# CMI300-1001

## Compact system with IBASE MI1001AF Mini-ITX Motherboard

# User's Manual

Version 1.0

## Copyright



## Disclaimer

IBASE assumes no liability for incidental or consequential damages resulting from misuse, inability to use the product, or reliance on the information herein, nor for any third-party rights infringements arising from its use.

## Trademarks

All the trademarks, registrations and brands mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective owners.

# Compliance

CE

This product has passed CE tests for environmental specifications and limits. This product is in accordance with the directives of the Union European (EU). If users modify and/or install other devices in this equipment, the CE conformity declaration may no longer apply.

FC

This product has been tested and found to comply with the limits for a Class B device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications.

## WEEE

In accordance with the EU Waste Electrical and Electronic Equipment (WEEE) Directive (2012/19/EU), this product must not be disposed of with regular household waste. Instead, return it to a designated municipal collection point. Please consult local regulations for proper disposal.

## Green IBASE


This product complies with RoHS 2 restrictions, which prohibit the use of certain hazardous substances in electrical and electronic equipment. The following substances do not exceed the specified maximum concentrations:

- Hexavalent chromium: 1,000 ppm
- Poly-brominated biphenyls (PBBs): 1,000 ppm
- Poly-brominated diphenyl ethers (PBDEs): 1,000 ppm
- Cadmium: 100 ppm
- Mercury: 1,000 ppm
- Lead: 1,000 ppm
- Bis(2-ethylhexyl) phthalate (DEHP): 1,000 ppm
- Butyl benzyl phthalate (BBP): 1,000 ppm
- Dibutyl phthalate (DBP): 1,000 ppm
- Diisobutyl phthalate (DIBP): 1,000 ppm

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# Important Safety Information

Carefully read the precautions before using the device.

### Environmental conditions:

- Lay the device horizontally on a stable and solid surface in case the device may fall, causing serious damage.
- Make sure you leave plenty of space around the devicefor ventilation.
- Use this product in environments with ambient temperatures 0˚C ~45˚C.

### Care for your IBASE products:

- Before cleaning, turn off the device and unplug all cables to avoid electrical risk.
- Use neutral cleaning agents or diluted alcohol to clean the device chassis with a cloth. Then wipe the chassis with a dry cloth.
- Use a computer vacuum to remove dust from vents and slots to maintain airflow.

**WARNING**

### Attention during use:

- Do not use this product near water.
- Do not spill water or any other liquids on your device.
- Do not place heavy objects on the top of the device.
- Operate this device from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your distributor or local power company.
- Do not walk on the power cord or allow anything to rest on it.
- If you use an extension cord, make sure that the total ampere rating of the product plugged into the extension cord does not exceed its limits.

### Avoid Disassembly

Do not disassemble, repair, or modify the device. Disassembly, modification, or any attempt at repair could generate hazards and cause damage to the device, even bodily injury or property damage, and will void any warranty.

**CAUTION**

Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

## Warranty Policy

- **IBASE standard products:**

  24-month (2-year) warranty from the date of shipment. If the date of shipment cannot be ascertained, the product serial numbers can be used to determine the approximate shipping date.

- **3rd-party parts:**

  12-month (1-year) warranty from delivery for the 3rd-party parts that are not manufactured by IBASE, such as CPU, memory, HDD, power adapter, panel and touchscreen.

* However, failures caused by misuse, accidents, improper installation, or unauthorized repairs are not covered by warranty. Repair and shipping costs in such cases will be the customer's responsibility.

## Technical Support & Services

1. Visit the IBASE website at www.ibase.com.tw to find the latest information about the product.
2. If you need any further assistance from your distributor or sales representative, prepare the following information of your product and elaborate upon the problem.

   - Product model name
   - Product serial number
   - Detailed description of the problem
   - The error messages in text or in screenshots if there is any
   - The arrangement of the peripherals
   - Software in use (such as OS and application software, including the version numbers)

3. If repair service is required, please go to the IBASE website and apply for an RMA number to fill out the RMA application form.

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# Table of Contents

# Chapter 1
# General Information

The information provided in this chapter includes:

- Features
- Packing List
- Optional Accessories
- Specifications
- Product View
- Dimensions

## 1.1 Introduction

The **CMI300-1001** is a compact and high-performance embedded system built with the IBASE MI1001AF Mini-ITX Motherboard, supporting the latest LGA1700 14th/13th/12th Gen Intel® Core™ desktop SoC processors. Designed for demanding applications, it accommodates up to 64GB of DDR5-5600 SO-DIMM memory and provides two M.2 sockets (E-key and M-key) for flexible storage and wireless expansion. The system delivers comprehensive connectivity with DisplayPort, HDMI, COM, and multiple USB 3.2 ports, alongside dual Intel® 2.5 Gigabit LAN and dual Intel® 10 Gigabit LAN interfaces for superior network performance. Additional features include support for Digital I/O, Intel® Active Management Technology (iAMT 16.1), and TPM 2.0 for enhanced security. Powered by a reliable +24V DC input, the CMI300-1001 is an ideal solution for industrial and embedded computing environments requiring robust performance and versatility.


## 1.2 Features

- LGA1700 for 14th/13th/12th Gen Intel® Core™ desktopSoC processor
- 2x M.2 sockets (E-key and M-key)
- 2x DDR5-5600 SO-DIMM, Max.64GB
- Supports DP, HDMI, COM and USB 3.2
- 2x Intel® 2.5G LAN & 2x Intel® 10G LAN
- Supports Digital I/O, iAMT(16.1), TPM (2.0)
- +24V DC input

## 1.3 Packing List

Your product package should include the items listed below. If any of the items below are missing, contact the distributor or the dealer from whom you purchased the product.

- CMI300-1001 x 1
- Wall mount kit (2 brackets) x 1
- Screws for wall mount kit x 4

## 1.4 Optional Accessories

IBASE provide optional accessories as follows. Please contact us or your dealer if you need any.

- DC power jack
- Power adaptor and power cord (for DC power jack)
- WiFi cable kit (KIT-16)
- VESA mounting kit

## 1.5 Specifications

| Product Model | CMI300-1001AF10GM |
|---|---|
| Product Description | (CMI) Embedded system with MI1001AF-10G & CPU cooler, w/o CPU/memory/SSD/Power adaptor, iAMT (16.1), mounting brackets (RoHS2) |
| **System** | |
| CPU | 14th/13th/12th Gen Intel® Core I / DT processors (RPL-S Refresh platform) |
| System Speed | Up to 5.8GHz |
| Memory | 2x DDR5-5600 SO-DIMM, Max. 64GB |
| Front Panel External I/O | • 4x Antenna holes(reserved)<br>• Power button with LED indicator |
| Rear Panel External I/O | • 4x USB 3.2<br>• 1x DisplayPort<br>• 1x HDMI<br>• 2x DB9 for COM (RS232/422/485)<br>• 2x 2.5G LAN<br>• 2x 10G LAN<br>• 1x 24V DC-input |
| Expansion Slots | • 2x M.2 sockets (E-key and M-key) |
| Storage | 1x M.2 (M2280), supports NVMe |
| Construction | • Aluminum &Steel |
| Chassis Color | Black |
| Mounting | • Desktop & wall mount bracket<br>• Optional VESA mounting kit |
| Dimensions | 200mm(W) x 200mm(D) x 62mm(H)<br>7.87” (W) x 7.87” (D) x 2.44” (H) |
| Others | • With active CPU cooler<br>• Optional power adaptor<br>• Power Requirement: 24V DC-in<br>• Operating System: Windows 10 /11, Ubuntu |
| Weight | 1.9 kg |
| Certification | CE, FCC Class B & LVD |

| Environment | |
|---|---|
| **Operating Temperature** | 0 °C ~ +45 °C (32°F~113°F) |
| **Storage Temperature** | -20°C~+80°C (-4°F~176°F) |
| **Relative Humidity** | 5 ~ 90% at 45 °C (non-condensing) |
| **Vibration** | Operating: 1 Grms / 3~500Hz |
| **Shock** | • Operating: 20 g / 11 ms<br>• Non-operating: 40 g / 11 ms |

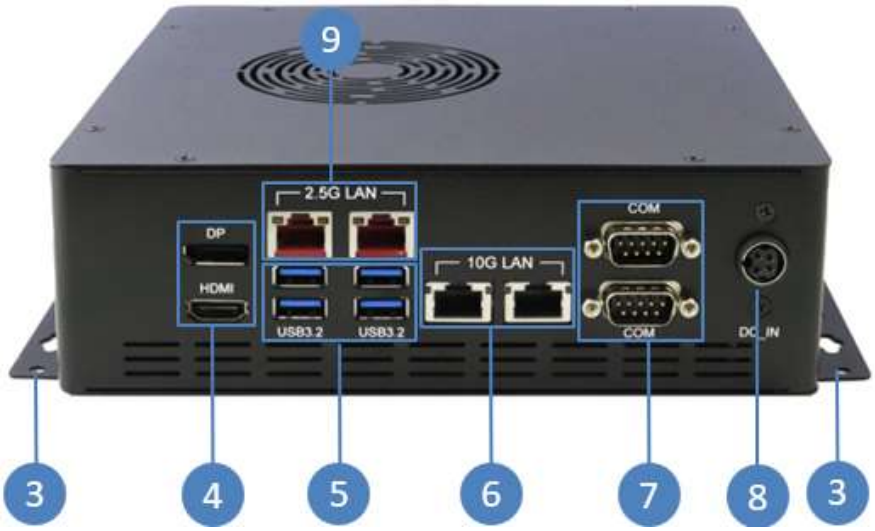
All specifications are subject to change without prior notice.

## 1.6 Product View

### CMI300-1001

## Front View


## Rear View

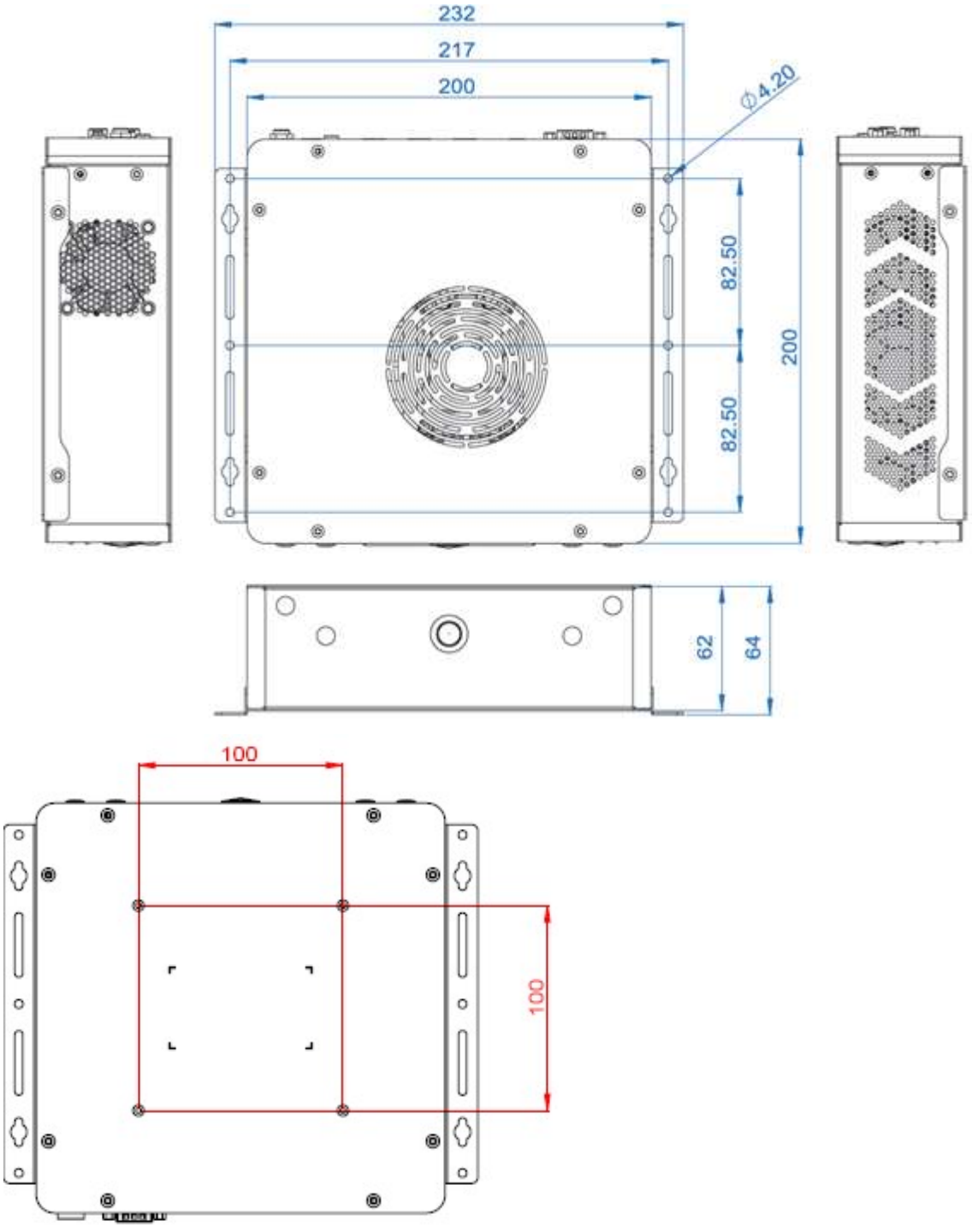



| No. | Name | No. | Name |
|---|---|---|---|
| 1 | Antenna holes | 5 | USB 3.2ports |
| 2 | Power button | 6 | 10G LAN Ports |
| 3 | Mounting brackets | 7 | COM1 RS-232/422/485 (top)<br>COM2 RS-232 (bottom) |
| 4 | DisplayPort and HDMI Port | 8 | DC-in |
| | | 9 | 2.5G LAN Ports |

## MI1001 Motherboard

## 1.7 CMI300-1001 Dimensions

Unit: mm



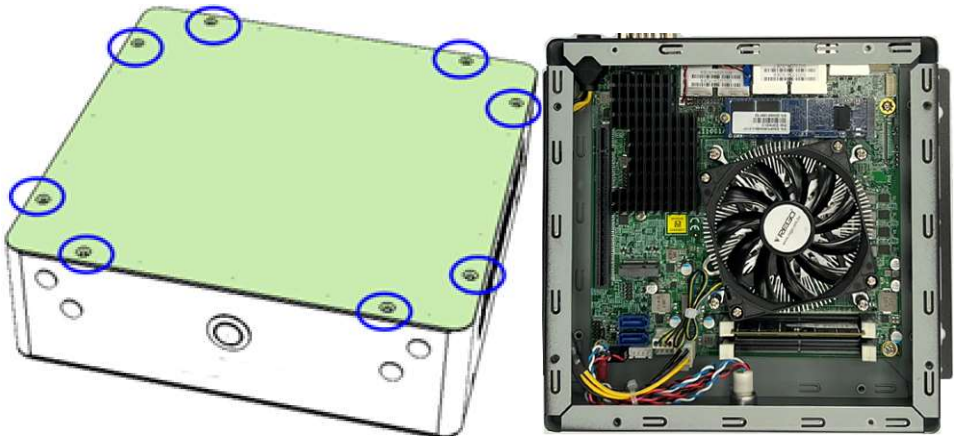
# Chapter 2
# Hardware Configuration

The information provided in this chapter includes:

- Installations
- Information and locations of connectors

## 2.1 Installations

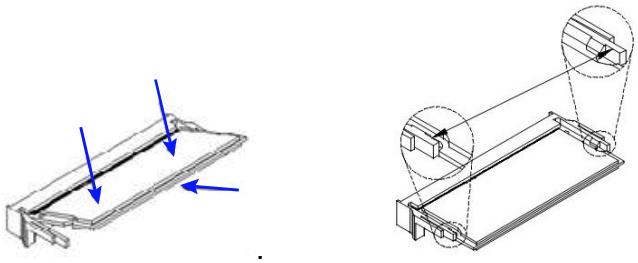
Before installation, turn your device upside down and remove the bottom chassis base by removing 8 screws as indicated below.



### 2.1.1 Memory Installation / Replacement

To install or replace a memory module, follow the instructions.

1. Locate the memory slots.
2. Align the key of your memory module with that on the memory slot and insert the module slantwise.
3. Gently push the module in an upright position until the clips click, locking the module in place when fully seated.

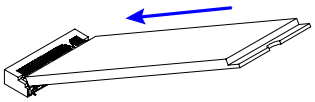


To remove the module, press the clips outwards with your thumb and index finger of both hands.

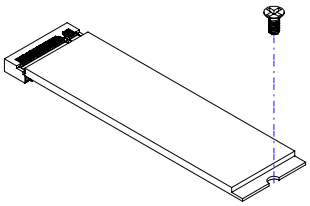
### 2.1.2 M.2Card Installation

To install an M.2 card, locate the socket and then follow these steps.

1. Align the key of the M.2 card to the M.2 interface, and insert the card slantwise.



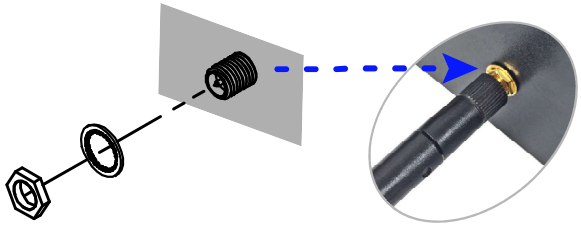
2. Push the M.2 card down, fix it onto the standoff with a screw.



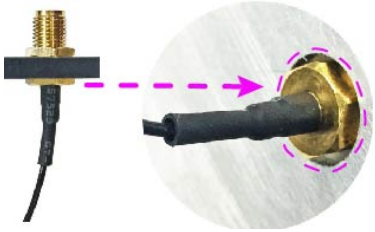
### 2.1.3 WiFi / 5G Antenna Installation

Thread the WiFi / 5G antenna extension cable through an antenna hole of the front I/O cover and fasten the antenna as shown below. Then apply adhesive around the edge of the hex nut behind the front I/O cover to prevent the extension cable from detaching if it becomes loose.

1. Thread and fasten the hex nut and the washer. Then install the antenna.



2. Apply adhesive around here.



**Info:**The diameter of the nut is around 6.35 mm (0.25”-36UNC).

### 2.1.4 Mounting Installation

#### Requirements

Before mounting the system, ensure there is enough room for the power adapter, signal cable routing, and adequate ventilation.The mounting method must support the weight of the system and any attached cables.

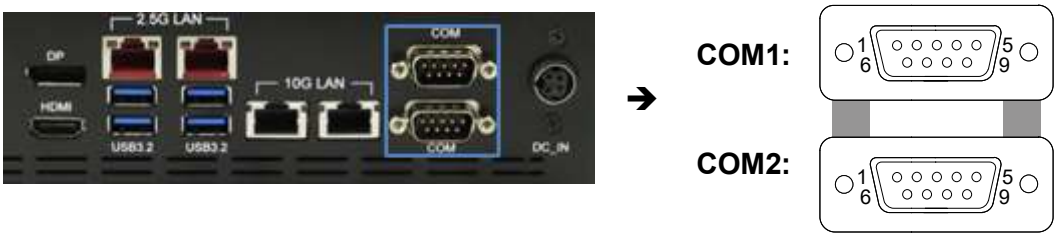
#### Wall Mounting Installation

1. Attach the two mountingbrackets and secure them with the supplied four screws as shown below.

2. Then prepare at least four screws(M3, 6 mm) to mount the device on the wall.

### 2.1.5 COM Ports& DC Power Connectors

- **COM1 & COM2 RS-232/422/485 Ports**




COM1 RS-232/422/485 (top) and COM2 RS-232 (bottom)portsare jumper-less and configurable in BIOS.
*Check motherboard section for the pin assignments.

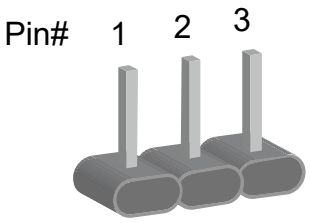
- **DC Power Input Connector**


| Pin | Assignment | Pin | Assignment |
|---|---|---|---|
| 1 | Ground | 2 | Ground |
| 3 | +24V | 4 | +24V |

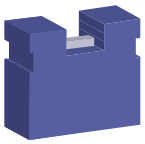
## 2.2 Setting the Jumpers

Set up and configure your product by using jumpers for various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your use.

Jumpers are short-length conductors consisting of several metal pins with a non-conductive base mounted on the circuit board. Jumper caps are used to have the functions and features enabled or disabled. If a jumper has 3 pins, you can connect either PIN1 to PIN2 or PIN2 to PIN3 by shorting.

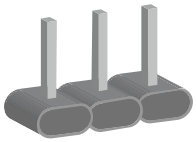
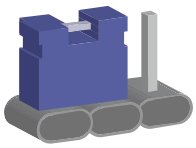
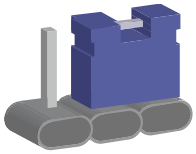
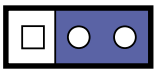



**A 3-pin jumper**



**A jumper cap**

Refer to the illustration below to set jumpers.

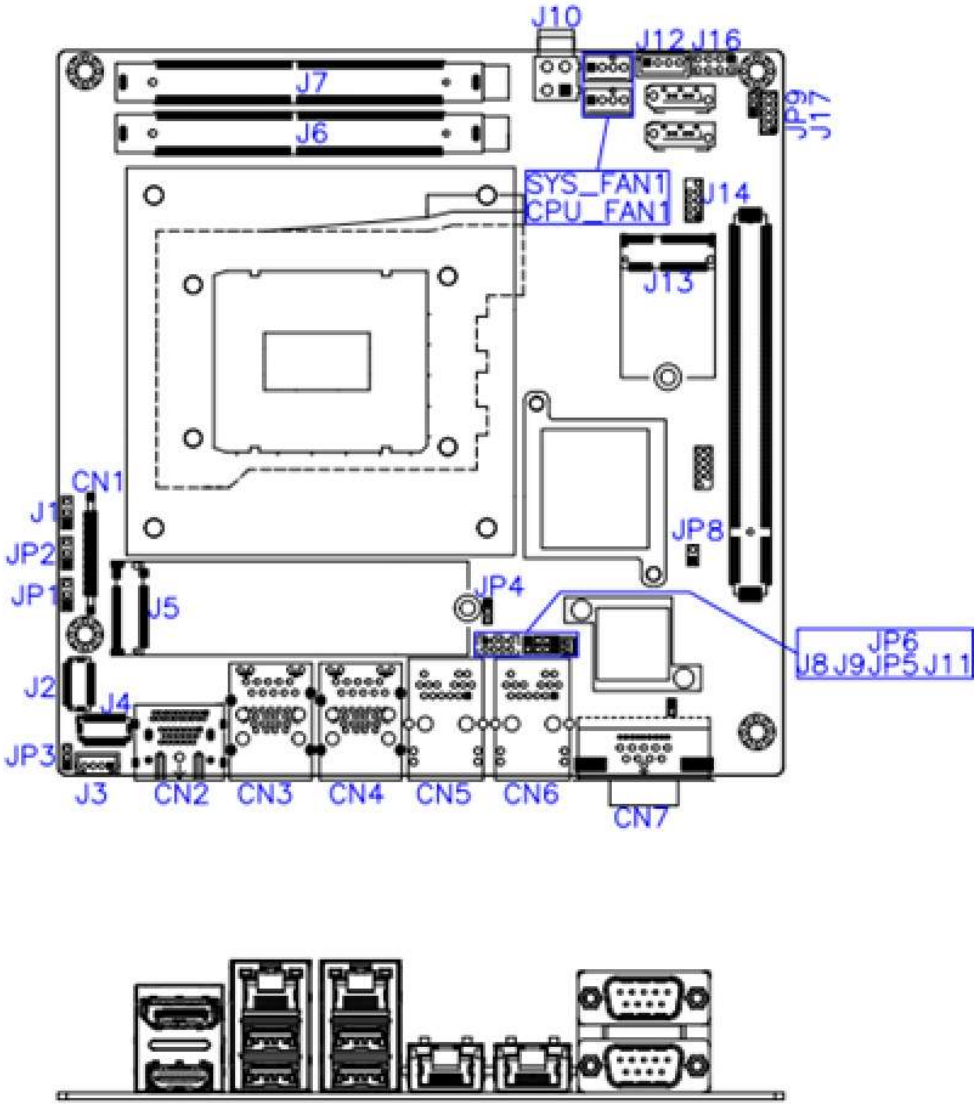
| Pin | Jumper | Illustration |
|---|---|---|
| Open |  |   |
| 1-2 Closed |  |   |
| 2-3 Closed |  |   |

When two pins of a jumper are encased in a jumper cap, this jumper is **closed**, i.e. turned **On**.

When a jumper cap is removed from two jumper pins, this jumper is **open**, i.e. turned **Off**.

## 2.3 Jumper &Connector Locations on Motherboard

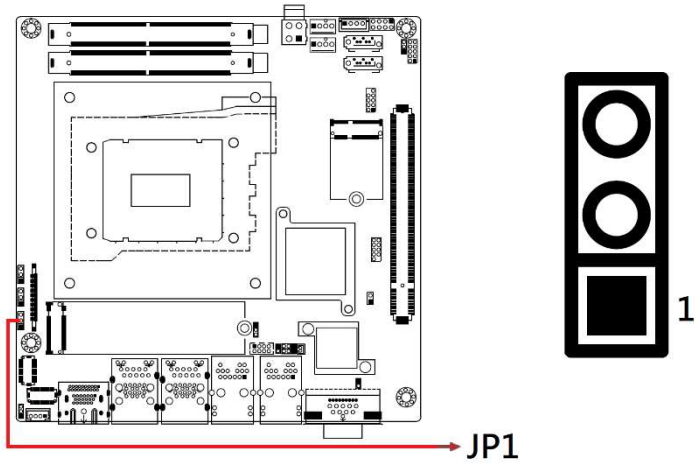
Motherboard: MI1001



## 2.4 JumpersQuick Reference

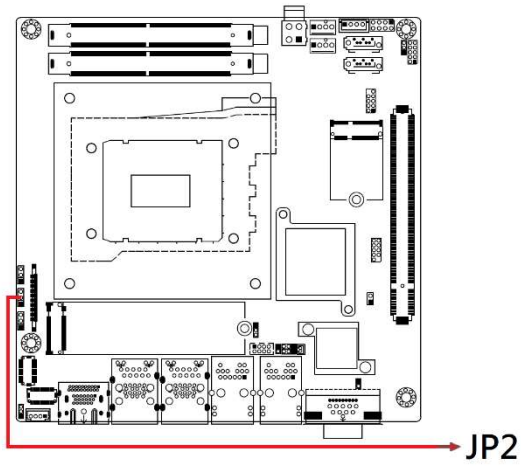
| Jumper | Function |
|---|---|
| JP1 | LVDS Power Selection |
| JP2 | eDP Panel Power Selection |
| JP3 | LVDS Power Brightness Selection |
| JP4 | PCIe (x16) Bifurcation Selection |
| JP5 | Clear CMOS Data |
| JP6 | Clear RTC |
| JP8 | Flash Descriptor Security Override (Factory use only) |
| JP9 | AT / ATX Selection |

### 2.4.1 JP1: LVDS Power Selection

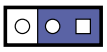
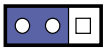



| Function | Pin closed | Illustration |
|---|---|---|
| 3.3V(default) | 1-2 |  1 |
| 5V | 2-3 |  1 |

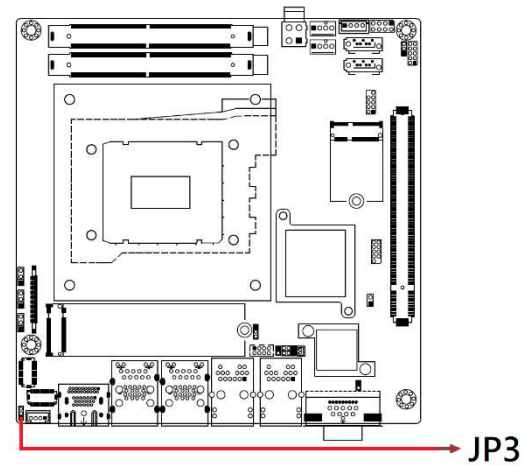
### 2.4.2 JP2: eDP Panel Power Selection



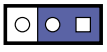
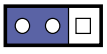


| Function | Pin | Illustration |
|---|---|---|
| 3.3V(default) | 1-2 |  |
| 5V | 2-3 |  |

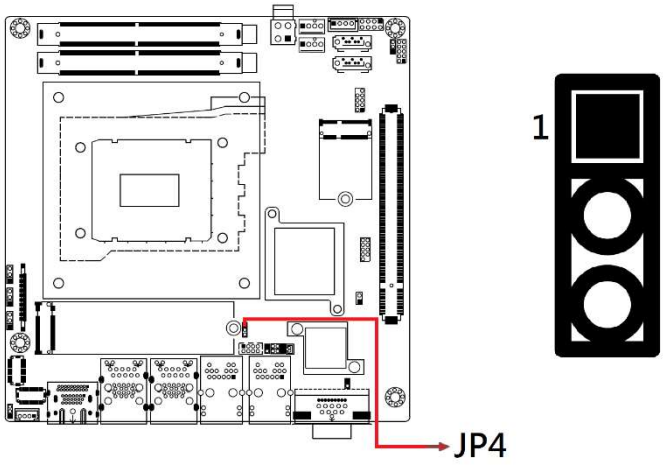
### 2.4.3 JP3: LVDS Power Brightness Selection





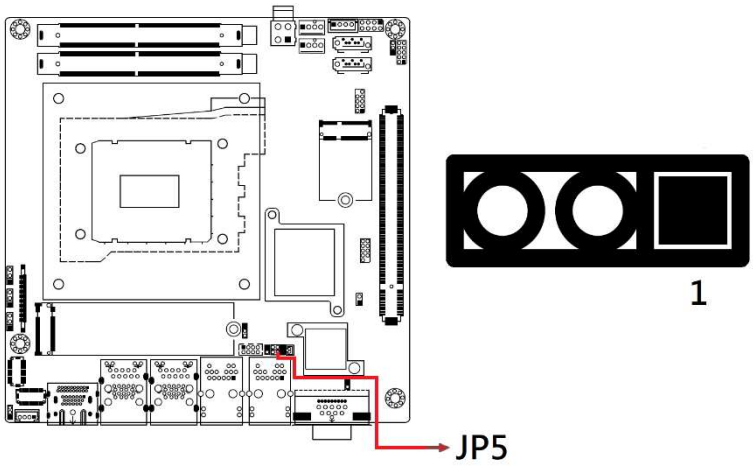
| Function | Pin | Illustration |
|---|---|---|
| 3.3V(default) | 1-2 |  |
| 5V | 2-3 |  |

### 2.4.4 JP4: PCI Express Bifurcation



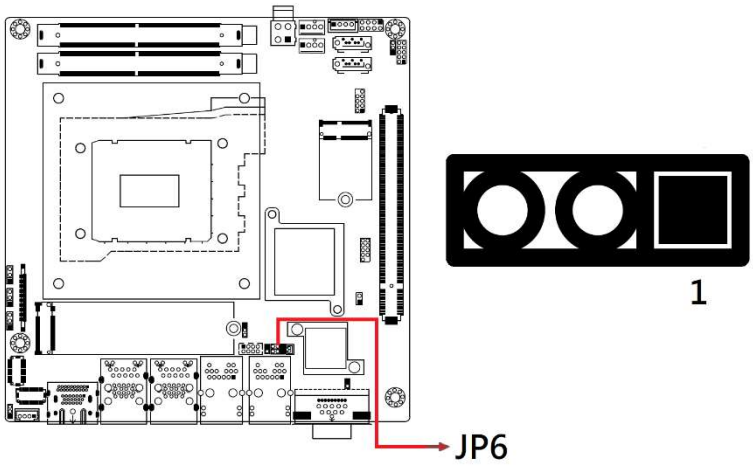

| Function | Pin closed | Illustration |
|---|---|---|
| 1 x PCIe (x16) (default) | 1-2 | 1 |
| 2 x PCIe (x8) | 2-3 | 1 |

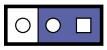
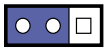
### 2.4.5 JP5: Clear CMOS



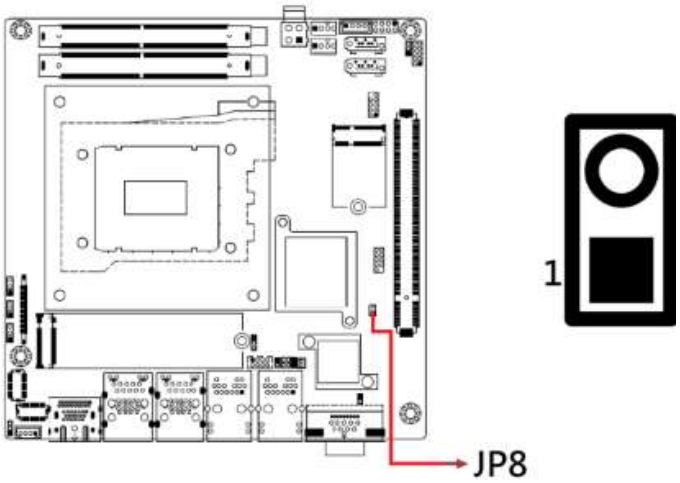

| Function | Pin closed | Illustration |
|---|---|---|
| Normal(default) | 1-2 | 1 |
| Clear CMOS | 2-3 | 1 |

### 2.4.6 JP6: Clear ME RTC



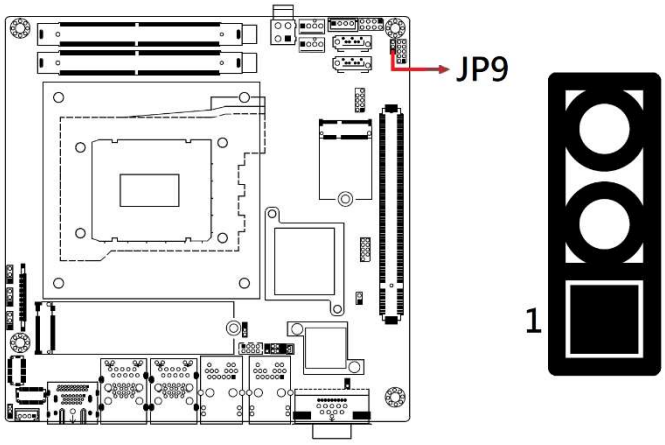

| Function | Pin closed | Illustration |
|---|---|---|
| Normal(default) | 1-2 |  |
| Clear ME RTC | 2-3 |  |

### 2.4.7 JP8: Flash Descriptor Security Override (Factory use only)




| Flash Descriptor Security Override | Pin | Illustration |
|---|---|---|
| Disabled (default) | Open |  |
| Enabled | Close |  |

### 2.4.8 JP9:AT/ATX Select



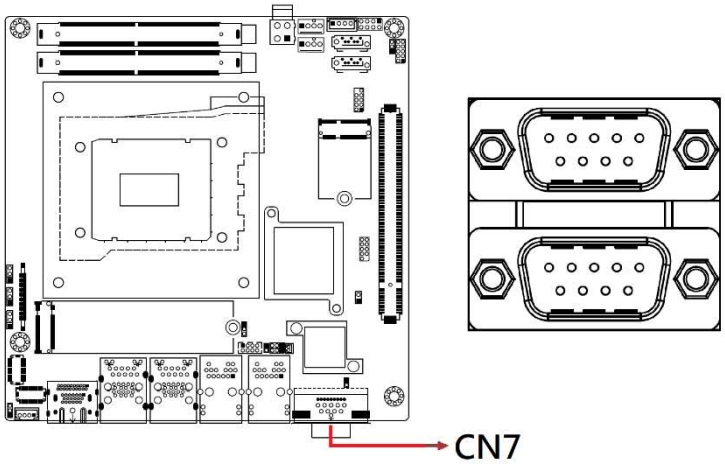

| Function | Pin closed | Illustration |
|---|---|---|
| ATX(default) | 1-2 | 1 |
| AT | 2-3 | 1 |

### 2.4.9 Connectors Quick Reference

| Connector | Function |
|---|---|
| CN7 (top) | COM1 RS-232/422/485 Port |
| CN7 (bottom) | COM2 RS-232 Port |
| CN8, CN9 | SATA Connectors |
| CN1 | eDP Connector |
| J2, J4 | LVDS Connector (1st/2nd channel) |
| J3 | LCD Backlight Connector |
| J6, J7 | DDR5 UDIMM CHA/CHB |
| J8 | USB 2.0 #5/#6 Connector |
| J10 | 24V DC_IN Power Connector |
| J12 | SATA HDD Power Connector |
| J13 | M.2 E-Key Socket |
| J16 | Front Panel Connector |
| J17 | Digital I/O Connector (4 in, 4 out) |
| CPU_FAN1 | CPU Fan Power Connector |
| SYS_FAN1 | System Fan Power Connector |

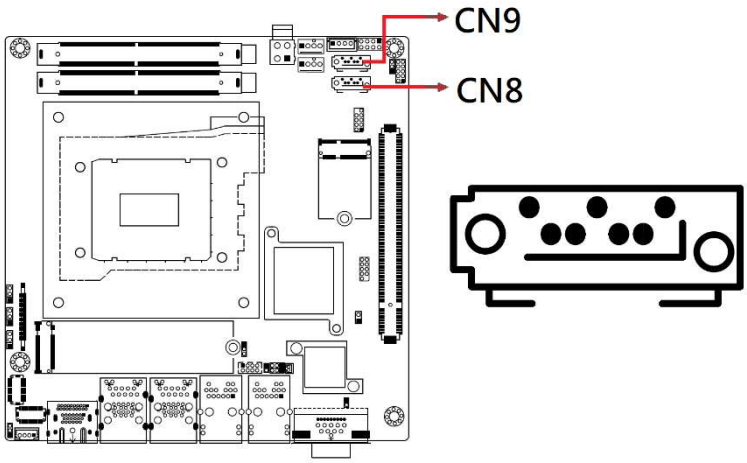
### 2.4.10 CN7(top):COM1 RS-232/422/485 Port

### 2.4.11 CN7(bottom):COM2 RS-232 Port



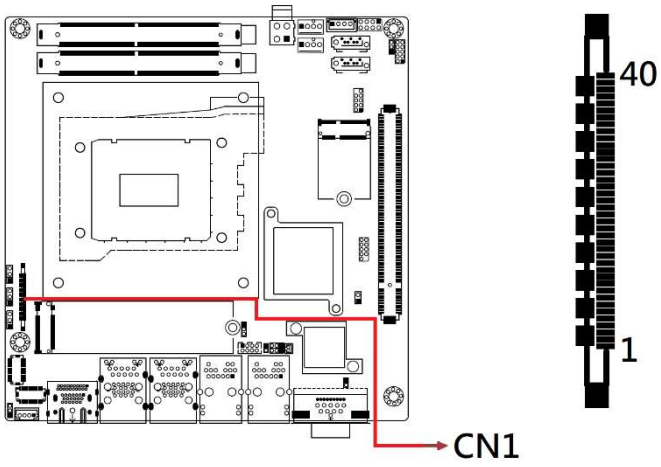

| Pin | Signal Name | | |
|---|---|---|---|
| | RS-232 | RS-422 | RS-485 |
| 1 | DCD | TX- | DATA- |
| 2 | RX | TX+ | DATA+ |
| 3 | TX | RX+ | NC |
| 4 | DTR | RX- | NC |
| 5 | Ground | Ground | Ground |
| 6 | DSR | NC | NC |
| 7 | RTS | NC | NC |
| 8 | CTS | NC | NC |
| 9 | RI | NC | NC |
| 10 | NC | NC | NC |

### 2.4.12 CN8, CN9: SATA Connectors



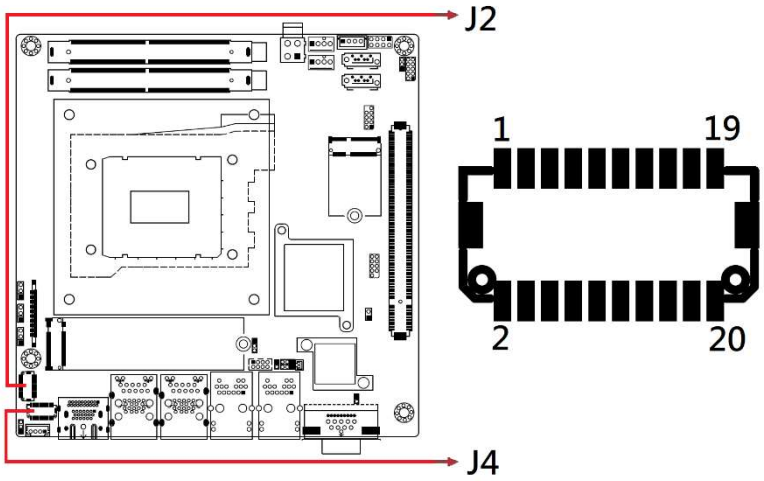

| Pin | Signal Name |
|---|---|
| 1 | Ground |
| 2 | TX+ |
| 3 | TX- |
| 4 | Ground |
| 5 | RX- |
| 6 | RX+ |
| 7 | Ground |

### 2.4.13 CN1: eDP Connector



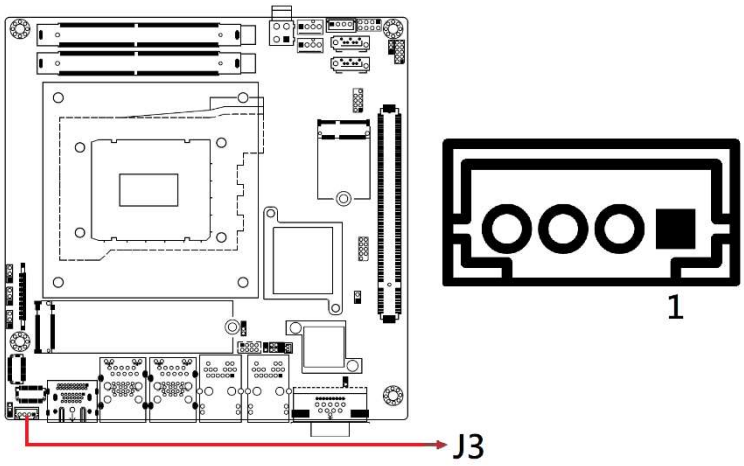

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | eDP VCC | 21 | TXN0 |
| 2 | eDP VCC | 22 | TXP0 |
| 3 | eDP VCC | 23 | Ground |
| 4 | eDP VCC | 24 | AUXP |
| 5 | eDP VCC | 25 | AUXN |
| 6 | Ground | 26 | NC |
| 7 | Ground | 27 | +3.3V |
| 8 | Ground | 28 | +12V |
| 9 | Ground | 29 | NC |
| 10 | Hot Plug detect | 30 | Ground |
| 11 | Ground | 31 | +5V |
| 12 | TXN3 | 32 | NC |
| 13 | TXP3 | 33 | Back Light Control |
| 14 | Ground | 34 | Back Lignt Enable |
| 15 | TXN2 | 35 | +12V |
| 16 | TXP2 | 36 | +3.3V |
| 17 | Ground | 37 | Ground |
| 18 | TXN1 | 38 | NC |
| 19 | TXP1 | 39 | NC |
| 20 | Ground | 40 | NC |

### 2.4.14 J2, J4 LVDS Connector (1st ch, 2nd ch)



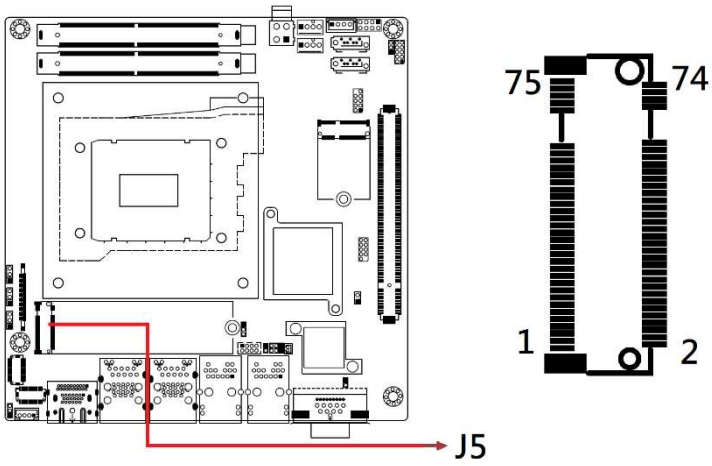

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | TX0P | 2 | TX0N |
| 3 | Ground | 4 | Ground |
| 5 | TX1P | 6 | TX1N |
| 7 | Ground | 8 | Ground |
| 9 | TX2P | 10 | TX2N |
| 11 | Ground | 12 | Ground |
| 13 | CLKP | 14 | CLKN |
| 15 | Ground | 16 | Ground |
| 17 | TX3P | 18 | TX3N |
| 19 | VDD | 20 | VDD |

### 2.4.15 J3: LCD Backlight Connector

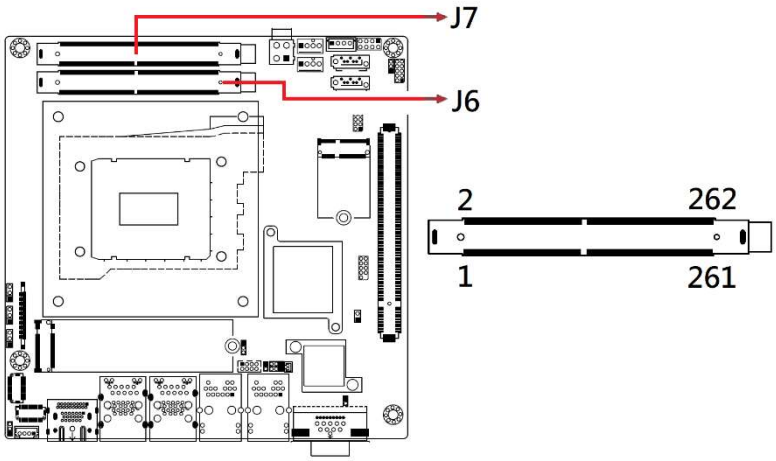



| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | +12V | 3 | Brightness Control |
| 2 | Backlight Enable | 4 | Ground |

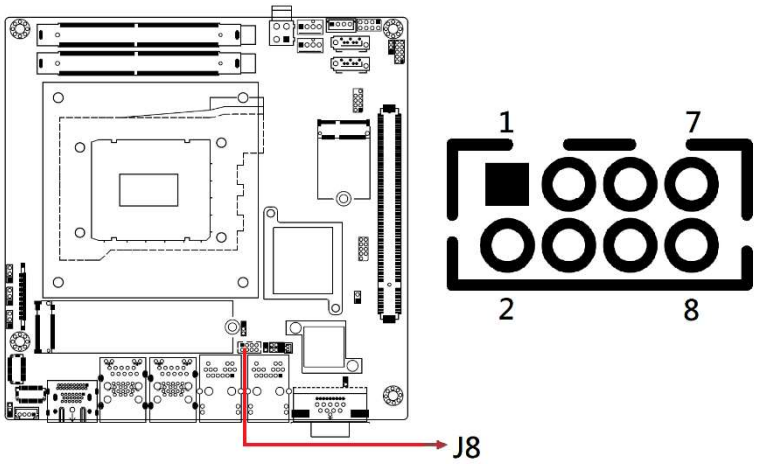
### 2.4.16 J5: M.2 M-Key NVME (CPU)



### 2.4.17 J6, J7:DDR5 UDIMM CHA/CHB

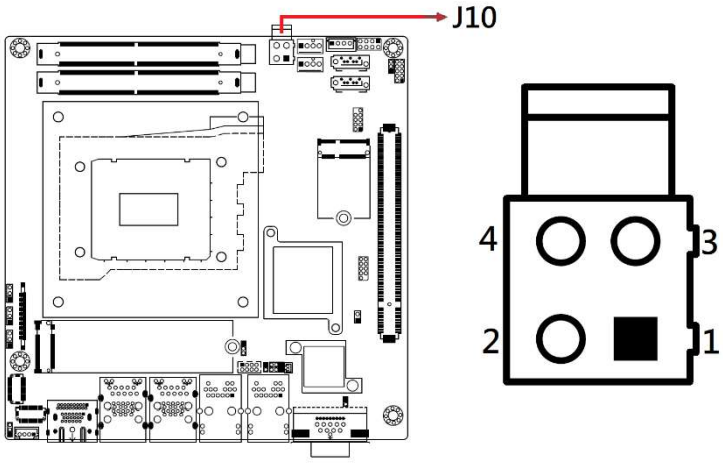



### 2.4.18 J8:USB 2.0 #5/#6 Connector



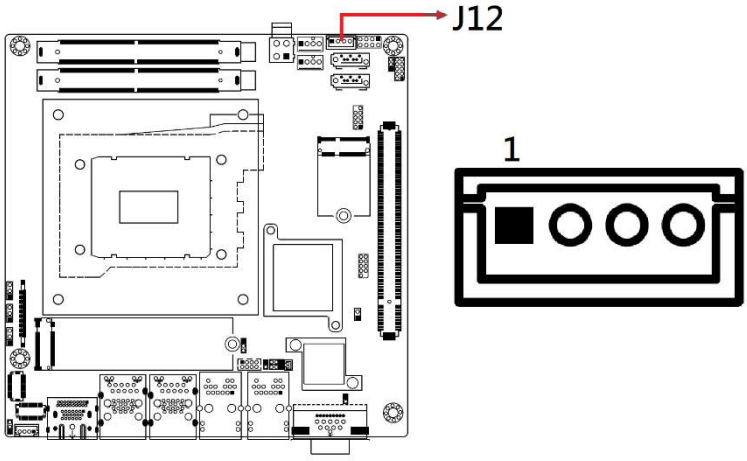

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | Vcc | 2 | Ground |
| 3 | D5- | 4 | D6+ |
| 5 | D5+ | 6 | D6- |
| 7 | Ground | 8 | Vcc |

### 2.4.19 J10: 24V DC_IN Power Connector



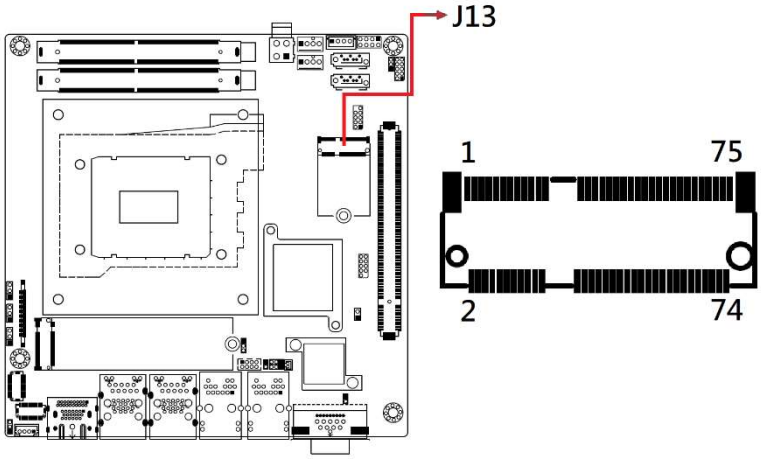

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | Ground | 3 | +24V |
| 2 | Ground | 4 | +24V |

### 2.4.20 J12: SATA HDD Power Connector

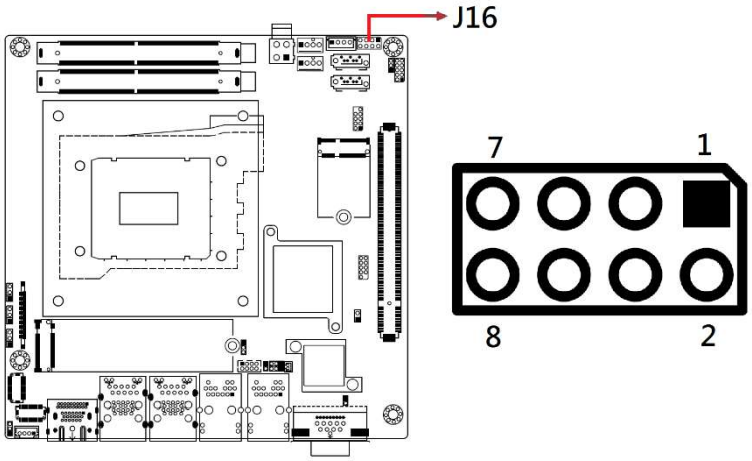



| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | +5V | 3 | Ground |
| 2 | Ground | 4 | +12V |

### 2.4.21 J13:M.2 E-KeySocket

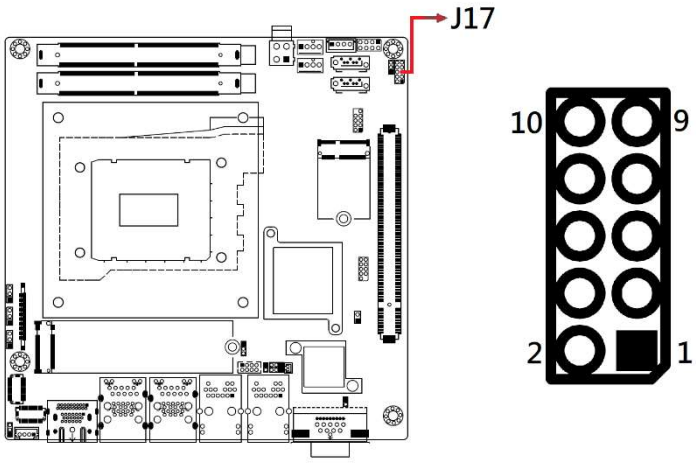



### 2.4.22 J16: Front Panel Connector



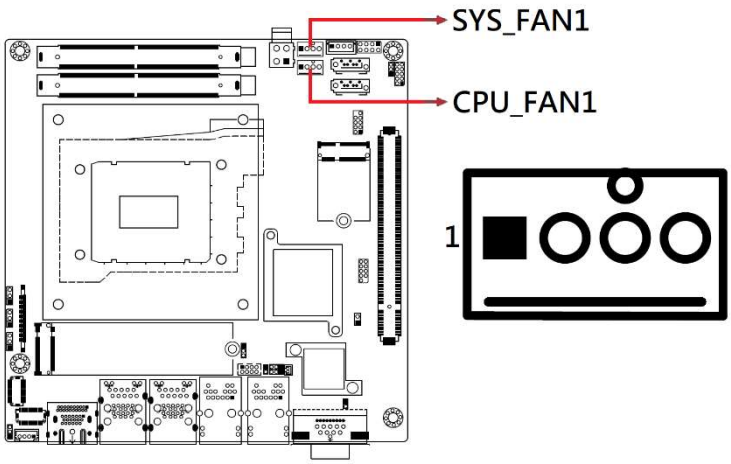

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | Power BTN | 2 | Power BTN |
| 3 | HDD LED+ | 4 | HDD LED- |
| 5 | Reset BTN | 6 | Reset BTN |
| 7 | Power LED+ | 8 | Power LED- |

### 2.4.23 J17:Digital I/O Connector (4 in, 4 out)




| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | Ground | 2 | +5V |
| 3 | Out3 | 4 | Out1 |
| 5 | Out2 | 6 | Out0 |
| 7 | IN3 | 8 | IN1 |
| 9 | IN2 | 10 | IN0 |

### 2.4.24 CPU_FAN1:CPU Fan Power Connector




| Pin | Signal Name |
|---|---|
| 1 | Ground |
| 2 | +12V |
| 3 | Rotation detection |
| 4 | Control |

**Note: PWM Only**

### 2.4.25 SYS_FAN1: System Fan Power Connector

| Pin | Signal Name |
|---|---|
| 1 | Ground |
| 2 | +12V |
| 3 | Rotation detection |
| 4 | Control |

**Note: PWM Only**

# Chapter 3
# Driver Installation

This chapter contains the following information:

- Intel® Chipset Software Installation Utility
- VGA Driver Installation
- Realtek HD Audio Driver Installation
- LAN Drivers Installation
- Intel® ME Drivers Installation
- Intel® Serial IO Drivers Installation

## 3.1 Introduction

This section describes the installation procedures for software and drivers. The contents of this section include the following:

**Note:** After installing your Windows operating system, you must install the Intel® Chipset Software Installation Utility first before proceeding with the driver installation.

## 3.2 Intel® Chipset Software Installation Utility

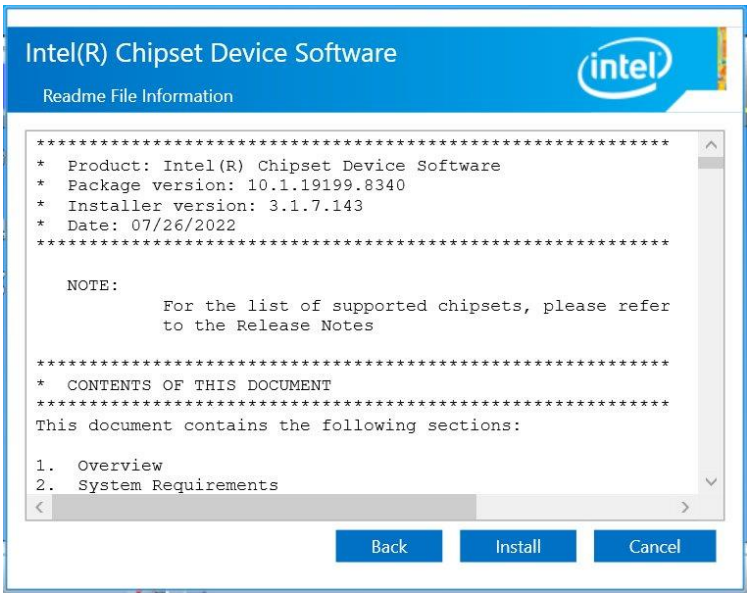
The Intel®Chipset drivers should be installed first before the software drivers to install INF files for Plug & Play function for Intel chipset components. Follow the instructions below to complete the installation.

1. The software drivers are available onthe IBASE website. Go to the download page of the product. Copy the compressed drivers file to your computer. Double click the file to decompress it. Run “CDGuide” to go to the main drivers page. Click **Intel** on the left pane and then **Intel(R) AlderLake-S/RaptorLake-S Chipset Drivers**, and **Intel(R) Chipset Software Installation Utility** on the right pane.


2. When the *Welcome* screen to the Intel®Chipset Device Software appears, click **Next** tocontinue.


3. Acceptthe terms in the *License Agreement* and click **Accept**.

4. On the *Readme File Information* screen, click**Install**.




5. When the driver has been completely installed, press**Finish** to complete the setupprocess.

## 3.3 VGA Driver Installation

1. Click **Intel** on the left pane and then **Intel(R) AlderLake-S/RaptorLake-S Chipset Drivers**, and **Intel(R) HD Graphics Driver** on the right pane.

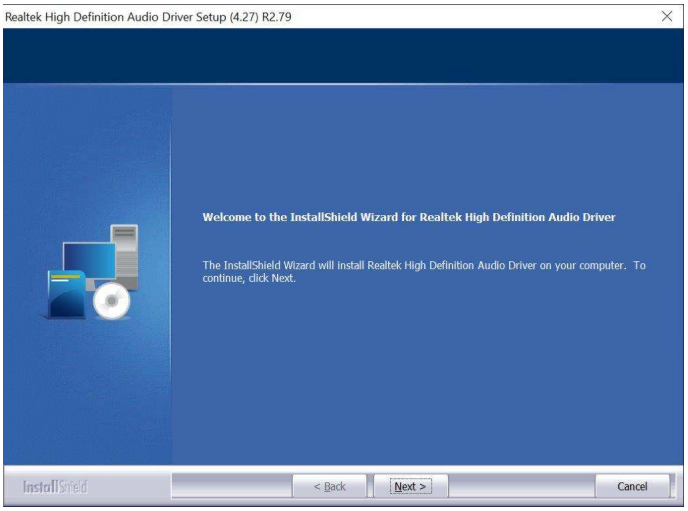

2. When the ***Intel Graphics Driver Installer*** screenappears, click **Begin installation**.


3. Click **I agree** to accept the INTEL SOFTWARE LICENSE AGREEEMENT.
4. In the Pre-Install stage, press **Start** to start installing the new graphics driver.
5. The next screen will indicate that the new graphics driver is being installed. When the message "**Installation complete!**" appears, restartyoursysteminordertoapplythedriverchanges.

## 3.4 Realtek HDAudio Driver Installation

1. Click **Intel** on the left pane and then **Intel(R) AlderLake-S/RaptorLake-S Chipset Drivers**, and **Realtek High Definition Audio Driver**on the right pane.

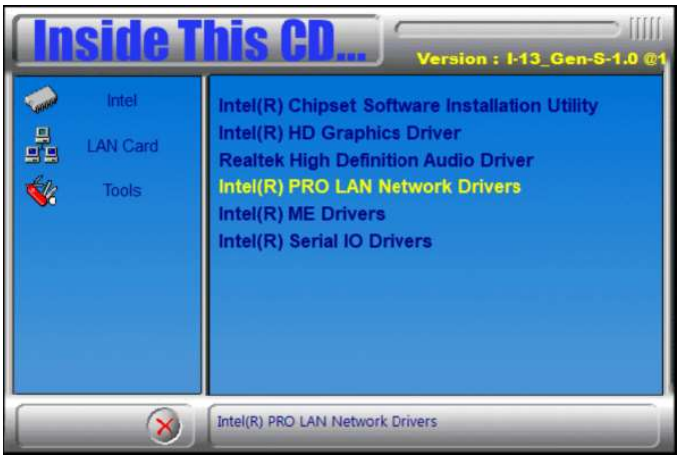

2. On the *Welcome*screen of the InstallShield Wizard, click**Next** to install the drivers.



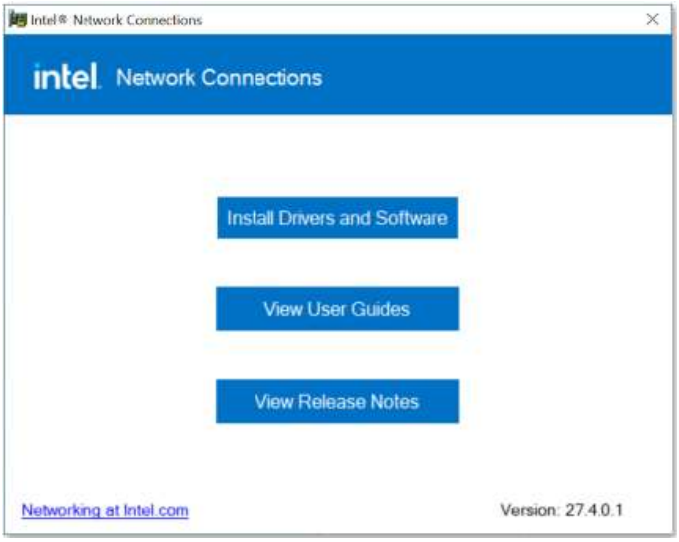

3. When the audio driver has been successfullyinstalled, press**Finish** to restart thecomputer.

## 3.5 LAN Drivers Installation

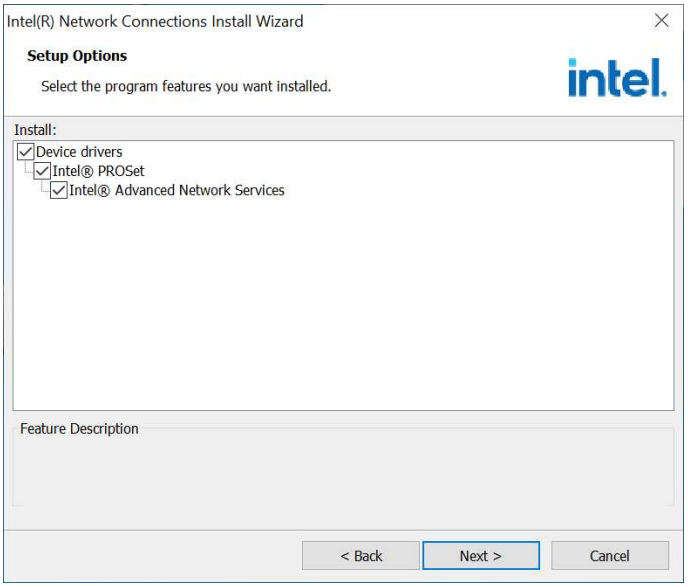
1. Click **LAN Card** on the left paneand then **Intel PRO LAN Network Drivers**on the right pane.




2. Click**Install Drivers and Software**.



3. When the Welcome to the install wizard for Intel(R) Nework Connection screen appears,press**Next**.
4. On the *Setup Options* screen, select the program features you want installed. Then press **Next** to continue.

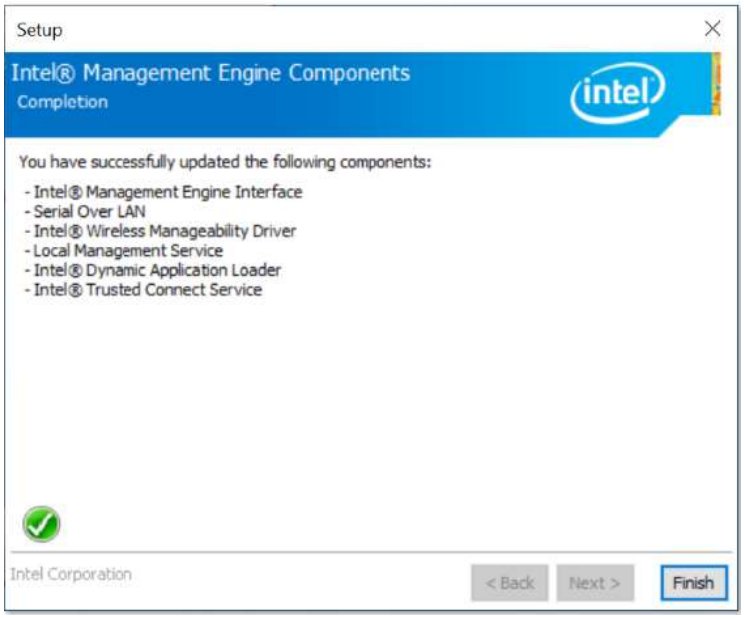



5. On the *Ready to Install the Program* screen, press **Install** to begin the installation.
6. When the *Install wizard Completed* screen appears, press **Finish**.

## 3.6 Intel®ME Drivers Installation

1. Click **Intel** on the left pane and then **Intel(R) AlderLake-S/RaptorLake-S Chipset Drivers,** and **Intel(R) ME Drivers** on the right pane.


2. When the *Welcome* screen to the **Intel® Management Engine Components**appears, press**Next**.
3. Accept the terms in the License Agreement and press**Next**.
4. On the next screen, press**Next**to install to the default folder.
5. Press**Finish** when the necessary components have been successfully installed.



## 3.7 Intel®Serial IO Drivers Installation

1. Click **Intel** on the left pane and then **Intel(R) AlderLake-S/RaptorLake-S ChipsetDrivers,** and **Intel(R) Serial IO Drivers** on the right pane.


2. When the *Welcome* screen to the Intel® Serial IO appears, click **Next**.


3. Accept the terms in the license agreement and press**Next**.
4. On the **Readme File Information** and **Confirmation** screens, press**Next**. Press **Finish** when the**Completion** screen appears.

# Chapter 4
# BIOS Setup

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

- Main Settings
- Advanced Settings
- Chipset Settings
- Security Settings
- Boot Settings
- Save & Exit

## 4.1 Introduction

The BIOS (Basic Input/Output System) installed in the ROM of your computer system supports Intel® processors. The BIOS provides critical low-level support for standard devices such as disk drives and serial ports. It also provides password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

## 4.2 BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup.

If you still need to enter Setup, restart the system by pressing the ”Reset” button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys.
You can also restart by turning the system Off and back On again.

The following message will appear on the screen:

```
Press <DEL> to Enter Setup
```

In general, press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help, and <Esc> to quit.

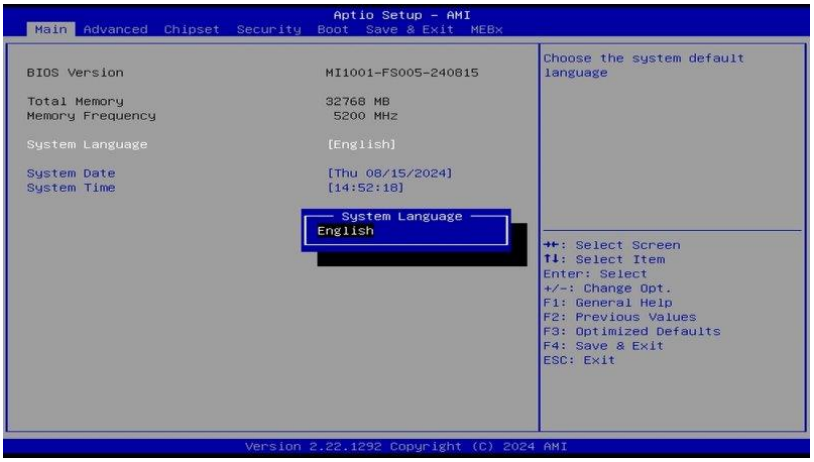
When you enter the BIOS Setup utility, the *Main Menu* screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

---

**Warning:** Do not modify the chipset default settings unless necessary. These defaults have been carefully selected by AMI and the system manufacturer to ensure optimal performance and stability. Changing them may result in system instability or crashes.

---

## 4.3 Main Settings




| BIOS Setting | Description |
|---|---|
| SystemLanguage | Choosethesystemdefaultlanguage. |
| System Date | Sets the date. Use the <Tab>key to switch between the date elements. |
| System Time | Set the time. Use the <Tab>key to switch between the time elements. |

## 4.4 Advanced Settings

**This section allows you to configure, improve your system and allows you to set up some system features according to your preference.**

### 4.4.1 ConnectivityConfiguration


| BIOS Setting | Description |
|---|---|
| BT Audio Offload | This is an option to enable/disable BT audio offload which enables audio input from BT device to the audio DSP and enables power efficient audio output to BT device. |
| RFI Mitigation | This is an option intended to enable/disable DDR-RFIM feature for Connectivity. This feature may result in temporary slowdown of the DDR speed. |
| Preboot BLE | This will be used to enable Preboot Bluetooth function. |
| Discrete Bluetooth Interface | Seriallo UARTO needs to be enabled to select BT interace. |
| BT Tile Mode | Enable/Disable Tile. |
| Advanced Settings | Configure ACPI objects for wireless devices. |
| WWAN Configuration | Configure WWAN related options. |
| WWAN Device | Select the M.2 WWAN Device options to enable 4G – 7360/7560 (Intel), 5G- M80 (MediaTek) Modems |

### 4.4.2 CPU Configuration


| BIOS Setting | Description |
|---|---|
| Intel (VMX) Virtualization Technology | When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology. |
| Active Performance-cores<br>Active Efficient-cores | Number of P-cores to enable in each processor package. Note: Number of Cores and E-cores are looked at together. When both are (0,0), Pcode will enable all cores |
| Hyper-Threading | Enable or disable Hyper-Threading Technology. |
| Legacy Game Compatibility Mode | When enabled, pressing the scroll lock key will toggle the Efficient-cores between being parked when Scroll Lock LED is on and un-parked when LED is off. |

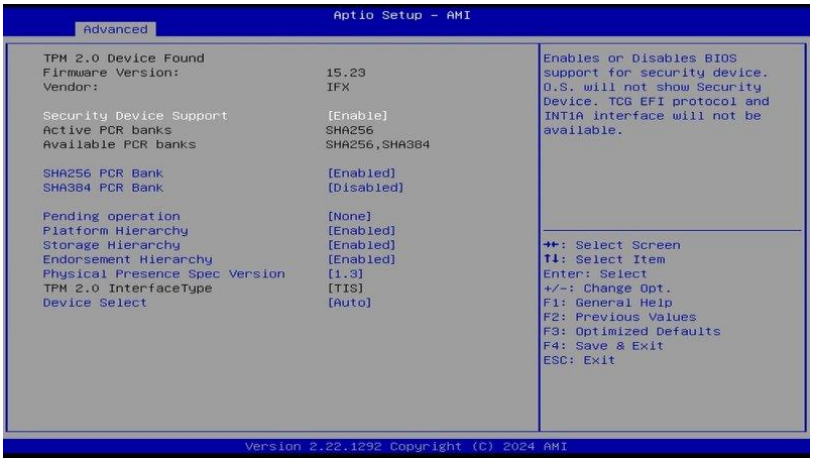
### 4.4.3 Power & Performance


| BIOS Setting | Description |
|---|---|
| Intel(R) SpeedStep(tm) | Allows more than two frequency ranges to be supported. |
| Intel(R) Speed Shift Technology | Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states. |
| Turbo Mode | Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled. |

### 4.4.4 PCH-FW Configuration

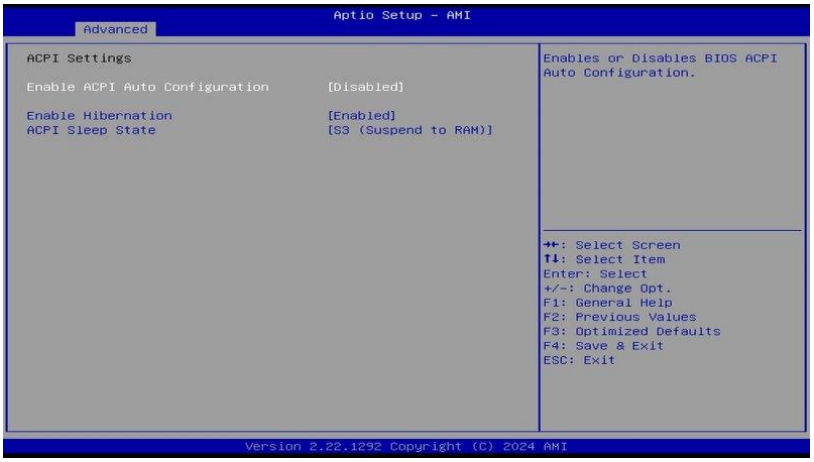

| BIOS Setting | Description |
|---|---|
| ME State | When Disabled ME will be put into ME Temporarily Disabled Mode. |
| Manageability Features State | Enable/Disable Intel(R) Manageability features.<br>**Note:** This option disables/enables Manageability Features support in FW. To disable support platform must be in an unprovisioned state first. |
| AMT BIOS Features | When disabled AMT BIOS Features are no longer supported and user is no longer able to access MEBx Setup.<br>**Note:** This option does not disable Manageability Features in FW. |

### 4.4.5 Trusted Computing



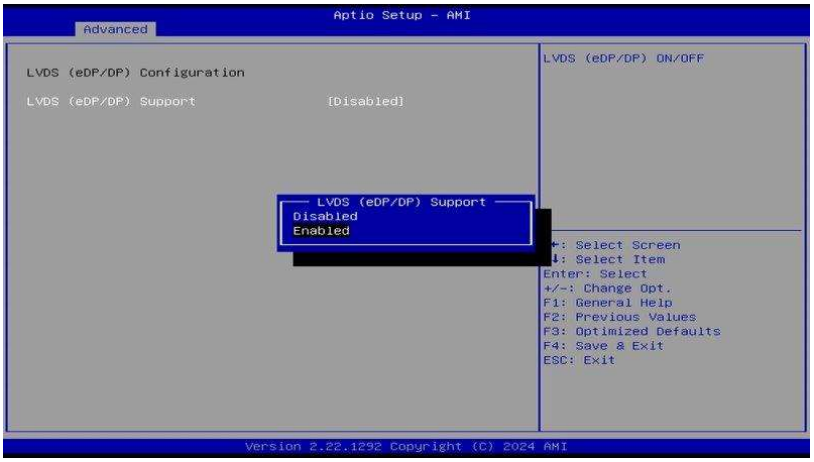

| BIOS Setting | Description |
|---|---|
| Security Device Support | Enables / Disables BIOS support for security device. OS will not show security device. TCG EFI protocol and INTIA interface will not be available. |
| SHA256 / SHA384/ SH3_256 PCR Bank | Option: Enabled / Disabled |
| Pending operation | Schedule an operation for the security device.<br>Note: Your computer will reboot during restart in order to change state of security device. |
| Platform Hierarchy | Enables / Disables platform hierarchy. |
| Storage Hierarchy | Enables / Disables storage hierarchy. |
| Endorsement Hierarchy | Enables / Disables endorsement hierarchy. |
| Physical Presence Spec Version | Select to tell O.S to support PPI Spec Version (1.2 or 1.3).<br>**Note:** Some HCK tests might not support 1.3. |
| Device Select | Auto will support TPM 1.2 / 2.0 devices with the default set to TPM 2.0. If not found, TPM 1.2 devices will be enumerated |

### 4.4.6 ACPI Settings




| BIOS Setting | Description |
|---|---|
| Enable ACPI Auto Configuration | Enables or Disables BIOS ACPI Auto Configuration |
| Enable Hibernation | Enables / Disables the system ability to hibernate (OS/S4 Sleep State). This option may be not effective with some OS. |
| ACPI Sleep State | Select the highest ACPI sleep state the system will enter when the Suspend button is pressed.<br>Options: Suspend Disabled, S3 (Suspend to RAM) |

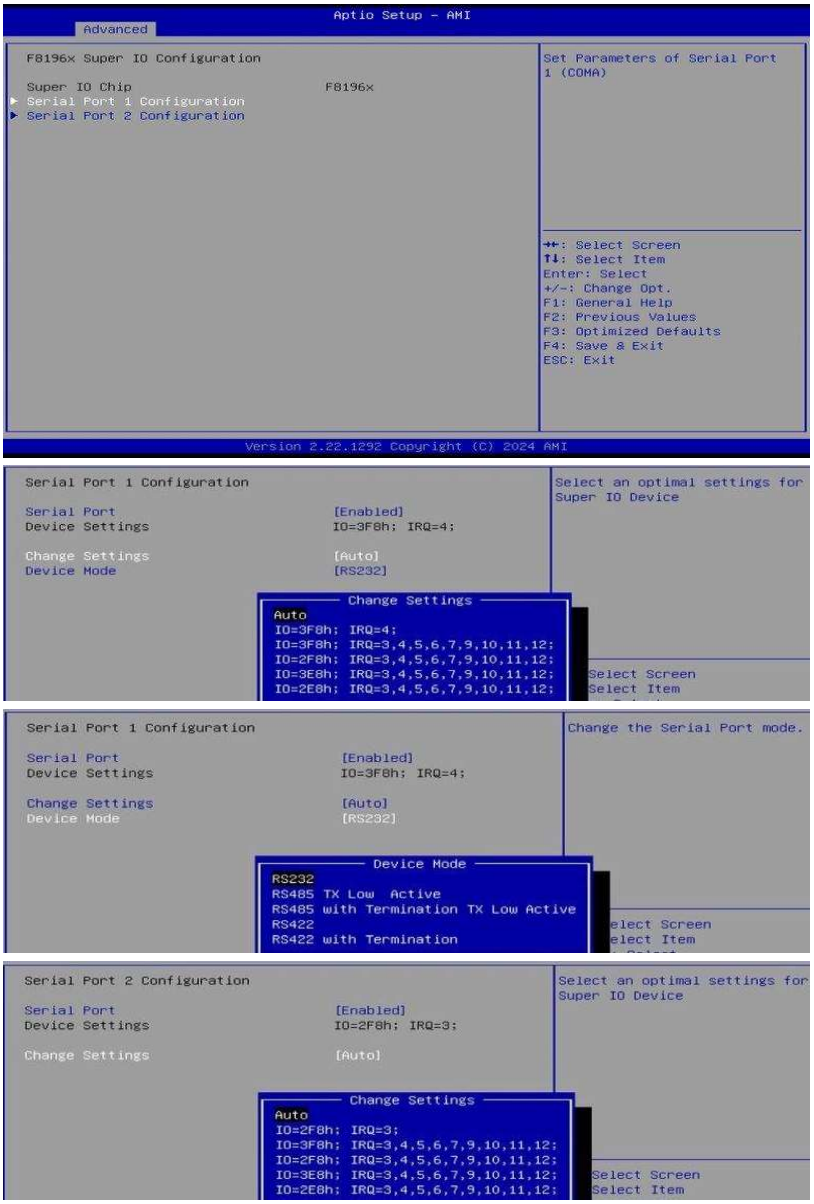
### 4.4.7 LVDS (eDP/DP)Configuration



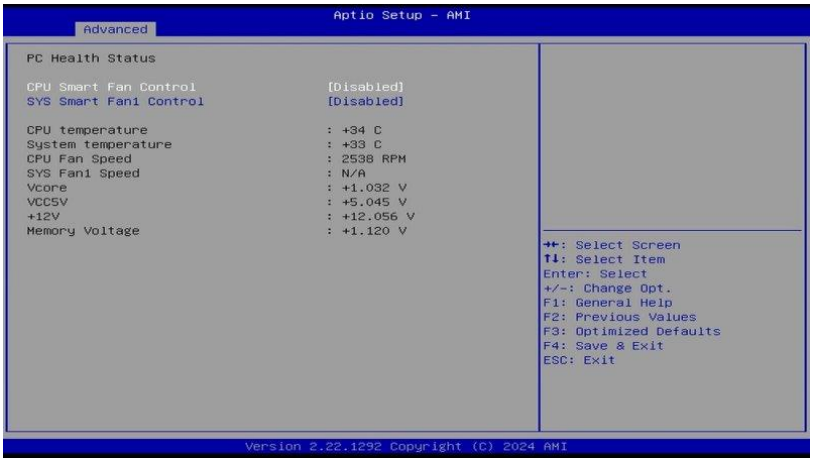


| BIOS Setting | Description |
|---|---|
| LVDS (eDP/DP) Support | LVDS (eDP/DP) ON/OFF |
| Panel Color Depth | Options: 18 BIT, 24bit(VESA), 24bit(JEIDA) |
| LVDS Channel Type | Options: Single, Dual |
| Panel Type | Options: 800 x 480, 800 x 600, 1024 x 768, 1280 x 768, 1280 x 800, 1280 x 960, 1366 x 768, 1440 x 900, 1600 x 900, 1600 x 1200, 1680 x 1050, 1920 x 1080, 1920 x 1200 |
| LVDS Brightness Level Control | Options: Level-1 to Level-8 |

### 4.4.8 F8196x Super IO Configuration

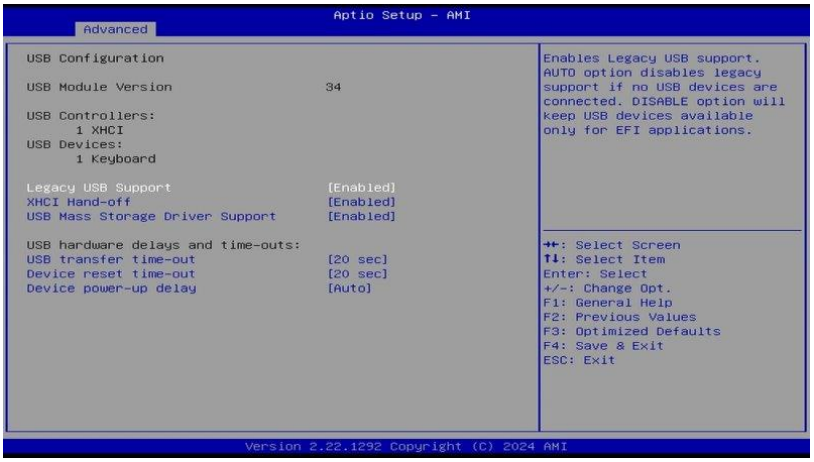


### 4.4.9 F8196x Super IO Hardware Monitor




| BIOS Setting | Description |
|---|---|
| CPU Smart Fan Control | Enables /Disables the CPU smart fan feature.<br>Options: Disabled / 50 °C / 60 °C / 70 °C / 80 °C |
| SYS Smart Fan Control | Enables /Disables the system smart fan feature.<br>Options: Disabled / 50 °C / 60 °C / 70 °C / 80 °C |
| Temperatures / Voltages | These fields display the parameters monitored by the system to reflect PC health status. The values are read-only values as monitored by the system and show the PC health status. |

### 4.4.10 USB Configuration




| BIOS Setting | Description |
|---|---|
| Legacy USB Support | • **Enabled** enables Legacy USB support.<br>• **Auto**disables legacy support if there is no USB deviceconnected.<br>• **Disabled** keeps USB devices available only for EFI applications. |
| XHCI Hand-off | This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver. |
| USB Mass Storage Driver Support | Enables /Disablesthe support for USB mass storage driver. |
| USB Transfer time-out | The time-out value (1 / 5 10 / 20 secs) for Control, Bulk, and Interrupt transfers. |
| Device reset time-out | Gives seconds (10 / 20 / 30 / 40 secs) to delay execution of Start Unit command to USB mass storage device. |
| Device power-up delay | The maximum time the device will take before it properly reports itself to the Host Controller.<br>**Auto** uses default value for a Root port it is 100ms. But for a Hub port, the delay is taken from Hub descriptor. |

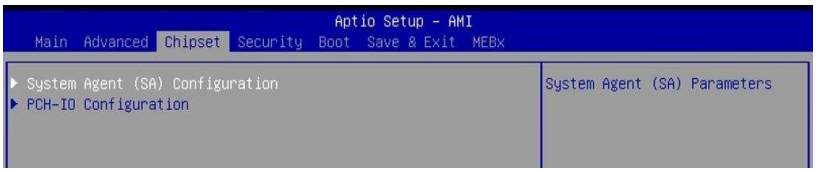
### 4.4.11 Network Stack Configuration


| BIOS Setting | Description |
|---|---|
| Network Stack | Enables / Disables UEFI Network Stack. |
| IPv4 PXE Support | Enables / Disables IPv4 PXE Boot Support.<br>If disabled, Ipv4 PXE boot option will not be created. |
| IPv4 HTTP Support | Enables / Disables IPv4 HTTP Boot Support.<br>If disabled, Ipv4 HTTP boot option will not be created. |
| IPv6 PXE Support | Enables / Disables IPv6 PXE Boot Support.<br>If disabled, Ipv4 PXE boot option will not be created. |
| IPv6 HTTP Support | Enables / Disables IPv6HTTP Boot Support.<br>If disabled, Ipv4 HTTP boot option will not be created. |
| PXE boot wait time | Assigns a period of time to press ESC key to abort the PXE boot.<br>Use either +/- or numeric keys to set the value |
| Media detect count | Assigns a number of times to check the presence of media. |

### 4.4.12 NVMe Configuration


### 4.4.13 Intel(R) Ethernet Converged Network Adapter

## 4.5 Chipset Settings

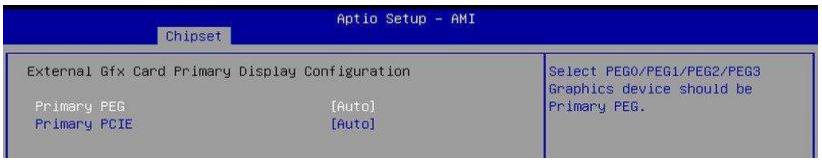


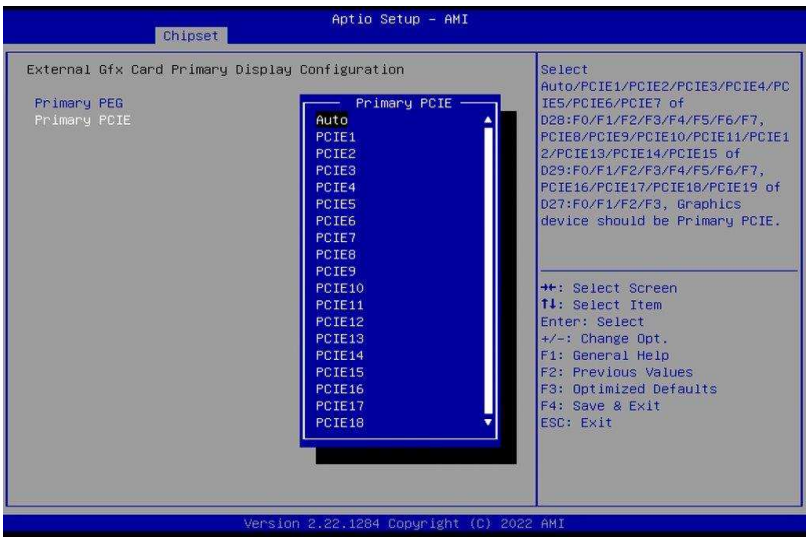

| BIOS Setting | Description |
|---|---|
| System Agent (SA) Configuration | System Agent (SA) parameters |
| PCH-IO Configuration | PCH parameters |

### 4.5.1 System Agent (SA) Configuration

#### Graphics Configuration


| BIOS Setting | Description |
|---|---|
| Primary Display | Select which of IGFX/PEG/PCI Graphics device should be primary display or select HG for Hybrid Gfx.<br>Options: Auto, IGFX, PEG Slot, PCH PCI, HG |
| External Gfx Card Primary Display Configuration | External Gfx Card Primary Display Configuration |
| Primary PEG | Select PEG0/PEG1/PEG3 Graphics device should be Primary PEG. |
| Primary PCIE | Select the graphics device as Primary PCIE. |
| Internal Graphics | Keep IGFX enabled based on the setup options. Options: Auto, Disabled, Enabled |
| GTT Size | Sets the GTT size as 2 MB, 4 MB, or 8 MB. |
| Aperture Size | Sets the aperture size.<br>**Note:** Above 4 GB MMIO BIOS assignment is automatically enabled when selecting 2048 MB aperture. To use this feature, disable CSM support. |




## VMDSetupMenu

### 4.5.2 PCH-IO Configuration


| BIOS Setting | Description |
|---|---|
| SATA Configuration | SATA device options settings. |
| Power Failure | Specify what state to go to when power is re-applied after a power failure (G3 state).<br>Options: Always On, Always Off |





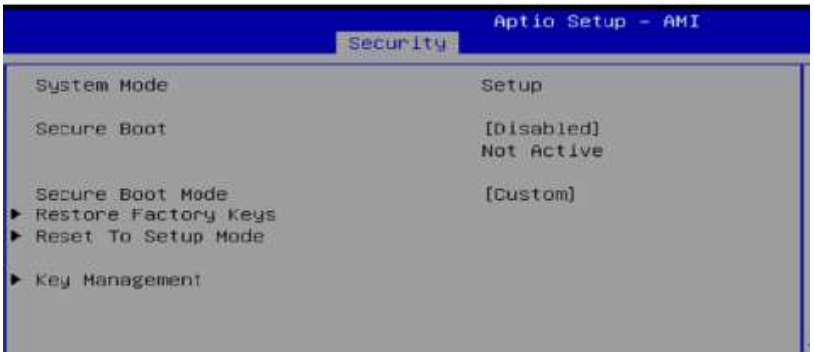
| BIOS Setting | Description |
|---|---|
| SATA Controller(s) | Enables / Disables the SATA device. |
| SATA Mode Selection | Determines how SATA controller(s) operate. |
| Serial ATA Ports | Enables/ Disables SATA ports. |
| Hot Plug | Designates the port as Hot Pluggable. |


Aptio Setup – AMI
Chipset
PCH-IO Configuration
SATA Configuration
Power Failure
[Always Off]
Power Failure
Always On
Always Off
Specify what state to go to when power is re-applied after a power failure (G3 state).
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1292 Copyright (C) 2024 AMI

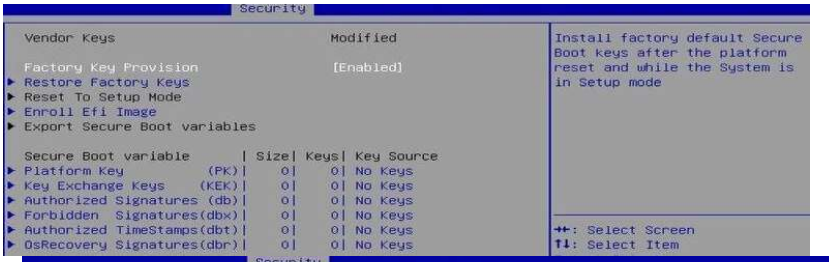
## 4.6 SecuritySettings


| BIOS Setting | Description |
|---|---|
| Administrator Password | Setsan administrator password for the setup utility. |
| User Password | Sets a user password. |
| Secure Boot | Configures Secure Boot. |

### Secure Boot



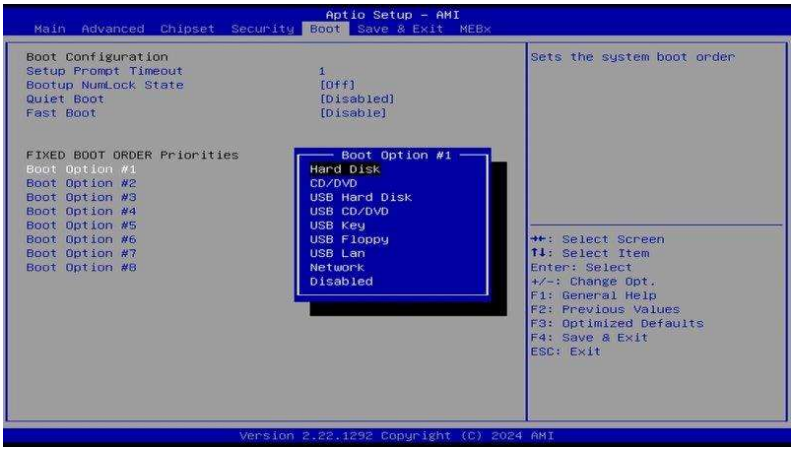

| BIOS Setting | Description |
|---|---|
| Secure Boot | Secure Boot feature is Active if Secure Boot is enabled. Platform Key (PK) Is enrolled and the system is in User mode. The mode change requires platform reset. |
| Secure Boot Mode | Secure Boot mode options: Standard or Custom.<br>In Custom mode, Secure Boot policy variables can be configured by a physically present user without full authentication. |
| Restore Factory Keys | Forces system to user mode. Install factory default Secure Boot key databases. |
| Key Management | Enables expert users to modify Secure Boot Policy variables without full authentication. |







## 4.7 BootSettings

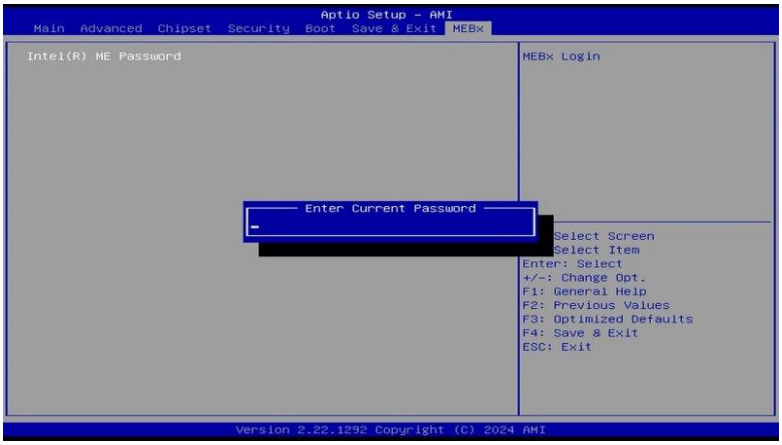



| BIOS Setting | Description |
|---|---|
| Setup Prompt Timeout | Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting. |
| Bootup NumLock State | Selects the keyboard NumLock state. |
| Quiet Boot | Enables/Disables Quiet Boot option. |
| Fast Boot | Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options. |
| Boot Option Priorities | Sets the system boot order. |

## 4.8 Save & ExitSettings


| BIOS Setting | Description |
|---|---|
| Save Changes and Exit | Exits system setup after saving the changes. |
| Discard Changes and Exit | Exits system setup without saving any changes. |
| Save Changes and Reset | Resets the system after saving the changes. |
| Discard Changes and Reset | Resets system setup without saving any changes. |
| Save Changes | Saveschanges done so far to any of the setup options. |
| Discard Changes | Discards changes done so far to any of the setup options. |
| Restore Defaults | Restores /Loads defaults values for all the setup options. |
| Save as User Defaults | Saves the changes done so far as User Defaults. |
| Restore User Defaults | Restores the user defaults to all the setup options. |
| LaunchEFIShellfromfilesystemdevice | AttemptstolaunchEFIShellapplication(Shell.efi)fromoneoftheavailablefilesystemdevices. |

## 4.9 MEBx



# Appendix

This section provides the mapping addresses of peripheral devices and the sample code of watchdog timer configuration.

- I/O Port Address Map
- Interrupt Request Lines (IRQ)
- Watchdog Timer Configuration
- Onboard Connector Types
- MI1001 USB Power Control Bit Mapping.

# A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. The following table lists the I/O port addresses used.

| Address | Device Description |
|---|---|
| 0x00000A00-0x00000A0F | Motherboard resources |
| 0x00000A10-0x00000A1F | Motherboard resources |
| 0x00000A20-0x00000A2F | Motherboard resources |
| 0x0000002E-0x0000002F | Motherboard resources |
| 0x0000004E-0x0000004F | Motherboard resources |
| 0x00000061-0x00000061 | Motherboard resources |
| 0x00000063-0x00000063 | Motherboard resources |
| 0x00000065-0x00000065 | Motherboard resources |
| 0x00000067-0x00000067 | Motherboard resources |
| 0x00000070-0x00000070 | Motherboard resources |
| 0x00000080-0x00000080 | Motherboard resources |
| 0x00000092-0x00000092 | Motherboard resources |
| 0x000000B2-0x000000B3 | Motherboard resources |
| 0x00000680-0x0000069F | Motherboard resources |
| 0x0000164E-0x0000164F | Motherboard resources |
| 0x00000040-0x00000043 | System timer |
| 0x00000050-0x00000053 | System timer |
| 0x00003000-0x0000303F | Microsoft Basic Display Adapter |
| 0x000003F8-0x000003FF | Communications Port (COM1) |
| 0x000002F8-0x000002FF | Communications Port (COM2) |
| 0x0000EFA0-0x0000EFBF | SM Bus Controller |
| 0x00003090-0x00003097 | Standard SATA AHCI Controller |
| 0x00003080-0x00003083 | Standard SATA AHCI Controller |
| 0x00003060-0x0000307F | Standard SATA AHCI Controller |
| 0x00000000-0x00000CF7 | PCI Express Root Complex |
| 0x00000D00-0x0000FFFF | PCI Express Root Complex |

| Address | Device Description |
|---|---|
| 0x00000020-0x00000021 | Programmable interrupt controller |
| 0x00000024-0x00000025 | Programmable interrupt controller |
| 0x00000028-0x00000029 | Programmable interrupt controller |
| 0x0000002C-0x0000002D | Programmable interrupt controller |
| 0x00000030-0x00000031 | Programmable interrupt controller |
| 0x00000034-0x00000035 | Programmable interrupt controller |
| 0x00000038-0x00000039 | Programmable interrupt controller |
| 0x0000003C-0x0000003D | Programmable interrupt controller |
| 0x000000A0-0x000000A1 | Programmable interrupt controller |
| 0x000000A4-0x000000A5 | Programmable interrupt controller |
| 0x000000A8-0x000000A9 | Programmable interrupt controller |
| 0x000000AC-0x000000AD | Programmable interrupt controller |
| 0x000000B0-0x000000B1 | Programmable interrupt controller |
| 0x000000B4-0x000000B5 | Programmable interrupt controller |
| 0x000000B8-0x000000B9 | Programmable interrupt controller |
| 0x000000BC-0x000000BD | Programmable interrupt controller |
| 0x000004D0-0x000004D1 | Programmable interrupt controller |
| 0x00002000-0x000020FE | Motherboard resources |
| 0x00000060-0x00000060 | Standard PS/2 Keyboard |
| 0x00000064-0x00000064 | Standard PS/2 Keyboard |
| 0x00001854-0x00001857 | Motherboard resources |

# B. Interrupt Request Lines (IRQ)

The following table shows the IRQ used by the devices on board.

| Level | Function |
|---|---|
| IRQ 4294967264~88 | Intel(R) Ethernet Controller I226-V #3 |
| IRQ 4294967289 | Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft) |
| IRQ 0 | System timer |
| IRQ 4294967238 | Intel(R) Management Engine Interface #1 |
| IRQ 4294967292 | PCI Express Root Port |
| IRQ 4 | Communications Port (COM1) |
| IRQ 3 | Communications Port (COM2) |
| IRQ 4294967290 | Standard SATA AHCI Controller |
| IRQ 4294967239~63 | Intel(R) Ethernet Controller I226-LM |
| IRQ 4294967293 | PCI Express Root Port |
| IRQ 55~204 | Microsoft ACPI-Compliant System |
| IRQ 256~511Microsoft ACPI-Compliant SystemIRQ 17 | High Definition Audio Controller |
| IRQ 1 | Standard PS/2 Keyboard |
| IRQ 4294967294 | PCI Express Root Port |
| IRQ 12 | Microsoft PS/2 Mouse |
| IRQ 4294967291 | PCI Express Root Port |

# C. Watchdog Timer Configuration

The Watchdog Timer (WDT) is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven.

Under normal circumstance, you will need to restart the WDT at regular intervals before the timer counts to zero.

**Sample Code:**

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OFANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TOTHE
//IMPLIEDWARRANTIESOFMERCHANTABILITYAND/ORFITNESSFORAPARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include<dos.h>
#include<conio.h>
#include<stdio.h>
#include<stdlib.h>
#include"F81966.H"
//---------------------------------------------------------------------------
int main (int argc, char*argv[]);
voidEnableWDT(int);
voidDisableWDT(void);
//---------------------------------------------------------------------------
intmain(intargc,char*argv[])
{
        unsigned char bBuf;
        unsigned charbTime;
        char**endptr;

        charSIO;

        printf("Fintek81966watchdogprogram\n");
        SIO =Init_F81966();
        if (SIO ==0)
        {
                printf("CannotdetectFintek81966,programabort.\n");
                return(1);
        }//if (SIO ==0)

        if (argc !=2)
        {
                printf("Parameterincorrect!!\n");
                return(1);
        }
```

```
        bTime=strtol(argv[1],endptr,10);
        printf("Systemwillresetafter%dseconds\n",bTime);

        if(bTime)
        { EnableWDT(bTime);}
        else
        { DisableWDT(); }
        return0;
}
//---------------------------------------------------------------------------
void EnableWDT(intinterval)
{
        unsigned charbBuf;

        bBuf =Get_F81966_Reg(0x2B);
        bBuf &=(~0x20);
        Set_F81966_Reg(0x2B, bBuf);     //EnableWDTO

        Set_F81966_LD(0x07);        //switch to logic device7
        Set_F81966_Reg(0x30, 0x01);     //enabletimer

        bBuf =Get_F81966_Reg(0xF5);
        bBuf &=(~0x0F);
        bBuf |=0x52;
        Set_F81966_Reg(0xF5,     bBuf); //count modeissecond

        Set_F81966_Reg(0xF6,    interval);       //settimer

        bBuf =Get_F81966_Reg(0xFA);
        bBuf |=0x01;
        Set_F81966_Reg(0xFA, bBuf);     //enable WDTOoutput

        bBuf =Get_F81966_Reg(0xF5);
        bBuf |=0x20;
        Set_F81966_Reg(0xF5,     bBuf); //startcounting
}
//---------------------------------------------------------------------------
voidDisableWDT(void)
{
        unsigned charbBuf;

        Set_F81966_LD(0x07);        //switch to logicdevice7

        bBuf =Get_F81966_Reg(0xFA);
        bBuf &=~0x01;
        Set_F81966_Reg(0xFA, bBuf);     //disable WDTOoutput

        bBuf =Get_F81966_Reg(0xF5);
        bBuf &=~0x20;
        bBuf |=0x40;
        Set_F81966_Reg(0xF5,     bBuf); //disableWDT
}
//---------------------------------------------------------------------------
```

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OFANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TOTHE
//IMPLIEDWARRANTIESOFMERCHANTABILITYAND/ORFITNESSFORAPARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include"F81966.H"
#include<dos.h>
//---------------------------------------------------------------------------
unsigned intF81966_BASE;
void Unlock_F81966 (void);
void Lock_F81966(void);
//---------------------------------------------------------------------------
unsignedintInit_F81966(void)
{
        unsigned int result;
        unsigned charucDid;

        F81966_BASE =0x4E;
        result =F81966_BASE;

        ucDid =Get_F81966_Reg(0x20);
        if   (ucDid==0x07)       //Fintek81966
        { goto   Init_Finish;     }

        F81966_BASE =0x2E;
        result =F81966_BASE;

        ucDid =Get_F81966_Reg(0x20);
        if   (ucDid==0x07)       //Fintek81966
        { goto   Init_Finish;     }

        F81966_BASE =0x00;
        result =F81966_BASE;

Init_Finish:
        return(result);
}
//---------------------------------------------------------------------------
void Unlock_F81966(void)
{
        outportb(F81966_INDEX_PORT, F81966_UNLOCK);
        outportb(F81966_INDEX_PORT,F81966_UNLOCK);
}
//---------------------------------------------------------------------------
void Lock_F81966(void)
{
        outportb(F81966_INDEX_PORT,F81966_LOCK);
}
//---------------------------------------------------------------------------
void Set_F81966_LD( unsigned charLD)
```

```
{
        Unlock_F81966();
        outportb(F81966_INDEX_PORT,F81966_REG_LD);
        outportb(F81966_DATA_PORT, LD);
        Lock_F81966();
}
//----------------------------------------------------------------------
voidSet_F81966_Reg(unsignedcharREG,unsignedcharDATA)
{
        Unlock_F81966();
        outportb(F81966_INDEX_PORT, REG);
        outportb(F81966_DATA_PORT, DATA);
        Lock_F81966();
}
//----------------------------------------------------------------------
unsignedcharGet_F81966_Reg(unsignedcharREG)
{
        unsignedcharResult;
        Unlock_F81966();
        outportb(F81966_INDEX_PORT, REG);
        Result =inportb(F81966_DATA_PORT);
        Lock_F81966();
        returnResult;
}
//----------------------------------------------------------------------
//----------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//----------------------------------------------------------------------
#ifndef     F81966_H
#define     F81966_H            1
//----------------------------------------------------------------------
#define   F81966_INDEX_PORT     (F81966_BASE)
#define   F81966_DATA_PORT      (F81966_BASE+1)
//----------------------------------------------------------------------
#define   F81966_REG_LD     0x07
//----------------------------------------------------------------------
#define   F81966_UNLOCK     0x87
#define   F81966_LOCK  0xAA
//----------------------------------------------------------------------
unsigned int Init_F81966(void);
void Set_F81966_LD( unsigned char);
void Set_F81966_Reg( unsigned char,
unsigned char); unsigned char
Get_F81966_Reg( unsigned char);
//----------------------------------------------------------------------
#endif  //    F81966_H
```

# D. Onboard Connector Types

| Function | Connector | Type | Compatible Mating Type(for reference) |
|---|---|---|---|
| COM1 & COM2 RS-232/422/485 | CN7 | YIMTEX 40909AANSABR | D-SUB 9-pin |
| Digital I/O Connector | J17 | E-CALL 0196-01-200-100 | Dupont 2.0 mm 2*5-pin |
| USB 2.0 | J8 | E-CALL 0126-01-2811009 | Dupont 2.54 mm 2*5-pin |
| Front Panel Settings | J16 | E-CALL 0126-01-203-200 | Dupont 2.54 mm 2*5-pin |
| CPU Fan Power | CPU_FAN1 | Techbest '2-03I104132S1WT(A)- | Molex 47054-1000 |
| System Fan Power | SYS_FAN1 | Techbest W2-03I104132S1WT(A)-L | Molex 47054-1000 |

## E. MI1001 USB Power Control Bit Mapping.

| Function | Connector | Software Mapping |
|---|---|---|
| M.2 –E Key | J13 | bit_0 |
| USB3.1 | CN3 | bit_1 |