# UMT-7212

## Medical Panel PC

# User's Manual

Version 1.1
(September 2025)

## Copyright



## Disclaimer

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# Compliance

CE

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.

Operation is subject to the following two conditions:

- This product may not cause harmful interference
- This product must accept any interference received including interference that may cause undesired operation.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception which can be determined by turning the equipment off and on, you may correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the distributor or an experienced radio/TV technician for help.

## WEEE

This product must not be disposed of as normal household waste, in accordance with the EU directive 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.

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**Green IBASE**

This product complies with the current RoHS restrictions that prohibit the use of the following substances in concentrations exceeding 0.1% by weight (1000 ppm) except for cadmium, limited to 0.01% by weight (100 ppm).

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent chromium (Cr6+)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ether (PBDE)

# Important Safety Information

Carefully read the precautions before using the device.

### Environmental conditions:

- Put the device horizontally on a stable and solid surface during installation in case the device may fall, causing serious damage.
- Leave plenty of space around the device for ventilation.
- Use this product in environments with ambient temperatures between 0˚C and 40˚C.
- DO NOT LEAVE THIS DEVICE IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY BE BELOW -20° C OR ABOVE 60° C. To prevent from damages, the device must be used in a controlled environment.
- Keep the device away from humidity to avoid condensation from accumulating on the inner surface of the panel.

### Care for your IBASE products:

- Before cleaning the device, turn it off and unplug all cables in case a small amount of electrical current may still flow.
- 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 cleaner to remove dust to prevent the air vent or slots from getting clogged.

## 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.
- Ensure to use the correct power supply voltage.
- 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**

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 on the product.

# 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 touch screen.

* Products, however, 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.

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# 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 assistance from your distributor or sales representative concerning problems that you may have encountered, please prepare the following information:

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

3. For repair service, please download the RMA form from http://www.ibase.com.tw/english/Supports/RMAService/.
   Fill out the form and contact your distributor or sales representative.

# Table of Contents

# Chapter 1
# General Information

The information provided in this chapter includes:

- Features
- Packing List
- Specifications
- Overview
- Dimensions

## 1.1 Introduction

UMT-7212 is a 21.5” medical touch panel PC based on the Intel® 6th Gen. Core™ processor. It features IP65 ingress protection for the front bezel and can be operated at ambient operating temperature ranging from 0°C to 40°C.

## 1.2 Features

- With Intel® Core™ i7 6600U / i5 6300U processor
- Projected capacitive touch screen
- Capacitive control keypad for power / brightness / volume
- IP65 front-panel waterproof protection
- PCIe (x4) expansion cards

## 1.3 Packing List

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

- UMT-7212
- Power Cord

## 1.4 Optional Accessories

- Backup Battery
- LED Reading Light
- Wi-Fi Cable Kit
- I/O Cover

## 1.5 Specifications

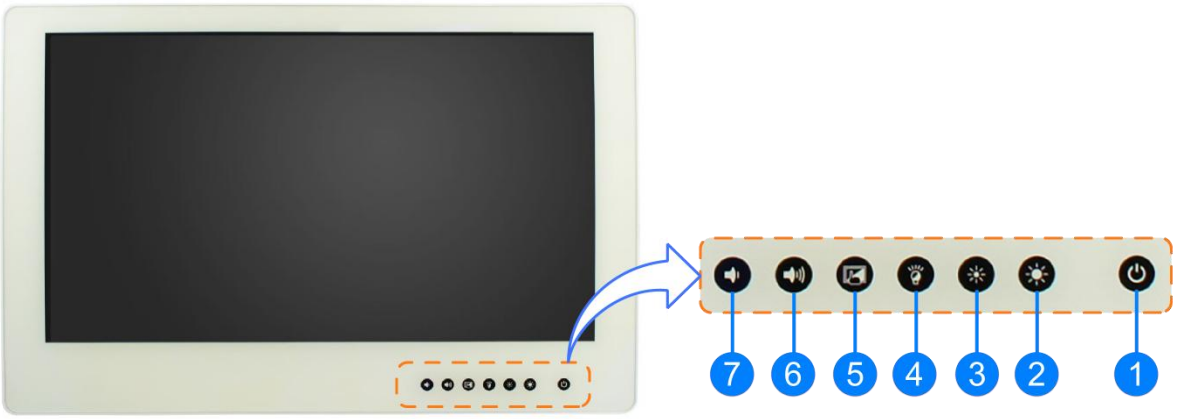
| | |
|---|---|
| **Product Name** | **UMT-7212** |
| **Motherboard** | MBM7001 |
| **Operating System** | Windows 10 / 8.1 (64-bit) |
| **System** | |
| **CPU** | • Intel® Core™ i7-6600U 2.6 GHz<br>• Intel® Core™ i5-6300U 2.4 GHz |
| **Memory** | 2 x DDR4-2133 SO-DIMM, default 1 x 4GB |
| **Membrane Control** | Capacitive keys for power on-off / brightness / volume / Touch on-off / reading light on-off |
| **Built-in speaker / Microphone** | IP54 speaker |
| **Power** | 90V ~ 240V AC (Optional internal backup battery for 15-min operation) |
| **Super I/O** | Fintek F81846AD |
| **BIOS** | AMI BIOS |
| **Watchdog** | Watchdog Timer 256 segments, 0, 1, 2…255 sec/min |
| **iSmart** | Yes (auto-scheduler / power resume) |
| **Chassis** | Medical white, aluminum + sheet metal with white powder coating |
| **Mounting** | VESA 100 x 100 mm |
| **Dimensions (W x H x D)** | 557 x 360 x 80 mm<br>(21.93" x 14.17" x 3.15") |
| **Net Weight** | 6.7 kg (14.77 lb) |
| **Ingress Protection** | IP65 rated front bezel / IP54 (except I/O side) |
| **RoHS** | Yes |
| **Certificate** | CE, FCC Class B, LVD |
| **Display & Touchscreen** | |
| **Display Type** | 21.5” TFT LCD |
| **Touch Type** | Projected capacitive touch |
| **Resolution** | Max. 1920 x 1080 |
| **Luminance** | 300 cd/m2 |
| **Contrast** | 1000:1 |
| **Colors** | Max. 16.7M |

| | |
|---|---|
| **Viewing Angle** | H/V: 178° / 178° |
| **Backlight Lifetime** | 30,000 hrs |
| **Touch Interface** | USB |
| **Light Transmission** | 87% |
| **Point of Touch** | 10 points multi-touch |
| **I/O Ports** | |
| **LAN** | 2 x GbE (4KV isolated) |
| **Serial** | **2 COM ports:**<br>• COM1: RS-232/422/485 (4KV isolated, selectable in BIOS)<br>• COM2/3: RS-232 only (4KV isolated, onboard headers) |
| **SATA** | 1 x SATA III connector on board |
| **USB** | • 2 x USB 3.0<br>• 2 x USB 3.0 |
| **Internal Storage** | • 1 x 2.5” SATA (default 64G SSD)<br>• 1 x M.2 M2280 SSD |
| **Internal Expansion** | • 1 x M.2 E2230 slot<br>• 1 x Mini PCIe (full-size)<br>• 1 x PCIe (x4) |
| **Environment** | |
| **Temperature** | • **Operating:** 0°C ~ 40°C (32 ~ 104 °F)<br>• **Storage:** -20°C ~ 60°C (-4 ~ 140 °F) |
| **Relative Humidity** | 10 ~ 95% (non-condensing) |

All specifications are subject to change without prior notice.

## 1.6 Overview

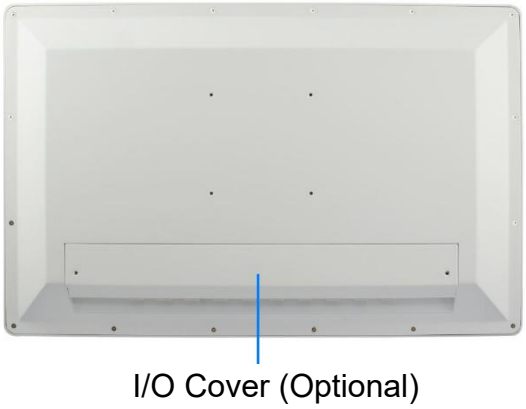
### Front View




| No. | Name | No. | Name |
|---|---|---|---|
| 1 | Power Button | 5 | Touchscreen Input Control [B] |
| 2 | Brightness Up | 6 | Volume Up |
| 3 | Brightness Down | 7 | Volume Down |
| 4 | LED Reading Light Control (Optional) [A] | | |

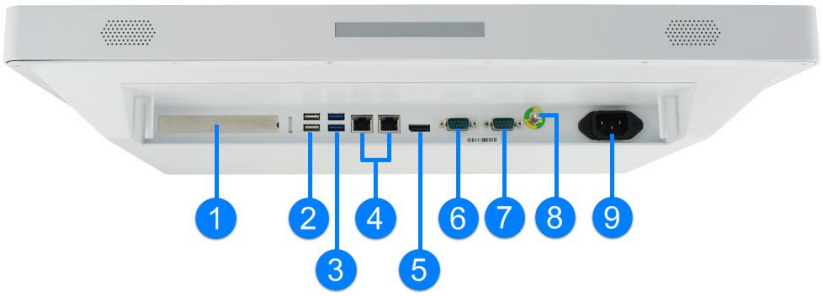
[A]: This button only functions with our optional LED reading light.
[B]: Press this button to disable or enable the touchscreen input when you need to clean the surface of the panel.

### Rear View




### Oblique View

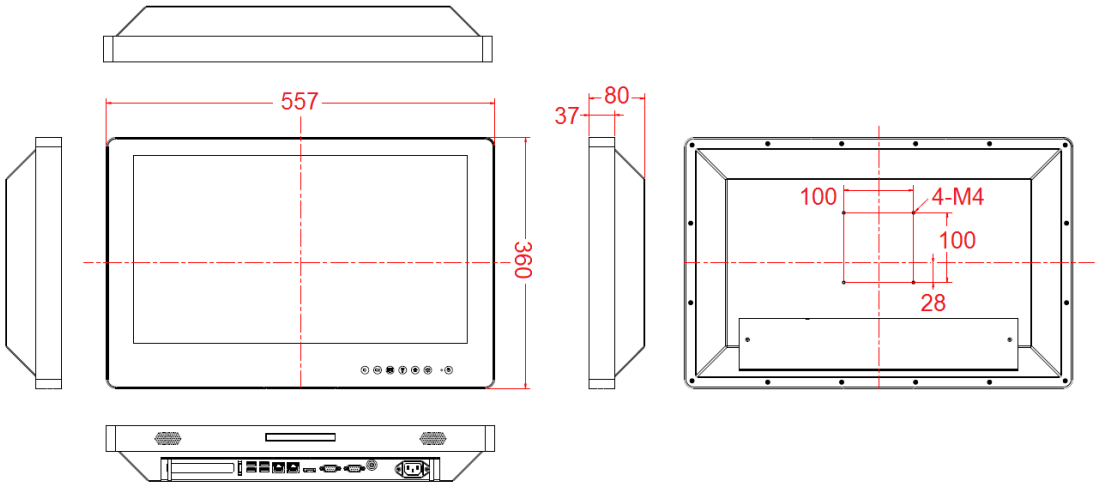
**I/O View**




| No. | Name | No. | Name |
|---|---|---|---|
| 1 | Expansion Card Slot | 6 | COM2 RS-232 |
| 2 | USB 2.0 Port | 7 | COM1 RS-232/422/485 Port |
| 3 | USB 3.0 Port | 8 | System Ground |
| 4 | LAN Port (GbE) | 9 | AC Inlet |
| 5 | DisplayPort | | |

## 1.7 Dimensions

Unit: mm



# Chapter 2
# Hardware Configuration

The information provided in this chapter includes:

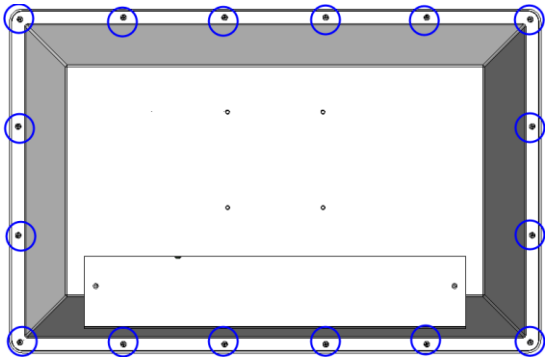
- Memory installation and membrane keypad extension
- Information and locations of connectors

## 2.1 Installations

**Avoid device disassembly:** Disassembly, modification, or any attempt at repair could generate hazards and cause damage to the device, injury, or property damage, and will void any warranty. If you need to make any changes to the device, be sure to unplug the power cord of the device and have qualified engineers or technicians do the disassembly or installation.

### 2.1.1 Rear Cover Disassembly

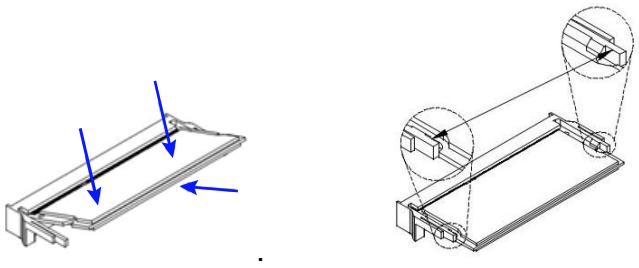
In case you need to remove the rear cover to install a memory module, a mini-PCIe card, an M.2 card or any expansion card, unscrew the 16 screws shown below to remove the rear cover.



### 2.1.2 Memory Replacement

To replace or install memory modules, perform the following steps after removing the system rear cover.

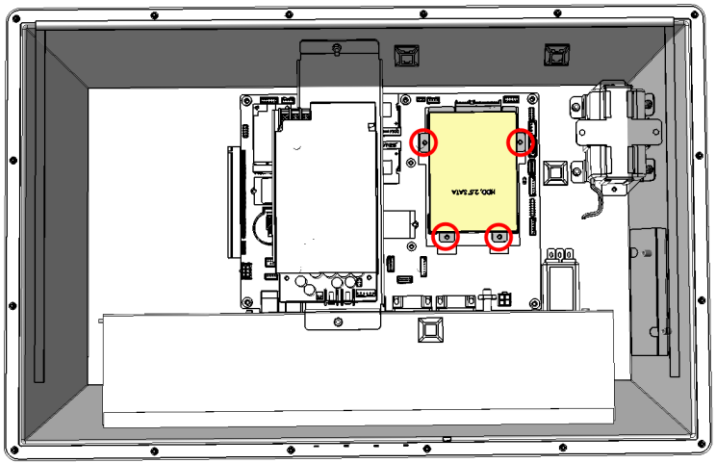
1. Locate the memory slot and align the key of the memory module with that on the memory slot.
2. Insert the module slantwise and gently push the module straight down until the clips of the slot close to hold the module in place when the module touches the bottom of the slot.



To remove the module, press the clips outwards with both hands.

### 2.1.3 SSD Replacement

1. After removing the rear cover, unscrew the following 4 screws to remove the SSD/HDD tray.



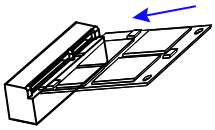
2. Unplug the cables of the SSD. Unscrew the 4 screws on the bottom of the tray to release the SSD and replace it with a new one.
3. Secure the new SSD to the tray, fix it onto the motherboard, and connect the cables.

### 2.1.4 Mini-PCIe & M.2 Card Installation

To replace or install a mini-PCIe card or an M.2 card, perform the following steps after removing the rear cover.

1. Locate the mini-PCIe or M.2 slot, align the key of the card to the interface, and insert the card slantwise.

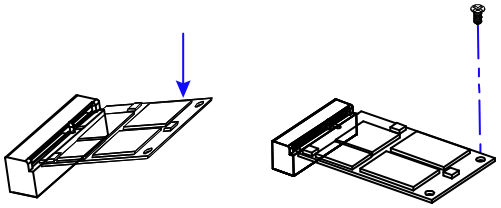
   (Insert the M.2 card in the same way.)



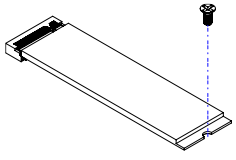
2. Push the card down and fix it with the supplied flat head screw.

   (Fix the M.2 card with a round head screw.)

**Mini-PCIe:**

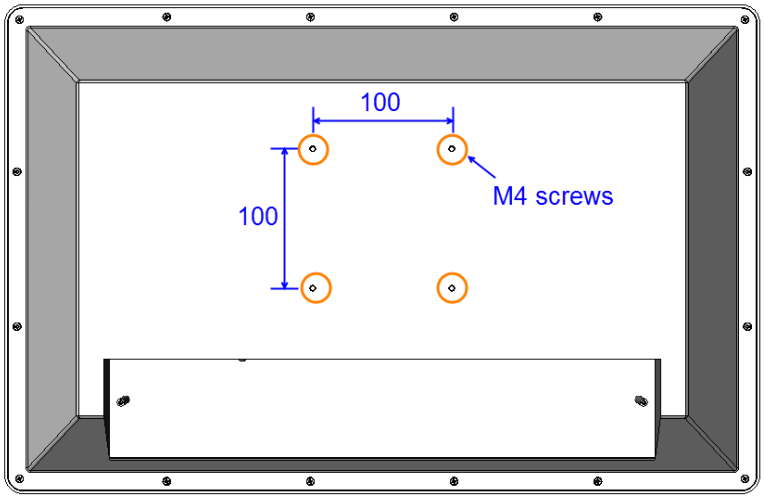


**M.2:**



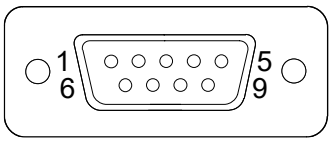
### 2.1.5 VESA Mounting Installation

You will need to prepare the VESA mount bracket in advance. Tighten 4 screws as shown below to attach the mounting brackets to the system.



## 2.2 Pin out for COM1 & COM2

- **COM1 RS232/422/485 Port**

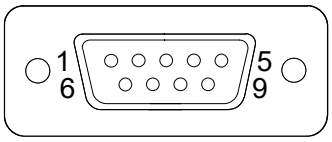



COM 1 features jumperless selection for RS-232/422/485, which is configurable in the BIOS setting.

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | DCD, Data carrier detect | 6 | DSR, Data set ready |
| 2 | RXD, Receive data | 7 | RTS, Request to send |
| 3 | TXD, Transmit data | 8 | CTS, Clear to send |
| 4 | DTR, Data terminal ready | 9 | RI, Ring indicator |
| 5 | Ground | | |

| 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 |

- **COM2 RS-232 Port**



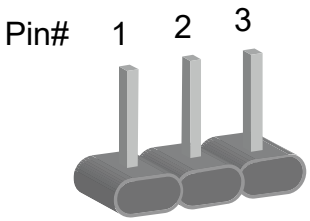

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | DCD, Data carrier detect | 6 | DSR, Data set ready |
| 2 | RXD, Receive data | 7 | RTS, Request to send |
| 3 | TXD, Transmit data | 8 | CTS, Clear to send |
| 4 | DTR, Data terminal ready | 9 | RI, Ring indicator |
| 5 | Ground | | |

## 2.3 Setting the Jumpers

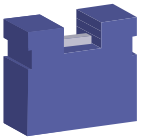
Configure the jumpers with the settings required to be able to use the features needed for your application. Contact your supplier if you have doubts about the best configuration for your use.

### 2.3.1 How to Set the 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 with the jumper cap.

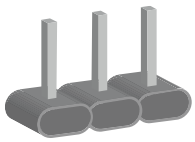
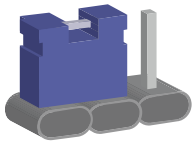
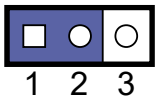
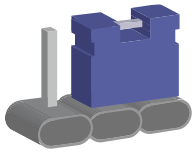
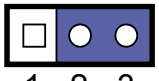



**A 3-pin jumper**



**A jumper cap**

Refer to the illustration below to set the jumpers.

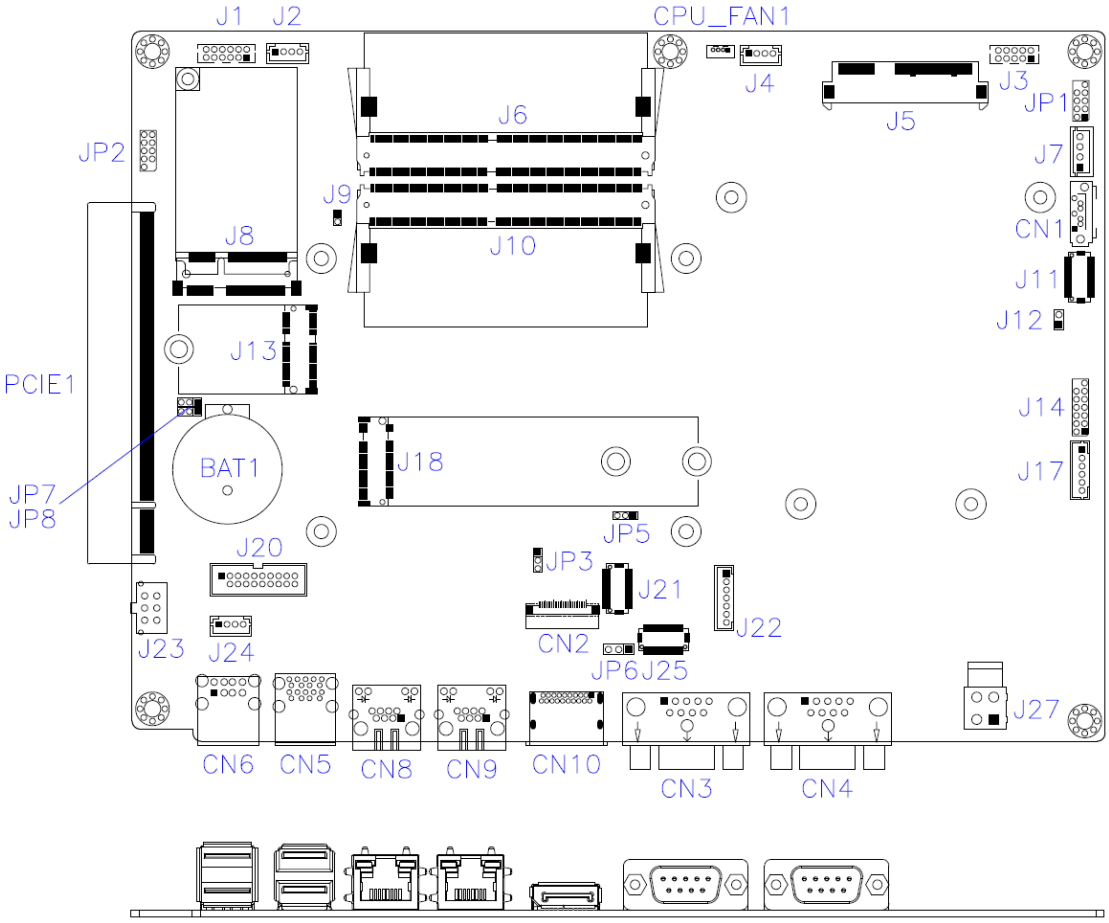
| Pin closed | Oblique view | Illustration in the manual |
|---|---|---|
| Open |  |   |
| 1-2 |  |   |
| 2-3 |  |   |

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**.

## 2.4 Jumper & Connector Locations

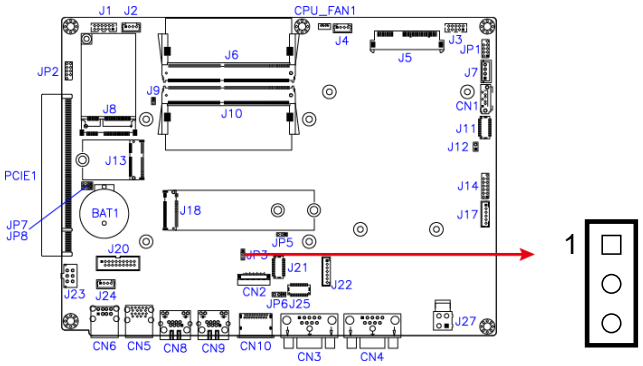
Motherboard: MBM7001



## 2.5 Jumpers Quick Reference

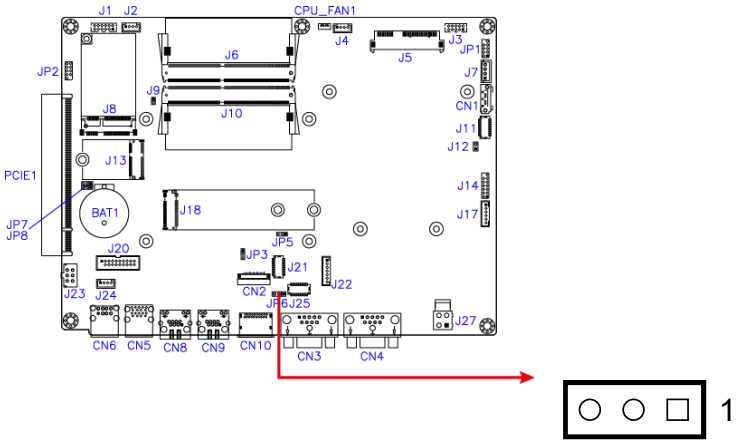
| Function | Connector Name | Page |
|---|---|---|
| VDD Power Selection for eDP | JP3 | 15 |
| LVDS Panel Power Selection | JP6 | 16 |
| Clearing CMOS Data | JP7 | 16 |
| Clearing ME Register | JP8 | 17 |
| Factory Use Only | JP1, JP2, JP5 | - - |

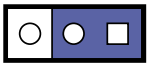
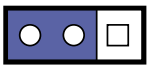
### 2.5.1 VDD Power Selection for eDP (JP3)



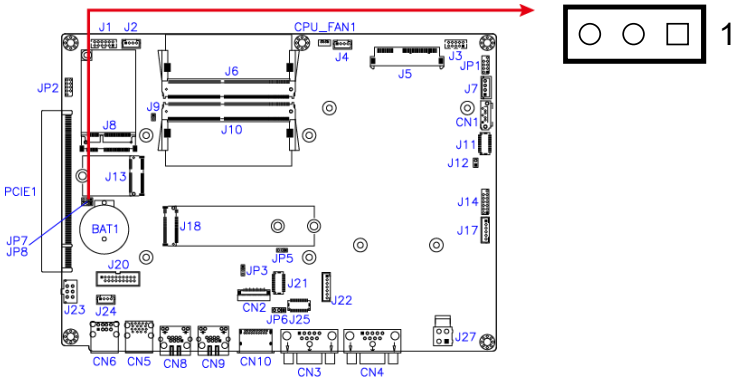

| Function | Pin closed | Illustration |
|---|---|---|
| 3.3V (default) | 1-2 |   |
| 5V | 2-3 |   |

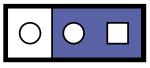
## 2.5.2 LVDS Panel Power Selection (JP6)



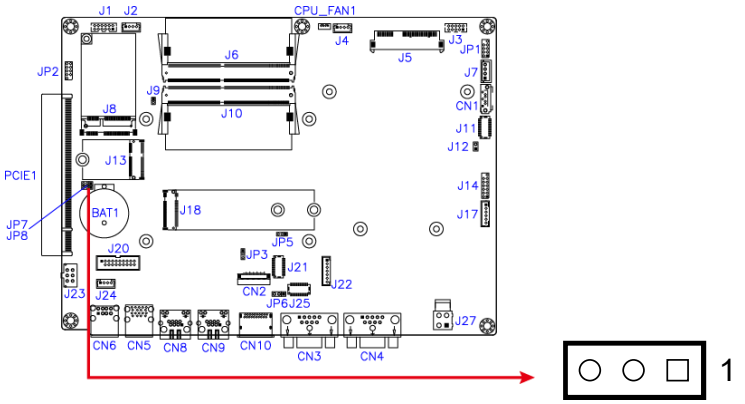

| Function | Pin closed | Illustration |
|---|---|---|
| 3.3V (default) | 1-2 |  |
| 5V | 2-3 |  |

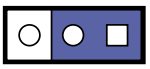
## 2.5.3 Clearing CMOS Data Register (JP7)




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

### 2.5.4 Clearing ME Register Selection (JP8)



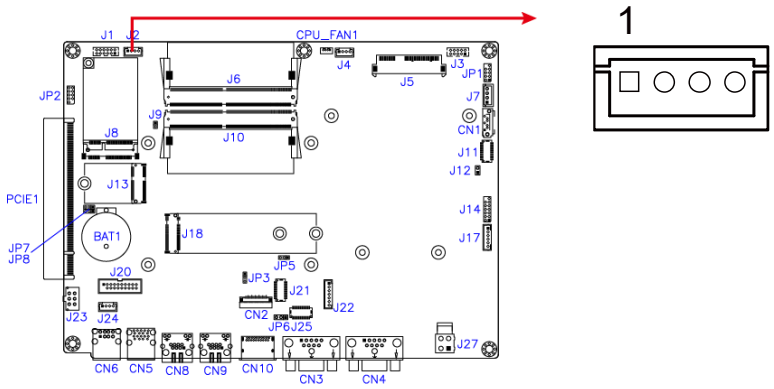

| Function | Pin closed | Illustration |
|---|---|---|
| Normal (default) | 1-2 |  1 |
| Clear ME Register | 2-3 |  1 |

## 2.6 Connectors Quick Reference

| Function | Connector Name | Page |
|---|---|---|
| Amplifier Connector | J2 | 19 |
| Audio Connector | J1 | 19 |
| COM3 RS-232 Port | J3 | 20 |
| Backlight Connector | J22 | 20 |
| LVDS Connector | J21, J25 | 21 |
| eDP Connector | CN2 | 22 |
| SATA Power Connector | J7 | - - |
| SSD SATA Connector | J5 | - - |
| Mini-PCIe Slot | J8 | - - |
| M.2 E2230 Slot | J12 | - - |
| M.2 M2280 Slot | J18 | - - |
| USB 3.0 Ports | J20 | - - |
| PCIe (x16) Power Connector | J23 | - - |
| DC-In Power Connector | J27 | - - |
| SATA Connector | CN1 | - - |
| Isolated COM Ports [1] | CN3 (COM2 RS-232),<br>CN4 (COM1 RS-232/422/485) | - - |
| USB 3.0 Ports | CN5 | - - |
| USB 2.0 Ports | CN6 | - - |
| GbE LAN Port | CN8, CN9 | - - |
| DisplayPort | CN10 | - - |
| Factory Use Only | J11, J14, J17, J24 | - - |

[1]: Refer to *2.2 Pin out for COM1 & COM2*.

### 2.6.1 Amplifier Connector (J2)

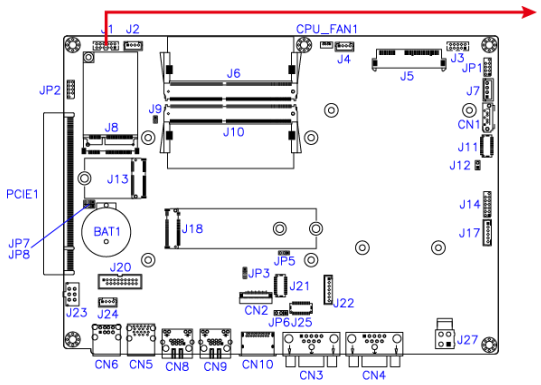


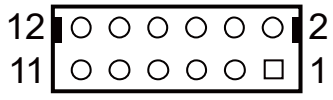




| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | OUTL+ | 3 | OUTR- |
| 2 | OUTL- | 4 | OUTR+ |

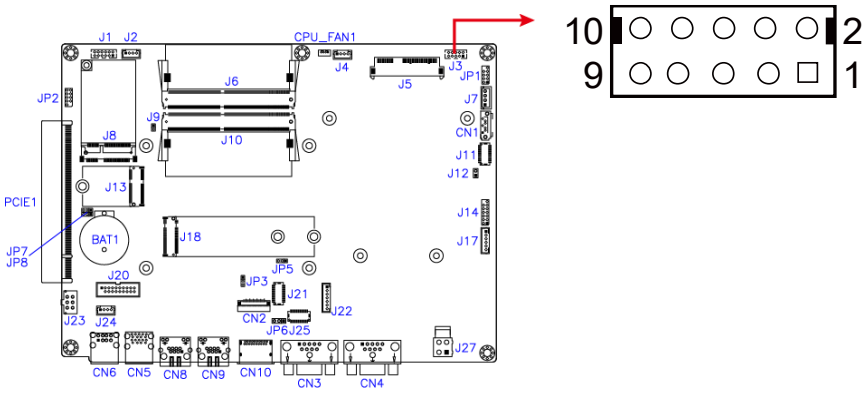
### 2.6.2 Audio Connector (J1)



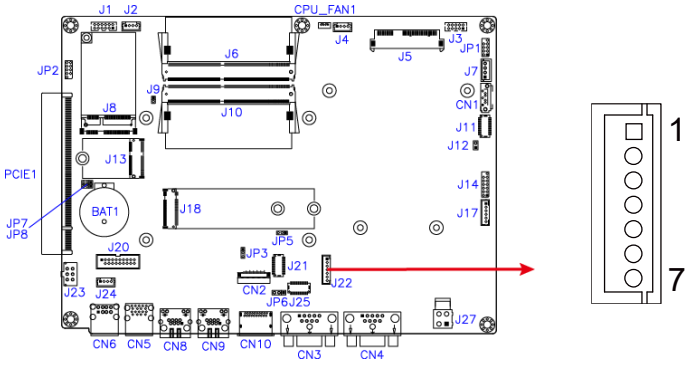

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | Lineout_L | 2 | Lineout_R |
| 3 | JD_FRONT | 4 | Ground |
| 5 | LINEIN_L | 6 | Linein_R |
| 7 | JD_LINEIN | 8 | Ground |
| 9 | MIC_L | 10 | MIC-R |
| 11 | JD_MIC1 | 12 | Ground |

### 2.6.3 COM3 RS-232 Port (J3)



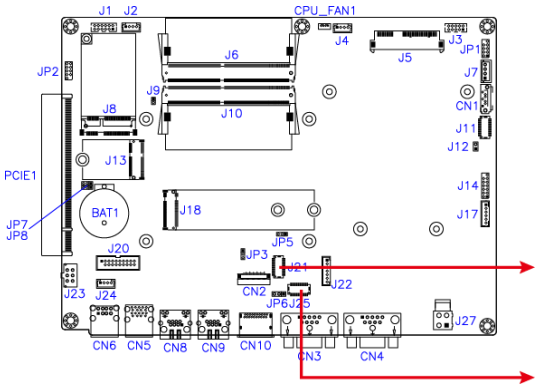

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | DCD, Data carrier detect | 2 | RXD, Receive data |
| 3 | TXD, Transmit data | 4 | Data terminal ready |
| 5 | Ground | 6 | DSR, Data set ready |
| 7 | RTS, Request to send | 8 | CTS, Clear to send |
| 9 | RI, Ring indicator | 10 | Not Used |

### 2.6.4 Backlight Connector (J22)

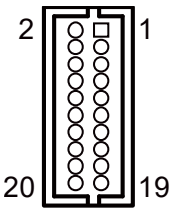



| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | +12V | 5 | Backlight Enable |
| 2 | +12V | 6 | Brightness Control |
| 3 | Ground | 7 | +3.3V |
| 4 | Ground | | |

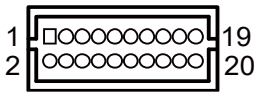
### 2.6.5 LVDS Connector (J21, J25)




**J21:**

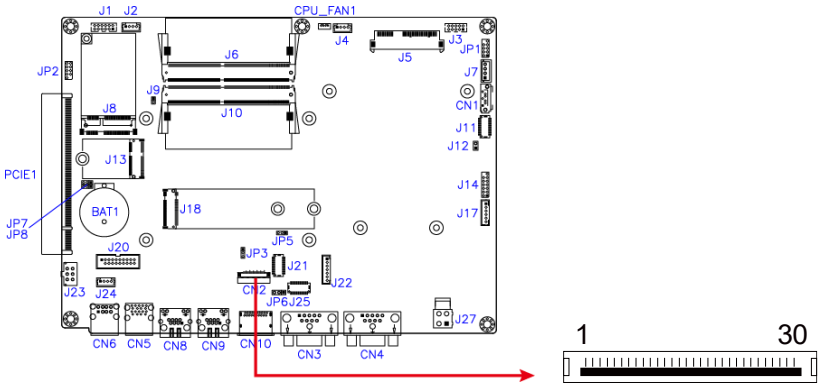



**J25:**




| 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 | Power | 20 | Power |

### 2.6.6 eDP Connector (CN2)




| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | NC | 16 | Ground |
| 2 | +5V | 17 | NC |
| 3 | +5V | 18 | VDD_EDP<br>(JP3 SEL +3.3V or +5V) |
| 4 | +5V | 19 | VDD_EDP<br>(JP3 SEL +3.3V or +5V) |
| 5 | +5V | 20 | Ground |
| 6 | NC | 21 | AUXN |
| 7 | NC | 22 | AUXP |
| 8 | Brightness | 23 | NC |
| 9 | BKLT_EN | 24 | TXP0 |
| 10 | Ground | 25 | TXN0 |
| 11 | Ground | 26 | Ground |
| 12 | Ground | 27 | TXP1 |
| 13 | Ground | 28 | TXN1 |
| 14 | HPD | 29 | Ground |
| 15 | Ground | 30 | NC |

# Chapter 3
# Driver Installation

The information provided in this chapter includes:

- Intel® Chipset Software Installation Utility
- Graphics Driver Installation
- HD Audio Driver Installation
- Intel® PRO LAN Network Drivers Installation
- Intel® ME 11.x Drivers Installation

## 3.1 Introduction

This section describes the installation procedures for software drivers. Drivers can be download from the IBASE website.

---

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

---

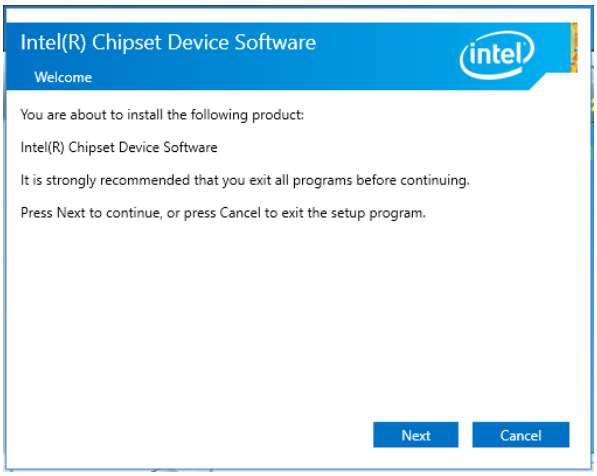
## 3.2 Intel® Chipset Software Installation Utility

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

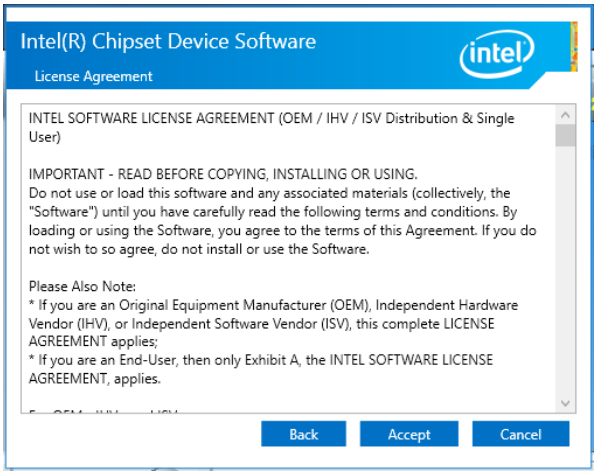
1. Insert the disk enclosed in the package. Click **Intel** and then **Intel(R) Skylake-U/Kabylake-U Chipset Drivers**.


2. Click **Intel(R) Chipset Software Installation Utility**.

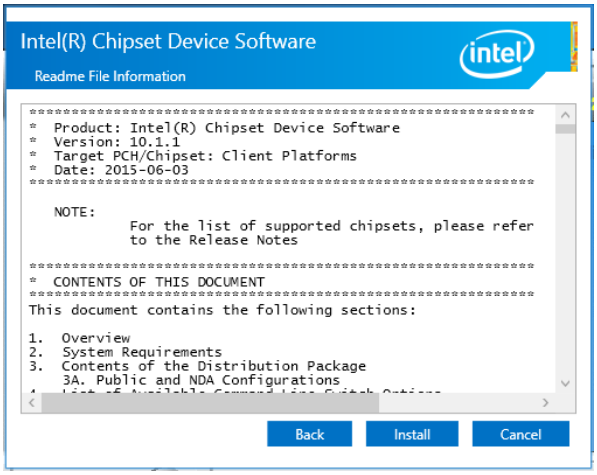
3. When the *Welcome* screen to the Intel® Chipset Device Software appears, click **Next** to continue.




4. Click **Yes** to accept the software license agreement, and proceed with the installation process.




5. Read the *Readme File Information,* and then click **Install**.



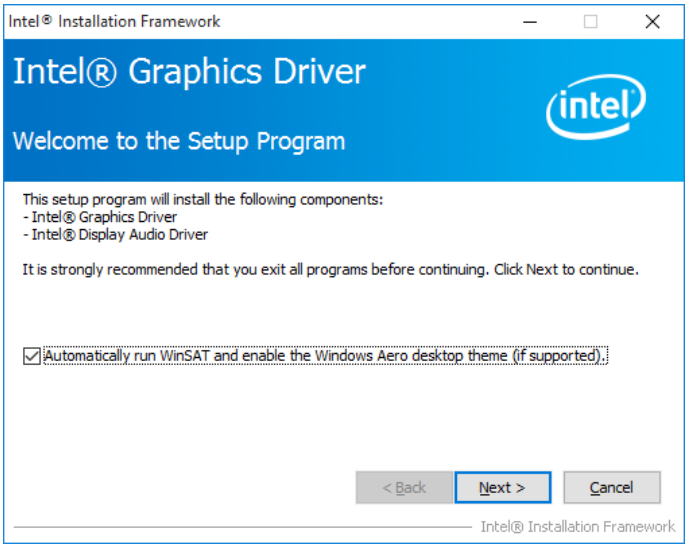

6. Choose a destination folder for installation.
7. The driver has been completely installed. Click **Finish,** and restart the computer for changes to take effect.

## 3.3 Graphics Driver Installation

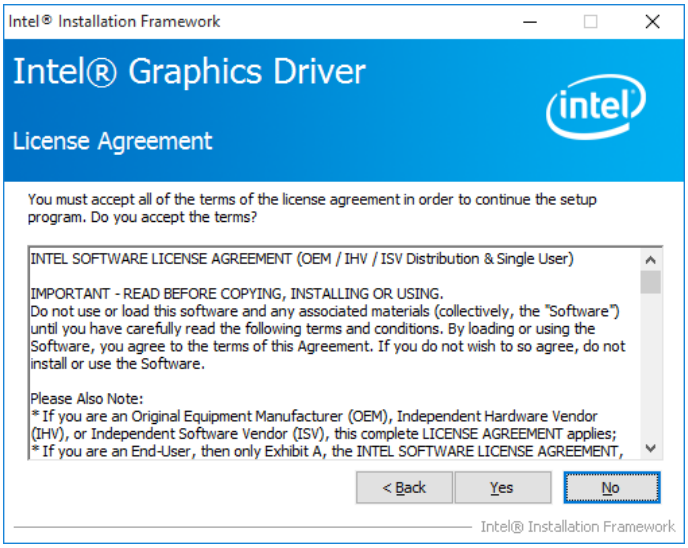
1. Click **Intel,** and then **Intel(R) Skylake-U/Kabylake-U Chipset Drivers**.


2. Click **Intel(R) HD Graphics Driver**.

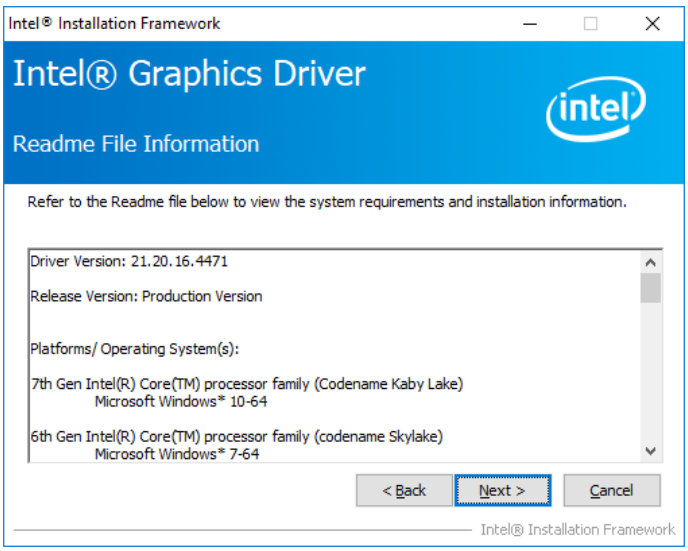

3. When the *Welcome* screen appears, click **Next** to continue.



4. Click **Yes** to agree with the license agreement, and continue the installation.




5. Read the *Readme File Information,* and then click **Next**.



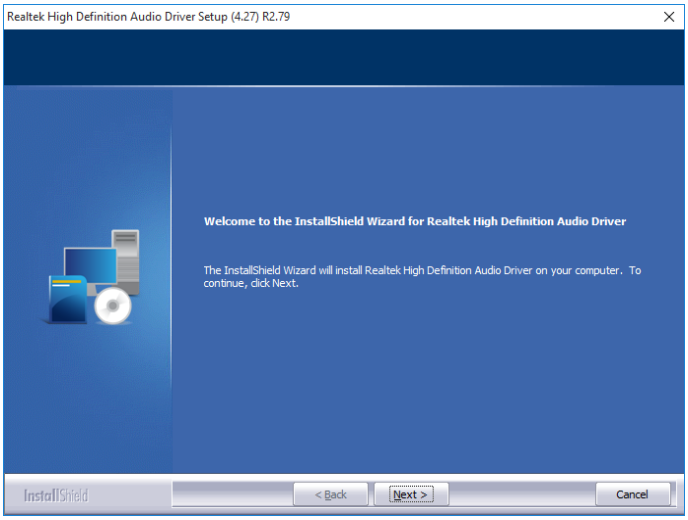

6. Choose a destination folder for installation.
7. The driver has been completely installed. Click **Finish,** and restart the computer for changes to take effect.

## 3.4 HD Audio Driver Installation

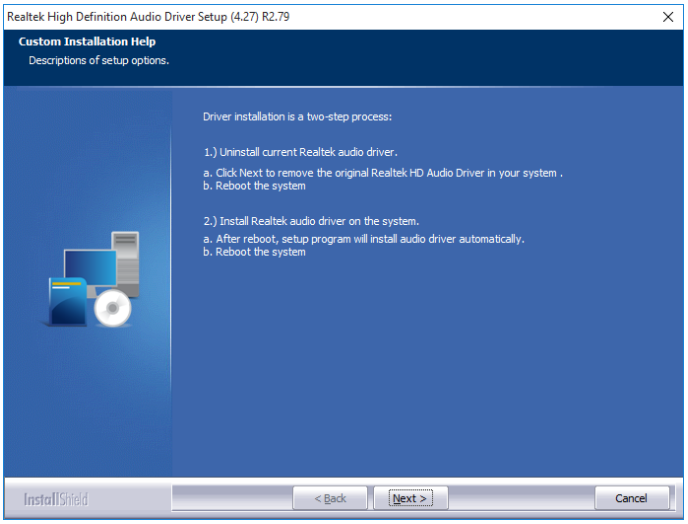
1. Click **Intel** and then **Intel(R) Skylake-U/Kabylake-U Chipset Drivers**.


2. Click **Realtek High Definition Audio Driver**.


3. On the *Welcome* screen of the InstallShield Wizard, click **Next**.



4. The screenshot shows the description of setup options. Click **Next**.



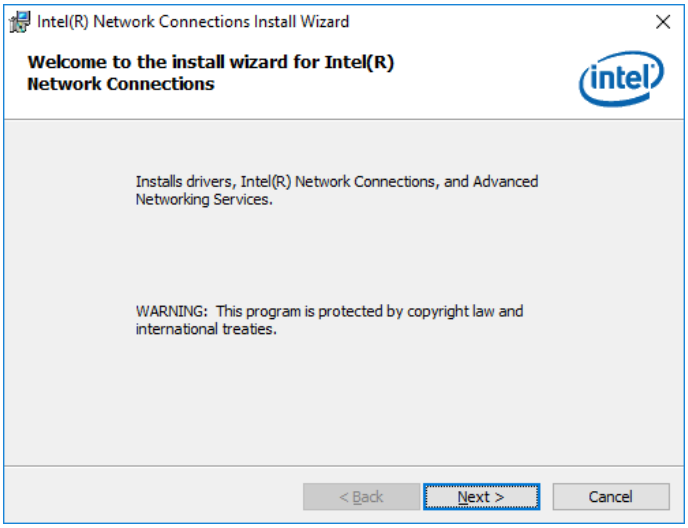

5. Choose a destination folder for installation.
6. The driver has been completely installed. Click **Finish**, and restart the computer and for changes to take effect.

## 3.5 LAN Network Driver Installation

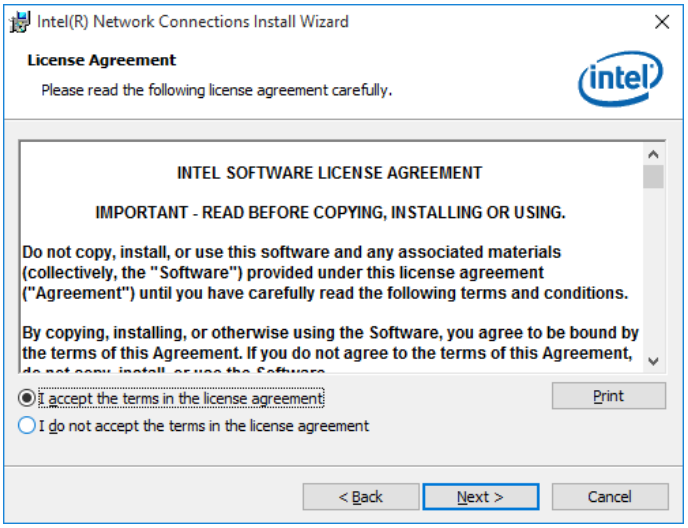
1. Click **Intel** and then **Intel(R) Skylake-U/Kabylake-U Chipset Drivers**.


2. Click **Intel(R) PRO LAN Network Drivers**.

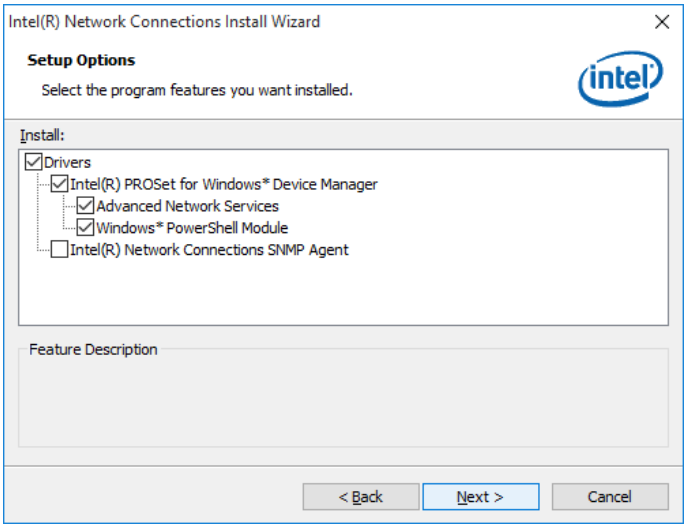

3. On the *Welcome* screen of the InstallShield Wizard, click **Next**.



4. Accept the license agreement and click **Next**.




5. On the Setup Options screen, select the desired drivers, and click **Next** and then **Install**.



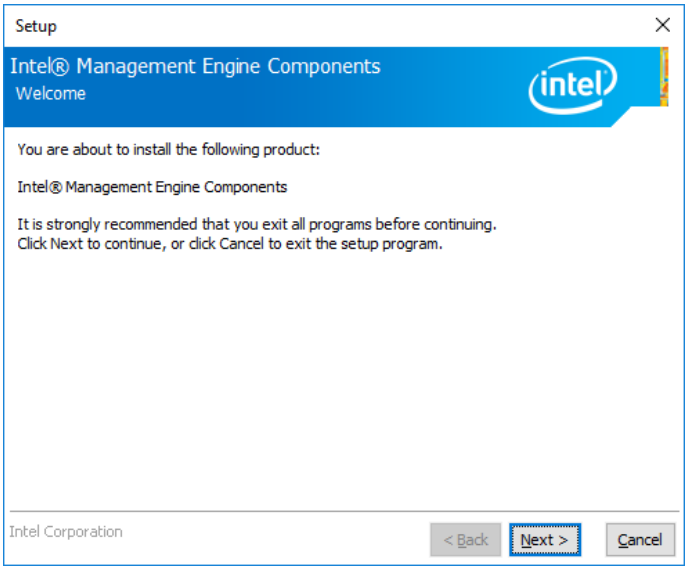

6. Choose a destination folder for installation.
7. The driver has been completely installed. Click **Finish,** and restart the computer for changes to take effect.

## 3.6 Intel® Management Engine Driver Installation

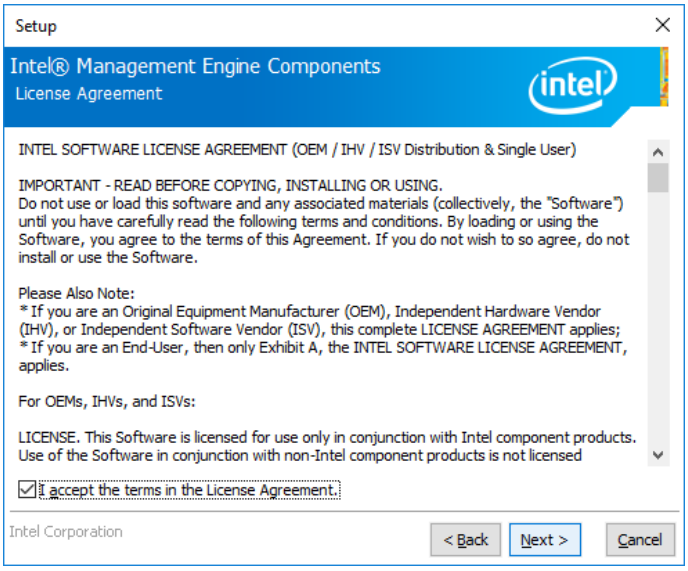
1. Click **Intel** and then **Intel(R) Skylake-U/Kabylake-U Chipset Drivers**.


2. Click **Intel(R) ME 11.x Drivers**.


3. When the *Welcome* screen appears, click **Next** to continue.



4. Accept the license agreement, and click **Next** to continue.




5. Choose a destination folder for installation.
6. The driver has been completely installed. Restart the computer for changes to take effect.

# Chapter 4
# BIOS Setup

- This chapter describes the different settings available in the AMI BIOS that comes with the board.

**Avoid changing the default settings:**

We strongly suggest you contact IBASE for technical support before you make any changes in BIOS. Please be noted that the device may malfunction if you change the BIOS settings improperly.

## 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. 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:** It is strongly recommended that you avoid making any changes to the chipset defaults.

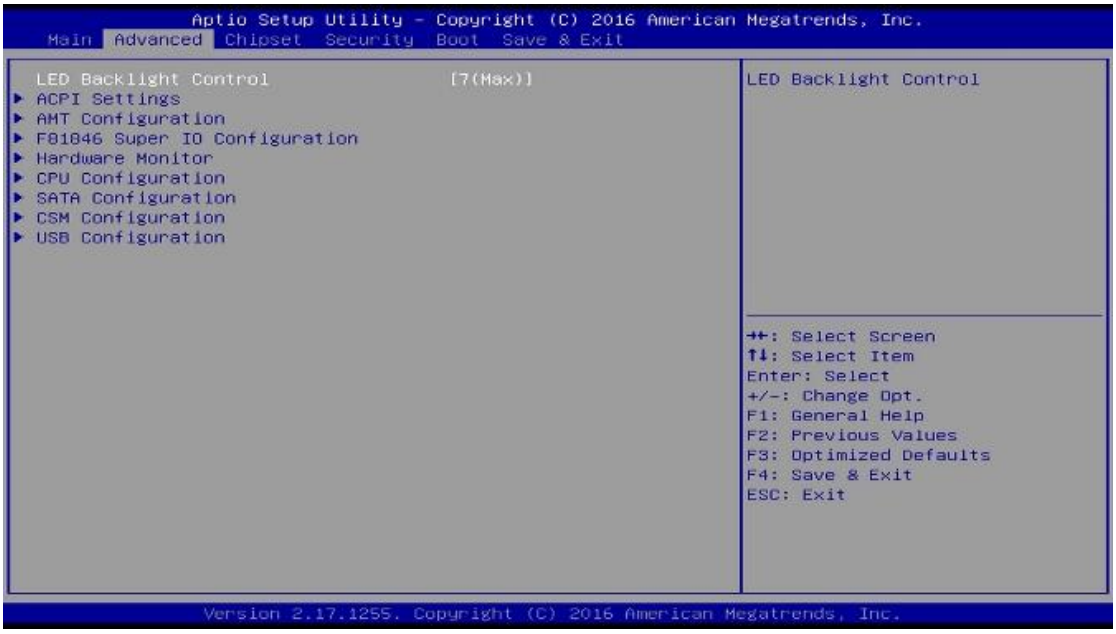
These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could make the system unstable and crash in some cases.

## 4.3 Main Settings

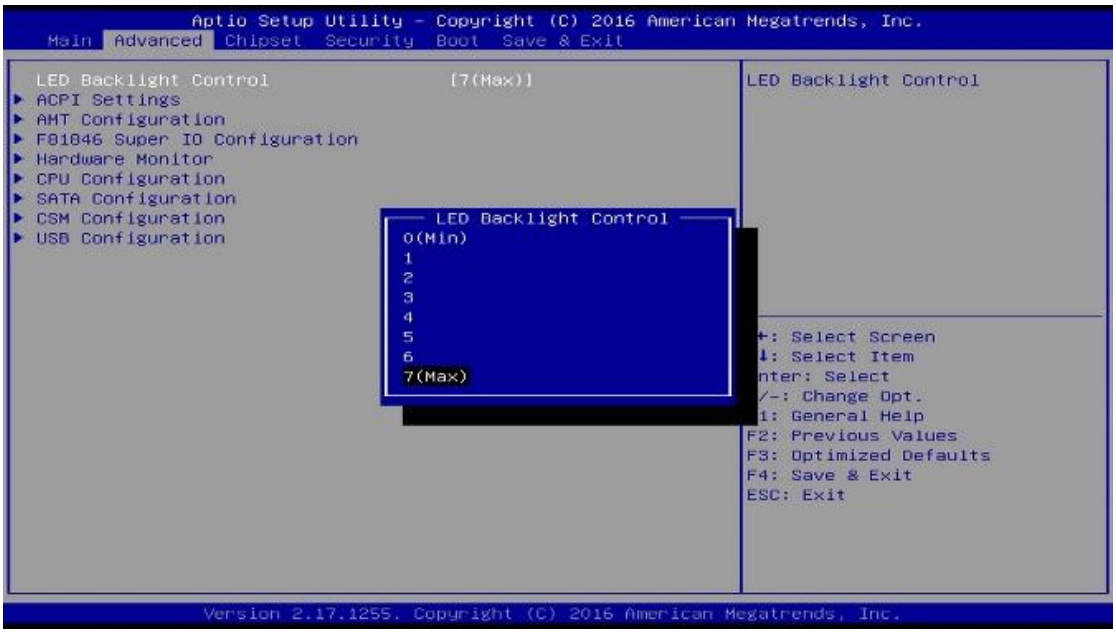

| BIOS Setting | Description |
|---|---|
| System Date | Sets the date.<br>Use the <Tab> key to switch between the data elements. |
| System Time | Set the time.<br>Use the <Tab> key to switch between the data elements. |

## 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 LED Backlight Control



### 4.4.2 ACPI Settings


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

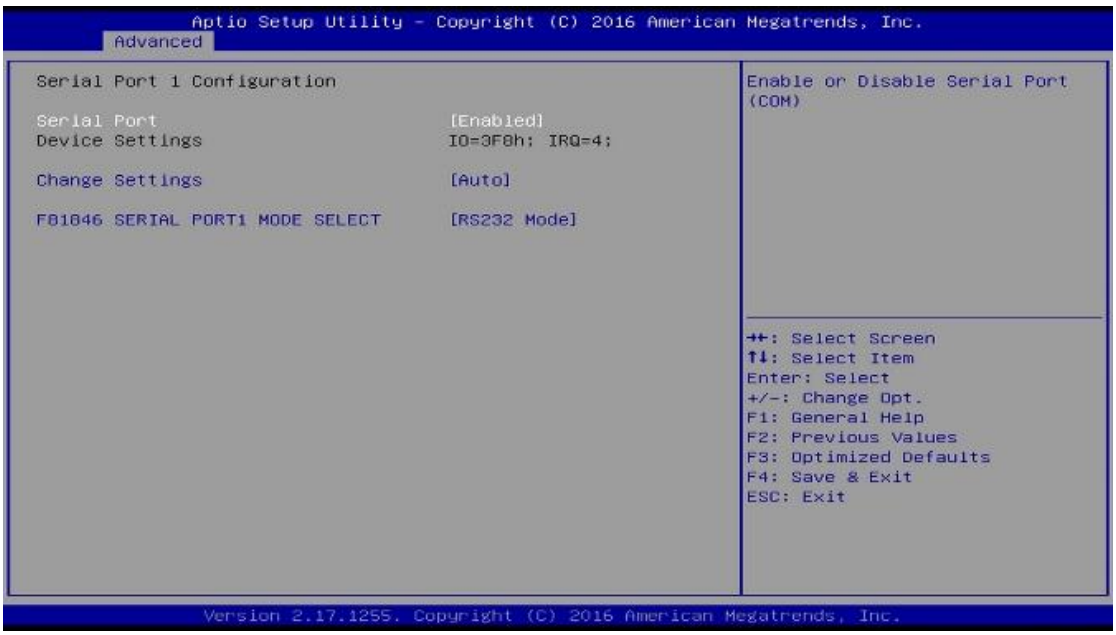
### 4.4.3 AMT Configuration


| BIOS Setting | Description |
|---|---|
| Intel AMT | Enables / Disables Intel(R) Active Management Technology BIOS Extension.<br>Note: iAMT H/W is always enabled.<br>This option just controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device. |
| BIOS Hotkey Pressed | OEMFlag Bit 1: enables or disables BIOS hotkey press. |
| MEBx Selection Screen | OEMFlag Bit 2: enables or disables MEBx selection screen. |
| Hide Un-Configure ME Confirmation Prompt | OEMFlag Bit 6: hides unconfigure ME without password confirmation prompt. |
| Unconfigure Me | OEMFlag Bit 15: unconfigure ME without password. |
| Amt Wait Timer | Sets timer to wait before sending ASF_GET_BOOT_OPTIONS. |
| Active Remote Assistance Process | Triggers CIRA boot. |
| USB Provisioning of AMT | Enables / Disables of AMT USB provisioning. |
| PET Progress | Enables / Disables PET events progress to receive PET events or not. |
| WatchDog | Enables / Disables watchdog timer. |

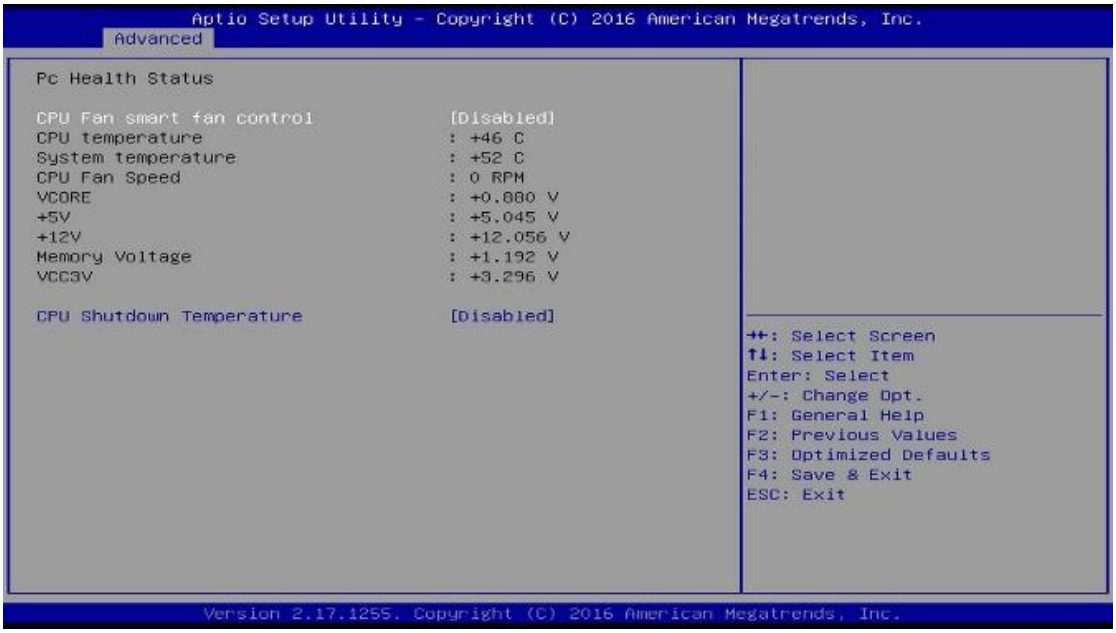
### 4.4.4 F81846 Super IO Configuration


| BIOS Setting | Description |
|---|---|
| Serial Ports Configuration | Sets parameters of serial ports.<br>Enables / Disables the serial port and select an optimal setting for the Super IO device. |

#### 4.4.4.1. Serial Port 1 Configuration

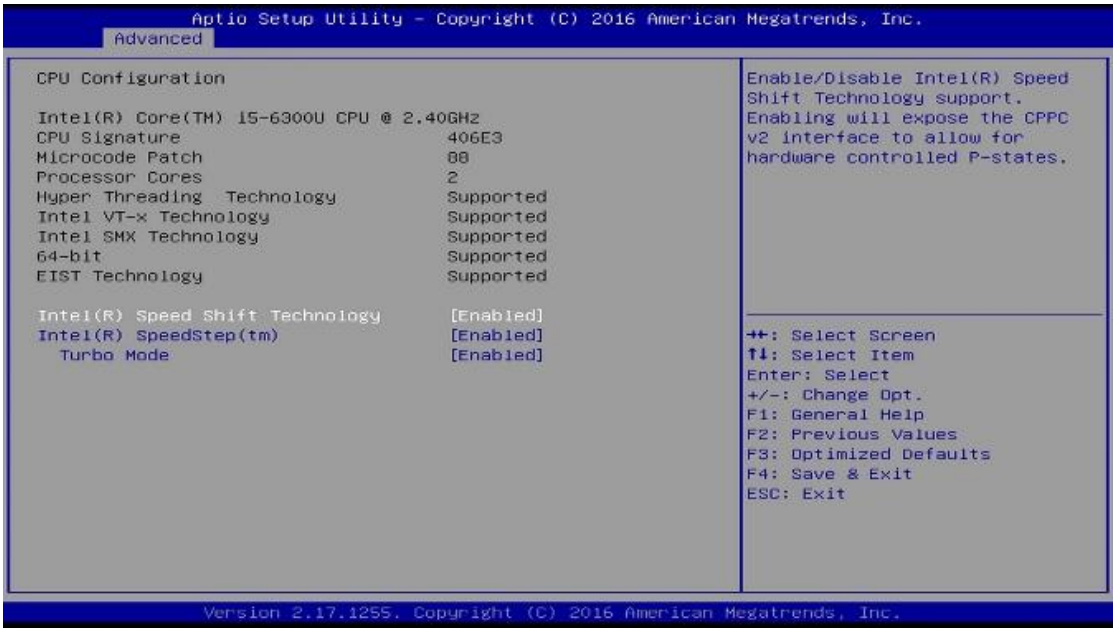


### 4.4.5 Hardware Monitor




| BIOS Setting | Description |
|---|---|
| CPU Fan smart fan control | Enables / Disables smart fan control. |
| 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. |
| CPU Shutdown Temperature | Sets a threshold of temperature to shut down if CPU goes overheated. |

### 4.4.6 CPU Configuration

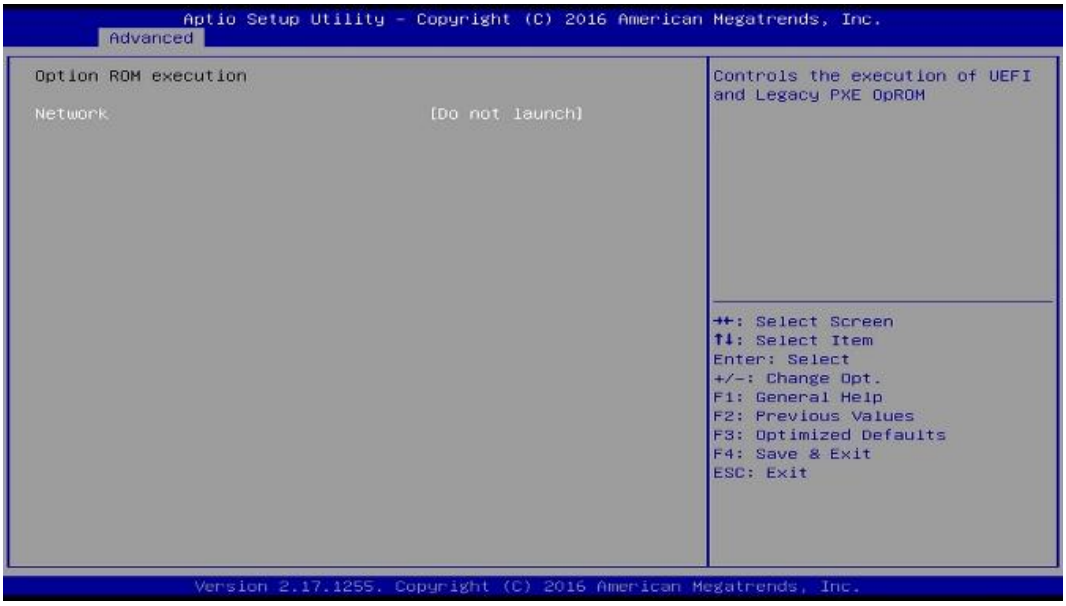



| BIOS Setting | Description |
|---|---|
| Intel(R) Speed Shift Technology | Enables / Disables Intel(R) Speed Shift Technology support.<br>Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states. |
| Intel(R) Speed Step (tm) | Enables / Disables the function to allow more than two frequency ranges to be supported. |
| Turbo Mode | Enables / Disables Turbo Mode. |

### 4.4.7 SATA Configuration

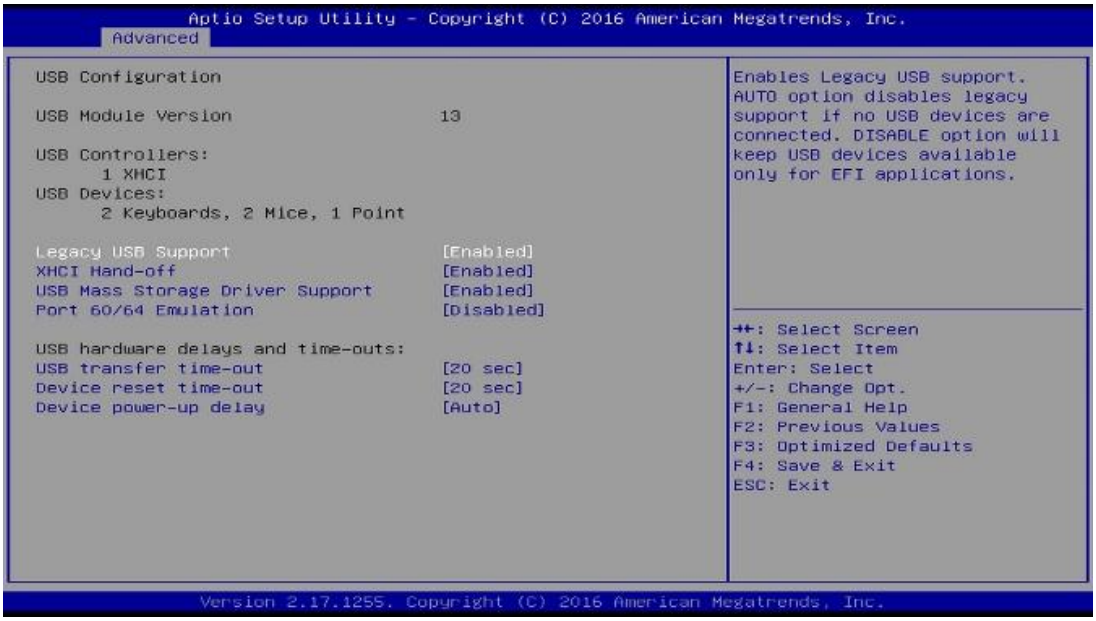

| BIOS Setting | Description |
|---|---|
| SATA Controller | Enables / Disables SATA device. |
| SATA Mode Selection | Selects AHCI Mode. |
| SATA Ports HotPlug | Enables / Disables SATA Ports HotPlug. |

### 4.4.8 CSM Configuration




| BIOS Setting | Description |
|---|---|
| Network | Controls the execution of UEFI and Legacy PXE OpROM. |

### 4.4.9 USB Configuration




| BIOS Setting | Description |
|---|---|
| Legacy USB Support | Enables / Disables Legacy USB support.<br>• **Auto** disables legacy support if there is no USB device connected.<br>• **Disable** 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 USB mass storage driver support. |
| Port 60/64 Emulation | Enables I/O port 60h / 64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes. |
| USB Transfer time-out | Sets the time-out value 1, 5, 10 or 20 sec(s) for Control, Bulk, and Interrupt transfers. |
| Device reset time-out | Sets the seconds (10, 20, 30, 40 secs) of delaying execution of start unit command to USB mass storage device. |
| Device power-up delay | 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 100 ms, and for a hub port the delay is taken from hub descriptor. |

# 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)
- Digital I/O Sample Code
- 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 |
|---|---|
| 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 |
| 0x00000A00-0x00000A0F | Motherboard resources |
| 0x00000A10-0x00000A1F | Motherboard resources |
| 0x00000A10-0x00000A1F | 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 |
| 0x00000070-0x00000070 | System CMOS/real time clock |
| 0x00000080-0x00000080 | Motherboard resources |
| 0x00000092-0x00000092 | Motherboard resources |

| Address | Device Description |
|---|---|
| 0x000000B2-0x000000B3 | Motherboard resources |
| 0x00000680-0x0000069F | Motherboard resources |
| 0x0000FFFF-0x0000FFFF | Motherboard resources |
| 0x0000FFFF-0x0000FFFF | Motherboard resources |
| 0x0000FFFF-0x0000FFFF | Motherboard resources |
| 0x00001800-0x000018FE | Motherboard resources |
| 0x0000164E-0x0000164F | Motherboard resources |
| 0x00001854-0x00001857 | Motherboard resources |
| 0x0000F000-0x0000F03F | Intel(R) HD Graphics 520 |
| 0x000003B0-0x000003BB | Intel(R) HD Graphics 520 |
| 0x000003C0-0x000003DF | Intel(R) HD Graphics 520 |
| 0x000003F8-0x000003FF | Communications Port (COM1) |
| 0x000002F8-0x000002FF | Communications Port (COM2) |
| 0x000003E8-0x000003EF | Communications Port (COM3) |
| 0x000002E8-0x000002EF | Communications Port (COM4) |
| 0x0000F0A0-0x0000F0A7 | Intel(R) Active Management Technology - SOL (COM5) |
| 0x00000000-0x00000CF7 | PCI Express Root Complex |
| 0x00000D00-0x0000FFFF | PCI Express Root Complex |
| 0x00000040-0x00000043 | System timer |
| 0x00000050-0x00000053 | System timer |
| 0x0000E000-0x0000EFFF | Intel(R) 100 Series Chipset Family PCI Express Root Port #10 - 9D19 |
| 0x0000F040-0x0000F05F | Intel(R) 100 Series Chipset Family SMBUS - 9D23 |
| 0x0000FF00-0x0000FFFE | Motherboard resources |
| 0x00000060-0x00000060 | Standard PS/2 Keyboard |
| 0x00000064-0x00000064 | Standard PS/2 Keyboard |
| 0x0000F090-0x0000F097 | Standard SATA AHCI Controller |
| 0x0000F080-0x0000F083 | Standard SATA AHCI Controller |
| 0x0000F060-0x0000F07F | Standard SATA AHCI Controller |

## B. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

| Level | Function |
|---|---|
| IRQ 14 | Motherboard resources |
| IRQ 4294967291 | Intel(R) HD Graphics 520 |
| IRQ 4 | Communications Port (COM1) |
| IRQ 3 | Communications Port (COM2) |
| IRQ 5 | Communications Port (COM3) |
| IRQ 7 | Communications Port (COM4) |
| IRQ 11 | Intel(R) 100 Series Chipset Family Integrated Sensor Hub - 9D35 |
| IRQ 11 | Intel(R) 100 Series Chipset Family SMBUS - 9D23 |
| IRQ 11 | Intel(R) 100 Series Chipset Family Thermal subsystem - 9D31 |
| IRQ 19 | Intel(R) Active Management Technology - SOL (COM5) |
| IRQ 54 ~ IRQ 204 | Microsoft ACPI-Compliant System |
| IRQ 256 ~IRQ 511 | Microsoft ACPI-Compliant System |
| IRQ 0 | System timer |
| IRQ 4294967285 | Intel(R) Management Engine Interface |
| IRQ 4294967294 | Intel(R) 100 Series Chipset Family PCI Express Root Port #10 - 9D19 |
| IRQ 4294967290 | Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft) |
| IRQ 4294967289 | Intel(R) I211 Gigabit Network Connection |
| IRQ 4294967288 | Intel(R) I211 Gigabit Network Connection |
| IRQ 4294967287 | Intel(R) I211 Gigabit Network Connection |
| IRQ 4294967286 | Intel(R) I211 Gigabit Network Connection |
| IRQ 4294967292 | Intel(R) Ethernet Connection I219-LM |
| IRQ 1 | Standard PS/2 Keyboard |
| IRQ 12 | Microsoft PS/2 Mouse |
| IRQ 16 | High Definition Audio Controller |
| IRQ 4294967293 | Standard SATA AHCI Controller |
| IRQ 8 | System CMOS/real time clock |

# 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 the 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 (for Fintek F81846 / F81866):**

```
//---------------------------------------------------------------------------
//
// 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 "F81866.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 81866 watch dog program\n");
        SIO = Init_F81866();
        if (SIO == 0)
        {
                printf("Can not detect Fintek 81866, 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_F81866_Reg(0x2B);
        bBuf &= (~0x20);
        Set_F81866_Reg(0x2B, bBuf);             //Enable WDTO

        Set_F81866_LD(0x07);                    //switch to logic device 7
        Set_F81866_Reg(0x30, 0x01);             //enable timer

        bBuf = Get_F81866_Reg(0xF5);
        bBuf &= (~0x0F);
        bBuf |= 0x52;
        Set_F81866_Reg(0xF5, bBuf);             //count mode is second
        Set_F81866_Reg(0xF6, interval);         //set timer
        bBuf = Get_F81866_Reg(0xFA);
        bBuf |= 0x01;
        Set_F81866_Reg(0xFA, bBuf);             //enable WDTO output

        bBuf = Get_F81866_Reg(0xF5);
        bBuf |= 0x20;
        Set_F81866_Reg(0xF5, bBuf);             //start counting
}
//-------------------------------------------------------------------------
void DisableWDT(void)
{
        unsigned char bBuf;
        Set_F81866_LD(0x07);                    //switch to logic device 7
        bBuf = Get_F81866_Reg(0xFA);
        bBuf &= ~0x01;
        Set_F81866_Reg(0xFA, bBuf);             //disable WDTO output

        bBuf = Get_F81866_Reg(0xF5);
        bBuf &= ~0x20;
        bBuf |= 0x40;
        Set_F81866_Reg(0xF5, bBuf);             //disable WDT
}
//-------------------------------------------------------------------------
```

```
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// PURPOSE.
//
//---------------------------------------------------------------------------
#include "F81866.H"
#include <dos.h>
//---------------------------------------------------------------------------
unsigned int F81866_BASE; void Unlock_F81866 (void); void Lock_F81866 (void);
//---------------------------------------------------------------------------
unsigned int Init_F81866(void)
{
	unsigned int result;
	unsigned char ucDid;

	F81866_BASE = 0x4E;
	result = F81866_BASE;

	ucDid = Get_F81866_Reg(0x20);
	if (ucDid == 0x07)			//Fintek 81866
	{	goto Init_Finish;}

	F81866_BASE = 0x2E;
	result = F81866_BASE;

	ucDid = Get_F81866_Reg(0x20);
	if (ucDid == 0x07)			//Fintek 81866
	{	goto Init_Finish;}

	F81866_BASE = 0x00;
	result = F81866_BASE;

Init_Finish:
	return (result);
}
//---------------------------------------------------------------------------
void Unlock_F81866 (void)
{
	outportb(F81866_INDEX_PORT, F81866_UNLOCK);
	outportb(F81866_INDEX_PORT, F81866_UNLOCK);
}
//---------------------------------------------------------------------------
void Lock_F81866 (void)
{
	outportb(F81866_INDEX_PORT, F81866_LOCK);
}
//---------------------------------------------------------------------------
void Set_F81866_LD( unsigned char LD)
{
```

```
	Unlock_F81866();
	outportb(F81866_INDEX_PORT, F81866_REG_LD);
	outportb(F81866_DATA_PORT, LD); Lock_F81866();
}
//-----------------------------------------------------------------------
void Set_F81866_Reg( unsigned char REG, unsigned char DATA)
{
	Unlock_F81866();
	outportb(F81866_INDEX_PORT, REG);
	outportb(F81866_DATA_PORT, DATA);
	Lock_F81866();
}
//-----------------------------------------------------------------------
unsigned char Get_F81866_Reg(unsigned char REG)
{
	unsigned char Result;
	Unlock_F81866();
	outportb(F81866_INDEX_PORT, REG);
	Result = inportb(F81866_DATA_PORT);
	Lock_F81866();
	return Result;
}
//-----------------------------------------------------------------------
```

```
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// PURPOSE.
//
//-----------------------------------------------------------------------
#ifndef	F81866_H
#define	F81866_H	1
//-----------------------------------------------------------------------
#define	F81866_INDEX_PORT	(F81866_BASE)
#define	F81866_DATA_PORT	(F81866_BASE+1)
//-----------------------------------------------------------------------
#define	F81866_REG_LD	0x07
//-----------------------------------------------------------------------
#define F81866_UNLOCK 0x87
#define	F81866_LOCK  0xAA
//-----------------------------------------------------------------------
unsigned int Init_F81866(void);
void Set_F81866_LD( unsigned char);
void Set_F81866_Reg( unsigned char, unsigned char); unsigned char
Get_F81866_Reg( unsigned char);
//-----------------------------------------------------------------------
#endif //	F81866_H
```