# MI1001 Series

**Intel® 14th Gen Core™ DT Processor**
**Mini-ITX Motherboard**

# User Manual

Version 1.0a
(September 2024)

# Compliance

CE

This product has passed CE tests for environmental specifications and limits. This product is in accordance with the directives of the European Union (EU). In a domestic environment, this product may cause radio interference in which case users may be required to take adequate measures.

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

This product must not be disposed of as normal household waste, in accordance with the EU directive of for waste electrical and electronic equipment (WEEE - 2012/19/EU). Instead, it should be disposed of by returning it to a municipal recycling collection point. Check local regulations for disposal of electronic products.

## 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 must not exceed the specified 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

# Important Safety Information

Carefully read the precautions before using the board.

### Environmental conditions:

- Use this product in environments with ambient temperatures between 0˚C and 60˚C.
- Do not leave this product in an environment where the storage temperature may be below -20° C or above 80° C. To prevent from damages, the product must be used in a controlled environment.

### Care for your IBASE products:

- Before cleaning the PCB, unplug all cables and remove the battery.
- Clean the PCB with a circuit board cleaner or degreaser, or use cotton swabs and alcohol.
- Vacuum the dust with a computer vacuum cleaner to prevent the fan from being clogged.

### WARNING

### Attention during use:

- Do not use this product near water.
- Do not spill water or any other liquids on this product.
- Do not place heavy objects on the top of this product.

### Anti-static precautions

- Wear an anti-static wrist strap to avoid electrostatic discharge.
- Place the PCB on an anti-static kit or mat.
- Hold the edges of PCB when handling.
- Touch the edges of non-metallic components of the product instead of the surface of the PCB.
- Ground yourself by touching a grounded conductor or a grounded bit of metal frequently to discharge any static.

### CAUTION

Danger of explosion if the internal lithium-ion battery is replaced by an incorrect type. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions or recycle them at a local recycling facility or battery collection point.

## 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, CPU cooler, memory, storage devices, power adapter, panel and touchscreen.

* PRODUCTS THAT FAIL DUE TO MISUSE, ACCIDENT, IMPROPER INSTALLATION OR UNAUTHORIZED REPAIR SHALL BE TREATED AS OUT OF WARRANTY AND CUSTOMERS SHALL BE BILLED FOR REPAIR AND SHIPPING CHARGES.

## 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.

# Table of Contents


**Chapter 1 General Information ..... 1**

1.1 Introduction ..... 2
1.2 Features ..... 2
1.3 Packing List ..... 3
1.4 Optional Accessories ..... 3
1.5 Specifications ..... 4
1.6 Block Diagram ..... 6
1.7 Product View ..... 7
1.8 Board Dimensions ..... 8

**Chapter 2 Hardware Configuration ..... 9**

2.1 Essential Installations Before You Begin ..... 10
2.1.1 Installing the Memory ..... 10
2.2 Setting the Jumpers ..... 11
2.3 Jumper & Connector Locations ..... 12
2.4 Jumpers Quick Reference ..... 13
2.4.1 JP1: LVDS Power Selection ..... 13
2.4.2 JP2: eDP Panel Power Selection ..... 14
2.4.3 JP3: LVDS Power Brightness Selection ..... 15
2.4.4 JP4: PCI Express Bifurcation ..... 16
2.4.5 JP5: Clear CMOS ..... 17
2.4.6 JP6: Clear ME RTC ..... 18
2.4.7 JP9: AT/ATX Select ..... 19
2.5 Connectors Quick Reference ..... 20
2.5.1 CN7(top): COM1 RS-232/422/485 Ports ..... 21
2.5.2 CN7(bottom): COM2 RS-232 Port ..... 21
2.5.3 CN8, CN9: SATA Connectors ..... 22
2.5.4 CN1: eDP Connector ..... 23
2.5.5 J2, J4 LVDS Connector (1st ch, 2nd ch) ..... 24
2.5.6 J3: LCD Backlight Connector ..... 25
2.5.7 J5: M.2 M-Key NVME (CPU) ..... 26
2.5.8 J6, J7: DDR5 UDIMM CHA/CHB ..... 26
2.5.9 J8: USB 2.0 #5/#6 Connector ..... 27
2.5.10 J10: 24V DC_IN Power Connector ..... 28
2.5.11 J12: SATA HDD Power Connector ..... 29
2.5.12 J13: M.2 E-Key Socket ..... 30

2.5.13 J16: Front Panel Connector ..... 31
2.5.14 J17: Digital I/O Connector (4 in, 4 out) ..... 32
2.5.15 CPU_FAN1: CPU Fan Power Connector ..... 33
2.5.16 SYS_FAN1: System Fan Power Connector ..... 33

**Chapter 3 Drivers Installation ..... 35**

3.1 Introduction ..... 36
3.2 Intel® Chipset Software Installation Utility ..... 36
3.3 VGA Driver Installation ..... 39
3.4 Realtek HD Audio Driver Installation ..... 41
3.5 LAN Drivers Installation ..... 42
3.6 Intel® ME Drivers Installation ..... 44
3.7 Intel® Serial IO Drivers Installation ..... 45

**Chapter 4 BIOS Setup ..... 47**

4.1 Introduction ..... 48
4.2 BIOS Setup ..... 48
4.3 Main Settings ..... 49
4.4 Advanced Settings ..... 49
4.5 Chipset Settings ..... 63
4.6 Security Settings ..... 67
4.7 Boot Settings ..... 69
4.8 Save & Exit Settings ..... 70
4.9 MEBx ..... 71

**Appendix ..... 73**

A. I/O Port Address Map ..... 74
B. Interrupt Request Lines (IRQ) ..... 76
C. Watchdog Timer Configuration ..... 77
D. Onboard Connector Types ..... 81
E. MI1001 USB Power Control Bit Mapping ..... 82

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# Chapter 1
# General Information

The information provided in this chapter includes:

- Features
- Packing List
- Optional Accessories
- Specifications
- Block Diagram
- Product View
- Board Dimensions

## 1.1 Introduction

MI1001 is a Mini ATX motherboard based on 14th Gen Intel® Core DT processors. With support for two DDR5 (5600) slots accommodating up to 64GB memory, it supports independent displays with eDP, LVDS, DisplayPort/DP++ and HDMI interface. This high-performance platform meets demands in next-generation applications in imaging, AI, and edge computing.

## 1.2 Features

- 14th Gen Intel Core™ i9/i7/i5 Processors
- 2x DDR5 SO-DIMM sockets, Max. 64GB
- Intel processor integrated graphics supporting eDP, LVDS, DisplayPort (1.4a), and HDMI (2.0a)
- Dual Intel 2.5G LAN, Dual Intel 10G LAN
- 4x USB 3.2, 2x USB 2.0
- 2x SATA III (6Gbps)
- 1x PCI-E (x16) [Gen.5], 1x M.2 (M-key), 1x M.2 (E-key)
- Watchdog timer, Digital I/O, iAMT(16.1), dTPM (SLB9672), fTPM (optional)

## 1.3 Packing List

Your MI1001 package should include the items listed below. If any of the items below is missing, contact the distributor or dealer from whom you purchased the product.

- MI1001 x1
- IO Shield x1
- SATA cable x1

## 1.4 Optional Accessories

- USB 2.0 Cable
- Cooler

## 1.5 Specifications

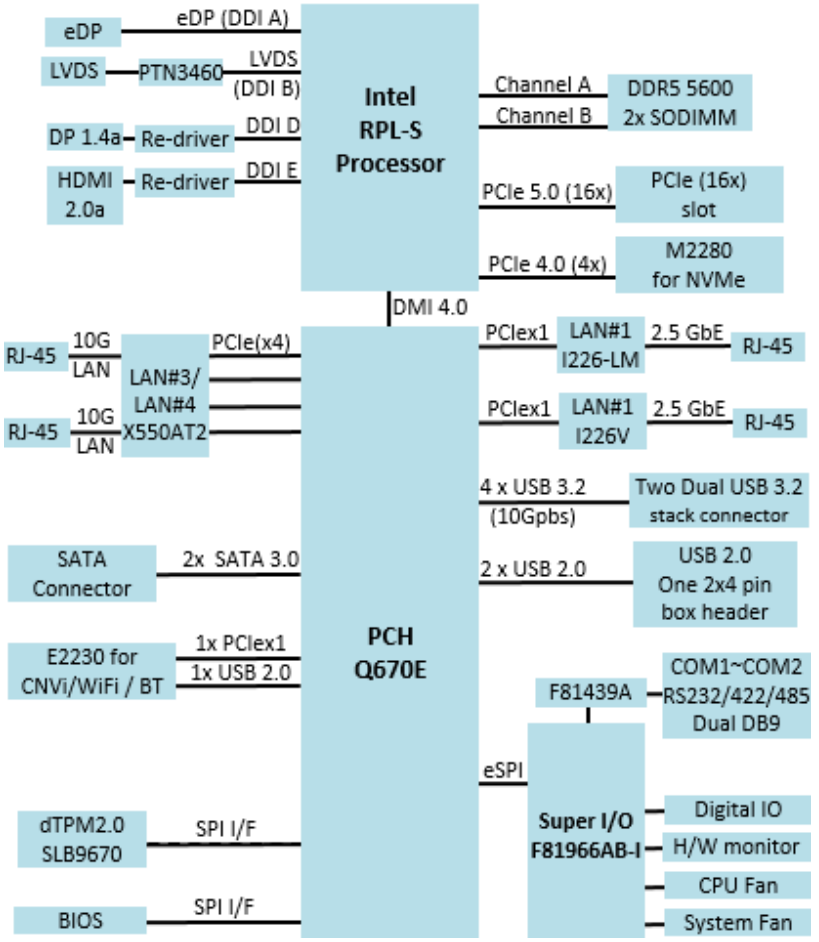
| | |
|---|---|
| **Product Name** | **MI1001AF-10G** [with Dual 10GbE, iAMT 16.1, Q670E PCH]<br>**MI1001AF** [with iAMT 16.1, Q670E PCH] |
| **Form Factor** | Mini-ITX motherboard |
| **CPU** | Intel® 14th Gen. Core™ DT Processor Based |
| **CPU Socket** | LGA1700 |
| **Chipset** | Intel® FH82Q670E PCH |
| **Memory** | 2x DDR5 SO-DIMM<br>Max. = 64GB |
| **Graphics Interface** | - eDP, Up to 3840x2160@60Hz<br>- LVDS (dual channel), Up to 1920x1080 @ 60 Hz<br>- DisplayPort / DP++ (DP1.4a), Up to 7680 x 4320 @ 60 Hz<br>- HDMI (HDMI 2.0a), Up to 3840 x 2160 @ 60 Hz |
| **Network** | - 1st LAN for iAMT via Intel I226LM<br>- 2nd LAN for 2.5GbE via Intel I226V<br>- 3rd / 4th LAN for 10GbE via X550-AT2 [TDP@11W, 17mmx17mm package] with HSMI1001-A heat sink<br>****For MI1001AF-10G model only**** |
| **Expansion Slots** | - PCIe (16x) x1<br>- M.2 (M-key@2280), supports NVMe<br>- M.2 (E-key@2230), supports CNVi<br>- E-Key with PDPC feature (CNVi modules not supported) |
| **Super I/O** | Fintek F81966AB-I |
| **USB** | - USB 3.2 G2 (10 Gbps) x2, type A @ rear panel (Port#0~#1 / USB3.2 #1~#2)<br>- USB 3.2 G2 (10 Gbps) x2, type A @ rear panel (Port#2~#3 / USB3.2 #3~#4)<br>- USB 2.0 x2 ports via box-header |
| **Digital I/O** | 4-In / 4-Out |
| **Audio Codec** | N/A |
| **Watchdog Timer** | Yes (256 segments, 0, 1, 2…255 sec / min) |
| **RAID** | RAID 0/1 |
| **iAMT** | iAMT 16.1 (supported by Intel Core i9/i7/i5 CPU SKUs) |
| **TPM** | 2.0 (fTPM is optional) |
| **Dimensions** | 170 x 170 mm (6.7” x 6.7”) |
| **RoHS 2** | Yes |

| | |
|---|---|
| **Edge Connectors** | - Dual DB9 stack connector for COM #1 / COM #2<br>- DP + HDMI stack connector x1<br>- RJ-45 (2.5G) [red color] + dual USB (3.2) [blue color] stack connector x2 (I226V port with power control)<br>- RJ45 (10G) connector x2 **** MI1001AF-10G model only**** |
| **OS Supported** | Windows 10 (64-bit), Ubuntu (64-bit) |
| **Others** | - LAN Wakeup<br>- BIOS recovering by jumper<br>- Support AT mode boot-up by jumper (via Super I/O)<br>- PDPC (Peripheral Device Power Control) |

| **Environmental** | |
|---|---|
| **Operating Temperature** | 0 ~ 60 °C (32 ~ 140 °F) |
| **Storage Temperature** | -20 ~ 80 °C (-4 ~ 176 °F) |

All specifications are subject to change without prior notice.

## 1.6 Block Diagram

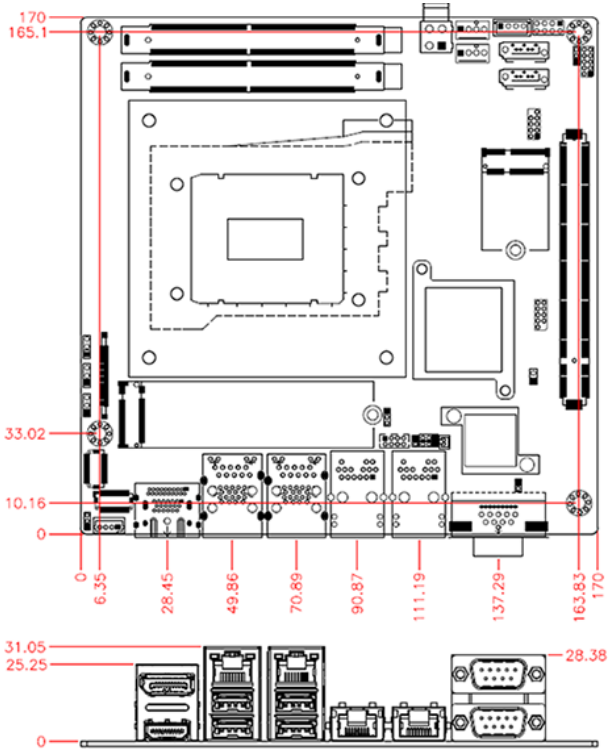


## 1.7 Product View

### Top View

### Bottom View

## 1.8 Board Dimensions



# Chapter 2
# Hardware Configuration

This section provides information on jumper settings and connectors on the MI1001 and other installation information in order to set up a workable system. The topics covered are:

- Essential installations before you begin
- Jumper and connector locations
- Jumper settings and information of connectors

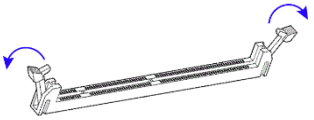
## 2.1 Essential Installations Before You Begin

Follow the instructions below to install the memory modules.

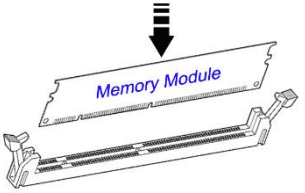
### 2.1.1 Installing the Memory

To install the modules, locate the memory slot on the board and perform the following steps:

1. Align the key of the memory module with that on the memory slot and insert the module slantwise.



2. Gently push the module in an upright position until the clips of the slot close to hold the module in place when the module touches the bottom of the slot.



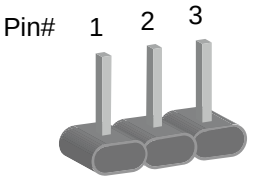

To remove the module, press the ejector tabs at both ends outwards.

## 2.2 Setting the Jumpers

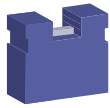
Set up and configure your MI1001 by using jumpers for various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your use.

### 2.2.1 How to Set Jumpers

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.

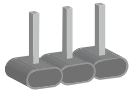
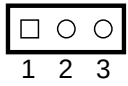
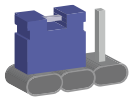
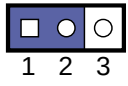
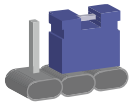
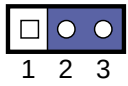



**A 3-pin jumper**



**A jumper cap**

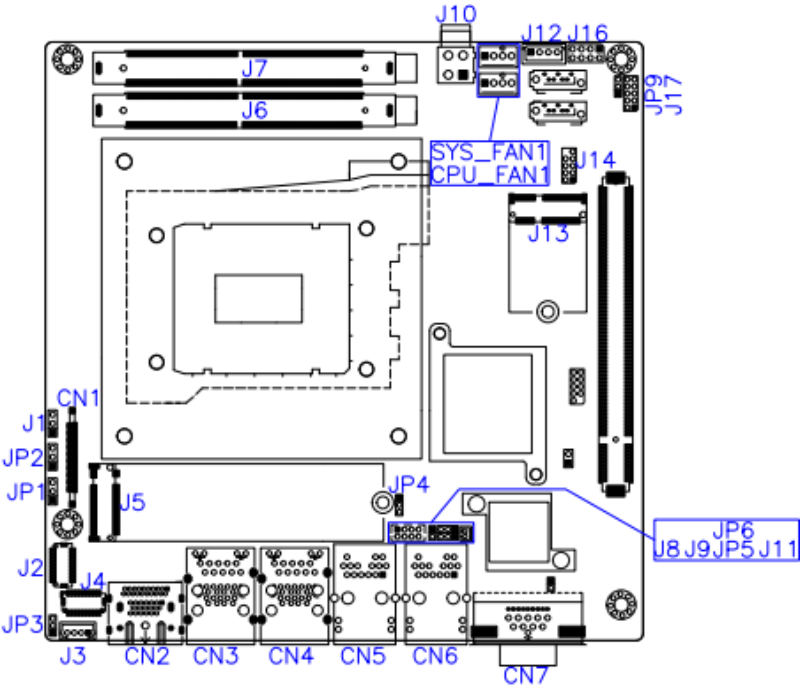
Refer to the illustration below to set jumpers.

| Pin closed | Oblique view | Illustration |
|---|---|---|
| Open |  |   |
| 1-2 |  |   |
| 2-3 |  |   |

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**.

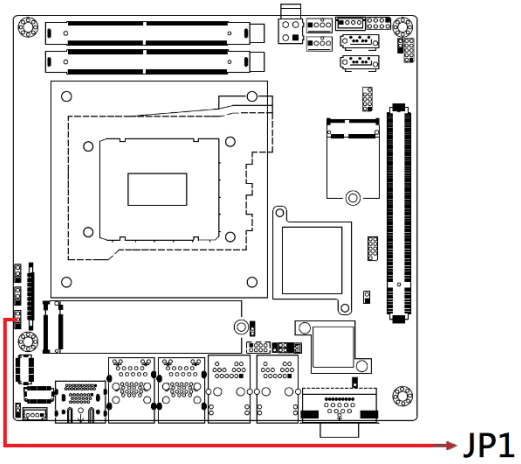
## 2.3 Jumper & Connector Locations



## 2.4 Jumpers Quick Reference

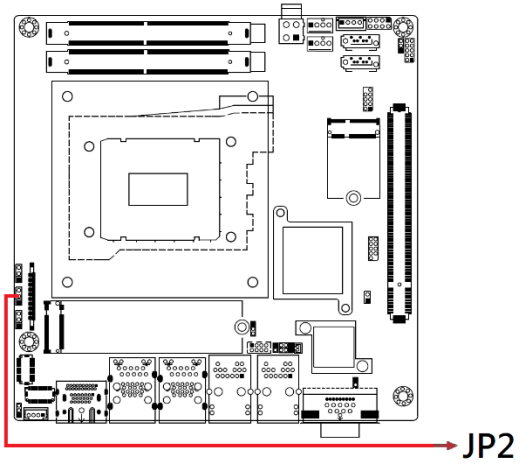
| Jumper | Function |
|---|---|
| JP1 | LVDS Power Selection |
| JP2 | eDP Panel Power Selection |
| JP3 | LVDS Power Brightness Selection |
| JP4 | PCIe (x16) Bifurcation Selection |
| JP5 | Clear CMOS Data |
| JP6 | Clear RTC |
| JP9 | AT / ATX Selection |

### 2.4.1 JP1: LVDS Power Selection

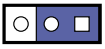
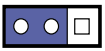



| Function | Pin closed | Illustration |
|---|---|---|
| 3.3V (default) | 1-2 | 1 |
| 5V | 2-3 | 1 |

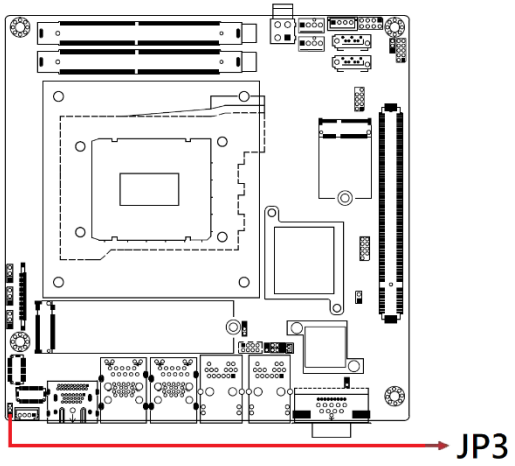
### 2.4.2 JP2: eDP Panel Power Selection





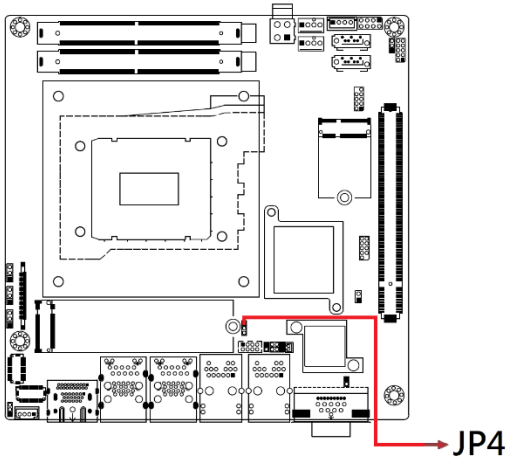
| Function | Pin | Illustration |
|---|---|---|
| 3.3V (default) | 1-2 |  1 |
| 5V | 2-3 |  1 |

### 2.4.3 JP3: LVDS Power Brightness Selection




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

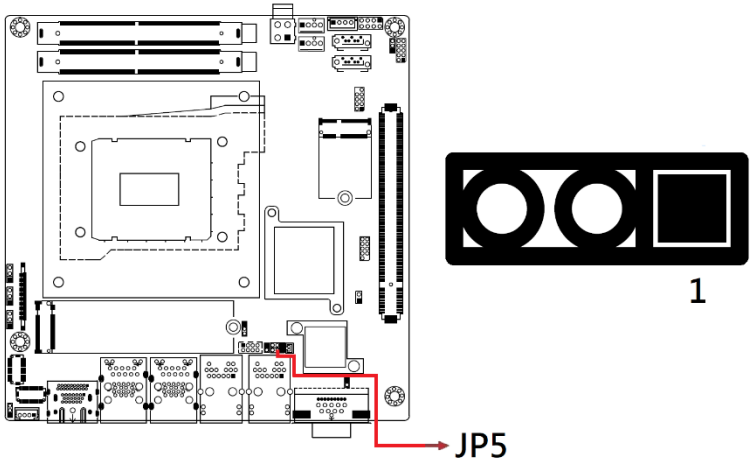
### 2.4.4 JP4: PCI Express Bifurcation





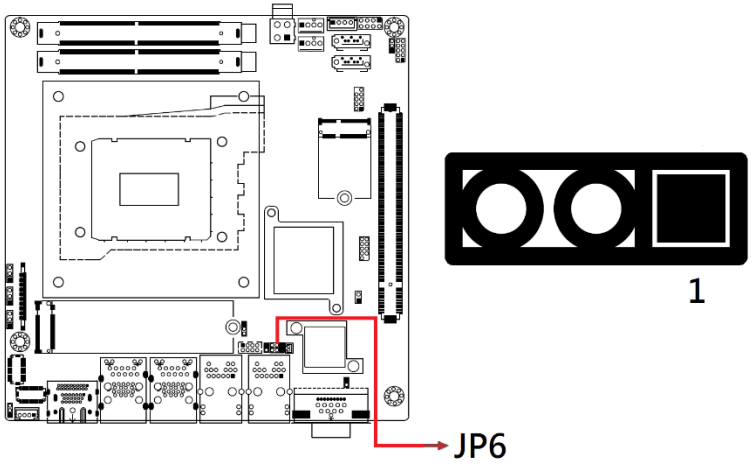
| Function | Pin closed | Illustration |
|---|---|---|
| 1 x PCIe (x16) (default) | 1-2 | 1 |
| 2 x PCIe (x8) | 2-3 | 1 |

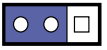
### 2.4.5 JP5: Clear CMOS



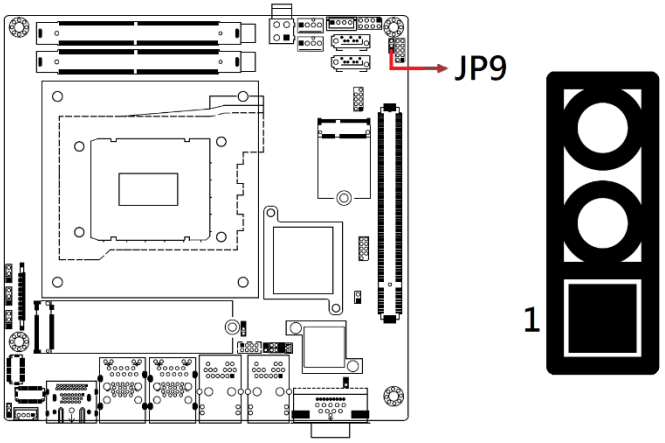

| Function | Pin closed | Illustration |
|---|---|---|
| Normal (default) | 1-2 | 1 |
| Clear CMOS | 2-3 | 1 |

### 2.4.6 JP6: Clear ME RTC




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

## 2.4.7 JP9: AT/ATX Select



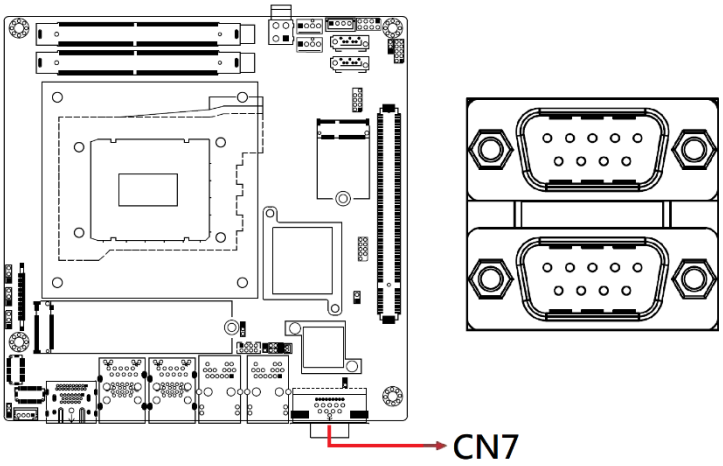

| Function | Pin closed | Illustration |
|---|---|---|
| ATX (default) | 1-2 | 1 |
| AT | 2-3 | 1 |

## 2.5 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 |

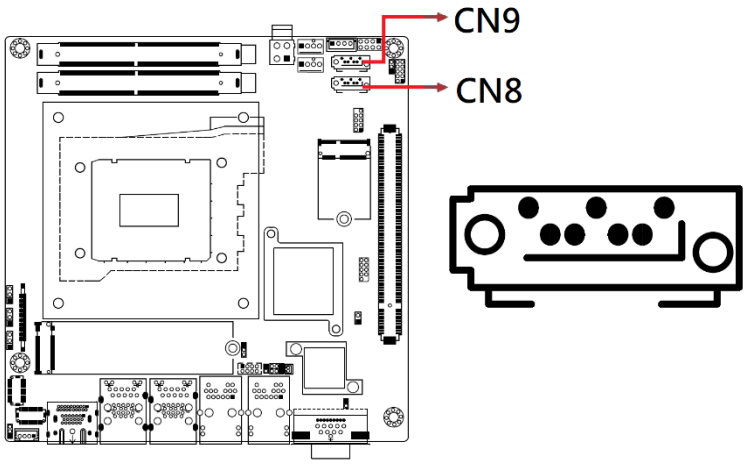
### 2.5.1 CN7(top): COM1 RS-232/422/485 Ports

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



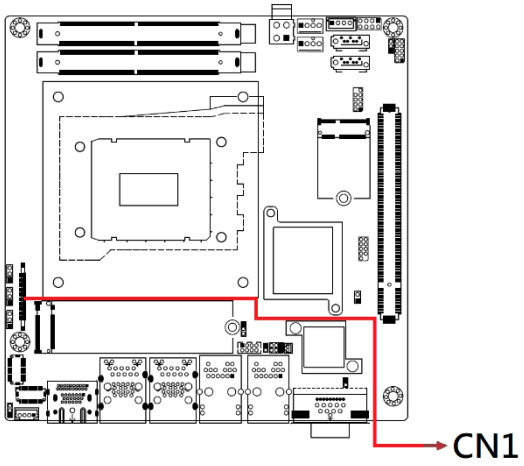

| Pin | Signal Name | | |
|---|---|---|---|
| | RS-232 | RS-422 | RS-485 |
| 1 | DCD | TX- | DATA- |
| 2 | RX | TX+ | DATA+ |
| 3 | TX | RX+ | NC |
| 4 | DTR | RX- | NC |
| 5 | Ground | Ground | Ground |
| 6 | DSR | NC | NC |
| 7 | RTS | NC | NC |
| 8 | CTS | NC | NC |
| 9 | RI | NC | NC |
| 10 | NC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

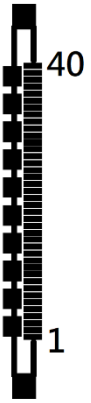
### 2.5.3 CN8, CN9: SATA Connectors




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

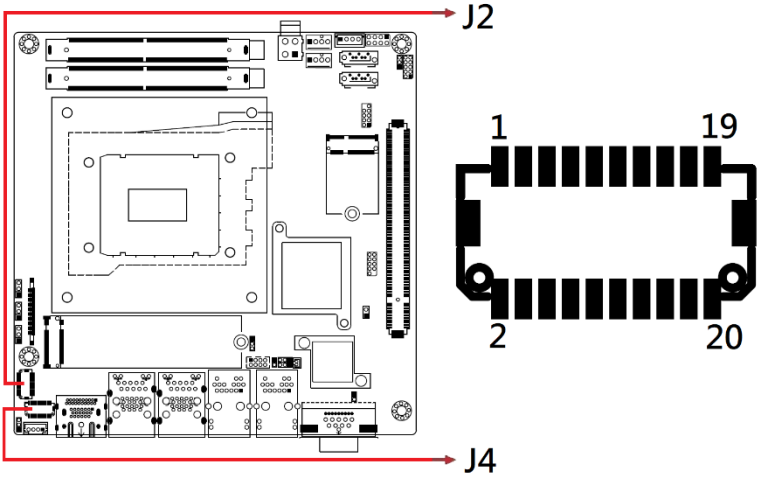
### 2.5.4 CN1: eDP Connector



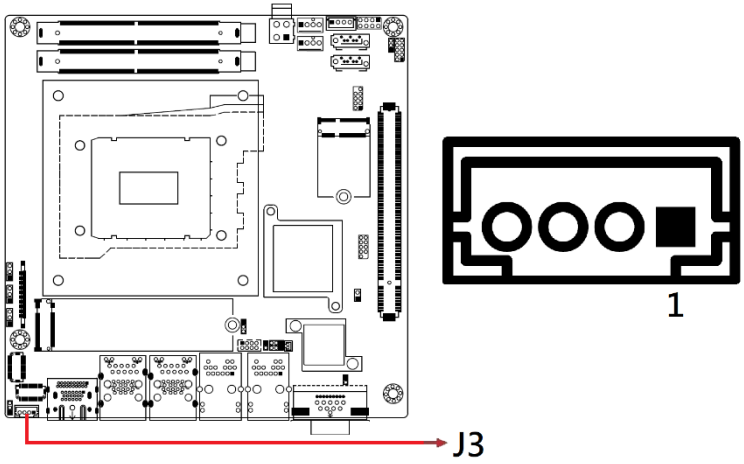

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | eDP VCC | 21 | TXN0 |
| 2 | eDP VCC | 22 | TXP0 |
| 3 | eDP VCC | 23 | Ground |
| 4 | eDP VCC | 24 | AUXP |
| 5 | eDP VCC | 25 | AUXN |
| 6 | Ground | 26 | NC |
| 7 | Ground | 27 | +3.3V |
| 8 | Ground | 28 | +12V |
| 9 | Ground | 29 | 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 |

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



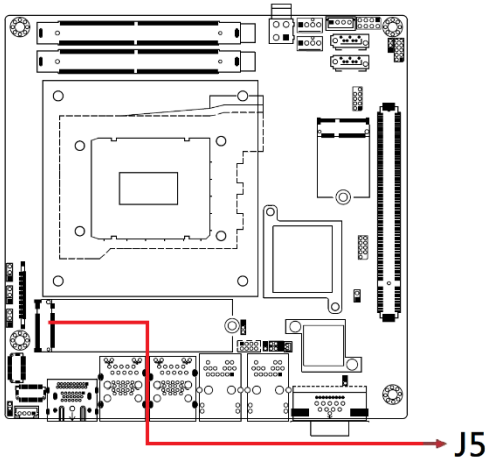

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | TX0P | 2 | TX0N |
| 3 | Ground | 4 | Ground |
| 5 | TX1P | 6 | TX1N |
| 7 | Ground | 8 | Ground |
| 9 | TX2P | 10 | TX2N |
| 11 | Ground | 12 | Ground |
| 13 | CLKP | 14 | CLKN |
| 15 | Ground | 16 | Ground |
| 17 | TX3P | 18 | TX3N |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

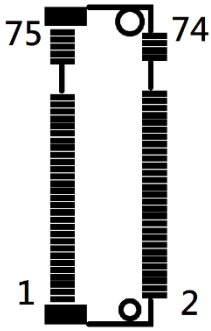
### 2.5.6 J3: LCD Backlight Connector



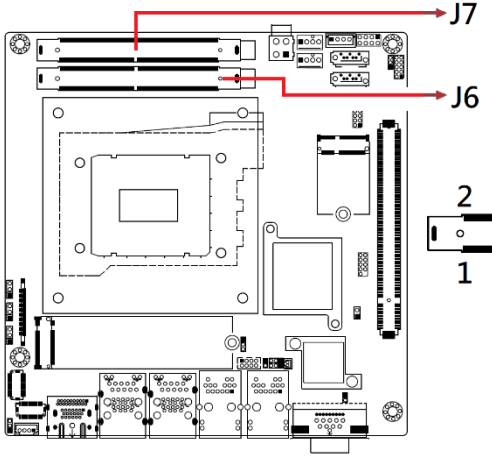

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | +12V | 3 | Brightness Control |
| 2 | Backlight Enable | 4 | Ground |

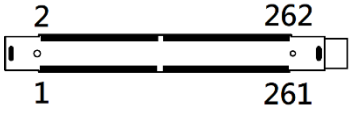
### 2.5.7 J5: M.2 M-Key NVME (CPU)



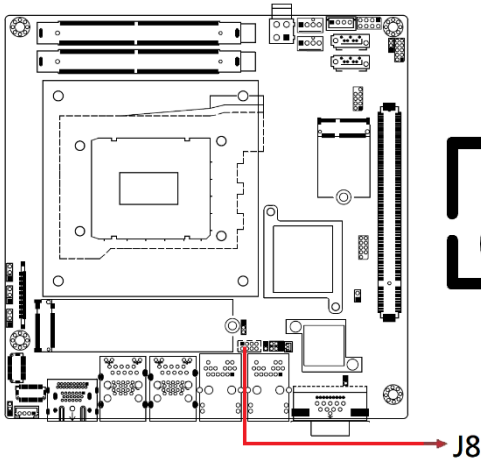



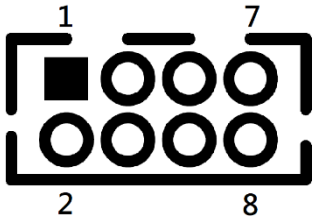

### 2.5.8 J6, J7: DDR5 UDIMM CHA/CHB



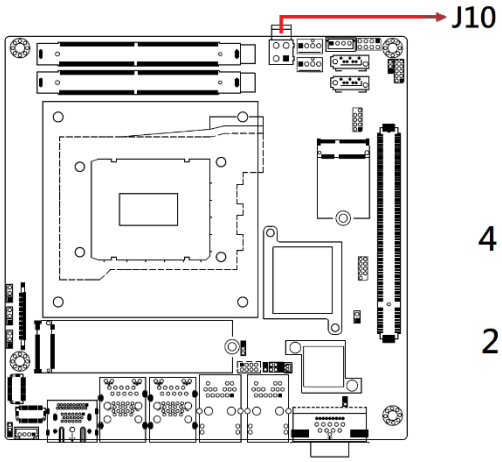
### 2.5.9 J8: USB 2.0 #5/#6 Connector

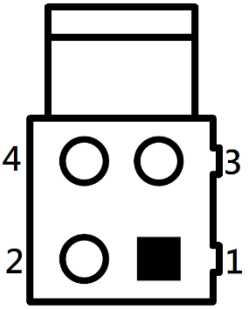



| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | Vcc | 2 | Ground |
| 3 | D5- | 4 | D6+ |
| 5 | D5+ | 6 | D6- |
| 7 | Ground | 8 | Vcc |

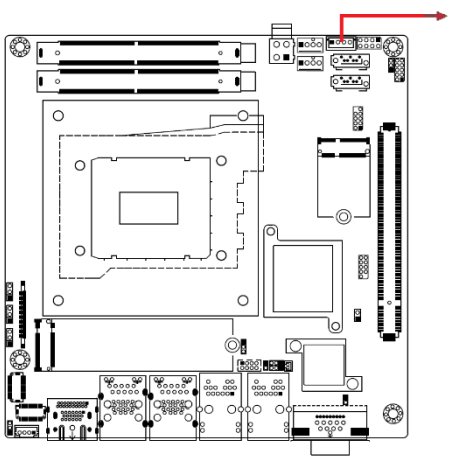
### 2.5.10 J10: 24V DC_IN Power Connector

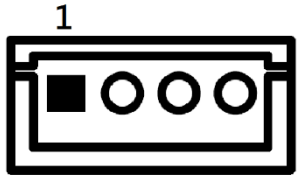



| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | Ground | 3 | +24V |
| 2 | Ground | 4 | +24V |

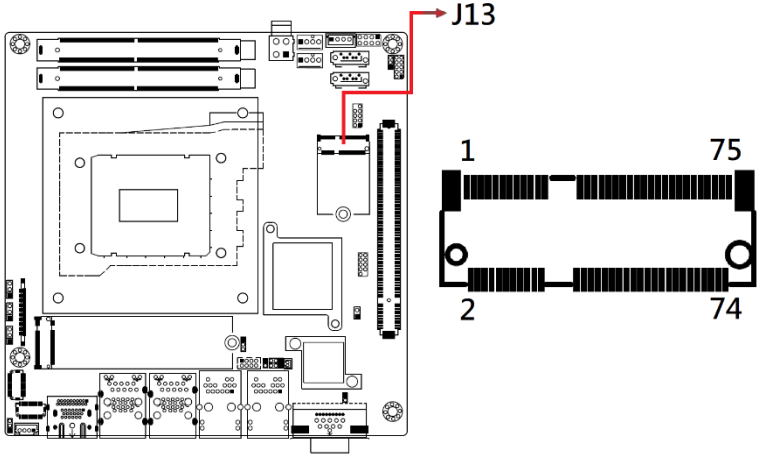
### 2.5.11 J12: SATA HDD Power Connector



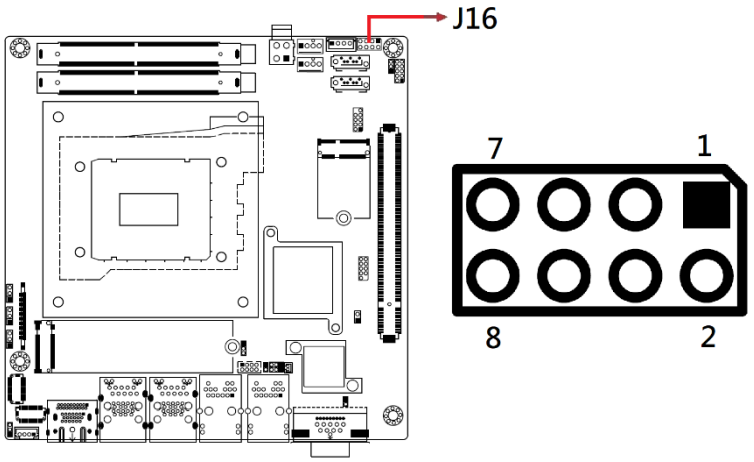




| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | +5V | 3 | Ground |
| 2 | Ground | 4 | +12V |

### 2.5.12 J13: M.2 E-Key Socket

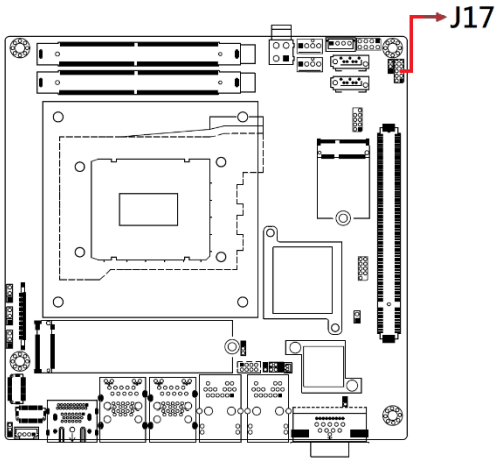


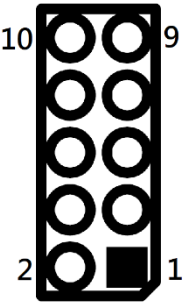
### 2.5.13 J16: Front Panel Connector




| 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- |

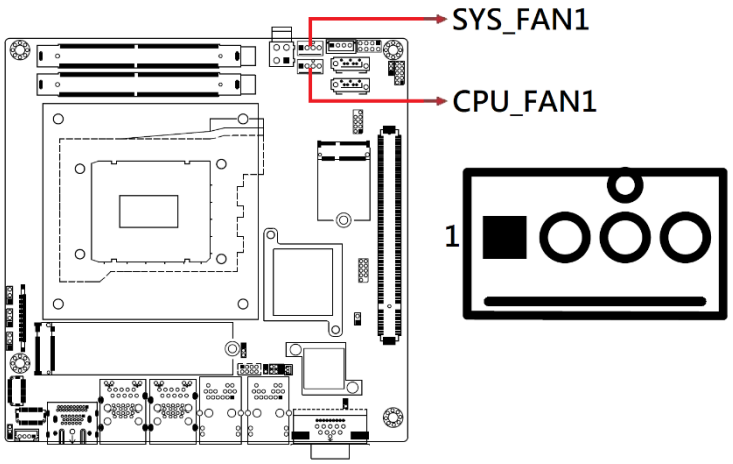
### 2.5.14 J17: Digital I/O Connector (4 in, 4 out)




| 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 |

### 2.5.15 CPU_FAN1: CPU Fan Power Connector




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

**Note: PWM Only**

### 2.5.16 SYS_FAN1: System Fan Power Connector

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

**Note: PWM Only**

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# Chapter 3
# Drivers Installation

This chapter introduces installation of the following drivers:

- Intel® Chipset Software Installation Utility
- VGA Driver
- HD Audio Driver
- Intel® Trusted Execution Engine Drivers
- Intel® Serial I/O Drivers
- LAN Drivers

## 3.1 Introduction

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

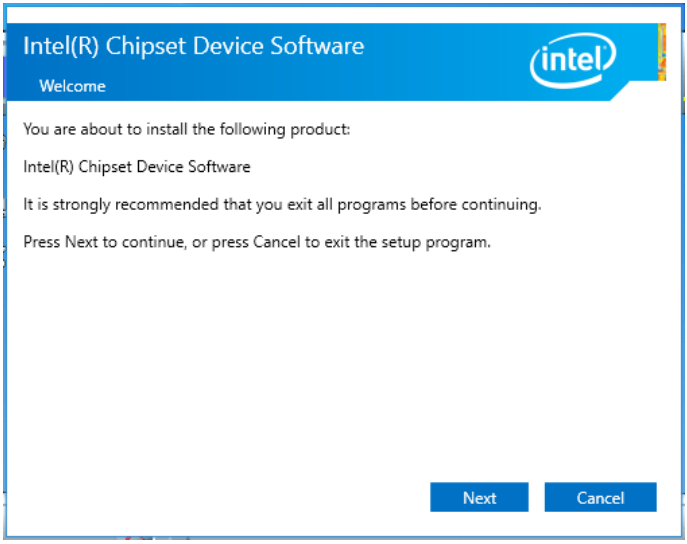
**Note:** After installing your Windows operating system, you must install the Intel® Chipset Software Installation Utility first before proceeding with the drivers installation.

## 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.

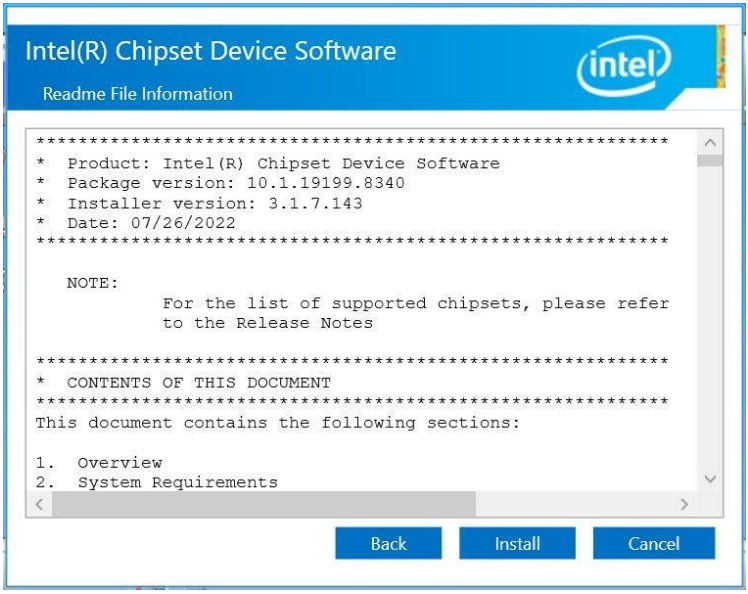
1. The software drivers are available on the IBASE website. Go to the download page of the product. Copy the compressed drivers file to your computer. Double click the file to decompress it. Run "CDGuide" to go to the main drivers page. Click **Intel** on the left pane and then **Intel(R) AlderLake-S/RaptorLake-S 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** to continue.




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

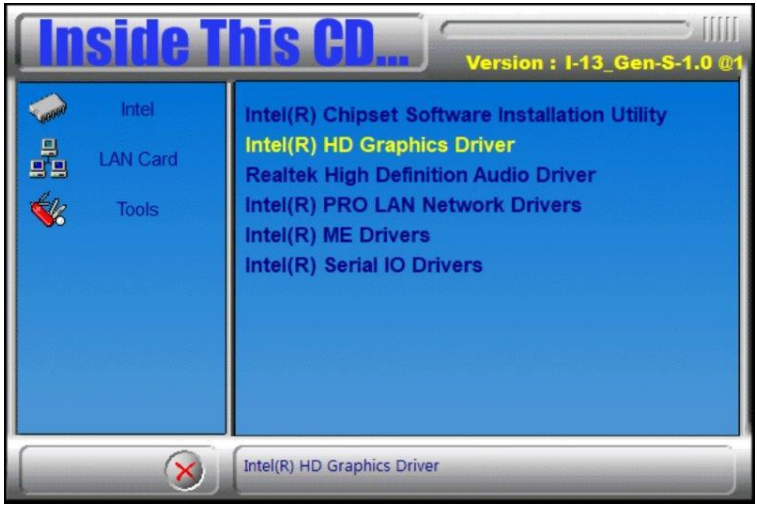
4. On the *Readme File Information* screen, click **Install**.




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

## 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.

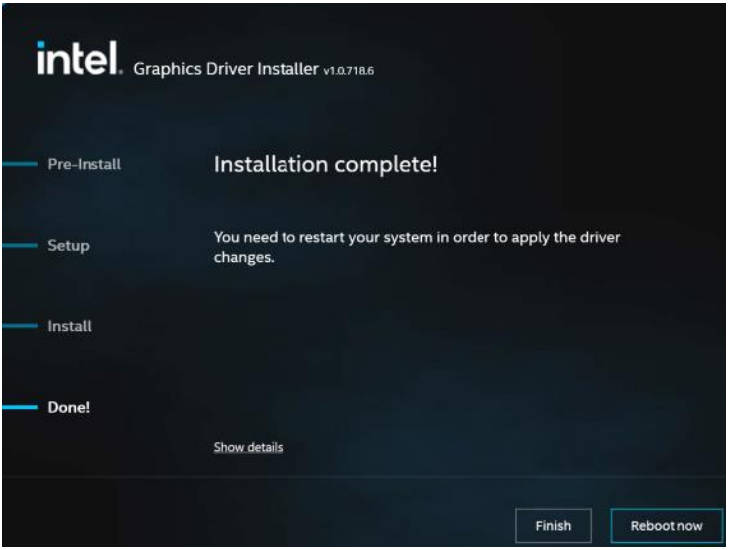



2. When the ***Intel Graphics Driver Installer*** screen appears, click **Begin installation**.

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.

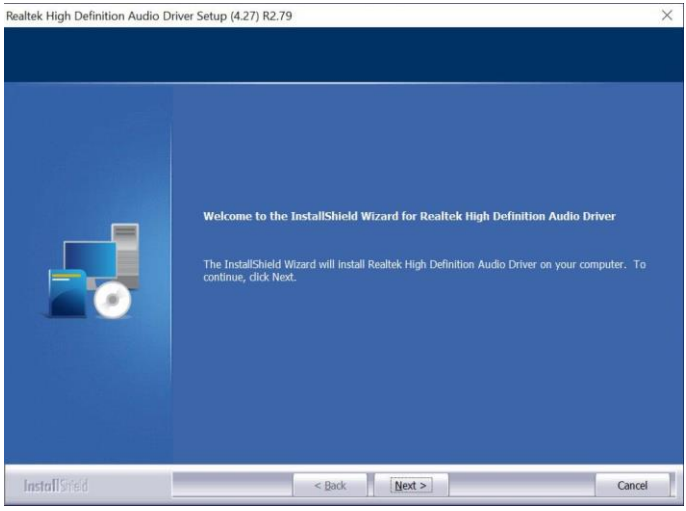
5. The next screen will indicate that the new graphics driver is being installed. When the message "**Installation complete!**" appears, restart your system in order to apply the driver changes.



## 3.4 Realtek HD Audio 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.

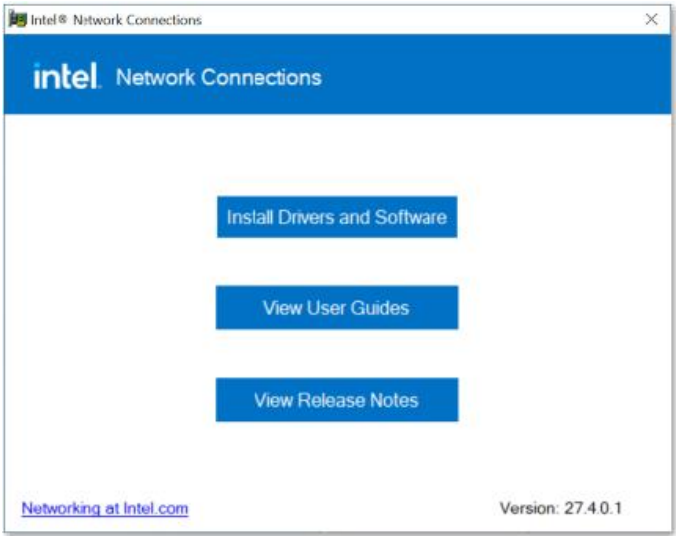



3. When the audio driver has been successfully installed, press **Finish** to restart the computer.

## 3.5 LAN Drivers Installation

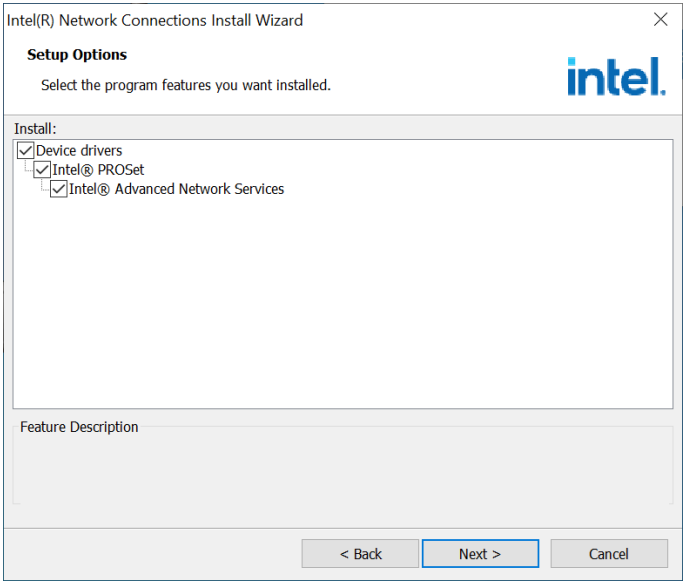
1. Click **LAN Card** on the left pane and then **Intel PRO LAN Network Drivers** on the right pane.


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.



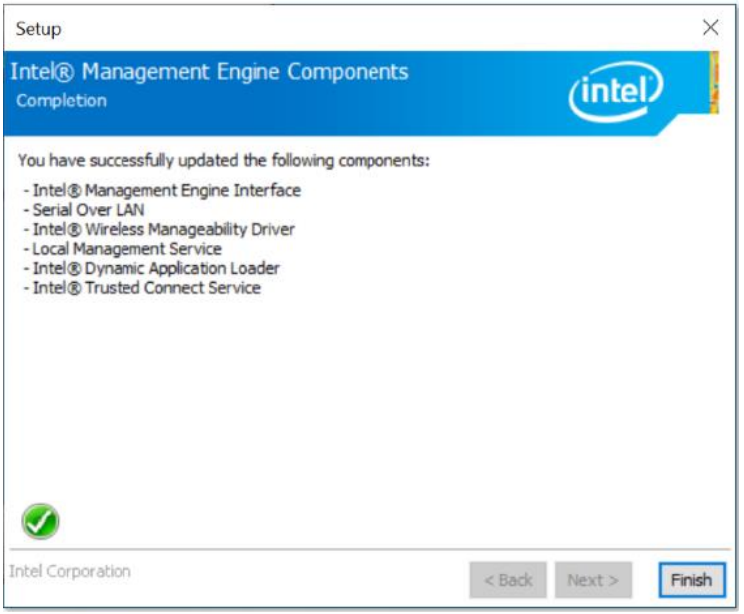

5. On the *Ready to Install the Program* screen, press **Install** to begin the installation.

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.

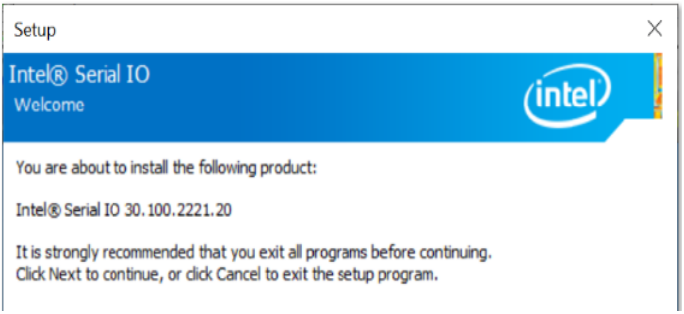

2. When the *Welcome* screen to the **Intel® Management Engine Components** appears, press **Next**.
3. Accept the terms in the License Agreement and press **Next**.
4. On the next screen, press **Next** to install to the default folder.
5. Press **Finish** when the necessary components have been successfully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



## 3.7 Intel® Serial IO Drivers Installation

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

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# 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, serial ports and parallel 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. Press 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:** It is strongly recommended that you avoid making any changes to the chipset defaults.

These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could make the system unstable and crash in some cases.

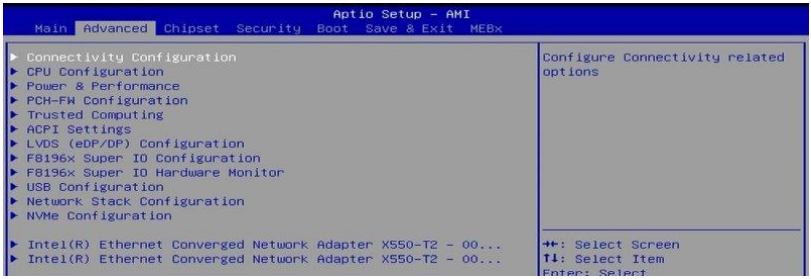
---

## 4.3 Main Settings


| BIOS Setting | Description |
|---|---|
| System Language | Choose the system default language. |
| 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 Connectivity Configuration


| 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 enable, 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 enable, 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 opton does not disable Manageability Features in FW. |

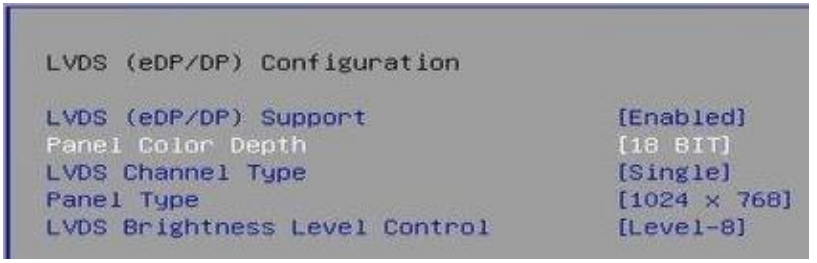
### 4.4.5 Trusted Computing


| 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

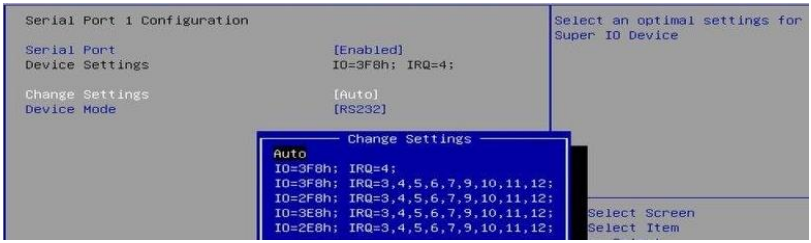

| BIOS Setting | Description |
|---|---|
| Enable ACPI Auto Configuration | Enables or Disables BIOS ACPI Auto Configuration |
| Enable Hibernation | Enables / Disables the system ability to hibernate (OS/S4 Sleep State). This option may be not effective with some OS. |
| ACPI Sleep State | Select the 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

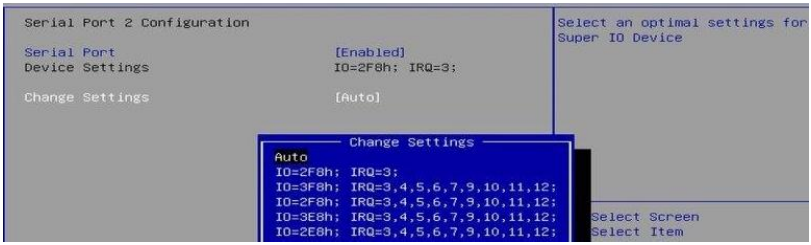




| BIOS Setting | Description |
|---|---|
| LVDS (eDP/DP) Support | LVDS (eDP/DP) ON/OFF |
| Panel Color Depth | Options: 18 BIT, 24bit(VESA), 24bit(JEIDA) |
| LVDS Channel Type | Options: Single, Dual |
| Panel Type | Options: 800 x 480, 800 x 600, 1024 x 768, 1280 x 768, 1280 x 800, 1280 x 960, 1366 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 are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status. |

## 4.4.10 USB Configuration

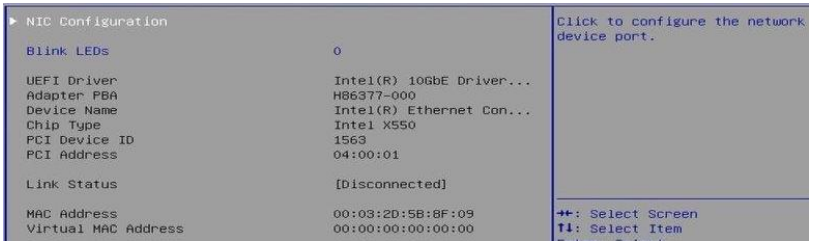

| BIOS Setting | Description |
|---|---|
| Legacy USB Support | • **Enabled** enables Legacy USB support.<br>• **Auto** disables legacy support if there is no USB device connected.<br>• **Disabled** keeps USB devices available only for EFI applications. |
| XHCI Hand-off | This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver. |
| USB Mass Storage Driver Support | Enables / Disables the 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. If disabled, Ipv4 PXE boot option will not be created. |
| IPv4 HTTP Support | Enables / Disables IPv4 HTTP Boot Support. If disabled, Ipv4 HTTP boot option will not be created. |
| IPv6 PXE Support | Enables / Disables IPv6 PXE Boot Support. If disabled, Ipv4 PXE boot option will not be created. |
| IPv6 HTTP Support | Enables / Disables IPv6 HTTP Boot Support. 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. Use either +/- or numeric keys to set the value |
| Media detect count | Assigns a number of times to check the presence of media. |

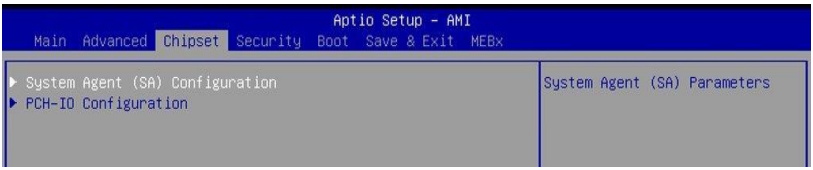
### 4.4.12 NVMe Configuration

## 4.4.13 Intel(R) Ethernet Converged Network Adapter



## 4.5 Chipset Settings



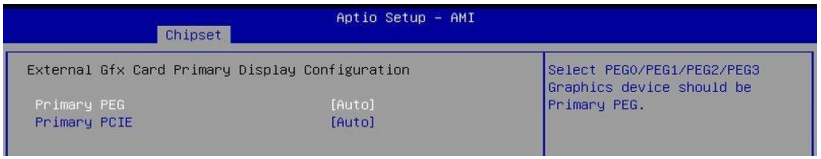

| BIOS Setting | Description |
|---|---|
| System Agent (SA) Configuration | System Agent (SA) parameters |
| PCH-IO Configuration | PCH parameters |

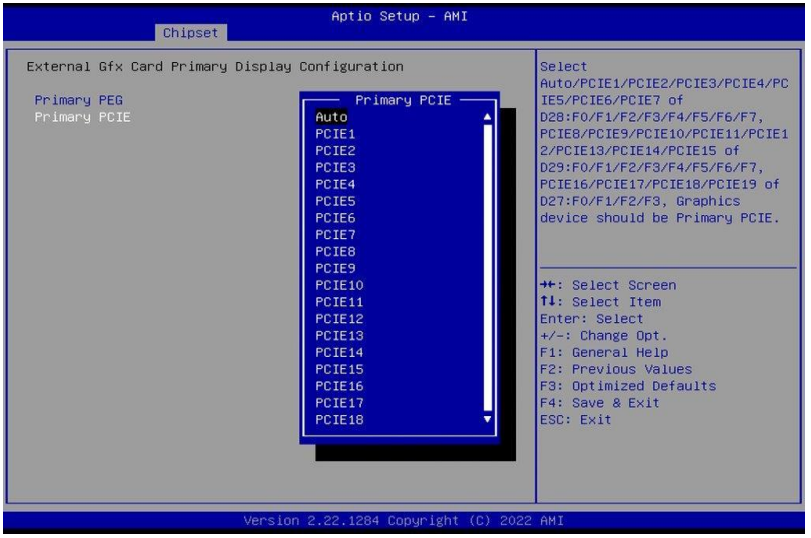
### 4.5.1 System Agent (SA) Configuration

**Graphics Configuration**

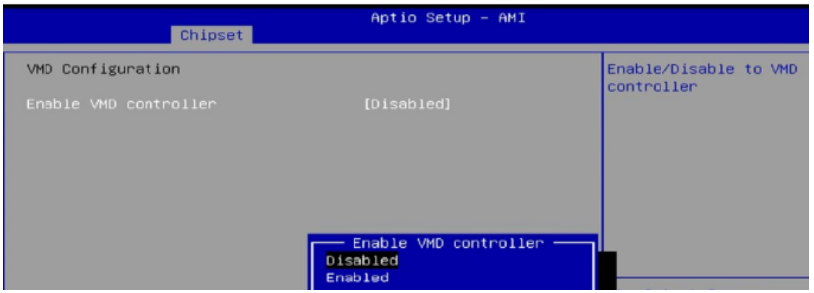

| BIOS Setting | Description |
|---|---|
| Primary Display | Select which of IGFX/PEG/PCI Graphics device should be primary display or select HG for Hybrid Gfx.<br>Options: Auto, IGFX, PEG Slot, PCH PCI, HG |
| External Gfx Card Primary Display Configuration | External Gfx Card Primary Display Configuration |
| 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. |



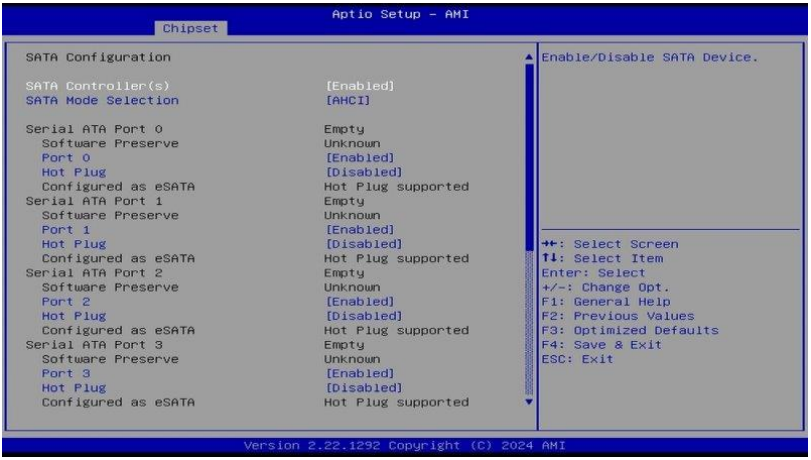



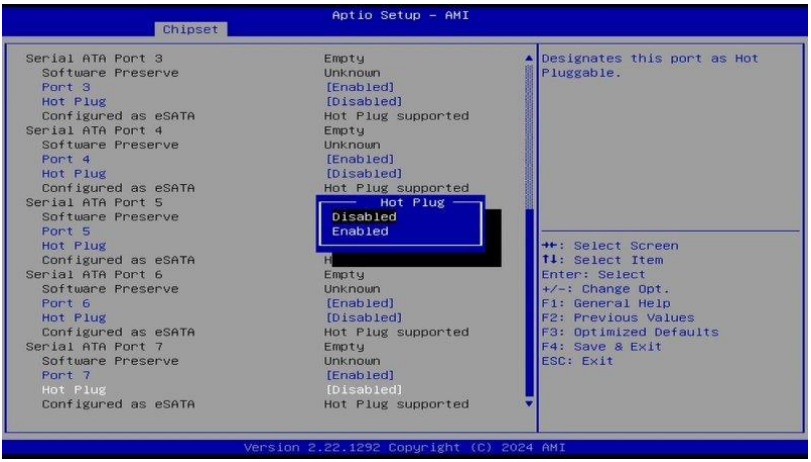

### VMD Setup Menu



## 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 |



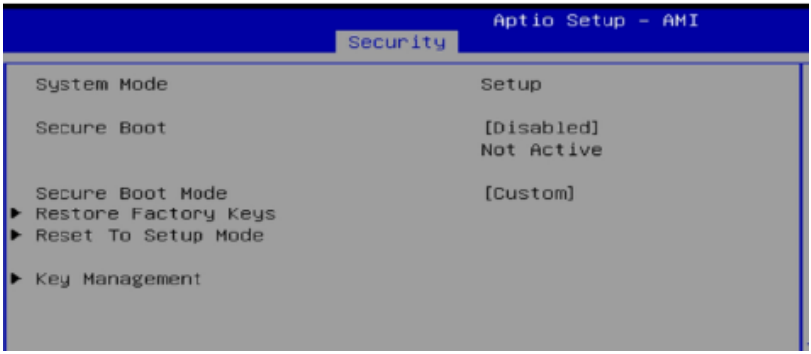



| BIOS Setting | Description |
|---|---|
| SATA Controller(s) | Enables / Disables the SATA device. |
| SATA Mode Selection | Determines how SATA controller(s) operate. |
| Serial ATA Ports | Enables / Disables SATA ports. |
| Hot Plug | Designates the port as Hot Pluggable. |

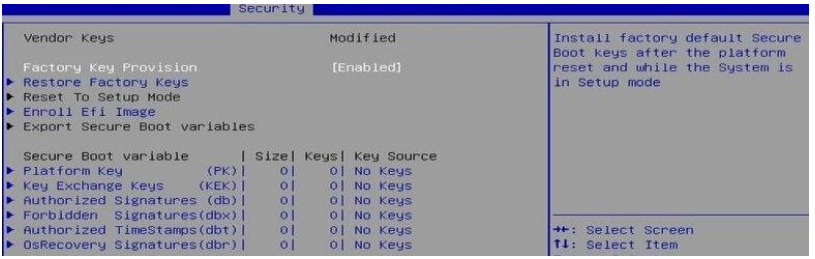
## 4.6 Security Settings


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

### 4.6.1 Secure Boot

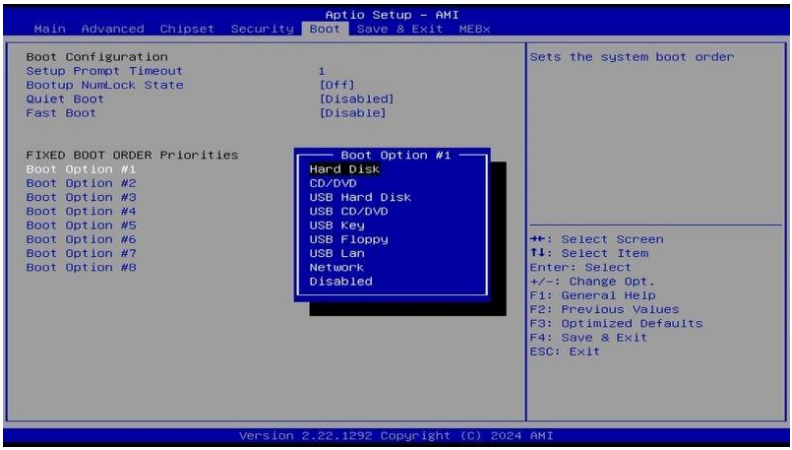


| BIOS Setting | Description |
|---|---|
| Secure Boot | Secure Boot feature is Active if Secure Boot is enabled. Platform Key (PK) Is enrolled and the system is in User mode. The mode change requires platform reset. |
| Secure Boot Mode | Secure Boot mode options: Standard or Custom.<br>In Custom mode, 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. |



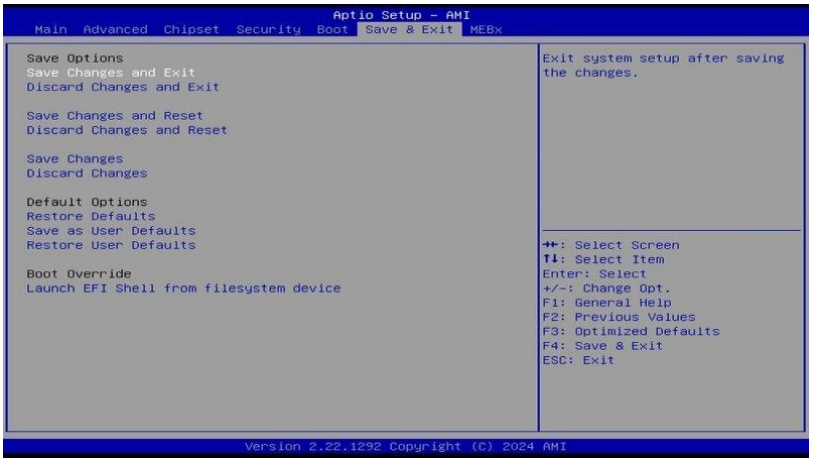



## 4.7 Boot Settings



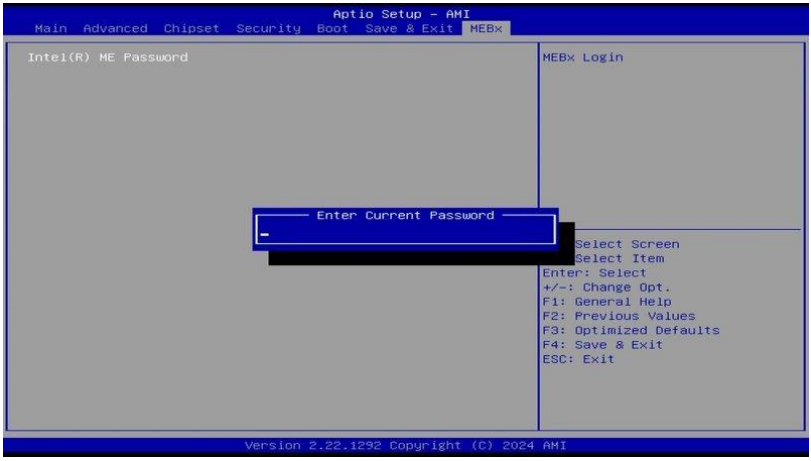

| BIOS Setting | Description |
|---|---|
| Setup Prompt Timeout | Number of seconds to wait for setup activation key.<br>65535(0xFFFF) means indefinite waiting. |
| Bootup NumLock State | Selects the keyboard NumLock state. |
| Quiet Boot | Enables / Disables Quiet Boot option. |
| Fast Boot | Enables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

## 4.8 Save & Exit Settings




| 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 | Saves changes 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. |
| Launch EFI Shell from filesystem device | Attempts to launch EFI Shell application (Shell.efi) from one of the available filesystem devices. |

## 4.9 MEBx


Aptio Setup – AMI
Main Advanced Chipset Security Boot Save & Exit MEBx
Intel(R) ME Password
MEBx Login
Enter Current Password
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

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# Appendix

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

# 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 |

| 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 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 OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "F81966.H"
//---------------------------------------------------------------------------
int main (int argc, char *argv[]);
void EnableWDT(int);
void DisableWDT(void);
//---------------------------------------------------------------------------
int main (int argc, char *argv[])
{
        unsigned char bBuf;
        unsigned char bTime;
        char **endptr;

        char SIO;

        printf("Fintek 81966 watch dog program\n");
        SIO = Init_F81966();
        if (SIO == 0)
        {
                printf("Can not detect Fintek 81966, program abort.\n");
                return(1);
        }//if (SIO == 0)

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

```
        bTime = strtol (argv[1], endptr, 10);
        printf("System will reset after %d seconds\n", bTime);

        if (bTime)
        {       EnableWDT(bTime); }
        else
        {       DisableWDT(); }
        return 0;
}
//-----------------------------------------------------------------------
void EnableWDT(int interval)
{
        unsigned char bBuf;

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

        Set_F81966_LD(0x07);                   //switch to logic device 7
        Set_F81966_Reg(0x30,   0x01);          //enable timer

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

        Set_F81966_Reg(0xF6,   interval);      //set timer

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

        bBuf = Get_F81966_Reg(0xF5);
        bBuf |= 0x20;
        Set_F81966_Reg(0xF5,   bBuf);          //start counting
}
//-----------------------------------------------------------------------
void DisableWDT(void)
{
        unsigned char bBuf;

        Set_F81966_LD(0x07);                   //switch to logic device 7

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

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


//-----------------------------------------------------------------------
//
```

```
// 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.
//
//---------------------------------------------------------------------------
#include "F81966.H"
#include <dos.h>
//---------------------------------------------------------------------------
unsigned int F81966_BASE;
void Unlock_F81966 (void);
void Lock_F81966 (void);
//---------------------------------------------------------------------------
unsigned int Init_F81966(void)
{
        unsigned int result;
        unsigned char ucDid;

        F81966_BASE = 0x4E;
        result = F81966_BASE;

        ucDid = Get_F81966_Reg(0x20);
        if (ucDid == 0x07)                      //Fintek 81966
        {       goto Init_Finish;               }

        F81966_BASE = 0x2E;
        result = F81966_BASE;

        ucDid = Get_F81966_Reg(0x20);
        if (ucDid == 0x07)                      //Fintek 81966
        {       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 char LD)
{
        Unlock_F81966();
        outportb(F81966_INDEX_PORT, F81966_REG_LD);
        outportb(F81966_DATA_PORT, LD);
        Lock_F81966();
}
```

```
//---------------------------------------------------------------------------
void Set_F81966_Reg( unsigned char REG, unsigned char DATA)
{
                Unlock_F81966();
                outportb(F81966_INDEX_PORT, REG);
                outportb(F81966_DATA_PORT, DATA);
                Lock_F81966();
}
//---------------------------------------------------------------------------
unsigned char Get_F81966_Reg(unsigned char REG)
{
                unsigned char Result;
                Unlock_F81966();
                outportb(F81966_INDEX_PORT, REG);
                Result = inportb(F81966_DATA_PORT);
                Lock_F81966();
                return Result;
}
//---------------------------------------------------------------------------
```

```
//---------------------------------------------------------------------------
//
// 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 W2-03I104132S1WT(A)-L | 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 |
| USB 3.1 | CN3 | bit_1 |