SU171/SU173

Mini-ITX Industrial Motherboard
User's Manual

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Trademarks

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FCC and DOC Statement on Class B

This equipment has been tested and found to comply with the limits for a Class B 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

About this Manual

An electronic file of this manual is included in the CD. To view the user's manual in the CD, insert the CD into a CD-ROM drive. The autorun screen (Main Board Utility CD) will appear. Click "User's Manual" on the main menu.

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 consequencial 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.

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.

- One SU171/SU173 motherboard
- One COM port cable
- One Serial ATA data with power cable
- One DVD
- One QR (Quick Reference)
- One Heat sink

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.

Optional Items

- USB port cable (Length: 200mm)
- COM port cable (Length: 250mm)
- Serial ATA data with power cable (Length: 300mm)
- Power adapter (100W, 12V)
- Power adapter (120W, 19V)
- LPC EXT-RS232 module (4 x RS232 ports)
- LPC EXT-RS485 module (4 x RS485 ports)
- I/O shield
- DT122 Chassis

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.

Before Using the System Board

Before using the system board, prepare basic system components.

If you are installing the system board in a new system, you will need at least the following internal components.

- Memory module
- Storage devices such as hard disk drive, CD-ROM, etc.

You will also need external system peripherals you intend to use which will normally include at least a keyboard, a mouse and a video display monitor.

Chapter 1 - Introduction

Specifications

System	Processor	6th Generation Intel® Core™ Processors, BGA 1356 Intel® Core™ i7-6600U Processor, Dual Core, 4M Cache, 2.6GHz (3.4GHz), 15W Intel® Core™ i5-6300U Processor, Dual Core, 3M Cache, 2.4GHz (3.0GHz), 15W Intel® Core™ i3-6100U Processor, Dual Core, 3M Cache, 2.3GHz, 15W Intel® Celeron® Processor 3955U, Dual Core, 2M Cache, 2.0GHz, 15W
	Memory	Two 204-pin SODIMM up to 16GB Dual Channel DDR3L 1600MHz
	BIOS	Insyde SPI 128Mbit
Graphics	Controller	Intel® HD Graphics GT Series
	Feature	OpenGL 5.0, DirectX 12, OpenCL 2.1 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
	Display	1 x LVDS/eDP (eDP available upon request) 1 x HDMI/DP (DP available upon request) 1 x DP++ LVDS: dual channel 48-bit, resolution up to 1920x1200 @ 60Hz DP: resolution up to 4096x2304 @ 60Hz HDMI: resolution up to 2560x1600 @ 60Hz or 4096x2160 @ 24Hz
	Triple Displays	LVDS + HDMI + DP++ LVDS + DP + DP++ (available upon request) eDP + HDMI + DP++ (available upon request) eDP + DP + DP ++ (available upon request)
Expansion	Interface	1 x PCIe x4 (Gen 3) 1 x SIM 1 x Full-size Mini PCIe (PCIe/USB/SATA) 1 x Full-size Mini PCIe (PCIe/USB)
Audio	Interface	Realtek ALC888S-VD2-GR
Ethernet	Controller	1 x Intel® I210AT PCIe (10/100/1000Mbps) 1 x Intel® I219LM PCIe with iAMT11.0 (10/100/1000Mbps) - (only Core i7/i5 supports iAMT)
Rear I/O	Ethernet	2 x GbE (RJ-45)
	USB	4 x USB 3.0
	Display	1 x HDMI/DP (DP available upon request) 1 x DP++
	Audio	1 x Line-out 1 x Mic-in
OS Support	Microsoft /Linux	Windows 7 (/WES7) 32/64-bit Windows 8.1 (64-bit) Windows 10 IoT Enterprise 64-bit Debian 8 (with VESA graphic driver) CentOS 7 (with VESA graphic driver) Ubuntu 15.10 (Intel graphic driver available)

Internal I/O	Serial	2 x RS-232/422/485 (RS-232 w/ power) (2.0mm pitch) 2 x RS-232 (2.0mm pitch)
	USB	4 x USB 2.0 (2.0mm pitch) or 2 x USB 2.0 (2.0mm pitch) + 1 x Vertical USB 2.0 (type A) - (available upon request)
	Display	1 x LVDS LCD Panel Connector 1 x LCD/Inverter Power 1 x eDP LCD Panel Connector (available upon request)
	Audio	1 x S/PDIF
	SATA	2 x SATA 3.0 (up to 6Gb/s) 2 x SATA Power
	DIO	1 x 8-bit DIO
	LPC	1 x LPC (supports LPC EXT-RS232/RS485 module)
	SMBus	1 x SMBus
WatchDog Timer	Output & Interval	System Reset, Programmable via Software from 1 to 255 Seconds
Security	TPM	Available Upon Request
Power	Type	Single 12V +/-10% DC (SU171) Wide Range 15~36V (SU173)
	Connector	DC-in Jack Right Angle Connector (4-pin) (available upon request) Vertical Type Connector (4-pin) (available upon request)
	Consumption	SU171 Typical: 6600U:12V @ 0.98A (11.76Watt); 6300U:12V @ 0.95A (11.40Watt) Max: 6600U:12V @ 1.62A (19.44Watt); 6300U:12V @ 1.58A (18.96Watt) SU173 Typical: 6600U:19V @ 0.48A (9.12Watt); 6300U:19V @ 0.43A (8.170Watt) Max: 6600U:19V @ 1.05A (19.95Watt); 6300U:19V @ 0.90A (17.10Watt)
	RTC Battery	Lithium 3V (210mAH)
Environment	Temperature	Operating: 0 to 60°C Storage: -40 to 85°C
	Humidity	Operating: 5 to 90% RH Storage: 5 to 90% RH
	MTBF	SU171 : 357,691 hrs @ 25°C; 206,450 hrs @ 45°C ; 130,229 hrs @ 60°C SU173 : 347,511 hrs @ 25°C; 200,230 hrs @ 45°C ; 126,434 hrs @ 60°C Calculation model: Telcordia Issue 2, Method I Case 3 Environment: GB, GC – Ground Benign, Controlled
Mechanical	Dimensions	Mini-ITX Form Factor 170mm (6.7") x 170mm (6.7")
	Height	PCB: 1.6mm Top Side: TBD, Bottom Side: TBD

Features

- **Watchdog Timer**

The Watchdog Timer function allows your application to regularly "clear" the system at the set time interval. If the system hangs or fails to function, it will reset at the set time interval so that your system will continue to operate.

- **DDR3L**

DDR3L is a higher performance DDR3 SDRAM interface providing less voltage and higher speed successor. DDR3L SDRAM modules support 1600MHz for DDR modules. DDR3L delivers increased system bandwidth and improved performance to provide its higher bandwidth and its increase in performance at a lower power.

- **Graphics**

The integrated Intel® HD graphics engine delivers an excellent blend of graphics performance and features to meet business needs. It provides excellent video and 3D graphics with out-standing graphics responsiveness. These enhancements deliver the performance and compatibility needed for today's and tomorrow's business applications. Supports 1 LVDS/eDP, 1 HDMI/DP and 1 DP++ interface for triple display outputs.

- **PCI Express**

PCI Express is a high bandwidth I/O infrastructure that possesses the ability to scale speeds by forming multiple lanes.

- **Serial ATA**

Serial ATA is a storage interface that is compliant with SATA 1.0a specification. With speed of up to 6Gb/s (SATA 3.0), it improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s. The bandwidth of the SATA 3.0 will be limited by carrier board design.

- **Gigabit LAN**

Intel® I210AT PCI Express Gigabit Ethernet and Intel® I219LM with iAMT11.0 Gigabit Ethernet Phy controllers support up to 1Gbps data transmission.

- **Wake-On-LAN**

This feature allows the network to remotely wake up a Soft Power Down (Soft-Off) PC. It is supported via the onboard LAN port or via a PCIe LAN card that uses the PCIe PME (Power Management Event) signal. However, if your system is in the Suspend mode, you can power-on the system only through an IRQ or DMA interrupt.

> **Important:**
> The 5V_standby power source of your power supply must support ≥720mA.

- **Wake-On-USB**

This 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 ≥1.5A. For 3 or more USB ports, the 5V_standby power source of your power supply must support ≥2A.

- **RTC Timer**

The RTC installed on the system board allows your system to automatically power-on on the set date and time.

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- ## ACPI STR

The system board is designed to meet the ACPI (Advanced Configuration and Power Interface) specification. ACPI has energy saving features that enables PCs to implement Power Management and Plug-and-Play with operating systems that support OS Direct Power Management. ACPI when enabled in the Power Management Setup will allow you to use the Suspend to RAM function.

With the Suspend to RAM function enabled, you can power-off the system at once by pressing the power button or selecting "Standby" when you shut down Windows® without having to go through the sometimes tiresome process of closing files, applications and operating system. This is because the system is capable of storing all programs and data files during the entire operating session into RAM (Random Access Memory) when it powers-off. The operating session will resume exactly where you left off the next time you power-on the system.

> **Important:**
> The 5V_standby power source of your power supply must support ≥720mA.

- ## Power Failure Recovery

When power returns after an AC power failure, you may choose to either power-on the system manually or let the system power-on automatically.

- ## USB

The system board supports the new USB 3.0. It is capable of running at a maximum transmission speed of up to 5 Gbit/s (625 MB/s) and is faster than USB 2.0 (480 Mbit/s, or 60 MB/s) and USB 1.1 (12Mb/s). USB 3.0 reduces the time required for data transmission, reduces power consumption, and is backward compatible with USB 2.0. It is a marked improvement in device transfer speeds between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

Chapter 2 - Hardware Installation

Board Layout
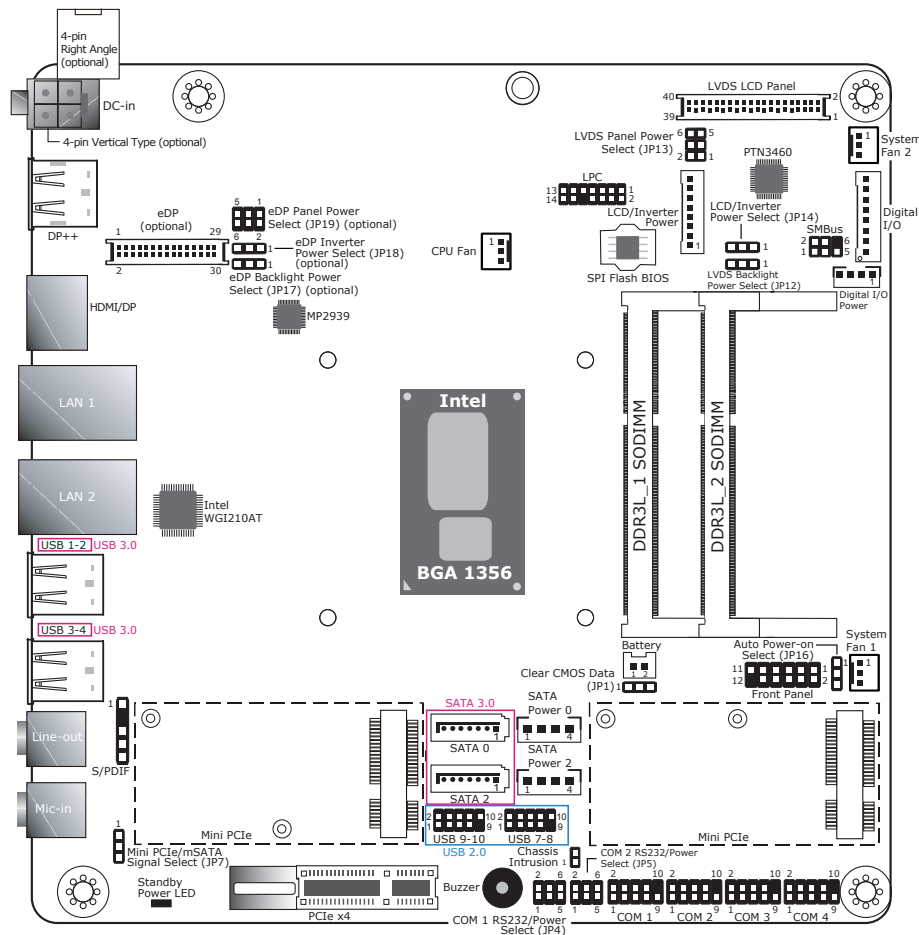
- SU171: Single 12V +/-10% DC.
  SU173: Wide Range 15~36V.

- The eDP connector is optional. Please contact your sales representative for more information.

- JP17, JP18 an JP19 will work when the eDP connector is populated on the system board.

> **Important:**
> Electrostatic discharge (ESD) can damage your board, processor, disk drives, add-in boards, and other components. Perform installation procedures 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.

System Memory

> **Important:**
> When the Standby Power LED lights red, it indicates that there is power on the system board. Power-off the PC then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.
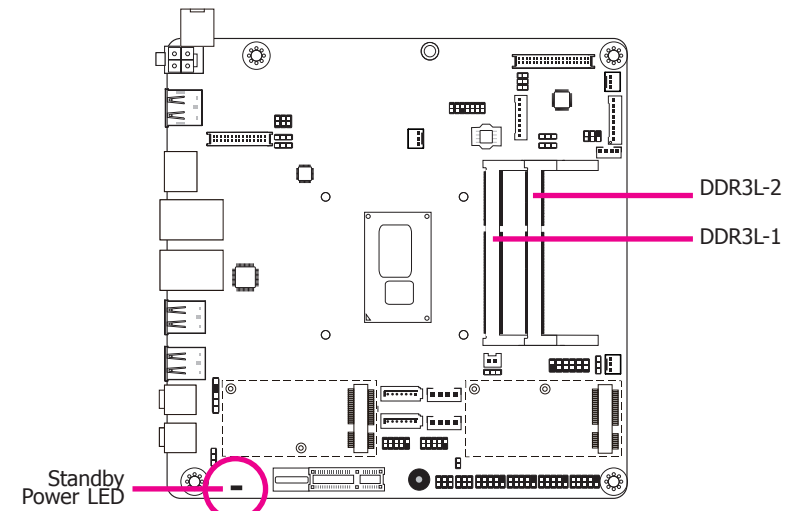
Features

- Two 204-pin DDR3L SODIMM sockets

- Supports 1600MHz DDR3L SDRAM

- Supports up to 16GB system memory

- Supports dual channel memory interface

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The system board supports the following memory interface.

Single Channel (SC)

Data will be accessed in chunks of 64 bits (8B) from the memory channels.

Dual Channel (DC)

Data will be accessed in chunks of 128 bits from the memory channels. Dual channel provides better system performance because it doubles the data transfer rate.

Single Channel	DIMMs are on the same channel. DIMMs in a channel can be identical or completely different. However, we highly recommend using identical DIMMs. Not all slots need to be populated.
Dual Channel	DIMMs of the same memory configuration are on different channels.

Installing the DIMM Module

Note:
The system board used in the following illustrations may not resemble the actual board. These illustrations are for reference only.

1. Make sure the PC and all other peripheral devices connected to it has been powered down.

2. Disconnect all power cords and cables.

3. Locate the SODIMM socket on the system board.

4. Note the key on the socket. The key ensures the module can be plugged into the socket in only one direction.
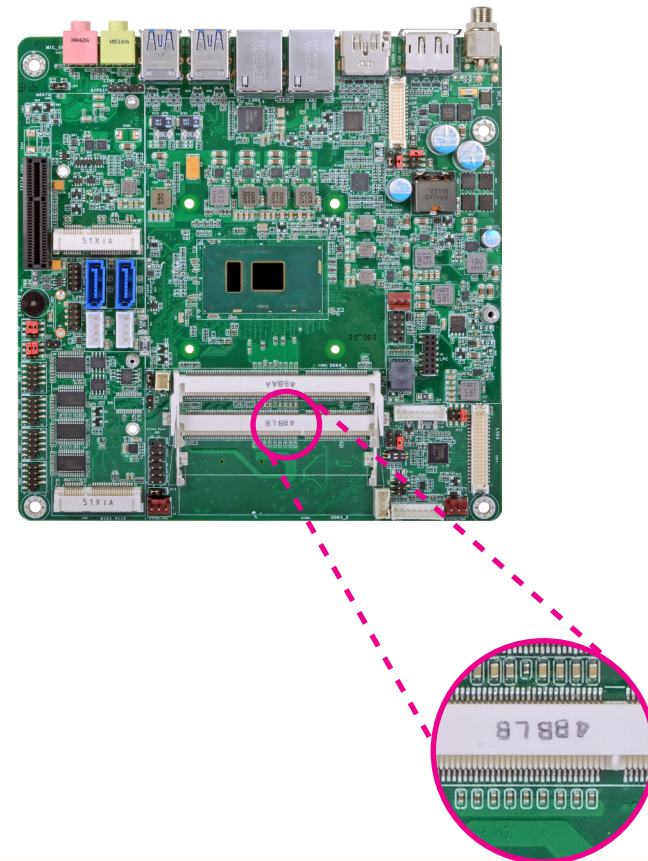
5. Grasping the module by its edges, align the module into the socket at an approximately 30 degrees angle. Apply firm even pressure to each end of the module until it slips down into the socket. The contact fingers on the edge of the module will almost completely disappear inside the socket.

6. Push down the module until the clips at each end of the socket lock into position. You will hear a distinctive "click", indicating the module is correctly locked into position.

Clip   Clip

Jumper Settings

Clear CMOS Data

1 2 3

1-2 On:
Normal (default)

1 2 3

JP1

2-3 On:
Clear CMOS Data
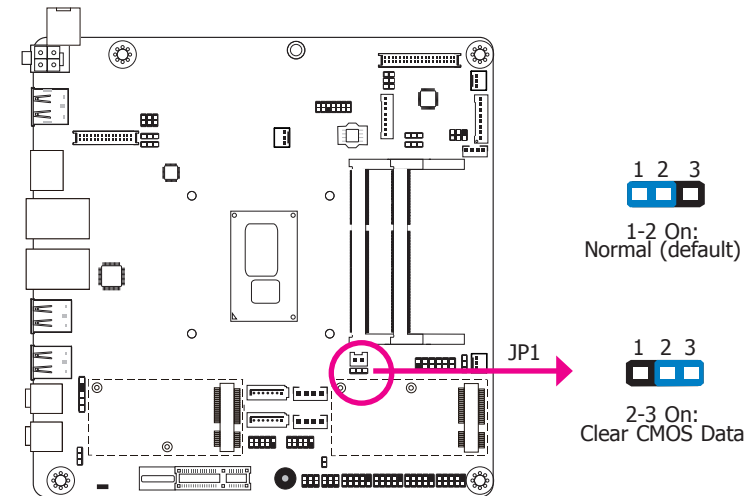
If you encounter the following,

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

you can reconfigure the system with the default values stored in the ROM BIOS.

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

1. Power-off the system and unplug the power cord.

2. Set JP1 pins 2 and 3 to On. Wait for a few seconds and set JP1 back to its default setting, pins 1 and 2 On.

3. Now plug the power cord and power-on the system.

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Auto Power-on Select

JP16

1
2
3

1-2 On:
Power-on via power button
(default)

1
2
3

2-3 On:
Power-on via AC power
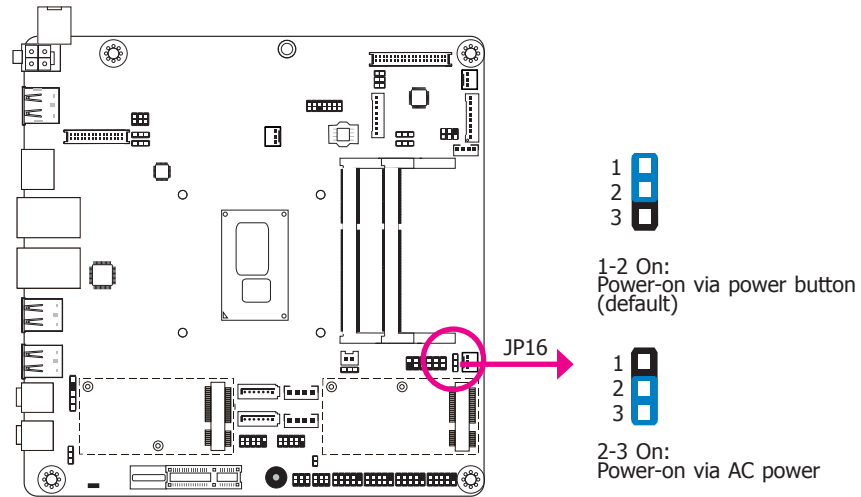
JP16 is used to select the method of powering on the system. If you want the system to power-on whenever AC power comes in, set JP16 pins 2 and 3 to On. If you want to use the power button, set pins 1 and 2 to On.

When using the JP16 "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).

LVDS Panel Power Select

JP13

6 5
4 3
2 1

1-2 On: +12V

6 5
4 3
2 1

3-4 On:+5V

6 5
4 3
2 1

5-6 On: +3.3V
(default)
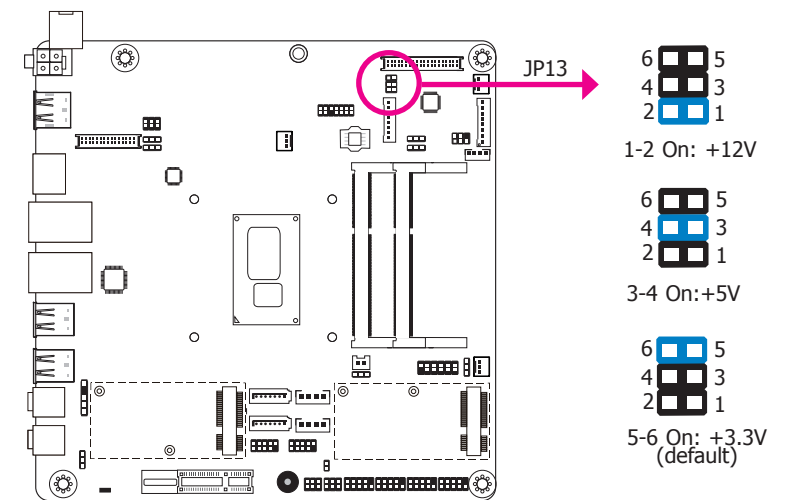
JP13 is used to select the power supplied with the LVDS LCD panel.

Important:
Before powering-on the system, make sure that the power settings of JP13 match the LCD panel's specification. Selecting the incorrect voltage will seriously damage the LCD panel.

LCD/Inverter Power Select

3 2 1
1-2 On: +12V
(default)

3 2 1
2-3 On: +5V
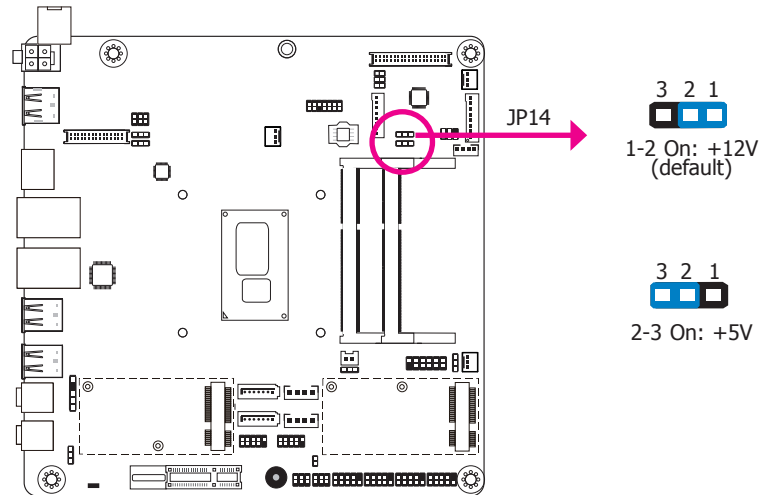
JP14

JP14 is used to select the power level of the LCD/Inverter power connector.

LVDS Backlight Power Select

3 2 1
1-2 On: +3.3V
(default)

3 2 1
2-3 On: +5V
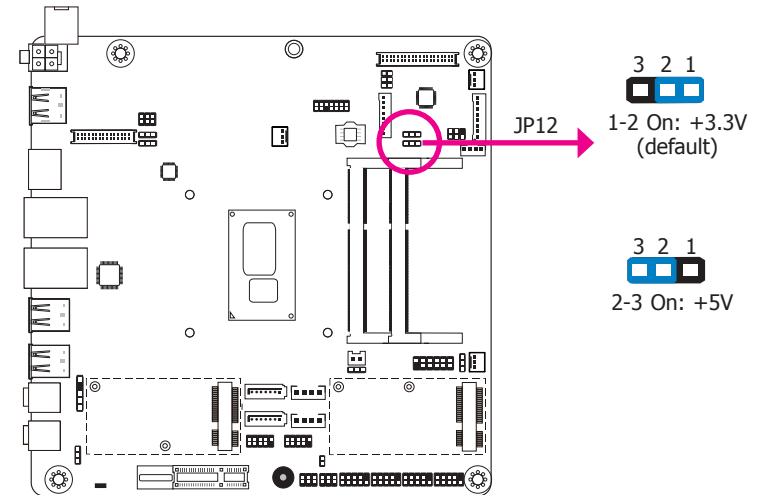
JP12

JP12 is used to select the power level of backlight control: +3.3V (default) or +5V.

Important:
Before powering-on the system, make sure that the power settings of JP12 match the power specification of backlight control. Selecting the incorrect voltage will seriously damage the backlight.

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eDP Panel Power Select (optional)

5 3 1

6 4 2
1-2 On: +12V

5 3 1

6 4 2
3-4 On:+5V

5 3 1

6 4 2
5-6 On: +3.3V
(default)
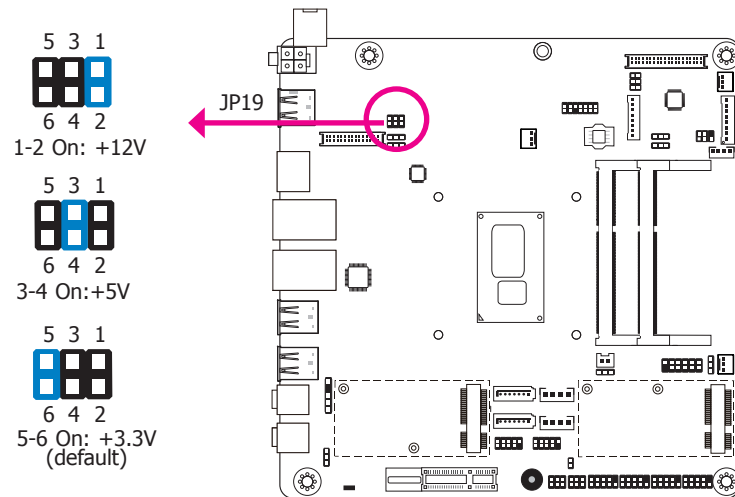
JP19

JP19 is used to select the power supplied with the eDP panel.

Important:
Before powering-on the system, make sure that the power settings of JP19 match the eDP panel's specification. Selecting the incorrect voltage will seriously damage the Edp panel.

eDP Inverter Power Select (optional)

3 2 1

1-2 On: +12V
(default)

3 2 1

2-3 On: +5V
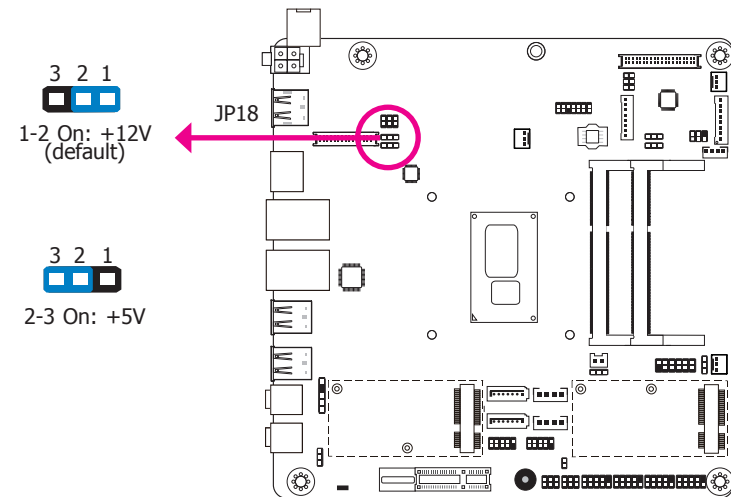
JP18

JP18 is used to select the power level of the eDP Inverter power supply.

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eDP Backlight Power Select (optional)

3 2 1

1-2 On: +3.3V
(default)

3 2 1

2-3 On: +5V
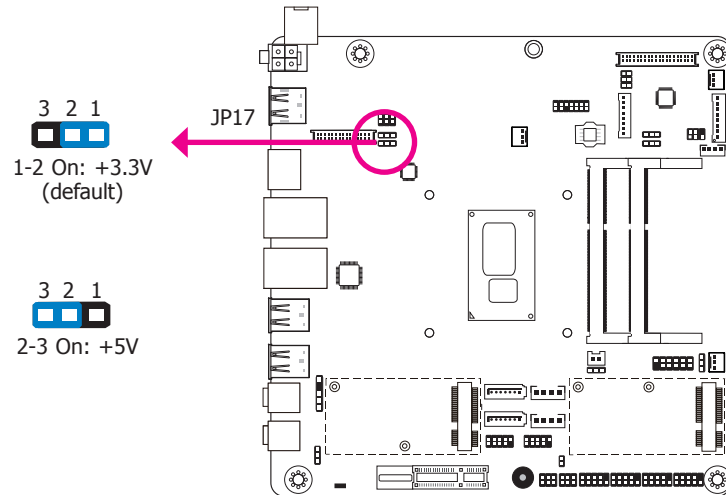
JP17

JP17 is used to select the power level of backlight control: +3.3V (default) or +5V.

Important:
Before powering-on the system, make sure that the power settings of JP17 match the power specification of backlight control. Selecting the incorrect voltage will seriously damage the backlight.

COM 1/COM 2 RS232/Power Select
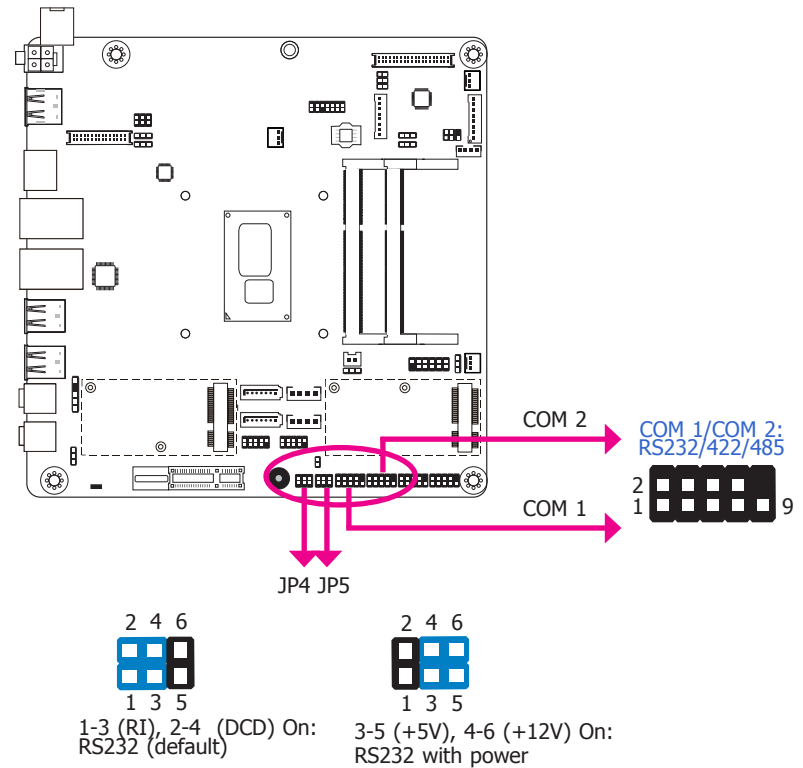
COM 2

COM 1

COM 1/COM 2:
RS232/422/485

2
1   9

JP4 JP5

2 4 6

1 3 5
1-3 (RI), 2-4 (DCD) On:
RS232 (default)

2 4 6

1 3 5
3-5 (+5V), 4-6 (+12V) On:
RS232 with power

JP4 (for COM1) and JP5 (for COM 2) are designed to configure Serial COM ports to pure RS232 or RS232 with power.

COM 1/COM 2

RXD DTR- DSR- CTS-
2
1   9
DCD- TXD GND RTS- RI-

RS232

RXD- TXD- NC. NC.
2
1   9
RXD+ TXD+ NC. NC. NC.

RS422
Full Duplex

DATA- NC. NC. NC.
2
1   9
DATA+ TXD NC. NC. NC.

RS485

15
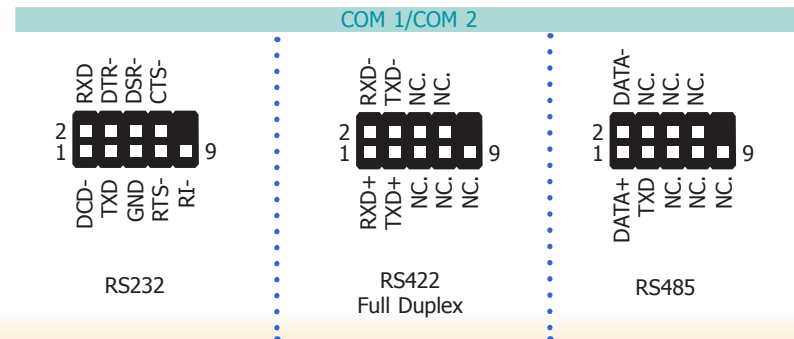
Mini PCIe/mSATA Signal Select

1
2
3

1-2 On: mSATA (default)

1
2
3

2-3 On: Mini PCIe

JP7

JP7 is used to select the Mini PCIe signal: Mini PCIe or mSATA (default).

Rear Panel I/O Ports

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

- 1 12V DC-in jack (default) - SU171
- 1 15~36V DC-in jack (default) - SU173
- 1 HDMI/DP port (DP available upon request)
- 1 DP++ port
- 2 RJ45 LAN ports
- 4 USB 3.0 ports
- 1 Line-out jack
- 1 Mic-in jack

12V DC-in (SU171)/15~36V DC-in (SU173)
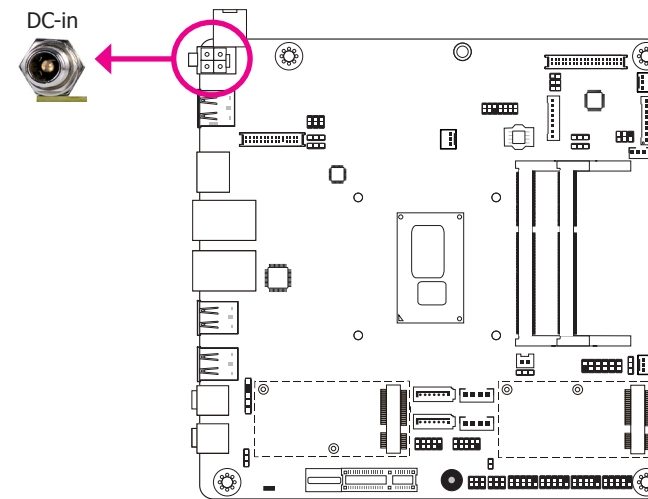
This jack is considered a low power solution. Connect a DC power cord to this jack. Using a voltage more than the recommended range may fail to boot the system or cause damage to the system board.

The DC-in jack on the system board co-lays with a 4-pin right angle connector (optional) or 4-pin vertical Type connector (optional) as the photo displayed below.
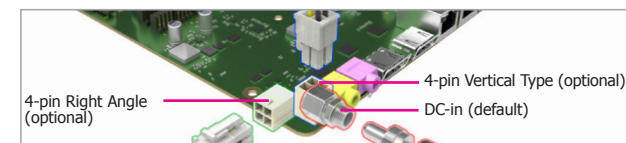
Graphics Interfaces

The display ports consist of the following:

• 1 DP++ port
• 1 HDMI/DP port
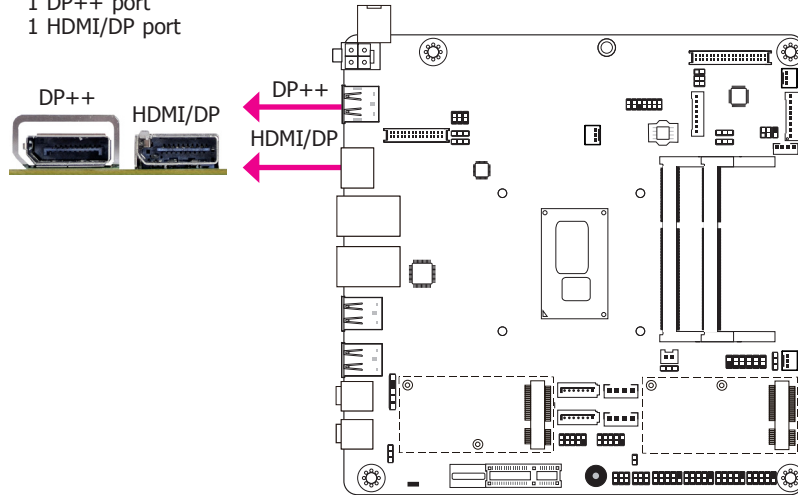
DP Port

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 features than any other digital interface.

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 the HDMI port.

Driver Installation

Install the graphics driver. Refer to chapter 4 for more information.

RJ45 LAN Ports
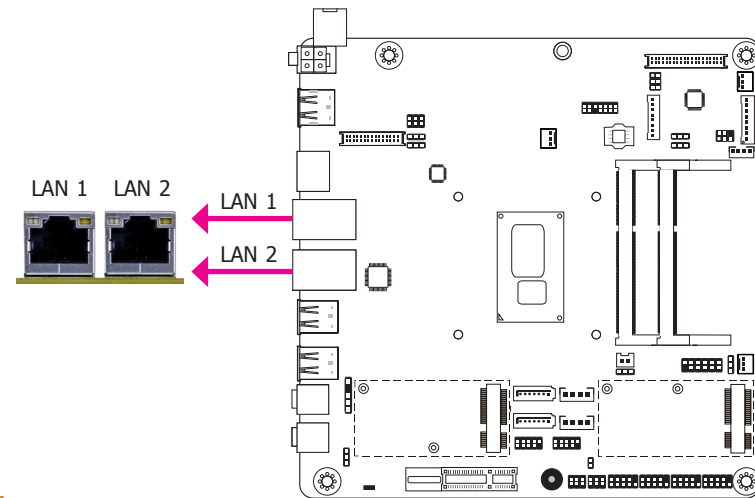
Features

• Intel® I210AT PCIe (10/100/1000Mbps)
• Intel® I219LM PCIe with iAMT11.0 (10/100/1000Mbps) (only Core i7/i5 supports iAMT)

The LAN ports allow the system board to connect to a local area network by means of a network hub.

Driver Installation

Install the LAN drivers. Refer to chapter 4 for more information.

USB Ports

USB 3.0
USB 2
USB 1
USB 4
USB 3
USB 3.0

USB 9-10 USB 7-8

N. C.
GND
+Data
-Data
VCC

USB 2.0 2 10
         1 9

Key
GND
+Data
-Data
VCC
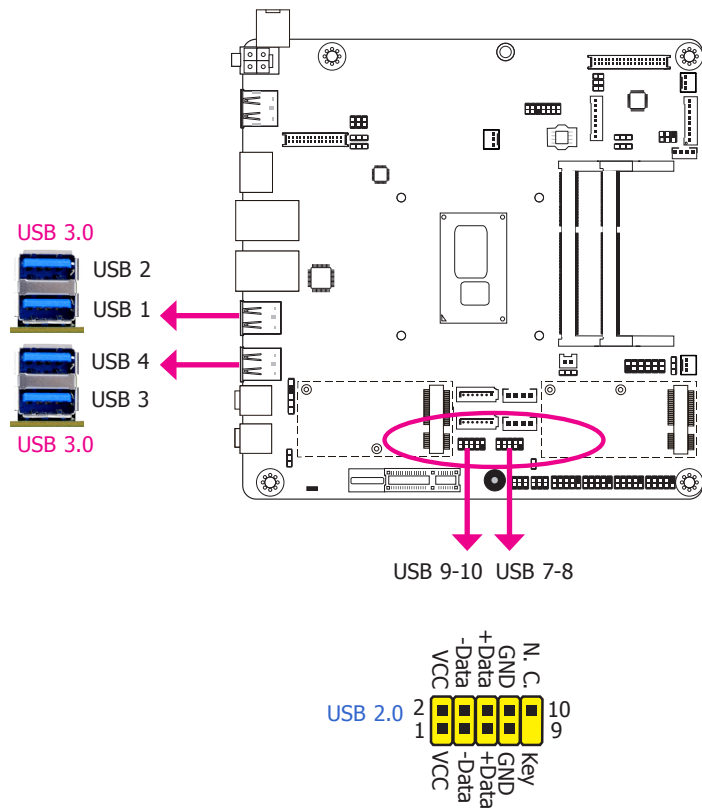
The USB device allows data exchange between your computer and a wide range of simultane-ously accessible external Plug and Play peripherals.

The system board is equipped with four onboard USB 3.0 ports (USB 1-2/3-4). The 10-pin connectors allow you to connect 4 additional USB 2.0 ports (USB 7-8/9-10). The additional USB ports may be mounted on a card-edge bracket. Install the card-edge bracket to an avail-able slot at the rear of the system chassis and then insert the USB port cables to a connector.

BIOS Setting

Configure the onboard USB in the Advanced menu ("USB Configuration" submenu) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

You may need to install the proper drivers in your operating system to use the USB device. Refer to your operating system's manual or documentation 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 ≥1.5A. For 3 or more USB ports, the +5V_standby power source of your power supply must support ≥2A.

19

Audio

Mic-in
Line-out
Line-out
Mic-in
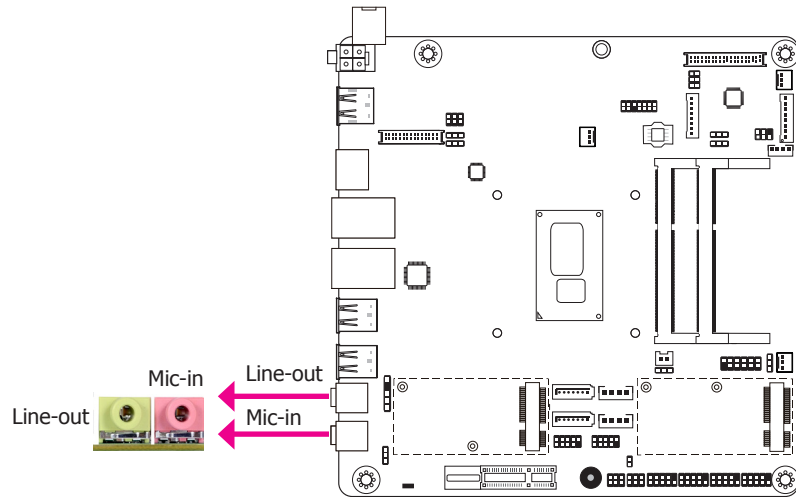
Rear Audio

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

- Line-out Jack (Lime)
  This jack is used to connect a headphone or external speakers.

- Mic-in (Pink)
  This jack is used to connect an external microphone.

BIOS Setting

Configure the onboard USB in the Advanced menu ("Audio Configuration" submenu) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

Install the audio driver. Refer to the chapter 4 for more information.

I/O Connectors

Digital I/O Connector

Digital I/O Power Connector

Digital I/O

Digital I/O power

4   1

+5V
5VSB
Ground
+12V
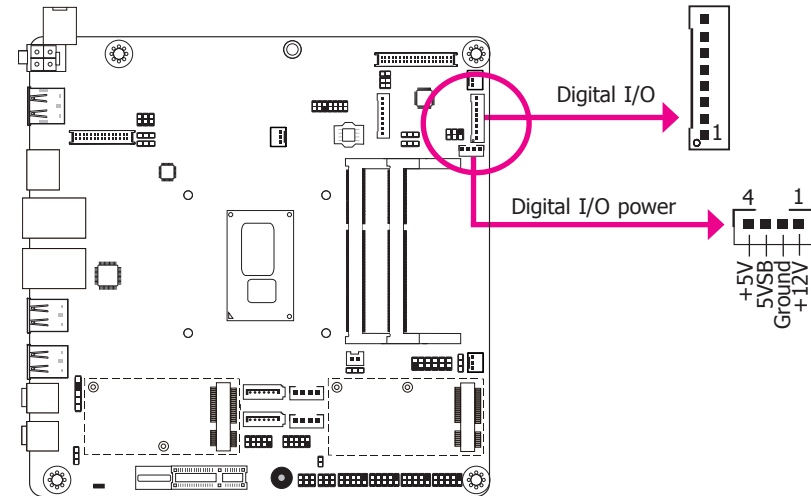
The 8-bit Digital I/O connector provides powering-on function to external devices that are connected to the connector.

Digital I/O Connector

Pins	Function
1	DIO7
2	DIO6
3	DIO5
4	DIO4
5	DIO3
6	DIO2
7	DIO1
8	DIO0

20

SATA (Serial ATA) Connectors

SATA 0
SATA 2

SATA 3.0 6Gb/s

7 1

GND
RXP
RXN
GND
TXN
TXP
GND

Features

• 2 Serial ATA 3.0 ports with data transfer rate up to 6Gb/s

• Integrated Advanced Host Controller Interface (AHCI) controller

• Supports RAID 0/1/5 (Core i only)

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

BIOS Setting

Configure the Serial ATA drives in the Advanced menu ("SATA Configuration" submenu) of the BIOS. Refer to chapter 3 for more information.

SATA (Serial ATA) Power Connectors

SATA
Power 0
SATA
Power 2

+12V
Ground
Ground
+5V

1 4
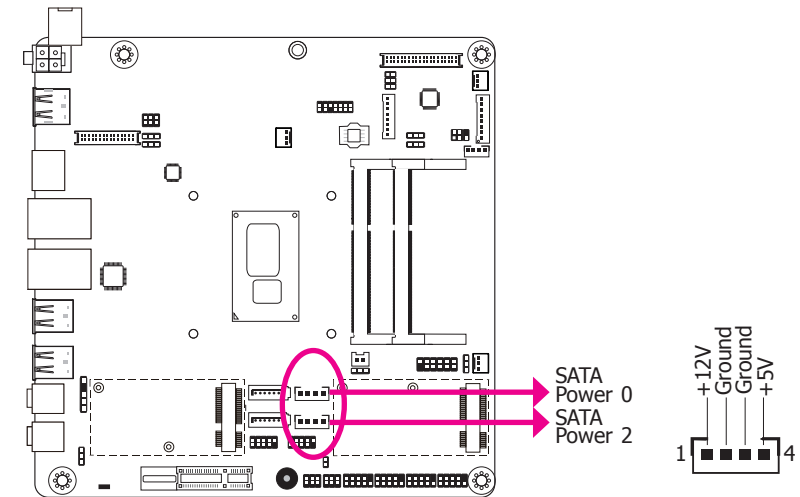
These SATA power connectors supply power to the SATA drive. Connect one end of the provided power cable to the SATA power connector and the other end to your storage device.

21

COM (Serial) Ports

COM 3/COM 4:
RS232

COM 1/COM 2:
RS232/422/485

COM 1
COM 2
COM 4
COM 3

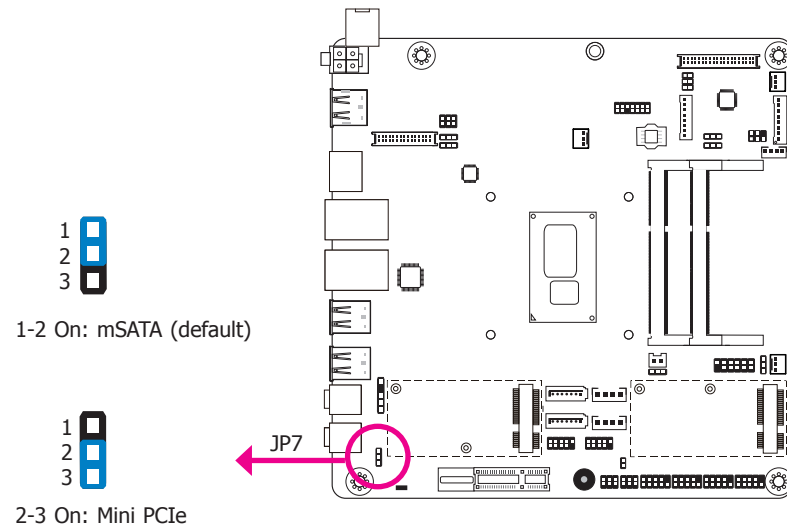COM 3 and COM 4 are fixed at RS232.

The pin functions of COM 1 and COM 2 will vary according to BIOS' setting. JP4 (for COM1) and JP5 (for COM 2) are designed to configure Serial COM ports to pure RS232 or RS232 with power. Refer to "COM 1/COM 2 RS232/Power Select" in this chapter for more information.

The serial ports are asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.

Connecting External Serial Ports

Your COM port may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the serial port cable to the COM connector. Make sure the colored stripe on the ribbon cable is aligned with pin 1 of the COM connector.

COM 1/COM 2

RS232

RS422
Full Duplex

RS485

BIOS Setting

Configure the serial COM ports in the Advanced menu ("SIO NUVOTON6106D" submenu) of the BIOS. Refer to the chapter 3 for more information.

22

Front Panel Connector

HDD-LED - HDD LED

This LED will light 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 light. 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
HDD-LED	3	HDD Power	PWR-LED	2	LED Power
	5	Signal		4	LED Power
RESET-SW	7	Ground		6	Signal
	9	RST Signal	PWR-BTN	8	Ground
	11	N.C.		10	Signal

Cooling Fan Connectors
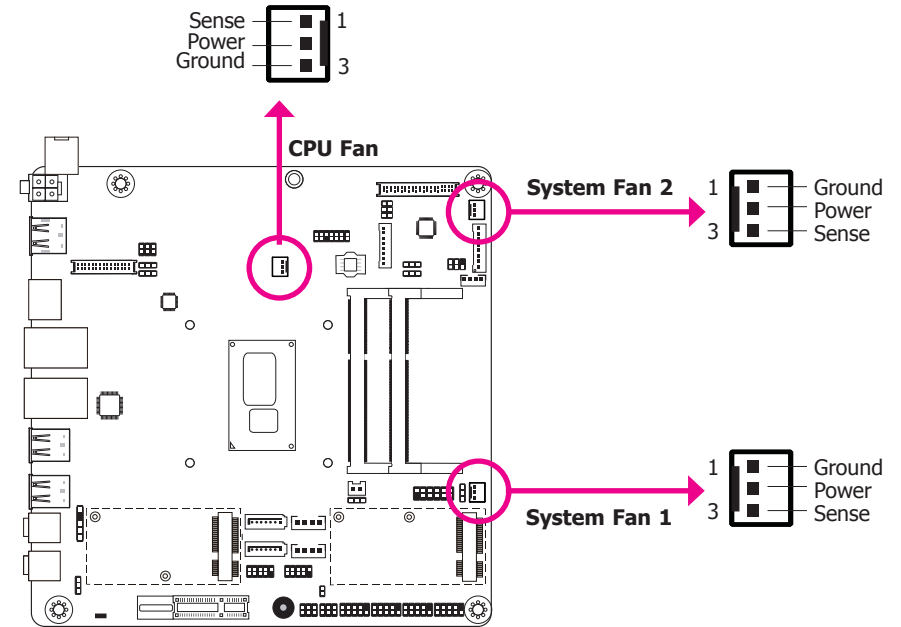
The fan connectors are used to connect cooling fans. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

BIOS Setting

The Advanced menu ("SIO NUVOTON6106D" submenu) of the BIOS will display the current speed of the cooling fans. Refer to chapter 3 for more information.

23

LVDS LCD Panel Connector

LCD/Inverter Power Connector

40 ········ 2
LVDS LCD Panel
39 ········ 1

8
LCD/Inverter power
1
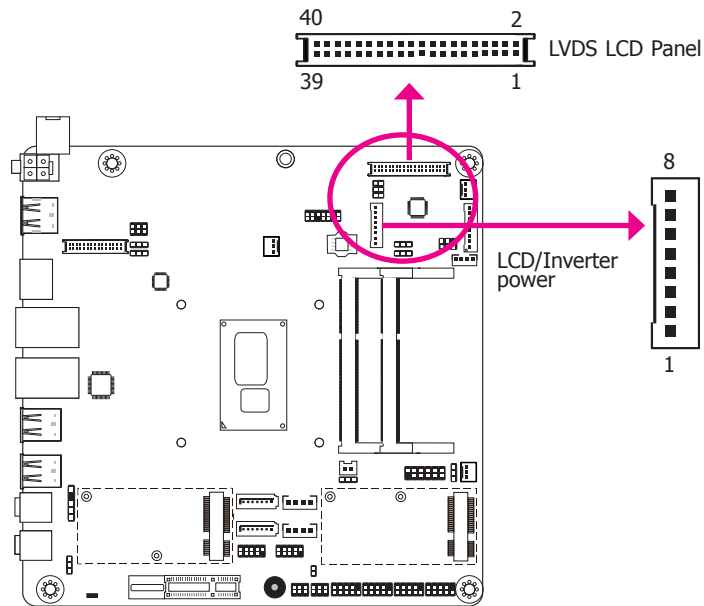
The system board allows you to connect a LCD Display Panel by means of the LVDS LCD panel connector and the LCD/Inverter power connector. These connectors transmit video signals and power from the system board to the LCD Display Panel.

Refer to the right side for the pin functions of these connectors.

BIOS Setting

Configure the LCD panel in the Advanced Features submenu of the BIOS. Refer to chapter 3 for more information.

LVDS LCD Panel Connector

Pins	Function	Pins	Function
1	GND	2	GND
3	LVDS_Out3+	4	LVDS_Out7+
5	LVDS_Out3-	6	LVDS_Out7-
7	GND	8	GND
9	LVDS_Out2+	10	LVDS_Out6+
11	LVDS_Out2-	12	LVDS_Out6-
13	GND	14	GND
15	LVDS_Out1+	16	LVDS_Out5+
17	LVDS_Out1-	18	LVDS_Out5-
19	GND	20	GND
21	LVDS_Out0+	22	LVDS_Out4+
23	LVDS_Out0-	24	LVDS_Out4-
25	GND	26	GND
27	LVDS_CLK1+	28	LVDS_CLK2+
29	LVDS_CLK1-	30	LVDS_CLK2-
31	GND	32	GND
33	LVDS_DDCCLK	34	N.C.
35	LVDS_DDCDTA	36	+3.3V
37	Panel Power	38	Panel Power
39	Panel Power	40	Panel Power

LCD/Inverter Power Connector

Pins	Function
1	GND
2	GND
3	Panel Inverter Brightness Voltage Control
4	Panel Power
5	+3.3V
6	Panel Backlight On/Off Control
7	LCD/Inverter Power
8	LCD/Inverter Power

Note:
DFI board's LVDS connector: Hirose DF13-40DP-1.25V(91)/40P/1.25mm; cable side connector: Hirose DF13-40DS-1.25C.

24

S/PDIF Connector

1
+5V
Key
SPDIF out — S/PDIF
Ground
SPDIF in
5
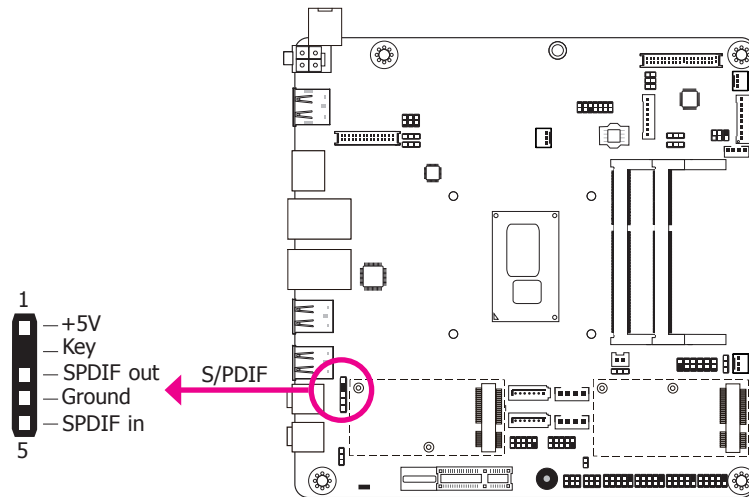
The S/PDIF connector is used to connect an external S/PDIF port. Your S/PDIF port may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the audio cable to the S/PDIF connector. Make sure pin 1 of the audio cable is aligned with pin 1 of the S/PDIF connector.

SMBus Connector

SMBus

+3.3V_standby GND
SMBUS_CLK SMBUS_Data
SMBUS_Alert# NC
2 6
1 5
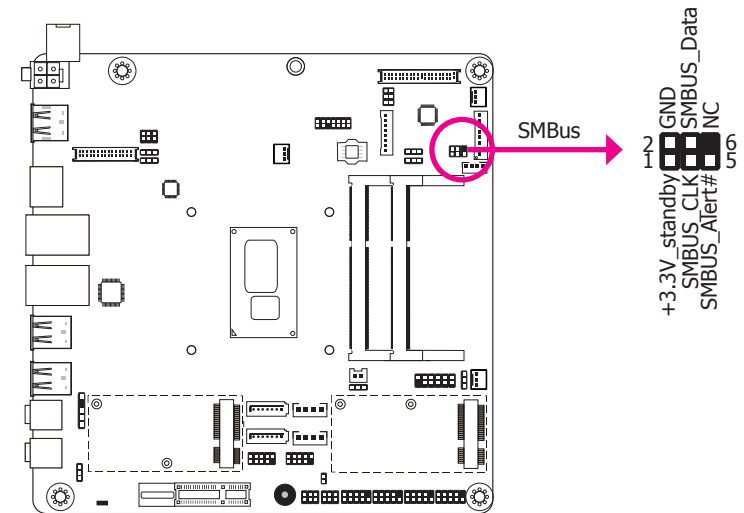
The SMBus (System Management Bus) connector is used to connect SMBus devices. It is a multiple device bus that allows multiple chips to connect to the same bus and enable each one to act as a master by initiating data transfer.

Expansion Slots

PCI Express x4

Mini PCI Express
(USB and PCIe signals)

Mini PCI Express
(USB, PCIe and mSATA signals)
(only Core i supports PCIe)
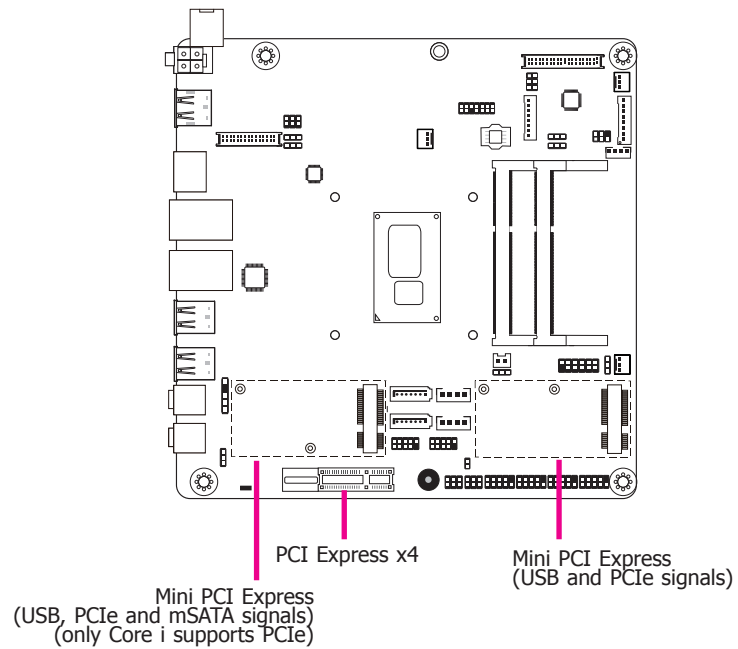
Mini PCI Express Slots

The Mini PCIe sockets are used to install a Mini PCIe card. Mini PCIe card is a small form fac-
tor PCI card with the same signal protocol, electrical definitions, and configuration definitions
as the conventional PCI.

PCI Express x4 Slot

Install PCI Express cards such as network cards or other cards that comply to the PCI Express
specifications into the PCI Express x4 slot.

Chassis Intrusion Connector

Chassis
Intrusion

2 Ground
1 Signal
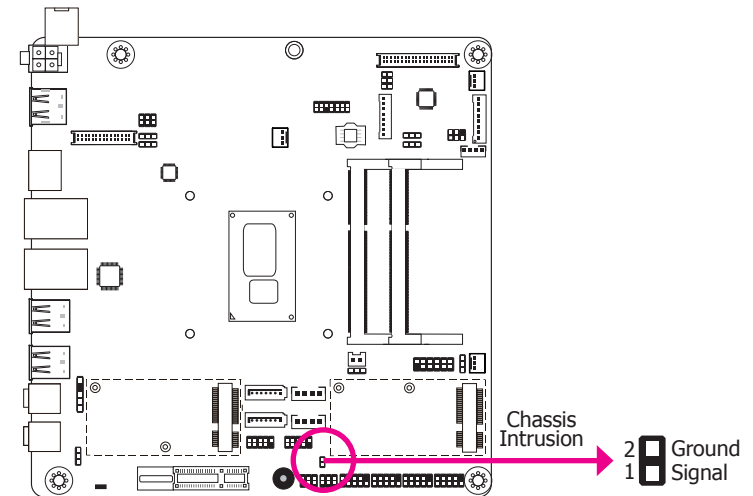
The board supports the chassis intrusion detection function. Connect the chassis intrusion
sensor cable from the chassis to this connector. When the system's power is on and a chassis
intrusion occurred, an alarm will sound. When the system's power is off and a chassis intrusion
occurred, the alarm will sound only when the system restarts.

26

eDP Connector (optional)
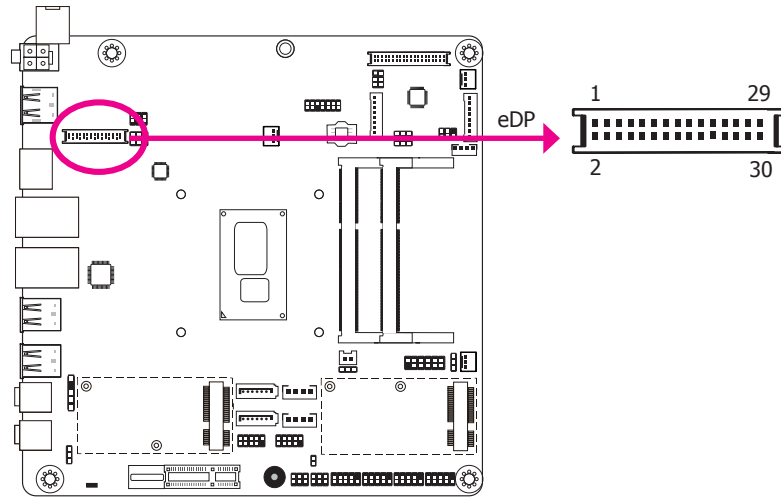
The eDP connector is an embedded displayport which has advanced power-saving features to connect a display device to transmit digital communication of audio and video signals. The table below indicates the pin fuctions of the eDP connector.

Pins	Pin Assignment	Pins	Pin Assignment
1	GND	2	GND
3	ML_Lane 0-	4	ML_Lane 3-
5	ML_Lane 0+	6	ML_Lane 3+
7	GND	8	N/C
9	ML_Lane 1-	10	GND
11	ML_Lane 1+	12	AUX-
13	GND	14	AUX+
15	ML_Lane 2-	16	GND
17	ML_Lane 2+	18	Hot Plug
19	+V_LCD	20	+V_LCD
21	GND	22	GND
23	Panel Backlight On/Off Control	24	Panel Inverter Brightness Voltage Control
25	Inverter GND	26	Inverter GND
27	3V3	28	Inverter PWR
29	Inverter PWR	30	Inverter PWR

LPC Connector

LPC Connector

13
14

1
2
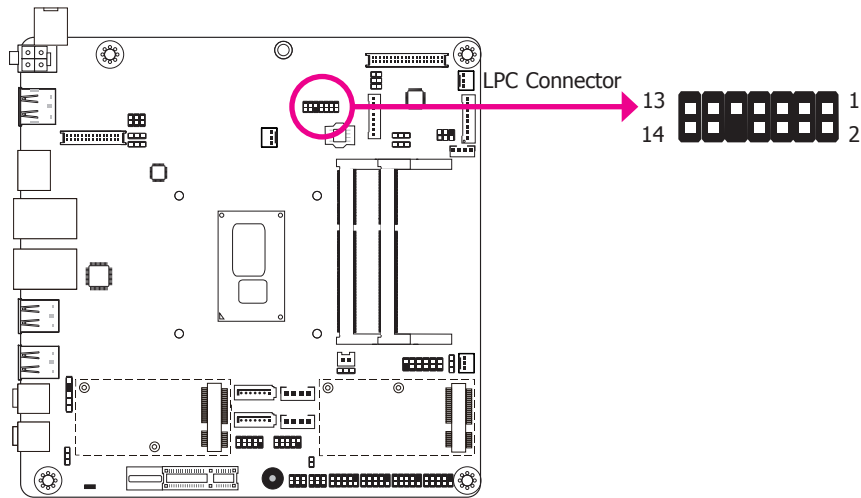
The Low Pin Count Interface was defined by Intel® Corporation to facilitate the industry's transition towards legacy free systems. It allows the integration of low-bandwidth legacy I/O components within the system, which are typically provided by a Super I/O controller. Furthermore, it can be used to interface firmware hubs, Trusted Platform Module (TPM) devices and embedded control-ler solutions. Data transfer on the LPC bus is implemented over a 4 bit serialized data interface, which uses a 33MHz LPC bus clock. For more information about LPC bus refer to the Intel® Low Pin Count Interface Specification Revision 1.1'. The table below indicates the pin fuctions of the LPC connector.

Pins	Pin Assignment	Pins	Pin Assignment
1	CLK_24M	2	LAD1
3	RST#	4	LAD0
5	FRAME#	6	VCC3
7	LAD3	8	GND
9	LAD2	10	-
11	SERIRQ	12	GND
13	5VSB	14	5V

Connecting the EXT-RS232/RS485 Card to SU171/SU173

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

The EXT-RS232/RS485 card is connected to SU171/SU173 via the LPC connector. The photo below guides you how to connect the extension module to the motherboard.

LPC

Top View

COM

Bottom View

LPC

EXT-RS485

BW171/BW173

EXT-RS485
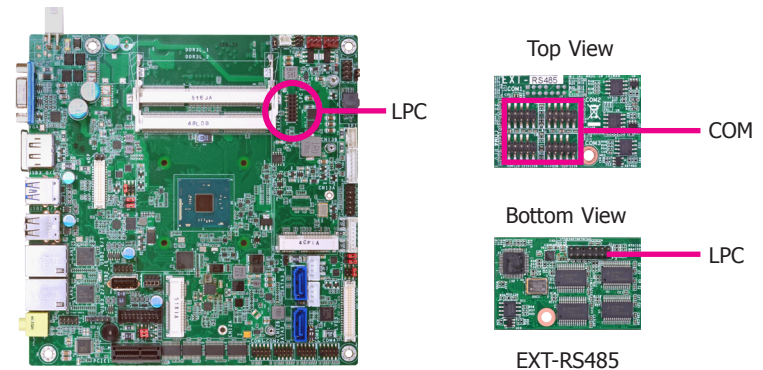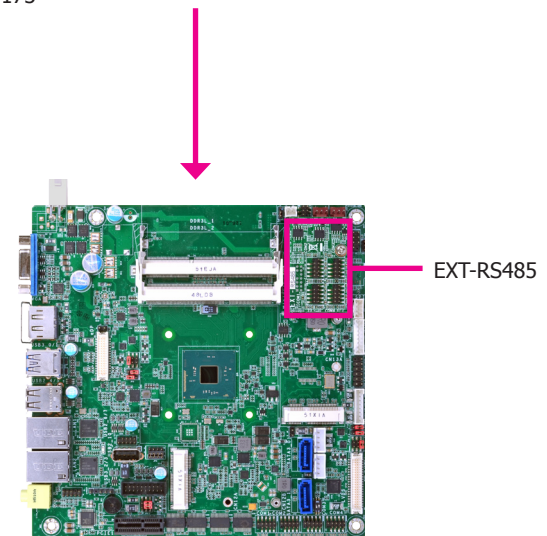
Standby Power LED

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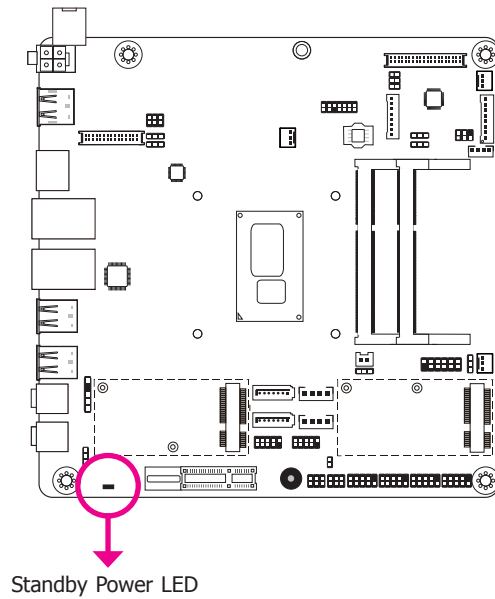
This LED will lit red when the system is in the standby mode. It indicates that there is power on the system board. Power-off the PC and then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.

Battery

Battery

+3.3V GND

Connect to the battery connector
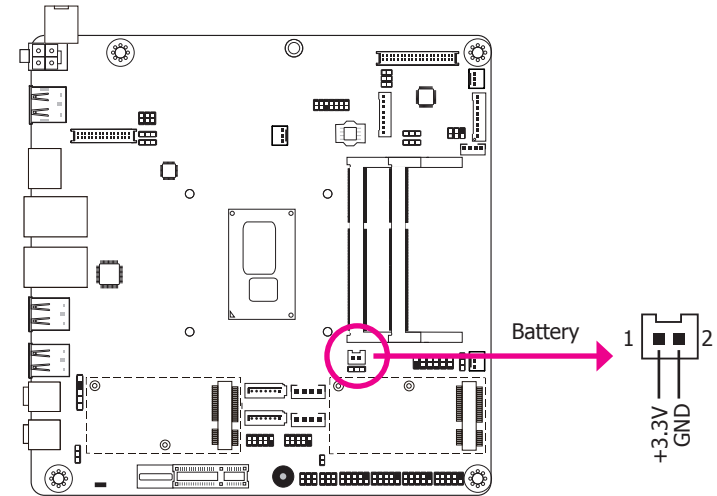
Battery

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 3 - 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 hightlight up or down between submenu or fields.
<Esc>	Exit to the BIOS Setup Utility.
+ (plus key)	Scrolls forward through the values or options of the highlighted field.
- (minus key)	Scrolls backward through the values or options of the highlighted field.
Tab	Select a field.
<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>.

30

Insyde BIOS Setup Utility

Main

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

```
                          InsydeH20 Setup Utility                    Rev. 5.0
   Main    Advanced    Security    Boot    Exit

   Project Name              SU17x                      This is the help for the
   BIOS Version              61.13A                     hour, minute, second
                                                        field. Valid range is from
   Processor Type            Intel(R) Core(TM) i5-6300U CPU @ 2.40GHz  0 to 23, 0 to 59, 0 to 59.
   EC Ver:                   N/A                        INCREASE/REDUCE:
   CPUID:                    0x406E3 (SKYLAKE ULT ULX)  +/-.
   CPU Speed:                2500 MHz
   CPU Stepping:             03 (D0/K0 Stepping)
   L1 Data Cache:            32 KB
   L1 Instruction Cache:     32 KB
   L2 Cache:                 256 KB
   L3 Cache:                 3072 KB
   Number of Processors:     2 Core(s) / 4 Thread(s)
   Microcode Rev:            00000057

   Total Memory              4096 MB
   System Memory Speed       1600 MHz
   SODIMM 0                  [Not Installed]
   SODIMM 1                  4096 MB

   PCH Rev / SKU             21 (C1 Stepping) / SKL PCH-LP (U) Premium
                              SKU
   Intel ME Version / SKU    11.0.0. 1180 / CORPORATE

   System Time               [13:13:03]
   System Date               [01/27/2016]

   F1   Help        ↑/↓   Select Item      F5/F6 Change Values       F9   Setup Defaults
   Esc  Exit        ←/→   Select Item      Enter Select ► SubMenu    F10  Save and Exit
```

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 <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. 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.

```
                          InsydeH20 Setup Utility                    Rev. 5.0
   Main    Advanced    Security    Boot    Exit

   ► ACPI Configuration                         ACPI Configuration Setting
   ► CPU Configuration
   ► Video Configuration
   ► Audio Configuration
   ► SATA Configuration
   ► USB Configuration
   ► PCI Express Configuration
   ► ME Configuration
   MEBX Configuration
   ► Active Management Technology Supoort
   ► SIO NUVOTON6106D

   F1   Help        ↑/↓   Select Item      F5/F6 Change Values       F9   Setup Defaults
   Esc  Exit        ←/→   Select Item      Enter Select ► SubMenu    F10  Save and Exit
```

31

ACPI Settings

This section is used to configure the system ACPI parameters.

```
                        InsydeH20 Setup Utility                    Rev. 5.0
        Advanced

    ACPI Configuration                                     Determines the action tak-
                                                           en when the system power
    Wake on PME                  <Enabled>                 is off and a PCI Power
    State After G3               <S0 State>                Management Enable wake
                                                           up event occurs.












    F1  Help          ↑/↓   Select Item      F5/F6 Change Values    F9   Setup Defaults
    Esc Exit          ←/→   Select Item      Enter Select ► SubMenu F10 Save and Exit
```
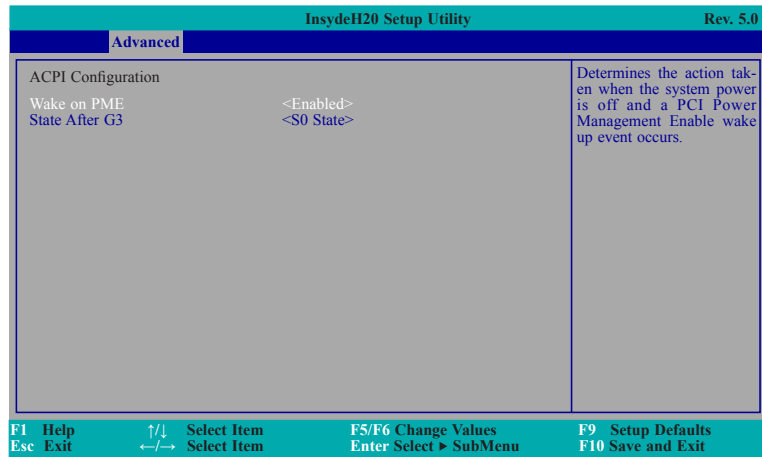
Wake on PME

Enable this field to use the PME signal to wake up the system.

State After G3

This field is to specify what state to go when power is re-applied after a power failue (G3 state).

S0 State   Enable the Suspend to RAM.

S5 State   Enable the Suspend to RAM.

CPU Configuration

This section is used to configure the CPU.

```
                        InsydeH20 Setup Utility                    Rev. 5.0
        Advanced

    CPU Configuration                                      Allows more than two fre-
                                                           quency ranges to be sup-
    Intel(R) SpeedStep(tm)       <Enabled>                 ported.
      Turbo Mode                 <Enabled>












    F1  Help          ↑/↓   Select Item      F5/F6 Change Values    F9   Setup Defaults
    Esc Exit          ←/→   Select Item      Enter Select ► SubMenu F10 Save and Exit
```
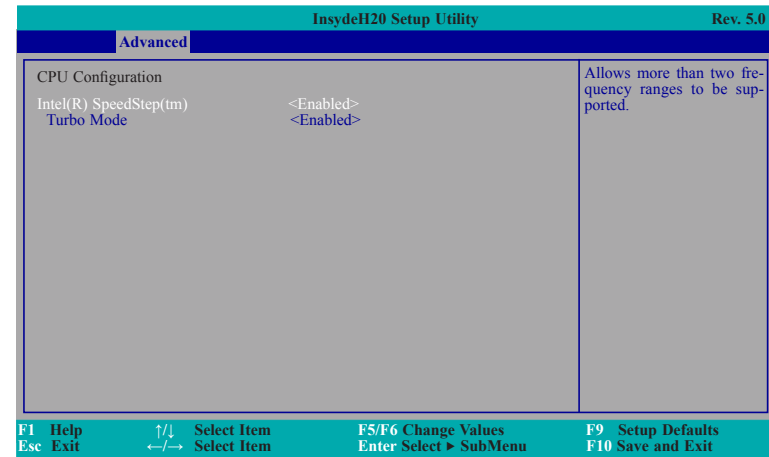
Intel(R) SpeedStep(tm)

This field is used to enable or disable the Intel Enhanced SpeedStep Technology.

Turbo Mode

Enable or disable the turbo mode.

Video Configuration

This section configures the video settings.

```
                          InsydeH20 Setup Utility                    Rev. 5.0
          Advanced

     Video Configuration                                    Keep IGFX enabled based
                                                            on the setup options.
     Internal Graphics              <Auto>
     Always Enabled PEG             <Disabled>
     Boot display                   <HDMI+DP>
     Backlight Type                 <Normal+PWM Mode>
     Panel Color Depth              <18 Bit>
     EDP Mode                       <PWM Mode>
     LVDS Mode                      <PWM Mode>
     LCD Panel Type                 <1024x768(24Bit)>




     F1   Help         ↑/↓   Select Item    F5/F6 Change Values    F9   Setup Defaults
     Esc  Exit         ←/→   Select Item    Enter Select ▶ SubMenu F10  Save and Exit
```
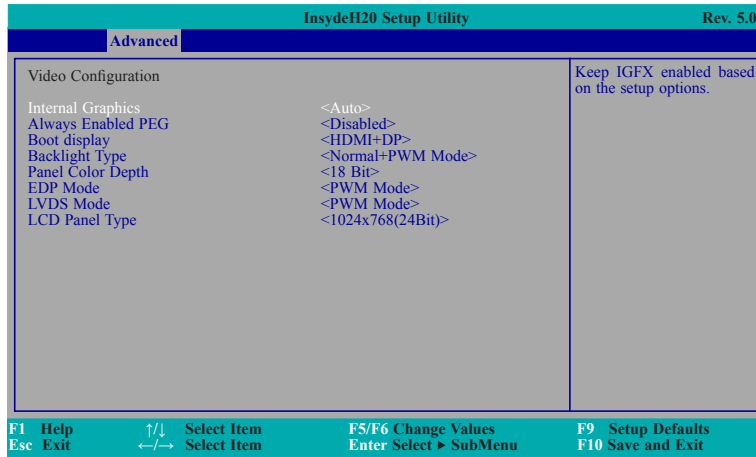
Internal Graphics

Keep IGFX enabled or disabled based on the setup options.

Always Enabled PEG

Enable or disable the PEG function.

Boot display

Set the display device combination.

```
                          InsydeH20 Setup Utility                    Rev. 5.0
          Advanced

     Video Configuration                                    Chose display device com-
                                                            bination
     Internal Graphics              <Auto>
     Always Enabled PEG             <Disabled>
     Boot display                   <HDMI+DP>
     Backlight Type                 <Normal+PWM Mode>
     Panel Color Depth              <18 Bit>
     EDP Mode                       <PWM Mode>
     LVDS Mode                      <PWM Mode>
     LCD Panel Type                 <1024x768(24Bit)>

                        Boot display
                        LCD+DP
                        LCD+HDMI
                        HDMI+LCD
                        HDMI+DP
                        DP+LCD
                        DP+HDMI

     F1   Help         ↑/↓   Select Item    F5/F6 Change Values    F9   Setup Defaults
     Esc  Exit         ←/→   Select Item    Enter Select ▶ SubMenu F10  Save and Exit
```

Backlight Type

Set the backlight type.

```
                          InsydeH20 Setup Utility                    Rev. 5.0
          Advanced

     Video Configuration                                    Backlight Type Setting

     Internal Graphics              <Auto>
     Always Enabled PEG             <Disabled>
     Boot display                   <HDMI+DP>
     Backlight Type                 <Normal+PWM Mode>
     Panel Color Depth              <18 Bit>
     EDP Mode                       <PWM Mode>
     LVDS Mode                      <PWM Mode>
     LCD Panel Type                 <1024x768(24Bit)>

                        Backlight Type
                        Normal+PWM Mode
                        Normal+DC Mode
                        Invert+PWM Mode
                        Invert+DC Mode

     F1   Help         ↑/↓   Select Item    F5/F6 Change Values    F9   Setup Defaults
     Esc  Exit         ←/→   Select Item    Enter Select ▶ SubMenu F10  Save and Exit
```

Panel Color Depth

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

EDP Mode

Select PTN3460 EDP mode is PWM mode or DC mode.

LVDS Mode

Select PTN3460 LVDS mode is PWM mode or DC mode.

LCD Panel Type

Select the LCD panel type.

```
                    InsydeH20 Setup Utility              Rev. 5.0
       Advanced
   Video Configuration                              Backlight Type Setting

   Internal Graphics            <Auto>
   Always Enabled PEG           <Disabled>
   Boot display                 <HDMI+DP>
   Backlight Type               <Normal+PWM Mode>
   Panel Color Depth            <18 Bit>
   EDP Mode                     <PWM Mode>
   LVDS Mode                    <PWM Mode>
   LCD Panel Type               <1024x768>

                    LCD Panel Type

                    640x480(18Bit)
                    800x600(18Bit)
                    1024*768(18Bit)
                    1024x768(24Bit)
                    1280x102448Bit)
                    1366x768(18Bit)
                    1920x1080(48Bit)

   F1  Help      ↑/↓   Select Item     F5/F6 Change Values      F9   Setup Defaults
   Esc Exit      ←/→   Select Item     Enter Select ▶ SubMenu   F10  Save and Exit
```

Audio Configuration

This section is used to configure the audio settings.

```
                    InsydeH20 Setup Utility              Rev. 5.0
       Advanced
   HD Audio                     <Enabled>        Control Detection of the
                                                 HD-Audio device.

                                                 Disabled = HDA will be
                                                 unconditionally disabled

                                                 Enabled = HDA will be
                                                 unconditionally enabled

                                                 Auto = HDA will be ena-
                                                 bled if present, disabled
                                                 otherwise.

   F1  Help      ↑/↓   Select Item     F5/F6 Change Values      F9   Setup Defaults
   Esc Exit      ←/→   Select Item     Enter Select ▶ SubMenu   F10  Save and Exit
```
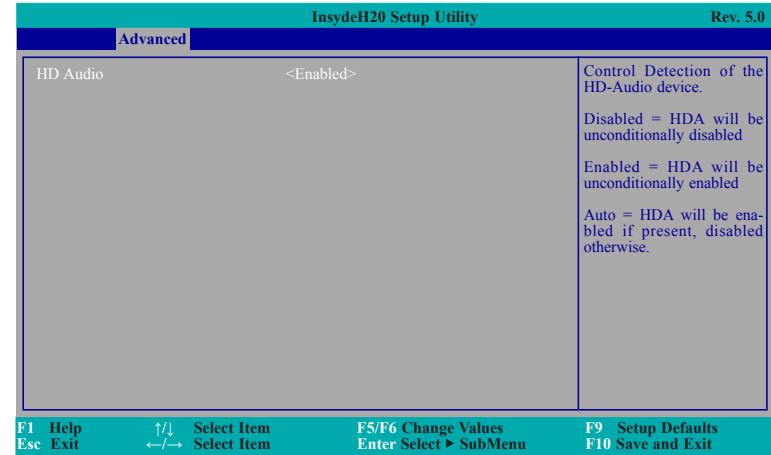
HD Audio

Control the detection of the HD-Audio device.

Disabled
HDA will be unconditionally disabled.

Enabled
HDA will be unconditionally enabled.

Auto
HDA will be enabled if present, disabled otherwise.

34

SATA Configuration

This section is designed to select the SATA controller and the type of hard disk drive which are insalled in your system unit.

```
                        InsydeH20 Setup Utility                    Rev. 5.0
      Advanced

   SATA Controller(s)                    <Enabled>        Enable/Disable SATA
   SATA Mode Selection                   <AHCI>           Device.
   Serial ATA Port 0        [Not Installed]
      Port 0                             <Enabled>
   Serial ATA Port 1        [Not Installed]
      Port 1                             <Enabled>
   Serial ATA Port 2        [Not Installed]
      Port 2                             <Enabled>




   F1   Help          ↑/↓   Select Item      F5/F6 Change Values       F9   Setup Defaults
   Esc  Exit          ←/→   Select Item      Enter Select ▶ SubMenu    F10 Save and Exit
```
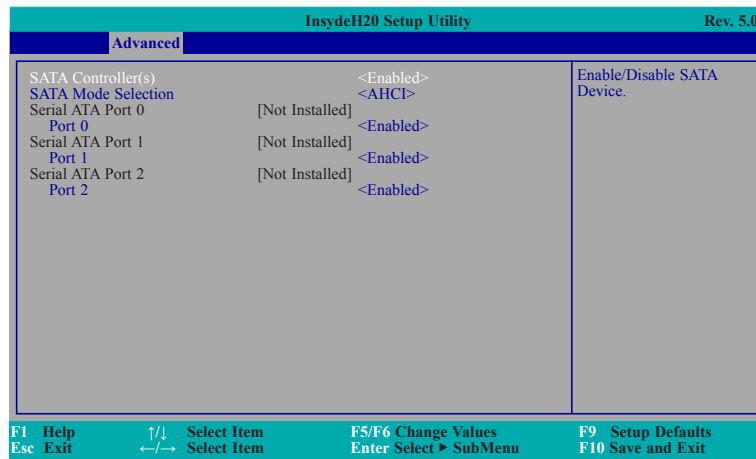
SATA Controller(s)

This field is used to enable or disable Serial ATA devices.

SATA Mode Selection

The mode selection determines how the SATA controller(s) operates.

AHCI Mode
This option allows the Serial ATA devices to use AHCI (Advanced Host Controller Inter-face).

RAID Mode
This option allows you to create RAID or Intel Matrix Storage configuration on Serial ATA devices.

Serial ATA Port 0, 1 and 2

This field is used to enable or disable the serial ATA port.

USB Configuration

This section is used to configure the parameters of the USB device.

```
                        InsydeH20 Setup Utility                    Rev. 5.0
      Advanced

   USB BIOS Support                      <Enabled>        USB keyboard/mouse/stor-
                                                          age support under UEFI
                                                          and DOS environment. It
                                                          will supporting UEFI en-
                                                          vironment only if set to
                                                          UEFI only




   F1   Help          ↑/↓   Select Item      F5/F6 Change Values       F9   Setup Defaults
   Esc  Exit          ←/→   Select Item      Enter Select ▶ SubMenu    F10 Save and Exit
```
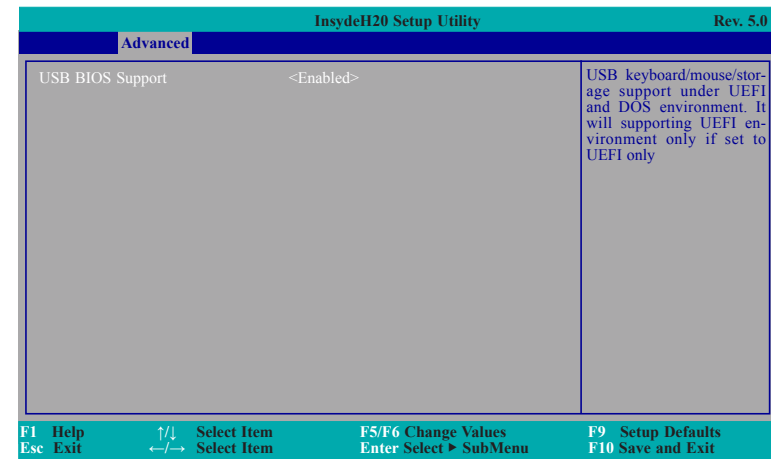
USB BIOS Support

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 settings relevant to PCI Express root ports.

```
                        InsydeH20 Setup Utility                    Rev. 5.0
         Advanced

  ▶  PCI Express Root Port 1                              PCI Express Root Port 1
  ▶  PCI Express Root Port 6                              Settings.
  ▶  PCI Express Root Port 7
  ▶  PCI Express Root Port 8
  ▶  PCI Express Root Port 9




  F1   Help          ↑/↓   Select Item      F5/F6 Change Values     F9   Setup Defaults
  Esc  Exit          ←/→   Select Item      Enter Select ▶ SubMenu  F10  Save and Exit
```

```
                        InsydeH20 Setup Utility                    Rev. 5.0
         Advanced

     PCI Express Root Port 6           <Enabled>           Control the PCI Express
                                                           Root Port.




  F1   Help          ↑/↓   Select Item      F5/F6 Change Values     F9   Setup Defaults
  Esc  Exit          ←/→   Select Item      Enter Select ▶ SubMenu  F10  Save and Exit
```

```
                        InsydeH20 Setup Utility                    Rev. 5.0
         Advanced

     PCI Express Root Port 1           <Enabled>           Control the PCI Express
     PCIe Speed                        <AUTO>              Root Port.




  F1   Help          ↑/↓   Select Item      F5/F6 Change Values     F9   Setup Defaults
  Esc  Exit          ←/→   Select Item      Enter Select ▶ SubMenu  F10  Save and Exit
```

```
                        InsydeH20 Setup Utility                    Rev. 5.0
         Advanced

     PCI Express Root Port 7           <Enabled>           Control the PCI Express
                                                           Root Port.




  F1   Help          ↑/↓   Select Item      F5/F6 Change Values     F9   Setup Defaults
  Esc  Exit          ←/→   Select Item      Enter Select ▶ SubMenu  F10  Save and Exit
```

```
                        InsydeH20 Setup Utility                      Rev. 5.0
        Advanced

   PCI Express Root Port 8           <Enabled>          Control the PCI Express
   PCIe Speed                        <AUTO>             Root Port.












 F1   Help          ↑/↓   Select Item      F5/F6 Change Values      F9   Setup Defaults
 Esc  Exit          ←/→   Select Item      Enter Select ▶ SubMenu   F10  Save and Exit
```

```
                        InsydeH20 Setup Utility                      Rev. 5.0
        Advanced

   PCI Express Root Port 9           <Enabled>          Control the PCI Express
   PCIe Speed                        <AUTO>             Root Port.












 F1   Help          ↑/↓   Select Item      F5/F6 Change Values      F9   Setup Defaults
 Esc  Exit          ←/→   Select Item      Enter Select ▶ SubMenu   F10  Save and Exit
```

PCI Express Root Port

This field is used to enable or disable the 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 settings relevant to flash ME region.

```
                        InsydeH20 Setup Utility                      Rev. 5.0
        Advanced

   Me Fw Image Re-Flash           <Disabled>          Enable/disable to flash ME
                                                      region












 F1   Help          ↑/↓   Select Item      F5/F6 Change Values      F9   Setup Defaults
 Esc  Exit          ←/→   Select Item      Enter Select ▶ SubMenu   F10  Save and Exit
```
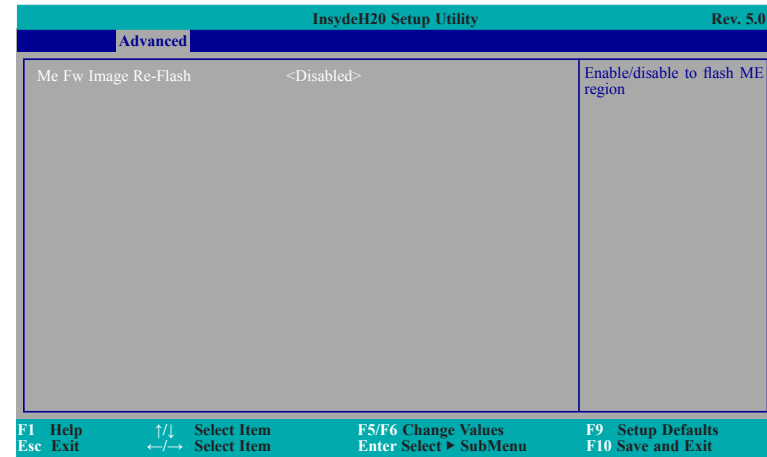
Me Fw Image Re-Flash

This field is used to enable or disable the flash ME region.

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SIO NUVOTON6106D

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

```
                        InsydeH20 Setup Utility                    Rev. 5.0
        Advanced

    SYS Smart Fan Control              <Enable>            Enable/Disable Smart Fan
        Boundary 1                     [30]
        Boundary 2                     [40]
        Boundary 3                     [50]
        Boundary 4                     [60]
        Fan Speed Count 1              [30]
        Fan Speed Count 2              [40]
        Fan Speed Count 3              [50]
        Fan Speed Count 4              [75]
    CPU Smart Fan Control              <Enable>
        Boundary 1                     [30]
        Boundary 2                     [40]
        Boundary 3                     [50]
        Boundary 4                     [60]
        Fan Speed Count 1              [30]
        Fan Speed Count 2              [40]
        Fan Speed Count 3              [50]
        Fan Speed Count 4              [75]
    AUX Smart Fan Control              <Enable>
        Boundary 1                     [30]
        Boundary 2                     [40]
        Boundary 3                     [50]
        Boundary 4                     [60]

F1   Help        ↑/↓    Select Item      F5/F6 Change Values      F9   Setup Defaults
Esc  Exit        ←/→    Select Item      Enter Select ▶ SubMenu   F10  Save and Exit
```

SYS/CPU/AUX Smart Fan Control

Enable or disable the system/CPU/AUX smart fan.
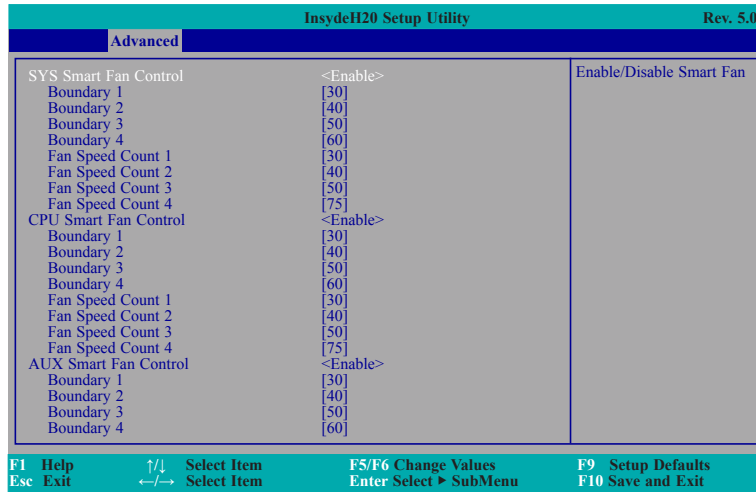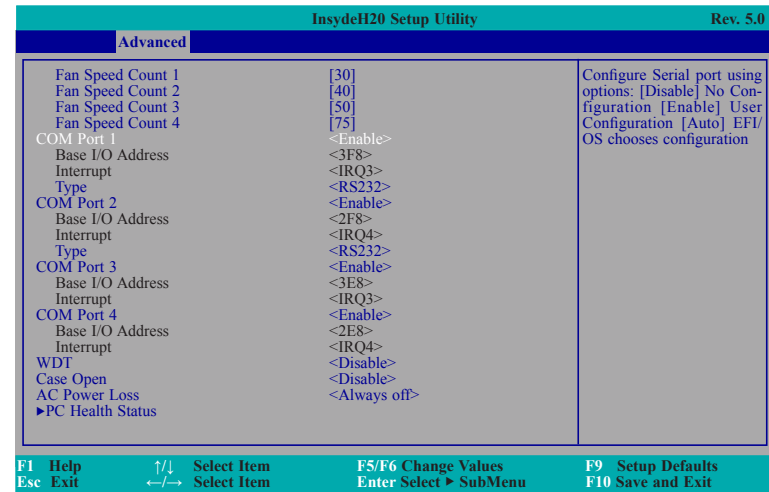
Boundary 1 to Boundary 4

Set the boundary temperature. The range is from 0-127ºC.

Fan Speed Count 1 to Fan Speed Count 4

Set the fan speed. The range is from 0-100%.

```
                        InsydeH20 Setup Utility                    Rev. 5.0
        Advanced

    Fan Speed Count 1              [30]              Configure Serial port using
    Fan Speed Count 2              [40]              options: [Disable] No Con-
    Fan Speed Count 3              [50]              figuration [Enable] User
    Fan Speed Count 4              [75]              Configuration [Auto] EFI/
    COM Port 1                     <Enable>          OS chooses configuration
        Base I/O Address           <3F8>
        Interrupt                  <IRQ3>
        Type                       <RS232>
    COM Port 2                     <Enable>
        Base I/O Address           <2F8>
        Interrupt                  <IRQ4>
        Type                       <RS232>
    COM Port 3                     <Enable>
        Base I/O Address           <3E8>
        Interrupt                  <IRQ3>
    COM Port 4                     <Enable>
        Base I/O Address           <2E8>
        Interrupt                  <IRQ4>
    WDT                            <Disable>
    Case Open                      <Disable>
    AC Power Loss                  <Always off>
    ▶PC Health Status

F1   Help        ↑/↓    Select Item      F5/F6 Change Values      F9   Setup Defaults
Esc  Exit        ←/→    Select Item      Enter Select ▶ SubMenu   F10  Save and Exit
```

Serial Port 1 to Serial Port 4

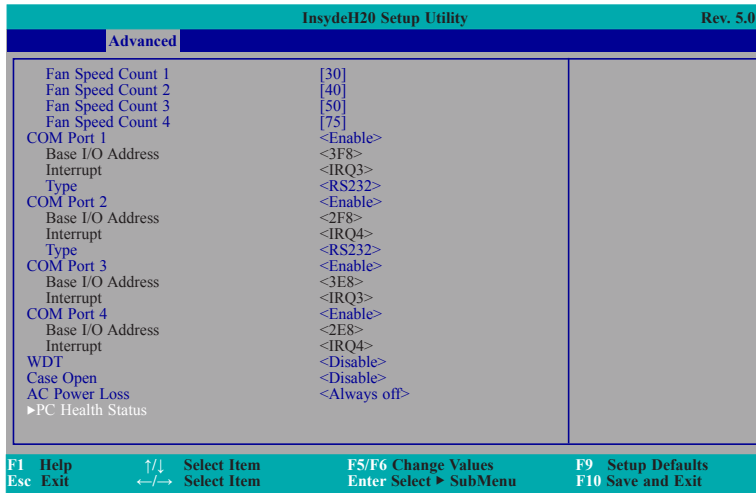Configure the settings to use the serial port.

Disable No configuration
Enable User configuration
Auto EFI/OS chooses configuration

Type

Choose RS232/RS485 (Peer-to-Peer) for the serial port type.

```
                              InsydeH20 Setup Utility                    Rev. 5.0
        Advanced

        Fan Speed Count 1            [30]
        Fan Speed Count 2            [40]
        Fan Speed Count 3            [50]
        Fan Speed Count 4            [75]
    COM Port 1                       <Enable>
        Base I/O Address             <3F8>
        Interrupt                    <IRQ3>
        Type                         <RS232>
    COM Port 2                       <Enable>
        Base I/O Address             <2F8>
        Interrupt                    <IRQ4>
        Type                         <RS232>
    COM Port 3                       <Enable>
        Base I/O Address             <3E8>
        Interrupt                    <IRQ3>
    COM Port 4                       <Enable>
        Base I/O Address             <2E8>
        Interrupt                    <IRQ4>
    WDT                              <Disable>
    Case Open                        <Disable>
    AC Power Loss                    <Always off>
    ▶PC Health Status

F1   Help          ↑/↓   Select Item      F5/F6 Change Values       F9   Setup Defaults
Esc  Exit          ←/→   Select Item      Enter Select ▶ SubMenu    F10  Save and Exit
```

WDT

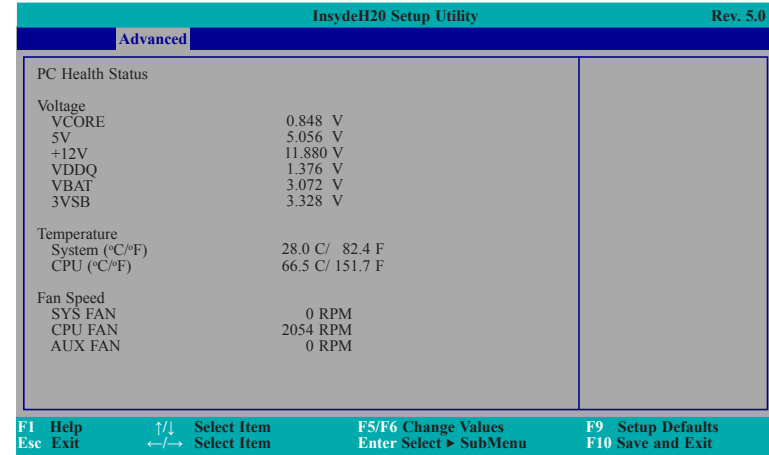Enable or disable the watchdog function.

Case Open

Enable or disable the case open.

AC Power Loss

Set the AC power loss always off/on.

PC Health Status

This field only displays the PC health status.

```
                              InsydeH20 Setup Utility                    Rev. 5.0
        Advanced

    PC Health Status

    Voltage
      VCORE                          0.848  V
      5V                             5.056  V
      +12V                          11.880  V
      VDDQ                           1.376  V
      VBAT                           3.072  V
      3VSB                           3.328  V

    Temperature
      System (ºC/ºF)                 28.0 C/   82.4 F
      CPU (ºC/ºF)                    66.5 C/ 151.7 F

    Fan Speed
      SYS FAN                           0 RPM
      CPU FAN                        2054 RPM
      AUX FAN                           0 RPM

F1   Help          ↑/↓   Select Item      F5/F6 Change Values       F9   Setup Defaults
Esc  Exit          ←/→   Select Item      Enter Select ▶ SubMenu    F10  Save and Exit
```

Security

```
                              InsydeH20 Setup Utility                    Rev. 5.0
     Main      Advanced    Security    Boot     Exit

     Current TPM Device          <TPM 2.0>                When Hidden, don't ex-
     TPM State                   Not Installed            poses TPM to 0
     TPM Availability            <Available>
     TPM Operation               <No Operation>
     Clear TPM                   [  ]
     Supervisor Password         Not installed

     Set Supervisor Password




  F1  Help          ↑/↓   Select Item       F5/F6 Change Values       F9   Setup Defaults
  Esc Exit          ←/→   Select Item       Enter Select ▶ SubMenu    F10  Save and Exit
```

TPM Availability

Set the TPM availability.

TPM Operation

Enable or disable the storage and endorsement hierarchy. This option will automatically return to No-Operation.

Clear TPM

Remove all TPM context associated with a specific owner.

Set Supervisor Password

Set the supervisor's password and the length of the password must be greater than one character.

Boot

```
                              InsydeH20 Setup Utility                    Rev. 5.0
     Main      Advanced    Security    Boot     Exit

     Numlock                     <On>                     Selects Power-on state for
     Boot Type                   <Dual Boot Type>         Numlock
     Network Stack               <Disabled>
     PXE Boot capability         <Disabled>
     USB Boot                    <Enabled>

     ▶ EFI
     ▶ Legacy




  F1  Help          ↑/↓   Select Item       F5/F6 Change Values       F9   Setup Defaults
  Esc Exit          ←/→   Select Item       Enter Select ▶ SubMenu    F10  Save and Exit
```
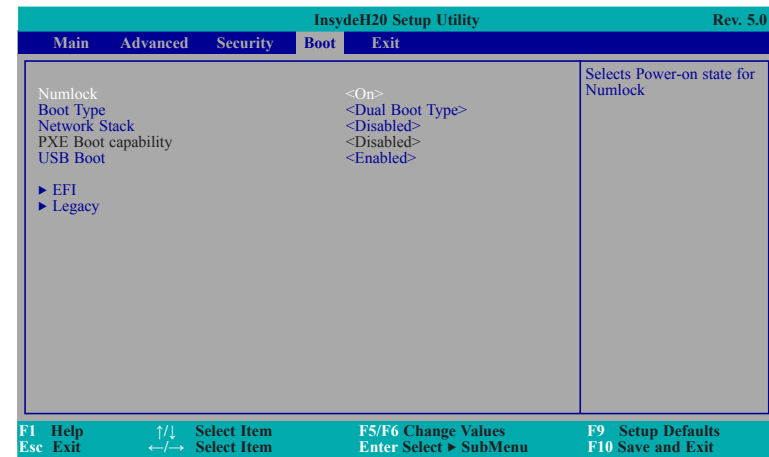
Numlock

Select the power-on state for numlock.

Boot Type

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

Network Stack

Network stack support:
Windows 8 BitLocker Unlock.
UEFI IPv4/IPv6 PXE
Legacy PXE OPROM

USB Boot

Enable or disable the booting for USB boot devices.

EFI

Set the EFI boot order.

InsydeH20 Setup Utility   Rev. 5.0

Boot

Boot Device Priority

Normal Boot Menu   <Normal>

▶ Boot Type Order

Select Normal Boot Option Priority or Advance Boot Option Priority

| F1 Help | ↑/↓ | Select Item | F5/F6 Change Values | F9 Setup Defaults |
| Esc Exit | ←/→ | Select Item | Enter Select ▶ SubMenu | F10 Save and Exit |
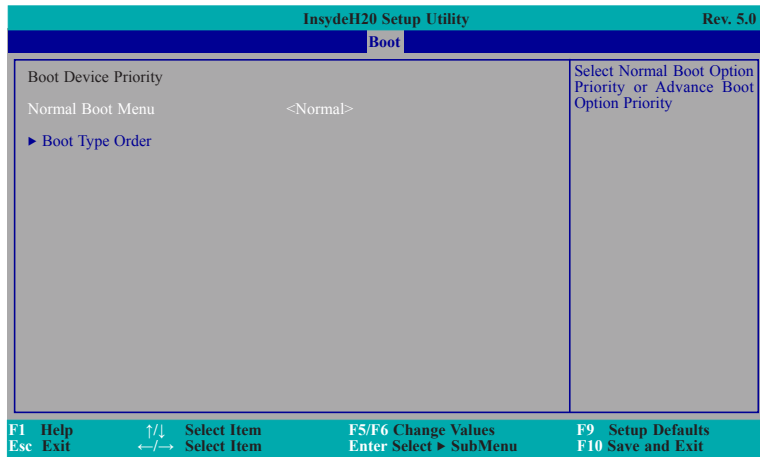
Normal Boot Menu

Normal
Based on the boot normal priority, it determines the EFI device first or the legacy device first.

Advance
All boot devices follow the user's selection sequence.

Boot Type Order

Select the priority of boot type: Normal Boot or Advance Boot.

Exit

InsydeH20 Setup Utility   Rev. 5.0

| Main | Advanced | Security | Boot | **Exit** |

Exit Saving Changes
Load Optimal Defaults
Discard Changes

Exit system setup and save your changes.

| F1 Help | ↑/↓ | Select Item | F5/F6 Change Values | F9 Setup Defaults |
| Esc Exit | ←/→ | Select Item | Enter Select ▶ SubMenu | F10 Save and Exit |
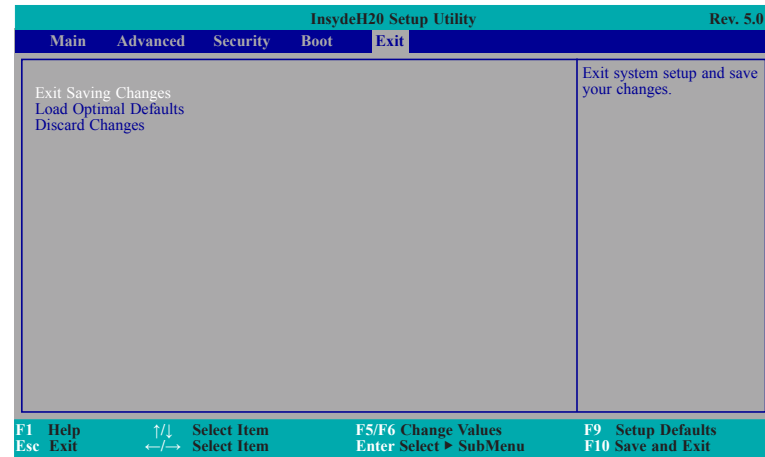
Exit Saving Changes

Select this field and then press <Enter> to exit the system setup and save your changes.

Load Optimal Defaults

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

Discard Changes

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

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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 4 - Supported Software

The CD that came with the system board contains drivers, utilities and software applications required to enhance the performance of the system board.

Insert the CD into a CD-ROM drive. The autorun screen (Mainboard Utility CD) will appear. If after inserting the CD, "Autorun" did not automatically start (which is, the Mainboard Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".

For Windows 10
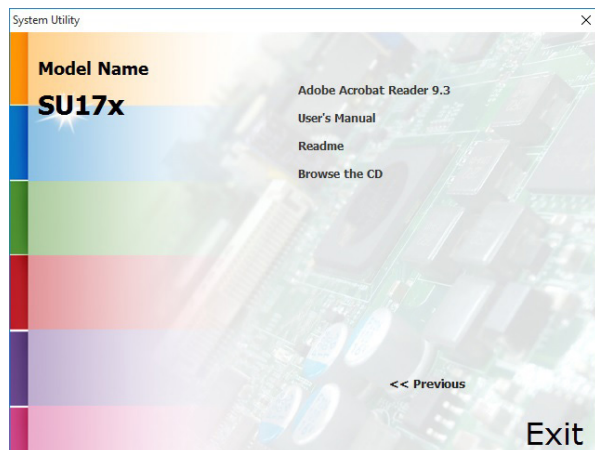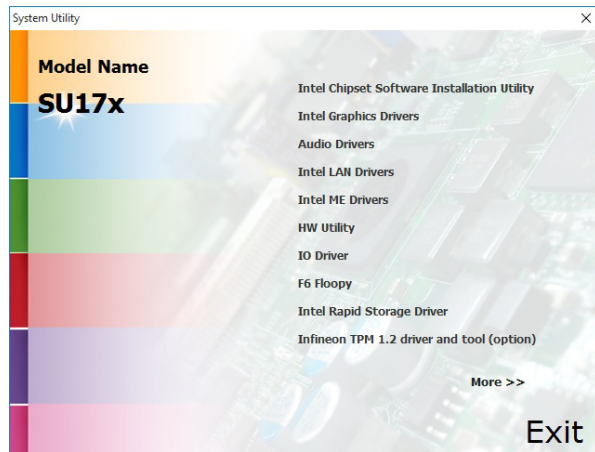
For Windows 8
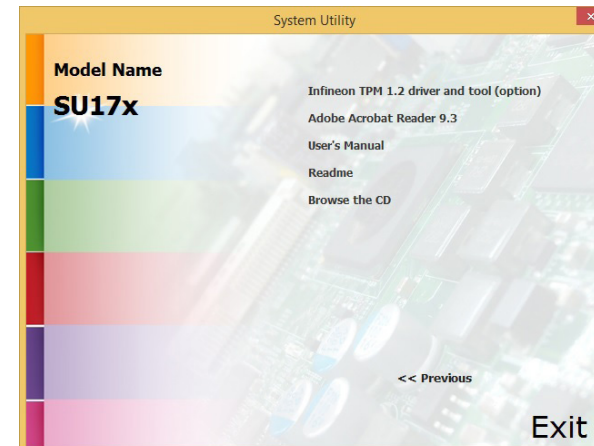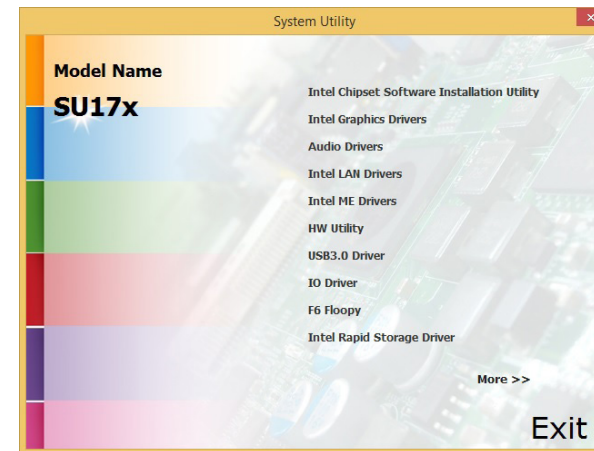
For Windows 7
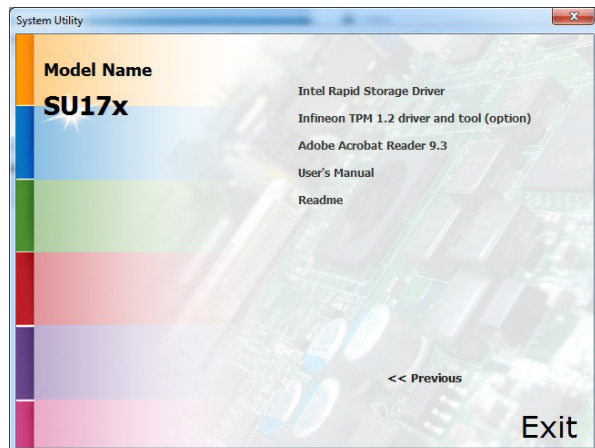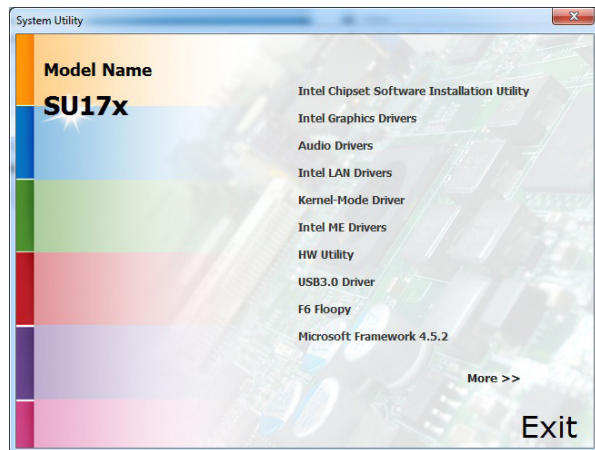
Intel Chipset Software Installation Utility

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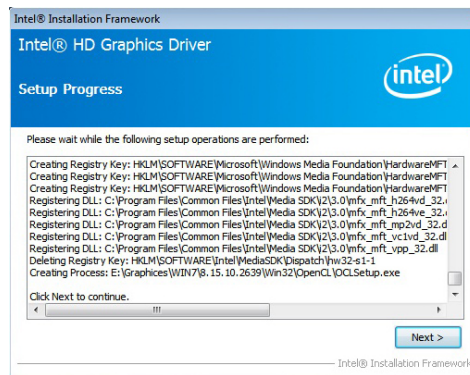
1. Setup is ready to install the utility. Click Next.

2. Read the license agreement then click Yes.

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3. Go through the readme document for more installa-tion tips then click Next.
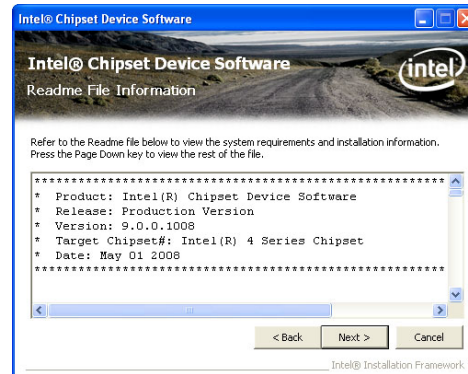
4. Click Finish to exit setup.

Intel Graphics Drivers

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

1. 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 Vista desktop appears. The "blank screen" period is the time Windows is testing the graphics perfor-mance.
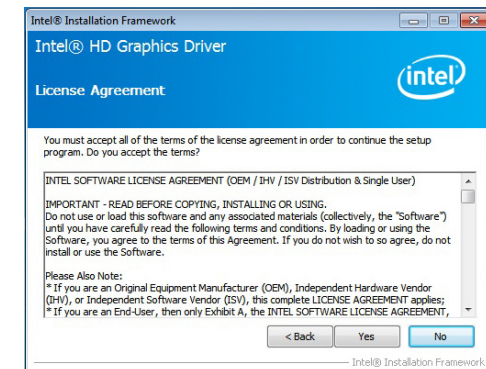
2. Read the license agreement then click Yes.

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3. Go through the readme document for system requirements and installation tips then click Next.
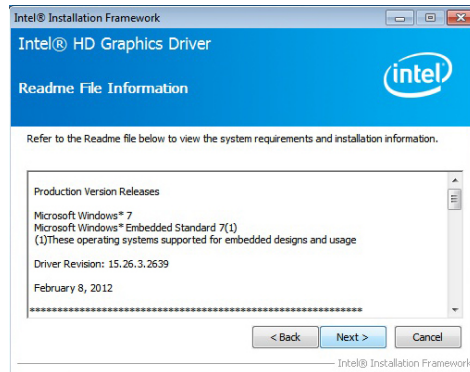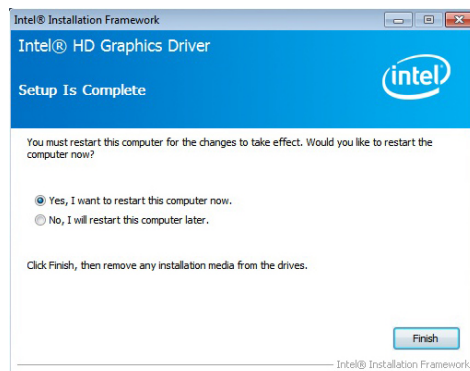

4. Setup is now installing the driver. Click Next to continue.

5. Click "Yes, I want to restart this computer now" then click Finish.
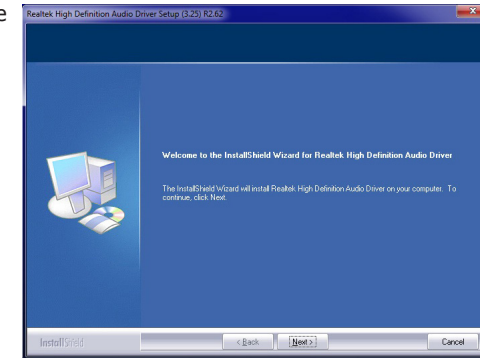
    Restarting the system will allow the new software installation to take effect.
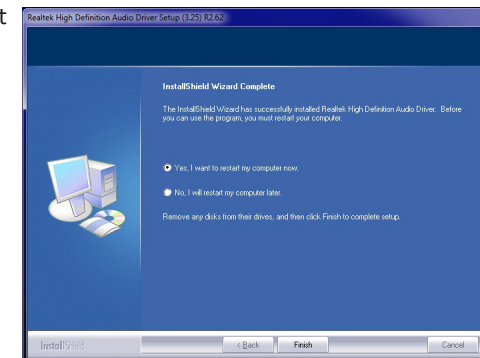

Audio Drivers

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

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

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

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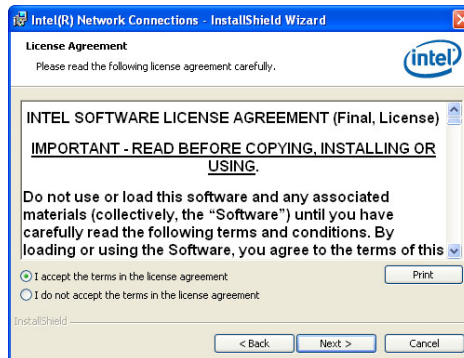

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Intel LAN Drivers

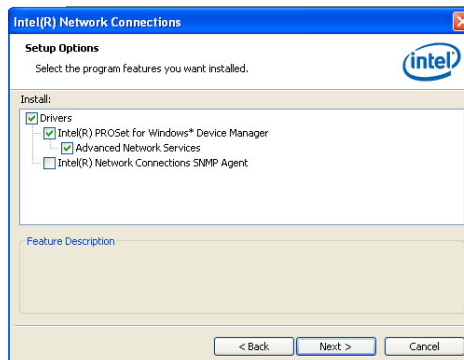To install the driver, click "Intel LAN Drivers" on the main menu.

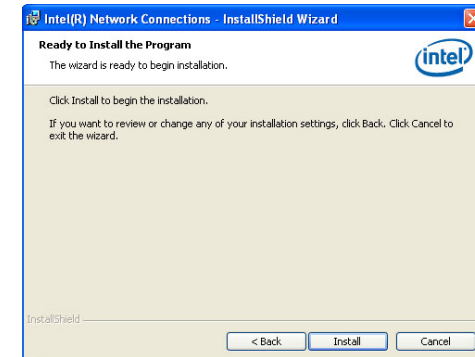1. Setup is ready to install the driver. Click Next.

2. Click "I accept the terms in the license agreement" then click "Next".

3. Select the program featuers you want installed then click Next.

4. Click Install to begin the installation.

5. After completing installa- tion, click Finish.

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Kernel Mode Driver (For Windows 7 only)

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

1. Click "Yes" to install the update.
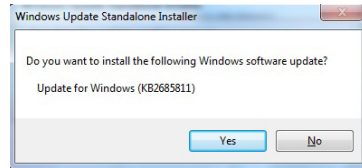
2. The update is installed now.
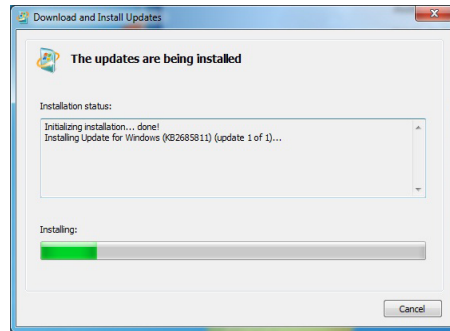
3. Click "Restart Now" to restart your computer when the installation is complete.
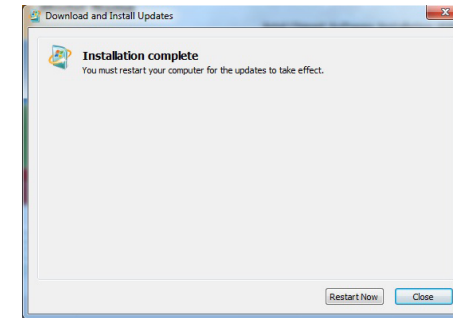
Intel Management Engine Drivers

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

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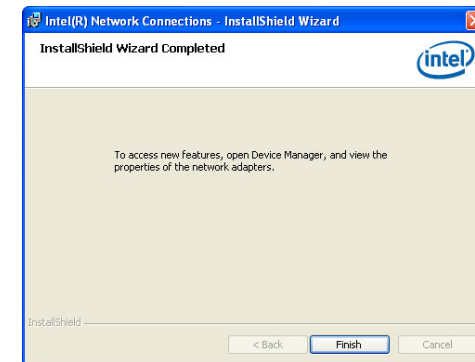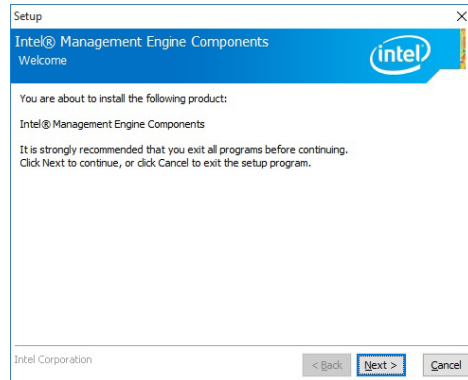

2. Read the license agreement then click Next.
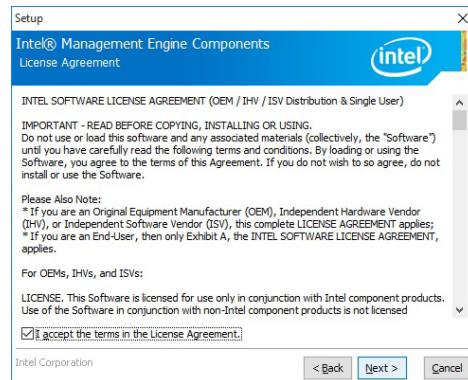
3. Setup is currently installing the driver. After installation has completed, click Next.
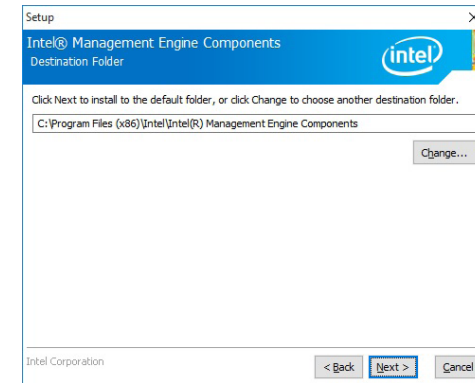
4. Please wait while the product is being installed.

4. After completing installation, click Finish.

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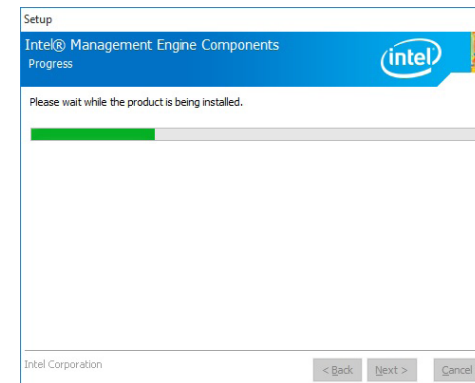
DFI Utility

DFI Utility provides information about the board, Watchdog,and DIO. To access the utility, click "DFI Utility" on the main menu.

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

1. Setup is ready to instal the DFI Utility driver Click "Next".

2. Click "I accept the terms in the license agreement" then click "Next".
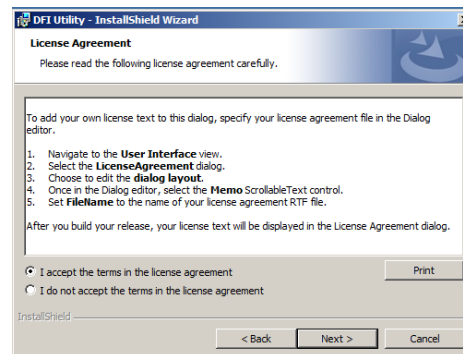
3. Click "Install" to begin the installation.

4. After completing installa tion, click "Finish".

50
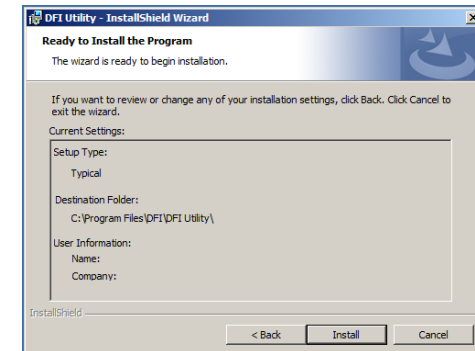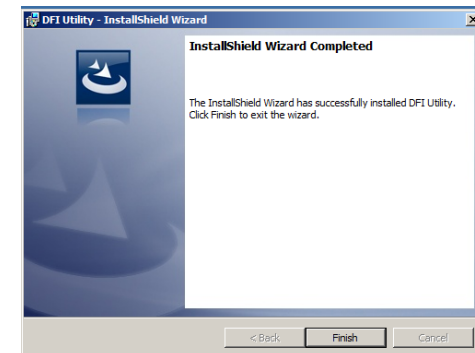
The DFI Utility icon will appear on the desktop. Double-click the icon to open the utility.
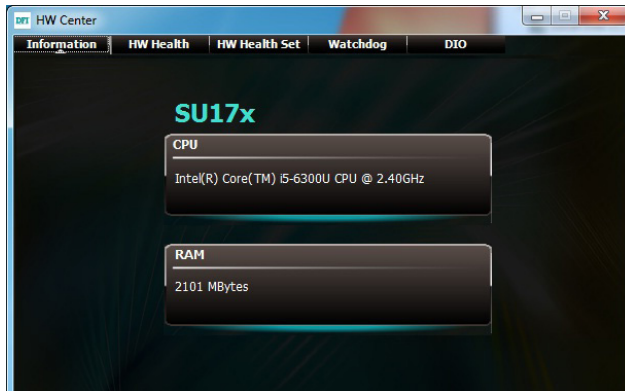
Information
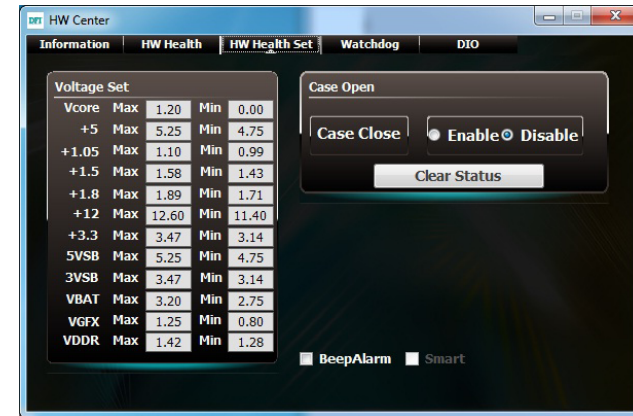
HW Health Set

HW Health

WatchDog

DIO
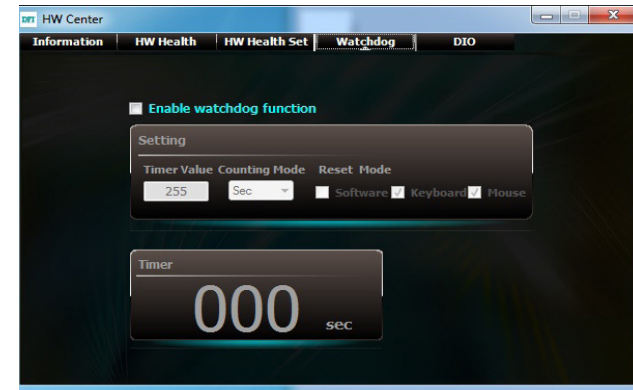
Intel USB 3.0 Drivers (For Windows 7 and Windows 8)

To install the driver, click "Intel USB 3.0 Driver" on the main menu.
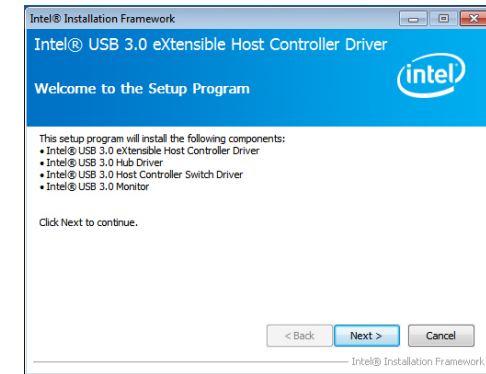
1. Setup is ready to install the driver. Click Next.

2. Read the license agreement then click Yes.

52
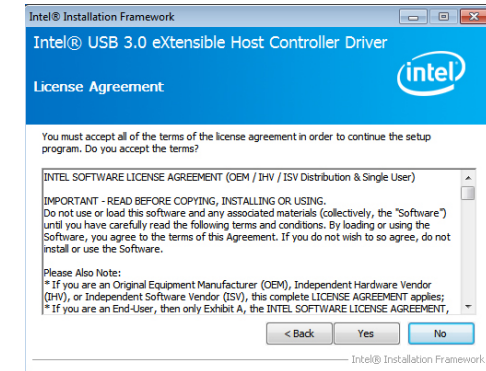
3. Go through the readme document for more installation tips then click Next.
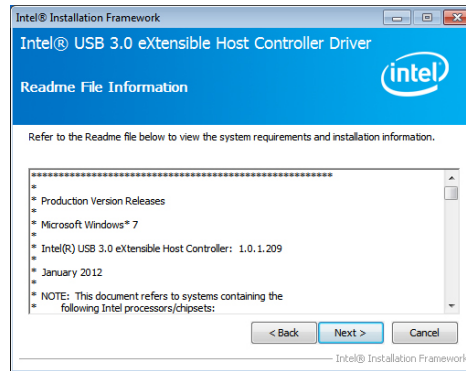
4. Setup is currently installing the driver. After installation has completed, click Next.
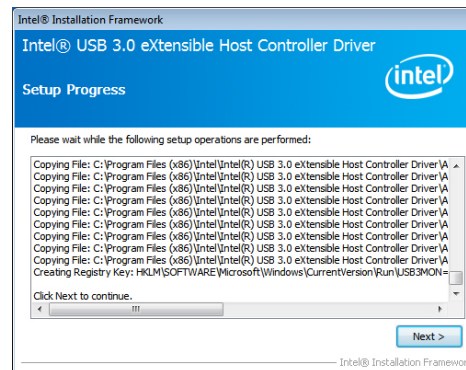
5. After completing installation, click Finish.
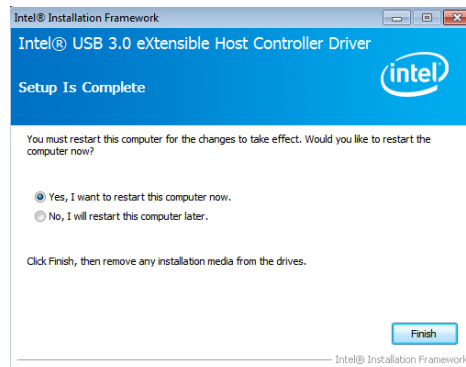
IO Driver (For Windows 8 and Windows 10)

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

1. Setup is ready to install the driver. Click Next.
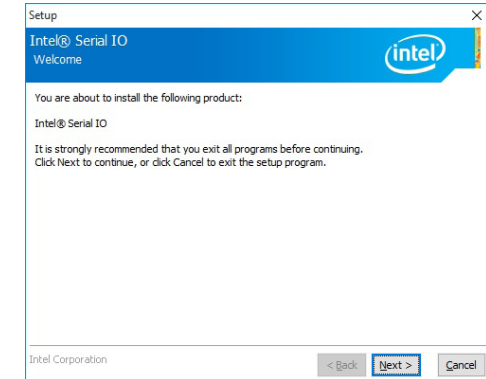
2. Read the license agreement carefully.

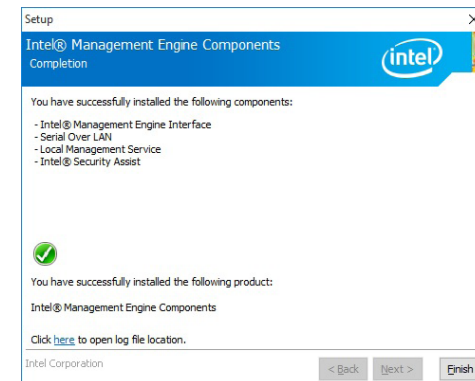   Click "I accept the terms in the License Agreement" then click Next.
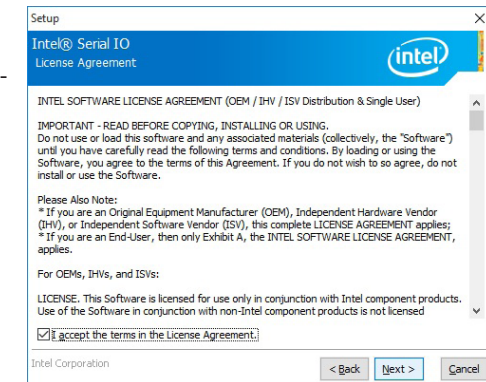
3. Read the file information then click Next.
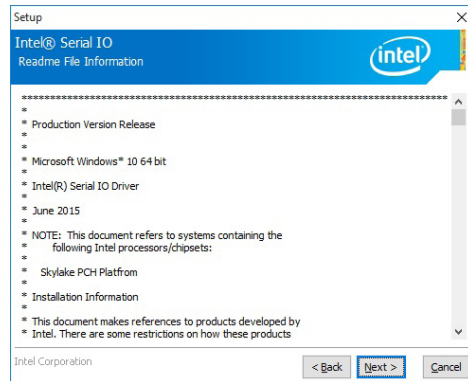
4. Setup is ready to install the driver. Click Next.
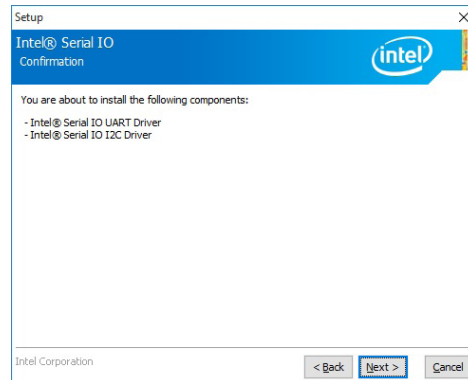
5. Setup is now installing the driver.
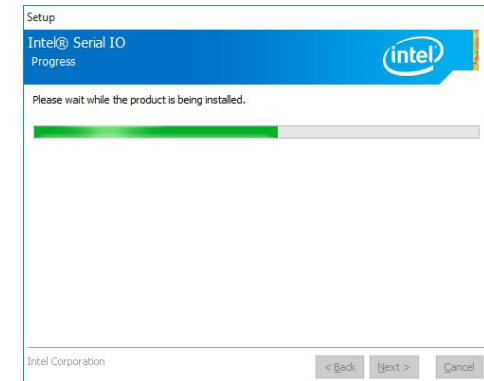
6. Click Finish.
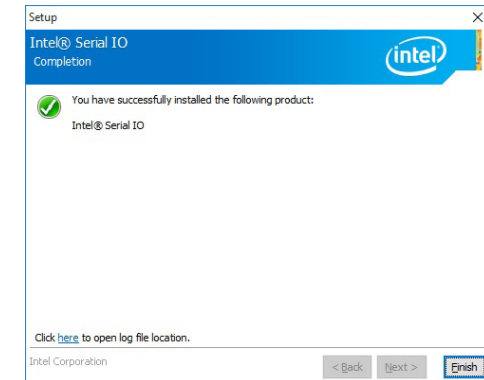
Microsoft Framework 4.5.2 (For Windows 7)

Note:
Before installing Microsoft Framework 4.5.2, make sure you have updated your Windows 7 operating system to Service Pack 3.

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

1. Setup is now extracting files.

3. Setup is now installing the driver.

4. Click Finish.

2. Read the license agreement carefully.

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

55
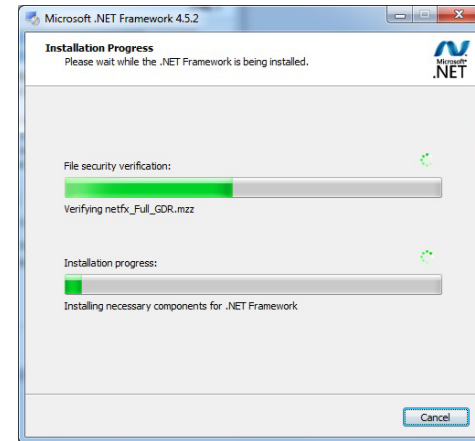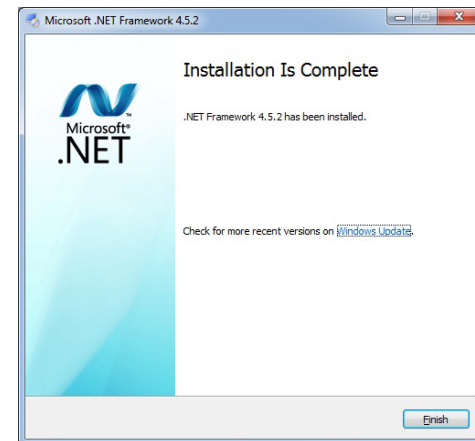
Intel Rapid Storage Technology

The Intel Rapid Storage Technology is a utility that allows you to monitor the current status of the SATA drives. It enables enhanced performance and power management for the storage subsystem.

To install the driver, click "Intel Rapid Storage Technology" on the main menu.

1. Setup is now ready to install the utility. Click Next.
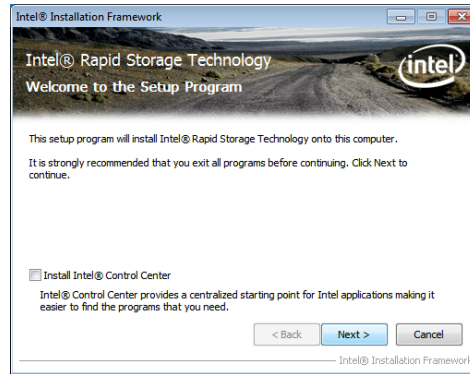
2. Read the warning then click Yes.
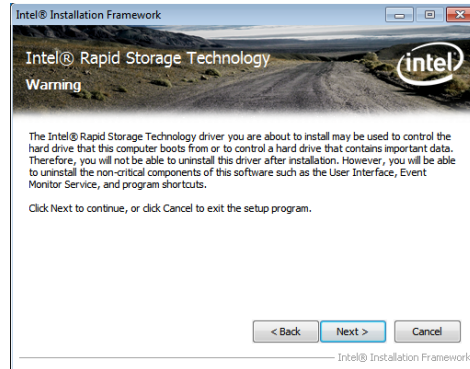
3. Read the license agreement then click Yes.

4. Go through the readme document for system requirements and installation tips then click Next.
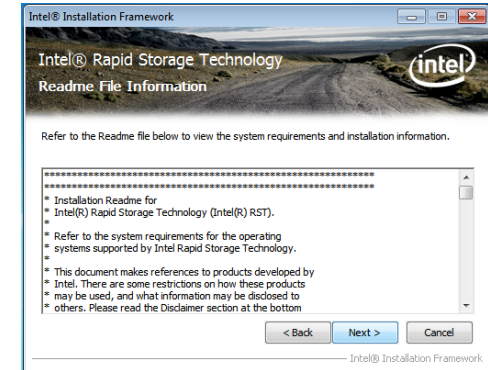
5. Setup is now installing the utility. Click Next to continue.

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Chapter 4
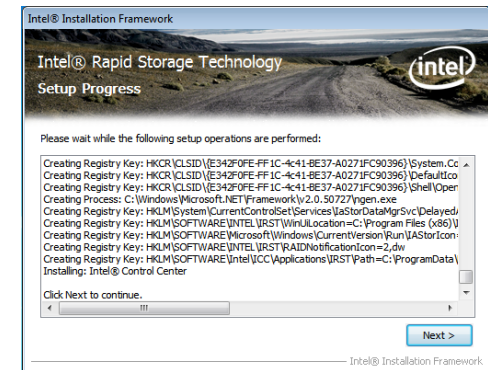
6. Click "Yes, I want to restart my computer now" then click Finish.

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

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.
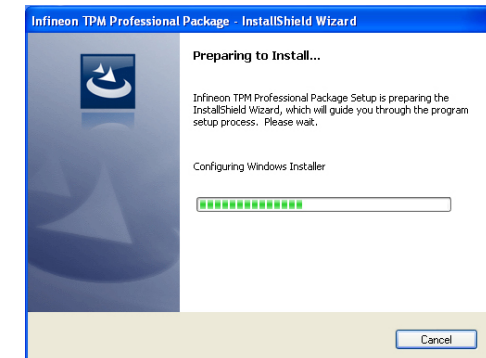
2. The setup program is now ready to install the utility. Click Next.
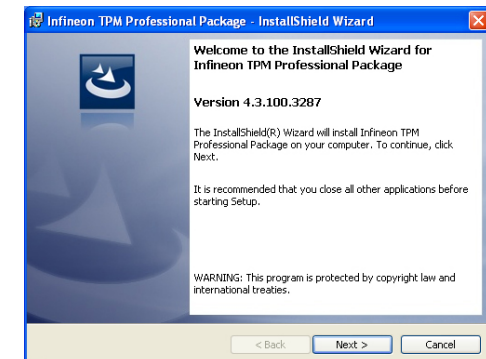
3. Click "I accept the terms in the license agreement" and then click "Next".
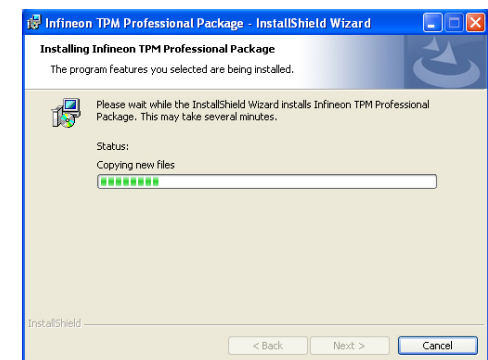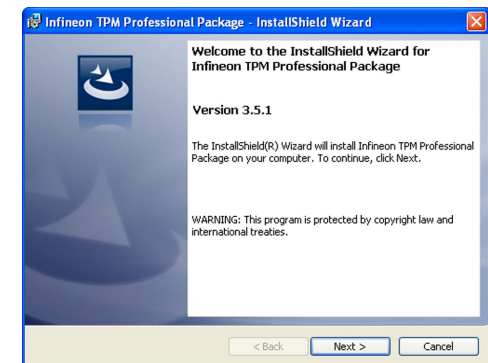
10. Click "Yes" to restart your system.
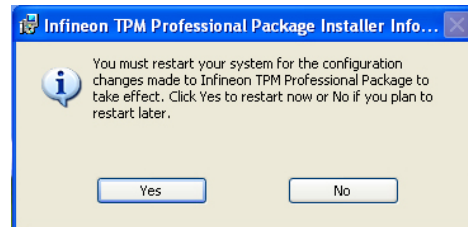
Adobe Acrobat Reader 9.3

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 another folder.
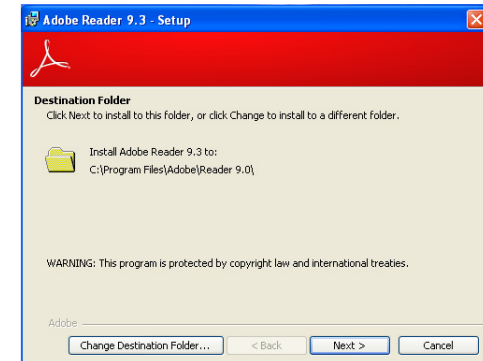
2. Click Install to begin installation.
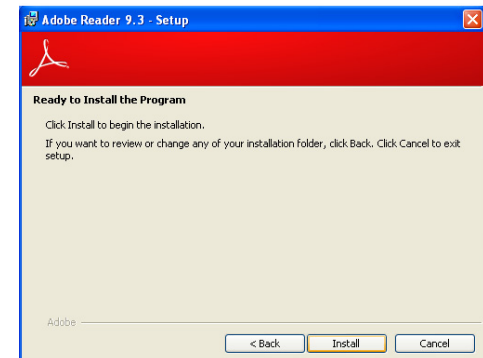
3. Click Finish to exit installation.

59
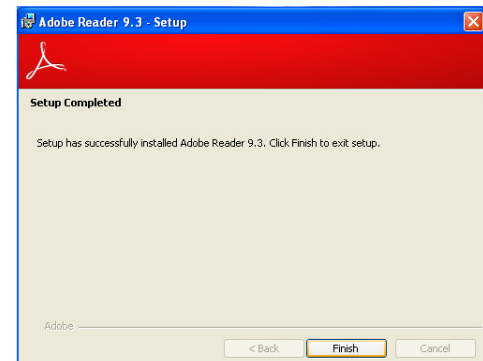
Chapter 5 - Intel AMT Settings

Overview

Intel Active Management Technology (Intel® AMT) combines hardware and software solution 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 Insyde BIOS.

2. In the **Advanced** menu, select **Avtive Management Technology Support**.

```
                    InsydeH20 Setup Utility                    Rev. 5.0
  Main    Advanced    Security    Boot    Exit

                                                    AMT Configuration
  ▶ ACPI Configuration
  ▶ CPU Configuration
  ▶ Video Configuration
  ▶ Audio Configuration
  ▶ SATA Configuration
  ▶ USB Configuration
  ▶ PCI Express Configuration
  ▶ ME Configuration
  MEBX Configuration
  ▶ Active Management Technology Supoort
  ▶ SIO NUVOTON6106D

  F1  Help       ↑/↓  Select Item    F5/F6 Change Values    F9   Setup Defaults
  Esc Exit       ←/→  Select Item    Enter Select ▶ SubMenu  F10 Save and Exit
```

3. In the **Advanced** menu, select **Enable** in the **AMT** field.

```
                    InsydeH20 Setup Utility                    Rev. 5.0
   Advanced

  Active Management Technology Support          Enable/Disable Intel(R)
                                                Active
  Intel AMT Support            <Enabled>        Management Technology
                                                BIOS Extension.
                                                Note : iAMT H/W is al-
                                                ways enabled. This Option
                                                Just controls the BIOS ex-
                                                tension execution

  F1  Help       ↑/↓  Select Item    F5/F6 Change Values    F9   Setup Defaults
  Esc Exit       ←/→  Select Item    Enter Select ▶ SubMenu  F10 Save and Exit
```

60

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

```
                    InsydeH20 Setup Utility              Rev. 5.0
   Main    Advanced   Security   Boot    Exit

                                         Exit system setup and save
   Exit Saving Changes                   your changes.
   Load Optimal Defaults
   Discard Changes




 F1  Help        ↑/↓   Select Item    F5/F6 Change Values    F9  Setup Defaults
 Esc Exit        ←/→   Select Item    Enter Select ▶ SubMenu F10 Save and Exit
```
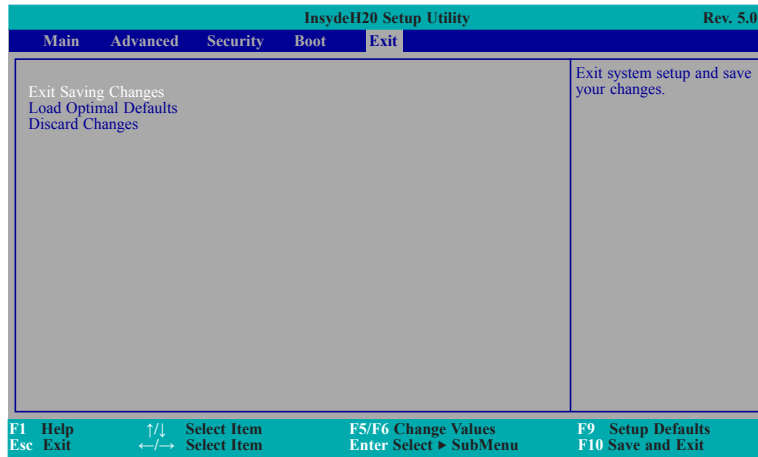
Enable Intel® AMT in the Intel® Management Engine BIOS Extension (MEBX) Screen

1. 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.

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
          Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                            MAIN MENU

  MEBx Login
> Intel (R) ME General Settings
> Intel (R) AMT Configuration
  MEBx Exit




        Intel(R) ME Password


 [↑↓] = Move Highlight    [Enter] = Select Entry      [Esc]= Exit
```

61
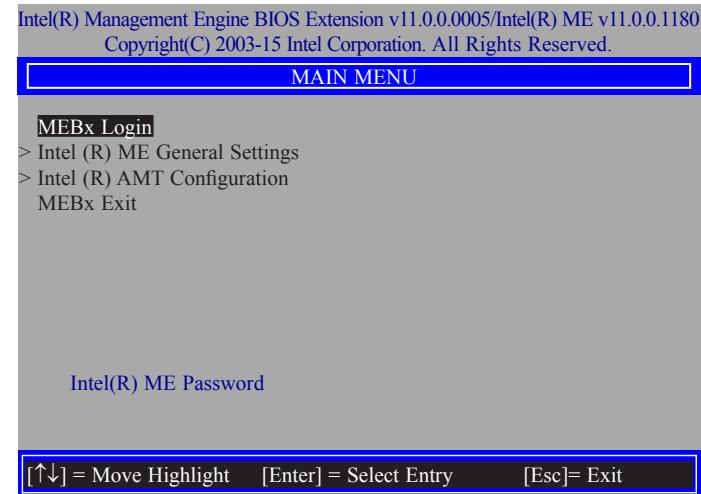
2. Enter a password in the space provided under Intel(R) ME Password then press Enter. The password must include:

- 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

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MAIN MENU

MEBx Login
> Intel (R) ME General Settings
> Intel (R) AMT Configuration
   MEBx Exit

Intel (R) ME Password

Intel(R) ME Password

[↑↓] = Move Highlight   [Enter] = Select Entry   [Esc]= Exit
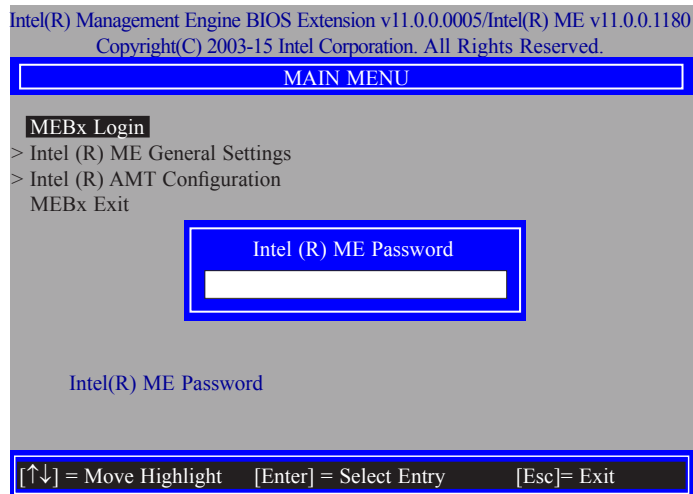
3. You will be asked to verify the password. Enter the same new password in the space provided under Verify Password then press Enter.

Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
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MAIN MENU

MEBx Login
> Intel (R) ME General Settings
> Intel (R) AMT Configuration
   MEBx Exit

Verify Password

Intel(R) ME Password

[↑↓] = Move Highlight   [Enter] = Select Entry   [Esc]= Exit
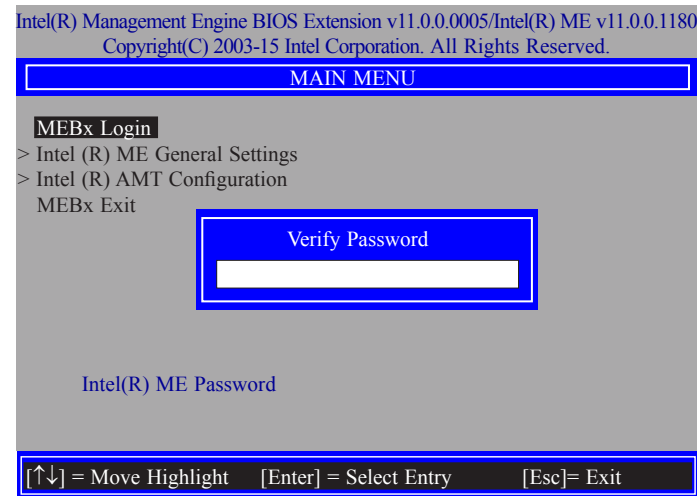
4. Select **Intel(R) ME General Settings** then press Enter.

Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.

MAIN MENU

> Intel (R) ME General Settings
> Intel (R) AMT Configuration
   MEBx Exit

[↑↓] = Move Highlight   [Enter] = Select Entry   [Esc]= Exit
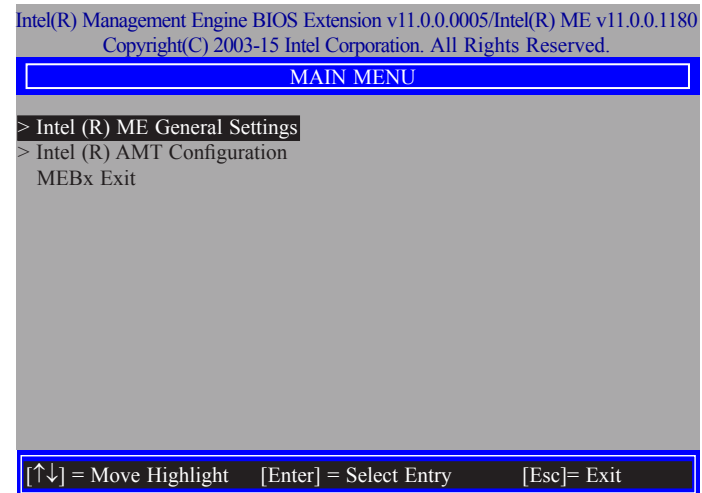
5. Select **Change Intel(R) ME Password** then press Enter.

    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 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

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
            Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
┌──────────────────────────────────────────────────────────────────────────┐
│                  INTEL (R) ME PLATFORM CONFIGURATION                       │
└──────────────────────────────────────────────────────────────────────────┘

Change ME Password
Local FW Update                      <Enabled>




            Intel (R) ME New Password



┌──────────────────────────────────────────────────────────────────────────┐
│ [↑↓] = Move Highlight    [Enter] = Select Entry          [Esc]= Exit       │
└──────────────────────────────────────────────────────────────────────────┘
```
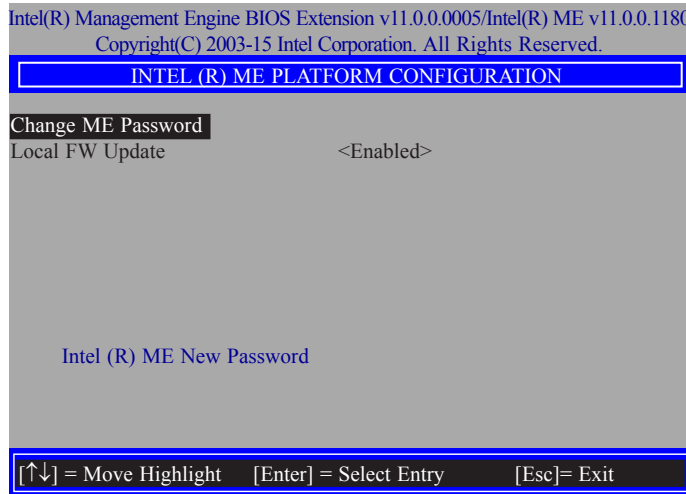
6. Select **Local FW Update** then press Enter. Select **Enabled** or **Disabled** or **password Protected** then press Enter.

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
            Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
┌──────────────────────────────────────────────────────────────────────────┐
│                  INTEL (R) ME PLATFORM CONFIGURATION                       │
└──────────────────────────────────────────────────────────────────────────┘

Change ME Password
Local FW Update                      <Enabled>

                          ┌──────────────────────────┐
                          │  Disabled                │
                          │  Enabled                 │
                          │  Password Protected      │
                          └──────────────────────────┘

┌──────────────────────────────────────────────────────────────────────────┐
│ [↑↓] = Move Highlight   [Enter] = Complete Entry  [Esc]= Discard Changes   │
└──────────────────────────────────────────────────────────────────────────┘
```
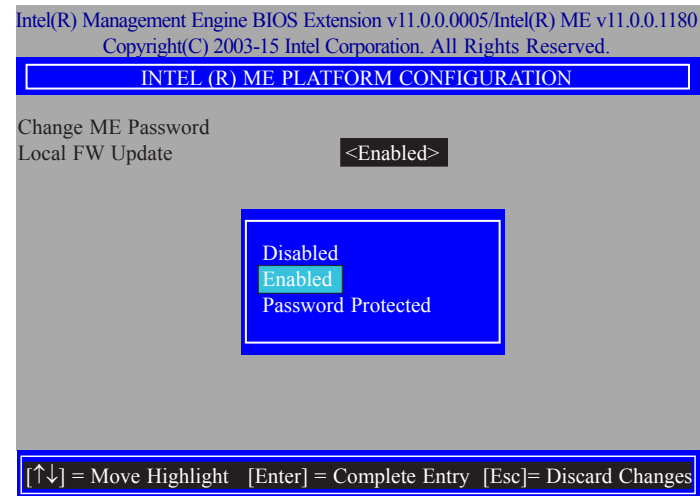
7. Select Previous Menu until you return to the **Main Menu**. Select **Intel(R) AMT Configuration** then press Enter.

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
            Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
┌──────────────────────────────────────────────────────────────────────────┐
│                    INTEL (R) AMT CONFIGURATION                             │
└──────────────────────────────────────────────────────────────────────────┘
    Manageability Feature Selection            < Enabled>
 > SOL/Storage Redirection/KVM
 > User Consent
    Password Policy                            <Anytime>
 > Network Setup
    Activate Network Access
    Unconfigure Network Access                 <Full Unprovision>
 > Remote Setup And Configuration
 > Power Control



┌──────────────────────────────────────────────────────────────────────────┐
│ [↑↓] = Move Highlight    [Enter] = Select Entry          [Esc]= Exit       │
└──────────────────────────────────────────────────────────────────────────┘
```

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

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
                Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                         INTEL (R) AMT CONFIGURATION

     Manageability Feature Selection              < Enabled>
   > SOL/Storage Redirection/KVM
   > User Consent
     Password Policy                              <Anytime>
   > Network Setup                       Disabled
     Activate Network Access             Enabled
     Unconfigure Network Access                    l Unprovision>
   > Remote Setup And Configuration
   > Power Control




   [↑↓] = Move Highlight   [Enter] = Complete Entry  [Esc]= Discard Changes
```

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

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
                Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                         SOL/Storage Redirection/KVM

     Username and Password                        < Enabled>
     SOL                                          <Enabled>
     Storage Redirection                          <Enabled>
     KVM Feature Selection                        <Enabled>




        Menu for FW Redirection Configuration




   [↑↓] = Move Highlight     [Enter] = Select Entry          [Esc]= Exit
```

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

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
                Copyright(C) 2003-15 Intel Corporation. All Rights Reserved..
                         SOL/Storage Redirection/KVM

     Username and Password                        < Enabled>
     SOL                                          <Enabled>
     Storage Redirection                          <Enabled>
     KVM Feature Selection                        <Enabled>


                                         Disabled
                                         Enabled




   [↑↓] = Move Highlight   [Enter] = Complete Entry  [Esc]= Discard Changes
```

11. In the **SOL/Storage Redirection/KVM** menu**,** select **SOL** then press Enter. Select **Enabled** or **Disabled** then press Enter.

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
                Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                         SOL/Storage Redirection/KVM

     Username and password                        < Enabled>
     SOL                                          <Enabled>
     Storage Redirection                          <Enabled>
     KVM Feature Selection                        <Enabled>


                                         Disabled
                                         Enabled




   [↑↓] = Move Highlight   [Enter] = Complete Entry  [Esc]= Discard Changes
```

64
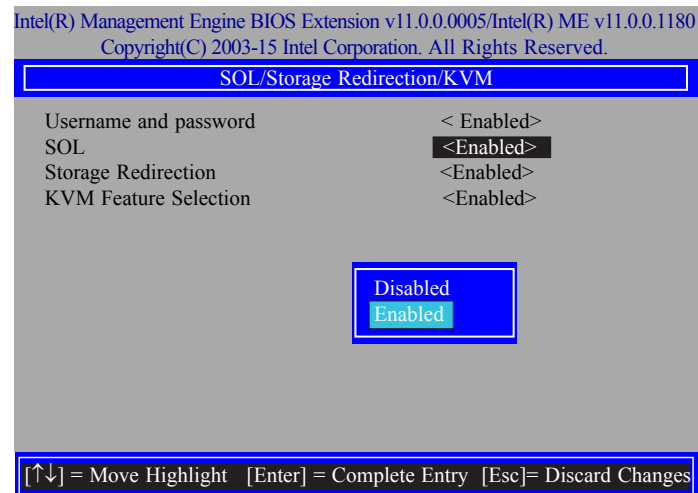
12. In the **SOL/Storage Redirection/KVM** menu, select **Storage Redirection** then press Enter. Select **Enabled** or **Disabled** then press Enter.

Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.

SOL/Storage Redirection/KVM

Username and password   < Enabled>
SOL   <Enabled>
Storage Redirection   <Enabled>
KVM Feature Selection   <Enabled>

Disabled
Enabled

[↑↓] = Move Highlight   [Enter] = Complete Entry [Esc]= Discard Changes
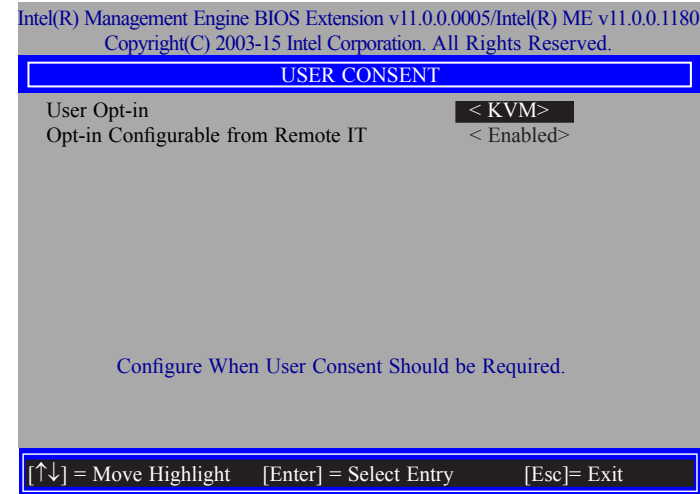
13. In the **SOL/IDER/KVM** menu, select **KVM Feature Selection** then press Enter. Select **Enabled** or **Disabled** then press Enter.

Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.

SOL/Storage Redirection/KVM

Username and password   < Enabled>
SOL   <Enabled>
Storage Redirection   <Enabled>
KVM Feature Selection   <Enabled>

Disabled
Enabled

[↑↓] = Move Highlight   [Enter] = Complete Entry [Esc]= Discard Changes

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

Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
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USER CONSENT

User Opt-in   < KVM>
Opt-in Configurable from Remote IT   < Enabled>

Configure When User Consent Should be Required.

[↑↓] = Move Highlight   [Enter] = Select Entry   [Esc]= Exit

15. In the **User Consent** menu, select **User Opt-in** then press Enter. Select **None** or **KVM** or **ALL** then press Enter.

Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.

USER CONSENT

User Opt-in   < KVM>
Opt-in Configurable from Remote IT   < Enabled>

NONE
KVM
ALL

[↑↓] = Move Highlight   [Enter] = Complete Entry [Esc]= Discard Changes

65
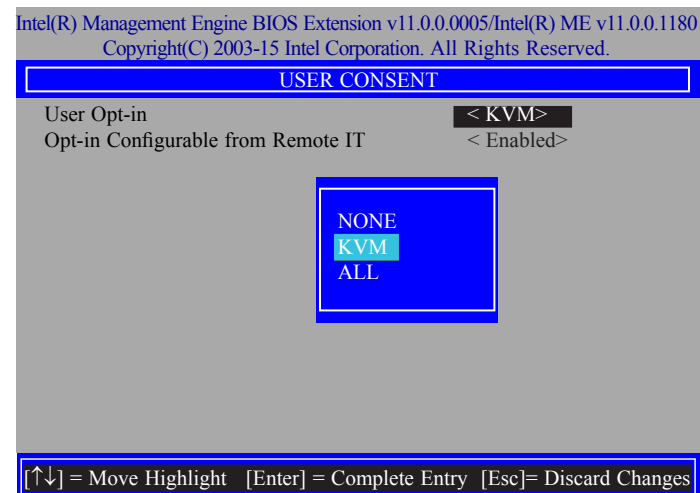
16. In the **User Consent** menu**,** select **Opt-in Configurable from Remote IT** then press Enter. Select **Enabled** or **Disable Remote Control of KVM Opt-in Policy** then press Enter.

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USER CONSENT

User Opt-in   < KVM>
Opt-in Configurable from Remote IT   < Enabled>

Disabled
Enabled

[↑↓] = Move Highlight   [Enter] = Complete Entry [Esc]= Discard Changes
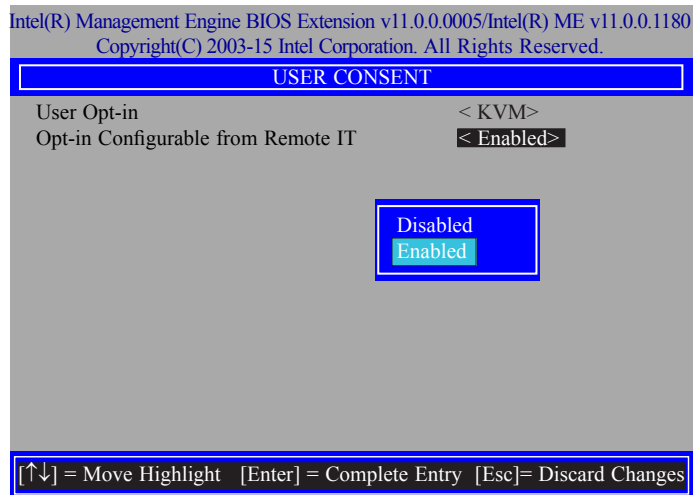
17. Select Previous Menu until you return to the **Intel(R) AMT Configuration** menu. Select **Password Policy** then press Enter.

You may choose to use a password only during setup and configuration or to use a password anytime the system is being accessed.

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INTEL (R) AMT CONFIGURATION

Manageability Feature Selection   < Enabled>
> SOL/Storage Redirection/KVM
> User Consent
Password Policy   <Anytime>
> Network Setup
Activate Network Access
Unconfigure Network Access   <Full Unprovision>
> Remote Setup And Configur
> Power Control

Default Password Only
During Step And Configuration
Anytime

[↑↓] = Move Highlight   [Enter] = Complete Entry [Esc]= Discard Changes

18. In the **Intel(R) AMT Configuration** menu**,** select **Network Setup** then press Enter.

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INTEL (R) AMT CONFIGURATION

Manageability Feature Selection   < Enabled>
> SOL/Storage Redirection/KVM
> User Consent
Password Policy   <Anytime>
> Network Setup
Activate Network Access
Unconfigure Network Access   <Full Unprovision>
> Remote Setup And Configuration
> Power Control

[↑↓] = Move Highlight   [Enter] = Select Entry   [Esc]= Exit

19. In the **Intel(R) ME Network Setup** menu, select **Intel(R) ME Network Name Settings** then press Enter.

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INTEL (R) ME NETWORK SETUP

> Intel (R) ME Network Name Settings
> TCP/ IP Settings

[↑↓] = Move Highlight   [Enter] = Select Entry   [Esc]= Exit

66
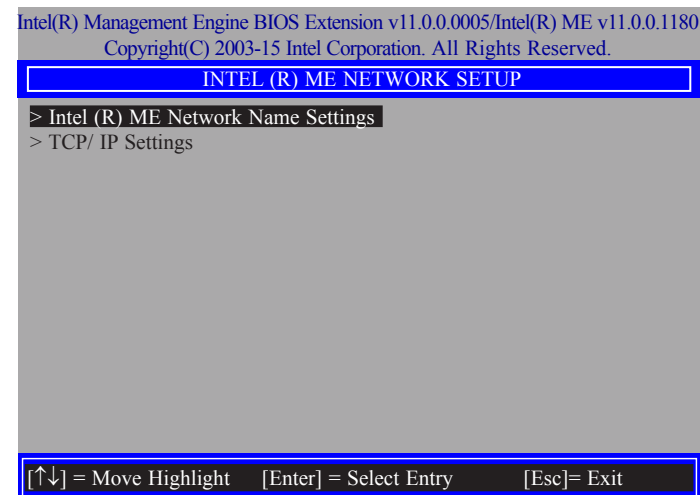
20. In the **Intel(R) ME Network Name Settings** menu, select **Host Name** then press Enter. Enter the computer's host name then press Enter.

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INTEL (R) ME NETWORK NAME SETTINGS

Host Name   _
Domain Name
Shared/ Dedicated FQDN   <Shared>
Dynamic DNS Update   <Disabled>

Computer Host Name

[Enter] = Complete Entry   [Esc]= Discard Changes
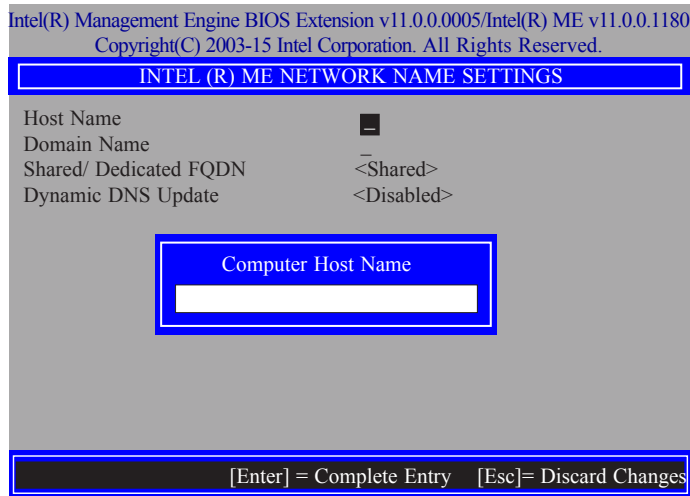
21. Select **Domain Name** then press Enter. Enter the computer's domain name then press Enter.

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INTEL (R) ME NETWORK NAME SETTINGS

Host Name   _
Domain Name   _
Shared/ Dedicated FQDN   <Shared>
Dynamic DNS Update   <Disabled>

Computer Domain Name

[Enter] = Complete Entry   [Esc]= Discard Changes
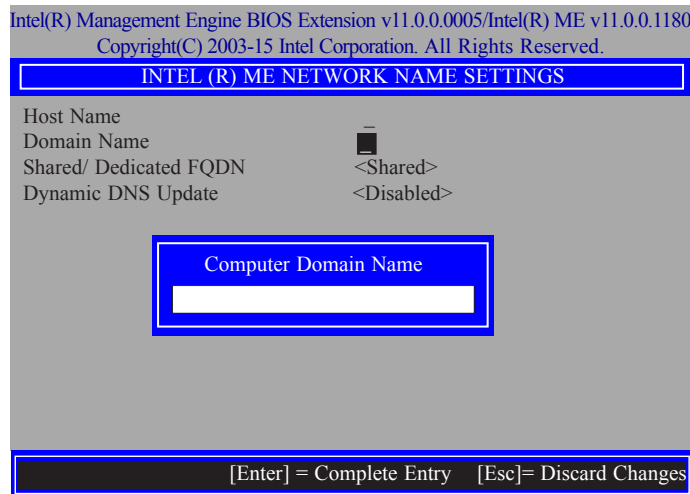
22. Select **Shared/Dedicated FQDN** then press Enter. Select **Shared** or **Dedicated** then press Enter.

Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
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INTEL (R) ME NETWORK NAME SETTINGS

Host Name   _
Domain Name   _
Shared/ Dedicated FQDN   <Shared>
Dynamic DNS Update   <Disabled>

Dedicated
Shared

[↑↓] = Move Highlight   [Enter] = Complete Entry [Esc]= Discard Changes

23. Select **Dynamic DNS Update** then press Enter. Select **Enabled** or **Disabled** then press Enter.

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INTEL (R) ME NETWORK NAME SETTINGS

Host Name   _
Domain Name   _
Shared/ Dedicated FQDN   <Shared>
Dynamic DNS Update   <Disabled>

Disabled
Enabled

[↑↓] = Move Highlight   [Enter] = Complete Entry [Esc]= Discard Changes
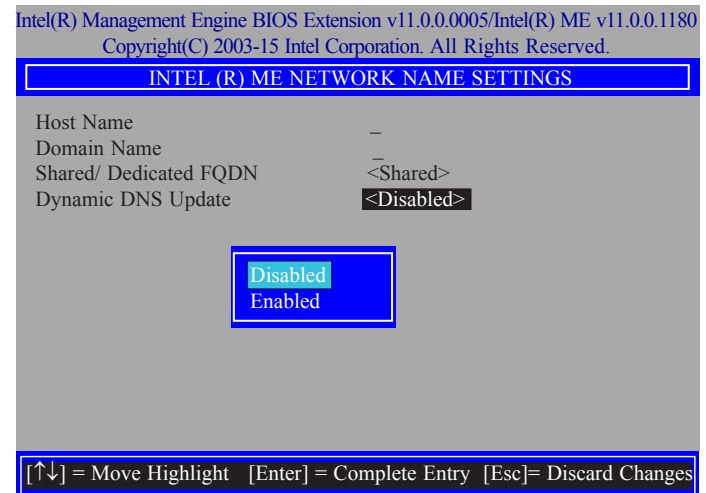
24. Select Previous Menu until you return to the **Intel(R) ME Network Setup** menu. Select **TCP/IP Settings** then press Enter.

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
              Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                          TCP/ IP SETTINGS
  > Wired LAN IPV4 Configuration




  [↑↓] = Move Highlight    [Enter] = Select Entry        [Esc]= Exit
```
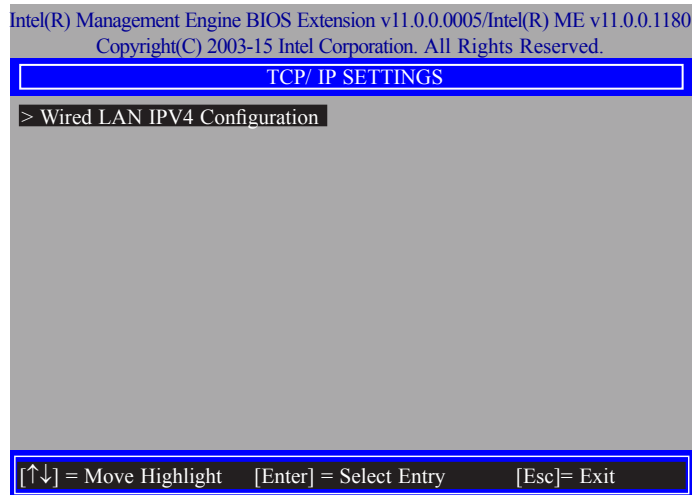
25. In the **TCP/IP Settings** menu, select **Wired LAN IPV4 Configuration** then press Enter.

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
              Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                      WIRED LAN IPV4 CONFIGURATION
  DHCP Mode                              <Enabled>



                      Disabled
                      Enabled



  [↑↓] = Move Highlight   [Enter] = Complete Entry  [Esc]= Discard Changes
```

26. In the **Intel(R) AMT Configuration** menu, select **Activate Network Access** then press Enter.

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
              Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                      INTEL (R) AMT CONFIGURATION
    Manageability Feature Selection           < Enabled>
  > SOL/Storage Redirection/KVM
  > User Consent
    Password Policy                           <Anytime>
  > Network Setup
    Activate Network Access
    Unconfigure Network Access                <Full Unprovision>
  > Remote Setup And Configuration
  > Power Control

  [↑↓] = Move Highlight   [Enter] = Complete Entry  [Esc]= Discard Changes
```

27. In the **Intel(R) AMT Configuration** menu, select **Unconfigure Network Access** then press Enter.

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
              Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                      INTEL (R) AMT CONFIGURATION
    Manageability Feature Selection           < Enabled>
  > SOL/Storage Redirection/KVM
  > User Consent
    Password Policy                           <Anytime>
  > Network Setup
    Activate Network Access
    Unconfigure Network Access                <Full Unprovision>
  > Remote Setup And Configuration
  > Power Control
                                    Full Unprovision

  [↑↓] = Move Highlight   [Enter] = Complete Entry  [Esc]= Discard Changes
```

28. In the **Intel(R) AMT Configuration** menu, select **Remote Setup And Configuration** then press Enter.

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
              Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                       INTEL (R) AMT CONFIGURATION

     Manageability Feature Selection            < Enabled>
   > SOL/Storage Redirection/KVM
   > User Consent
     Password Policy                            <Anytime>
   > Network Setup
     Activate Network Access
     Unconfigure Network Access                 <Full Unprovision>
   > Remote Setup And Configuration
   > Power Control



   [↑↓] = Move Highlight    [Enter] = Select Entry         [Esc]= Exit
```

29. In the **Intel(R) Remote Setup And Configuration** menu, select **Current Provisioing Mode** then press Enter.

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
              Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                  INTEL (R) REMOTE SETUP AND CONFIGURATION

     Current Provisioning Mode
     Provisioning Record
     Provisioning Server IPV4/IPV6             _
     Provisioning Server FQDN                  _
   > RCFG
   > TLS PKI

                    Provisioning Mode:PKI


   [↑↓] = Move Highlight    [Enter] = Select Entry         [Esc]= Exit
```
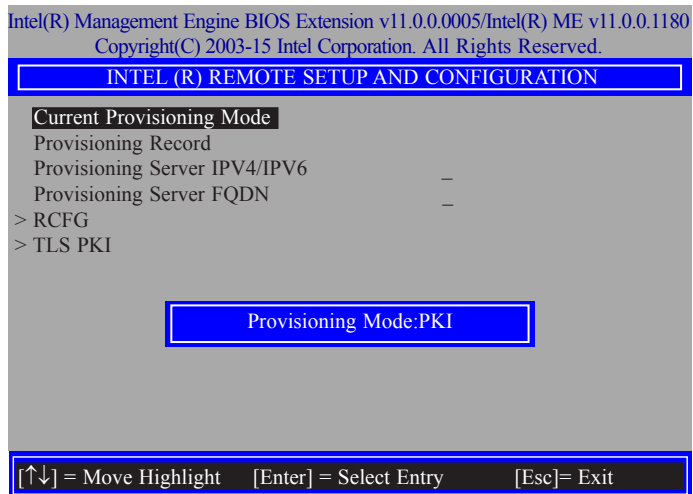
30. In the **Intel(R) Remote Setup And Configuration** menu, select **Provisioning Record** then press Enter.

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
              Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                  INTEL (R) REMOTE SETUP AND CONFIGURATION

     Current Provisioning Mode
     Provisioning Record
     Provisioning Server IPV4/IPV6             _
     Provisioning Server FQDN                  _
   > RCFG
   > TLS PKI

                 Provision Record is not present


   [↑↓] = Move Highlight    [Enter] = Select Entry         [Esc]= Exit
```
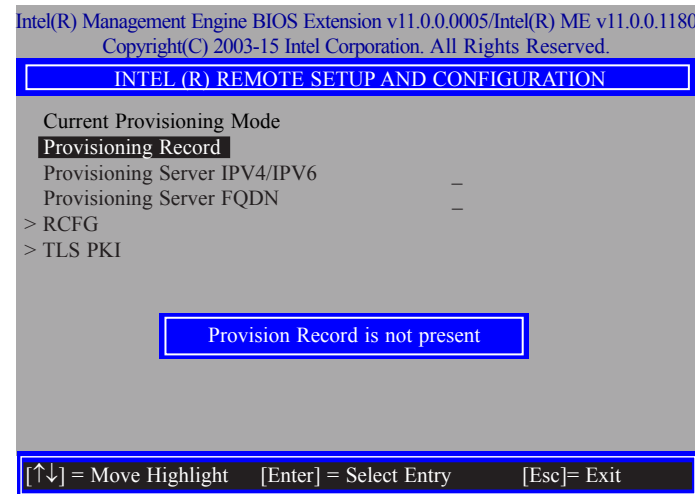
31. In the **Intel(R) Remote Setup And Configuration** menu, select **Provisioning server IPV4/IPV6,** enter the Provisioning server address then press Enter.

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
              Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                  INTEL (R) REMOTE SETUP AND CONFIGURATION

     Current Provisioning Mode
     Provisioning Record
     Provisioning Server IPV4/IPV6             _
     Provisioning Server FQDN                  _
   > RCFG
   > TLS PKI

                    Provisioning server address
                  [                            ]

   [↑↓] = Move Highlight    [Enter] = Select Entry         [Esc]= Exit
```

69
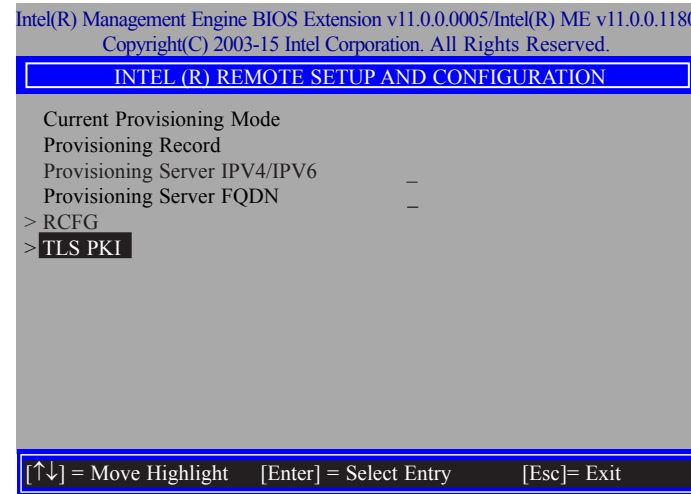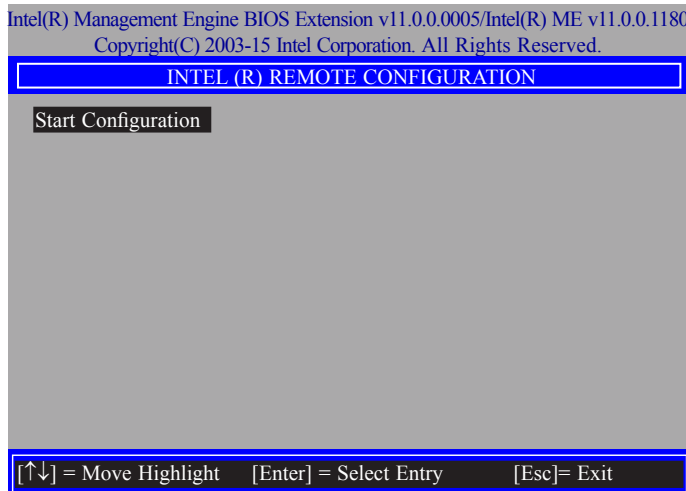
32. In the **Intel(R) Remote Setup And Configuration** menu**,** select **Provisioning server FQDN,** enter the FQDN of Provisioning server then press Enter.
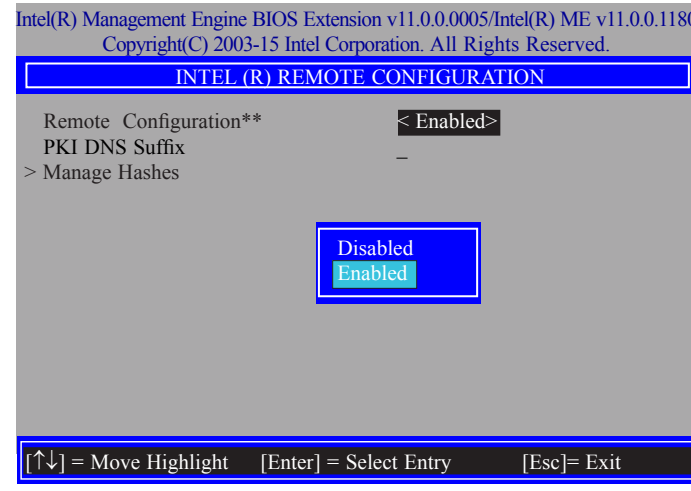
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.

INTEL (R) REMOTE SETUP AND CONFIGURATION

    Current Provisioning Mode
    Provisioning Record
    Provisioning Server IPV4/IPV6   _
    Provisioning Server FQDN   _
> RCFG
> TLS PKI

        Enter FQDN of provisioning server

[↑↓] = Move Highlight   [Enter] = Select Entry   [Esc]= Exit
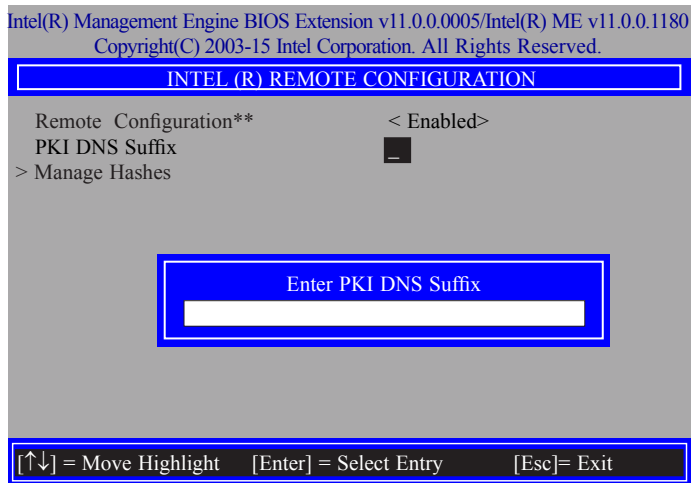
33. In the **Intel(R) Remote Setup And Configuration** menu**,** select **RCFG** then press Enter, and select **Start Configuration** then press enter.
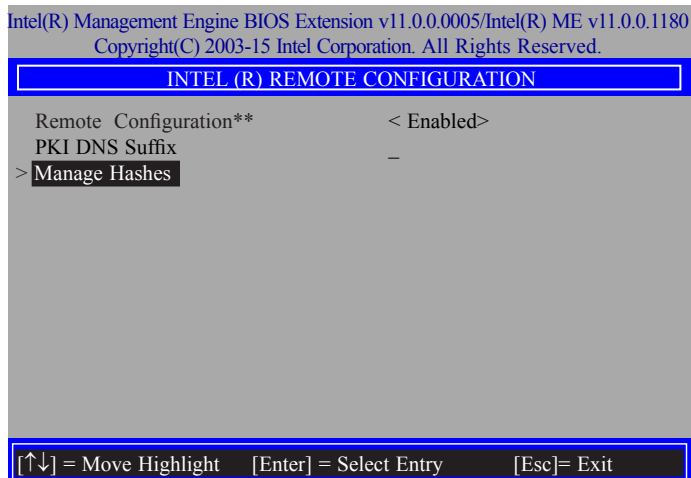
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
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INTEL (R) REMOTE CONFIGURATION

    Start Configuration

[↑↓] = Move Highlight   [Enter] = Select Entry   [Esc]= Exit

34. In the **Intel(R) Remote Setup And Configuration** menu**,** select **TLS PKI** then press Enter.

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INTEL (R) REMOTE SETUP AND CONFIGURATION

    Current Provisioning Mode
    Provisioning Record
    Provisioning Server IPV4/IPV6   _
    Provisioning Server FQDN   _
> RCFG
> TLS PKI

[↑↓] = Move Highlight   [Enter] = Select Entry   [Esc]= Exit

35. In the **Intel(R) Remote Configuration** menu**,** select **Remote Configuration**** then press Enter, select **Enabled** or **Disabled** then press Enter.

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INTEL (R) REMOTE CONFIGURATION

    Remote Configuration**   < Enabled>
    PKI DNS Suffix   _
> Manage Hashes

                    Disabled
                    Enabled

[↑↓] = Move Highlight   [Enter] = Select Entry   [Esc]= Exit

36. Select **PKI DNS Suffix,** Enter the PKI DNS Suffix then press Enter.

```
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                Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                        INTEL (R) REMOTE CONFIGURATION

     Remote  Configuration**              < Enabled>
     PKI DNS Suffix                       _
   > Manage Hashes


                      ┌──────────────────────────────────┐
                      │       Enter PKI DNS Suffix        │
                      │ ┌──────────────────────────────┐  │
                      │ │                              │  │
                      │ └──────────────────────────────┘  │
                      └──────────────────────────────────┘




     [↑↓] = Move Highlight     [Enter] = Select Entry        [Esc]= Exit
```

37. Select **Manage Hashes** then press Enter, and select one of hash name.

```
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                Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                        INTEL (R) REMOTE CONFIGURATION

     Remote  Configuration**              < Enabled>
     PKI DNS Suffix                       _
   > Manage Hashes






     [↑↓] = Move Highlight     [Enter] = Select Entry        [Esc]= Exit
```

38. In the **Intel(R) AMT Configuration** menu, select **Power Control** then press Enter.

```
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                Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                        INTEL (R) AMT CONFIGURATION

     Manageability Feature Selection       < Enabled>
   > SOL/Storage Redirection/KVM
   > User Consent
     Password Policy                       <Anytime>
   > Network Setup
     Activate Network Access
     Unconfigure Network Access            <Full Unprovision>
   > Remote Setup And Configuration
   > Power Control




     [↑↓] = Move Highlight     [Enter] = Select Entry        [Esc]= Exit
```
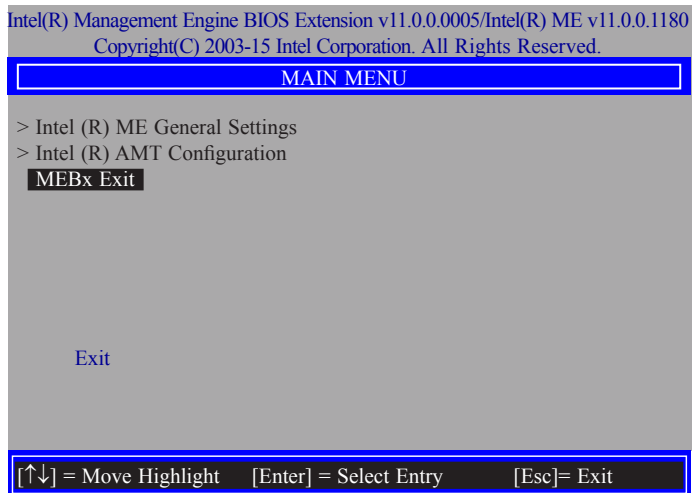
39. In the **Intel(R) AMT Power Control** menu, select **Intel(R) AMT ON in Host Sleep States** then press Enter. Select an option then press Enter.

```
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                Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                        INTEL (R) AMT POWER CONTROL

   These configurations are effective only after AMT provisioning has started

   Intel (R) AMT ON in Host Sleep States    <Mobile: ON in S0,
                                            ME Wake in S3, S4-5
                                            (AC only)>

   Idle Timeout                             65535

          ┌──────────────────────────────────────────────────┐
          │  Mobile: ON in S0                                 │
          │  Mobile: ON in S0, ME Wake in S3, S4-5 (AC only)  │
          └──────────────────────────────────────────────────┘



     [↑↓] = Move Highlight   [Enter] = Complete Entry  [Esc]= Discard Changes
```

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

```
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                Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                          INTEL (R) AMT POWER CONTROL

     This configurations are effective only after AMT provisioning has started

     Intel (R) ME ON in Host Sleep States        <Mobile: ON in S0,
                                                   ME Wake in S3, S4-5
                                                   (AC only)>
     Idle Timeout                                 65535

                            Timeout Value (1-65535)

                            65535


                    <ENTER> = Complete Entry     [ESC]= Discard Changes
```

41. Select Previous Menu until you return to the **Main Menu**. Select **Exit** then press Enter. Type **Y** then press Enter.

```
Intel(R) Management Engine BIOS Extension v11.0.0.0005/Intel(R) ME v11.0.0.1180
                Copyright(C) 2003-15 Intel Corporation. All Rights Reserved.
                                MAIN MENU

     > Intel (R) ME General Settings
     > Intel (R) AMT Configuration
       MEBx Exit








             Exit




     [↑↓] = Move Highlight    [Enter] = Select Entry        [Esc]= Exit
```

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Appendix A - 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.