



# **EC70A-SU**

## **User's Manual**

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## Trademarks

Product names or trademarks appearing in this manual are for identification purpose only and are the properties of the respective owners.

## FCC and DOC Statement on Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to 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 into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

### Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

## Table of Contents

Copyright.....	2
Trademarks.....	2
FCC and DOC Statement on Class A.....	2
About this Manual.....	4
Warranty.....	4
Static Electricity Precautions.....	4
Safety Measures.....	4
Safety Precautions.....	5
About the Package.....	5
Chapter 1 - Introduction.....	6
Overview.....	6
Key Features.....	6
Specifications.....	7
Getting to Know the EC70A-SU.....	8
Mechanical Dimensions.....	9
Chapter 2 - Getting Started.....	10
Chapter 3 - Installing the Devices.....	11
Installing a 2.5" SATA Drive.....	11
Installing a Mini PCIe Card.....	12
Chapter 4 - Jumper Settings.....	13
Clear CMOS Data.....	13
Auto Power-on Select.....	13
Mini PCIe Signal/ SATA Select.....	14
COM4/DIO Select.....	14
Chapter 5 - Ports and Connectors.....	15
Front Panel I/O Ports.....	15

Rear Panel I/O Ports.....	15
15~36V DC-in.....	16
Display Interfaces.....	16
USB Ports.....	17
COM (Serial) Ports.....	18
RJ45 LAN Ports.....	19
Audio.....	19

I/O Connectors.....	20
Serial ATA Connector.....	20
Serial ATA Power Connector.....	20
Expansion Slots.....	20
Front Panel Connector.....	21
Standby Power LED.....	22
Battery.....	22

Chapter 6 - Mounting Options.....	23
-----------------------------------	----

Chapter 7 - BIOS Setup.....	26
-----------------------------	----

Main.....	27
Advanced.....	27
Security.....	36
Boot.....	37
Exit.....	38

Chapter 8 - Supported Software.....	40
-------------------------------------	----

Chapter 9 - Intel AMT Settings.....	56
-------------------------------------	----

Appendix A - Watchdog Sample Code.....	69
--	----

Appendix B - System Error Message.....	70
--	----

Appendix C - Troubleshooting Checklist.....	71
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## About this Manual

An electronic file of this manual can be obtained from the DFI website at [www.dfi.com](http://www.dfi.com). To download the user's manual from our website, please go to "Support" > "Download Center." On the Download Center page, select your product or type the model name and click "Search" to find all technical documents including the user's manual for a specific product.

## Warranty

1. Warranty does not cover damages or failures that arised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.
2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.
3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.
4. We will not be liable for any indirect, special, incidental or damages to the product that has been modified or altered.

## Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface.
4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.



### Important:

Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

## Safety Measures

To avoid damage to the system:

- Use the correct AC input voltage range.

To reduce the risk of electric shock:

- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

## Safety Precautions

- Use the correct DC input voltage range.
- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.
- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.
- Keep this system away from humidity.
- Place the system on a stable surface. Dropping it or letting it fall may cause damage.
- The openings on the system are for air ventilation to protect the system from overheating. **DO NOT COVER THE OPENINGS.**
- Place the power cord in such a way that it will not be stepped on. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the system and that it matches the voltage and current marked on the system's electrical range label.
- If the system will not be used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
- If one of the following occurs, consult a service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated the system.
  - The system has been exposed to moisture.
  - The system is not working properly.
  - The system dropped or is damaged.
  - The system has obvious signs of breakage.
- The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace the outlet.
- Disconnect the system from the DC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

## About the Package

The package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- 1 EC70A-SU system uni
- Mounting screws for SATA drive
- Mounting screws for Mini PCIe module
- 1 Quick Installation Guide

## Optional Items

- Wall Mount kit
- Power Cord
- Power Adapter: 120W, 19V/6.31A or 60W, 19V/3.15A

The board and accessories in the package may not come similar to the information listed above. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

## Chapter 1 - Introduction

### Overview



Front View



Rear View

### Key Features

<b>Model Name</b>	<b>EC70A-SU</b>
<b>Processor</b>	6th Generation Intel® Core™ processors, BGA 1356
<b>LAN</b>	2 LAN ports
<b>COM</b>	4 COM ports
<b>Display</b>	VGA HDMI (or DP upon request)
<b>Audio</b>	Microphone and Line-out
<b>USB</b>	4 USB 3.0 Type A ports
<b>Power</b>	15~36V DC-in
<b>DIO</b>	COM 4/ 8-bit DIO (by jumper switch)
<b>Power Switch</b>	Power-on button and distant power-on switch

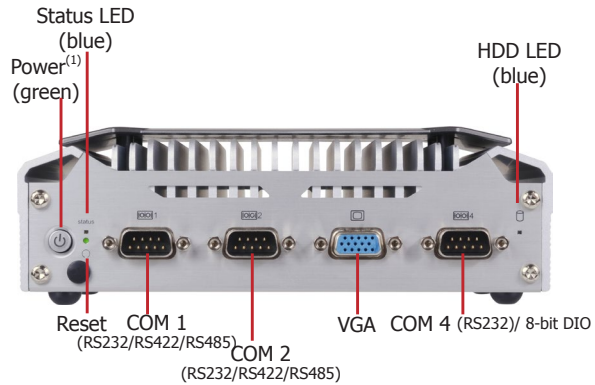
## Specifications

<b>Processor</b>	6th Generation Intel® Core™ Processors, BGA 1356 Intel® Core™ i7-6600U Processor, Dual Core, 4M Cache, 2.6GHz, 15W Intel® Core™ i5-6300U Processor, Dual Core, 3M Cache, 2.4GHz, 15W Intel® Core™ i3-6100U Processor, Dual Core, 3M Cache, 2.3GHz, 15W
<b>Memory</b>	<ul style="list-style-type: none"> <li>• Supports dual-channel DDR4 2133MHz</li> <li>• Supports 4GB/8GB memory onboard</li> </ul>
<b>Graphics</b>	Intel® HD Graphics GT Series OpenGL 5.0, DirectX 12, OpenCL 2.1 <ul style="list-style-type: none"> <li>• Supports these codecs:                HW Decode: AVC/H.264, MPEG2, VC1/WMV9, JPEG/MJPEG, HEVC/H265, VP8, VP9                HW Encode: AVC/H.264, MPEG2, JPEG, HEVC/H265, VP8, VP9</li> <li>• Output displays:                VGA: resolution up to 2560x1600 @ 60Hz                HDMI: resolution up to 4096x2160 @ 24Hz or 2560x1600 @ 60Hz</li> <li>• Dual display: VGA + HDMI</li> </ul>
<b>Audio</b>	<ul style="list-style-type: none"> <li>• Realtek ALC888</li> <li>• Audio ports:                Mic-in and Line-out</li> </ul>
<b>Storage</b>	One 2.5" SATA drive bay <ul style="list-style-type: none"> <li>• SATA 3.0 port with data transfer rate up to 6Gb/s</li> </ul>
<b>Ethernet</b>	1 x Intel® I210AT PCIe (10/100/1000Mbps) 1 x Intel® I219LM with iAMT11.0 PCIe (10/100/1000Mbps) (only Core i7/i5 supports iAMT)
<b>Expansion</b>	One full-size Mini PCIe (PCIe+USB) One half-size Mini PCIe (PCIe/mSATA)
<b>Front Panel I/O Ports</b>	<ul style="list-style-type: none"> <li>• Front Panel               <ul style="list-style-type: none"> <li>- One power button with LED</li> <li>- One reset button</li> <li>- One status LED</li> <li>- One HDD LED</li> <li>- Two RS232/422/485 and one RS232 (or 8-bit DIO)</li> <li>- One VGA port</li> <li>- 1 x Wi-Fi module antenna hole</li> </ul> </li> <li>• Rear Panel               <ul style="list-style-type: none"> <li>- One RS-232 (DB-9)</li> <li>- One Line-out and one Mic-in ports</li> <li>- One HDMI port</li> <li>- Four USB 3.0 Type A ports</li> <li>- Two RJ45 LAN ports</li> <li>- One 15~36V DC-in jack</li> <li>- One distant power on/off switch</li> <li>- Two Wi-Fi module antenna holes</li> </ul> </li> </ul>

<b>Power</b>	• Power input voltage: 15~36V DC-in (DC-in jack connector)
<b>Cooling System</b>	• Fanless with heatsink
<b>Environment</b>	<ul style="list-style-type: none"> <li>• Operating Temperature:                -20 to 60°C (wide temperature SSD or mSATA mini)                0 to 50°C (general SSD or mSATA mini)</li> <li>• Storage Temperature:                -20 to 85°C</li> <li>• Relative Humidity:                5 to 95% RH (non-condensing)</li> </ul>
<b>Construction</b>	• Aluminum + Metal Aluminum
<b>Mounting</b>	• Wall/VESA/DIN-rail Mount
<b>Dimensions</b>	• 181.6mm x 57mm x 118.4mm (W x H x D)
<b>Weight</b>	• 1.1 Kg
<b>OS Support</b>	<ul style="list-style-type: none"> <li>• Windows 7 (32/64-bit)</li> <li>• Windows 8.1 (64-bit)</li> <li>• Windows 10</li> <li>• Windows Embedded Standard 7</li> <li>• Windows Embedded 8 Standard</li> </ul>
<b>Other Features</b>	System Reset, Programmable via Software from 1 to 255 Seconds
<b>Standards and Certifications</b>	Shock: Operating: Half-sine, 3G @ 11ms, IEC 60068-2-27 Non-Operating: 5G @ 11ms Vibration: Operating: Random, 1Grms @ 5~500 Hz, 30min., IEC 60068-2-64 Non-Operating: Sweep sine, 3Grms @ 10~500Hz, 30min., IEC 60068-2-6

## Getting to Know the EC70A-SU

### Front View



**Power button with LED (Green)**  
Press to power on or power off the system.

**Status LED (Blue)**  
Indicates system status.

Status LED				
Suspend Mode	S0	S1	S3	S4, S5
LED Behavior	Always ON	Quick Blink (cycle 1 sec)	Slow Blink (cycle >1 sec)	Off

**Reset Button**  
Press to reset the system.

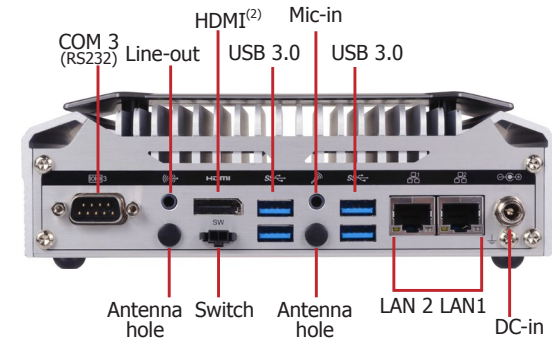
**COM Ports**  
Used to connect serial devices. COM 4 can be selected between an RS232 COM port or 8-bit digital IO via jumper settings.

**VGA**  
Used to connect the VGA connector of a monitor.

**HDD LED (Blue)**  
Indicates the status of the hard drive.

HDD LED		
HDD State	Disk access activity	HDD present or HDD not present
LED Behavior	Blink	Off

### Rear View



**COM Port**  
Used to connect serial devices.

**Microphone/Line-out Ports**  
Used to connect audio devices such as microphones and speakers.

**HDMI**  
Used to connect the HDMI connector of an LCD monitor.

**USB 3.0 Ports**  
Used to connect USB 2.0/1.1 devices or USB 3.0 devices.

**Switch**  
Used to connect a power switch for distant power on/off control.

**Gigabit LAN Ports**  
Used to connect the system to a local area network.

**DC-in**  
DC15~36V power input via a DC-in jack.

**Antenna Holes**  
Used to connect a Wi-Fi module's antenna.

**Notes:**

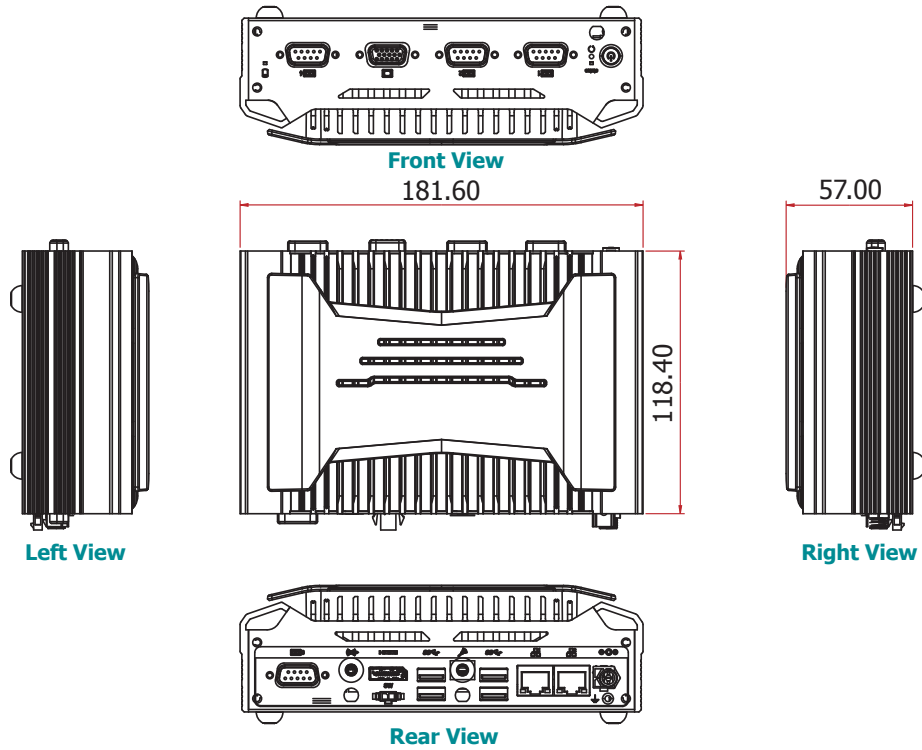
- Please gently press the power button to avoid possible damages.
- The HDMI is a DP/HDMI combo port but can only transmit HDMI signals (unless wired as a DP port by request). Please plug in an HDMI cable with the right orientation and alignment to avoid damage to the connector. You should feel resistance (due to a pin on the right) if the cable is not inserted correctly.

Aligning side (left) — Angled-corner pin — Angled-corner (up) — Align this edge with the left side of the connector

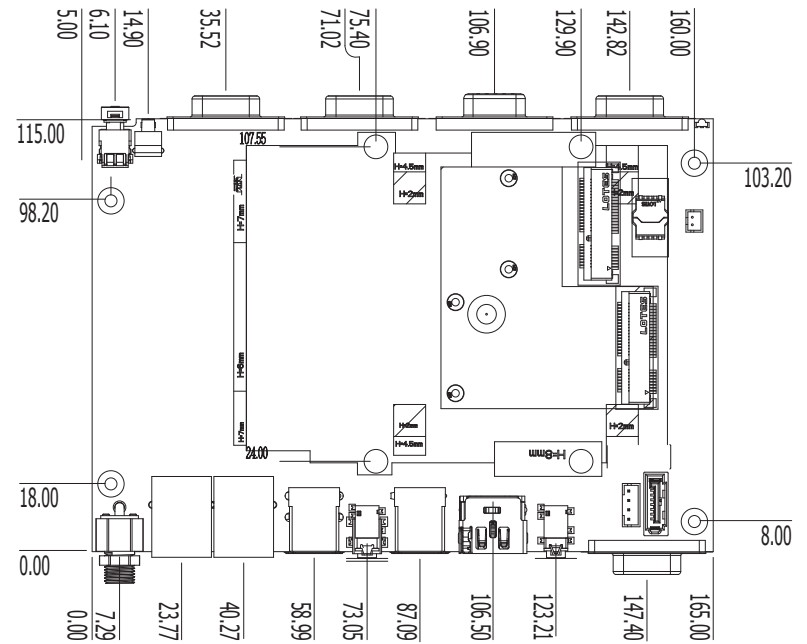


### Mechanical Dimensions

#### Chassis Dimensions



#### Motherboard Dimensions



## Chapter 2 - Getting Started

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### Preparing the System

Before you start using the system, you need the following items:

- SATA hard drive
- AC power adapter
- CD-ROM drive (for installing software/drivers)

### Installing Devices

The following are devices that can be installed in the system.

- SATA hard drive
- Mini PCIe card

### Configuring the BIOS

To get you started, you may need to change configurations such as the date, time and the type of hard disk drive.

1. Power-on the system.
2. After the memory test, the message "Press DEL to run setup" will appear on the screen. Press the Delete key to enter the BIOS setup utility.

### Installing an Operating System

Most operating system software can be installed using a DVD (and DVD burner) or bootable USB drive.

Please refer to your operating system manual for instructions on installing an operating system.

### Installing the Drivers

The system requires you to install drivers for some devices to operate properly. Refer to the Supported Software chapter for instructions on installing the drivers.

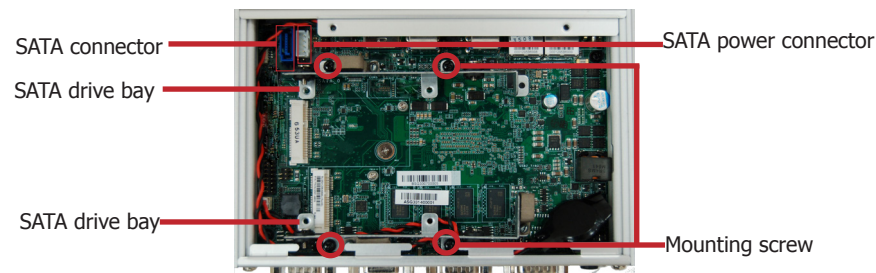
## Chapter 3 - Installing the Devices

### Installing a 2.5" SATA Drive

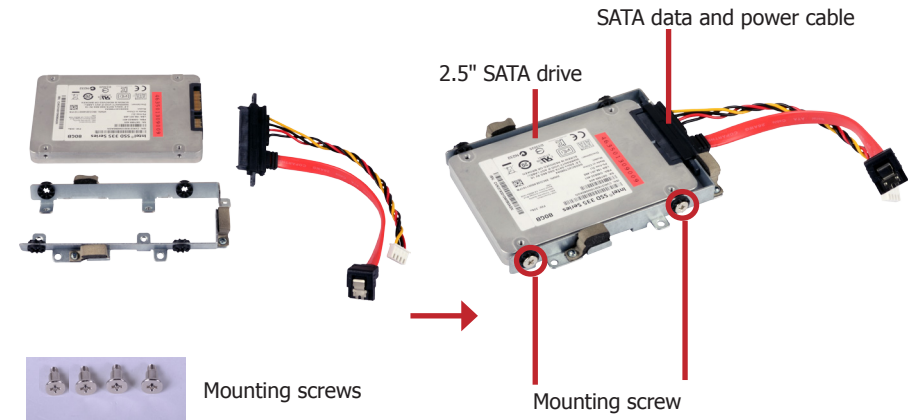
1. Remove the two screws securing the chassis cover and lift the cover to open the system.



2. Locate the SATA drive bay on the system board. Remove 4 mounting screws that secure the drive bay to the system board.

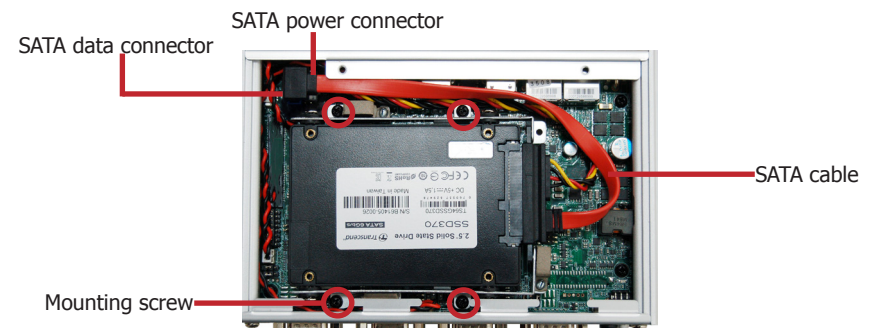


3. Align the mounting holes of a 2.5" SATA drive with the mounting holes on the drive bay and connect the SATA cable (data and power) to the SATA drive. Then, use the provided HDD mounting screws to affix the HDD to the drive bay.

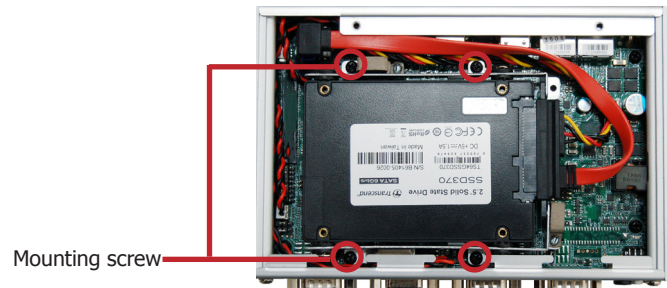


**Note:** Please connect the SATA cable first before installing the HDDs on the drive bay. The drive bay might block the access to the SATA connectors on the HDD.

4. Place the SATA drive bay with the installed HDD back to the system and connect the SATA cable to the SATA connectors on the system board.



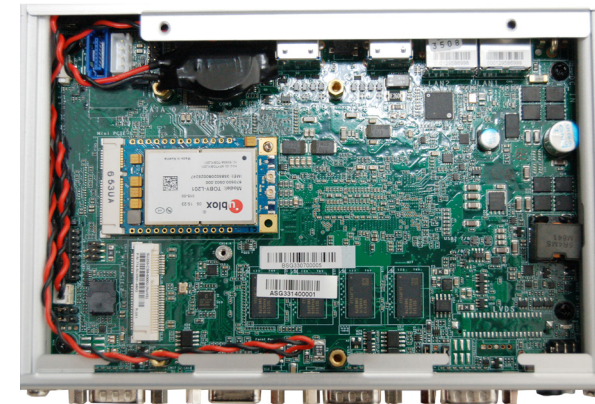
- Secure the SATA drive bay with the mounting screws you removed in step 2.



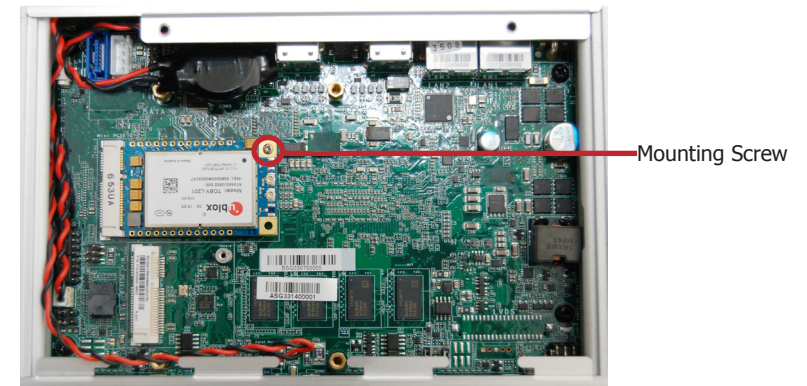
## Installing a Mini PCIe Card

The system board is equipped with 2 Mini PCIe slots: one full-size and one half-size slot. Here we will demonstrate the installation of a full-size Mini PCIe card.

- Grasp the Mini PCIe card by its edges and align the notch in the connector of the PCIe card with the notch in the connector on the system board.



- Push the Mini PCIe card down and use the provided mounting screws to secure the card on the system board.

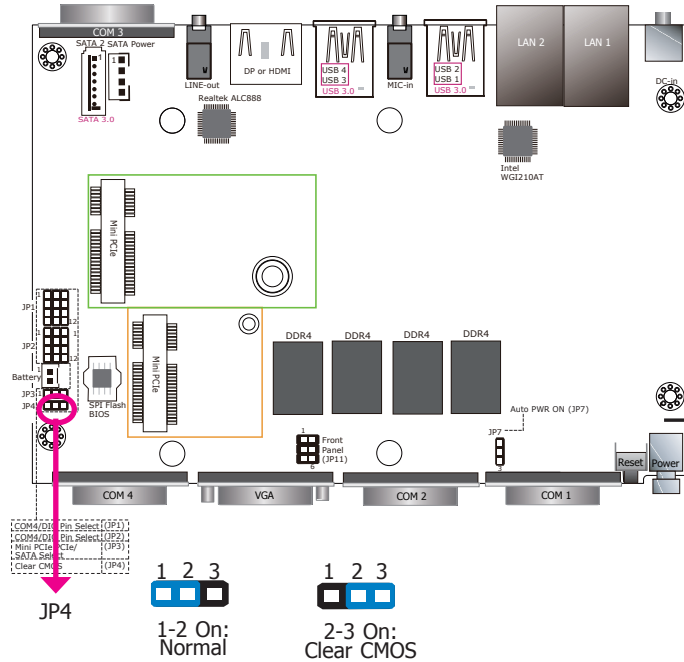


**Note:**

The system also has a half-size Mini PCIe slot that can accommodate either a Mini PCIe or an mSATA card. Refer to jumper settings for signal selection for this slot.

# Chapter 4 - Jumper Settings

## Clear CMOS Data



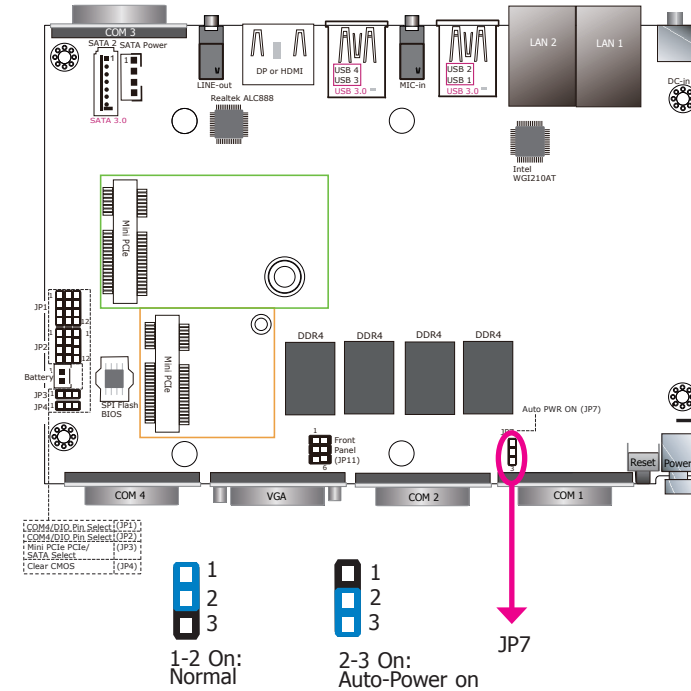
You can reconfigure the system with the default values stored in the ROM BIOS if you encounter the following situations:

- a) CMOS data becomes corrupted.
- b) You forgot the supervisor or user password.

To load the default values stored in the ROM BIOS, please follow these steps below.

1. Power off the system and unplug the power cord.
2. Set JP4 pins 2 and 3 to On. Wait for a few seconds and set JP4 back to its default setting, pins 1 and 2 On.
3. Now plug the power cord and power on the system.

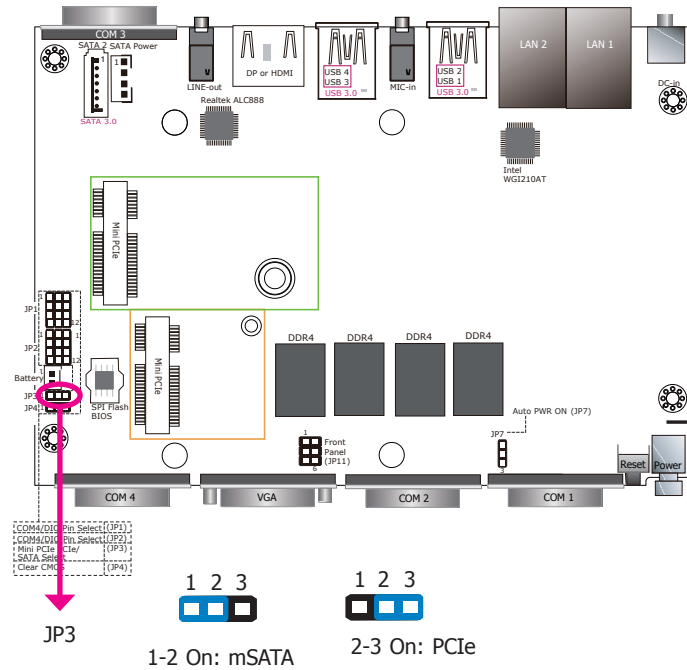
## Auto Power-on Select



JP7 is used to select the method of powering on the system. If you want the system to power on whenever AC power comes in, set JP7 pins 2 and 3 to On. If you want to use the power button, set pins 1 and 2 to On.

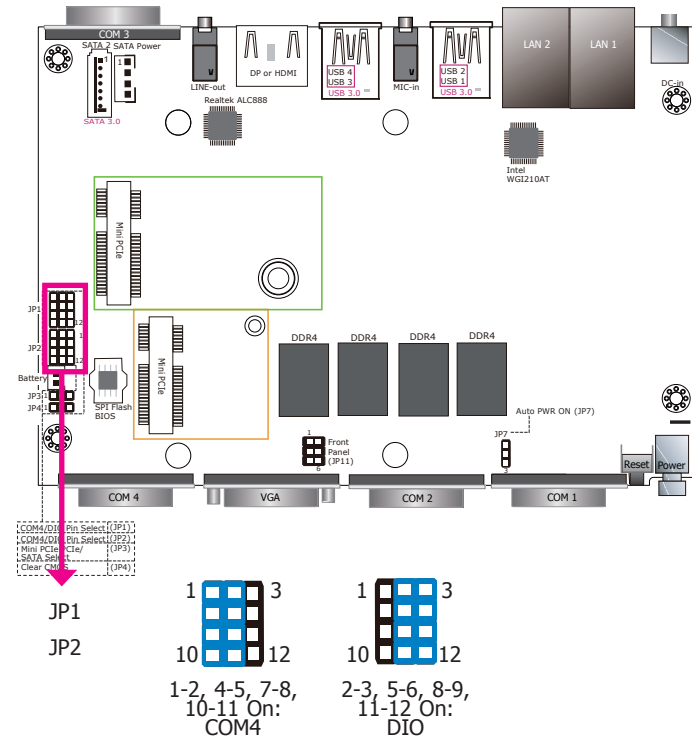
When using the JP7 "Power On" feature to power the system back on after a power failure occurs, the system may not power on if the power lost is resumed within 5 seconds (power flicker).

### Mini PCIe Signal/ SATA Select



JP3 is used to select the Mini PCIe signal for the half-size Mini PCIe slot: PCIe or mSATA (default).

### COM4/DIO Select



The system board uses JP1 and JP2 to select between RS232 serial communication or 8-bit DIO for the DB-9 connector (COM 4) at the rear panel.

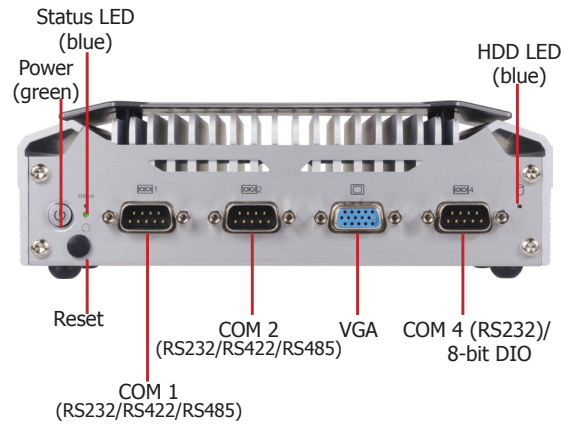


**Important:**

You cannot use COM 4 and DIO at the same time. Please set JP1 and JP2 together.

## Chapter 5 - Ports and Connectors

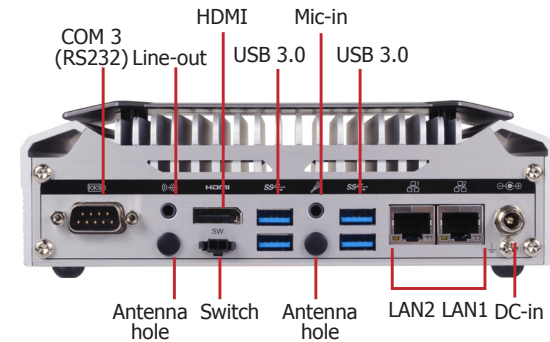
### Front Panel I/O Ports



The front panel I/O consists of the following ports:

- Power button (green)
- Status LED (blue)
- Reset button
- Three serial ports
  - Two of them support RS232/422/485
  - One (COM4) supports only RS232 with optional 8-bit DIO
- VGA port
- HDD LED (blue)

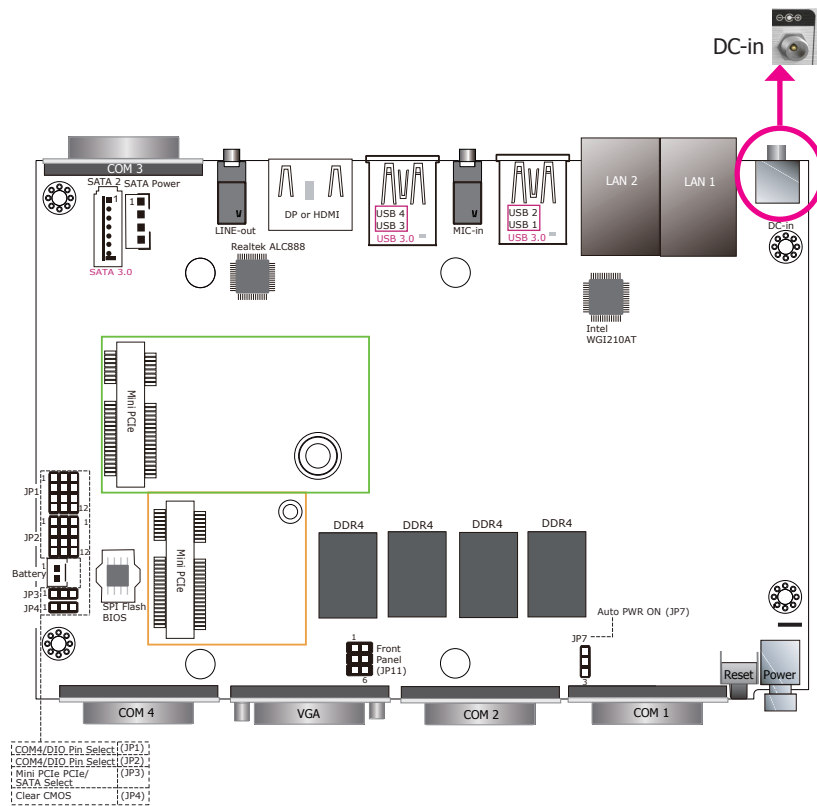
### Rear Panel I/O Ports



The rear panel I/O consist of the following ports:

- Serial port supporting RS232
- Two antenna holes
- HDMI port (or optional DP port)
- Remote power-on/off switch
- Four USB 3.0 ports
- Mic-in/line-out jack
- Two RJ45 LAN ports
- 15~36V DC-in

### 15~36V DC-in

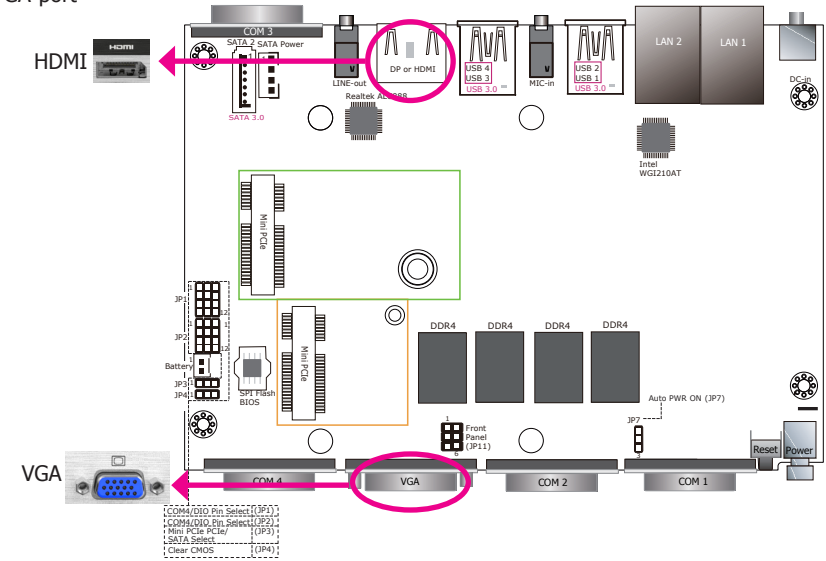


This DC-in jack is considered a low power solution. Connect a DC power cord to this DC-in jack. Using a voltage more than the recommended range may fail to boot the system or cause damage to the system board.

### Display Interfaces

The display ports consist of the following:

- 1 HDMI/DP++(optional) port
- 1 VGA port



#### VGA Port

The VGA port is used for connecting a VGA monitor. Connect the monitor's 15-pin D-shell cable connector to the VGA port. After you plug the monitor's cable connector into the VGA port, gently tighten the cable screws to hold the connector in place.

#### HDMI Port

The HDMI port which carries both digital audio and video signals is used to connect a LCD monitor or digital TV that has an HDMI port.

#### DP Port (optional)

The DP port is a digital display interface used to connect a display device such as a computer monitor. It is used to transmit audio and video simultaneously. The interface, which is developed by VESA, delivers higher performance than any other digital interfaces.

#### BIOS Setting

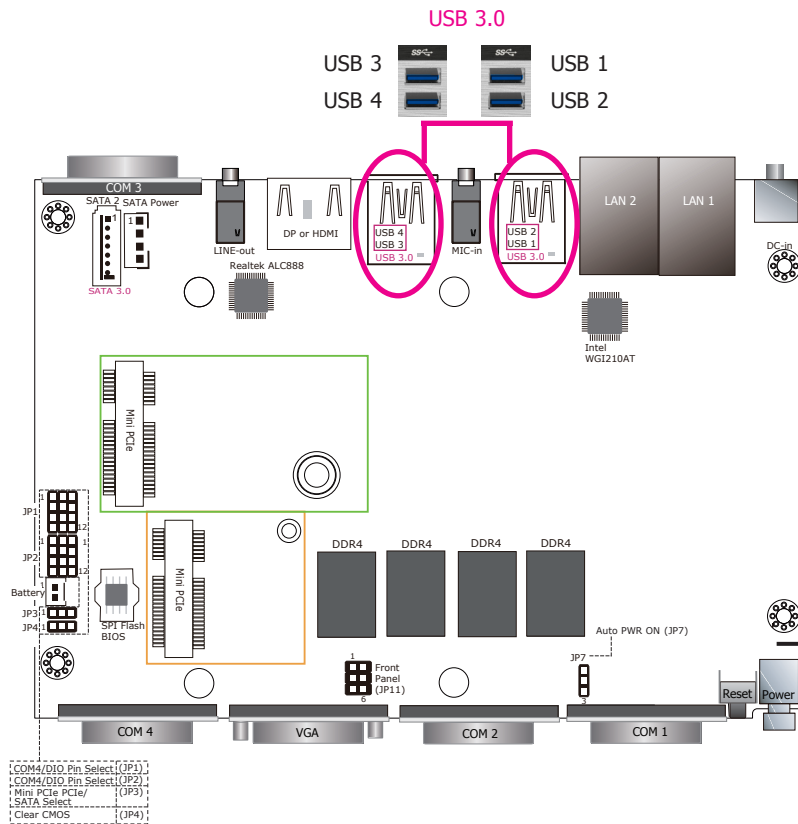
Configure the display devices in the Advanced menu ("Video Configuration" submenu) of the BIOS. Refer to Chapter 7 for more information.

#### Driver Installation

Install the graphics driver. Refer to Chapter 8 for more information.



## USB Ports



The system board is equipped with four onboard USB 3.0 ports (USB 1-4). USB devices allow data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

## BIOS Setting

Configure the onboard USB in the Advanced menu ("USB Configuration" submenu) of the BIOS. Refer to Chapter 7 for more information.

## Driver Installation

You may need to install the proper drivers in your operating system to use USB devices. Refer to Chapter 8 for more information.

## Wake-On-USB Keyboard/Mouse

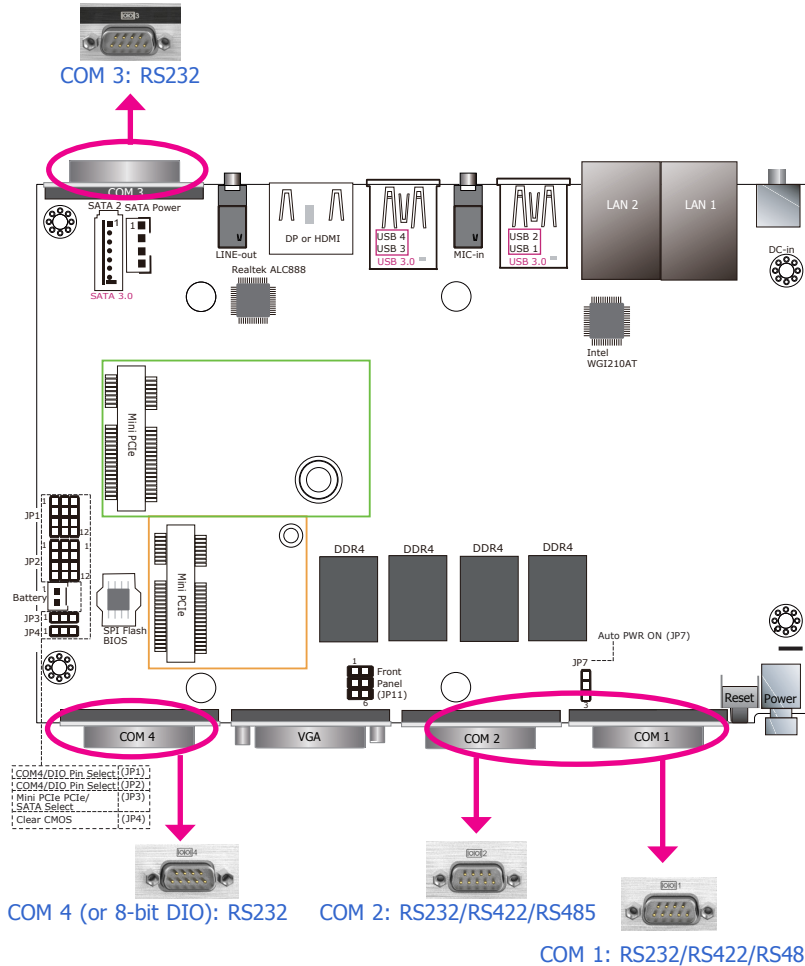
The Wake-On-USB Keyboard/Mouse function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state.



### Important:

If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the +5V\_standby power source of your power supply must support  $\geq 1.5A$ . For 3 or more USB ports, the +5V\_standby power source of your power supply must support  $\geq 2A$ .

## COM (Serial) Ports

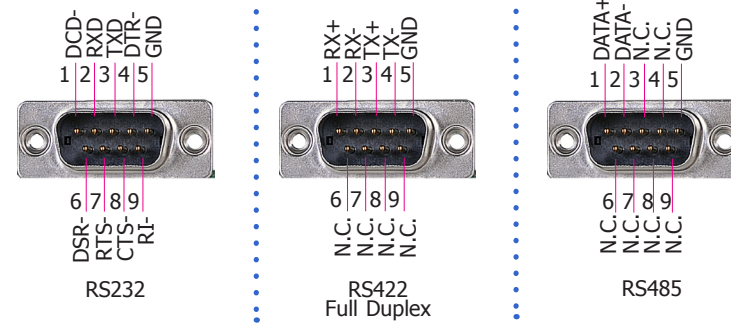


COM 1 and COM 2 can be selected among RS232/RS422/RS485 whereas COM 3 and COM 4 are fixed at RS232. Use the BIOS configuration utility to select the communication mode for COM 1 and COM 2.

### BIOS Setting

Configure the serial ports in the "Advanced" menu (Super I/O submenu) of the BIOS. Refer to Chapter 7 for more information.

COM 1 (RS232/422/485) / COM 2 (RS232/422/485) / COM 3 (RS232 only)



### COM 4 (Serial) Port

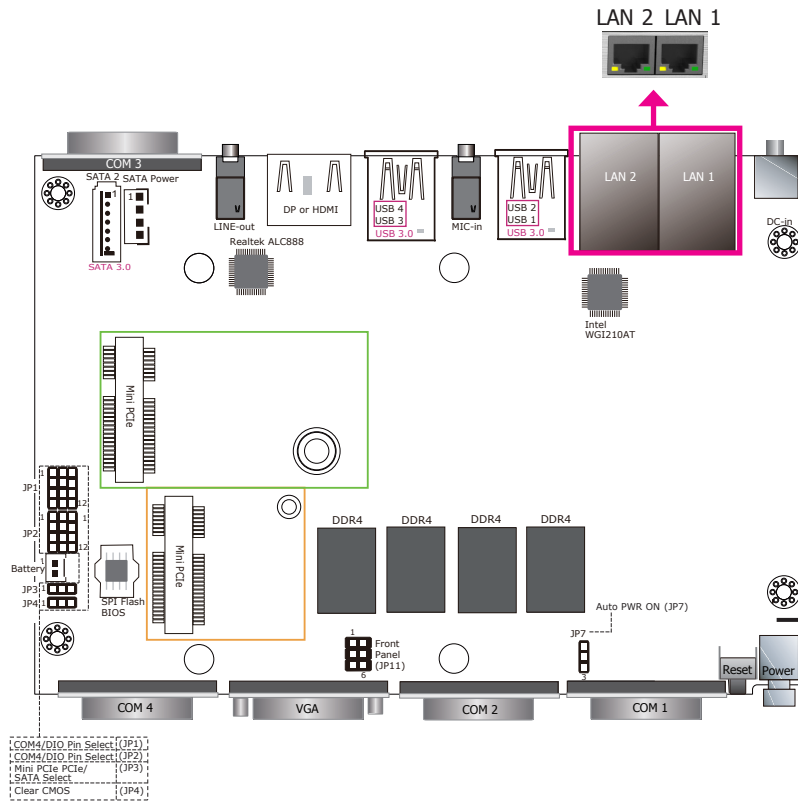
This DB-9 serial port can be configured as an RS232 serial port or as an 8-bit DIO connector via jumper settings. Refer to "COM 4/DIO Select" in Chapter 4 for its respective configuration.

### 8-bit Digital IO

The 8-bit Digital I/O connector provides monitoring and control functions to the connected external devices. You can use the HW utility provided in the Manual and Driver CD to set the DIO pins to be either input or output.

Pins	COM 4 Function	
	RS232	DIO
1	DCD	DIO_0
2	RX	DIO_1
3	TX	DIO_2
4	DTR	DIO_3
5	GND	GND
6	DSR	DIO_4
7	RTS	DIO_5
8	CTS	DIO_6
9	RI	DIO_7

## RJ45 LAN Ports



### Features

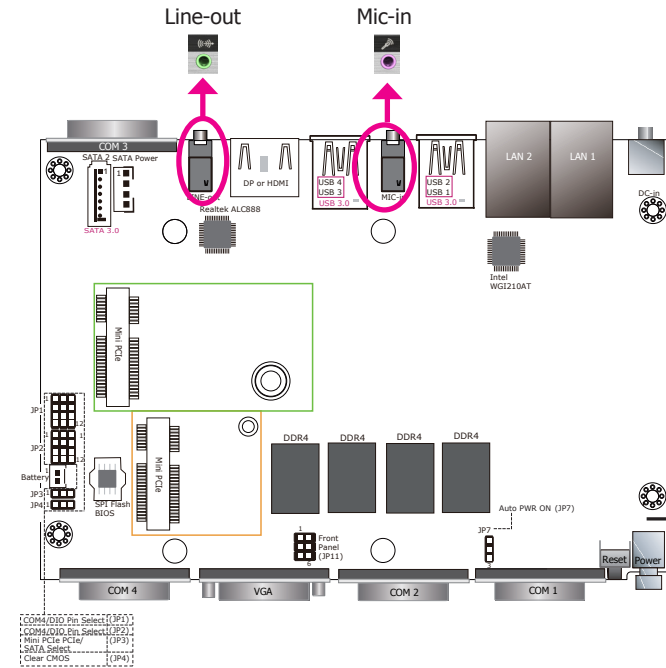
- LAN 1 is built on the Intel® I219LM PCI Express Gigabit Ethernet controller with iAMT11.0 PCIe (10/100/1000Mbps) (only Core i7/i5 supports iAMT)
- LAN 2 is built on the Intel® I210AT PCI Express Gigabit Ethernet controller

The LAN ports allow the system board to connect to a local area network using a network hub.

### Driver Installation

Install the LAN drivers. Refer to Chapter 8 for more information.

## Audio



### Rear Audio

The system board is equipped with 2 audio jacks. A jack is a one-hole connecting interface for inserting a plug.

- Line-out Jack  
This jack is used to connect a headphone or external speakers.
- Mic-in Jack  
This jack is used to connect an external microphone.

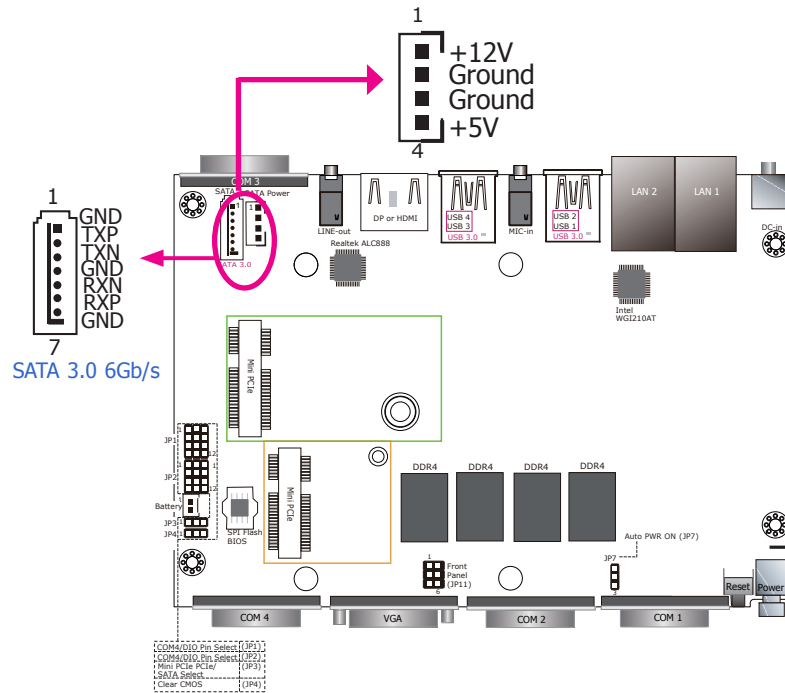
### Driver Installation

Install the audio driver. Refer to the Chapter 8 for more information.

## I/O Connectors

### Serial ATA Connector

### Serial ATA Power Connector



### Features

- 1 Serial ATA 3.0 port with data transfer rate up to 6Gb/s
- Integrated Advanced Host Controller Interface (AHCI) controller

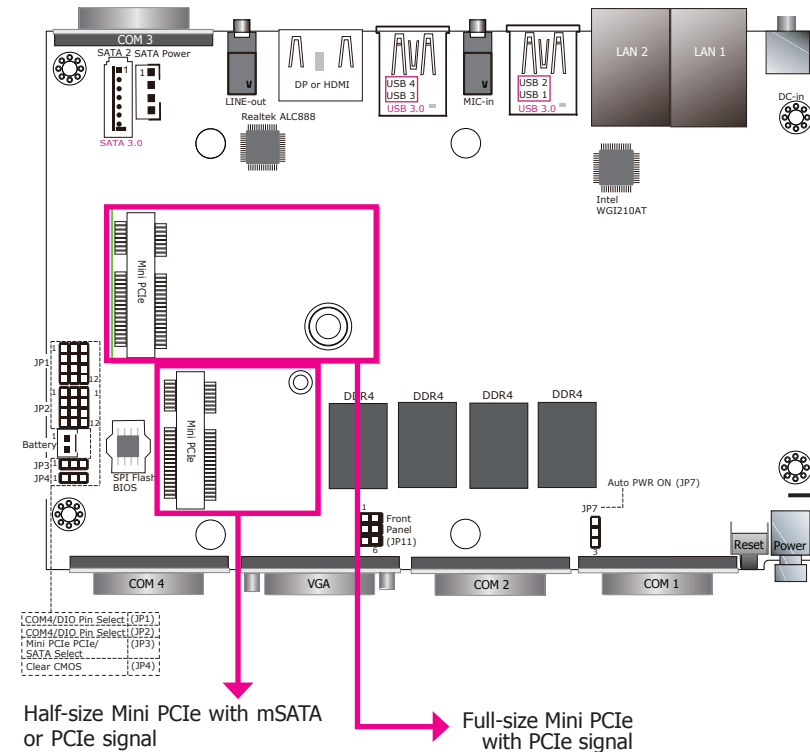
The Serial ATA connector is used to connect the Serial ATA device. Connect one end of the Serial ATA data cable to a SATA connector and the other end to your Serial ATA device.

The SATA power connector supplies power to the SATA drive. Connect one end of the provided power cable to the SATA power connector and the other end to your storage device.

### BIOS Setting

Configure the Serial ATA drives in the Advanced menu ("SATA Configuration" submenu) of the BIOS. Refer to Chapter 7 for more information.

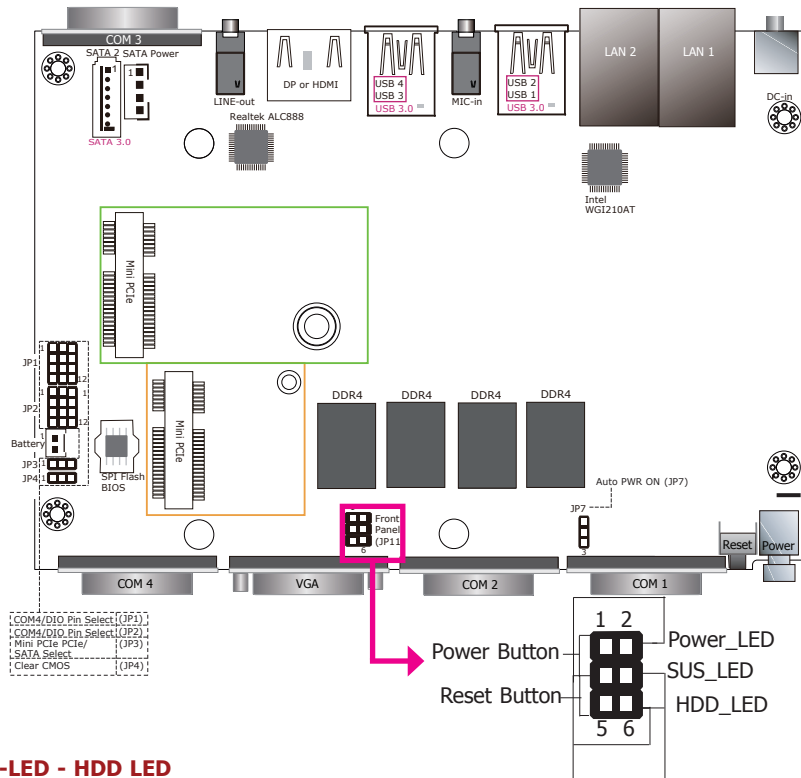
## Expansion Slots



### Mini PCI Express Slots

The Mini PCI Express slots on the system board are used to install one half-size and full-size Mini PCIe card. The half-size Mini PCIe slot can be inserted with either an mSATA card or a Mini PCIe card; please refer to Chapter 4 for more information on jumper settings for signal selection and Chapter 7 for the designated SATA port of this slot.

## Front Panel Connector



### HDD-LED - HDD LED

This LED will be lit when the hard drive is being accessed.

### RESET-SW - Reset Switch

This switch allows you to reboot without having to power off the system.

### PWR-BTN - Power Switch

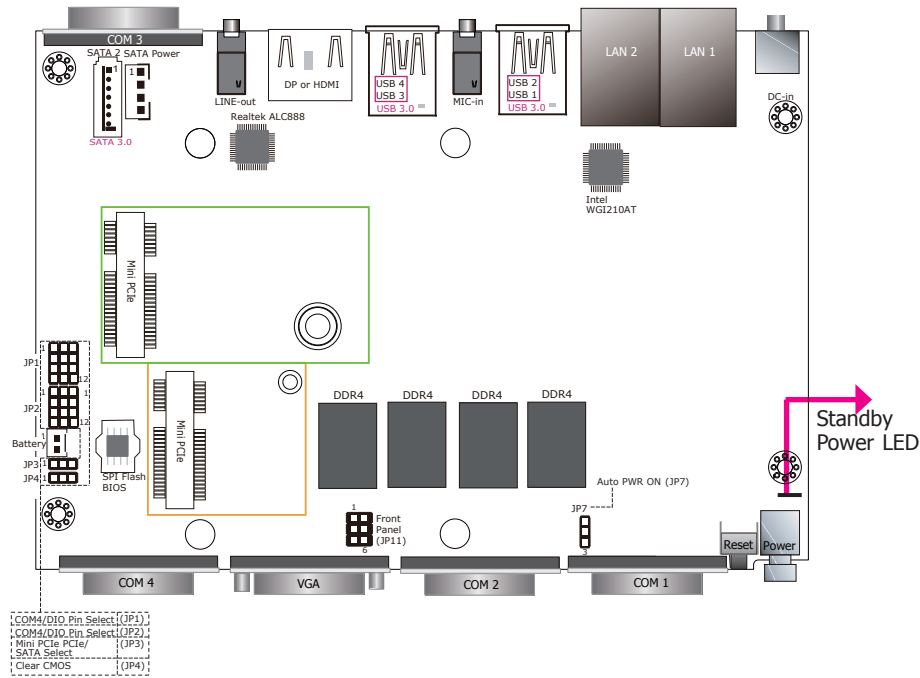
This switch is used to power on or off the system.

### PWR-LED - Power/Standby LED

When the system's power is on, this LED will be lit. When the system is in the S1 (POS - Power On Suspend) state, it will blink every second. When the system is in the S3 (STR - Suspend to RAM) state, it will blink every 4 seconds.

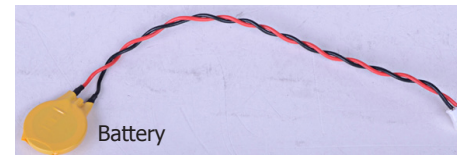
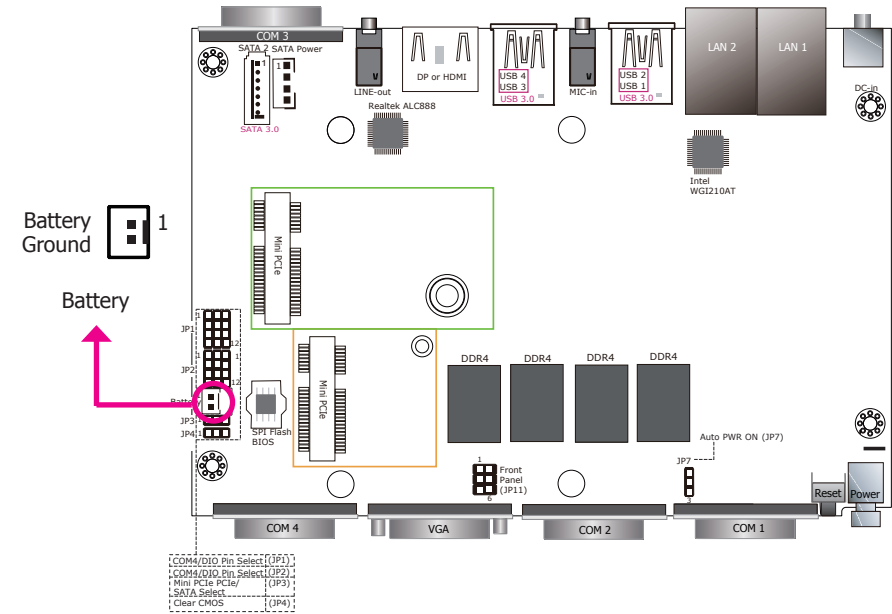
	Pin	Pin Assignment		Pin	Pin Assignment
<b>HDD-LED</b>	6	HDD Power	<b>PWR Button</b>	1	Power Button
	3	Ground		3	Ground
<b>RESET-SW</b>	3	Ground	<b>PWR LED</b>	2	Power LED
	5	RST Signal		3	Ground
			<b>Suspend Mode LED</b>	3	Ground
				4	SUS LED

### Standby Power LED



This LED will blink when the system is in the standby mode. It indicates that there is power on the system board. Power off the PC and then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.

### Battery



Connect to the battery connector

The lithium ion battery powers the real-time clock and CMOS memory. It is an auxiliary source of power when the main power is shut off.

### Safety Measures

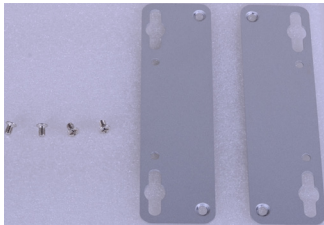
- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

## Chapter 6 - Mounting Options

### Wall Mount

The wall mount kit includes the following:

- 2 Wall mount brackets
- Bracket screws



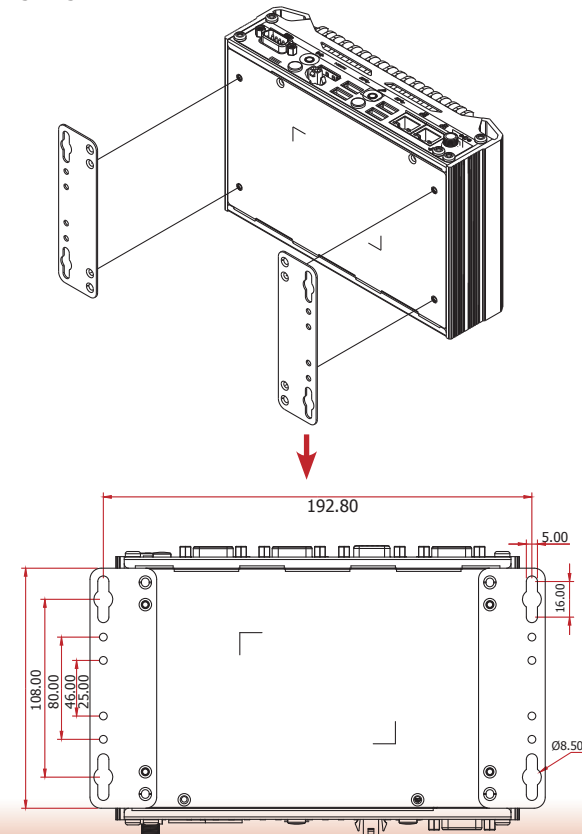
1. Remove the rubber feet from the bottom cover chassis. Or if the rubber feet are not attached to the chassis, use these screw holes to mount wall brackets.



2. Use the provided mounting screws to attach the wall mount brackets to both sides on the bottom of the system.



The following diagrams show the location and dimension of the wall mounting holes.



## VESA Mount

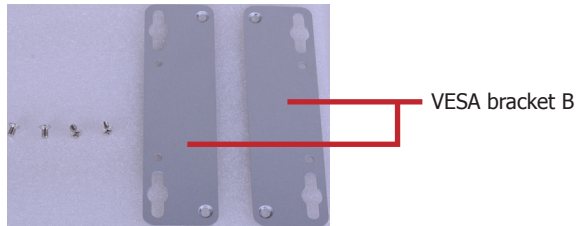
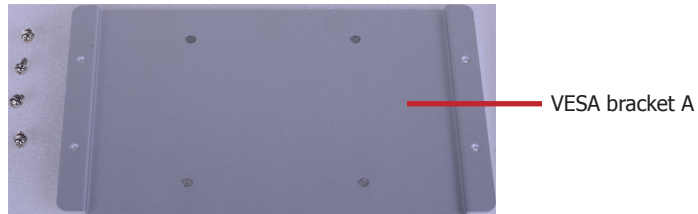


**Note:**

The system unit used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

The vesa mount kit includes the following:

- 1 VESA mount bracket A
- 2 VESA mount bracket B
- Bracket screws



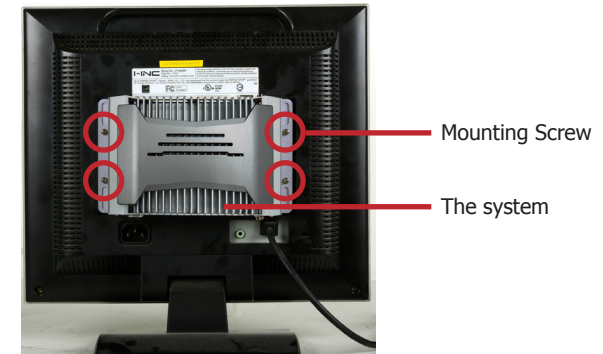
1. Attach the VESA mount bracket B to the left and right sides on the bottom of the system.



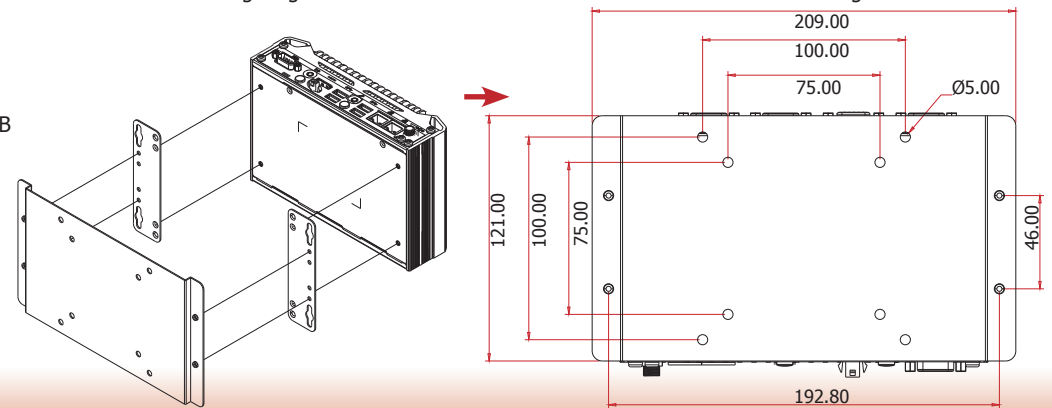
2. Attach the VESA mount bracket A to the back of your display using four screws as shown in the picture below.



3. Align VESA bracket A with VESA bracket B, and then use the provided mounting screws to attach both brackets to secure the system in place.



The following diagrams show the location and dimension of the vesa mounting holes.





## DIN Rail Mount

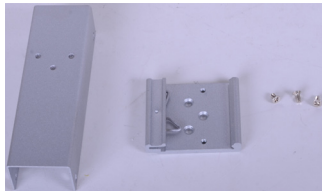


### Note:

The system unit used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

The DIN Rail mount kit includes the following:

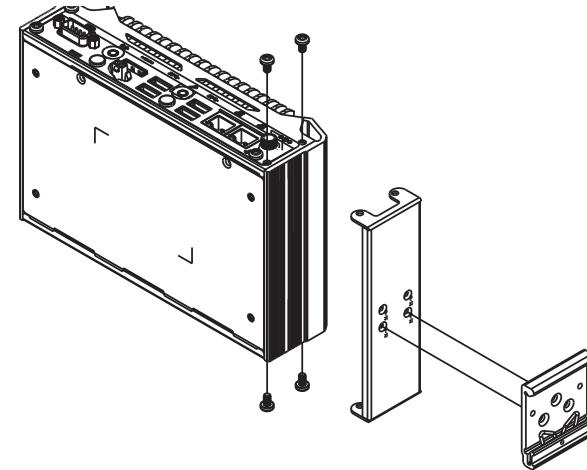
- 1 DIN-rail mount clip
- 1 bracket
- Bracket screws



1. Locate the mounting screws for mounting the din-rail bracket on the chassis cover. Remove these screws and put them in a safe place for later use.



2. Align the mounting holes on the system and the mounting holes on the bracket, and then use the screws removed in step 1 to secure the bracket in place.
3. The 3 mounting holes on the bracket are used to affix the DIN-rail mount clip to the bracket.



## Chapter 7 - BIOS Setup

### Overview

The BIOS is a program that takes care of the basic level of communication between the CPU and peripherals. It contains codes for various advanced features found in this system board. The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data retains even when the power is off. In general, the information stored in the CMOS RAM of the EEPROM will stay unchanged unless a configuration change has been made such as a hard drive replaced or a device added.

It is possible that the CMOS battery will fail causing CMOS data loss. If this happens, you need to install a new CMOS battery and reconfigure the BIOS settings.



**Note:**

The BIOS is constantly updated to improve the performance of the system board; therefore the BIOS screens in this chapter may not appear the same as the actual one. These screens are for reference purpose only.

### Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

### Entering the BIOS Setup Utility

The BIOS Setup Utility can only be operated from the keyboard and all commands are keyboard commands. The commands are available at the right side of each setup screen.

The BIOS Setup Utility does not require an operating system to run. After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the message "Press DEL to run setup" will appear on the screen. If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

### Legends

Keys	Function
Right and Left arrows	Moves the highlight left or right to select a menu.
Up and Down arrows	Moves the highlight up or down between submenu or fields.
<Esc>	Exit to the BIOS Setup Utility.
<F1>	Help
<F5>	Change values
<F6>	Change values
<F9>	Setup Defaults
<F10>	Save and Exit
<Enter>	Press <Enter> to enter the highlighted submenu.

### Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

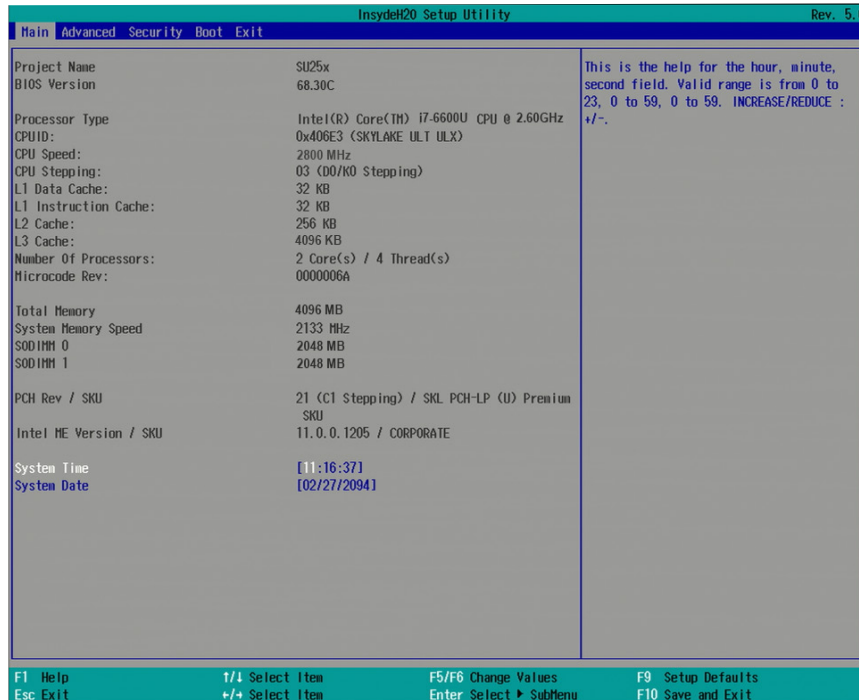
### Submenu

When "►" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>.

## Insyde BIOS Setup Utility

### Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.



#### System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

#### System Date

The date format is <month>, <date>, <year>. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1980 to 2099.

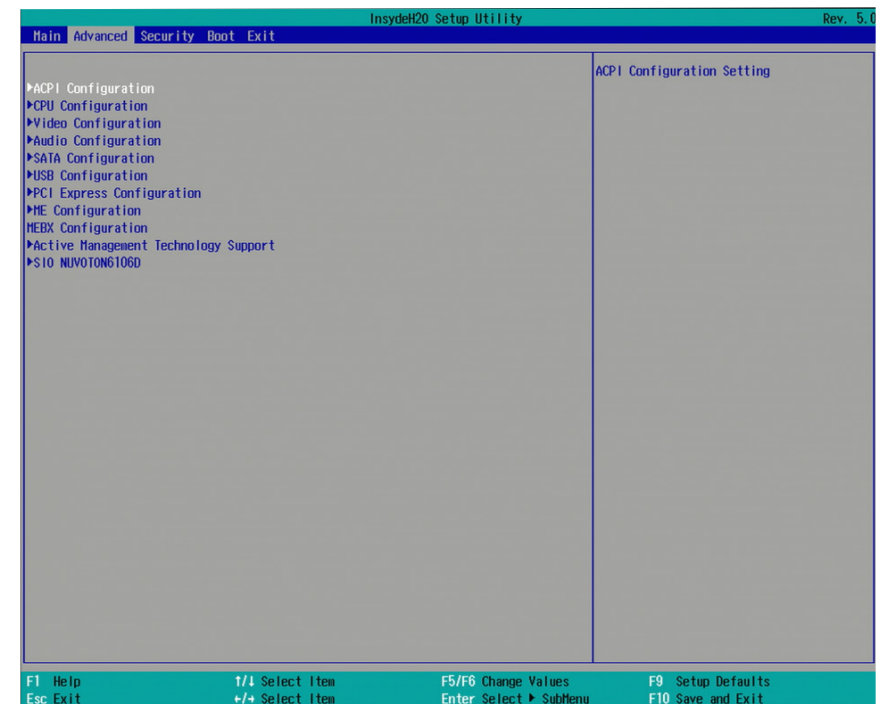
### Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.



#### Important:

Setting incorrect field values may cause the system to malfunction.



## ACPI Settings

This section configures system ACPI parameters.



### Wake on LAN

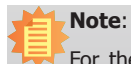
Enable or disable WOL (wake-on-LAN) to wake the system through the Ethernet adapter.

### After G3

This field is to specify what state the system should be in when power is re-applied after a power failure (G3, the mechanical-off, state).

**S0 State** The system is in working state.

**S5 State** The system is in soft-off state.

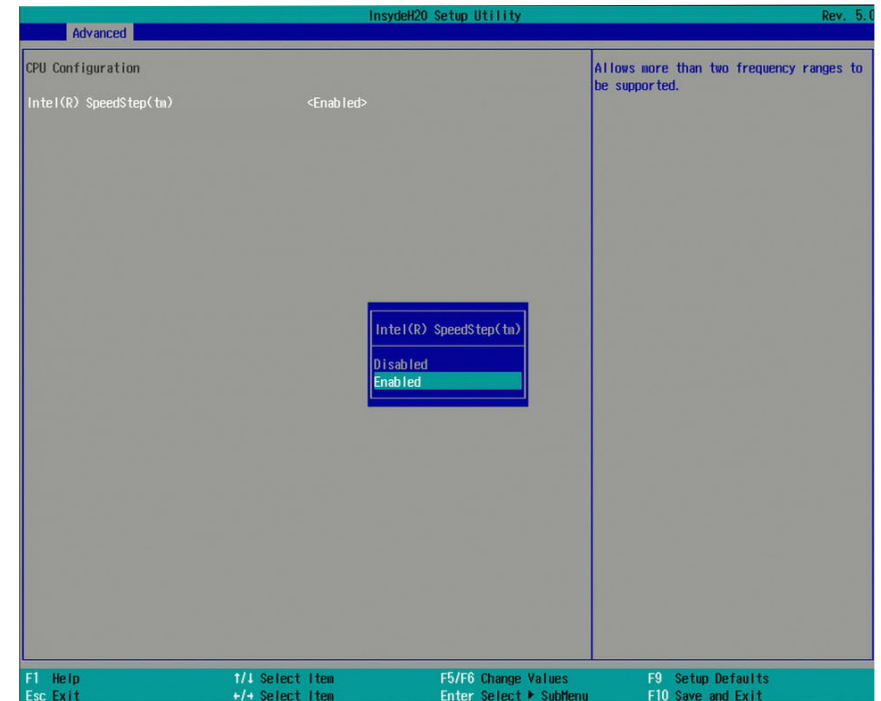


#### Note:

For the "After G3" setting to take effect, make sure that the "AC Power Loss" option is set to "Always on" in "SIO NUVOTON6106D" of the "Advanced" menu.

## CPU Configuration

This section configures the CPU.

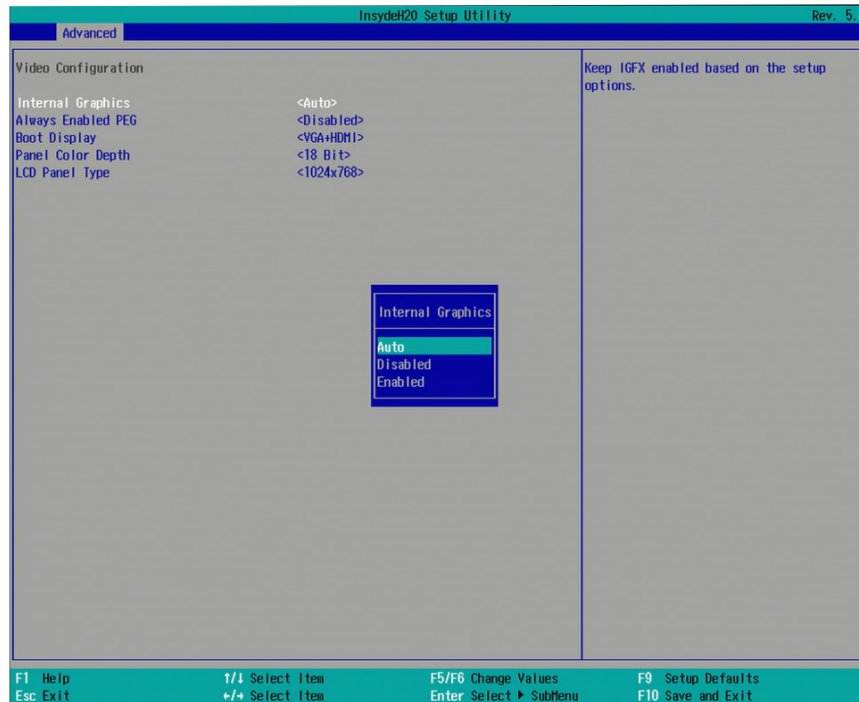


### Intel® SpeedStep™

This field is used to enable or disable the Enhanced Intel SpeedStep® Technology, which helps optimize the balance between system's power consumption and performance. After it is enabled in the BIOS, you can enable the EIST feature using the operating system's power management.

## Video Configuration

This section configures the video settings. Note that the configuration options may vary depending on the "Boot type" selected in the "Boot" menu.



### Internal Graphics

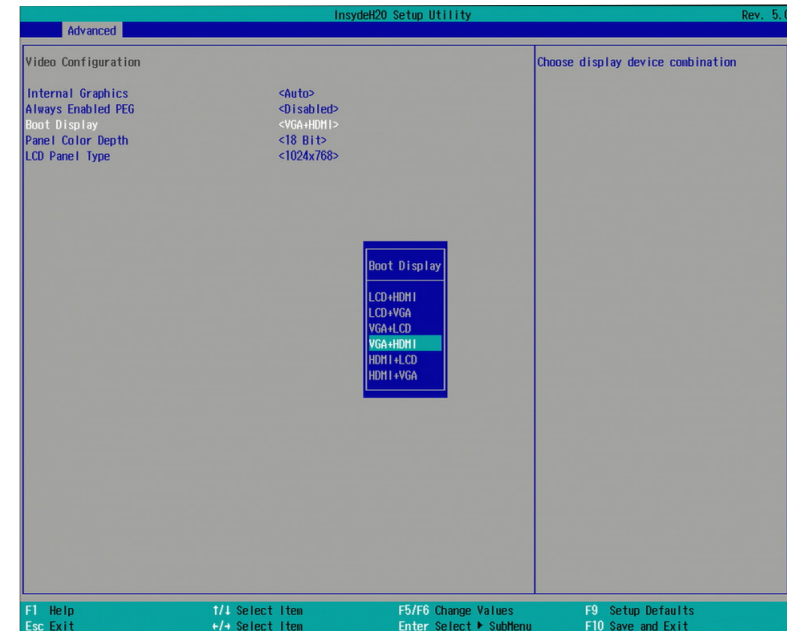
Enable, disable or automatically detect the internal graphics.

### Always Enabled PEG

Enable or disable PCIe Graphics devices.

### Boot display

Set the display device combination during system boot. The options may vary depending on the "Boot Type" selected in the "Boot" menu.



### Panel Color Depth

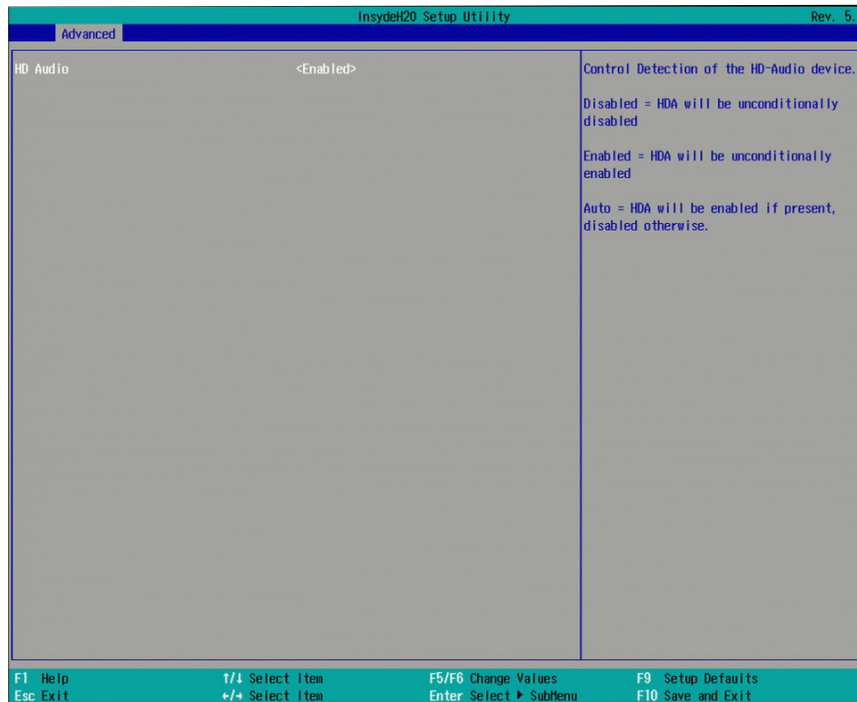
Select the LFP panel color depth: 18 bit, 24 bit, 36 bit, and 48 bit.

### LCD Panel Type

Select the type of LCD panel connected to the system's LCD connector. Please check the specification of your LCD monitor.

## Audio Configuration

This section configures the audio settings.



### HD Audio

Control the detection of the high-definition audio devices.

#### Disabled

High-definition audio devices will be unconditionally disabled.

#### Enabled

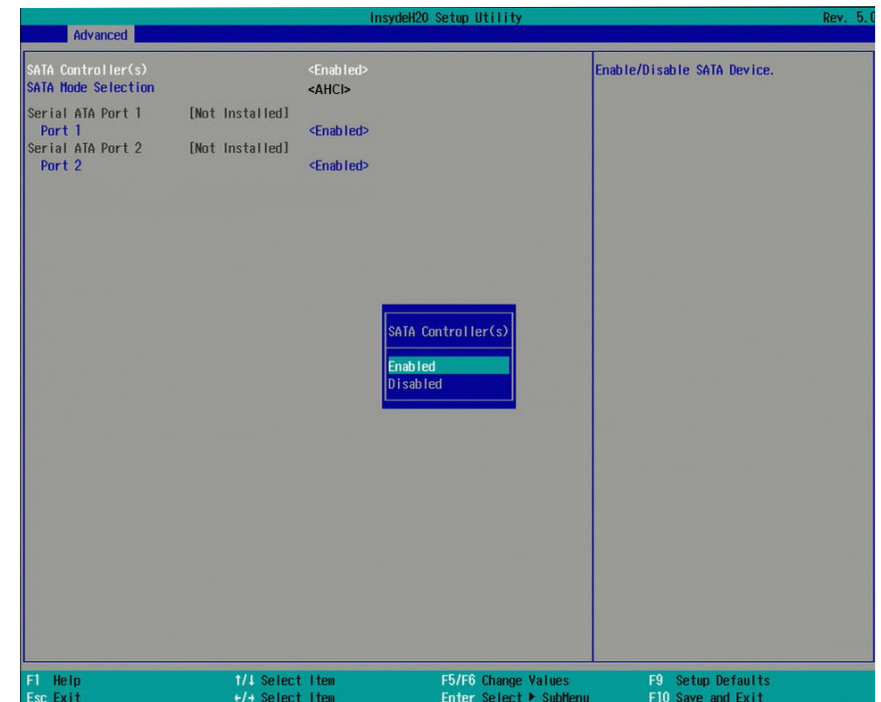
High-definition audio devices will be unconditionally enabled.

#### Auto

High-definition audio devices will be enabled if present and disabled otherwise.

## SATA Configuration

This section configures the SATA controllers and the hard disks.

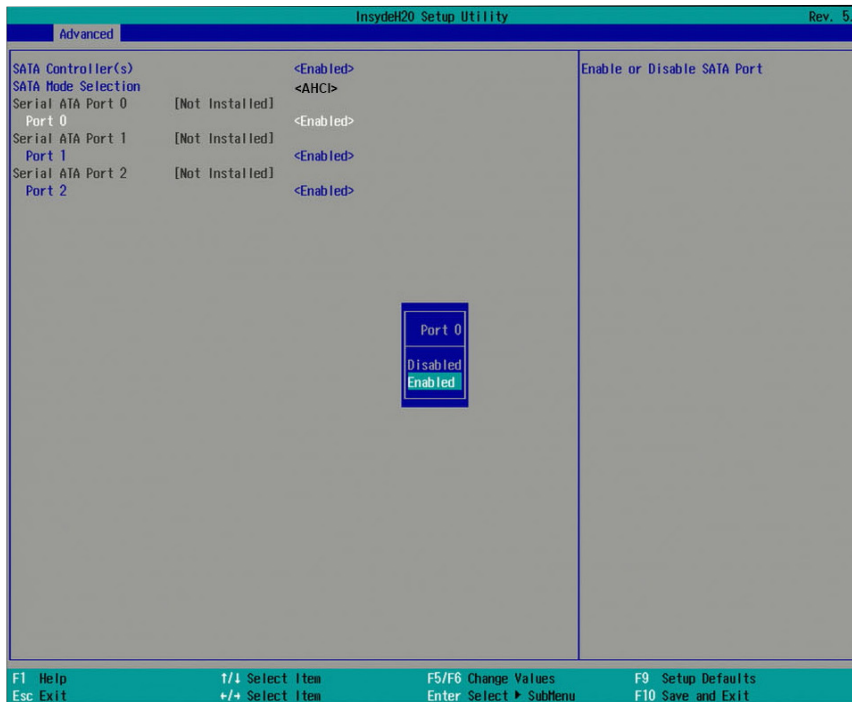


### SATA Controller(s)

Enable or disable Serial ATA controllers.

## USB Configuration

This section configures the parameters of the USB devices.



### SATA Mode

The mode option shows how the SATA controller(s) operates.

### AHCI Mode

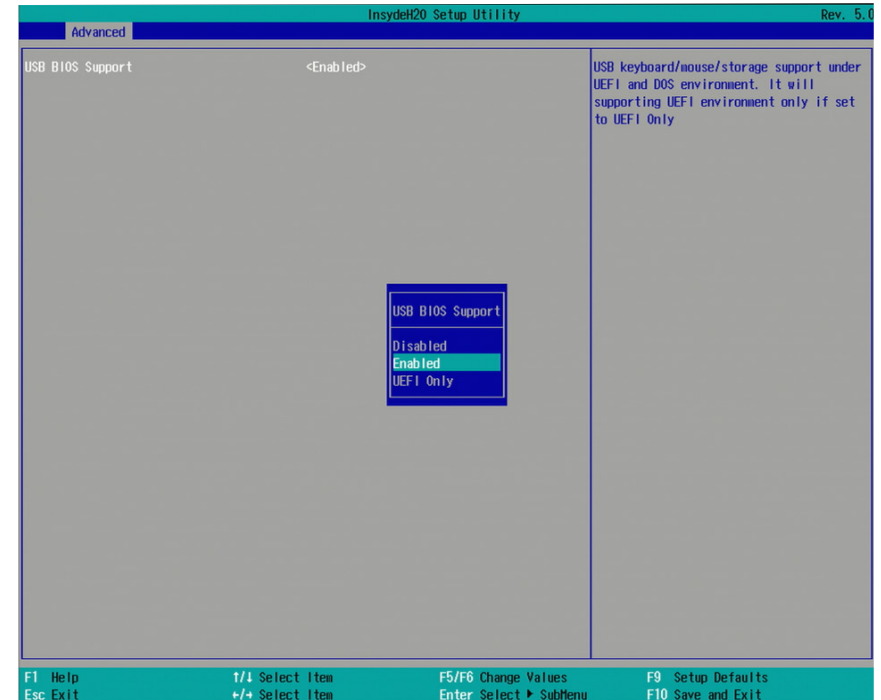
This mode allows the Serial ATA devices to use AHCI (Advanced Host Controller Interface).

### Serial ATA Port 1 and 2

Enable or disable each serial ATA port.

SATA 1: Controls the SATA signal of the half-size mini PCIe slot.

SATA 2: Controls the SATA signal of the SATA port on the system board.



### USB BIOS Support

#### Disabled

Disable USB keyboard/mouse/storage support.

#### Enabled

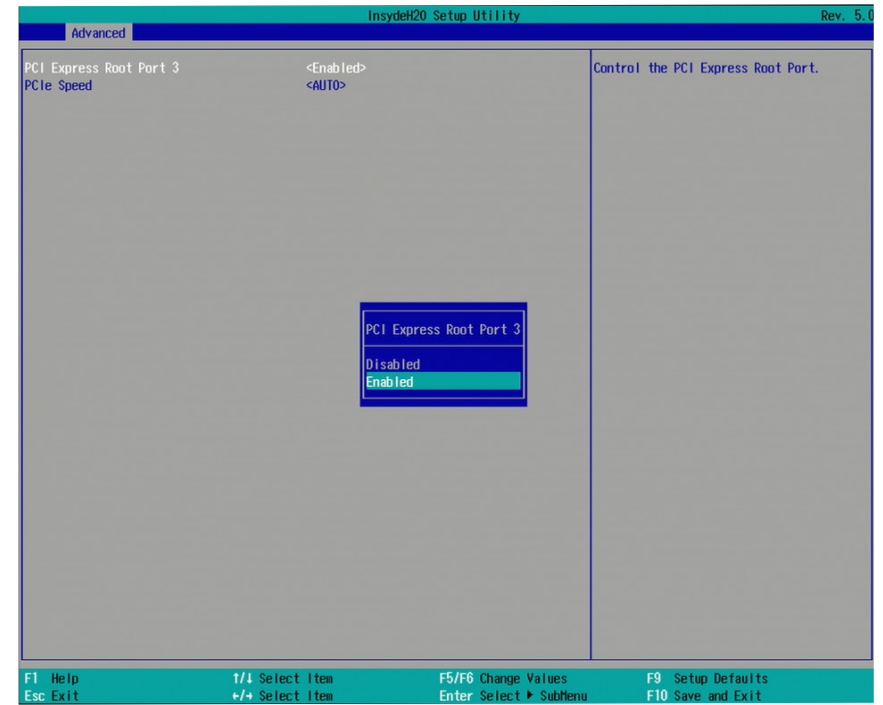
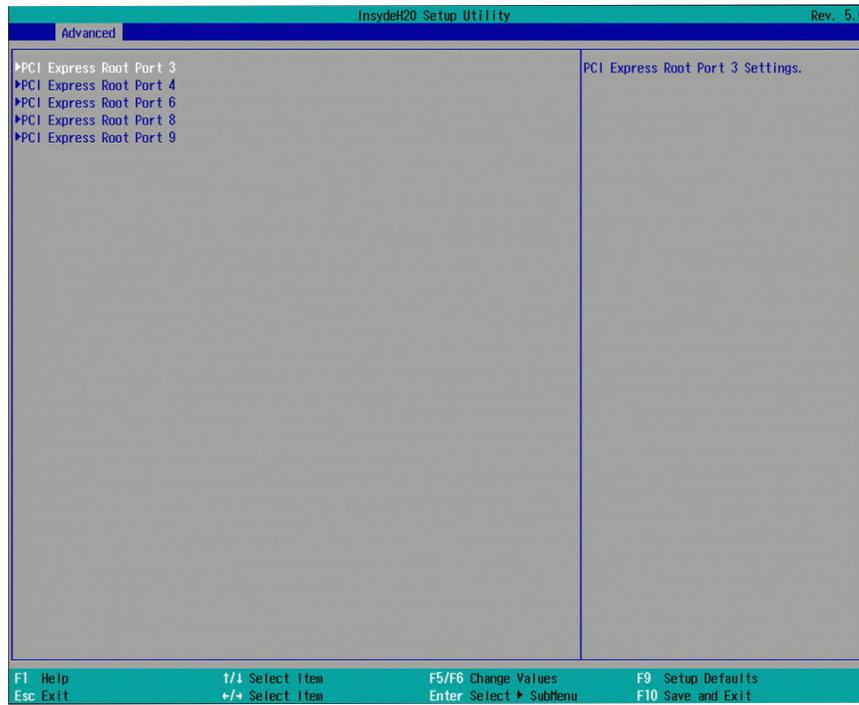
Enable USB keyboard/mouse/storage support under UEFI and DOS environment.

#### UEFI Only

Enable USB keyboard/mouse/storage support only under UEFI environment.

## PCI Express Configuration

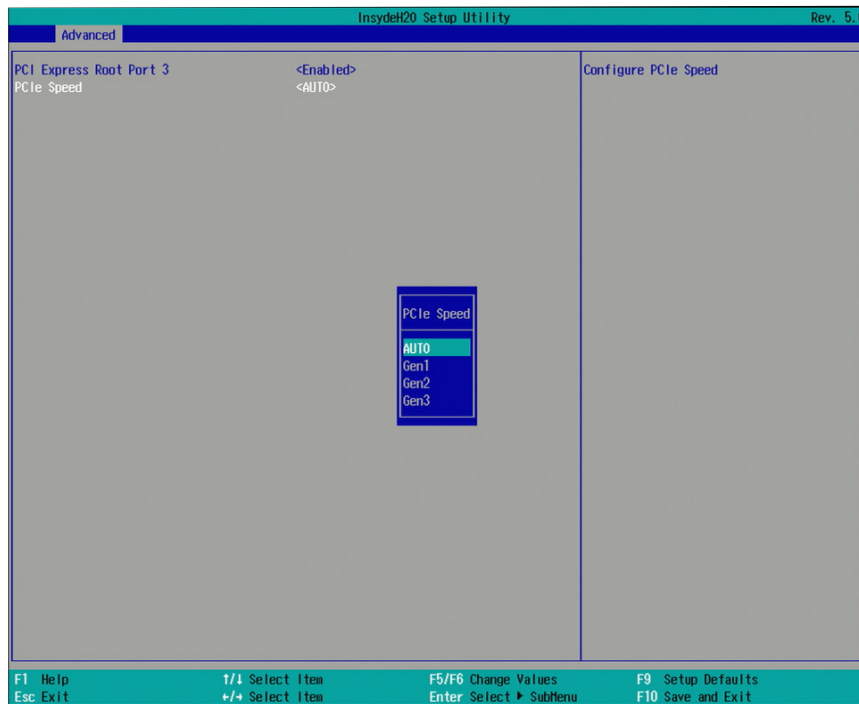
This section configures the settings of PCI Express root ports.



### PCI Express Root Port

Enable or disable each PCI Express Root Port.



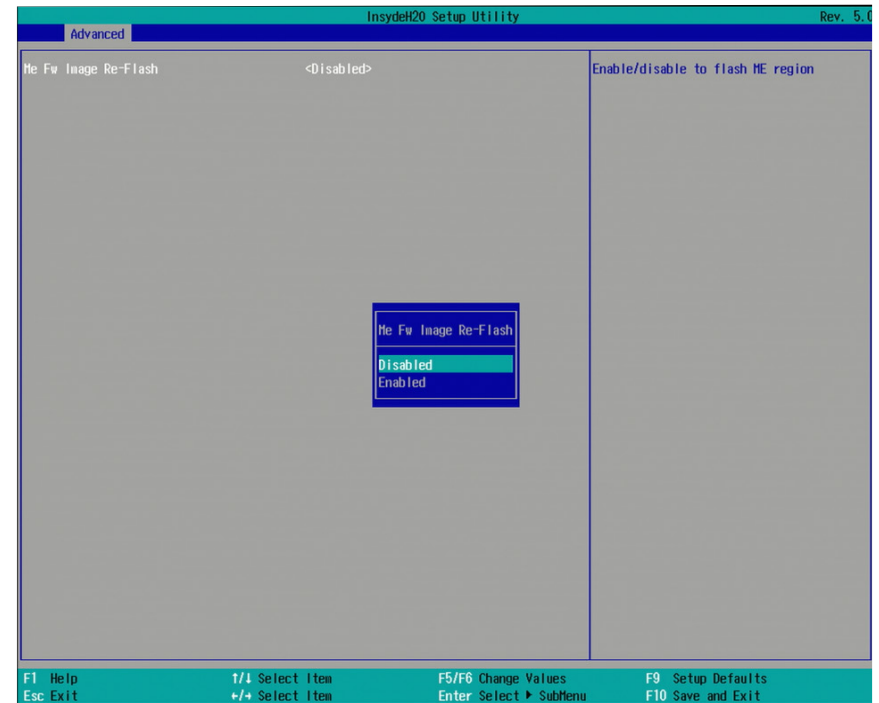


### PCIe Speed

Select the speed of the PCI Express Root Port: Auto, Gen1, Gen2 or Gen3.

### ME Configuration

This section configures flashing of the Intel® Management Engine.

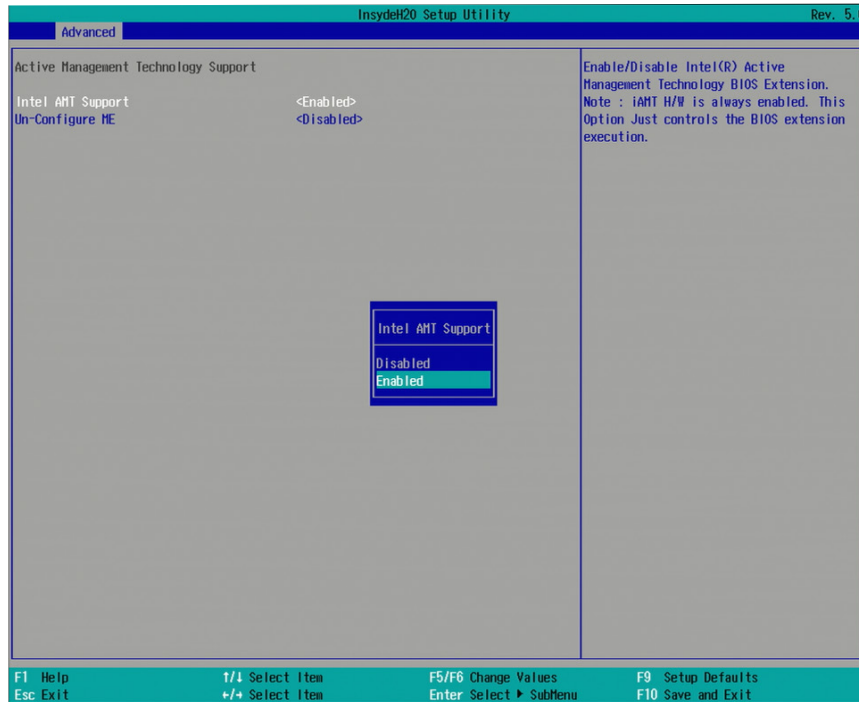


### Me Fw Image Re-Flash

Enable or disable Intel® Management Engine firmware flashing.

## Active Management Technology Support

The section allows you to enable or disable the Intel® Active Management Technology (Intel® AMT) BIOS extension. Refer to Chapter 9 - Intel AMT Settings for more information.



### Intel AMT Support

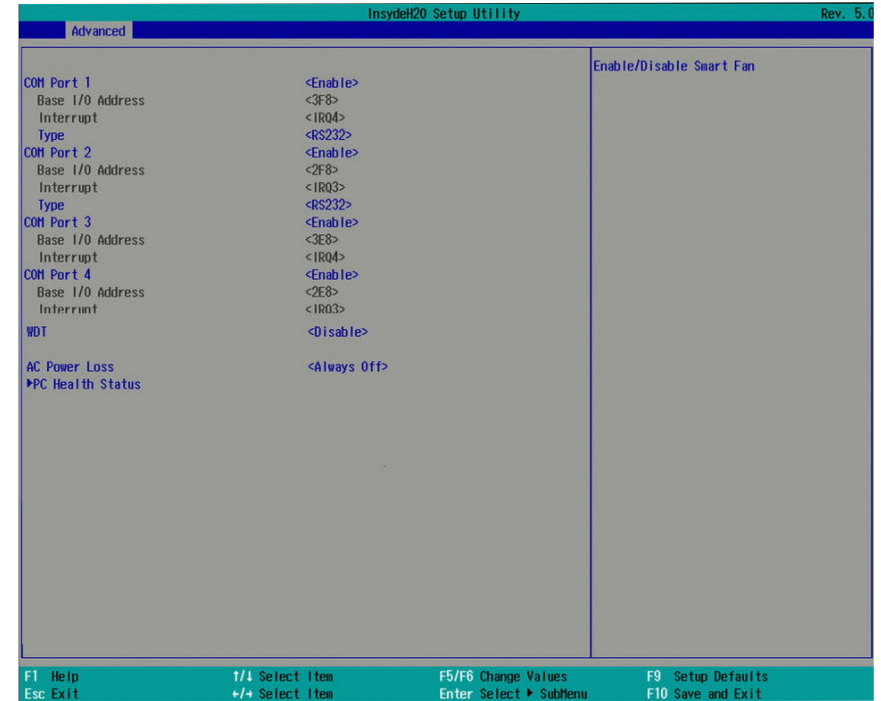
Enable or disable Intel® Active Management Technology BIOS extension.

### Un-Configure ME

Clears all ME related configurations without requiring a password on the next boot.

## SIO NUVOTON6106D

This section configures the system super I/O chip parameters.



### COM Port 1 to COM Port 4

Enable or disable each serial port.

**Disable** Disable this serial port.

**Enable** Enable this serial port.

### Type

Choose RS232, RS422 or RS485 (Peer-to-Peer) for the serial port type for COM port 1 and 2.



### WDT

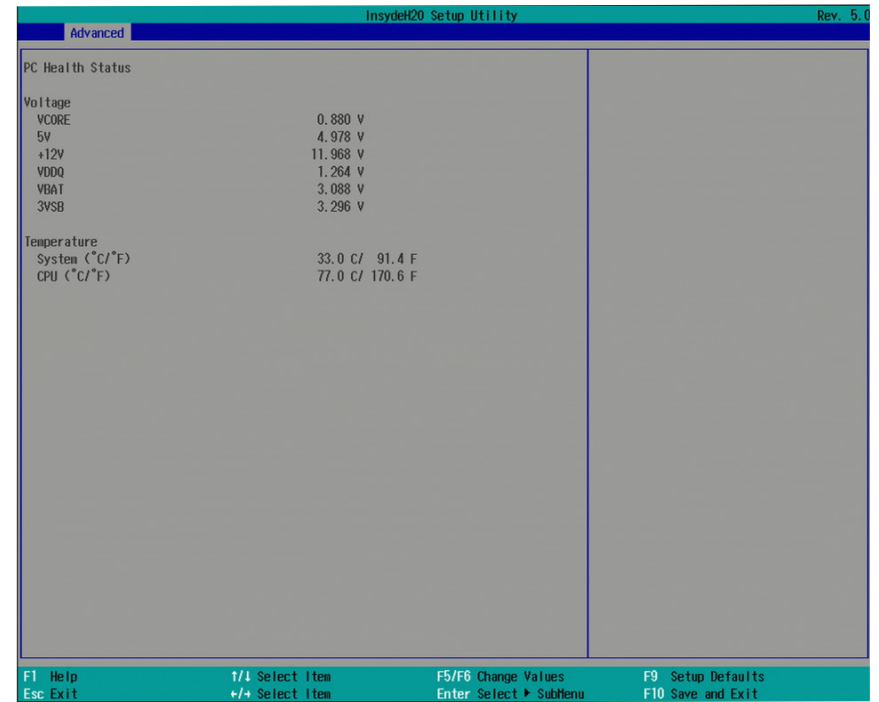
Enable or disable the watchdog function. A counter will appear if you select to enable WDT. Input any value between 1 to 255.

### AC Power Loss

Set the AC power loss to Always off or Always on. When set to Always off, the system's status will be power-off after an AC power loss event. When set to Always on, the system's status will be power-on after an AC power loss event. This item is only working when JP7 (auto power on) jumper is set as 2-3 on (automatic power-on via AC power).

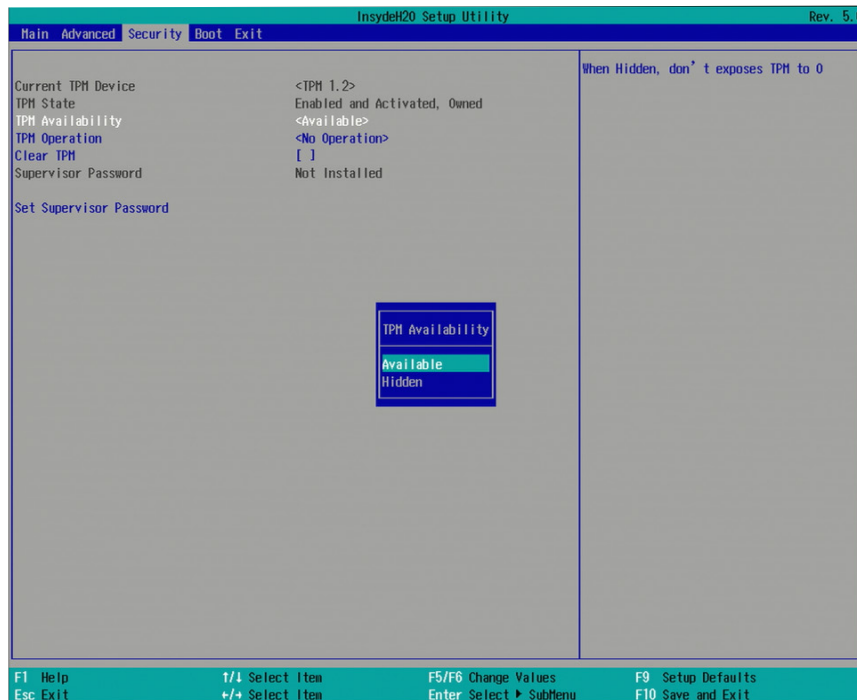
### PC Health Status

This section displays PC health status.



## Security

This section configures the Trusted Platform Module (TPM) function and the HDD security.



### TPM Availability

Show or hide TPM availability and its configurations.

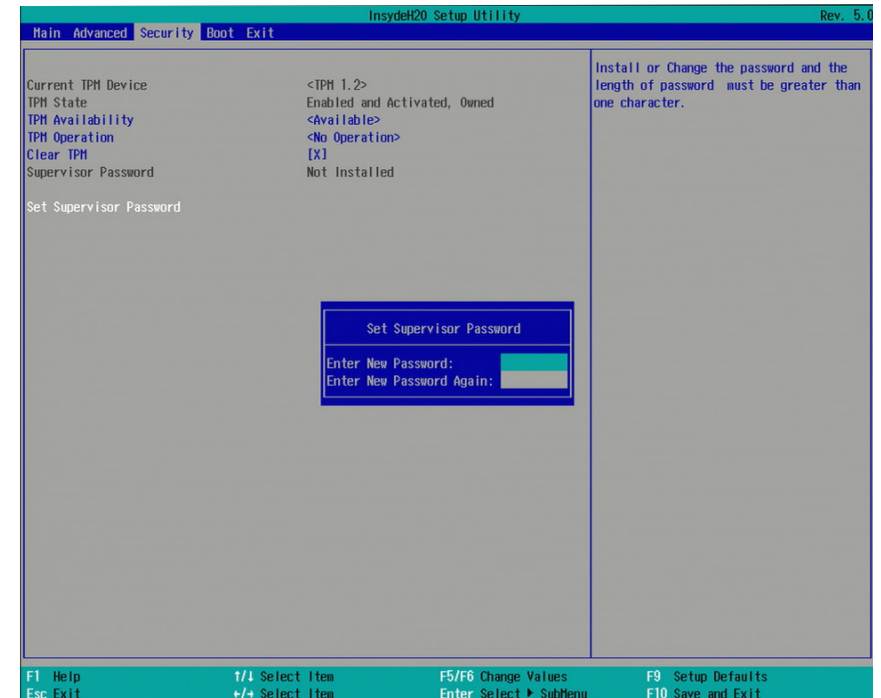
### TPM Operation

Enable or disable the TPM function. It displays the following options:

- No Operation: No changes to the current state.
- Disable: Disable and deactivate TPM.
- Enable: Enable and activate TPM.

### Clear TPM

Remove all TPM ownership contents.



### Set Supervisor Password

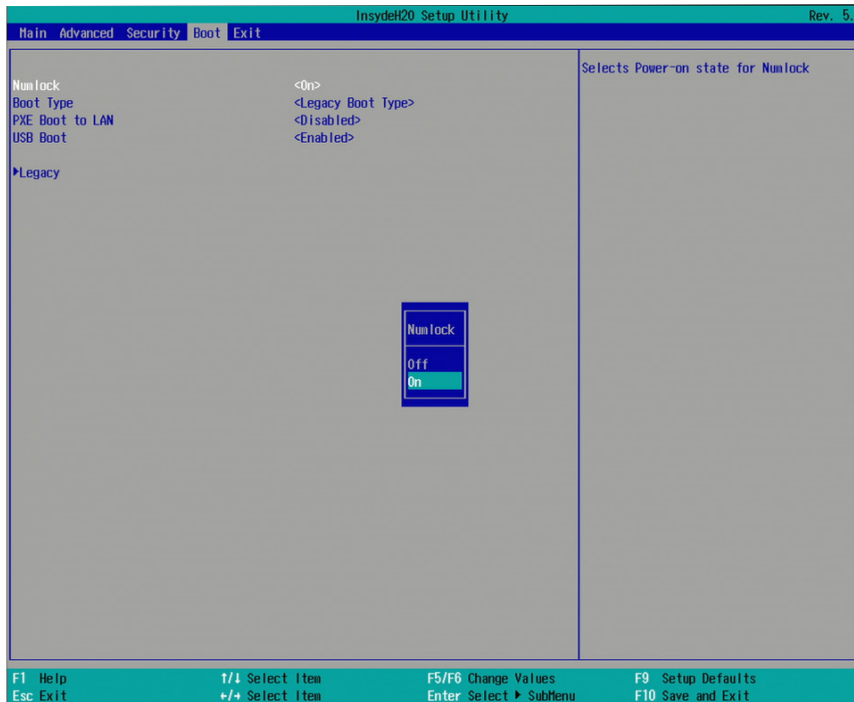
Set the administrative password for entering the BIOS utility or upon the entering of the power-on self-test (POST) process. The length of the password must be greater than 1 character and less than or equal to 10 characters.

### Power-on Password

If you select to set the supervisor password, this option will be shown. Enable or disable the system to require password at boot.

## Boot

This section configures boot options.



### Numlock

Select the power-on state for the Numlock key.

### Boot Type

Select the boot type. The options are Dual Boot Type, Legacy Boot Type or UEFI Boot Type.

### Network Stack

This option is shown only when the boot type is set to Dual or UEFI. Enable or disable UEFI network stack. It supports the operation of these functions or software: Windows 8 BitLocker Network Unlock, UEFI IPv4/IPv6 PXE and legacy PXE option ROM.

### PXE Boot to LAN

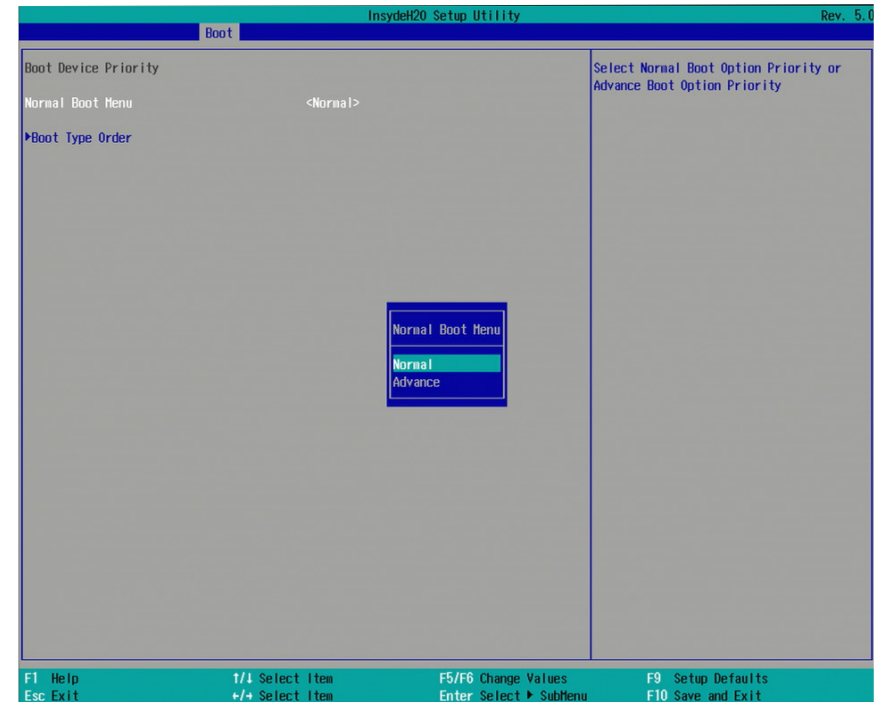
Enable or disable Preboot eXecution Environment (PXE) boot to LAN.

### USB Boot

Enable or disable booting to USB boot devices.

## Boot Device Priority

This section configures legacy boot order. This menu is shown only when the boot type is set to "Legacy" or "Dual".



### Boot Menu

#### Normal

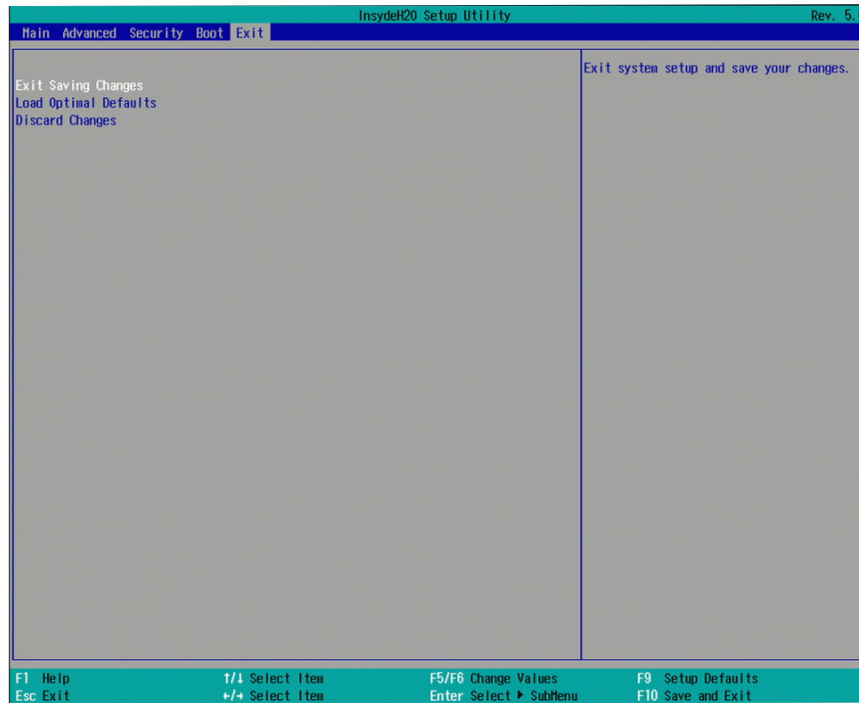
For this option, determine the boot order for the devices within each category. Use + and - keys to arrange the priority of the boot devices in the list. The first device in the list has the highest boot priority.

#### Advance

For this option, determine the boot order for all bootable devices. Use + and - keys to arrange the priority of the detected boot devices in the list. The first device in the list has the highest boot priority.

## Exit

This section configures the parameters for exiting BIOS setup utility.



### Exit Saving Changes

Select this field and press <Enter> to exit BIO setup and save your changes.

### Load Optimal Defaults

Select this field and press <Enter> to load the optimal defaults.

### Discard Changes

Select this field and press <Enter> to exit the BIOS setup without saving your changes.

## Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility. Please contact technical support or your sales representative for the files and specific instructions about how to update BIOS with the flash utility.

When you download the given BIOS file, you may find a BIOS flash utility attached with the BIOS file. This is the utility for performing BIOS updating procedure. For your convenience, we will also provide you with an auto-execution file in the BIOS file downloaded. This auto-execution file will bring you directly to the flash utility menu soon after system boots up and finishes running the boot files in your boot disk.

```

Read file successfully. (path= "platform.ini")

Information
Please do not remove the AC power

Insyde H20FFT (Flash Firmware Tool) Version (SEG) 100.00.08.10
Copyright(c) 2012 - 2016, Insyde Software Corp. All Rights Reserved.

Initializing
Current BIOS Model name: SU25x
New BIOS Model name: SU25x

Current BIOS version: 68.08A
New BIOS version: 68.08A

Updating Block at FFFF000h
0%      25%      50%      75%      100%
C:\SU25x>_
  
```

## Notice: BIOS SPI ROM

1. The Intel® Management Engine has already been integrated into this system board. Due to the safety concerns, the BIOS (SPI ROM) chip cannot be removed from this system board and used on another system board of the same model.
2. The BIOS (SPI ROM) on this system board must be the original equipment from the factory and cannot be used to replace one which has been utilized on other system boards.
3. If you do not follow the methods above, the Intel® Management Engine will not be updated and will cease to be effective.



### Note:

- a. You can take advantage of flash tools to update the default configuration of the BIOS (SPI ROM) to the latest version anytime.
- b. When the BIOS IC needs to be replaced, you have to populate it properly onto the system board after the EEPROM programmer has been burned and follow the technical person's instructions to confirm that the MAC address should be burned or not.

## Chapter 8 - Supported Software

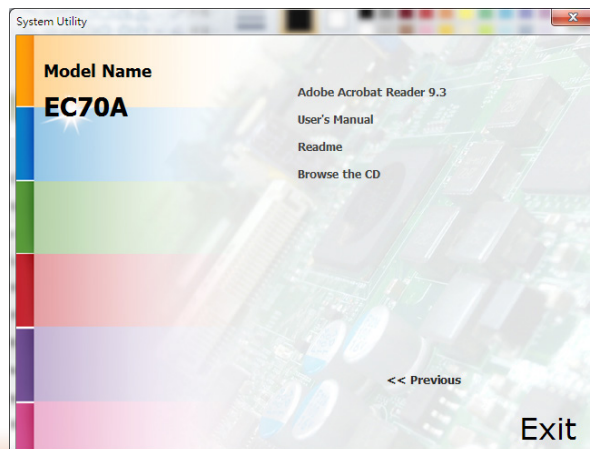
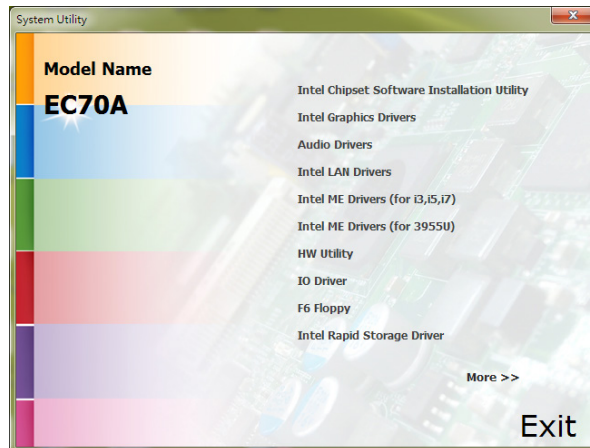
Some devices of the system require drivers from hardware manufactures to operate properly. The system may come with a CD/DVD that contains drivers, utilities and software applications. Insert the CD into a CD-ROM drive. The auto-run screen (Mainboard Utility CD) will appear. If the "Autorun" does not automatically start, please go to the root directory of the CD and double-click "Setup".

If your product package does not include a CD/DVD, you can download the latest drivers from the DFI Download Center:

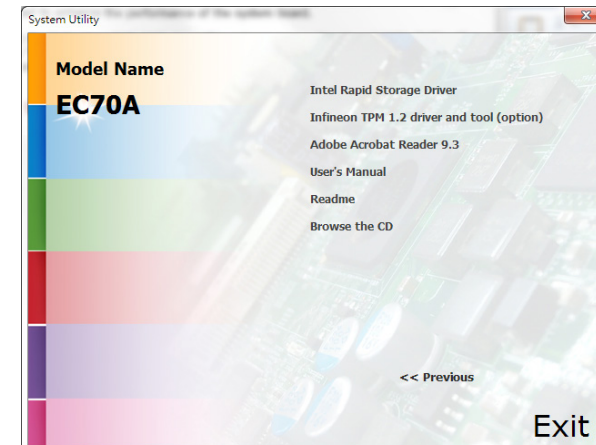
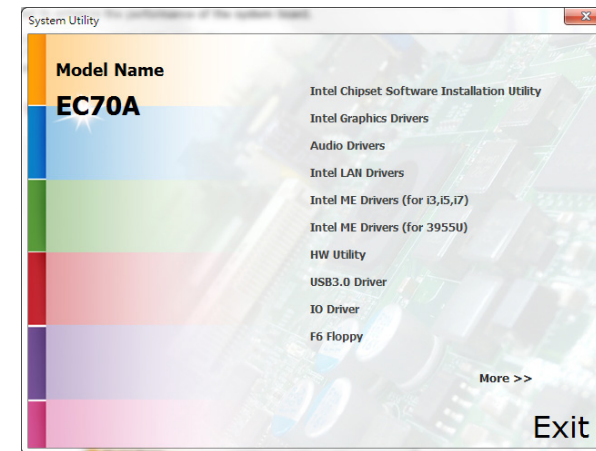
<http://www.dfi.com/DownloadCenter>

Once you are in the Download Center page, select your product or type the model name and click "Search" to find product-related resources such as documentation and drivers.

### For Windows 10

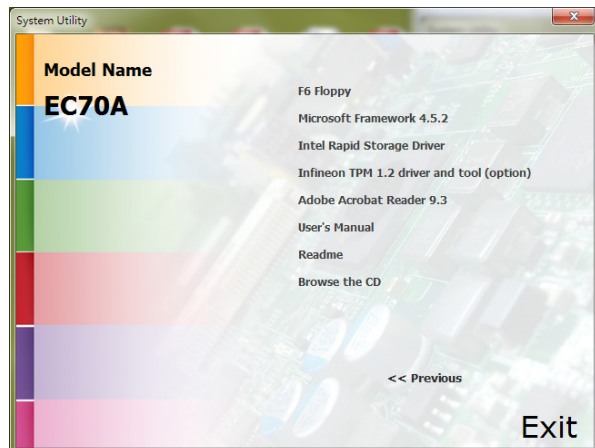
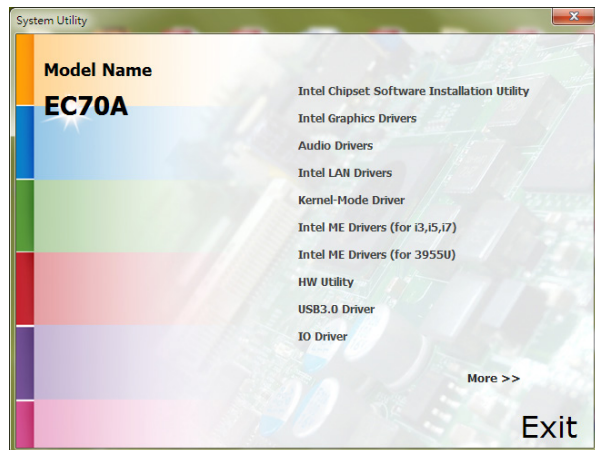


### For Windows 10





## For Windows 7



## Intel Chipset Software Installation Utility

The Intel Chipset Software Installation Utility is used for updating Windows® INF files so that the Intel chipset can be recognized and configured properly in the system.

To install the utility, click "Intel Chipset Software Installation Utility" on the main menu.

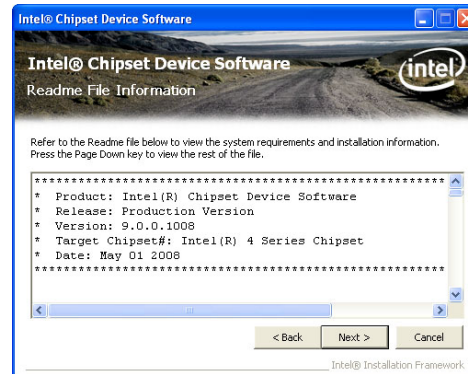
1. Setup is ready to install the utility. Click "Next" to continue.



2. Read the license agreement ,and then click "Yes".



- Go through the readme document for more installation tips, and then click "Next".



- Click "Finish" to exit the setup.



## Intel Graphics Drivers

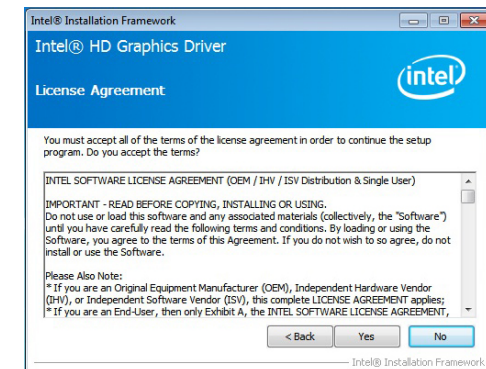
To install the driver, click "Intel Graphics Drivers" on the main menu.

- Setup is now ready to install the graphics driver. Click "Next".

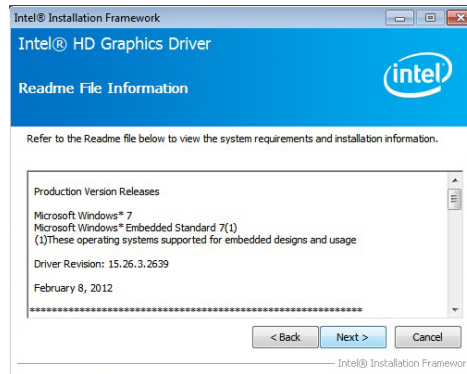


By default, the "Automatically run WinSAT and enable the Windows Aero desktop theme" is enabled. With this enabled, after installing the graphics driver and the system rebooted, the screen will turn blank for 1 to 2 minutes (while WinSAT is running) before the Windows 7/Windows 8.1/Windows 10 desktop appears. The "blank screen" period is the time Windows is testing the graphics performance.

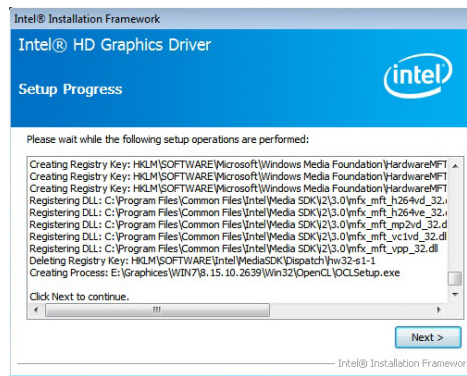
- Read the license agreement, and then click "Yes".



- Go through the readme document for system requirements and installation tips, and then click "Next".



- Setup is now installing the driver. Click "Next" to continue.



- Click "Yes, I want to restart this computer now", and then click "Finish".

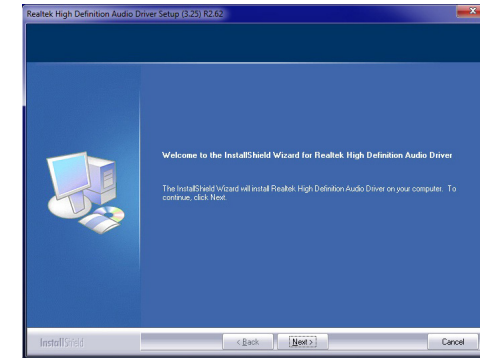
Restarting the system will allow the new software installation to take effect.



## Audio Drivers

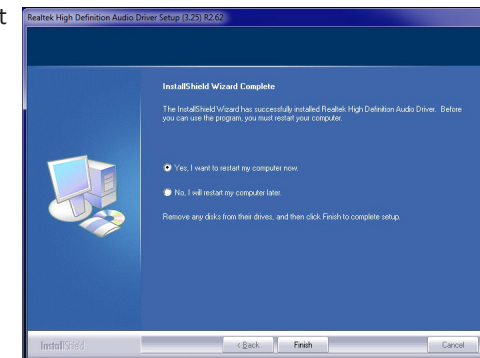
To install the driver, click "Audio Drivers" on the main menu.

- Setup is ready to install the driver. Click "Next" to continue.



- Click "Yes, I want to restart my computer now", and then click "Finish".

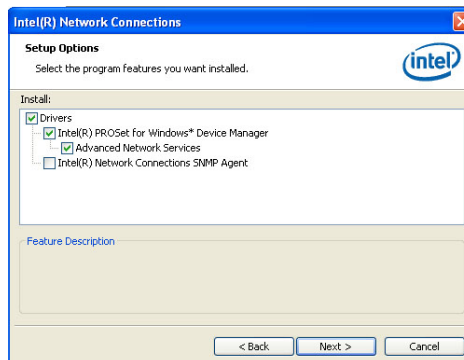
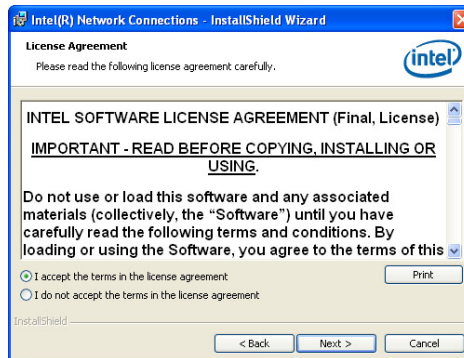
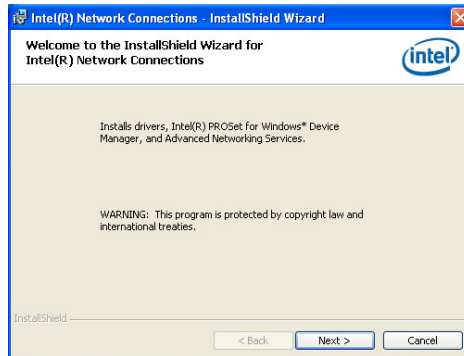
Restarting the system will allow the new software installation to take effect.



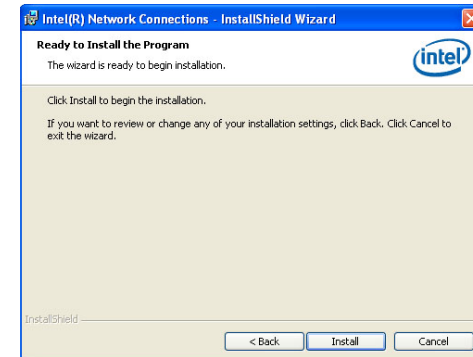
## Intel LAN Drivers

To install the driver, click "Intel LAN Drivers" on the main menu.

1. Setup is ready to install the driver. Click "Next" to continue.
2. Click "I accept the terms in the license agreement", and then click "Next".
3. Select the program features you want installed, and then click "Next".



4. Click "Install" to begin the installation.



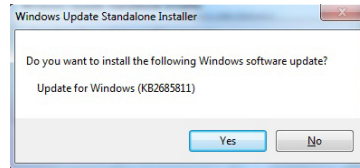
5. After the installation is complete, click "Finish".



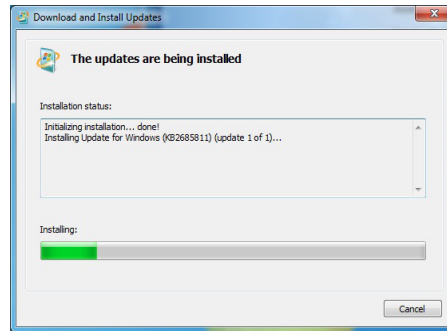
## Kernel Mode Driver (For Windows 7 only)

To install the driver, click "Kernel-Mode Driver" on the main menu.

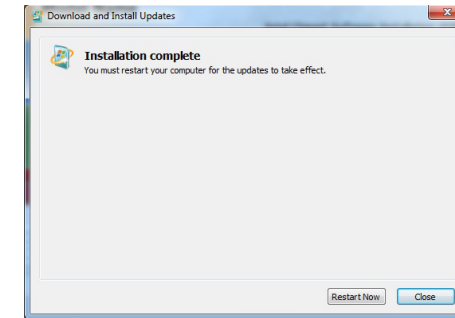
1. Click "Yes" to install the update.



2. The update is being installed now.



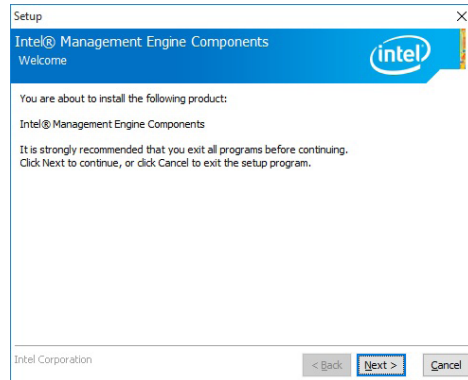
3. Click "Restart Now" to restart your computer when the installation is complete.



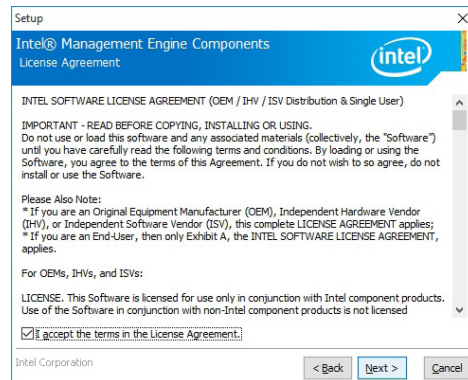
## Intel Management Engine Drivers

To install the driver, click "Intel Management Engine Drivers" on the main menu.

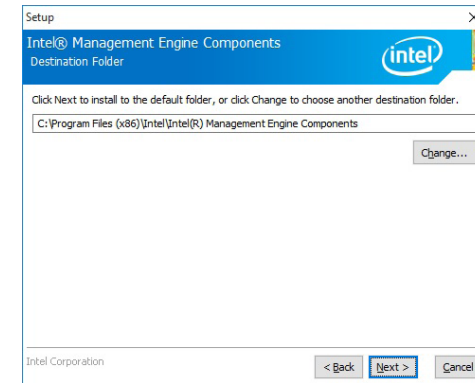
1. Setup is ready to install the driver. Click "Next" to continue.



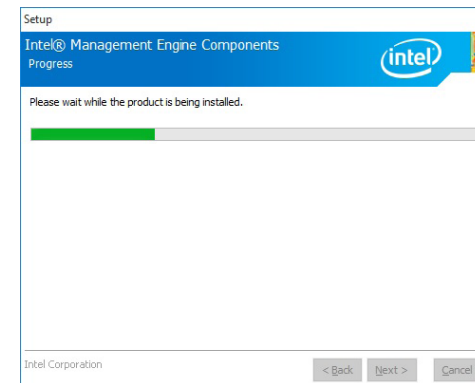
2. Read the license agreement, and then click "Next".



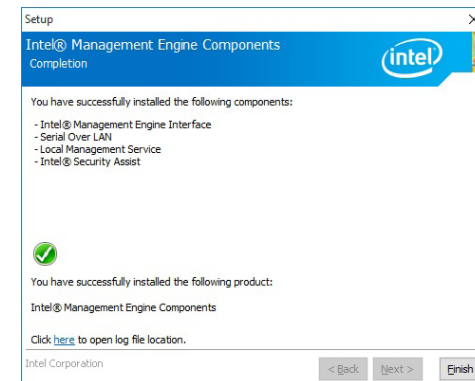
3. Setup is currently installing the driver. After the installation is complete, click "Next".



4. Please wait while the product is being installed.



5. After the installation is complete, click "Finish".



## HW Utility

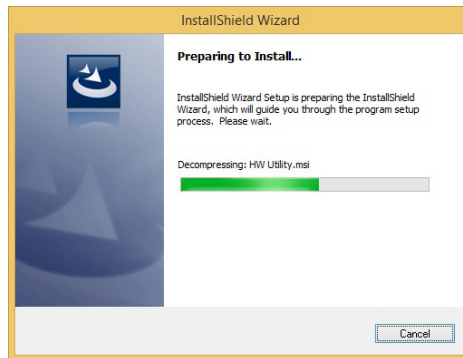
HW Utility provides information about the system and control functions of watchdog and DIO. To access the utility, click "HW Utility" from the main menu.



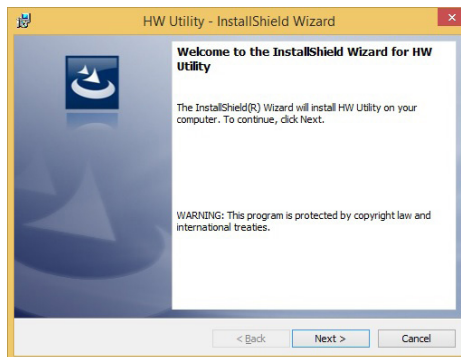
### Note:

If you are using Windows 7 or later versions, you need to access the operating system as an administrator to be able to install the utility.

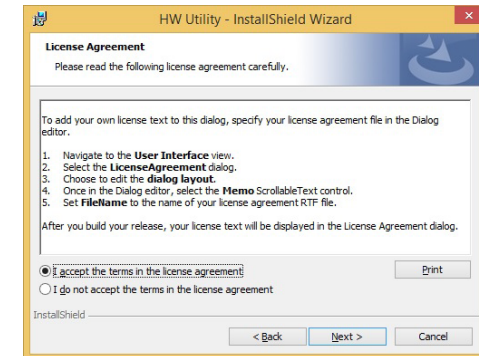
1. Setup is ready to install the driver.



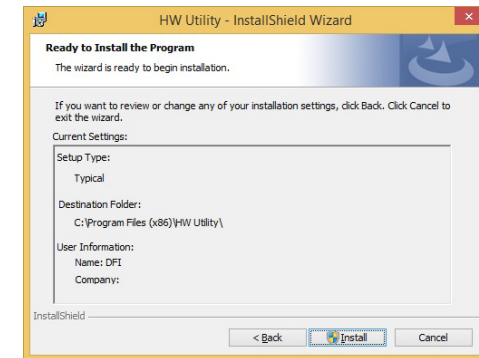
2. Click "Next" to continue.



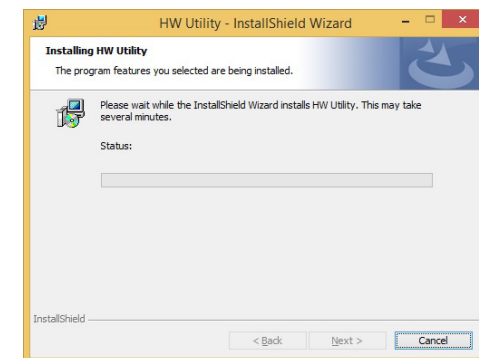
3. Read the license agreement then click "I accept the terms in the license agreement". Click "Next" to continue .



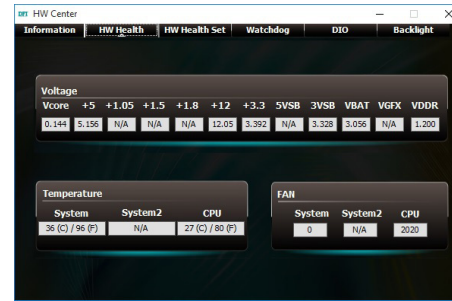
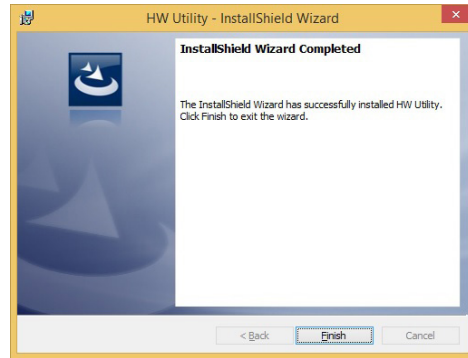
4. The wizard is ready to begin the installation. Click "Install" to start installing the program.



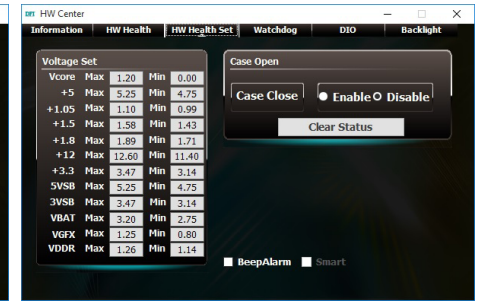
5. Please wait while the program features are being installed.



- After the installation is complete, click "Finish".

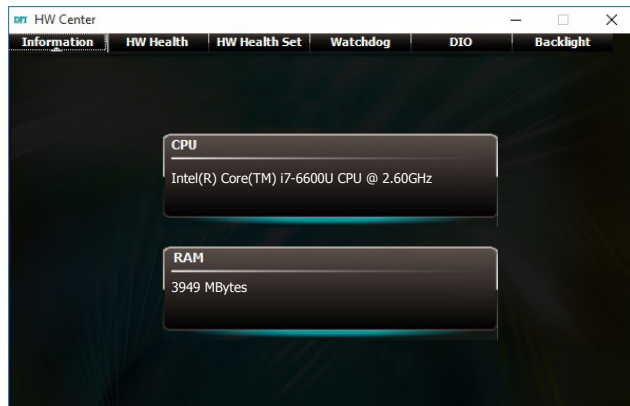


HW Health



HW Health Set

The HW Utility icon will appear on the desktop. Double-click the icon to open the utility.

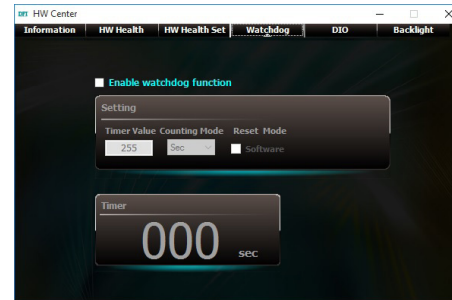


Information

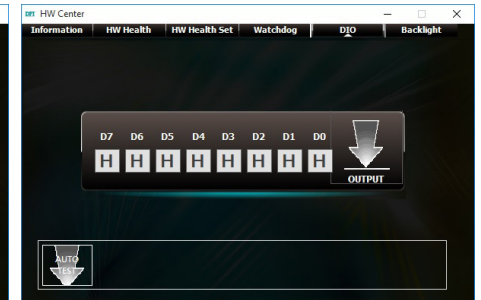


**Note:** The screenshot displayed above is for illustrative purpose only, and may not resemble the actual screen.

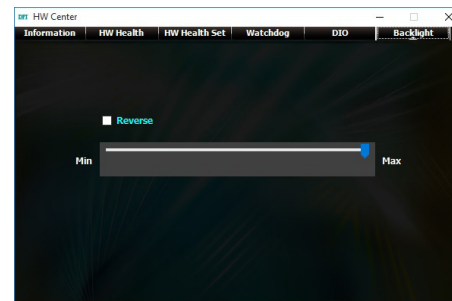
The HW Utility has the following tabs: Information, HW Health, HW Health set, Watchdog, DIO and Backlight. Click each tab to access its respective function.



Watchdog



DIO



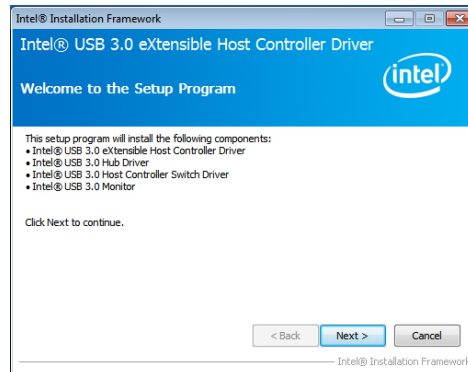
Backlight



## Intel USB 3.0 Drivers (For Windows 7 and Windows 8.1)

To install the driver, click "Intel USB 3.0 Driver" on the main menu.

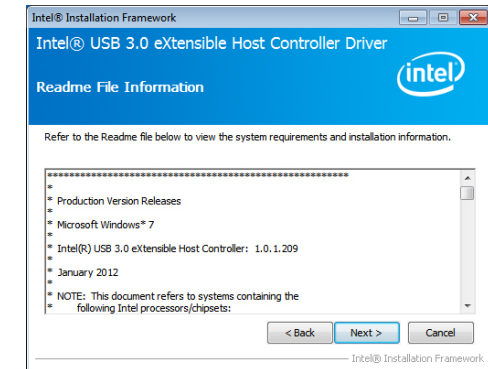
1. Setup is ready to install the driver. Click "Next" to continue.



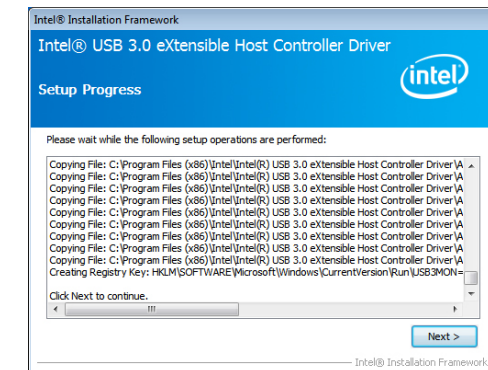
2. Read the license agreement, and then click "Yes".



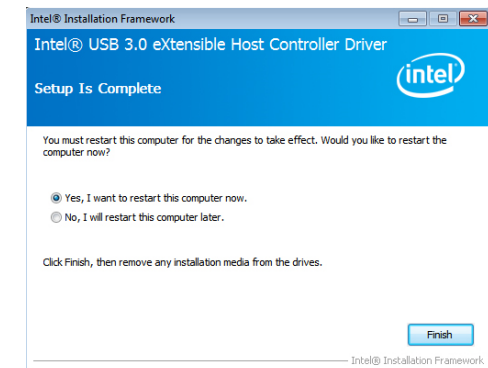
3. Go through the readme document for more installation tips, and then click "Next".



4. Setup is currently installing the driver. After the installation is complete, click "Next".



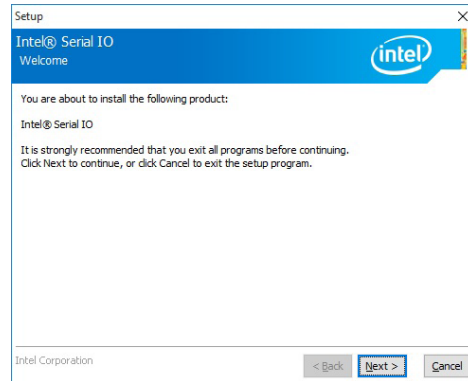
5. After the installation is complete, click "Finish".



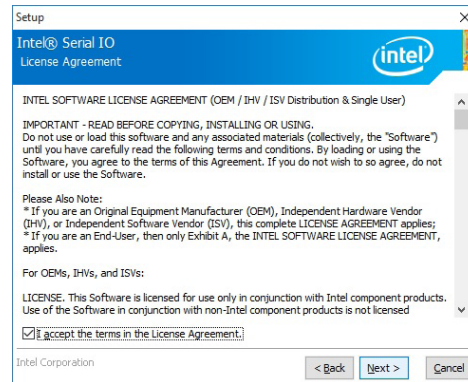
## IO Driver

To install the driver, click "IO Driver" on the main menu

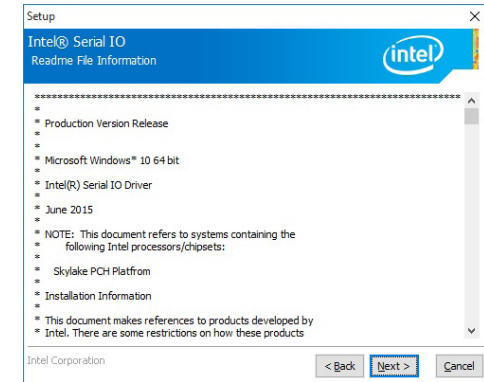
1. Setup is ready to install the driver.  
Click "Next".



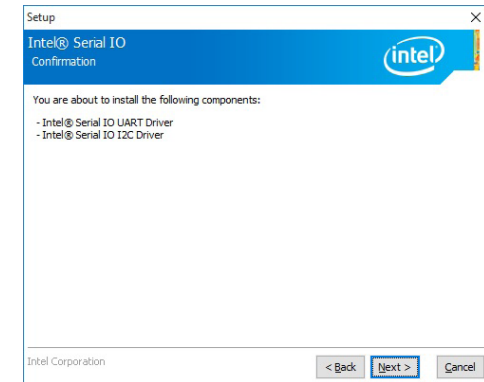
2. Read the license agreement carefully. Click "I accept the terms in the License Agreement", and then click "Next".



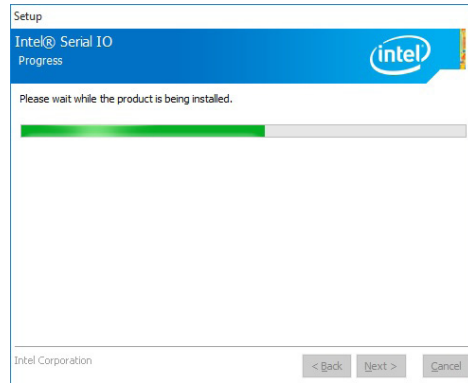
3. Read the file information, and then click "Next".



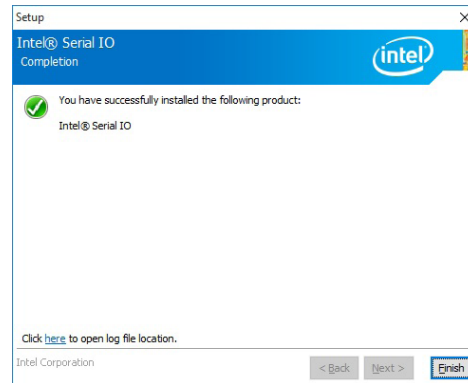
4. Setup is ready to install the driver.  
Click "Next" to continue.



5. Setup is now installing the driver.



6. Click "Finish" to exit the setup.



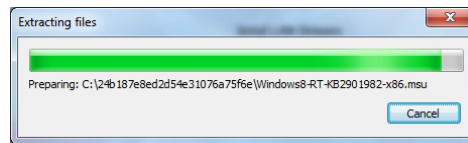
## Microsoft Framework 4.5.2 (For Windows 7 only)



**Note:** Before installing Microsoft Framework 4.5.2, make sure you have updated your Windows 7 operating system to Service Pack 1 or above.

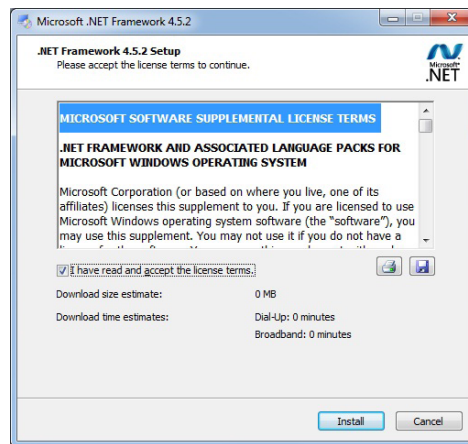
To install the driver, click "Microsoft Framework 4.5.2" on the main menu.

1. Setup is now extracting files.

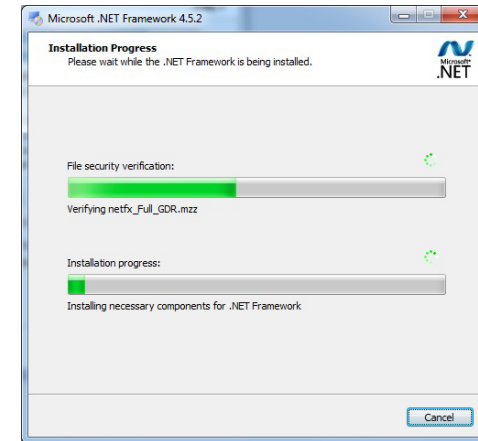


2. Read the license agreement carefully.

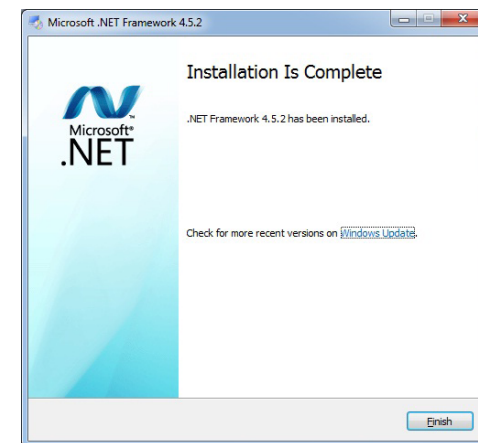
Click "I have read and accept the terms of the License Agreement", and then click "Install".



3. Setup is now installing the driver.



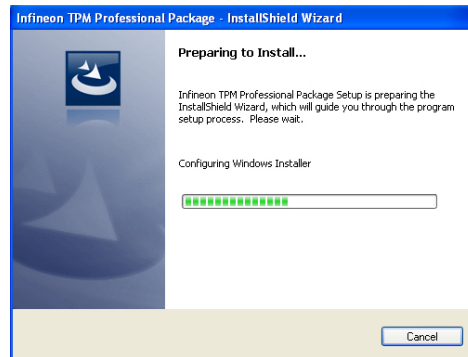
4. Click "Finish" to exit the setup program.



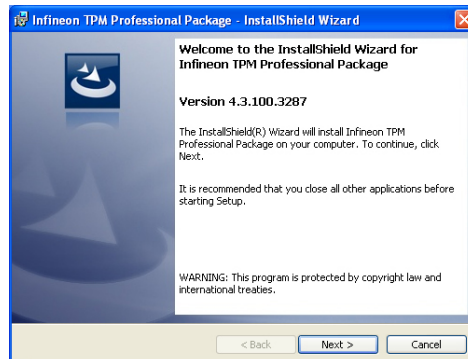
## Infineon TPM 1.2 Driver and Tool (Optional)

To install the driver, click "Infineon TPM driver and tool (option)" on the main menu.

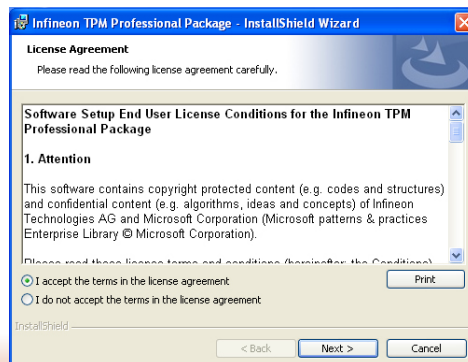
1. The setup program is preparing to install the driver.



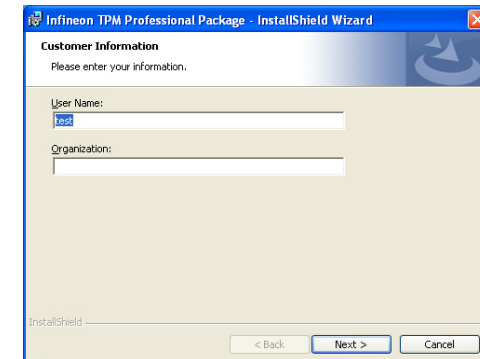
2. The setup program is now ready to install the utility. Click "Next" to continue.



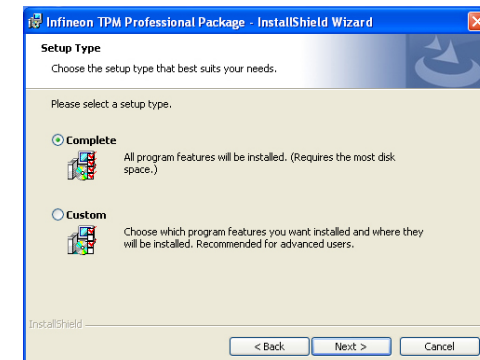
3. Click "I accept the terms in the license agreement", and then click "Next".



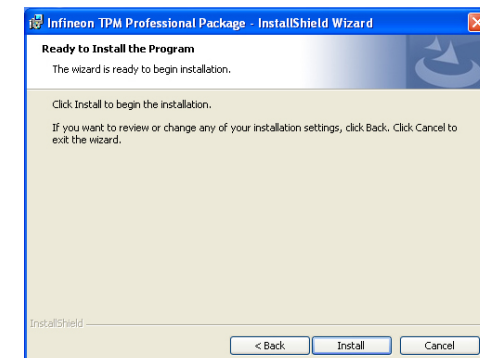
4. Enter the necessary information, and then click "Next".



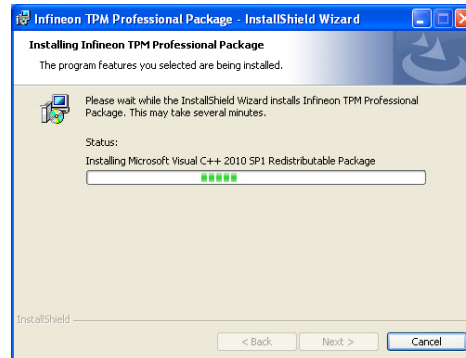
5. Select a setup type, and then click "Next".



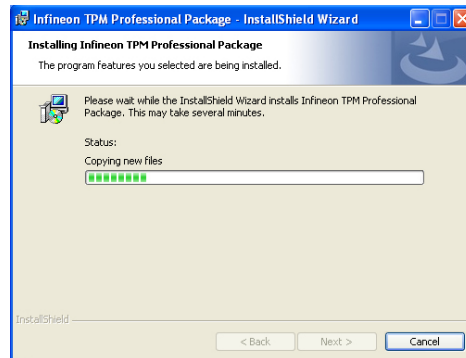
6. Click "Install" to begin the installation.



7. TPM requires installing the Microsoft Visual C++ package prior to installing the utility. Click "Install" to start the installation.



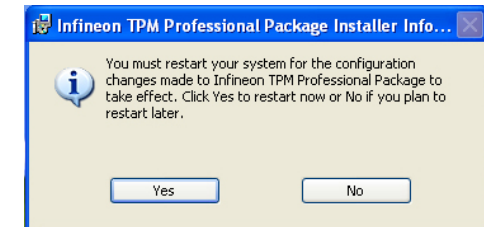
8. The setup program is currently installing the Microsoft Visual C++ package.



9. Click "Finish".



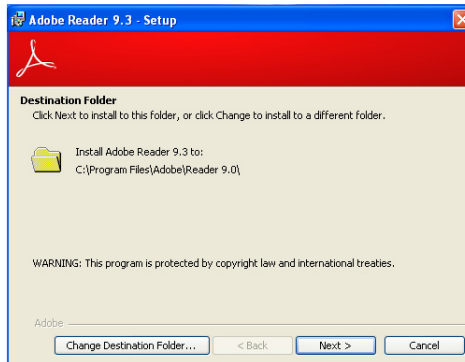
10. Click "Yes" to restart your system.



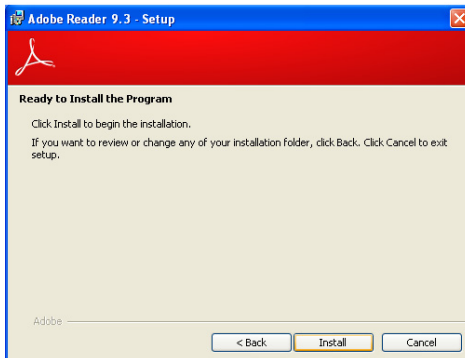
## Adobe Acrobat Reader 9.3

To install the reader, click "Adobe Acrobat Reader 9.3" on the main menu.

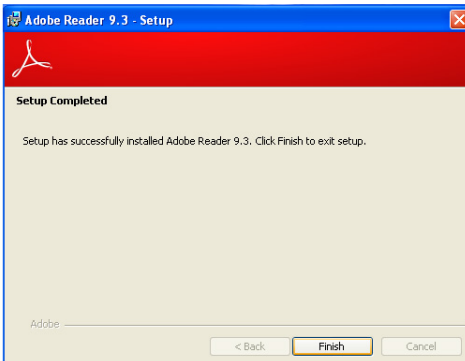
1. Click "Next" to install or click "Change Destination Folder" to select a different folder for installation.



2. Click "Install" to begin installing the program.



3. Click "Finish" to exit the installation.



## Chapter 9 - Intel AMT Settings

### Overview

Intel Active Management Technology (Intel® AMT) combines hardware and software solutions to provide maximum system defense and protection to networked systems.

The hardware and software information are stored in non-volatile memory. With its built-in manageability and latest security applications, Intel® AMT provides the following functions.

- **Discover**

Allows remote access and management of networked systems even while PCs are powered off; significantly reducing desk-side visits.

- **Repair**

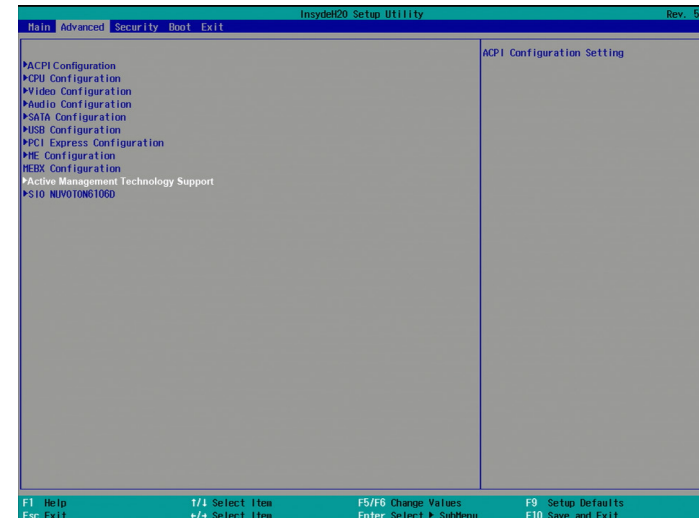
Remotely repair systems after OS failures. Alerting and event logging help detect problems quickly to reduce downtime.

- **Protect**

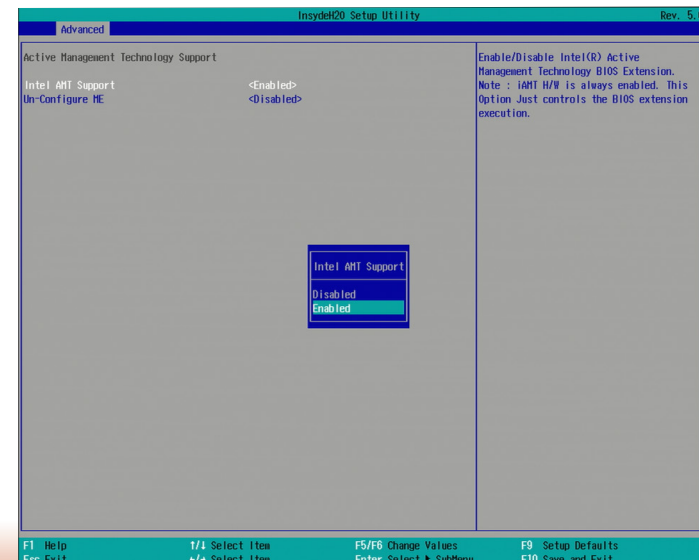
Intel AMT's System Defense capability remotely updates all systems with the latest security software. It protects the network from threats at the source by proactively blocking incoming threats, reactively containing infected clients before they impact the network, and proactively alerting when critical software agents are removed.

### Enable Intel® AMT in the Insyde BIOS

1. Power on the system then press <Del> to enter the main menu of the BIOS setup utility.
2. In the "Advanced" menu, select "Active Management Technology Support".

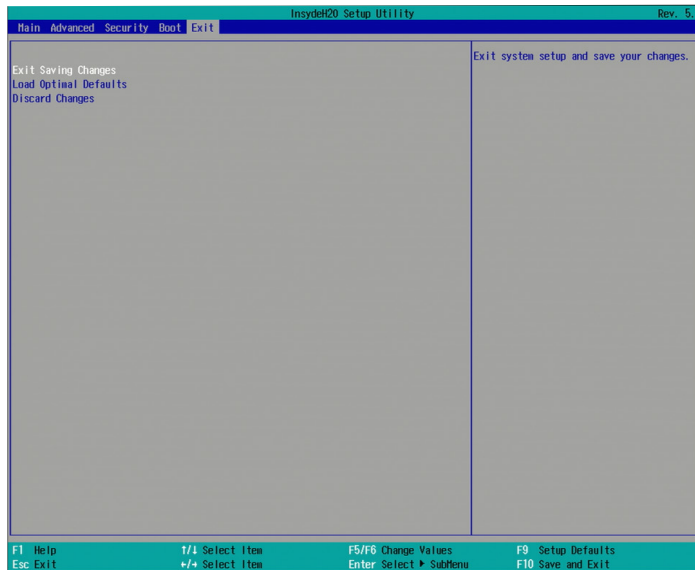


3. In the "Active Management Technology Support" menu, select "Enabled" for "Intel AMT Support".



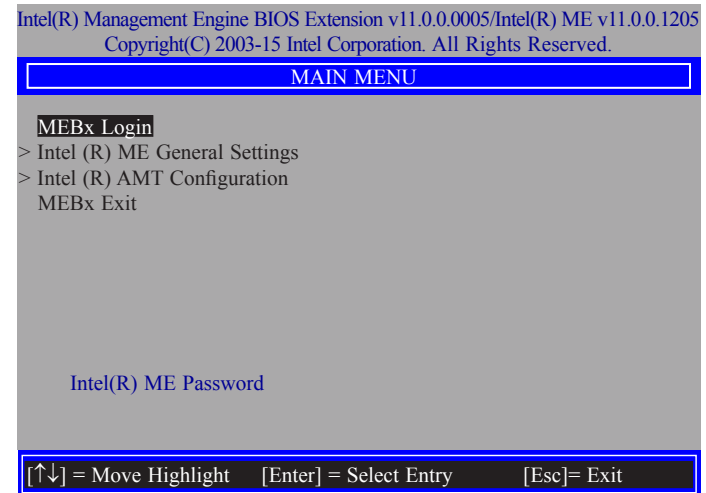


4. In the "Exit" menu, select "Exit Saving Changes" and then select "OK".



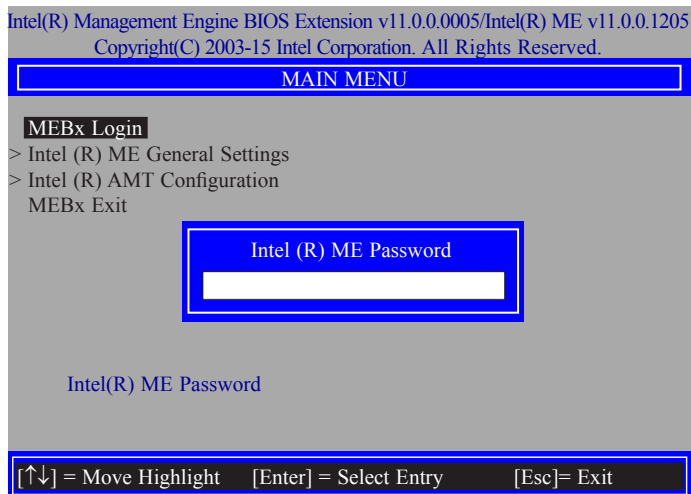
## Set up Intel® AMT using the Intel® Management Engine BIOS Extension (MEBX)

1. After the system reboots, press <Del> to enter the BIOS menu again.
2. In the "Advanced" menu, select "MEBX Configuration" to enter the Manageability Engine BIOS Extension (MEBx) Setup.
3. When the system reboots, you will be prompted for a password. The default password is "admin". Enter the default password in the space provided under Intel(R) ME Password, then press "Enter".

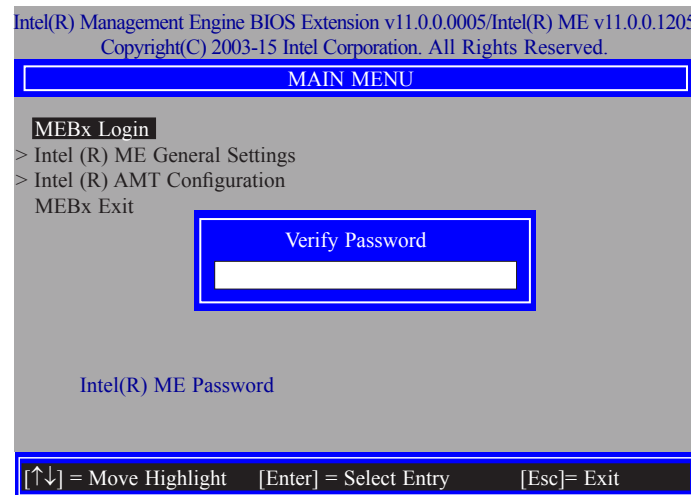


4. Enter a password in the space provided under "Intel(R) ME Password" and then press "Enter". The password must include:

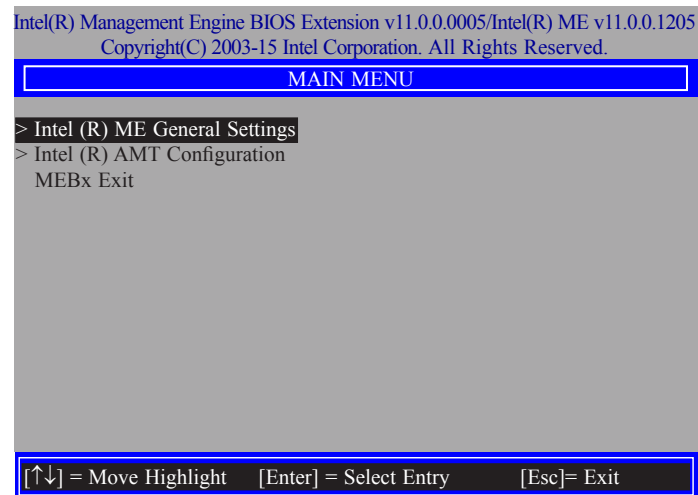
- 8-32 characters
- Strong 7-bit ASCII characters excluding : , and " characters
- At least one digit character (0, 1, ...9)
- At least one 7-bit ASCII non alpha-numeric character, above 0x20, (e.g. !, \$, ;)
- Both lower case and upper case characters



5. You will be asked to verify the password. Enter the same new password in the space provided under "Verify Password" and then press "Enter".



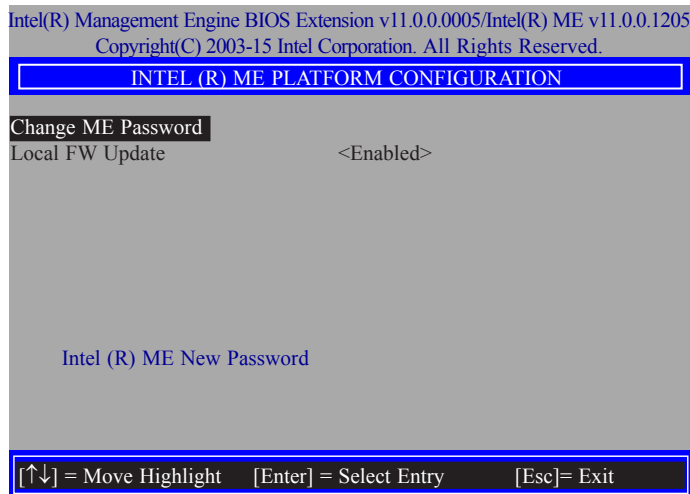
6. Select "Intel(R) ME General Settings" and then press "Enter".



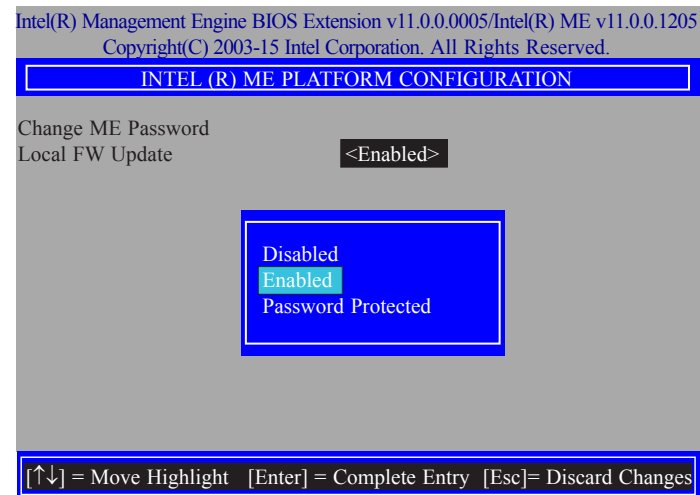
7. Select "Change Intel(R) ME Password" and then press "Enter".

You will be prompted for a password. The default password is "admin". Enter the default password in the space provided under "Intel(R) ME New Password" and then press "Enter".

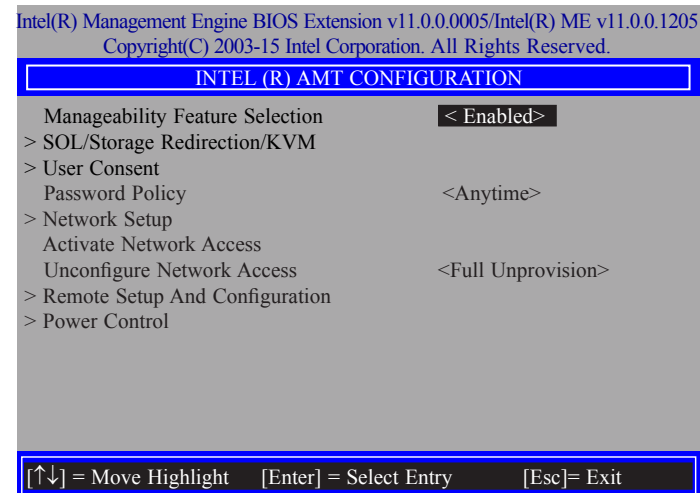
- 8-32 characters
- Strong 7-bit ASCII characters excluding : , and " characters
- At least one digit character (0, 1, ...9)
- At least one 7-bit ASCII non alpha-numeric character, above 0x20, (e.g. !, \$, ;)
- Both lower case and upper case characters



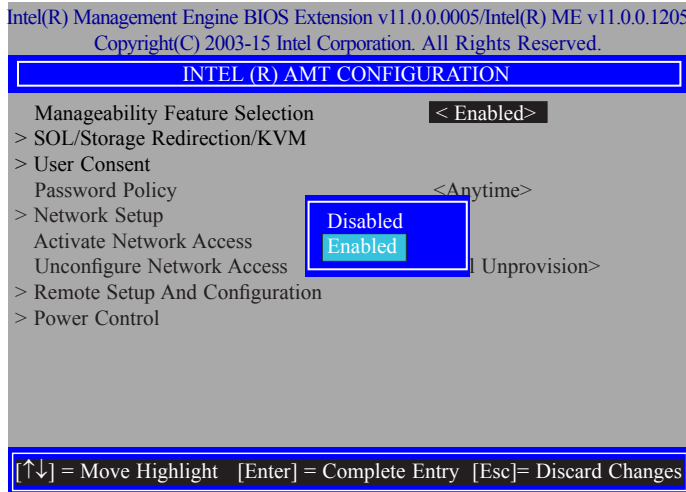
8. Select "Local FW Update" and then press "Enter". Select "Enabled" or "Disabled" or "Password Protected" and then press "Enter".



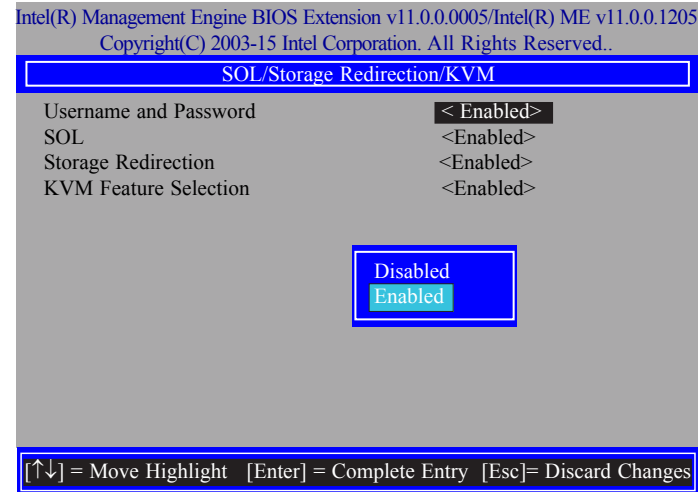
9. Select Previous Menu until you return to the "Main Menu". Select "Intel(R) AMT Configuration" and then press "Enter".



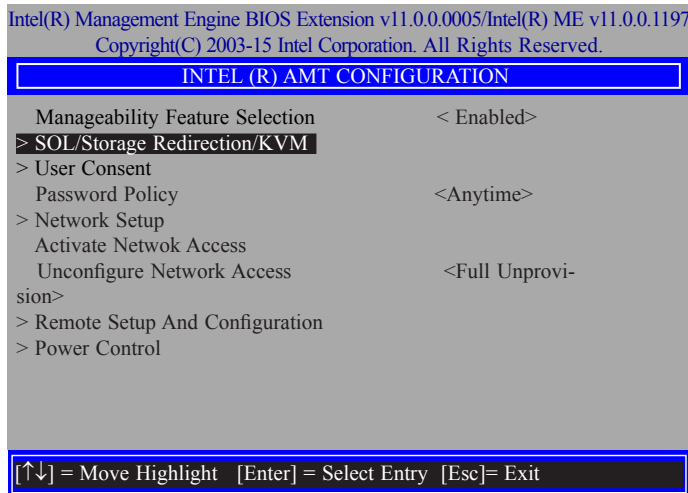
10. In the "Intel(R) AMT Configuration" menu, select "Manageability Feature Selection" and then press "Enter". Select "Enabled" or "Disabled" and then press "Enter".



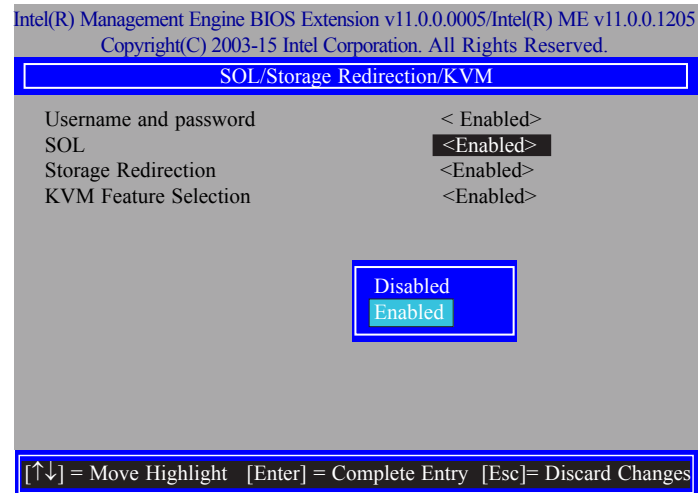
12. In the "SOL/Storage Redirection/KVM" menu, select "Username and Password" and then press "Enter". Select "Enabled" or "Disabled" and then press "Enter".



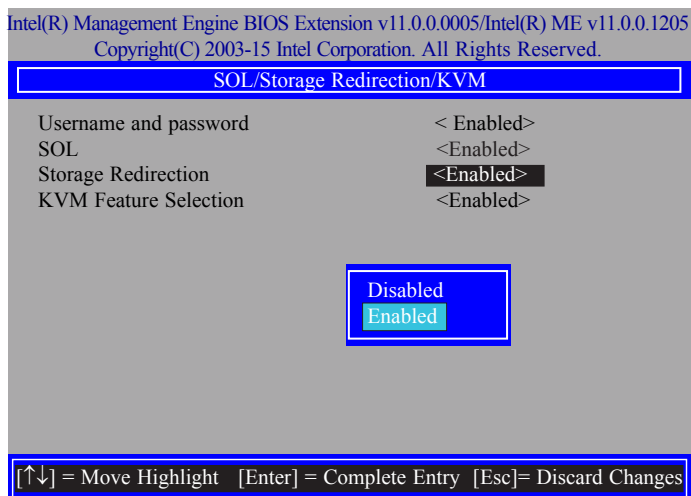
11. In the "Intel(R) AMT Configuration" menu, select "SOL/Storage Redirection/KVM" and then press "Enter".



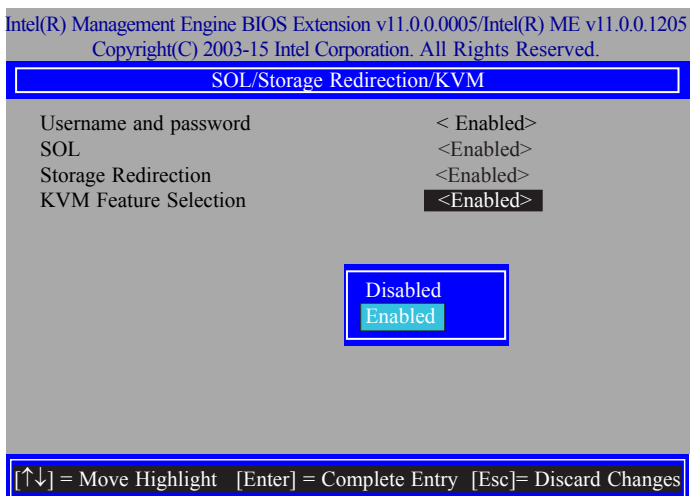
13. In the "SOL/Storage Redirection/KVM" menu, select "SOL" and then press "Enter". Select "Enabled" or "Disabled" and then press "Enter".



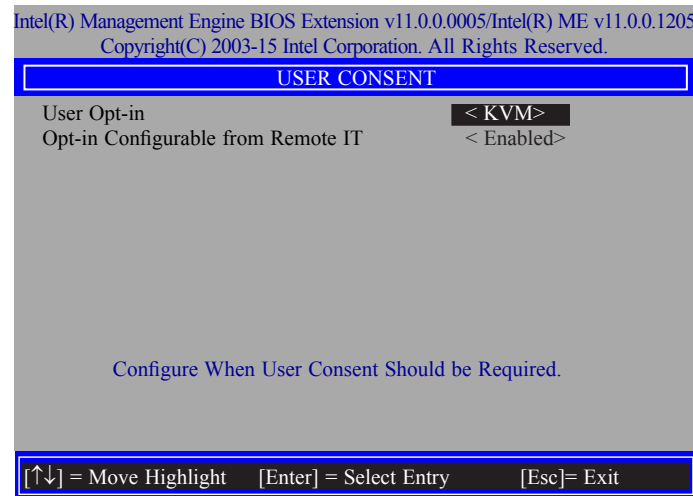
14. In the "SOL/Storage Redirection/KVM" menu, select "Storage Redirection" and then press "Enter". Select "Enabled" or "Disabled" and then press "Enter".



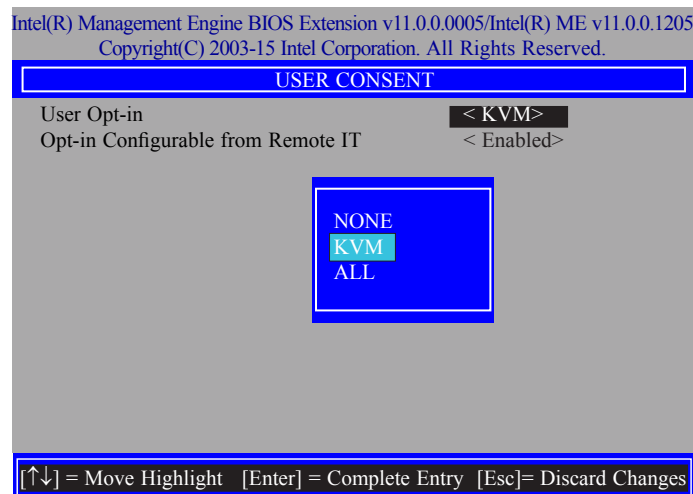
15. In the "SOL/IDER/KVM" menu, select "KVM Feature Selection" and then press "Enter". Select "Enabled" or "Disabled" and then press "Enter".



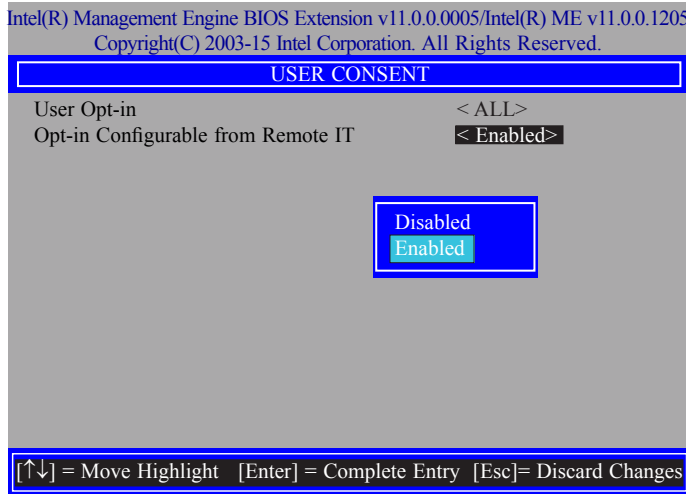
16. Select Previous Menu until you return to the "Intel(R) AMT Configuration" menu. Select "User Consent" and then press "Enter".



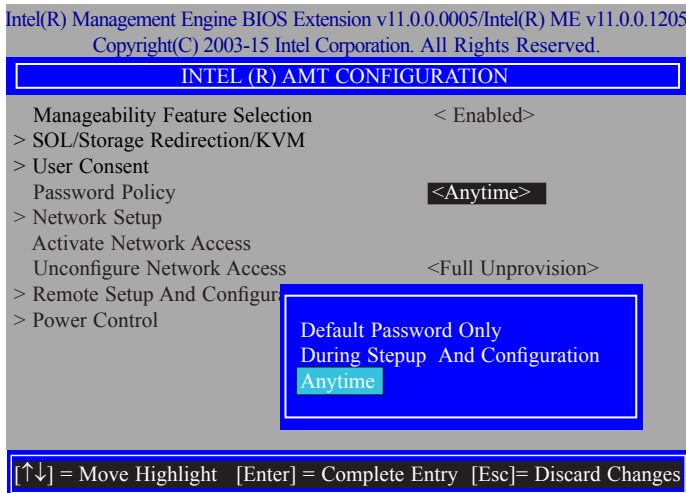
17. In the "User Consent" menu, select "User Opt-in" and then press "Enter". Select "None" or "KVM" or "ALL" and then press "Enter".



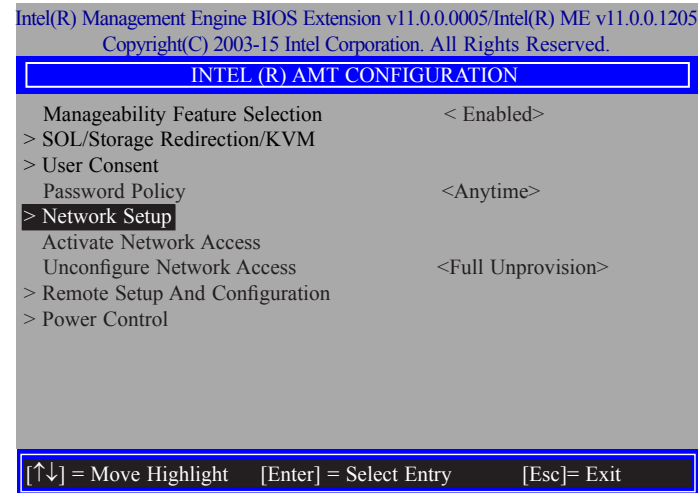
18. In the "User Consent" menu, select "Opt-in Configurable from Remote IT" and then press "Enter". Select "Enabled" or "Disable Remote Control of KVM Opt-in Policy" and then press "Enter".



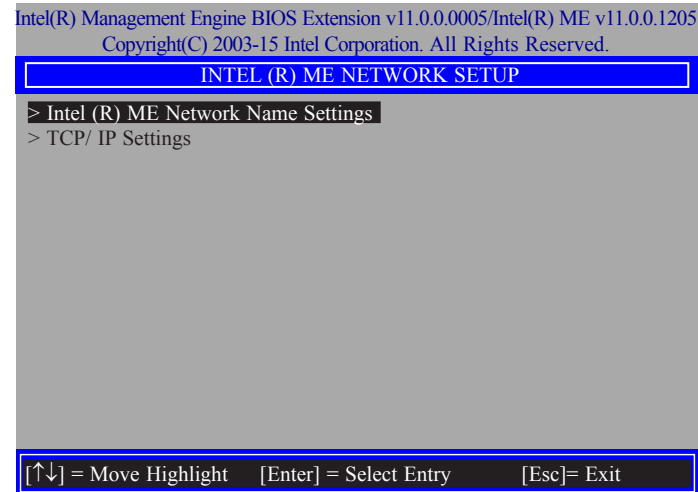
19. Select Previous Menu until you return to the "Intel(R) AMT Configuration" menu. Select "Password Policy" and then press "Enter". You may choose to use a password only during setup and configuration or to use a password anytime the system is being accessed.



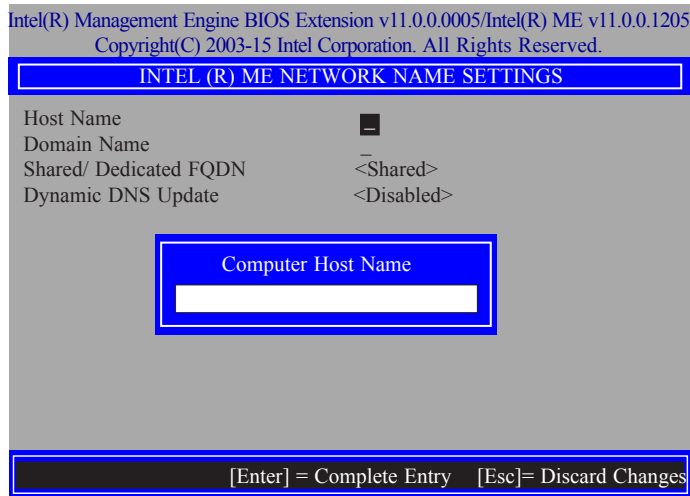
20. In the "Intel(R) AMT Configuration" menu, select "Network Setup" and then press "Enter".



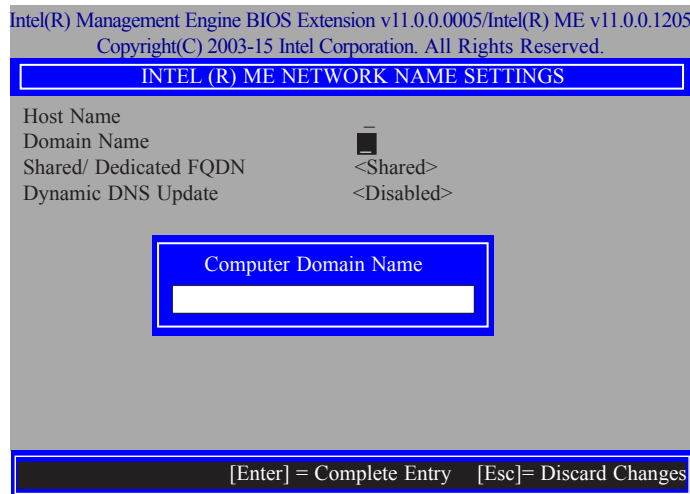
21. In the "Intel(R) ME Network Setup" menu, select "Intel(R) ME Network Name Settings" and then press "Enter".



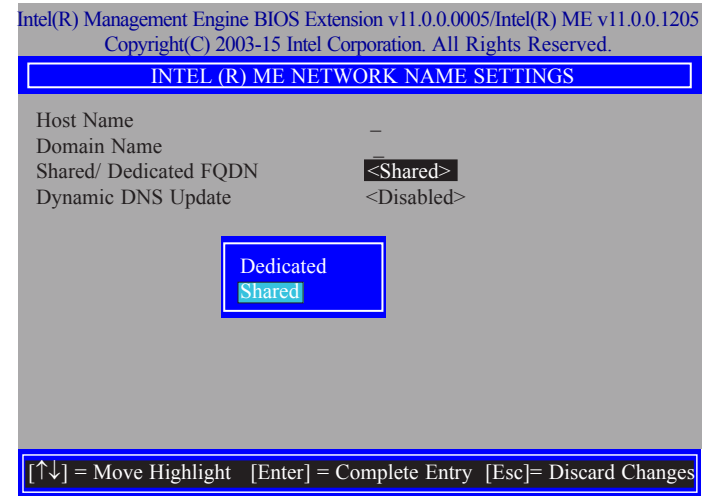
22. In the "Intel(R) ME Network Name Settings" menu, select "Host Name" and then press "Enter". Enter the computer's host name and then press "Enter".



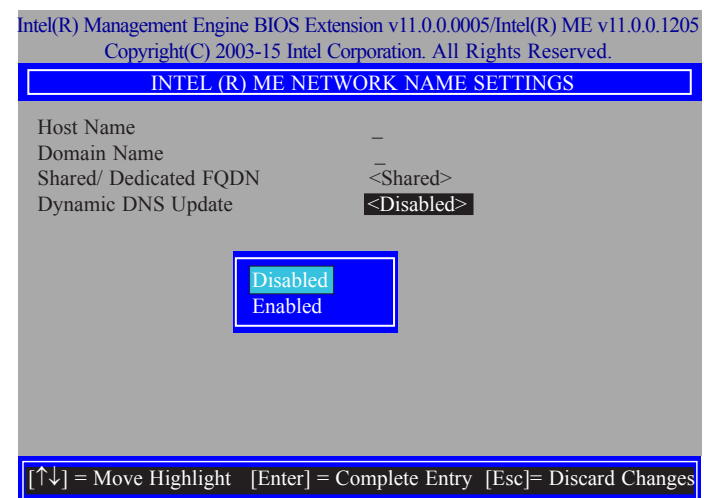
23. Select "Domain Name" and then press "Enter". Enter the computer's domain name and then press "Enter".



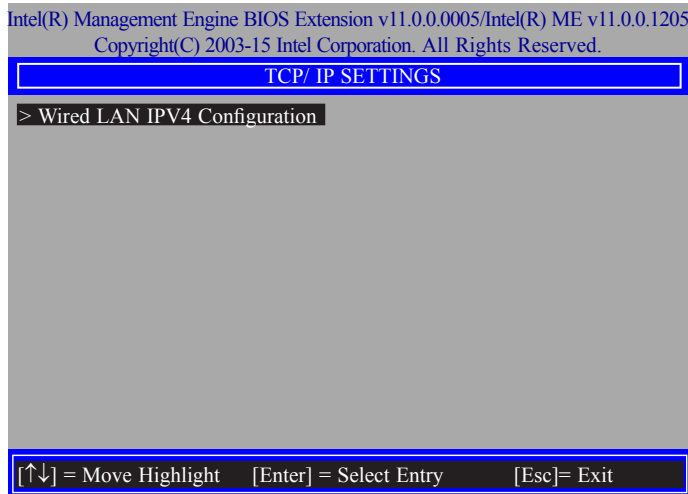
24. Select "Shared/Dedicated FQDN" and then press "Enter". Select "Shared" or "Dedicated" and then press "Enter".



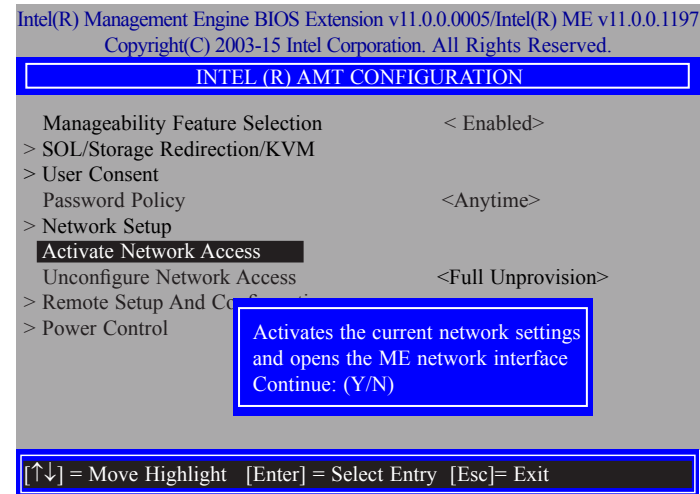
25. Select "Dynamic DNS Update" and then press "Enter". Select "Enabled" or "Disabled" and then press "Enter".



26. Select Previous Menu until you return to the "Intel(R) ME Network Setup" menu. Select "TCP/IP Settings" and then press "Enter".



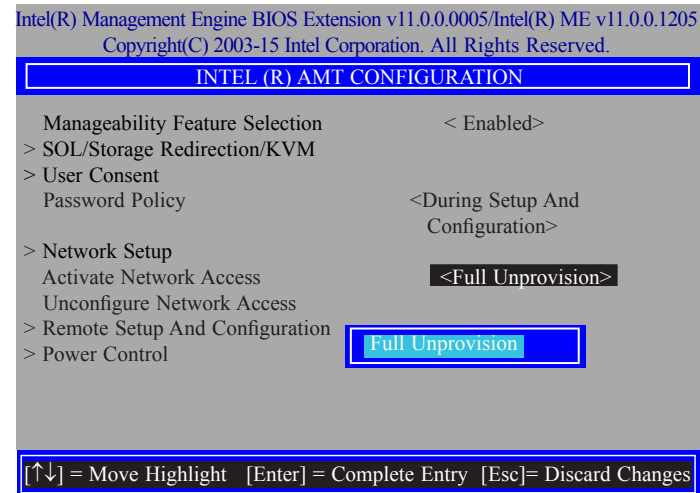
28. In the "Intel(R) AMT Configuration" menu, select "Activate Network Access" and then select "Yes/No" and press "Enter".



27. In the "TCP/IP Settings" menu, select "Wired LAN IPV4 Configuration" and then press "Enter".

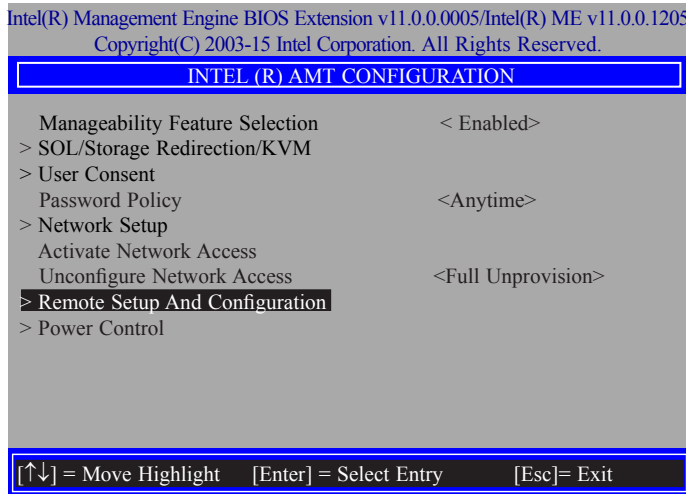


29. In the "Intel(R) AMT Configuration" menu, select "Unconfigure Network Access" and then press "Enter".

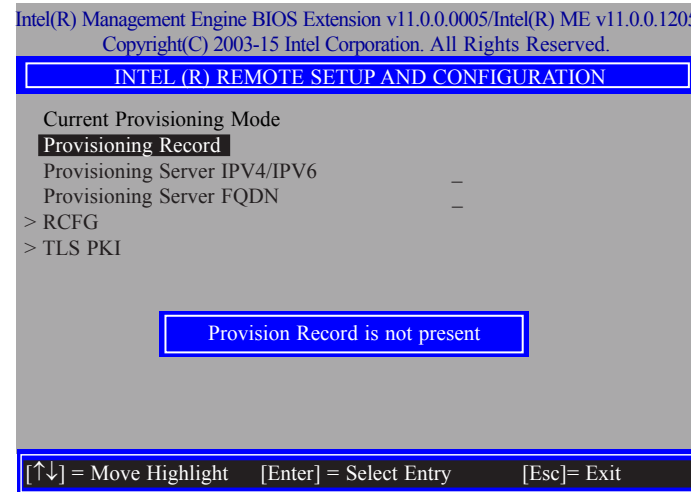




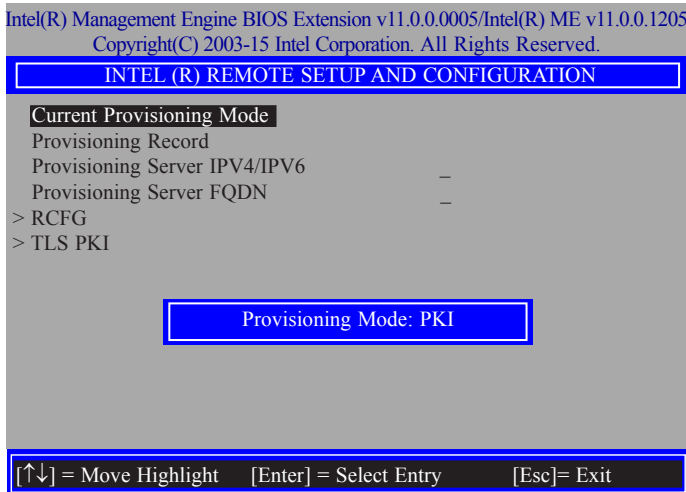
30. In the "Intel(R) AMT Configuration" menu, select "Remote Setup And Configuration" and then press "Enter".



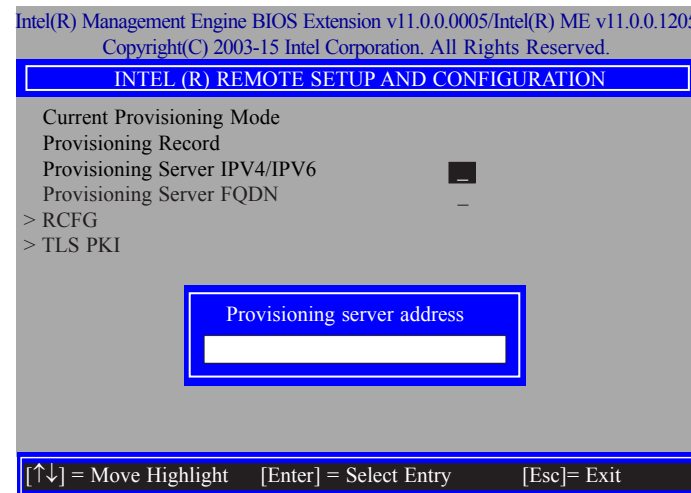
32. In the "Intel(R) Remote Setup And Configuration" menu, select "Provisioning Record" and then press "Enter".



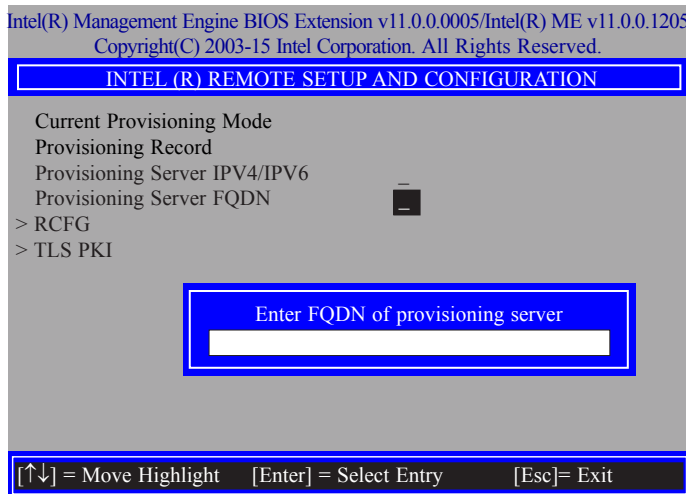
31. In the "Intel(R) Remote Setup And Configuration" menu, select "Current Provisioning Mode" and then press "Enter".



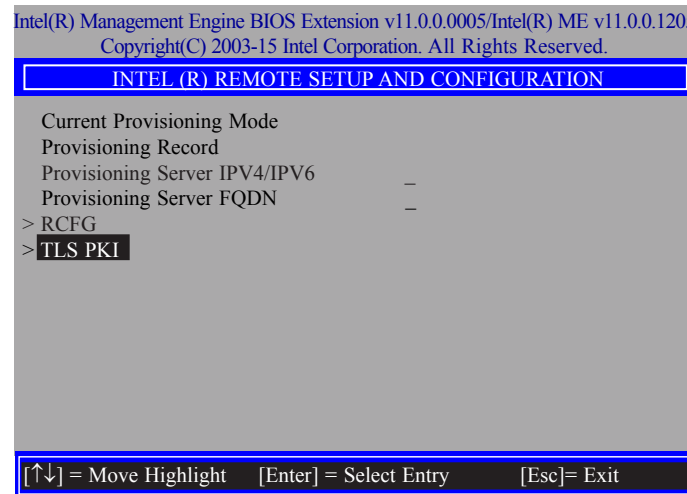
33. In the "Intel(R) Remote Setup And Configuration" menu, select "Provisioning server IPV4/ IPV6", enter "Provisioning server address" and then press "Enter".



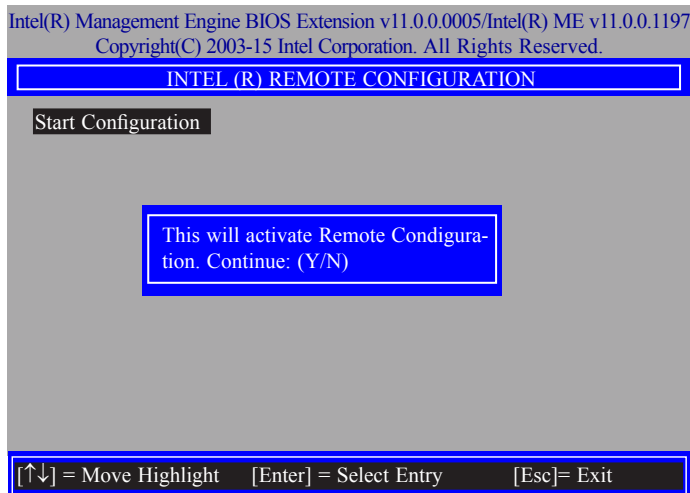
34. In the "Intel(R) Remote Setup And Configuration" menu, select "Provisioning server FQDN", enter the FQDN of Provisioning server, and then press "Enter".



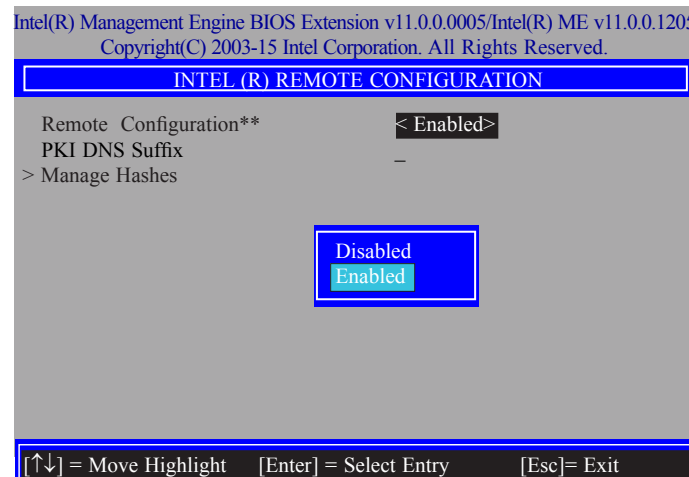
36. In the "Intel(R) Remote Setup And Configuration" menu, select "TLS PKI" and then press "Enter".



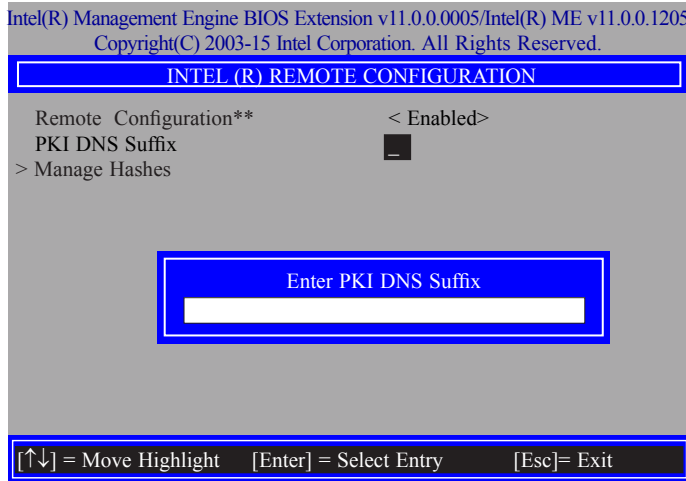
35. In the "Intel(R) Remote Setup And Configuration" menu, select "RCFG" and press "Enter", and then select "Start Configuration Y/N" and press "enter".



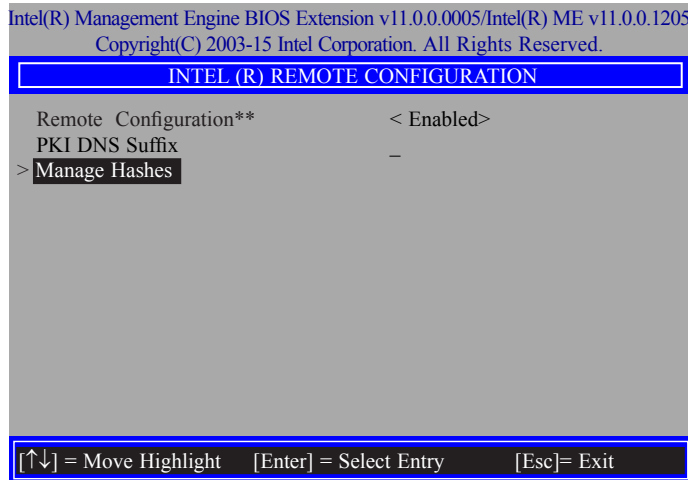
37. In the "Intel(R) Remote Configuration" menu, select "Remote Configuration\*\*" and press "Enter", and then select "Enabled" or "Disabled" and press "Enter".



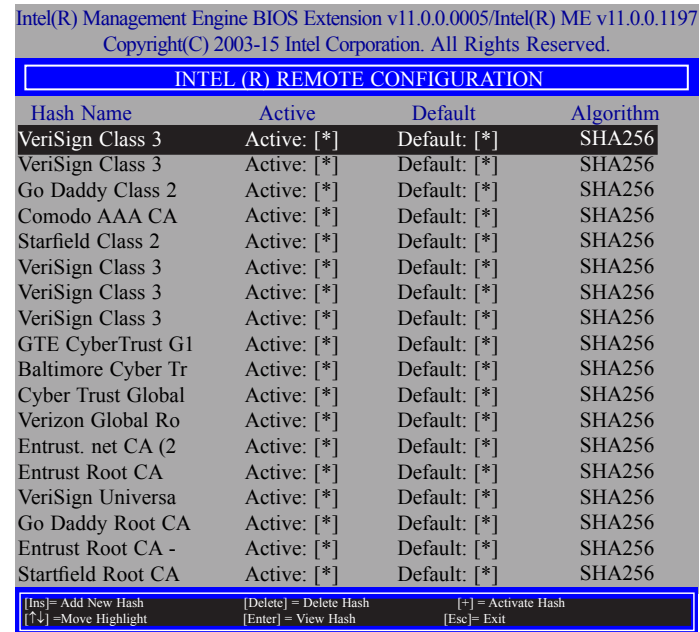
38. Select "PKI DNS Suffix", enter the "PKI DNS Suffix", and then press "Enter".



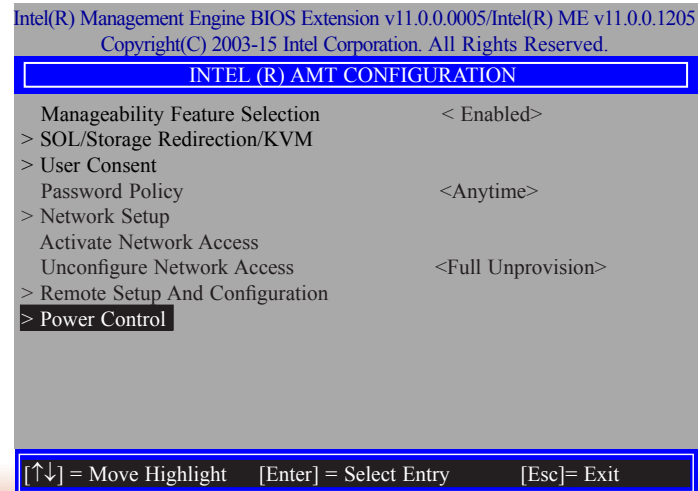
39. Select "Manage Hashes" and press "Enter", and then select one of the hash names.



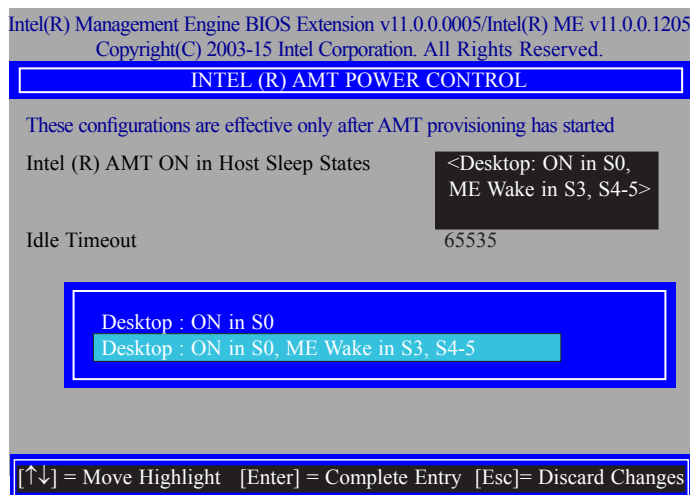
40. In the "Intel(R) AMT Configuration" menu, select Power Control, and then press "Enter".



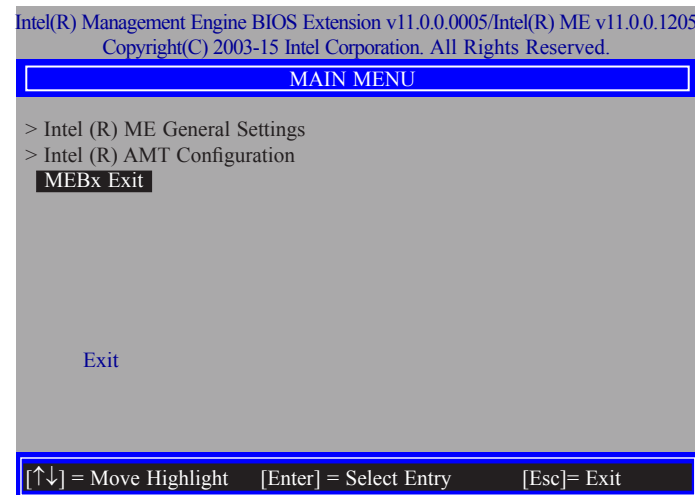
41. In the "Intel(R) AMT Power Control" menu, select "Intel(R) AMT ON in Host Sleep States" and then press "Enter". Select an option and then press "Enter".



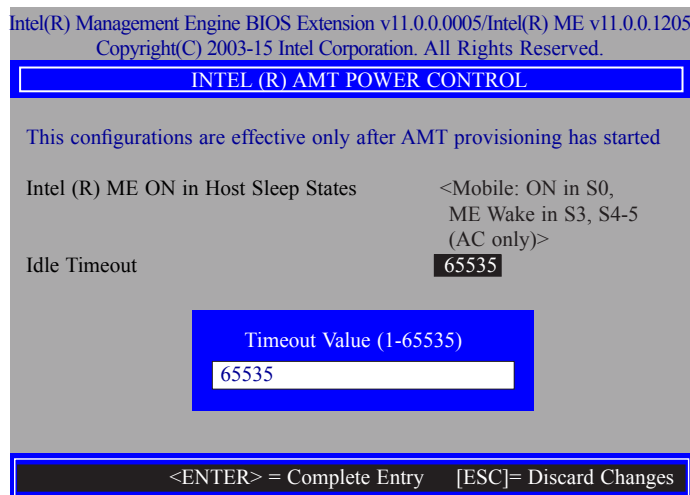
42. In the "Intel(R) AMT Power Control" menu, select "Idle Timeout" and then press "Enter". Enter the timeout value (1-65535).



44. Select Previous Menu until you return to the "Main Menu". Select "Exit" and then press "Enter". Type "Y" and then press "Enter".



43. In the "Intel(R) AMT Power Control" menu, select "Idle Timeout" and then press "Enter". Enter the timeout value (1-65535).



## Appendix A - Watchdog Sample Code

;Software programming example:

```

;-----
;(1) Enter Super IO Configuration mode
;-----
MOV     DX,4EH
MOV     AL,87H
OUT     DX,AL
OUT     DX,AL

;-----
;(2) Configuration Logical Device 8, register CRF0/CRF1 (WDT Control/WDT
timer)
;-----
MOV     DX,4EH
MOV     AL,07H           ;Ready to Program Logical Device
OUT     DX,AL

MOV     DX,4FH
MOV     AL,08H           ;Select Logical Device 8
OUT     DX,AL

MOV     DX,4EH
MOV     AL, F1H           ;Select watchdog timer register
OUT     DX,AL

MOV     DX,4FH
MOV     AL,10H           ;Set watchdog timer value
OUT     DX,AL

MOV     DX,4EH
MOV     AL, F0H           ;Select watchdog Control Register
OUT     DX,AL

MOV     DX,4FH
MOV     AL,02H           ;Set Watchdog Control Value
OUT     DX,AL

;-----
;(1) Exit extended function mode
;-----
MOV     DX,4EH
MOV     AL,AAH
OUT     DX,AL

```

## Appendix B - System Error Message

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and the message, PRESS F1 TO CONTINUE, CTRL-ALT-ESC or DEL TO ENTER SETUP, will be shown in the information box at the bottom. Enter Setup to correct the error.

### Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list indicates the error messages for all Awards BIOSes:

#### CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional. It should be replaced.



#### Important:

Danger of explosion if battery incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

#### CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

#### DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, either turn off the system and change the jumper or enter Setup and change the VIDEO selection.

#### FLOPPY DISK(S) fail (80)

Unable to reset floppy subsystem.

#### FLOPPY DISK(S) fail (40)

Floppy type mismatch.

#### Hard Disk(s) fail (80)

HDD reset failed.

#### Hard Disk(s) fail (40)

HDD controller diagnostics failed.

#### Hard Disk(s) fail (20)

HDD initialization error.

#### Hard Disk(s) fail (10)

Unable to recalibrate fixed disk.

#### Hard Disk(s) fail (08)

Sector Verify failed.

#### Keyboard is locked out - Unlock the key

The BIOS detects that the keyboard is locked. Keyboard controller is pulled low.

#### Keyboard error or no keyboard present

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

#### Manufacturing POST loop

System will repeat POST procedure infinitely while the keyboard controller is pull low. This is also used for the M/B burn in test at the factory.

#### BIOS ROM checksum error - System halted

The checksum of ROM address F0000H-FFFFFH is bad.

#### Memory test fail

The BIOS reports memory test fail if the memory has error(s).

## Appendix C - Troubleshooting Checklist

### Troubleshooting Checklist

This chapter of the manual is designed to help you with problems that you may encounter with your personal computer. To efficiently troubleshoot your system, treat each problem individually. This is to ensure an accurate diagnosis of the problem in case a problem has multiple causes.

Some of the most common things to check when you encounter problems while using your system are listed below.

1. The power switch of each peripheral device is turned on.
2. All cables and power cords are tightly connected.
3. The electrical outlet to which your peripheral devices are connected is working. Test the outlet by plugging in a lamp or other electrical device.
4. The monitor is turned on.
5. The display's brightness and contrast controls are adjusted properly.
6. All add-in boards in the expansion slots are seated securely.
7. Any add-in board you have installed is designed for your system and is set up correctly.

### Monitor/Display

#### If the display screen remains dark after the system is turned on:

1. Make sure that the monitor's power switch is on.
2. Check that one end of the monitor's power cord is properly attached to the monitor and the other end is plugged into a working AC outlet. If necessary, try another outlet.
3. Check that the video input cable is properly attached to the monitor and the system's display adapter.
4. Adjust the brightness of the display by turning the monitor's brightness control knob.

#### The picture seems to be constantly moving.

1. The monitor has lost its vertical sync. Adjust the monitor's vertical sync.
2. Move away any objects, such as another monitor or fan, that may be creating a magnetic field around the display.
3. Make sure your video card's output frequencies are supported by this monitor.

#### The screen seems to be constantly wavering.

1. If the monitor is close to another monitor, the adjacent monitor may need to be turned off. Fluorescent lights adjacent to the monitor may also cause screen wavering.

### Power Supply

#### When the computer is turned on, nothing happens.

1. Check that one end of the AC power cord is plugged into a live outlet and the other end properly plugged into the back of the system.
2. Make sure that the voltage selection switch on the back panel is set for the correct type of voltage you are using.
3. The power cord may have a "short" or "open". Inspect the cord and install a new one if necessary.

### Floppy Drive

#### The computer cannot access the floppy drive.

1. The floppy diskette may not be formatted. Format the diskette and try again.
2. The diskette may be write-protected. Use a diskette that is not write-protected.
3. You may be writing to the wrong drive. Check the path statement to make sure you are writing to the targeted drive.
4. There is not enough space left on the diskette. Use another diskette with adequate storage space.

## Hard Drive

### Hard disk failure.

1. Make sure the correct drive type for the hard disk drive has been entered in the BIOS.
2. If the system is configured with two hard drives, make sure the bootable (first) hard drive is configured as Master and the second hard drive is configured as Slave. The master hard drive must have an active/bootable partition.

### Excessively long formatting period.

If your hard drive takes an excessively long period of time to format, it is likely a cable connection problem. However, if your hard drive has a large capacity, it will take a longer time to format.

## Serial Port

### The serial device (modem, printer) doesn't output anything or is outputting garbled characters.

1. Make sure that the serial device's power is turned on and that the device is on-line.
2. Verify that the device is plugged into the correct serial port on the rear of the computer.
3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.
4. Make sure the COM settings and I/O address are configured correctly.

## Keyboard

### Nothing happens when a key on the keyboard was pressed.

1. Make sure the keyboard is properly connected.
2. Make sure there are no objects resting on the keyboard and that no keys are pressed during the booting process.

## System Board

1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.
2. Check the jumper settings to ensure that the jumpers are properly set.
3. Verify that all memory modules are seated securely into the memory sockets.
4. Make sure the memory modules are in the correct locations.
5. If the board fails to function, place the board on a flat surface and seat all socketed components. Gently press each component into the socket.
6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.