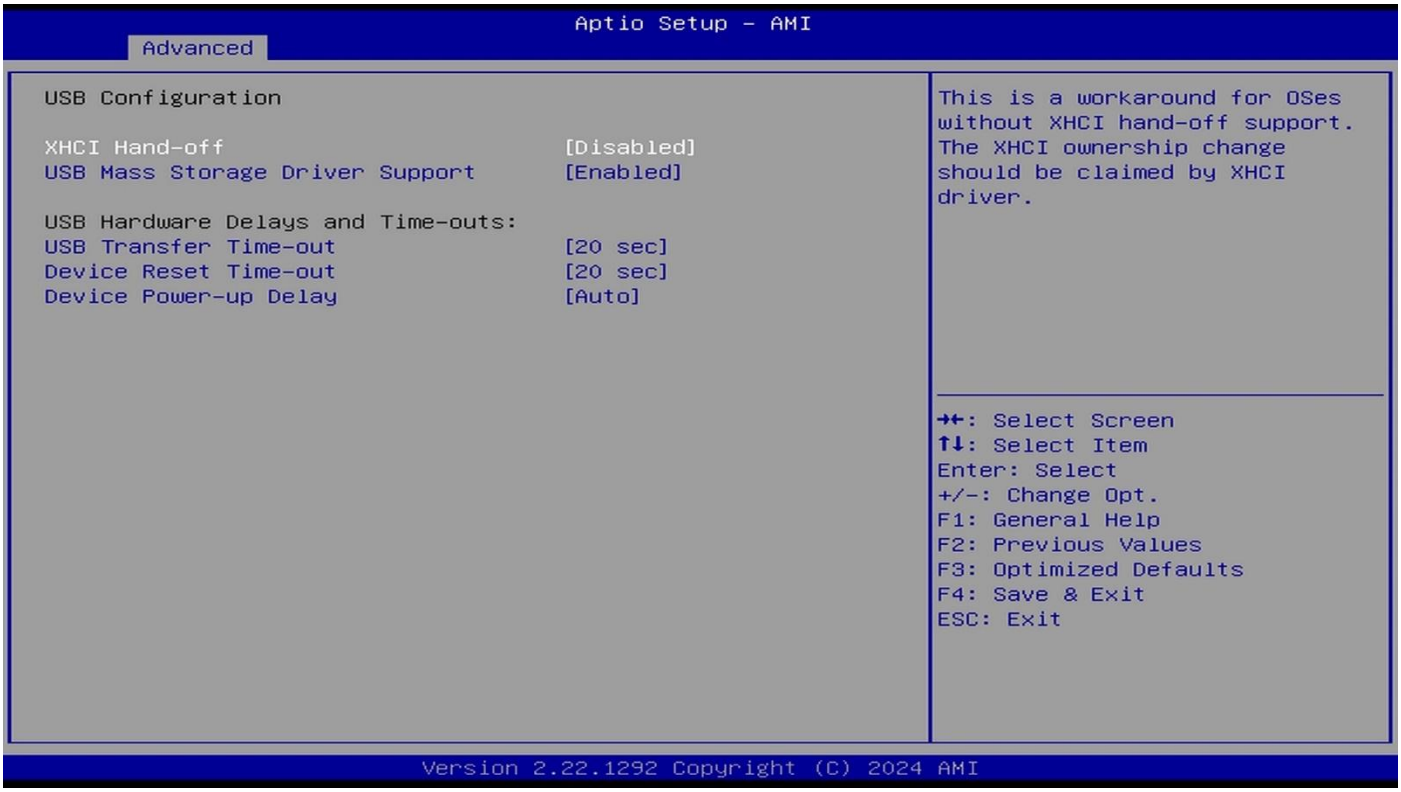
**This item may or may not show up, depending on different configuration.*

***Stop Bits EMS***

The default setting is: [1].

**This item may or may not show up, depending on different configuration.*

## USB Configuration




Press [Enter] to make settings for the following sub-items:

***USB Configuration***

**XHCI Hand-off**

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

The optional settings: [Enabled]; [Disabled].

XHCI Hand-off Set the default value to: [Disabled]

**USB Mass Storage Driver Support**

Use this item to enable or disable USB Mass storage driver support.

The optional settings: [Disabled]; [Enabled].

USB Mass Storage Driver Support Set the default value to: [Enabled]

***USB hardware delay and time-out***

**USB Transfer time-out**

Use this item to set the time-out value for control, bulk, and interrupt transfers.

The optional settings: [1 sec]; [5 sec]; [10 sec]; [20 sec].

USB Transfer time-out Set the default value to: [20 sec]

**Device reset time-out**

Use this item to set USB mass storage device start unit command time-out.

The optional settings: [10 sec]; [20 sec]; [30 sec]; [40 sec].

Device reset time-out Set the default value to: [20 sec]

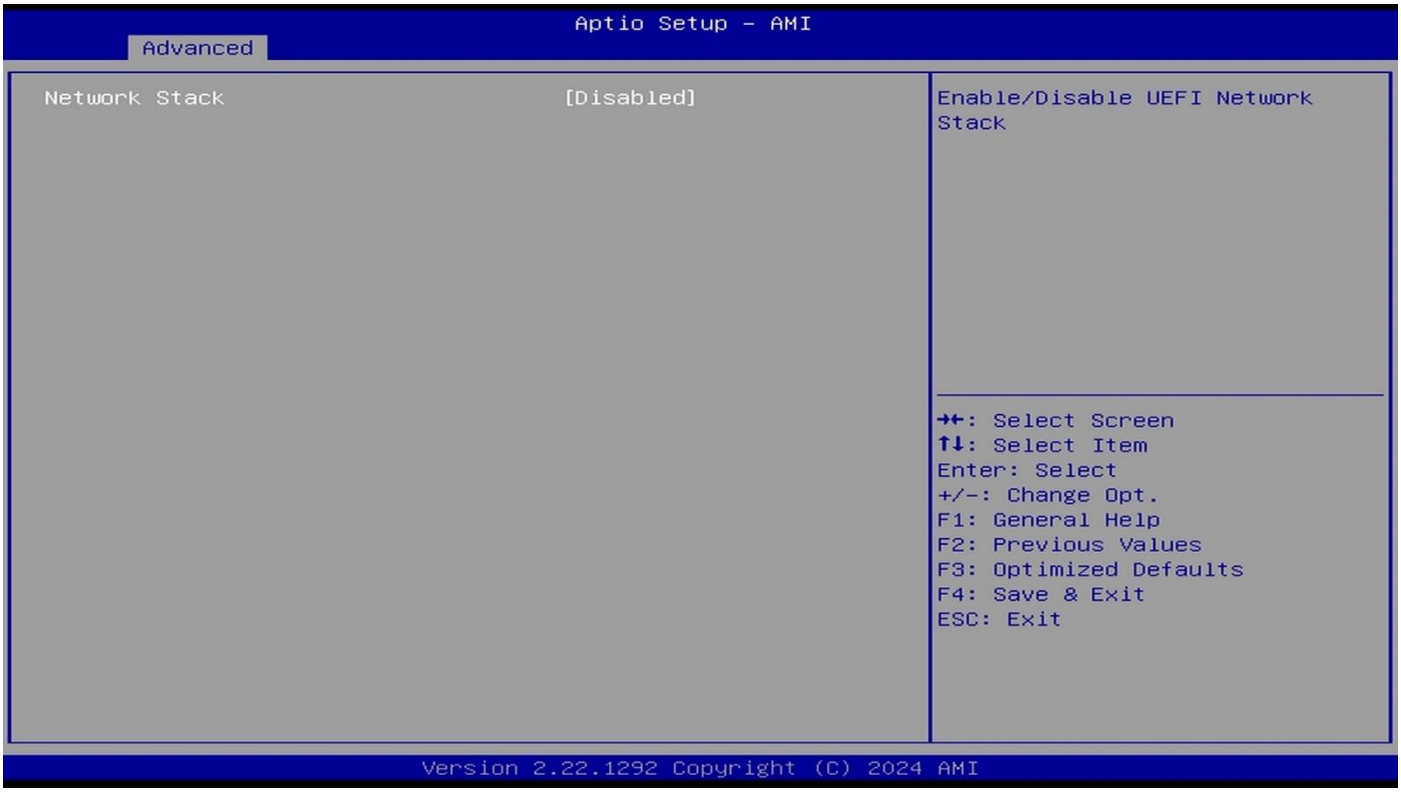
**Device power-up delay**



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Use this item to set maximum time the device will take before it properly reports itself to the host controller. ‘Auto’ uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor.
The optional settings: [Auto]; [Manual].
Device power-up delay Set the default value to: [Auto]
Select **[Manual]** you can set value for the following sub-item: ‘**Device power-up delay in seconds**’**,** the delay range is 1 .. 40 seconds, in one second increments.

- **Network Stack Configuration**




Press [Enter] to go to ‘**Network Stack**’ screen to make further settings.
**Network Stack**
Use this item to enable or disable UEFI Network Stack.
The optional settings: [Disabled]; [Enabled].
Network Stack Set the default value to: [Disabled]
When set as **[Enabled]**, the following sub-items shall appear:
**IPv4 PXE Support**
Use this item to enable/disable IPv4 PXE Boot Support. When set as [Disabled], IPv4 PXE boot support will not be available.
The optional settings: [Disabled]; [Enabled].
IPv4 PXE Support Set the default value to: [Enabled]
**IPv6 PXE Support**
Use this item to enable/disable IPv6 PXE Boot Support. When set as [Disabled], IPv6 PXE boot support will not be available.
The optional settings: [Disabled]; [Enabled].
IPv6 PXE Support Set the default value to: [Disabled]

**PXE boot wait time**
Wait time in seconds to press [ESC] key to abort the PXE boot.
Use either [+]/[-] or numeric keys to set the value.



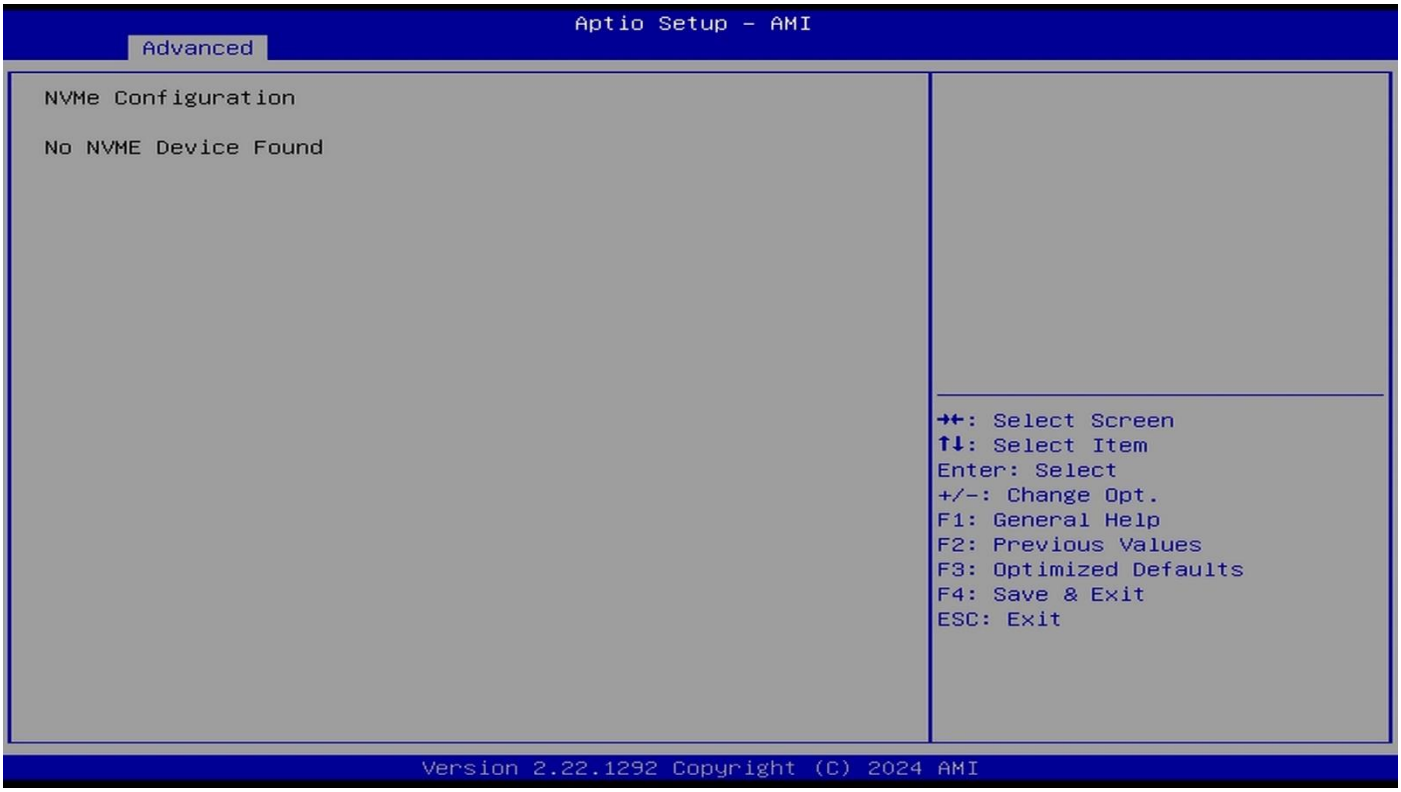
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PXE boot wait time Set the default value to: [2]

**Media detect count**

Use this item to set number of times presence of media will be checked.
Use either [+]/[-] or numeric keys to set the value.
Media detect count Set the default value to: [5]

- **NVMe Configuration**




Use this item to set NVMe Device options settings.

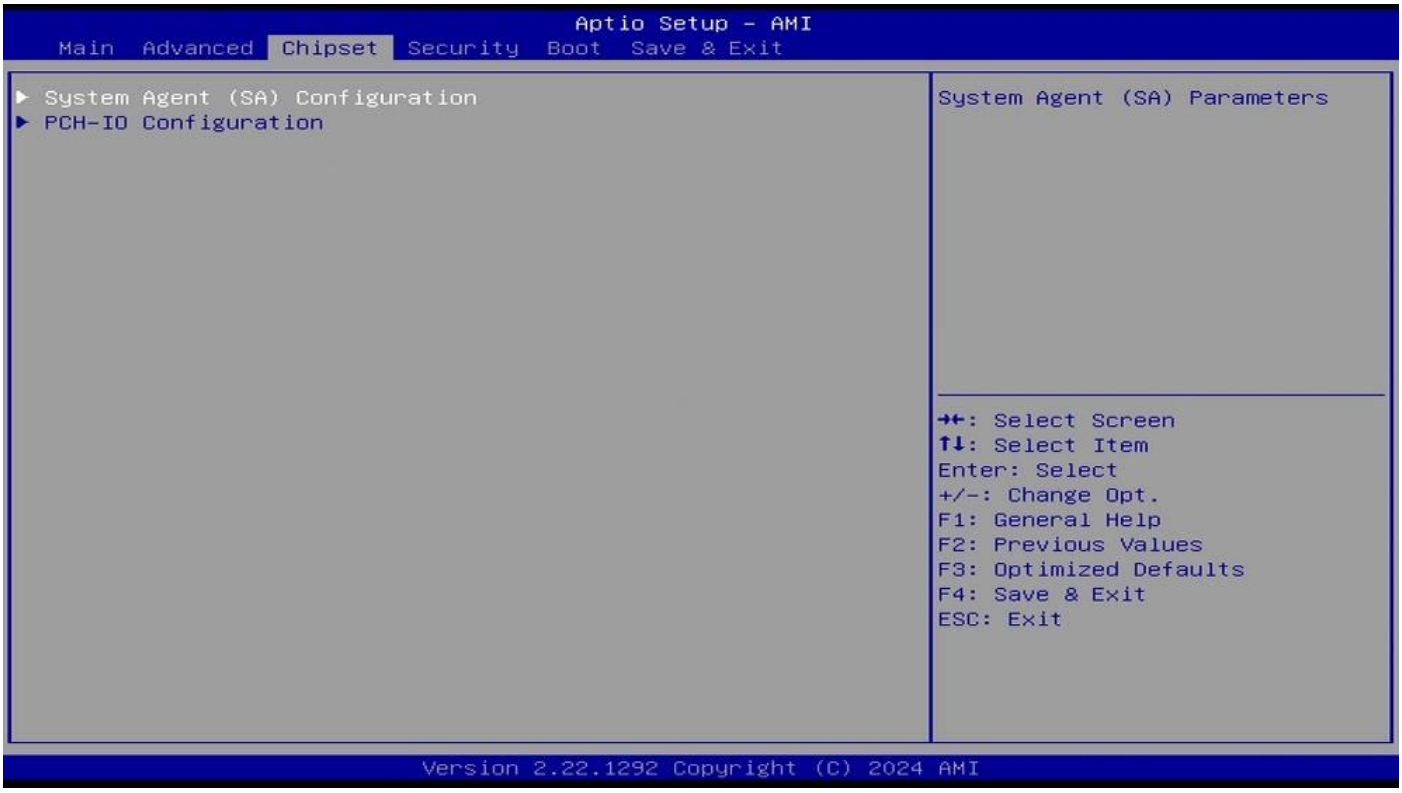
***NVMe Configuration***

- **Realtek PCIe GBE Family Controller (MAC:XX:XX:XX:XX:XX:XX)**

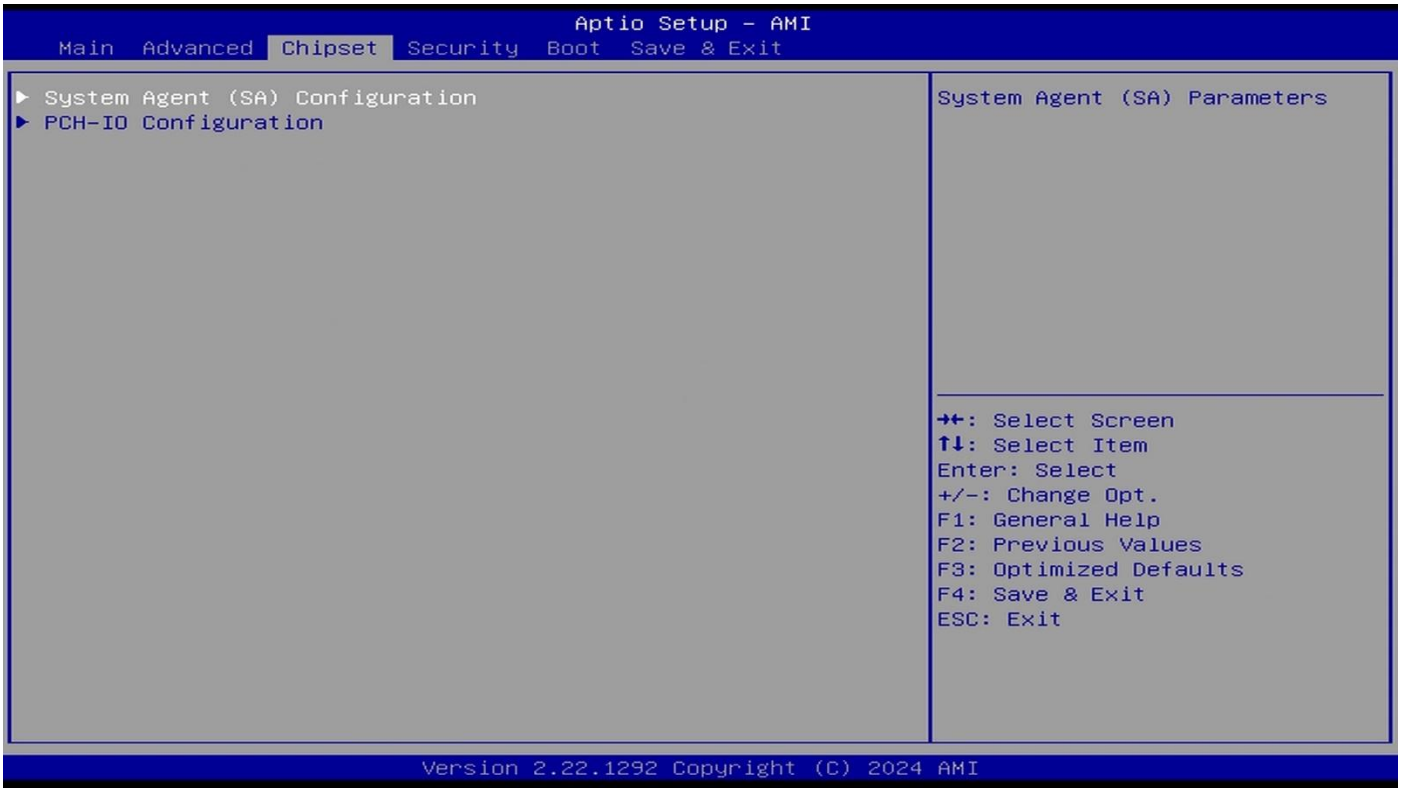


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# 3-8 Chipset Menu




### ▸ System Agent (SA) Configuration



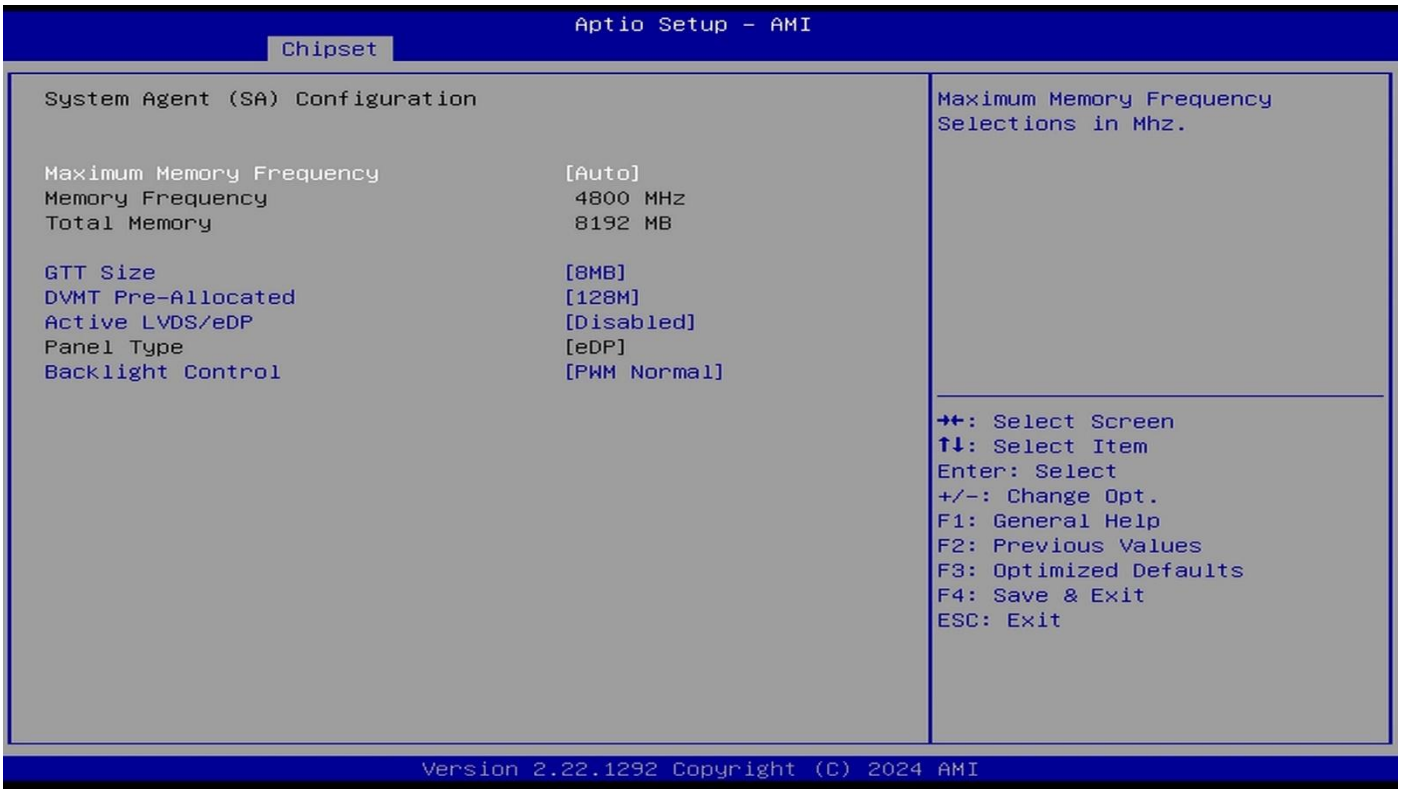

Press [Enter] to make settings for the following sub-items:

***System Agent (SA) Configuration***

**Maximum Memory Frequency**



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Maximum Memory Frequency Selections in Mhz.

The optional settings are: [Auto]; [3200]; [3467]; [3600]; [3733]; [4000]; [4200] ; [4267]; [4400]; [4600]; [4800].

GTT Size Set the default value to: [Auto]

**GTT Size**

Use this item to select GTT Size.

The optional settings are: [2MB]; [4MB]; [8MB].

GTT Size Set the default value to: [8MB]

**DVMT Pre-Allocated**

Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

The optional settings: [32M]; [64M]; [96M]; [128M]; [160M]; [8M]; [12M]; [16M]; [20M]; [24M]; [28M]; [32M/F7]; [36M]; [40M]; [44M]; [48M]; [52M]; [56M]; [60M].

DVMT Pre-Allocated Set the default value to: [128M]

**Active LVDS/eDP**

Use this item to select the Active LFP Configuration.

The optional settings: [Disabled]; [Enabled].

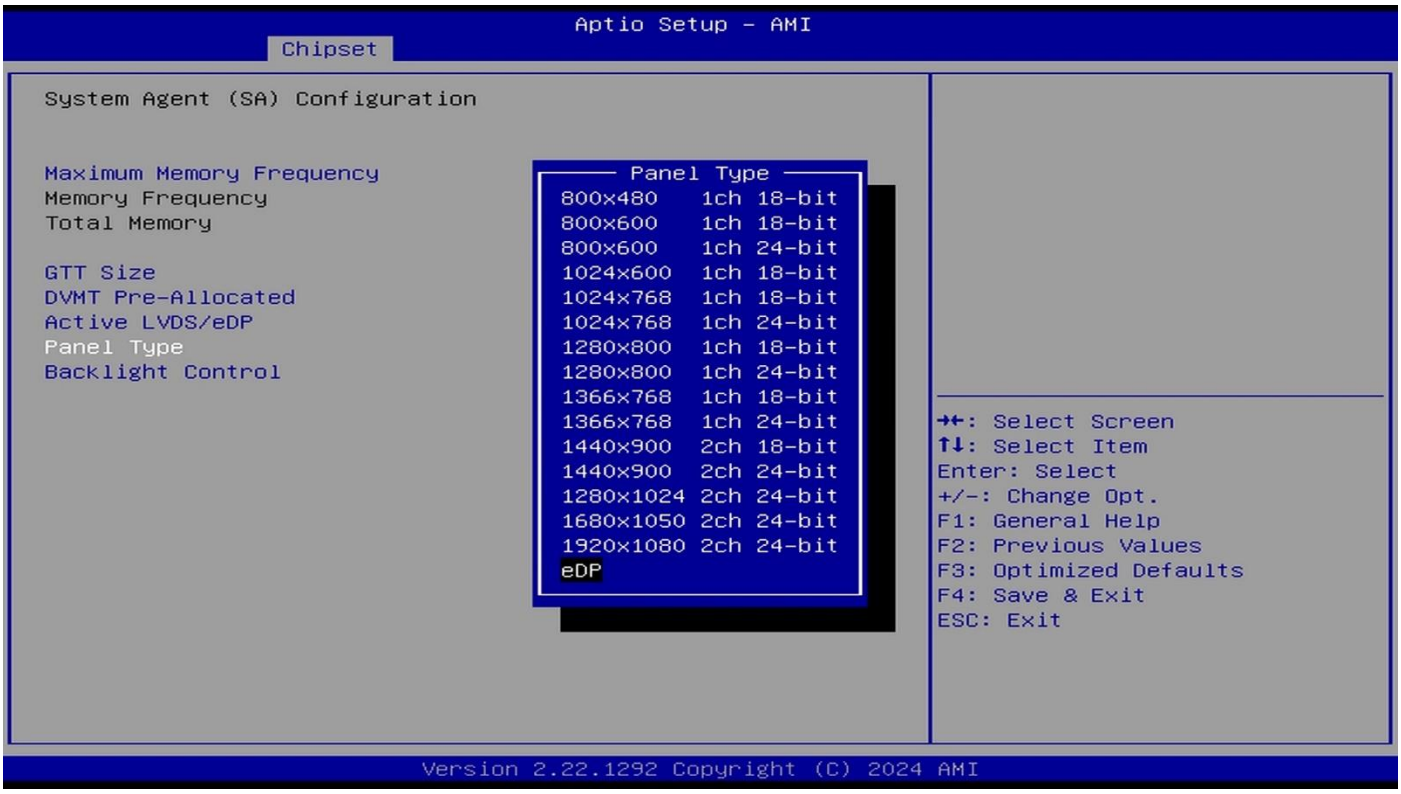
Active LFP Set the default value to: [Disabled]

When set as [Enabled], the following sub-item shall appear:

**Panel Type**



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The optional settings are: [800x480 1ch 18-bit]; [800x600 1ch 18-bit]; [800x600 1ch 24-bit]; [1024x600 1ch 18-bit]; [1024x768 1ch 18-bit]; [1024x768 1ch 24-bit]; [1280x800 1ch 18-bit]; [1280x800 1ch 24-bit]; [1366x768 1ch 18-bit]; [1366x768 1ch 24-bit]; [1440x900 2ch 18-bit]; [1440x900 2ch 24-bit]; [1280x1024 2ch 24-bit]; [1680x1050 2ch 24-bit]; [1920x1080 2ch 24-bit]; [eDP].

Panel Type Set the default value to: [eDP]

**Backlight Control**

Use this item to make back light control setting.

The optional settings are: [PWM Inverted]; [PWM Normal].

Backlight Control Set the default value to: [PWM Normal]



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## PCH-IO Configuration



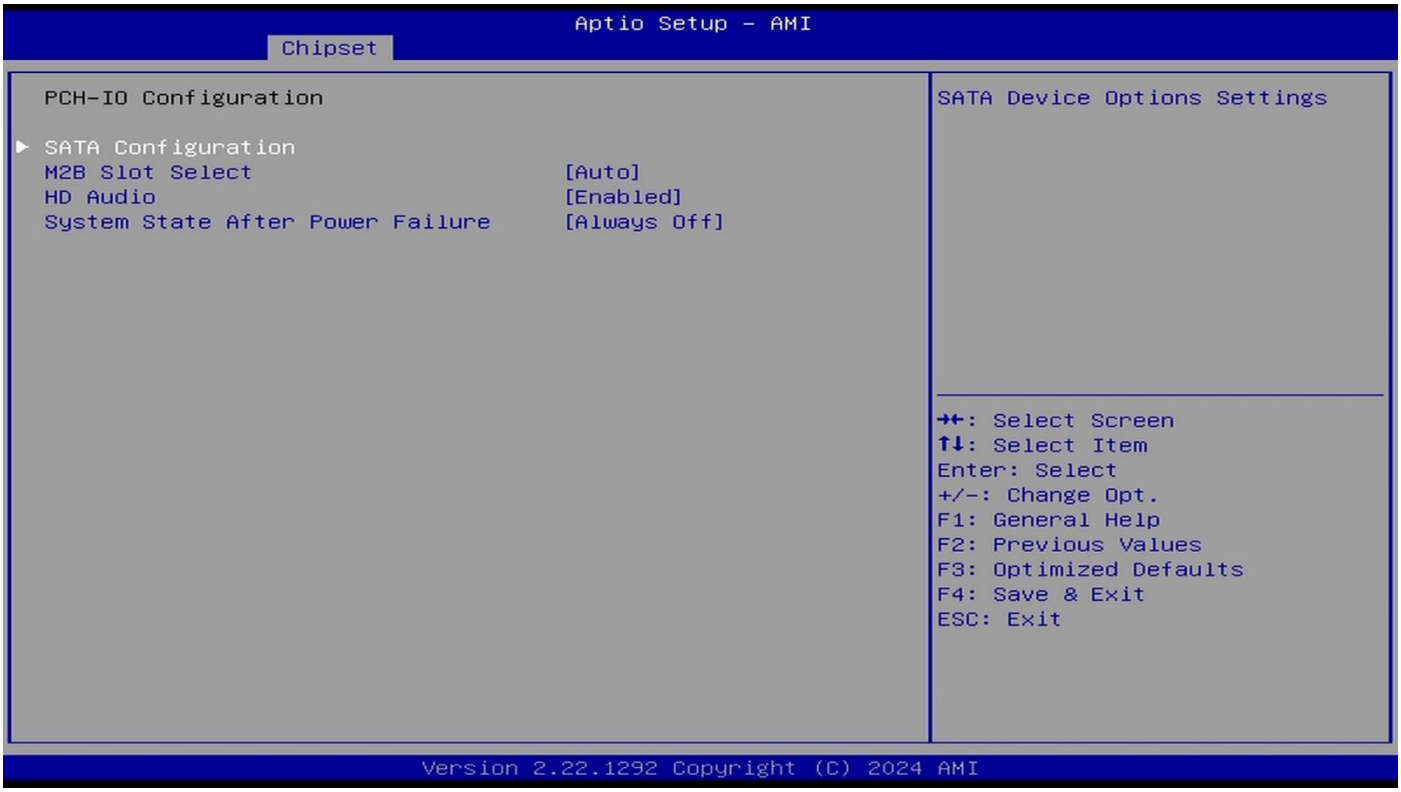

Press [Enter] to make settings for the following sub-items:

***PCH-IO Configuration***



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## SATA Configuration



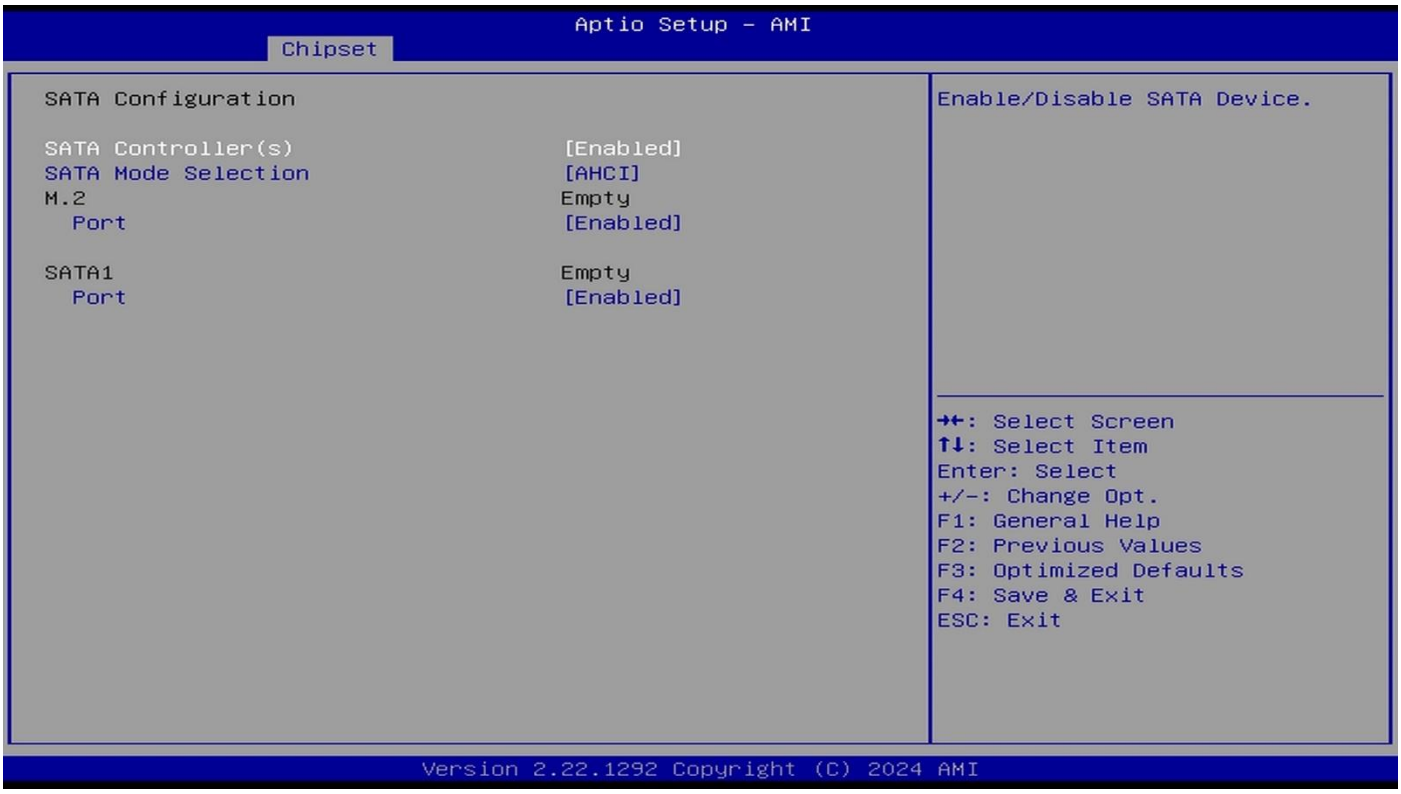

SATA Device Options Settings.



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## ***SATA Configuration***

### SATA Controller(s)




Use this item to enable/disable SATA Device.

The optional settings are: [Enabled]; [Disabled].

SATA Controller(s) Set the default value to: [Enabled]

When set as [Enabled], the following sub-items shall appear:

**SATA Mode Selection**

Use this item to determines how SATA controller(s) operate.

The optional settings are: [AHCI].

SATA Mode Selection Set the default value to: [AHCI]

***M.2***

**Port**

Use this item to enable or disable SATA Port.

The optional settings are: [Disabled]; [Enabled].

Port Set the default value to: [Enabled]

***SATA1***

**Port**

Use this item to enable or disable SATA Port.

The optional settings are: [Disabled]; [Enabled].

Port Set the default value to: [Enabled]

**M2B Slot Select**

Select slot Function



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The optional settings: [Auto]; [SATA] [PCIex2]; [PCIex1+USB3].

HD Audio Set the default value to: [Auto]

**HD Audio**

Use this item to control detection of the HD-Audio device.

Disabled= HDA will be unconditionally disabled.

Enabled= HDA will be unconditionally enabled.

The optional settings: [Disabled]; [Enabled].

HD Audio Set the default value to: [Enabled]

**System State after Power Failure**

Specify what state to go to when power is re-applied after a power failure (G3 state).

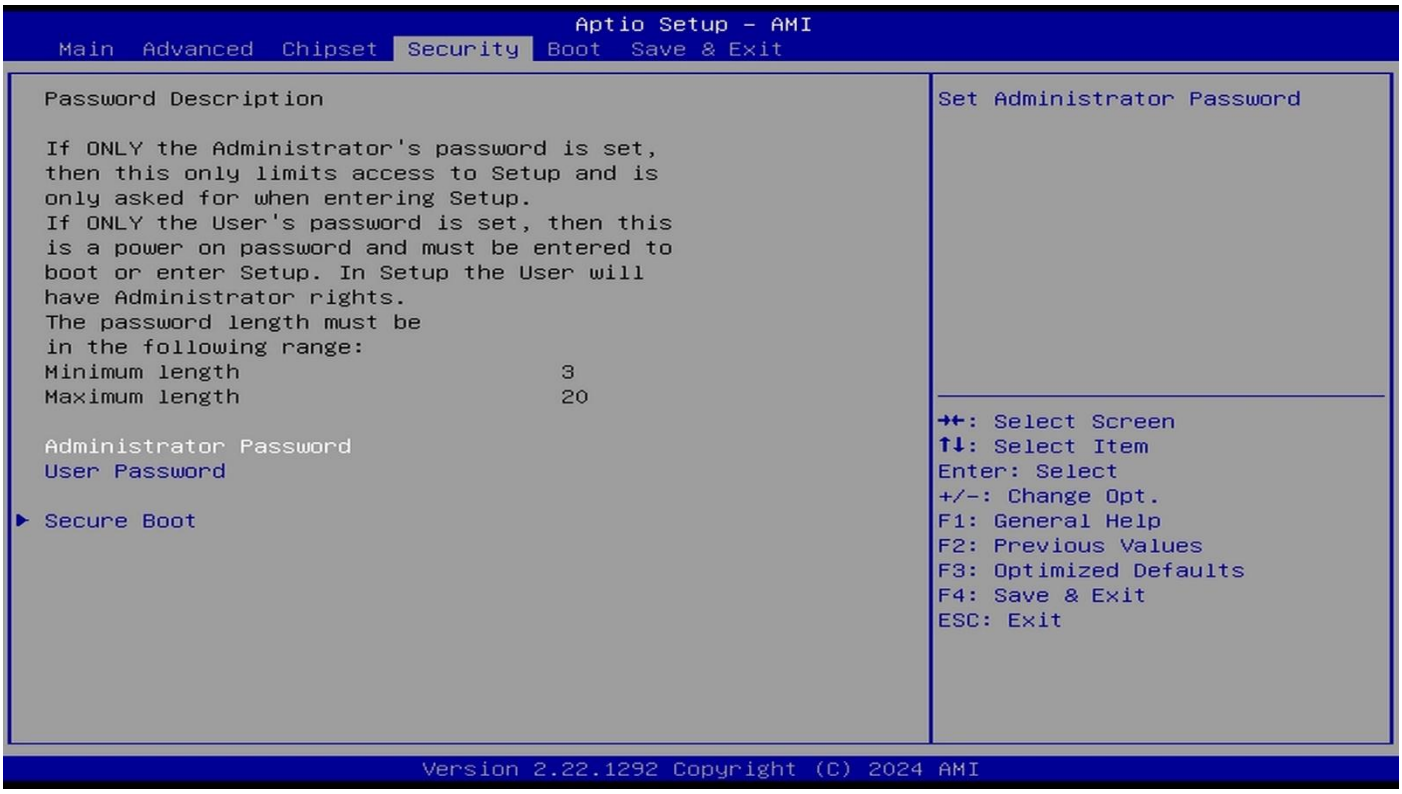
The optional settings: [Always On]; [Always Off]; [Former State].

System State after Power Failure Set the default value to: [Always Off]



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# 3-9 Security Menu




Security menu allow users to change administrator password and user password settings.

**Administrator Password**

If there is no password present on system, please press [Enter] to create new administrator password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new administrator password.

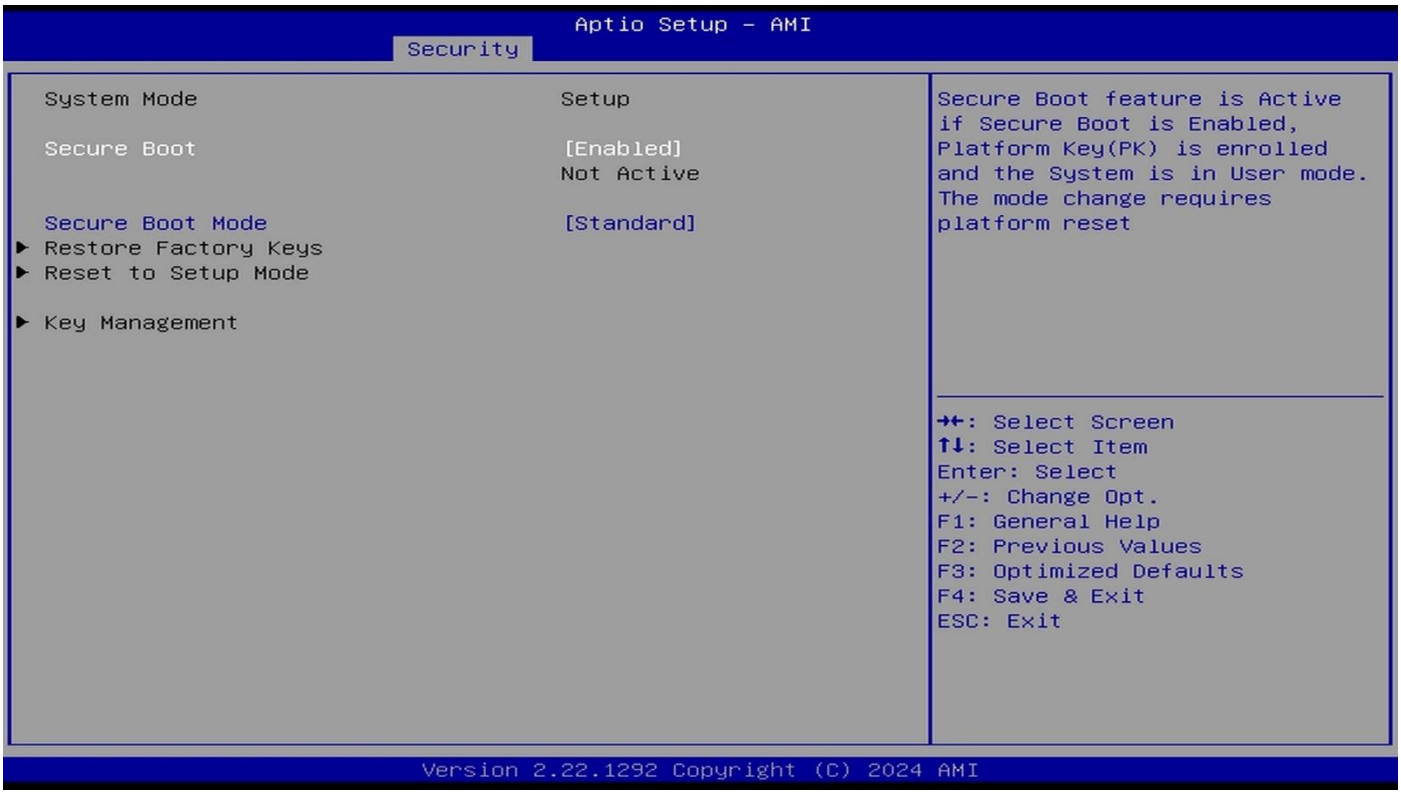
**User Password**

If there is no password present on system, please press [Enter] to create new administrator password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new administrator password.



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## Secure Boot




Press [Enter] to make customized secure settings:

***System Mode***

**Secure Boot**

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.

The optional settings: [Disabled]; [Enabled].

Secure Boot Set the default value to: [Enabled]

**Secure Boot Mode**

Set UEFI Secure Boot Mode to Standard mode or Custom mode. This change is effective after save. After reset, this mode will return to Standard mode.

In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

The optional settings: [Standard]; [Custom].

Secure Boot Mode Set the default value to: [Standard]

When set as [**Custom**], user can make further settings in the following items that show up:

- **Restore Factory Keys**

Use this item to force system to User Mode, to install factory default Secure Boot key databases.

- **Reset To Setup Mode**

Use this item to Delete all secure boot key databases from NVRAM.

- **Key Management**

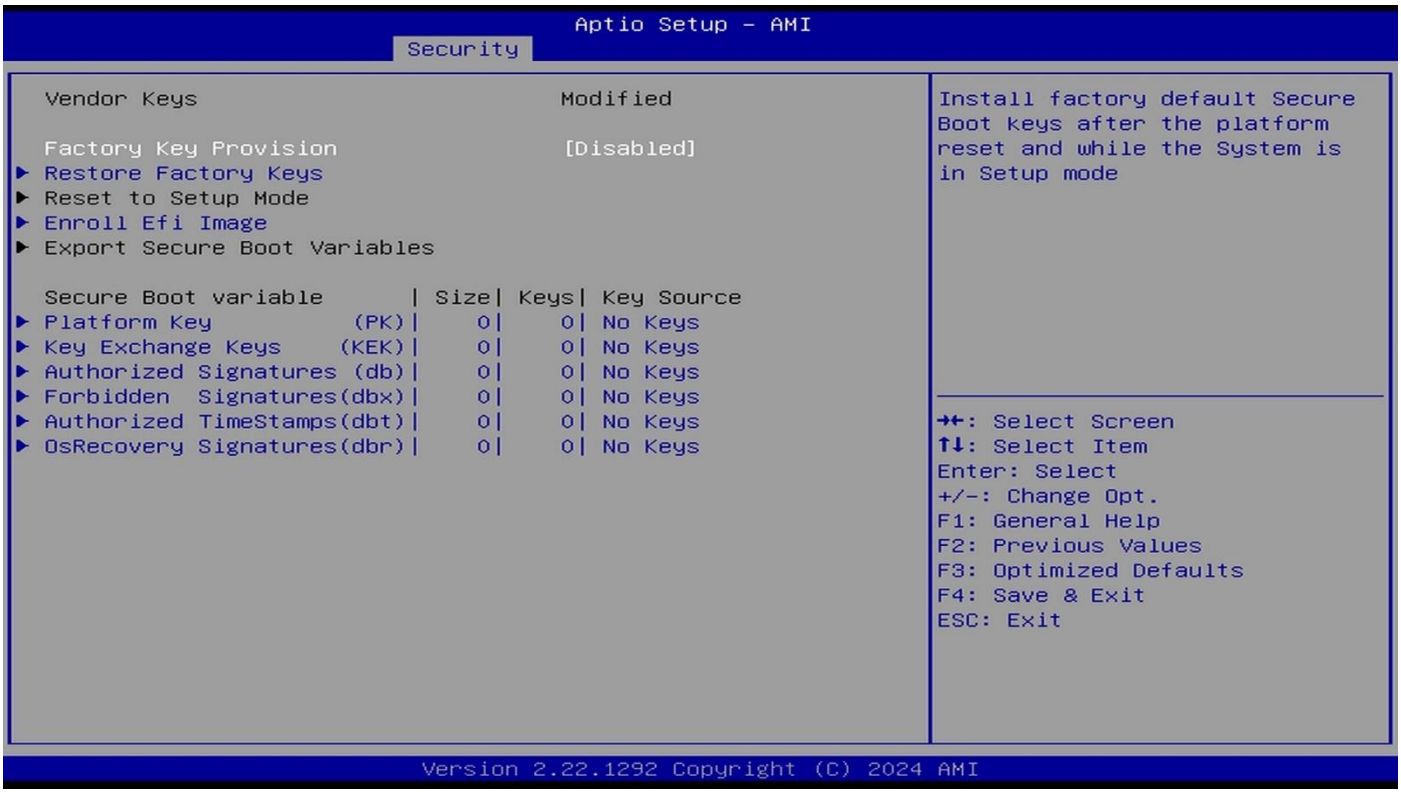
This item enables expert users to modify Secure Boot Policy variables without full authentication, which includes the following items:



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## ***Vendor Keys***

### Factory Key Provision




This item is for user to install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.
The optional settings: [Disabled]; [Enabled].
Factory Key Provision Set the default value to: [Disabled]

- **Restore Factory Keys**

Use this item to force system into User Mode. Install factory default Secure Boot key databases.

- **Reset To Setup Mode**

Use this item to Delete all Secure Boot key databases from NVRAM.

- **Enroll Efi Image**

This item allows the image to run in Secure Boot mode.
Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

- **Export Secure Boot variables**

Use this item to save NVRAM content of Secure Boot variables to a file.

- **Platform Key(PK)/Key Exchange Keys(KEK)/Authorized Signatures(db)/Forbidden Signatures(dbx)/ Authorized TimeStamps(dbt)/OsRecovery Signatures(dbr)**

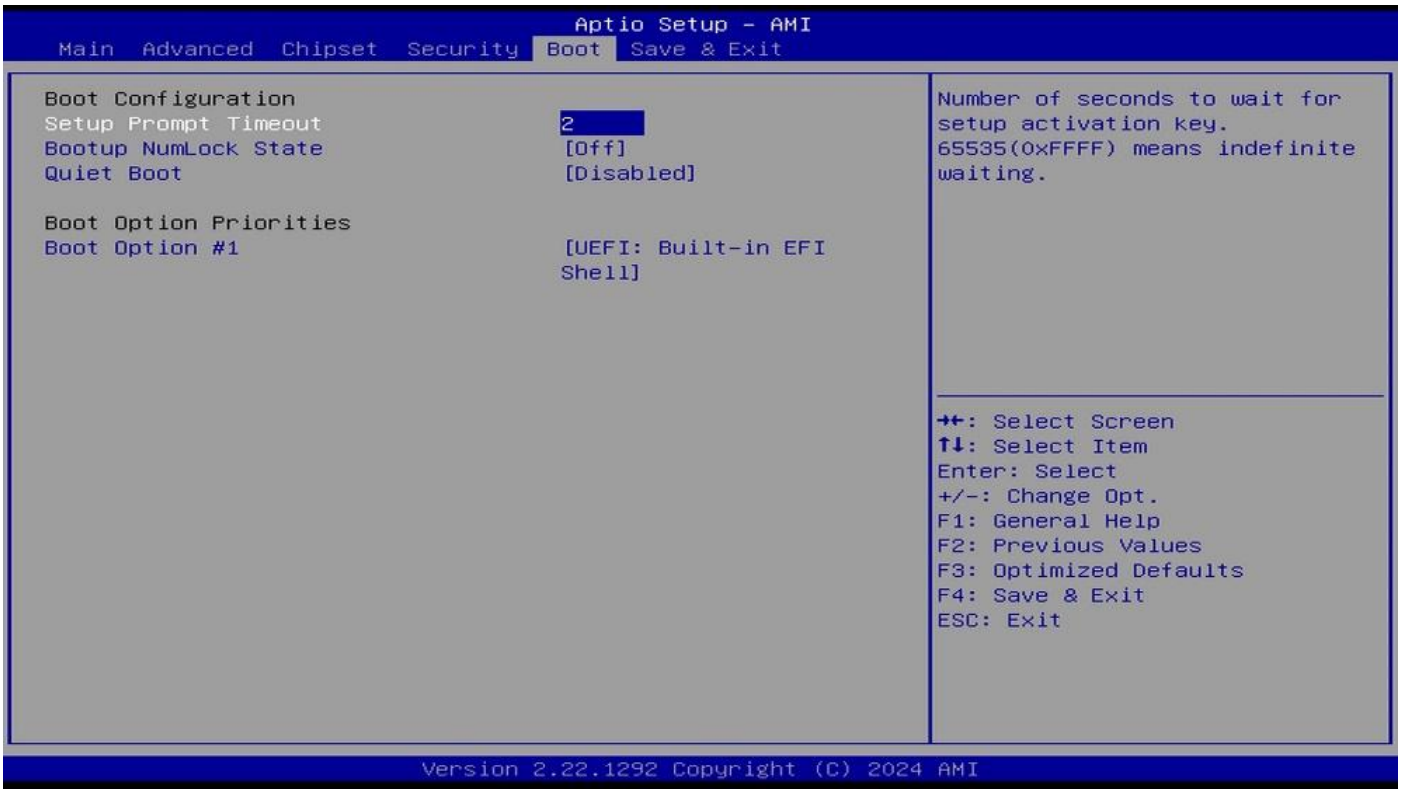
Use this item to enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate:
   a) EFI_SIGNATURE_LIST
   b) EFI_ CERT_X509 (DER)
   c) EFI_ CERT_RSA2048 (bin)
   d) EFI_ CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image (SHA256)

Key Source: Factory, Modified, Mixed



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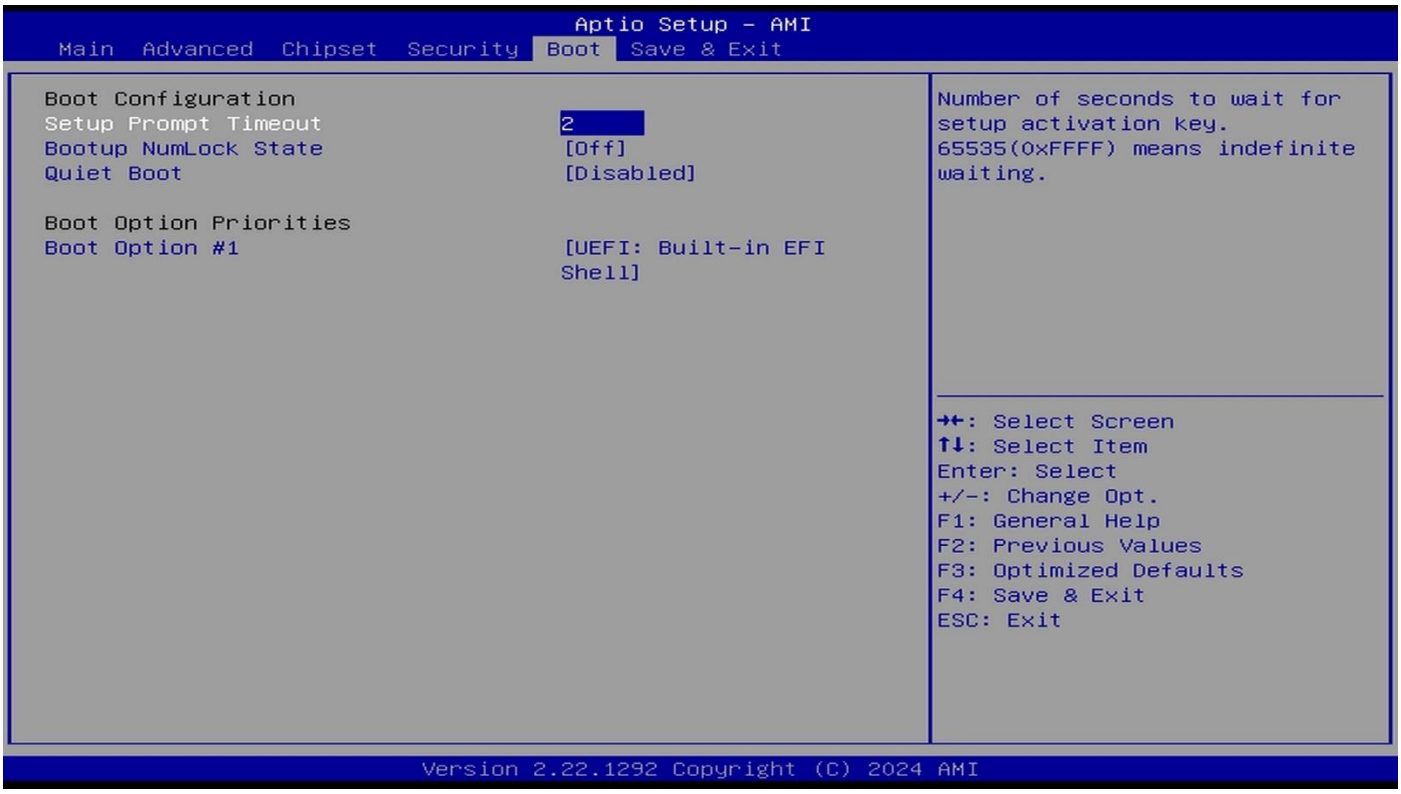
# 3-10 Boot Menu






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## ***Boot Configuration***




**Setup Prompt Timeout**

Use this item to set number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

Setup Prompt Timeout Set the default value to: [2]

**Bootup NumLock State**

Use this item to select keyboard NumLock state.

The optional settings: [On]; [Off].

Bootup NumLock State Set the default value to: [Off]

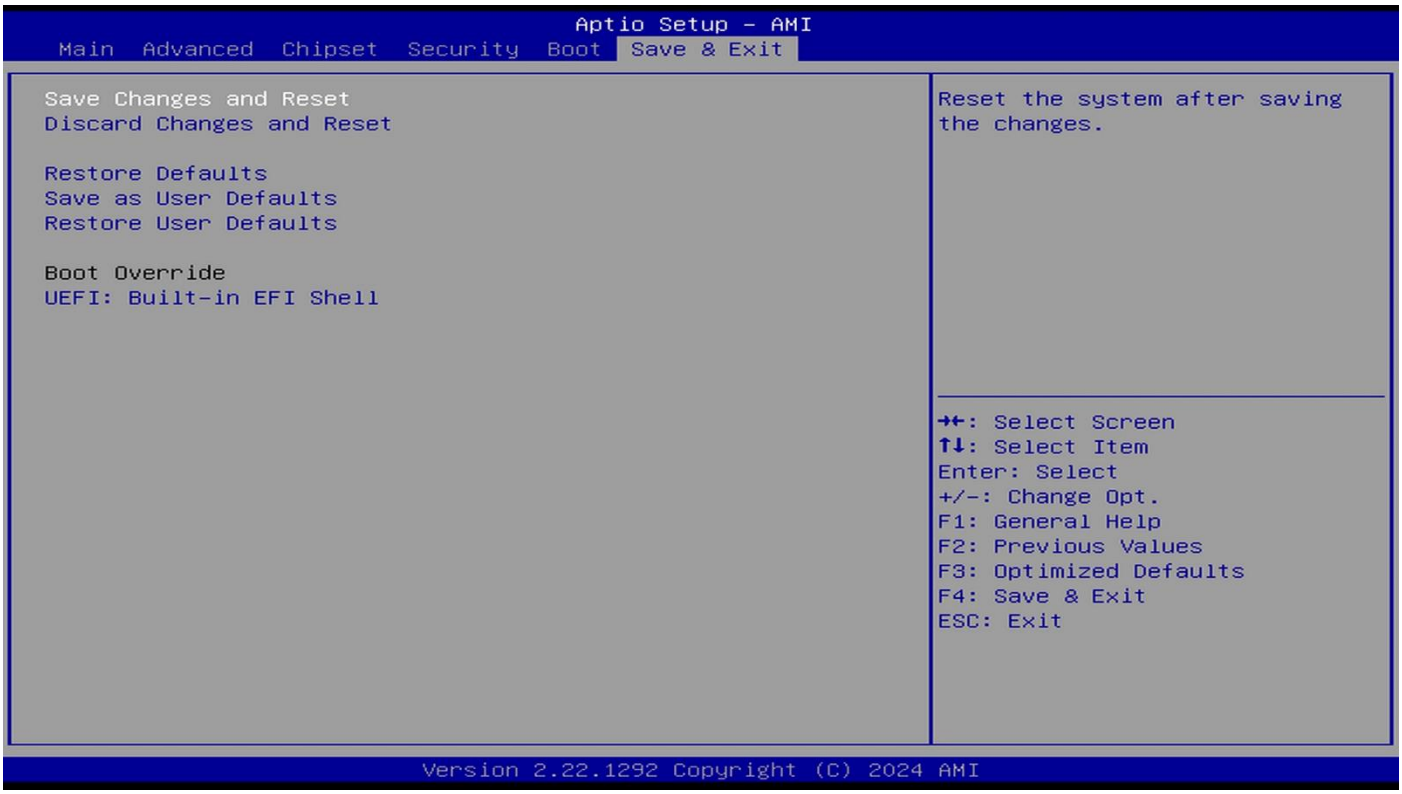
**Quiet Boot**

The optional settings: [Disabled]; [Enabled].

Quiet Boot Set the default value to: [Disabled]

## ***Boot Option Priorities***

# 3-11 Save & Exit Menu




**Save Changes and Reset**

This item allows user to reset the system after saving the changes.

**Discard Changes and Reset**

This item allows user to reset the system setup without saving any changes.

**Restore Defaults**

Use this item to restore /load default values for all the setup options.

**Save as User Defaults**

Use this item to save the changes done so far as user defaults.

**Restore User Defaults**

Use this item to restore the user defaults to all the setup options.

***Boot Override***

# Appendix A

## Mating Connectors for H810 Chipset

| Location Printing | Function | Vendor | Vendor P/N |
|---|---|---|---|
| CPUFAN1 | CPU FAN Connector | Topt | WF254-104S-TEW0004A |
| SYSFAN1 | System FAN Connector | Topt | WF254-104S-TEW0004A |
| LVDS_EDP1 | LVDS_EDP Header | CHUFON | C151900-160 |
| INVERTER1 | LVDS_EDP Inverter Wafer | topctconn | WF2-1108-K-S6R-B0 |
| SATA1 | SATAIII Port Connector | Win Win | WATF-07DBLSA1UW |
| SATA2 | SATAIII Port Connector | Win Win | WATF-07DBLSA1UW |
| SATA3 | SATAIII Port Connector | Win Win | WATF-07DBLSA1UW |
| SATA4 | SATAIII Port Connector | Win Win | WATF-07DBLSA1UW |
| I2C1 | I2C Header | Topt | PH200-A105-SGCB-RN |
| SMBUS1 | SMBUS Header | Topt | PH200-A105-SGCB-RN |
| FP_USB2 | USB2.0 x2 Port Header | Topt | PH200-205M-GBB0009D |
| FP_USB3 | USB2.0 x2 Port Header | Topt | PH200-205M-GBB0009D |
| PS2KBMS1 | PS/2 Keyboard and Mouse Header | DCNT | P525-07SG01ST403 |
| FP_AUDIO1 | Front Panel Line-Out, MIC-In Header | Topt | PH254-205S-GBB0008A |
| FP1 | Front Panel Header | DCNT | P525-05DG01ST408 |
| COM3 | RS232 Serial Port Header | Topt | PH200-205M-GBB00010D |
| COM4 | RS232 Serial Port Header | Topt | PH200-205M-GBB00010D |
| COM5 | RS232 Serial Port Header | Topt | PH200-205M-GBB00010D |
| COM6 | RS232 Serial Port Header | Topt | PH200-205M-GBB00010D |



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# Mating Connectors for W880 and Q870 Chipset

| Location Printing | Function | Vendor | Vendor P/N |
|---|---|---|---|
| CPUFAN1 | CPU FAN Connector | Topt | WF254-104S-TEW0004A |
| SYSFAN1 | System FAN Connector | Topt | WF254-104S-TEW0004A |
| LVDS_EDP1 | LVDS_EDP Header | CHUFON | C151900-160 |
| INVERTER1 | LVDS_EDP Inverter Wafer | topctconn | WF2-1108-K-S6R-B0 |
| SATA1 | SATAIII Port Connector | Win Win | WATF-07DBLSA1UW |
| SATA2 | SATAIII Port Connector | Win Win | WATF-07DBLSA1UW |
| SATA3 | SATAIII Port Connector | Win Win | WATF-07DBLSA1UW |
| SATA4 | SATAIII Port Connector | Win Win | WATF-07DBLSA1UW |
| I2C1 | I2C Header | Topt | PH200-A105-SGCB-RN |
| SMBUS1 | SMBUS Header | Topt | PH200-A105-SGCB-RN |
| FP_USB1 | USB3.2 Gen1 Port Header | LOTES | GAP-ABA-USB-050-P05<br>*Compared with H810* |
| FP_USB2 | USB2.0 x2 Port Header | Topt | PH200-205M-GBB0009D |
| FP_USB3 | USB2.0 x2 Port Header | Topt | PH200-205M-GBB0009D |
| PS2KBMS1 | PS/2 Keyboard and Mouse Header | DCNT | P525-07SG01ST403 |
| FP_AUDIO1 | Front Panel Line-Out, MIC-In Header | Topt | PH254-205S-GBB0008A |
| FP1 | Front Panel Header | DCNT | P525-05DG01ST408 |
| COM3 | RS232 Serial Port Header | Topt | PH200-205M-GBB00010D |
| COM4 | RS232 Serial Port Header | Topt | PH200-205M-GBB00010D |
| COM5 | RS232 Serial Port Header | Topt | PH200-205M-GBB00010D |
| COM6 | RS232 Serial Port Header | Topt | PH200-205M-GBB00010D |