

SE-102-N

Digital Signage Player

User's Manual

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Compliance

CE

The product described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

FCC

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 the current RoHS directives restricting the use of the following substances in concentrations not to exceed 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 following safety information before using this device.

Setting up your system:

- Put the device horizontally on a stable and solid surface.
- Do not use this product near water or any heated source.
- Leave plenty of space around the device and do not block the ventilation openings. Never drop or insert any objects of any kind into the openings.
- Use this product in environments with ambient temperatures between 0°C and 45°C for the N-series processor or between -40°C and 70°C for the E-series processor.

Care during use:

- Do not place heavy objects on the top of the device.
- Make sure to connect the correct voltage to the device. Failure to supply the correct voltage could damage the unit.
- Do not walk on the power cord or allow anything to rest on it.
- If you use an extension cord, make sure the total ampere rating of all devices plugged into the extension cord does not exceed the cord's ampere rating.
- Do not spill water or any other liquids on your device.
- Always unplug the power cord from the wall outlet before cleaning the device.
- Only use neutral cleaning agents to clean the device.
- Vacuum dust and particles from the vents by using a computer vacuum cleaner.

Product Disassembly

Do not try to repair, disassemble, or make modifications to the device. Doing so will void the warranty and may result in damage to the product or personal injury.



CAUTION

There is a danger of explosion if the lithium-ion battery is replaced with an incorrect battery. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries by observing local regulations.

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 3rd-party parts that are not manufactured by IBASE, such as CPU, CPU cooler, memory, storage devices, power adaptor, display 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.

Technical Support & Services

1. Visit the IBASE website at www.ibase.com.tw to find the latest information about the product.
2. If you encounter any technical problems and require assistance from your distributor or sales representative, please prepare and send the following information:
 - Product model name
 - Product serial number
 - Detailed description of the problem
 - Error messages in text or screenshots if any
 - The arrangement of the peripherals
 - Software used (such as OS and application software)
3. If repair service is required, please download the RMA form at <http://www.ibase.com.tw/english/Supports/RMAService/>. Fill out the form and contact your distributor or sales representative.

Table of Contents

Compliance.....	iii
Important Safety Information	iv
CAUTION	iv
Warranty Policy.....	v
Technical Support & Services	v
Chapter 1 General Information.....	1
1.1 Introduction	2
1.2 Features.....	3
1.3 Packing List	3
1.4 Optional Accessories	3
1.5 Specifications.....	4
1.6 Overview.....	6
1.7 Dimensions	7
Chapter 2 Hardware Configuration.....	8
2.1 Installations.....	9
2.1.1 Memory Module Installation	9
2.1.2 Mini-PCIe Card Installation	10
2.1.3 WiFi / 3G / 4G Antenna Installation.....	10
2.1.4 HDMI Cable Holder Installation.....	11
2.1.5 Power Cable Holder Installation.....	11
2.1.6 Mounting Installation.....	12
2.2 Setting the Jumpers	13
2.2.1 How to Set Jumpers	13
2.3 Jumper & Connector Locations on Motherboard	14
2.4 Jumper & Connectors Quick Reference	16
2.4.1 Clearing CMOS Data (JP1).....	16
2.4.2 Clearing ME Register (JP2)	17
2.4.3 Battery Connector (BAT1)	17
Chapter 3 Driver Installation	18
3.1 Introduction	19
3.2 Intel® Chipset Software Installation Utility.....	19

3.3	Intel® Graphics Driver Installation	21
3.4	HD Audio Driver Installation	23
3.5	LAN Driver Installation	24
3.6	Intel® Trusted Execution Engine Drivers Installation.....	26
3.7	Intel® Serial IO Drivers Installation	28
Chapter 4 BIOS Setup		30
4.1	Introduction	31
4.2	BIOS Setup.....	31
4.3	Main Settings	32
4.4	Advanced Settings	33
4.4.1	ACPI Settings	34
4.4.2	iSmart Controller.....	35
4.4.3	F81964 Super IO Configuration	36
4.4.4	Fintek Super IO Hardware Monitor	39
4.4.5	CPU Configuration.....	40
4.4.6	AMI Graphic Output Protocol Policy.....	41
4.4.7	Network Stack Configuration	42
4.4.8	CSM Configuration	43
4.4.9	USB Configuration.....	44
4.5	Chipset Settings.....	45
4.6	Security Settings	46
4.7	Boot Settings.....	47
4.8	Save & Exit Settings.....	48
Appendix		49
A.	I/O Port Address Map.....	50
B.	Interrupt Request Lines (IRQ)	52
C.	Watchdog Timer Configuration.....	53

Chapter 1

General Information

The information provided in this chapter includes:

- Features
- Packing List
- Specifications
- Optional Accessories
- Overview
- Dimensions

1.1 Introduction

The SE-102-N is an ultra slim, fanless digital signage player that measures only 19.5mm thick. The media player enables the retail, food and hospitality segments to deliver compelling and valuable content in dual high-definition HDMI displays to targeted audiences in outdoor environments. It has been tested to pass extended operating temperatures (-40°C to +70°C) and meet extreme system reliability requirements that allow its deployment in a wide range of harsh indoor and outdoor environments. The fanless and noiseless system comes on board with a lower-power Intel® Atom™ x7-E3950 @ 2.0GHz quad-core processor with an Intel® HD Graphics, which combines efficiency and excellent performance, ensuring industrial-grade reliability for stable operation. It has two dual-channel DDR3L-1866 sockets to provide up to 8GB memory and 64GB mSATA SSD for faster system boot and low heat emission.

The SE-102-N's super-slim chassis can fit into the tightest spaces behind displays and offers an array of connectivity options including a Gigabit Ethernet, audio, USB 3.0 ports, and two HDMI interfaces supporting 4K UHD resolution. Powered by a 60W adaptor, the SE-102-N also has a mini-PCIe slot for optional WiFi, Bluetooth, 4G and video capture functions. The player has two HDMI outputs together supporting independent audio outputs, as well as built-in hardware EDID (extended display identification data) simulation to prevent screen convergence problems and issues due to cable disconnection or failure to identify EDID. It also comes with IBASE's unique iSMART intelligent energy-saving and Observer monitoring technologies that feature automatic power on/off scheduling, automatic power recovery, low temperature boot protection and hardware monitoring.



1.2 Features

- Outdoor, compact, fanless and super slim digital signage player
- iSmart for EuP/ErP auto-scheduler, power saving and power resume
- With onboard Intel® Atom™ x7-E3950 2.0 GHz [i-Temp support] or Intel® Pentium® N4200 2.5 GHz
- Intel® HD Graphics (Gen 7-LP) 4EU
- 2 x DDR3L-1866/1600 SO-DIMM, dual channel, expandable up to 8 GB, non-ECC
- 2 x HDMI 1.4b with hardware EDID emulation
- 1 x GbE LAN, 1 x RJ45 COM RS-232
- 1 x Mini-PCle (full-size) for WiFi, Bluetooth, or 4G LTE options
- SIM card slot
- Wide-range operating temperature from -40°C to 70°C (without adapter for E-series only)

1.3 Packing List

If you buy a barebone SE-102-N, 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.

Drivers and this user manual are downloadable from our website.

- | | |
|--|-----|
| • SE-102-N Digital Signage Player | x 1 |
| • Power Adaptor | x 1 |
| • Power Cord | x 1 |
| • Flat Head Screw for Mini-PCle Card (M2 x 0.4 mm) | x 4 |

1.4 Optional Accessories

IBASE provides optional accessories as listed below. Please contact us or your dealer if you would like to order any item(s).

- Power Cable Holder (with 1 round head screw)
- HDMI Cable Holder (with 2 round head screws)

1.5 Specifications

Product	SE-102-N
System	
Mainboard	MBD102
Operating System	<ul style="list-style-type: none"> • Windows 10 (64-bit) • Linux Ubuntu
CPU	<ul style="list-style-type: none"> • Intel® Atom™ x7 E3950, 2 GHz, 12W TDP • Intel® Pentium® QC N4200, 2.5 GHz, 6W TDP
Chipset	Integrated
Cache	2 MB
Memory	2 x DDR3L SO-DIMM 1866 MHz, dual channel, expandable to 8 GB (DDR3L 1600 MHz for Intel® N3350 only)
Graphics	Integrated Intel® Gen9 18 EUs GFX
Ethernet	Intel® I210IT for E-series processor Intel® I211AT for N-series processor
Super I/O	Fintek F81964D
Storage	1 x mSATA
Power Supply	60W, 12V DC-In power adaptor
Watchdog	Watchdog Timer 256 segments, 0, 1, 2...255 sec/min
iSmart	Yes
Chassis	Aluminum and SGCC, black & white
Mounting	Slim design with wall mounting holes
Dimensions (W x H x D)	190 x 19.5 x 130.6mm (7.48" x 0.77" x 5.12")
Net Weight	0.9 kg (1.98 lb)
Compliance	CE, FCC class B, cULus & CCC
I/O Ports	
HDMI	2 x HDMI 1.4b with hardware EDID emulation
LAN	1 x GbE RJ45 LAN port
Serial	1 x RJ45 for COM1 RS-232 port
USB	3 x USB 3.0
Audio Jack	1 x Line-Out
Power Jack	1 x DC-In power jack
SIM	1 x SIM card slot

Expansion	1 x Mini-PCIe (x1) for WiFi, BT, or 4G LTE options
Environment	
Temperature	<ul style="list-style-type: none"> • Operating: For CPU E-series processor: -40 ~ 70 °C (-40 ~ 158 °F) For CPU N-series processor: 0 ~ 45 °C (32 ~ 113 °F) • Storage: For CPU E-series processor: -40 ~ 85 °C (-40 ~ 185 °F) For CPU N-series processor: -10 ~ 80 °C (14 ~ 176 °F)
Relative Humidity	10 ~ 90% (non-condensing)

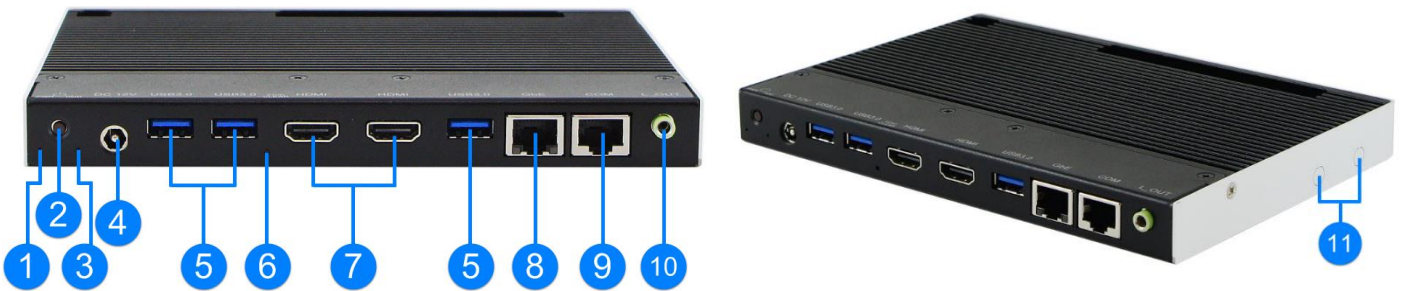
All specifications are subject to change without prior notice.

1.6 Overview

Top View



I/O View

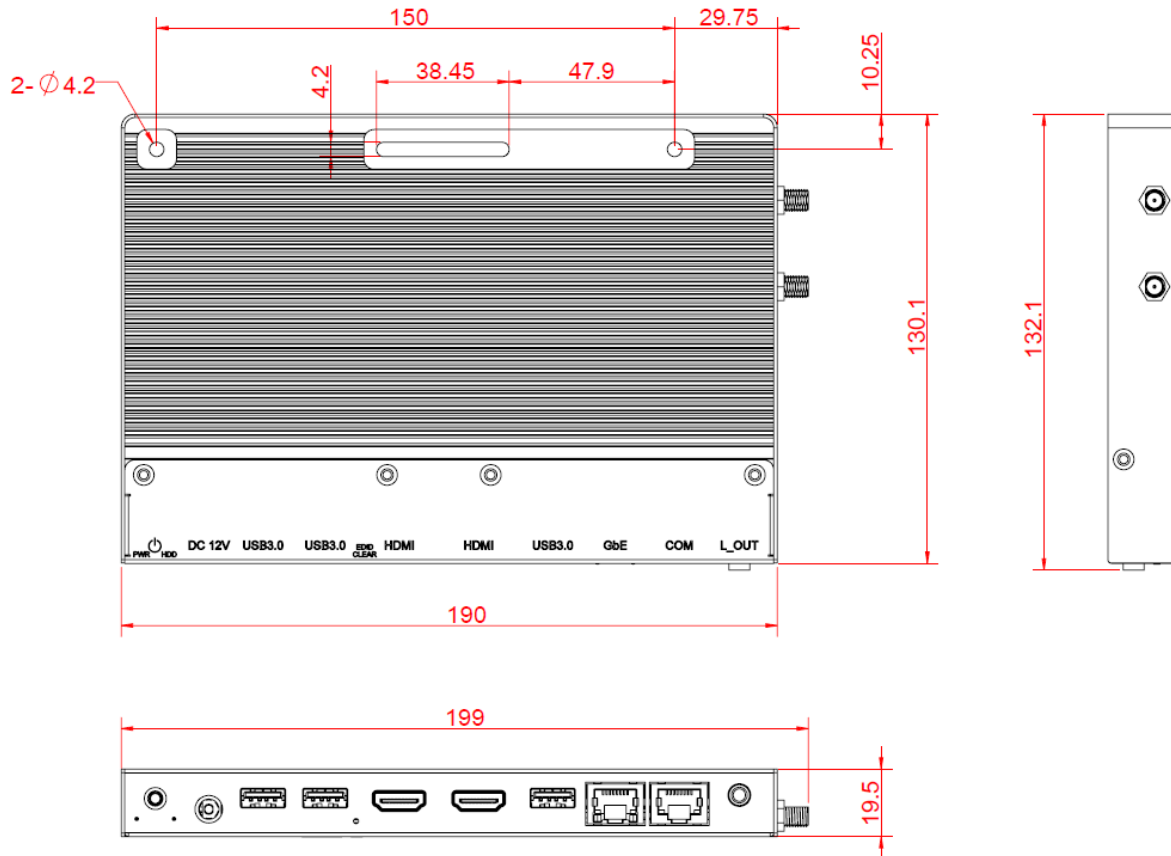


No.	Name	No.	Name
1	LED Indicator for Power	7	HDMI 1.4b Ports
2	Power Button	8	GbE LAN Port
3	LED Indicator for HDD	9	RJ45 COM RS-232 Port
4	DC Power Input	10	Audio Jack for Line-Out
5	USB 3.0 Ports	11	Antenna Hole
6	EDID Button*		

* Be sure to press the EDID button to acquire or change the EDID data when the connected display/monitor cannot be recognized, or the displayed image does not fit the screen.

1.7 Dimensions

Unit: mm



Chapter 2

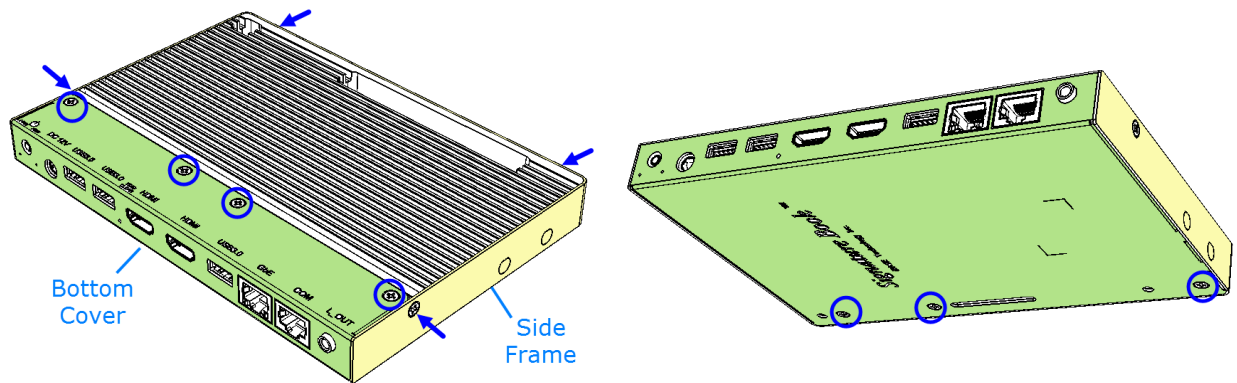
Hardware Configuration

This section contains general information about:

- Installations
- Jumper and connectors

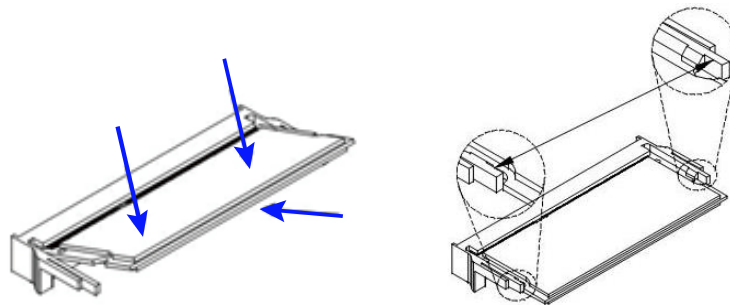
2.1 Installations

Before installing any card or module into the device, remove the 11 screws shown in the picture below. Pull out the u-shaped side frame and then remove the bottom cover.



2.1.1 Memory Module Installation

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

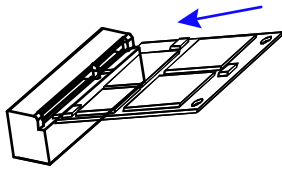


1. Align the key of the memory module with that on the memory slot and insert the module slantwise.
2. Gently push the module in an upright position until the clips of the slot close to hold the module in place when the module touches the bottom of the slot.

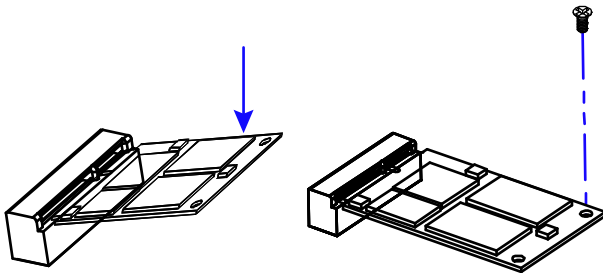
To remove a module, use your fingers to press the clips outwards until the module pops up. Grab the module gently and pull it out of the slot.

2.1.2 Mini-PCle Card Installation

1. Align the mini-PCle card's bus connector with the mini-PCle slot, and insert the card slantwise.



2. Push the mini PCIe card downwards as shown in the picture, and fix it with a screw.



2.1.3 WiFi / 3G / 4G Antenna Installation

Insert the WiFi / 3G / 4G antenna extension cable through the antenna hole of the front I/O cover and fasten the antenna as shown below. Then apply adhesive around the hex nut behind the front I/O cover to prevent the extension cable from falling off if the cable becomes loose.

1. Fasten the hex nut and the washer. Install the antenna.

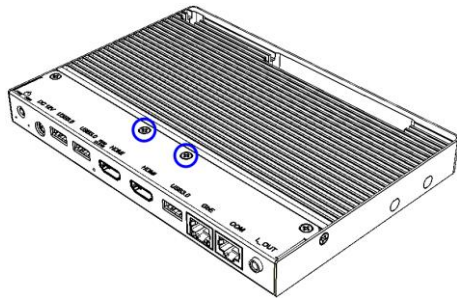
2. Apply adhesive around here.



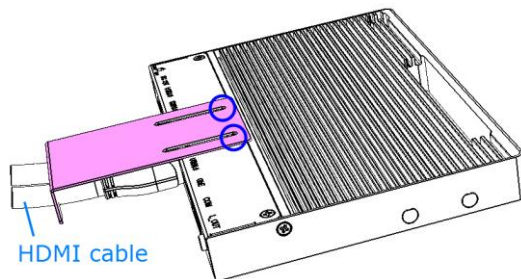
Info: The diameter of the nut is around 6.35 mm (0.25"-36UNC).

2.1.4 HDMI Cable Holder Installation

1. Remove the two screws indicated below.

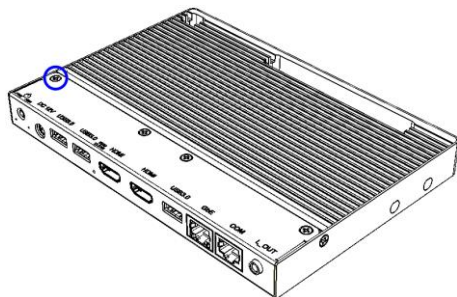


2. An HDMI cable holder comes with the product package. Align it to the HDMI ports and the 2 screw holes as indicated below. Then squeeze the cables into the notches of the holder and secure it with the supplied 2 round-head screws.

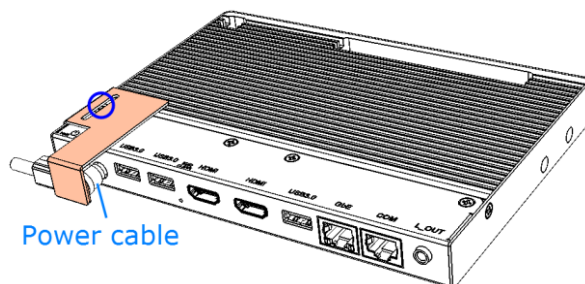


2.1.5 Power Cable Holder Installation

1. Remove the screw indicated below.



2. Align the power cable holder enclosed in the product package to the screw hole and the DC jack as shown below and secure it with a supplied round-head screw.



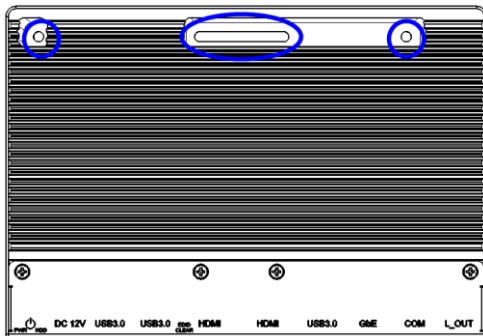
2.1.6 Mounting Installation

Requirements

Before mounting the system, ensure that you have enough room for the power adaptor and signal cable routing, and have good ventilation for the power adaptor. The method of mounting must be able to support the weight of the SE-102-N plus the weight of the suspending cables attached to the system. Use the following methods for mounting your system:

Wall Mounting Installation

1. Attach the device to the desired surface.
2. Prepare at least 2 screws (M3) to hang the device on wall through the indicated screw holes below.

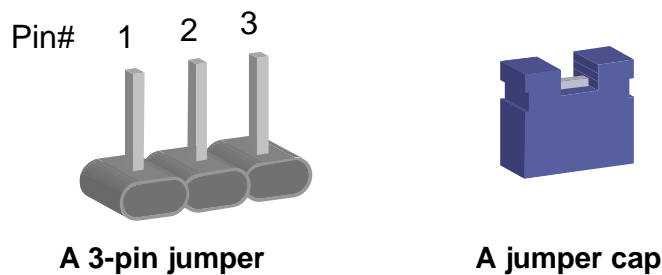


2.2 Setting the Jumpers

Configure your product by using jumpers to enable the features that you need based on your 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 base mounted on the circuit board. Jumper caps are placed (or removed) on the pins to enable or disable functions or features. If a jumper has 3 pins, you can connect Pin 1 with Pin 2 or Pin 2 with Pin 3 by shorting the jumper.



Refer to the illustration below to set jumpers.

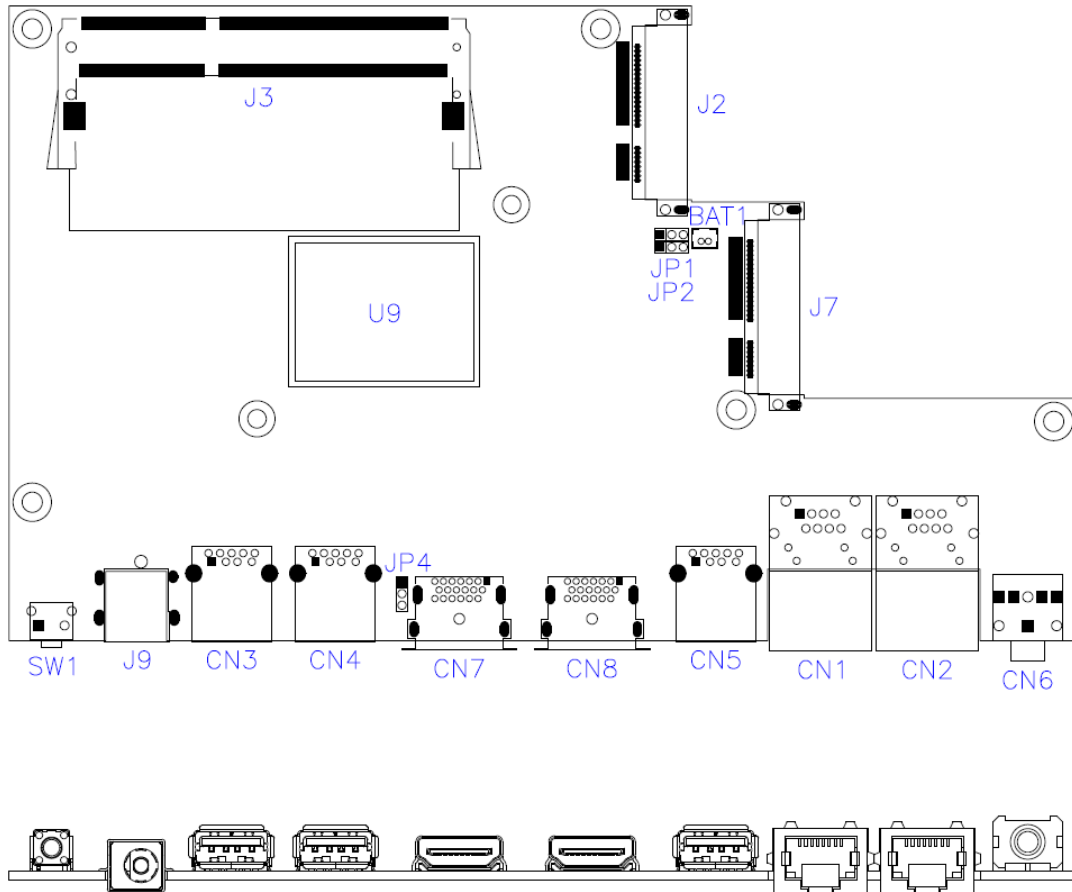
Pin closed	Oblique view	Illustration
Open		
1-2		
2-3		

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

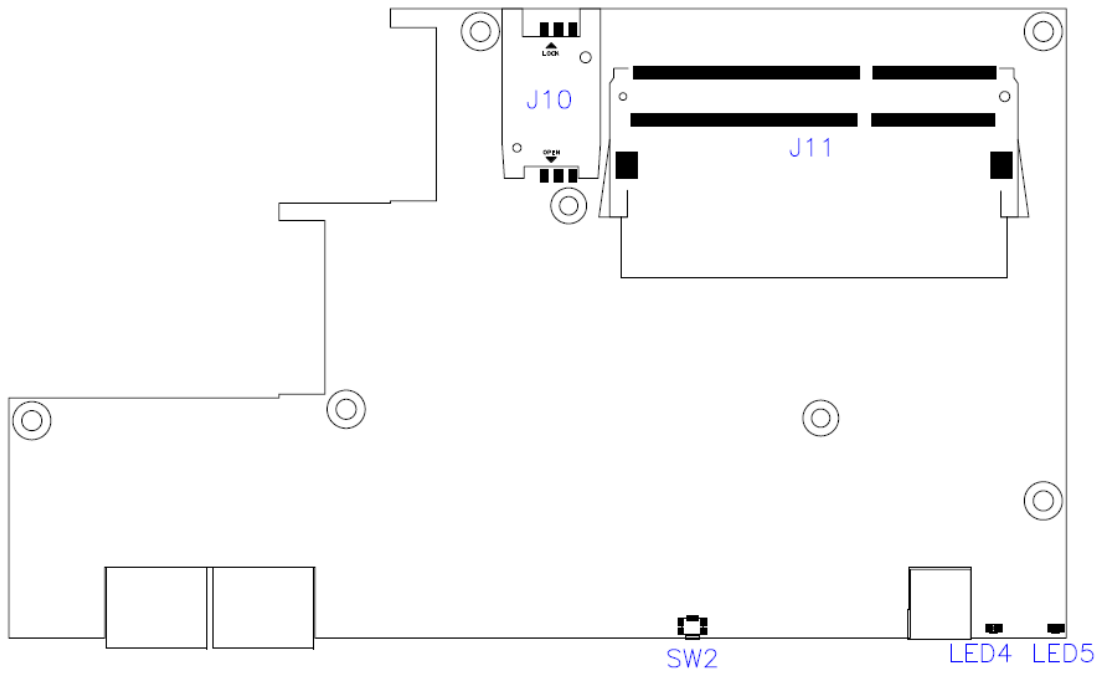
When a jumper cap is removed from two jumper pins, this jumper is **open**, i.e. turned **Off**.

2.3 Jumper & Connector Locations on Motherboard

Motherboard: MBD102



MBD102 – top view



MBD102 – bottom view

2.4 Jumper & Connectors Quick Reference

Jumpers:

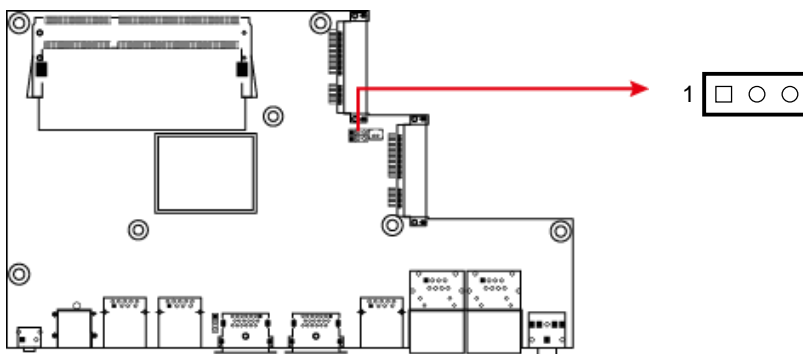
Function	Connector Name	Page
Clearing CMOS Data	JP1	16
Clearing ME Register	JP2	17
Factory Use Only	JP4	--

Connectors:

Function	Connector Name	Page
Battery Connector	BAT1	17
Wireless Module Connector	J2	--
mSATA Connector	J7	--
Memory Slot	J3, J11	--
SIM Card Socket	J10	--
EDID Button*	SW2	--
LED Indicators	LED4 (for HDD), LED5 (for power status)	--

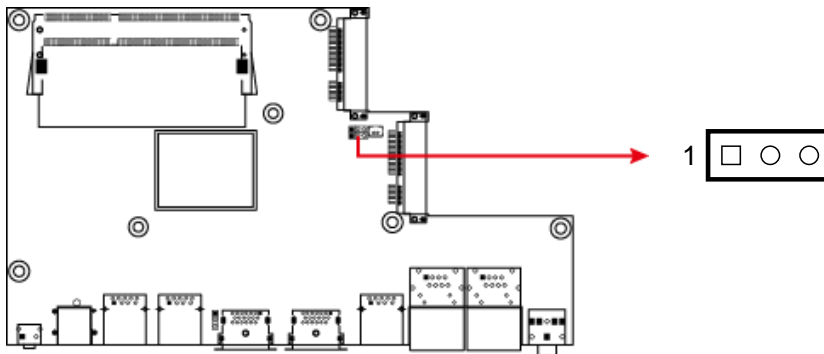
* Be sure to press the EDID button to acquire or change the EDID data when the connected display/monitor cannot be recognized, or the displayed image does not fit the screen.


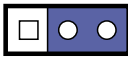
2.4.1 Clearing CMOS Data (JP1)



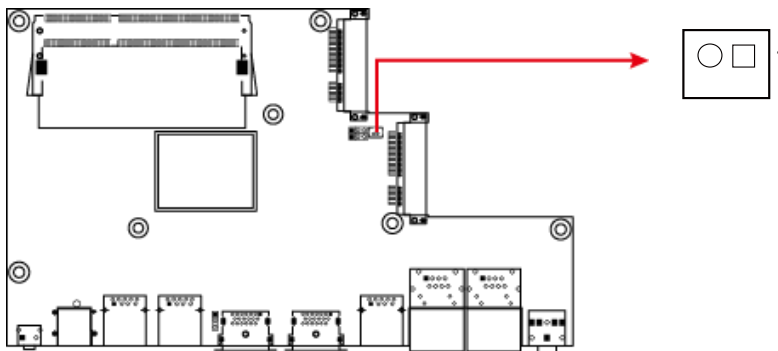
Function	Pin closed	Jumper
Normal (default)	1-2	1
Clear CMOS	2-3	1

2.4.2 Clearing ME Register (JP2)



Function	Pin closed	Jumper
Normal (default)	1-2	1 
Clear ME	2-3	1 

2.4.3 Battery Connector (BAT1)



Pin	Signal Name	Pin	Signal Name
1	Battery+	2	Ground

Chapter 3

Driver Installation

The information provided in this chapter includes:

- Intel® Chipset Software Installation Utility
- Intel® HD Graphics Drivers
- HD Audio Drivers
- LAN Network Drivers
- Intel® Trusted Execution Engine Drivers
- Intel® Serial IO Drivers

3.1 Introduction

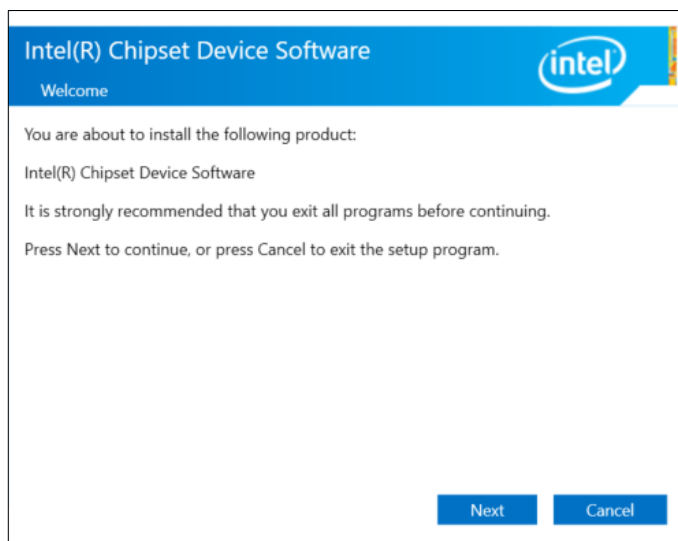
This section describes the installation procedures for software drivers. The software drivers are available on IBASE website www.ibase.com.tw. Register as a member on our website to download all the necessary drivers.

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

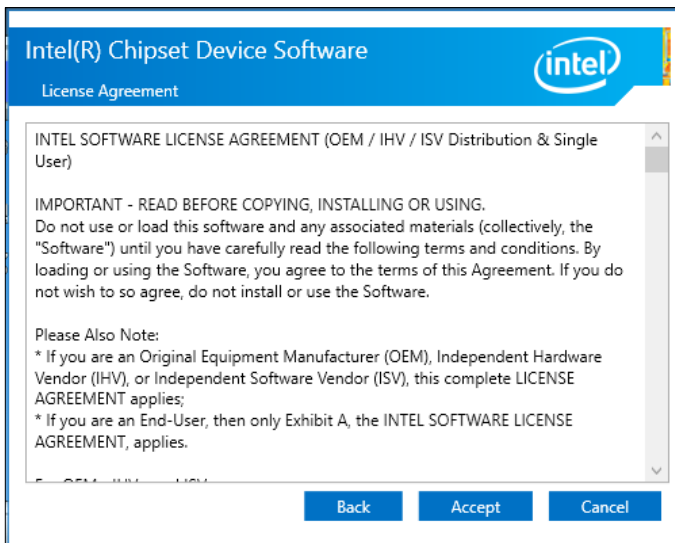
3.2 Intel® Chipset Software Installation Utility

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.

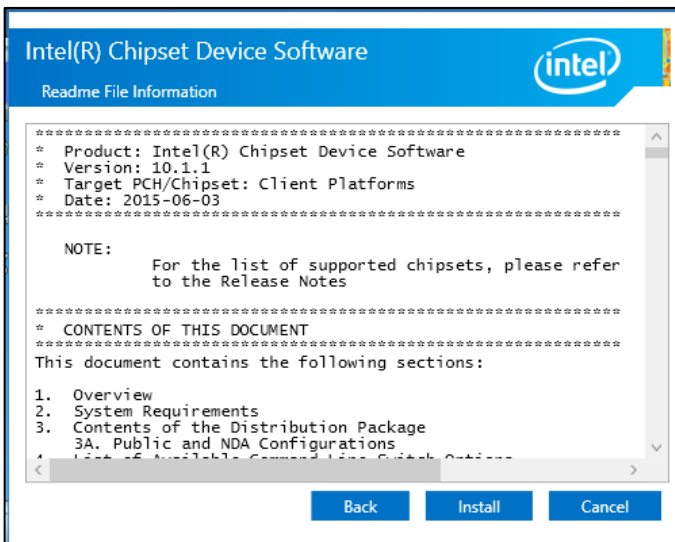
1. Run the **Setup.exe** file.
2. When the *Welcome* screen to the Intel® Chipset Device Software appears, click **Next** to continue.



3. Accept the license agreement and proceed with the installation process.



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

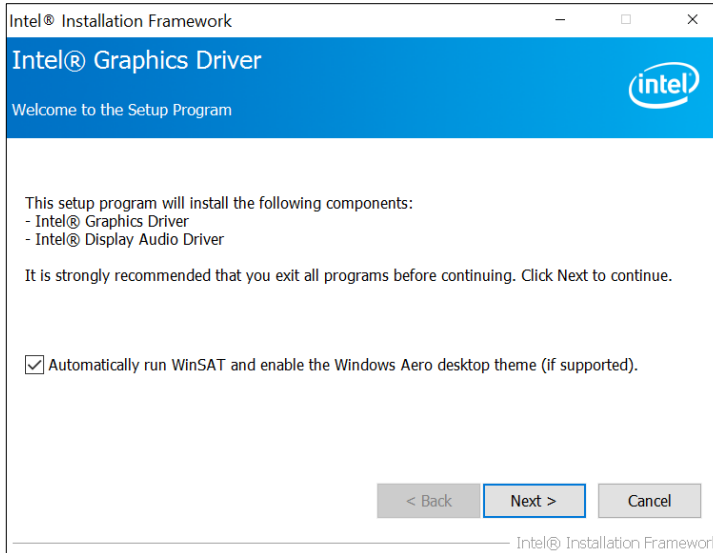


5. Installation is now complete. Restart the system for changes to take effect.

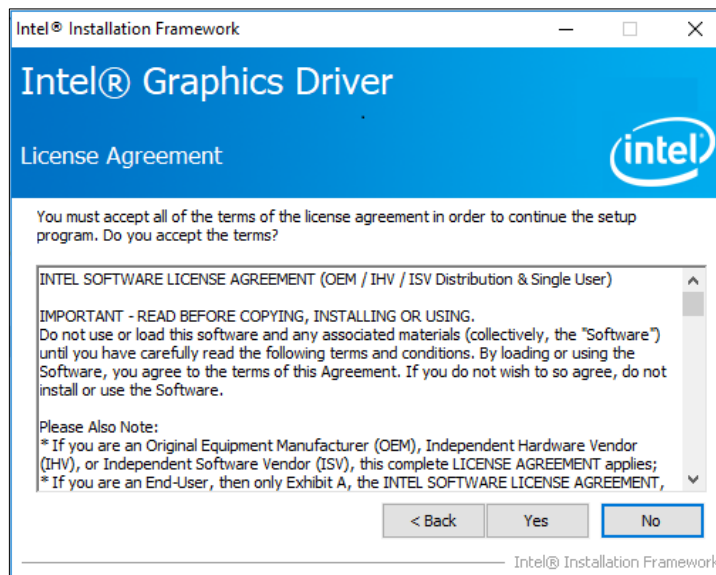


3.3 Intel® Graphics Driver Installation

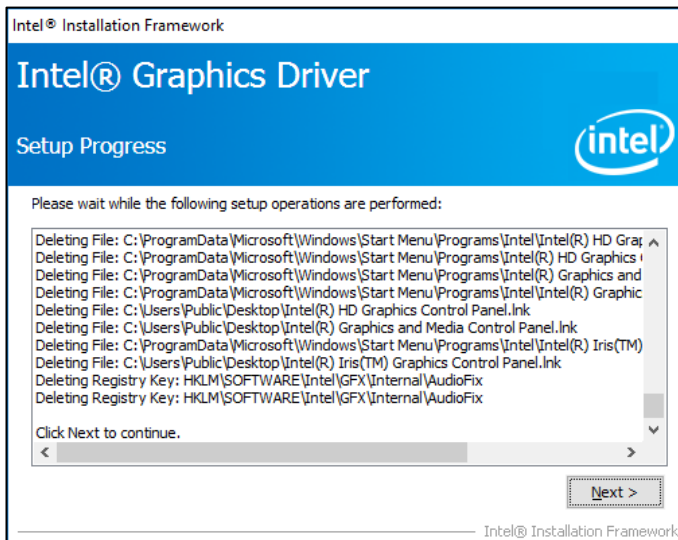
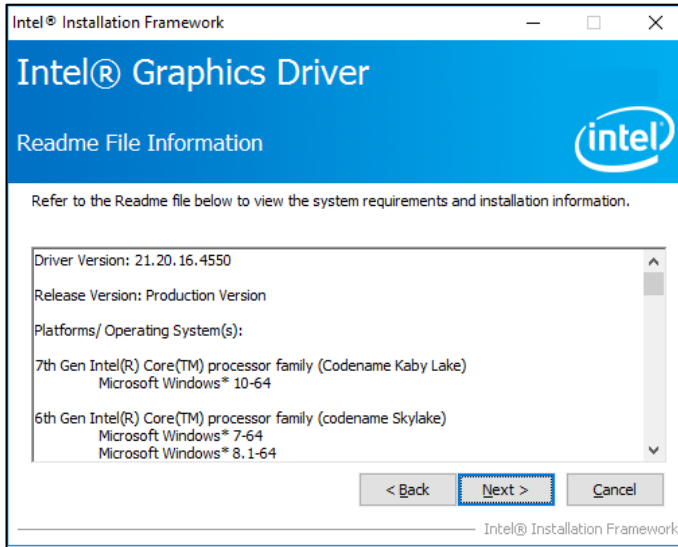
1. Run the **Setup.exe** file.
2. When the *Welcome* screen appears, click **Next** to continue.



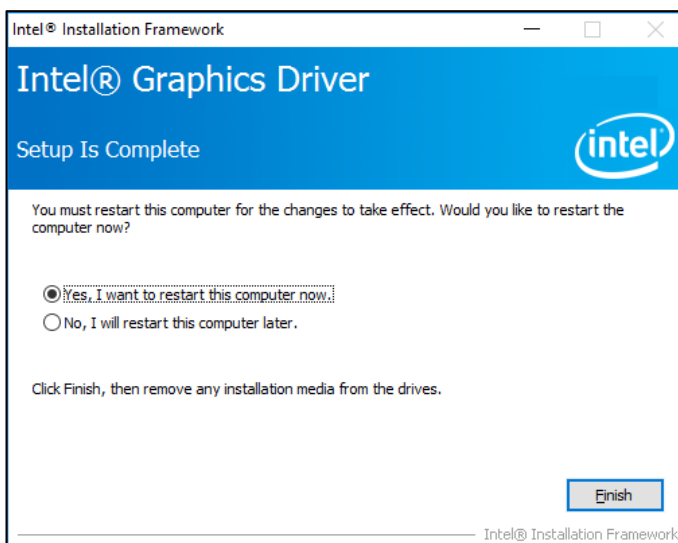
3. Click **Yes** to agree with the license agreement and continue the installation.



4. On the *Readme File Information* and *Setup Progress* screen, click **Next** until the installation starts.

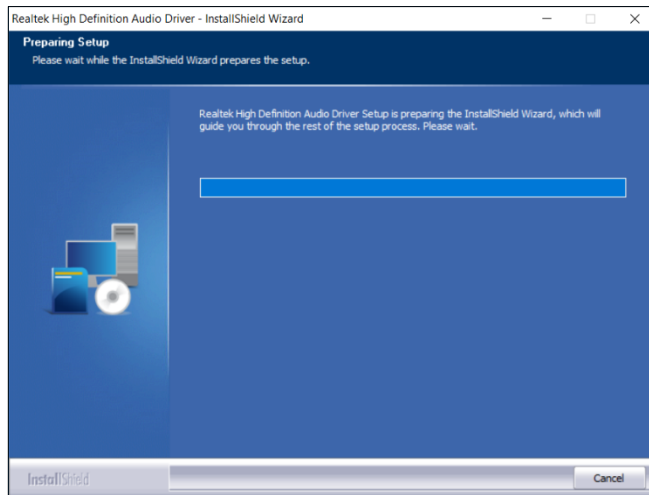


5. Installation is now complete. Restart the system for changes to take effect.

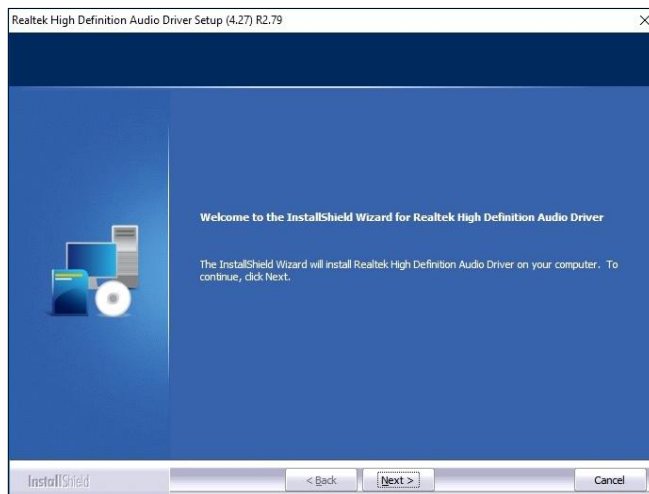


3.4 HD Audio Driver Installation

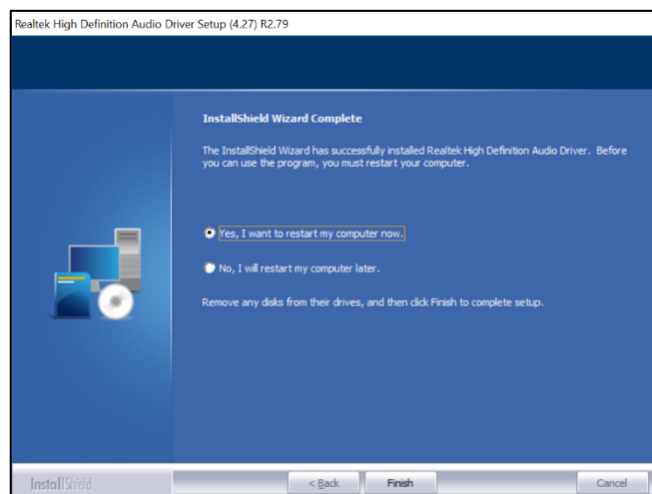
1. Run the **Setup.exe** file and the wizard starts.



2. On the *Welcome* screen of the InstallShield Wizard, click **Next** to start installing the audio driver on your system.

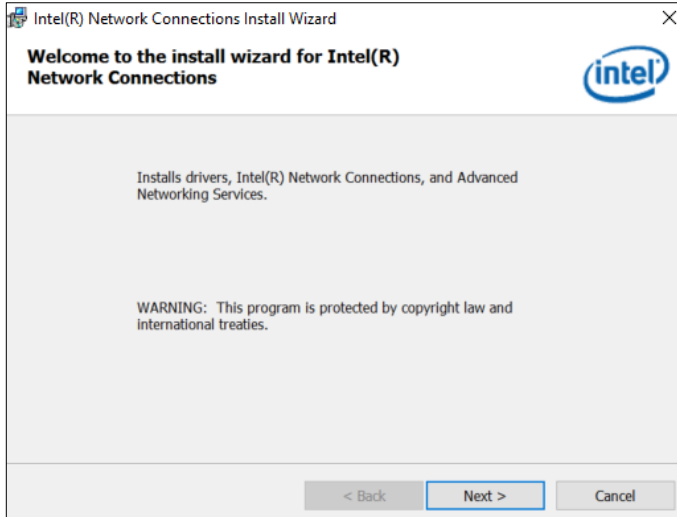


3. Installation is now complete. Restart the system for changes to take effect.



3.5 LAN Driver Installation

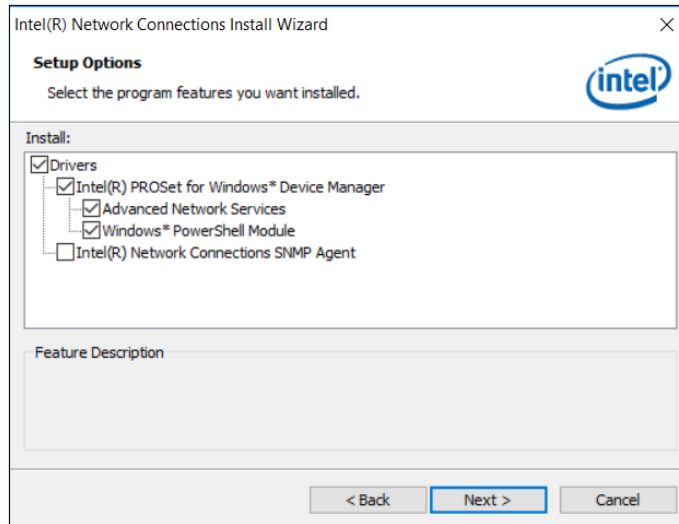
1. Run the **Setup.exe** file.
2. On the *Welcome* screen of the InstallShield Wizard, click **Next** to continue.



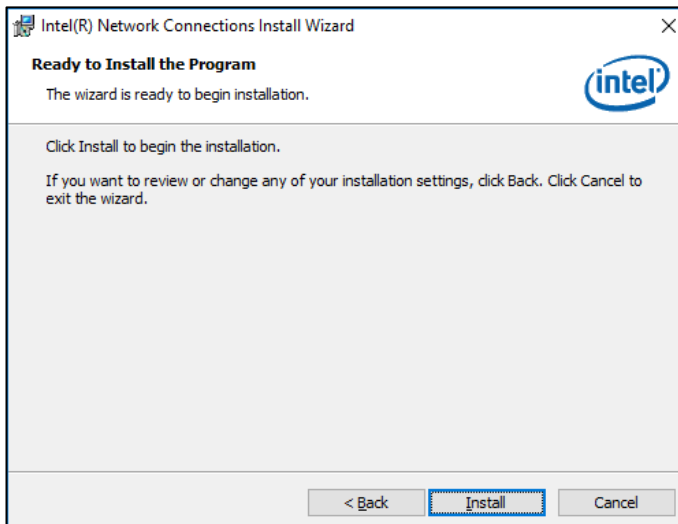
3. Accept the license agreement and click **Next**.



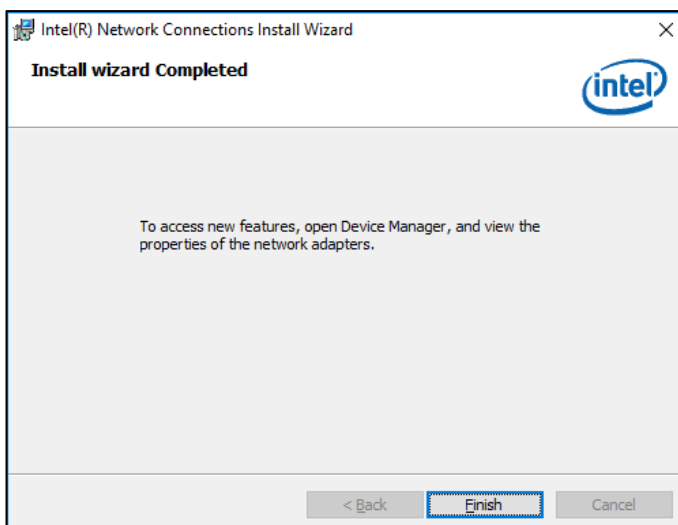
4. On the *Setup Options* screen, tick the checkbox to select the desired driver(s) and click **Next**.



5. Click **Install**.

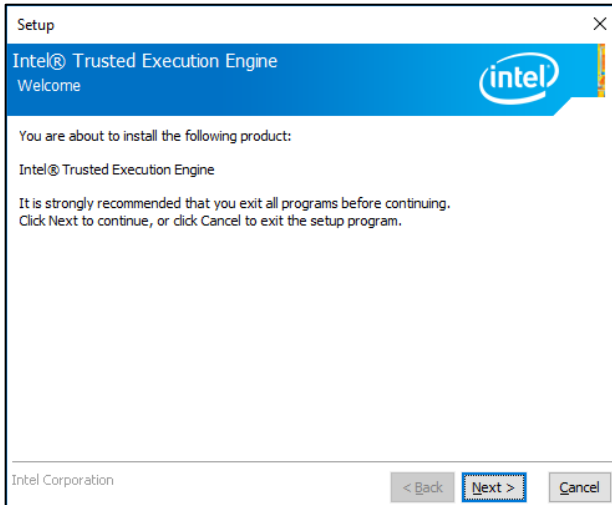


6. Installation is now complete. Restart the system for changes to take effect.

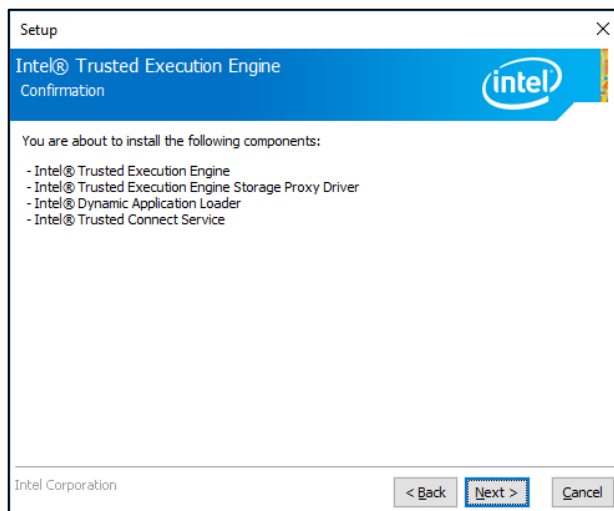
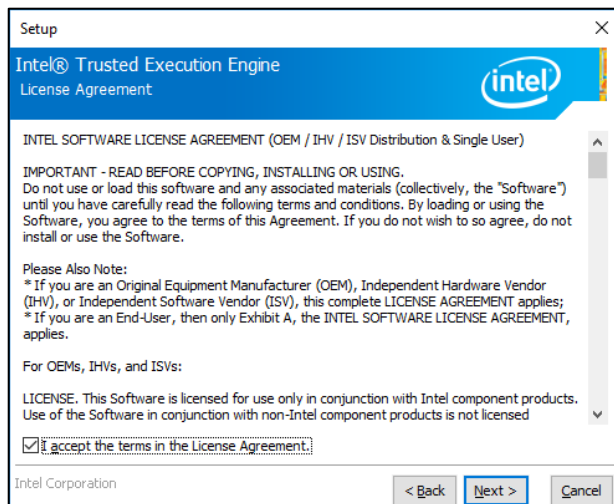


3.6 Intel® Trusted Execution Engine Drivers Installation

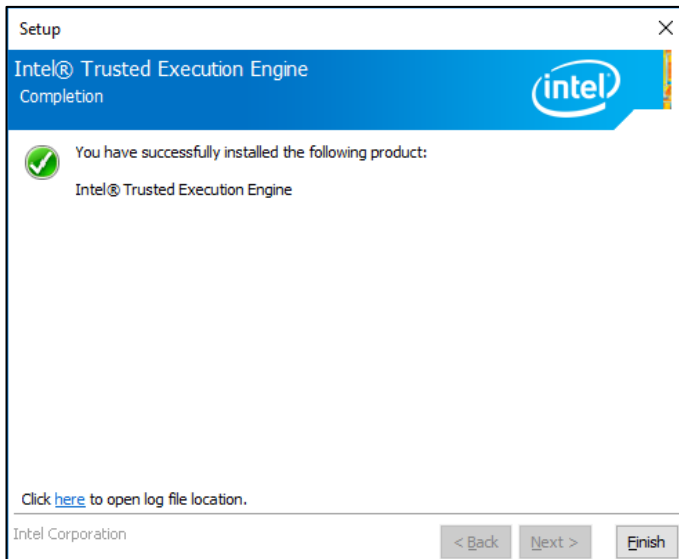
1. Run the **Setup.exe** file.
2. When the *Welcome* screen appears, click **Next**.



3. Accept the license agreement and click **Next** until the installation starts.

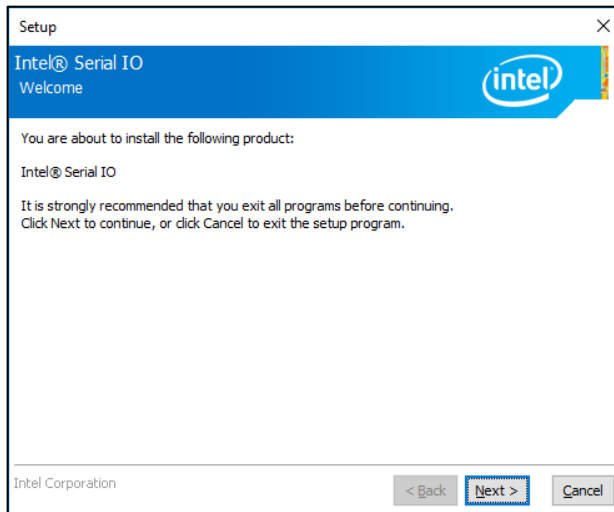


4. Installation is now complete. Restart the system for changes to take effect.

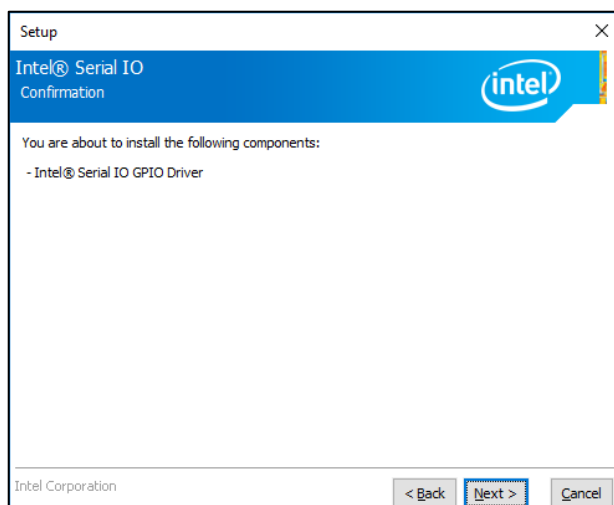
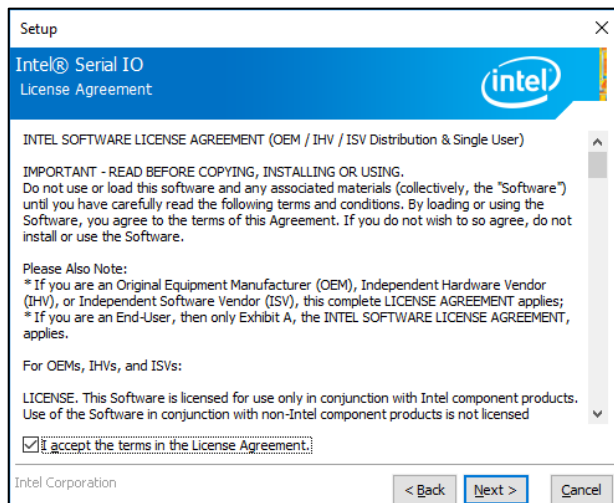


3.7 Intel® Serial IO Drivers Installation

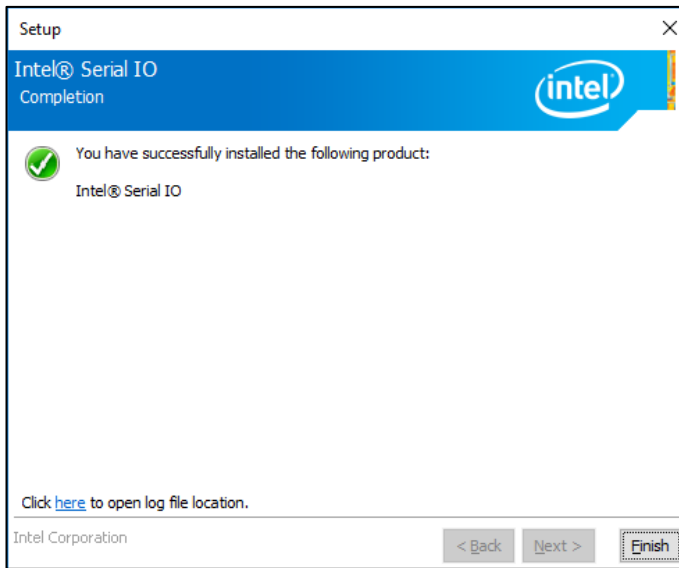
1. Run the **Setup.exe** file.
2. When the *Welcome* screen appears, click **Next**.



3. Accept the license agreement and click **Next** until the installation starts.



4. Installation is now complete. Restart the system 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. 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 key immediately allows you to enter the Setup utility. If you are a little bit late pressing the 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.

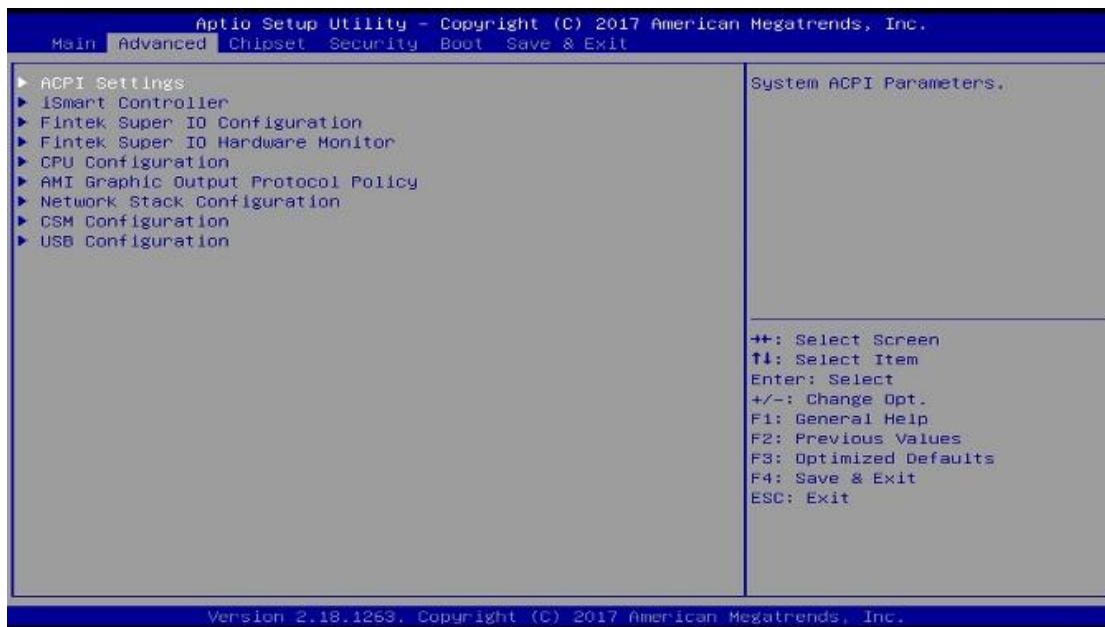
4.3 Main Settings



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



BIOS Setting	Description
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	Selects an ACPI sleep state (Suspend Disabled or S3) where the system will enter when the Suspend button is pressed.

4.4.2 iSmart Controller



BIOS Setting	Description
Power-On after Power failure	Enables / Disables the system to be turned on automatically after a power failure.
Temperature Guardian	Generate the reset signal when system hands up on POST.
Schedule Slot 1 / 2	<p>Sets up the hour / minute for system powe-on.</p> <p>Important: If you would like to set up a schedule between adjacent days, configure two schedule slots.</p> <p>For example, if setting up a schedule from Wednesday 5 p.m. to Thursday 2 a.m., configure two schedule slots. But if setting up a schedule from 3 p.m to 5 p.m. on Wednesday, configure only a schedule slot.</p>

4.4.3 F81964 Super IO Configuration



BIOS Setting	Description
Standby Power on S5	Enables / Disables to provide the standby power for devices. Options: All Enable / Enable Ethernet for WOL / All Disable
Serial Port Configuration	Sets parameters of Serial Ports (COMA). Enables / Disables the serial port and select an optimal setting for the Super IO device.

4.4.3.1. Serial Port 1 Configuration



BIOS Setting	Description
Serial Port	Enables / Disables the serial port.
Change Settings	<p>Selects an optimal settings for Super IO device.</p> <p>Options:</p> <ul style="list-style-type: none"> • Auto • IO = 3F8h; IRQ = 4 • IO = 3F8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2F8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 3E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12
Device Mode	<p>Changes the serial port mode to:</p> <ul style="list-style-type: none"> • RS232 • RS485 TX Low Active • RS485 with Termination TX Low Active • RS422 • RS422 with Termination

4.4.3.2. Serial Port 2 Configuration



BIOS Setting	Description
Serial Port	Enables / Disables the serial port.
Change Settings	<p>Selects an optimal settings for Super I/O device.</p> <p>Options:</p> <ul style="list-style-type: none"> • Auto • IO = 2F8h; IRQ = 3 • IO = 3F8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2F8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 3E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12 • IO = 2E8h; IRQ = 3, 4, 5, 6, 7, 9, 10, 11, 12

4.4.4 Fintek Super IO Hardware Monitor



BIOS Setting	Description
Power Failure	Options: Bypass mode, Always on, Always off
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	This field enables or disables the Shutdown Temperature. Options: Disabled / 70 °C / 75 °C / 80 °C / 85 °C / 90 °C / 95 °C

4.4.5 CPU Configuration



BIOS Setting	Description
Socket 0 CPU Information	Displays the socket specific CPU information.
CPU Power Management	Allows you to enable / disable Turbo Mode.
Active Processor Cores	Enables / Disables the cores in the processor package.
Monitor Mwait	Enables / Disables Monitor Mwait.

4.4.5.1. CPU Power Management Configuration



BIOS Setting	Description
Turbo Mode	Enables / Disables the turbo mode.
Boot Performance Mode	Selects the performance state that the BIOS will set before OS handoff. Options: Max. Performance, Max. Battery
Power Limit 1 Enable	Enables / Disables Power Limit 1.

4.4.6 AMI Graphic Output Protocol Policy



4.4.7 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.
Media detect count	Assigns a number of times to check the presence of media.

4.4.8 CSM Configuration



BIOS Setting	Description
CSM Support	Enables / Disables CSM support.
GateA20 Active	<ul style="list-style-type: none"> • Upon Request disables GA20 when using BIOS services. • Always cannot disable GA20, but is useful when any RT code is executed above 1 MB.
INT19 Trap Response	<p>Sets how BIOS reacts on INT19 trap by Option ROM.</p> <ul style="list-style-type: none"> • Immediate executes the trap right away. • Postponed executes the trap during legacy boot.
Boot option filter	Controls the priority of Legacy and UEFI ROMs.
Netwok	Controls the execution of UEFI and LEGAcY OXE OpROM.
Storage	Controls the execution of UEFI and Legacy Storage OpROM.
Video	Controls the execution of UEFI and Legacy Video OpROM.
Other PCI devices	Determines OpROM execution policy for devices other than network, storage or video.

4.4.9 USB Configuration



BIOS Setting	Description
Legacy USB Support	<ul style="list-style-type: none"> • Enable: Enables Legacy USB Support. • Auto: Disables legacy support if no USB devices are connected. • Disable: Keeps USB devices available only for EFI applications.
XHCI Hand-off	This is a workaround for OSEs without XHCI / EHCI 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 for Control, Bulk, and Interrupt transfers.
Device reset time-out	Seconds of delaying 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. "Auto" uses default value for a Root port it is 100ms. But for a Hub port, the delay is taken from Hub descriptor.

4.5 Chipset Settings



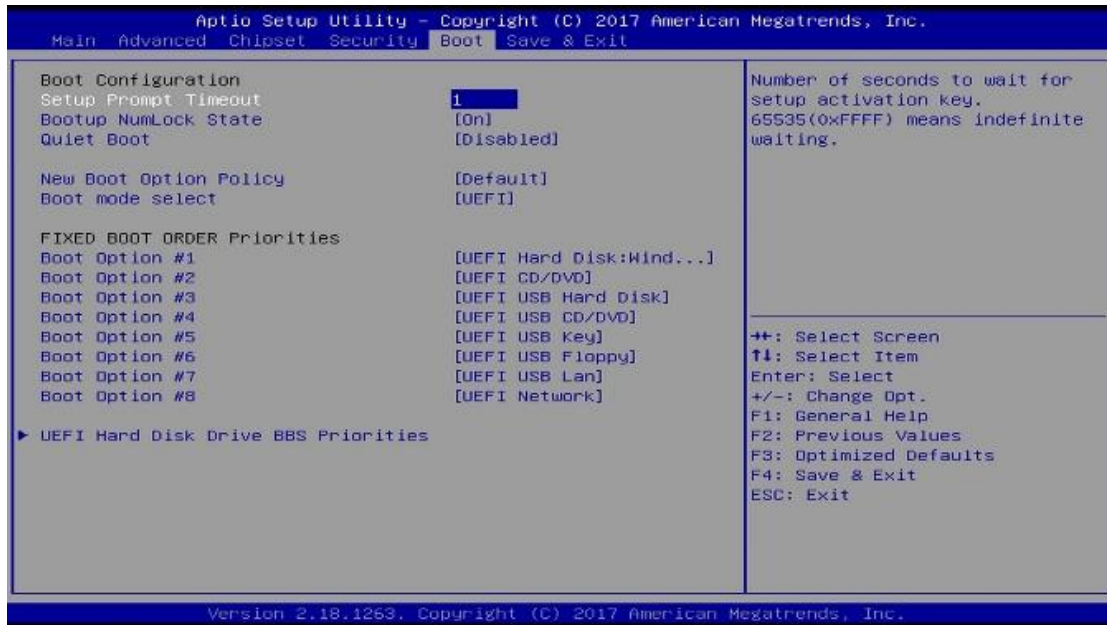
BIOS Setting	Description
North Bridge	Displays the North Bridge parameters
Max TOLUD	Maximum value of TOLUD.

4.6 Security Settings



BIOS Setting	Description
Administrator Password	Sets an administrator password for the setup utility.
User Password	Sets a user password.

4.7 Boot Settings



BIOS Setting	Description
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Bootup NumLock State	Selects the keyboard NumLock state.
Quiet Boot	Enables / Disables Quiet Boot option.
New Boot Option Policy	Specifies the Boot device priority sequence from available hard disk drives.
Boot Mode Select	Selects a Boot mode.
Boot Option Priorities	Sets the system boot order priorities for hard disk, CD/DVD, USB, Network.
LEFI Hard Disk Drive BBS Priorities	Specifies the boot device priority sequence from available UEFI Hard Disk Drives.

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.

Appendix

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

- I/O Port Address Map
- Interrupt Request Lines (IRQ)
- Watchdog Timer Configuration

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
0x00000070-0x00000070	System CMOS/real time clock
0x00000080-0x0000008F	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000B2-0x000000B3	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x00000400-0x0000047F	Motherboard resources
0x00000500-0x000005FE	Motherboard resources
0x00000600-0x0000061F	Motherboard resources
0x0000164E-0x0000164F	Motherboard resources
0x0000F040-0x0000F05F	Intel(R) Celeron(R)/Pentium(R) Processor SMBUS - 5AD4
0x000003F8-0x000003FF	Communications Port (COM1)
0x000002F8-0x000002FF	Communications Port (COM2)
0x0000E000-0x0000EFFF	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8
0x00000000-0x0000006F	PCI Express Root Complex
0x00000078-0x00000CF7	PCI Express Root Complex

Address	Device Description
0x00000D00-0x0000FFFF	PCI Express Root Complex
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
0x0000F000-0x0000F03F	Intel(R) HD Graphics
0x0000F090-0x0000F097	Standard SATA AHCI Controller
0x0000F080-0x0000F083	Standard SATA AHCI Controller
0x0000F060-0x0000F07F	Standard SATA AHCI Controller
0x00000040-0x00000043	System timer
0x00000050-0x00000053	System timer

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 0	System timer
IRQ 3	Communications Port (COM2)
IRQ 4	Communications Port (COM1)
IRQ 8	High precision event timer
IRQ 14	Intel(R) Serial IO GPIO Host Controller - INT3452
IRQ 14	Intel(R) Serial IO GPIO Host Controller - INT3452
IRQ 14	Intel(R) Serial IO GPIO Host Controller - INT3452
IRQ 14	Intel(R) Serial IO GPIO Host Controller - INT3452
IRQ 25	High Definition Audio Controller
IRQ 54 ~ IRQ 204	Microsoft ACPI-Compliant System
IRQ 256 ~ IRQ 511	Microsoft ACPI-Compliant System
IRQ 4294967284	802.11n Wireless LAN Card
IRQ 4294967285	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
IRQ 4294967286 ~ IRQ 4294967291	Intel(R) I211 Gigabit Network Connection
IRQ 4294967292	Intel(R) Trusted Execution Engine Interface
IRQ 4294967293	Intel(R) HD Graphics
IRQ 4294967294	Standard SATA AHCI Controller

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

```
//-----
//
// 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 "F81964.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 81964 watch dog program\n");
    SIO = Init_F81964();
    if (SIO == 0)
    {
        printf("Can not detect Fintek 81964, program abort.\n");
        return(1);
    }
    //if (SIO == 0)

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

iBASE

```
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_F81964_Reg(0x2B);
    bBuf &= (~0x20);
    Set_F81964_Reg(0x2B, bBuf);           //Enable WDTO

    Set_F81964_LD(0x07);                 //switch to logic device 7
    Set_F81964_Reg(0x30, 0x01);         //enable timer

    bBuf = Get_F81964_Reg(0xF5);
    bBuf &= (~0x0F);
    bBuf |= 0x52;
    Set_F81964_Reg(0xF5, bBuf);         //count mode is second
    Set_F81964_Reg(0xF6, interval);     //set timer
    bBuf = Get_F81964_Reg(0xFA);
    bBuf |= 0x01;
    Set_F81964_Reg(0xFA, bBuf);         //enable WDTO output

    bBuf = Get_F81964_Reg(0xF5);
    bBuf |= 0x20;
    Set_F81964_Reg(0xF5, bBuf);         //start counting
}
//-----
void DisableWDT(void)
{
    unsigned char bBuf;
    Set_F81964_LD(0x07);                 //switch to logic device 7
    bBuf = Get_F81964_Reg(0xFA);
    bBuf &= ~0x01;
    Set_F81964_Reg(0xFA, bBuf);         //disable WDTO output

    bBuf = Get_F81964_Reg(0xF5);
    bBuf &= ~0x20;
    bBuf |= 0x40;
    Set_F81964_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 "F81964.H"
#include <dos.h>
//-----
unsigned int F81964_BASE; void Unlock_F81964 (void); void Lock_F81964 (void);
//-----
unsigned int Init_F81964(void)
{
    unsigned int result;
    unsigned char ucDid;

    F81964_BASE = 0x4E;
    result = F81964_BASE;

    ucDid = Get_F81964_Reg(0x20);
    if (ucDid == 0x07) //Fintek 81964
    {
        goto Init_Finish;
    }

    F81964_BASE = 0x2E;
    result = F81964_BASE;

    ucDid = Get_F81964_Reg(0x20);
    if (ucDid == 0x07) //Fintek 81964
    {
        goto Init_Finish;
    }

    F81964_BASE = 0x00;
    result = F81964_BASE;

Init_Finish:
    return (result);
}
//-----
void Unlock_F81964 (void)
{
    outportb(F81964_INDEX_PORT, F81964_UNLOCK);
    outportb(F81964_INDEX_PORT, F81964_UNLOCK);
}
//-----
void Lock_F81964 (void)
{
    outportb(F81964_INDEX_PORT, F81964_LOCK);
}
//-----
void Set_F81964_LD( unsigned char LD)
{
    Unlock_F81964();
}

```

iBASE

```
    outportb(F81964_INDEX_PORT, F81964_REG_LD);
    outportb(F81964_DATA_PORT, LD); Lock_F81964();
}
//-----
void Set_F81964_Reg( unsigned char REG, unsigned char DATA)
{
    Unlock_F81964();
    outportb(F81964_INDEX_PORT, REG);
    outportb(F81964_DATA_PORT, DATA);
    Lock_F81964();
}
//-----
unsigned char Get_F81964_Reg(unsigned char REG)
{
    unsigned char Result;
    Unlock_F81964();
    outportb(F81964_INDEX_PORT, REG);
    Result = inportb(F81964_DATA_PORT);
    Lock_F81964();
    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    F81964_H
#define    F81964_H    1
//-----
#define    F81964_INDEX_PORT    (F81964_BASE)
#define    F81964_DATA_PORT    (F81964_BASE+1)
//-----
#define    F81964_REG_LD    0x07
//-----
#define    F81964_UNLOCK    0x87
#define    F81964_LOCK    0xAA
//-----
unsigned int Init_F81964(void);
void Set_F81964_LD( unsigned char);
void Set_F81964_Reg( unsigned char, unsigned char); unsigned char
Get_F81964_Reg( unsigned char);
//-----
#endif //    F81964_H
```