

**EC300/310/
320/321/322
Series
User's Manual**

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Trademarks

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

FCC and DOC Statement on Class 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

Copyright.....	2
Trademarks.....	2
FCC and DOC Statement on Class B.....	3
About this Manual.....	7
Warranty.....	7
Static Electricity Precautions.....	8
Safety Measures.....	8
Safety Precautions.....	9
About the Package.....	10
Before Using the System.....	10
Chapter 1 - Introduction.....	11
Overview.....	11
Key Features.....	15
Specifications.....	16
Getting to Know the EC300/310/320/321/322 Series.....	18
Mechanical Dimensions.....	28
Chapter 2 - Getting Started.....	31
Preparing the System.....	31
Installing Devices.....	31
Configuring the BIOS.....	31
Installing the Operating System.....	31
Installing the Drivers.....	32
Chapter 3 - Installing Devices.....	33
Removing the Chassis Cover.....	33
Installing a SODIMM.....	35
Installing a SATA Drive.....	38
Installing a CompactFlash Card.....	42
Installing a Mini PCIe and/or mSATA Card.....	43
Installing the PCI and PCIe Expansion Cards.....	48

Connecting Cables to Terminal Blocks	51
Chapter 4 - Jumper Settings	53
Jumper Settings - System Board	53
Clear CMOS Data	53
PS/2 Power Select.....	54
USB Power Select.....	55
COM1 and COM2 RS232/422/485 Select.....	56
COM1 and COM2 RS232/Power Select	57
Power-on Select.....	58
Mini PCIe/mSATA Power Select	59
Mini PCIe/mSATA Select.....	60
Reset/Power on Select.....	61
Factory Testing	62
Jumper Settings - I/O Board	63
Chapter 5 - Ports and Connectors	76
Front Panel I/O Ports.....	76
USB Ports.....	77
Rear Panel I/O Ports.....	79
LAN Ports.....	89
USB Ports.....	90
DVI Port.....	91
VGA Port.....	92
Speaker-out	93
Digital Input/Output	94
COM Ports.....	95
COM 3 to COM 10 RS232/422/485 Select (-CRA060)	96
COM 6 and COM 7 RS232/Power Select	97
COM 3 to COM 6 RS232/422/485 Select (-CR6881)	98
COM 3 to COM 6 RS232/Power Select	99
COM 3 to COM 6 RS232/422/485 Select (-CR6G60).....	100
COM 3 to COM 6 RS232/Power Select	101
COM 3 and COM 4 RS232/422/485 Select (-CR4G65)	102
COM 3 and COM 4 RS232/Power Select	103
DC-in.....	104
PoE LAN Ports.....	105
I/O Connectors	106
Chassis Intrusion Connector	106
SATA (Serial ATA) Connectors	107
HDD Power Connectors	108
Mini PCIe Slot.....	109
Cooling Fan Connectors.....	110
PS/2 Keyboard/Mouse Connector	111

Front Panel Connector	112
Battery	113
CompactFlash Socket.....	114
Chapter 6 - Mounting Options	115
Wall Mounting.....	115
Chapter 7 - BIOS Setup	118
Overview	118
AMI BIOS Setup Utility	120
Main	120
Advanced	121
Chipset.....	141
Boot.....	149
Security	151
Save and Exit.....	155
Updating the BIOS.....	156
Chapter 8 - Supported Software	157
Appendix A - NLITE and AHCI Installation Guide	189
Appendix B - Watchdog Timer.....	201
Appendix C - System Error Message.....	204
Appendix D - Troubleshooting.....	206

About this Manual

An electronic file of this manual can be obtained from the DFI website at www.dfi.com.

To download the user's manual from our website, please go to "Support" > "Download Center." On the Download Center page, select your product or type the model name and click "Search" to find all technical documents including the user's manual for a specific product.

Warranty

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

To reduce the risk of electric shock:

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

Battery:

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

Safety Precautions

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

About the Package

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

- 1 System unit
- 1 SATA data/power cable
- 1 120W power adapter (-CR6G60/-CRA060/-CR6881/-CR4G65)
- 1 160W power adapter (-CR4866)
- 1 Quick Installation guide

The system 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

- 1 Wall mount kit
- 1 Power cord
- 1 3G Module

Before Using the System

Before powering-on the system, prepare the 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

Overview

EC300 Series



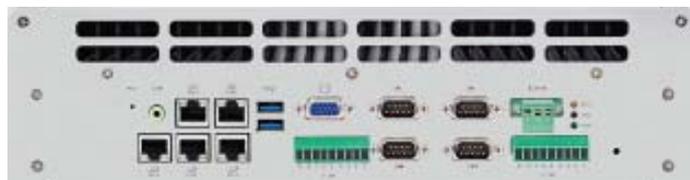
EC300-CR688I



EC300-CR6G60



EC300-CRA060



EC300-CR4G65



EC300-CR4866

EC310 Series



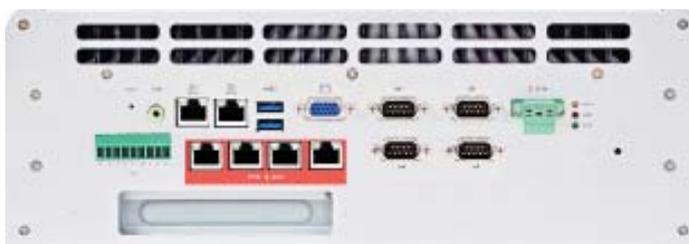
EC310-CR688I



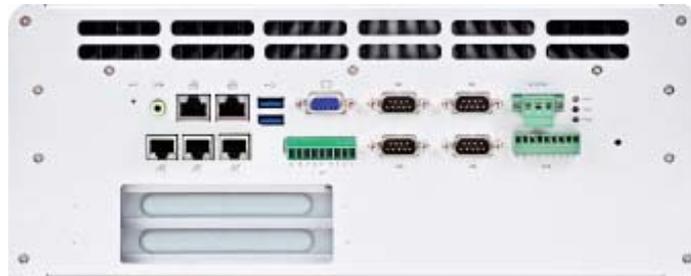
EC310-CR6G60



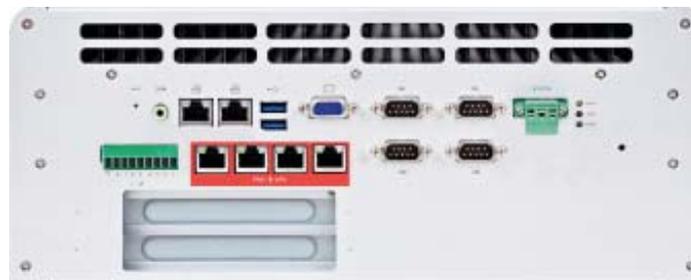
EC310-CRA060



EC310-CR4866



EC321/322-CR4G65



EC320/321/322-CR4866

Key Features

- Fanless, compact design for industrial applications
- 3rd/2nd Generation Intel® Core™ i7/i5/i3 and QM77
- Supports DDR3/DDR3L SODIMM, up to 16GB
- 2 2.5" SATA drive bays, 1 CompactFlash socket
- - CR6881: 1 DVI, 1 VGA, 2 LAN, 8 USB, 6 COM, 8-bit GPIO
- - CR6G60: 1 VGA, 2 LAN, 6 USB, 6 COM, 16-bit GPIO
- - CRA060: 1 VGA, 2 LAN, 6 USB, 10 COM
- - CR4G65: 1 VGA, 5 LAN, 6 USB, 4 COM
- - CR4866: 1 VGA, 6 LAN (4 PoE LAN), 6 USB, 4 COM
- Expansion
 - EC300 Series: 1 XCT0-3G, 1 Mini PCIe
 - EC310 Series: 1 XCT0-3G, 1 Mini PCIe, 1 PCI
 - EC320 Series: 1 XCT0-3G, 1 Mini PCIe, 2 PCI
 - EC321 Series: 1 XCT0-3G, 1 Mini PCIe, 1 PCI, 1 PCIe x16
 - EC322 Series: 1 XCT0-3G, 1 Mini PCIe, 2 PCIe x16 (x8 signal)

Specifications

PROCESSOR SYSTEM

- 3rd Generation Intel® Core™ processors (22nm process technology)
 - Intel® Core™ i7-3610QE (6M Cache, up to 3.3 GHz); 45W
 - Intel® Core™ i5-3610ME (3M Cache, up to 3.3 GHz); 35W
 - Intel® Core™ i3-3120ME (3M Cache, 2.4 GHz); 35W
- 2nd Generation Intel® Core™ processors (32nm process technology)
 - Intel® Core™ i7-2710QE (6M Cache, up to 3.0 GHz); 45W
 - Intel® Core™ i5-2510E (3M Cache, up to 3.1 GHz); 35W
 - Intel® Core™ i3-2330E (3M Cache, 2.2 GHz); 35W
 - Intel® Celeron® B810 (2M Cache, 1.6 GHz); 35W
- Chipset: Intel® QM77

MEMORY

- 2 DDR3/DDR3L 1066/1333/1600MHz SODIMM sockets
- Supports up to 16GB memory
- Dual channel memory interface

GRAPHICS

- Intel® HD Graphics 4000
- Supports 2 independent displays
- VGA display resolution up to 2048x1536 @ 60Hz
- DVI display resolution up to 1920x1080 @ 60Hz
- Display outputs: 1 VGA and 1 DVI (DVI-D signal)

STORAGE

- 2.5" SATA drive bay(s)
 - 2 SATA 3.0 ports with data transfer rate up to 6Gb/s
 - Standard: 1 single drive bay for 1 SATA drive
 - Option: Single drive bay for second SATA drive (supports RAID 0/1/5/10)
- 1 CompactFlash socket
- Supports 1 mSATA module via the mini PCIe slot

ETHERNET

- Intel® WG82579LM with iAMT7.0 Gigabit Ethernet Phy
- Intel® 82574 Gigabit Ethernet controller (-CR4G65/-CR4866)
- Fully IEEE std 802.3af-2003 compliant (-CR4866)
 - Power output: 48V DC 15.4 watts of power per PoE port (Type 1 Mode A 15.4W per port)
- Supports wireless 802.11 b/g/n via the mini PCIe slot

AUDIO

- Realtek® ALC262 High Definition Audio
- 2 watt, 4Ω power amplifier

EXPANSION

- 1 Mini PCIe slot supports Wi-Fi module or mSATA
- 1 XCT0-3G riser card supports 3G (option)
 - : 1 Mini PCIe slot (USB signal)
 - : 1 SIM slot
- PCI/PCIe slots
 - EC300 Series: none
 - EC310 Series: 1 PCI slot
 - EC320 Series: 2 PCI slots
 - EC321 Series: 1 PCI slot and 1 PCIe x16 slot
 - EC322 Series: 2 PCIe x16 slots (x8 signal)

POWER

- Power input voltage: 9~30V DC-in

ENVIRONMENT

- Temperature
 - Operating: 0°C ~ 60°C (-CR6881/-CR6G60/-CRA060/-CR4G65)
 - Operating: 0°C ~ 55°C (-CR4866)
 - Storage: -20°C ~ 65°C
- Operating Vibration
 - IEC68-2-64 (HDD)
- Operating Shock
 - Half sine wave 15G, 11ms, 3 shock per axis

CONSTRUCTION

- Aluminum + SGCC

MOUNTING

- Wall mount

DIMENSIONS

- EC300 Series: 340.5mm x 88mm x 223mm (W x H x D)
- EC310 Series: 340.5mm x 120.5mm x 223mm (W x H x D)
- EC320/321/322 Series: 340.5mm x 140.5mm x 223mm (W x H x D)

WEIGHT

- 9 kg

OS SUPPORT

- Windows XP, WES 2009, POSReady 2009, Windows 7, WES 7, Windows 8.1, WES 8
- Linux (Distribution available upon request)

OTHER FEATURES

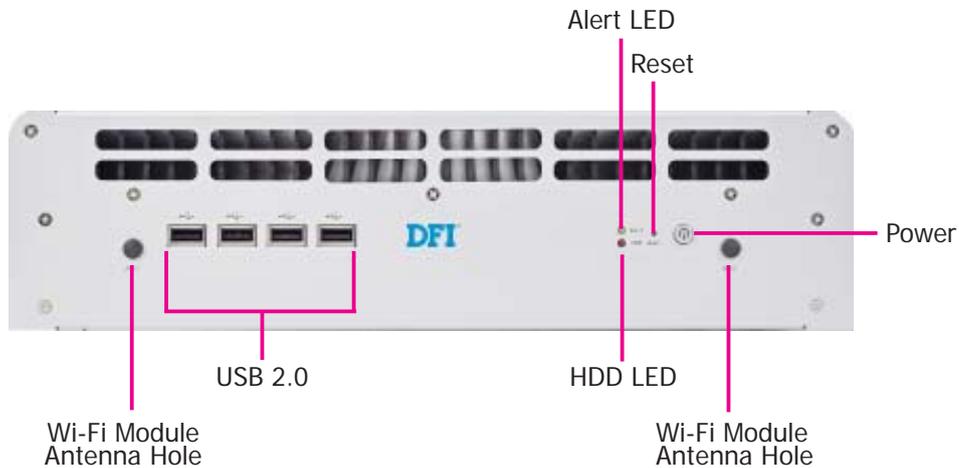
- Watchdog Timer function

CERTIFICATION

- CE
- FCC Class A
- RoHS
- UL (EC300-CR6881)

Getting to Know the EC300/310/320/321/322 Series

EC300 Series Front Panel



Wi-Fi Module Antenna Hole

Used to connect to a Wi-Fi antenna.

USB Ports

Used to connect USB 2.0/1.1 devices.

HDD LED

Indicates the status of the hard drive.

Alert LED

Indicates the status when the CPU is over temperature.

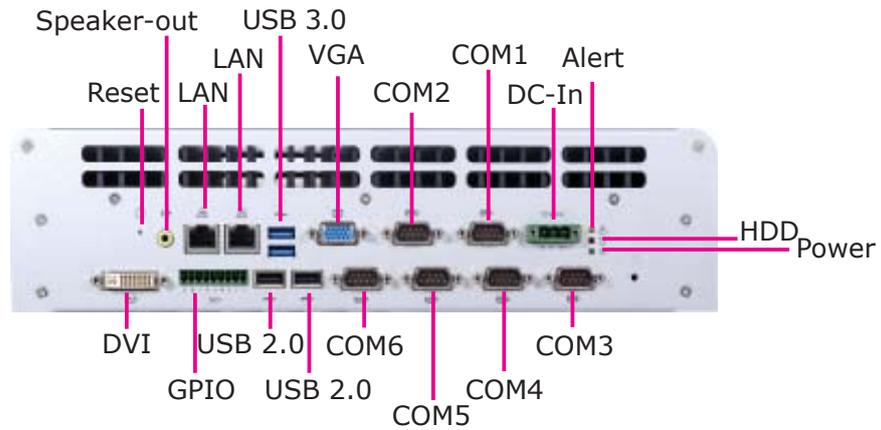
Reset Button

Press to reset the system.

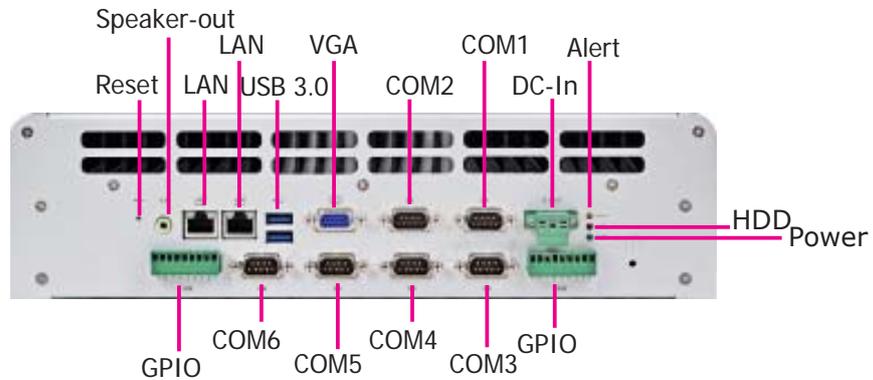
Power Button

Press to power-on or power-off the system.

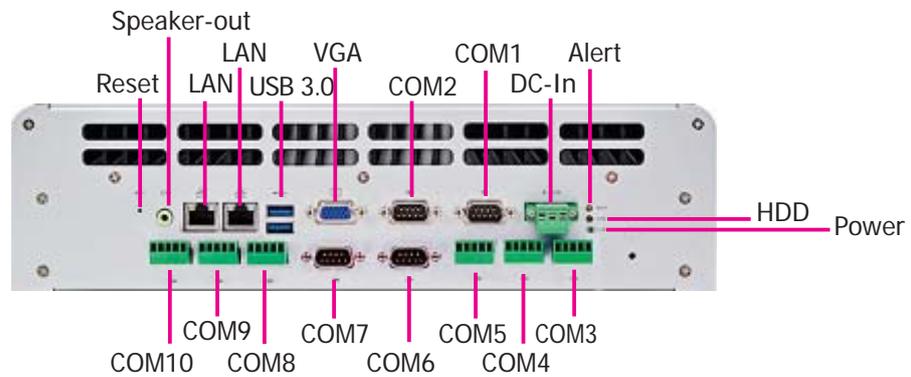
EC300 Series Rear Panel



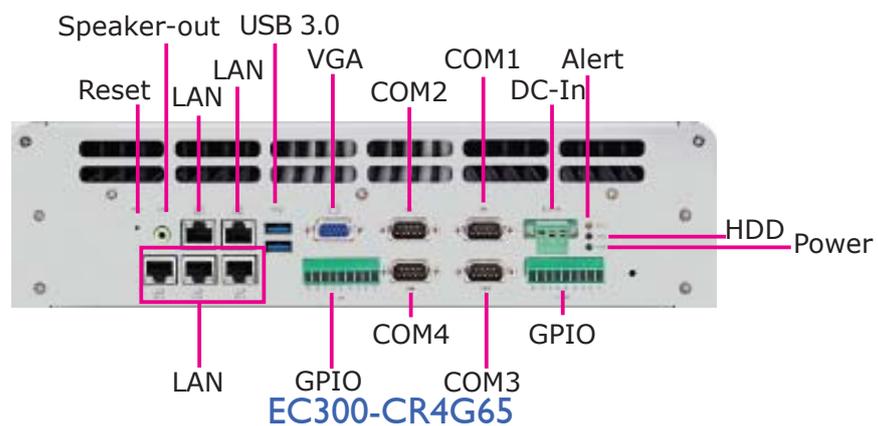
EC300-CR688 I



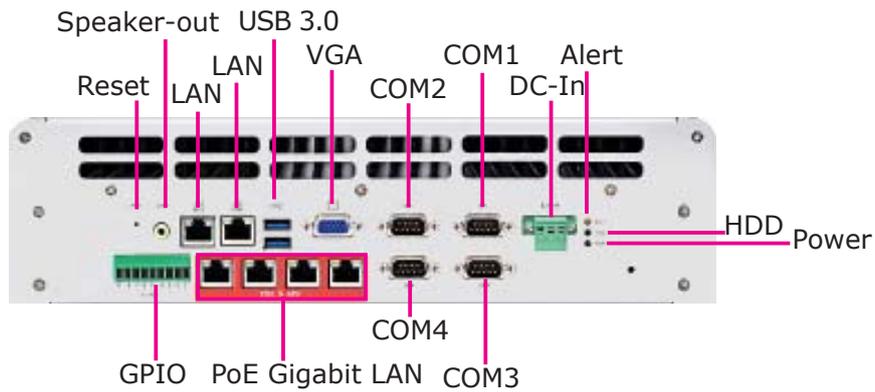
EC300-CR6G60



EC300-CRA060



EC300-CR4G65



EC300-CR4866

Power LED

Indicates the power status of the system.

HDD LED

Indicates the status of the hard drive.

Alert LED

Indicates the status when the CPU is over temperature.

DC-in

Used to plug a power adapter.

COM Ports

Used to connect serial devices.

DVI Port

Used to connect a DVI device.

VGA Port

Used to connect an analog VGA monitor.

USB Ports

Used to connect USB 3.0 devices.

LAN Ports

Used to connect systems to a local area network.

GPIO

Supports 8-bit digital output and input.

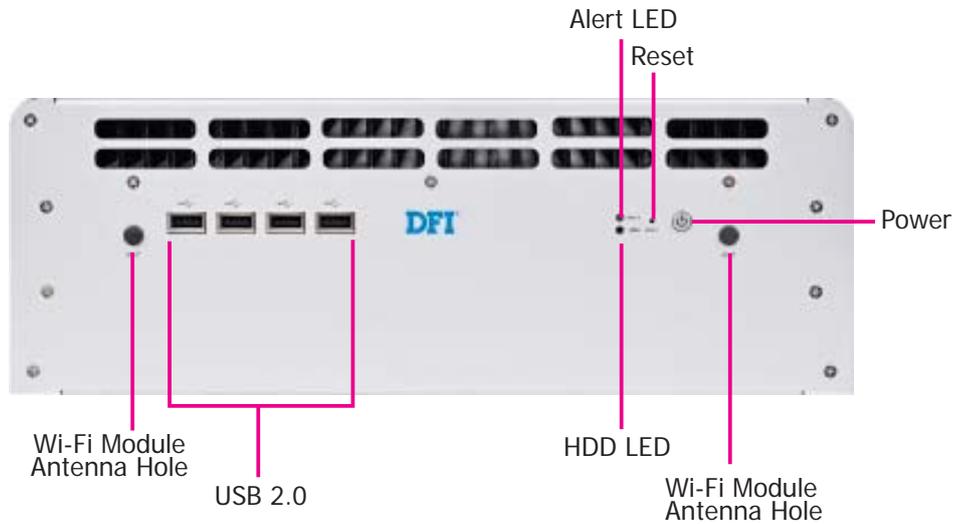
Speaker-out

Used to connect to a speaker.

Reset Button

Press to reset the system.

EC310 Series Front Panel



Wi-Fi Module Antenna Hole

Used to connect to a Wi-Fi antenna.

USB Ports

Used to connect USB 2.0/1.1 devices.

HDD LED

Indicates the status of the hard drive.

Alert LED

Indicates the status when the CPU is over temperature.

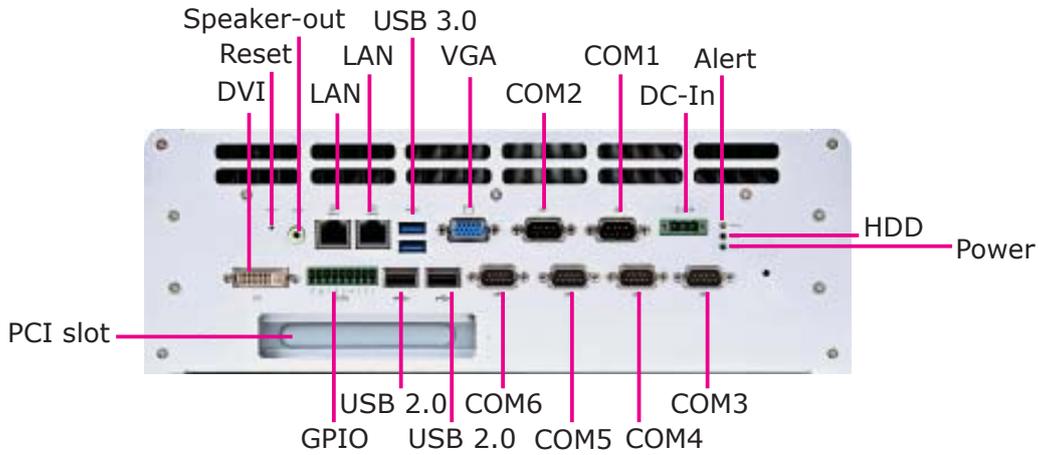
Reset Button

Press to reset the system.

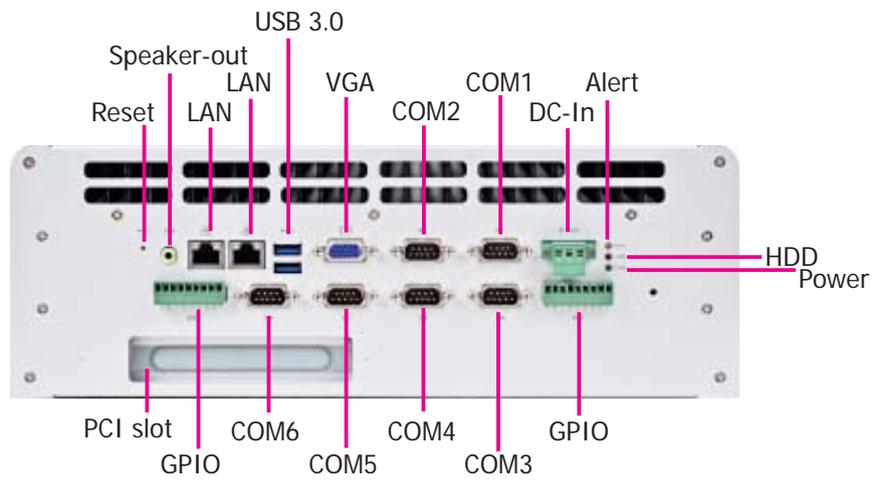
Power Button

Press to power-on or power-off the system.

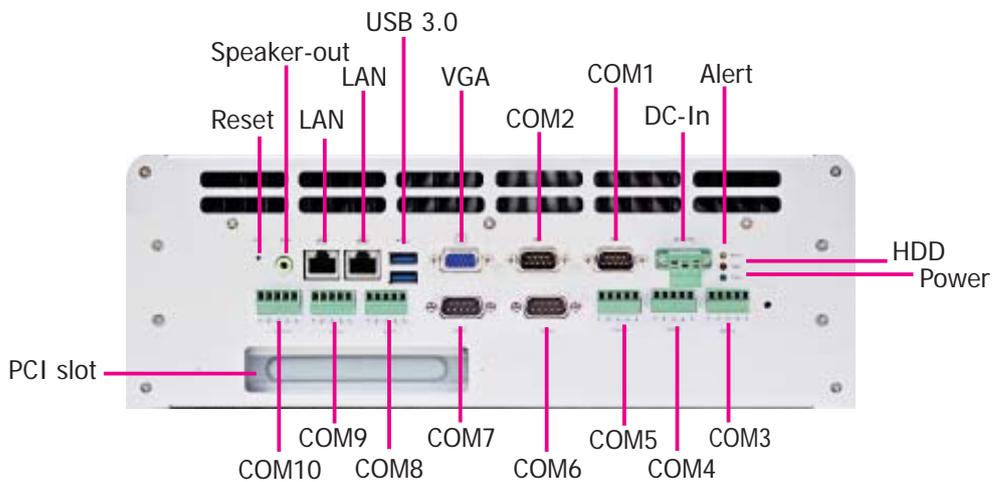
EC310 Series Rear Panel



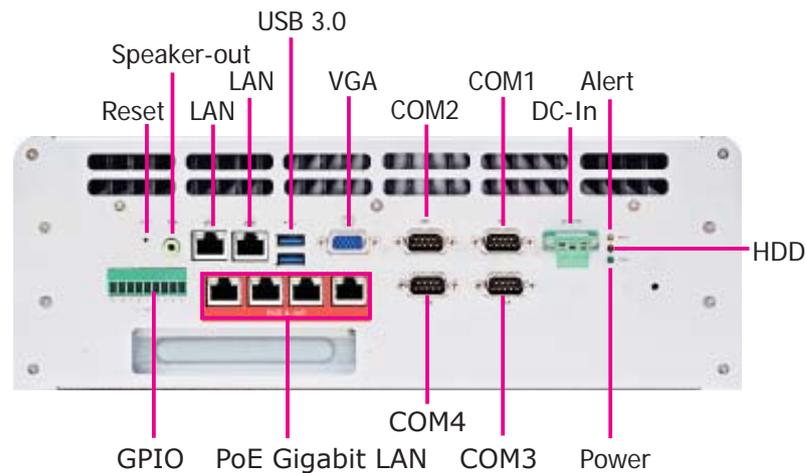
EC310-CR688I



EC310-CR6G60



EC310-CRA060



EC310-CR4866

Power LED

Indicates the power status of the system.

HDD LED

Indicates the status of the hard drive.

Alert LED

Indicates the status when the CPU is over temperature.

DC-In

Used to plug a power adapter.

COM Ports

Used to connect serial devices.

DVI Port

Used to connect a DVI device.

VGA Port

Used to connect an analog VGA monitor.

USB Ports

Used to connect USB 3.0 devices.

LAN Ports

Used to connect systems to a local area network.

GPIO

Supports 16-bit digital output and input.

Speaker-out

Used to connect to a speaker.

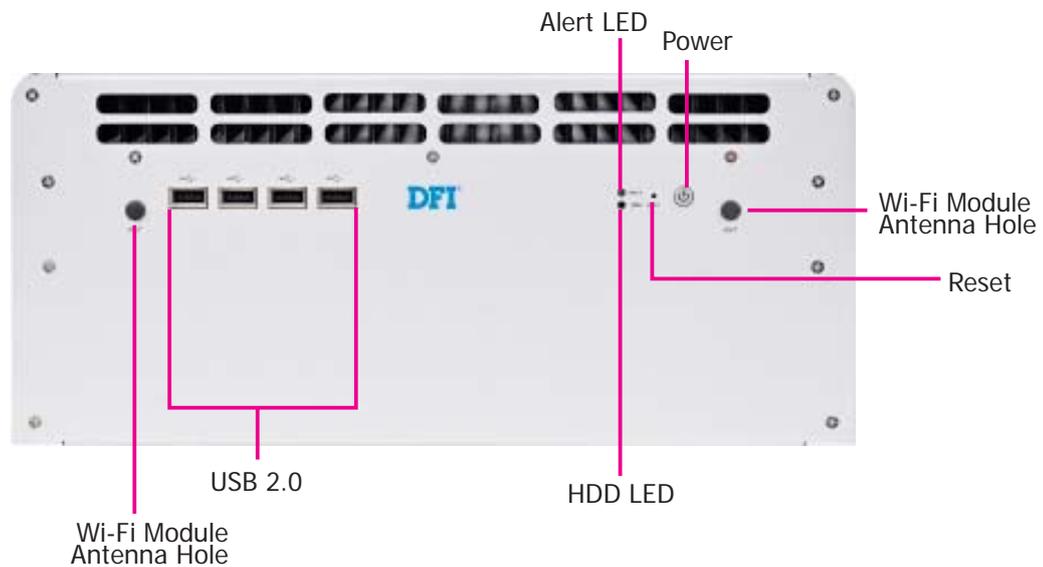
Reset Button

Press to reset the system.

PCI slot

Supports to add on riser cards.

EC320/321/322 Series Front Panel

**Wi-Fi Module Antenna Hole**

Used to connect to a Wi-Fi antenna.

USB Ports

Used to connect USB 2.0/1.1 devices.

HDD LED

Indicates the status of the hard drive.

Alert LED

Indicates the status when the CPU is over temperature.

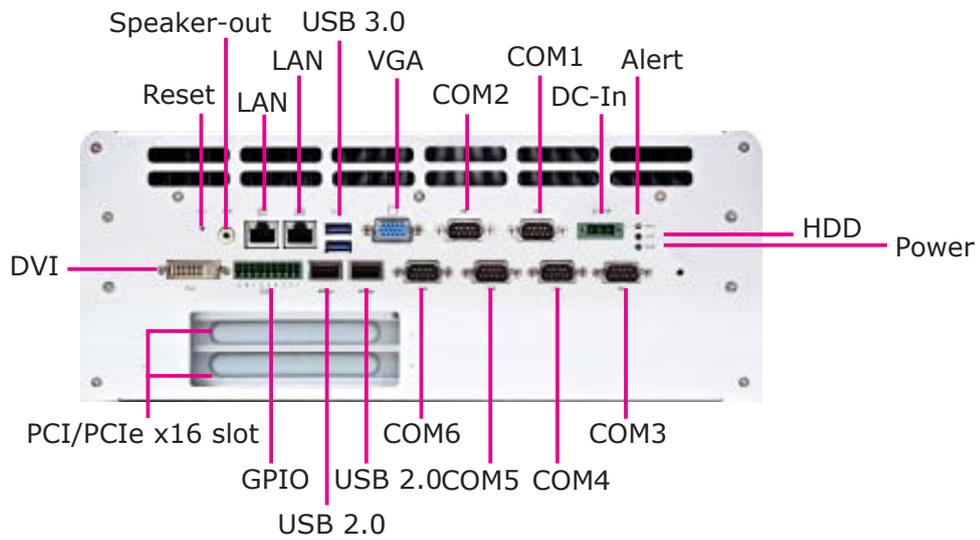
Reset Button

Press to reset the system.

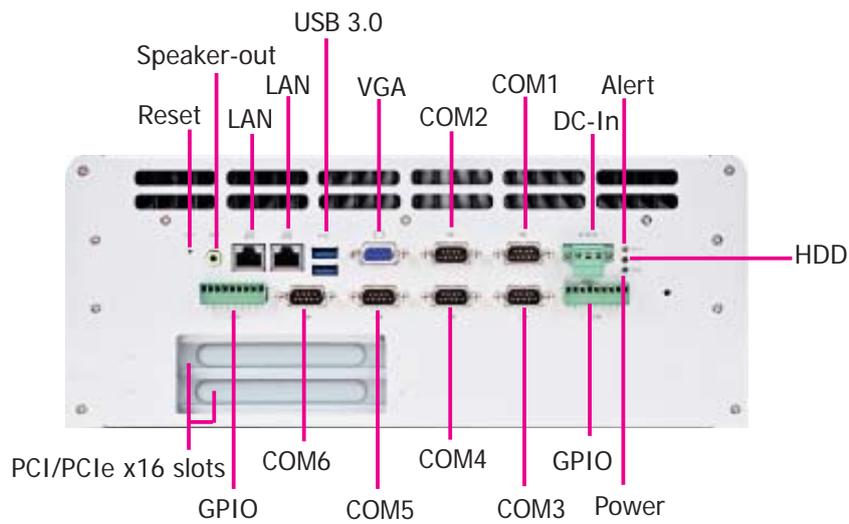
Power Button

Press to power-on or power-off the system.

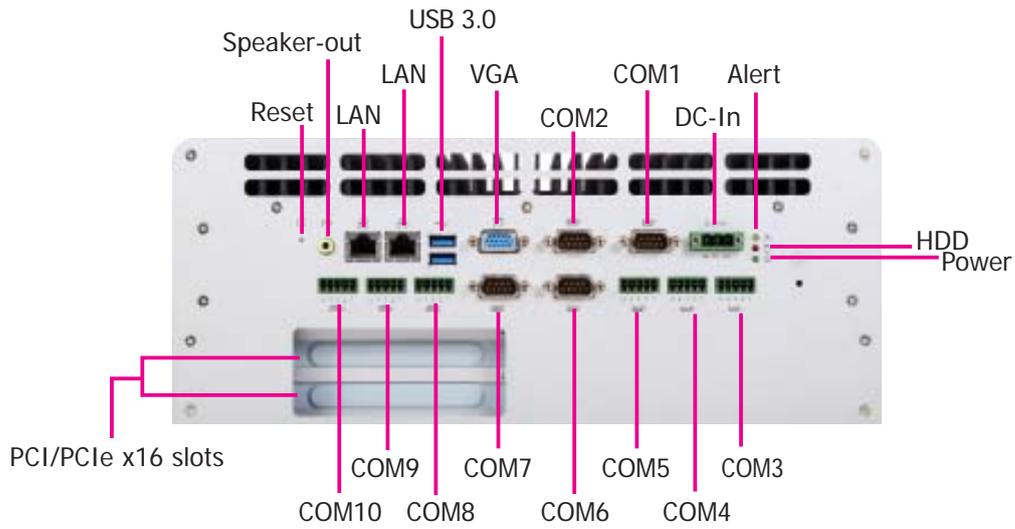
EC320/321/322 Series Rear Panel



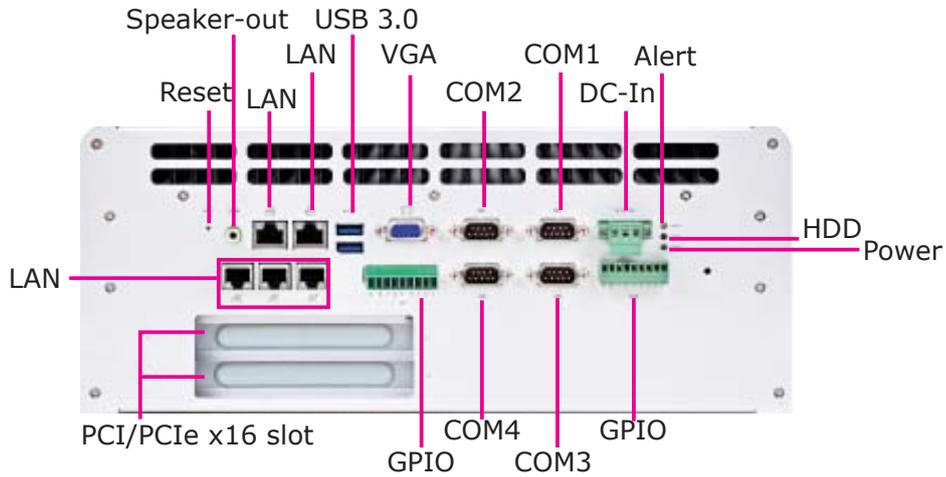
EC320/321/322-CR688 I



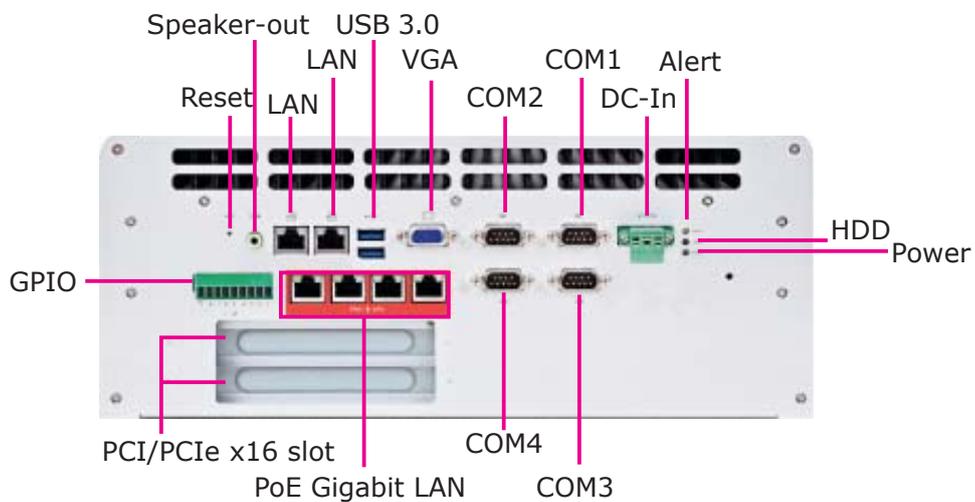
EC320/321/322-CR6G60



EC320/321/322-CRA060



EC321/322-CR4G65



EC320/321/322-CR4866

Power LED

Indicates the power status of the system.

HDD LED

Indicates the status of the hard drive.

Alert LED

Indicates the status when the CPU is over temperature.

DC-In

Used to plug a power adapter.

COM Ports

Used to connect serial devices.

DVI Port

Used to connect a DVI device.

VGA Port

Used to connect an analog VGA monitor.

USB Ports

Used to connect USB 3.0 devices.

LAN Ports

Used to connect systems to a local area network.

GPIO

Supports 16-bit digital output and input.

Speaker-out

Used to connect to a speaker.

Reset Button

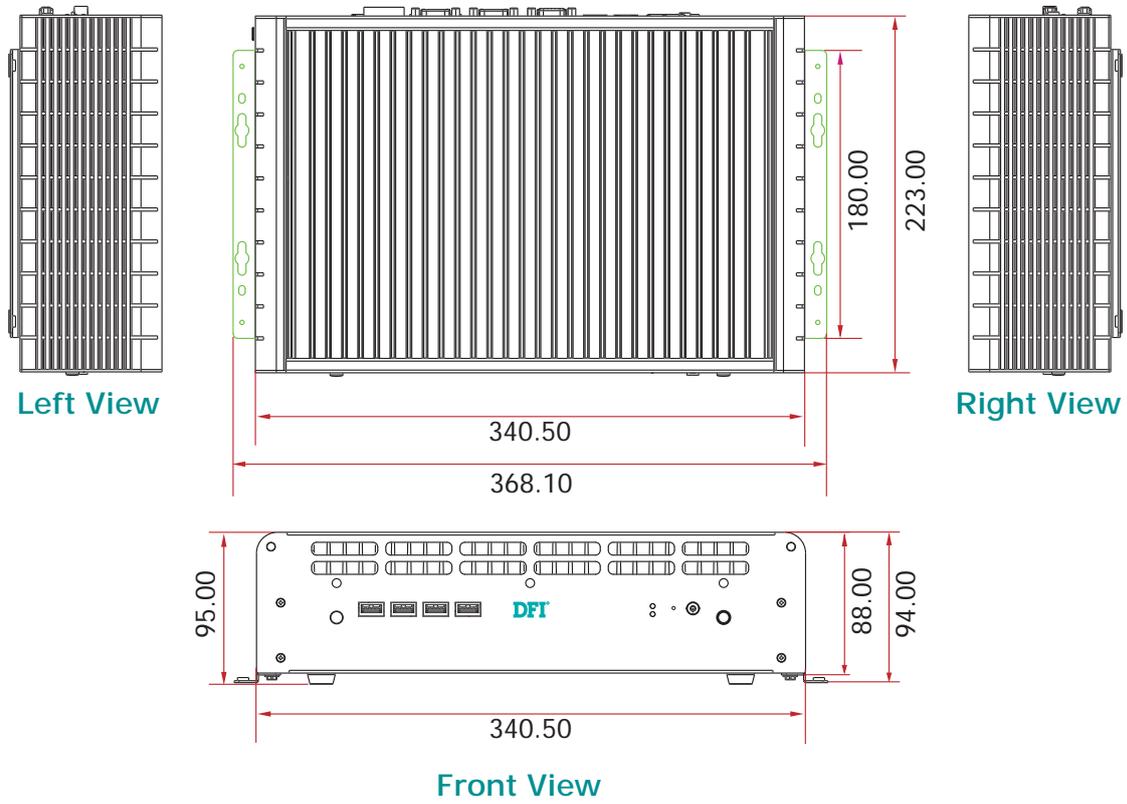
Press to reset the system.

PCI/PCIe slot

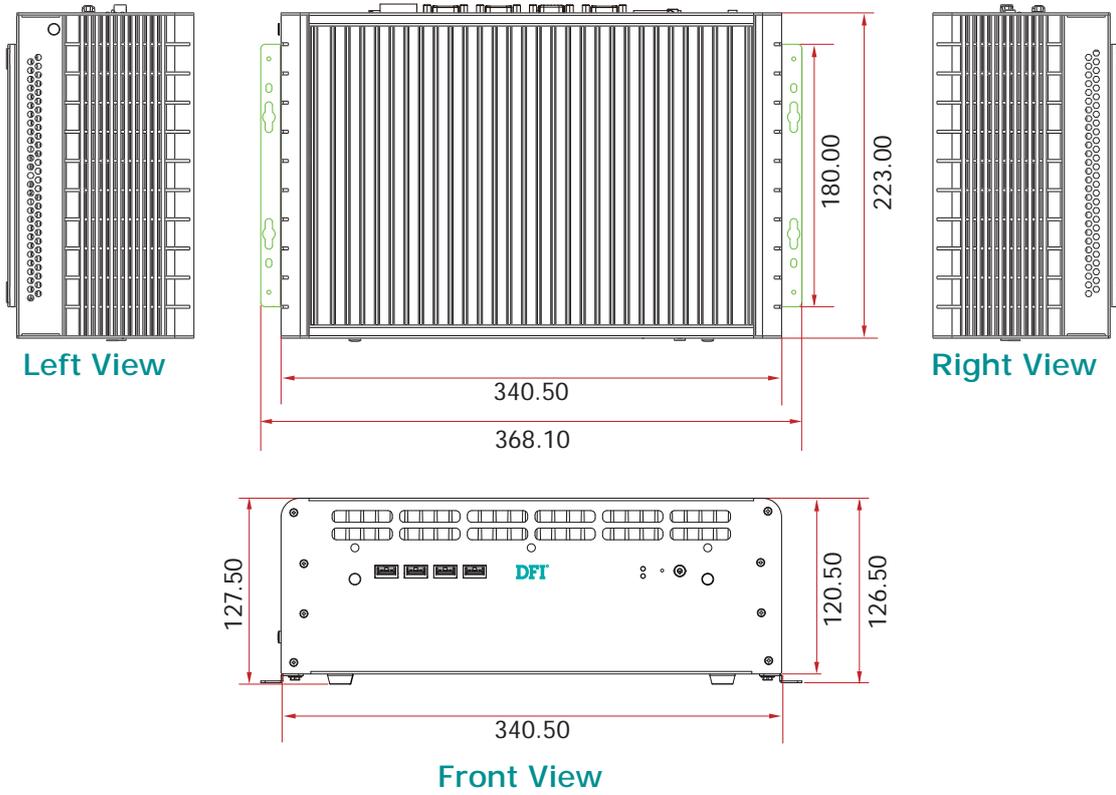
Supports to add on riser cards.

Mechanical Dimensions

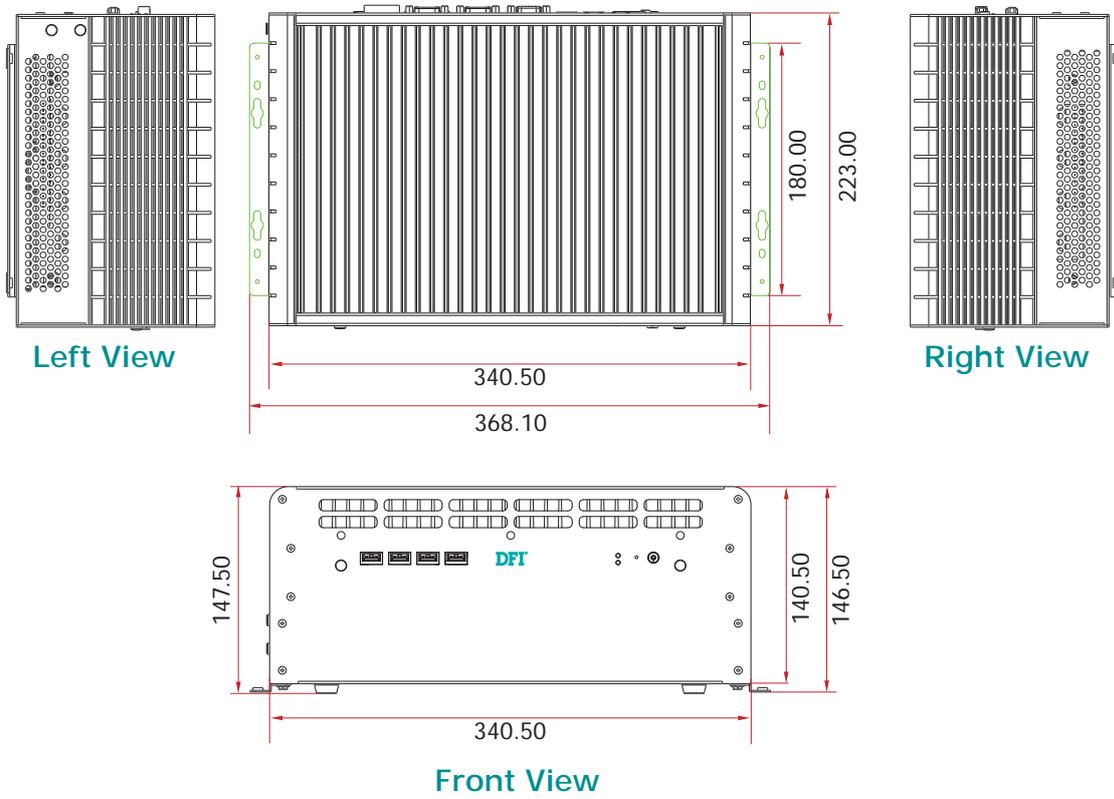
EC300 Series



EC310 Series



EC320/321/322 Series



Chapter 2 - Getting Started

Preparing the System

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

- Memory module
- SATA hard drive
- DC power adapter
- USB keyboard
- USB mouse
- CD-ROM drive (for installing software/drivers)
- Screwdriver

Installing Devices

The following are devices that can be installed in the EC300/310/320/321 series system.

- Memory module
- SATA hard drive
- CompactFlash card
- Mini PCIe card
- mSATA card
- PCI expansion card
- PCIe expansion card

Configuring the BIOS

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

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

Installing the Operating System

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

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

Installing the Drivers

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

Chapter 3 - Installing Devices

Removing the Chassis Cover

1. Make sure the system and all other peripheral devices connected to it has been powered-off.
2. Disconnect all power cords and cables.
3. The 6 mounting screws on the front and rear of the system are used to secure the cover to the chassis. Remove these screws and then put them in a safe place for later use.



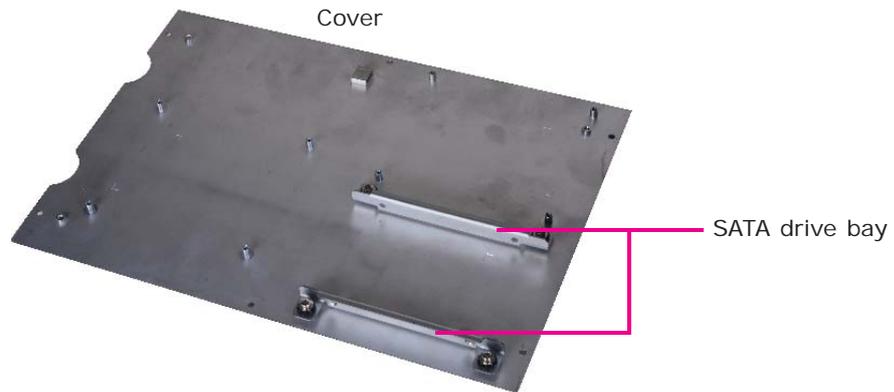
4. After removing the mounting screws, lift the cover up.



3

Installing Devices

5. The SODIMM socket, SATA drive bay, CompactFlash socket and Mini PCIe slot are readily accessible after removing the chassis cover.

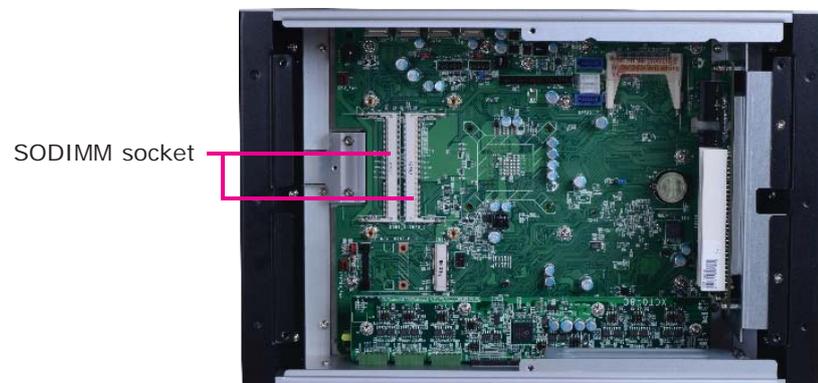
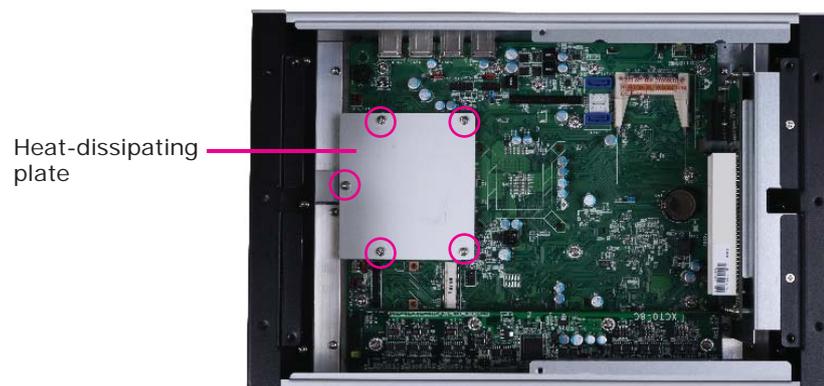


Installing a SODIMM

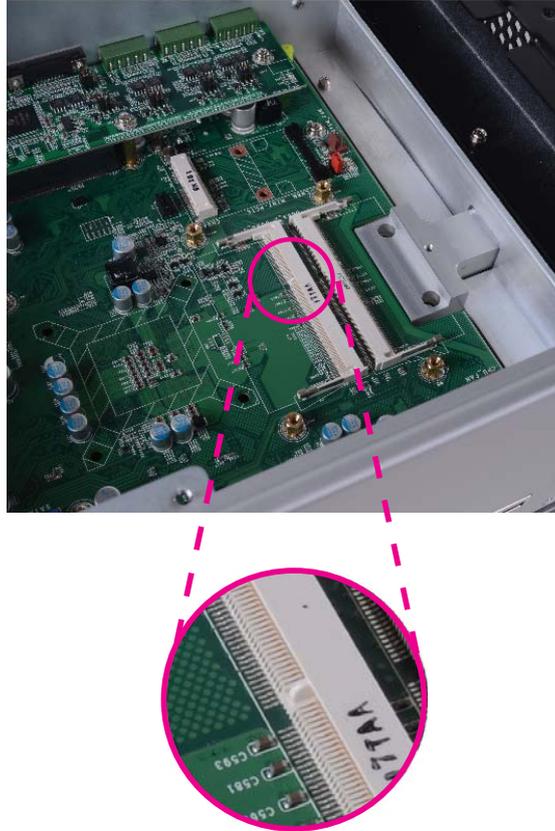
1. Locate the SODIMM socket on the system board.



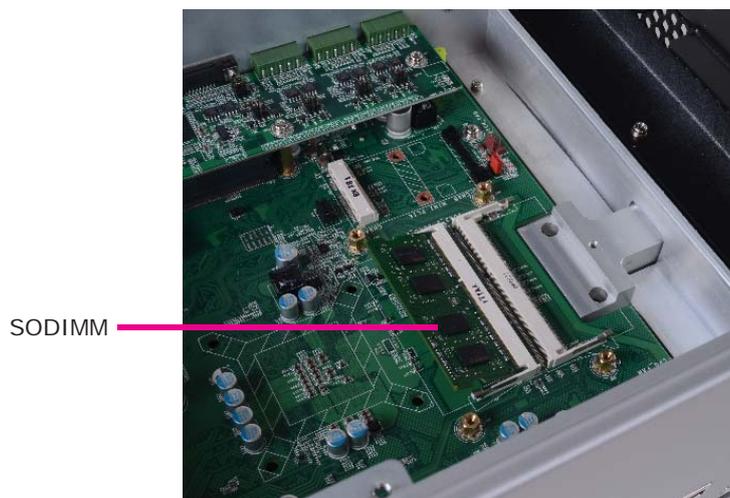
2. The 5 mounting screws on the protective plate is used to secure the plate. Remove these screws and then put them in a safe place for later use.



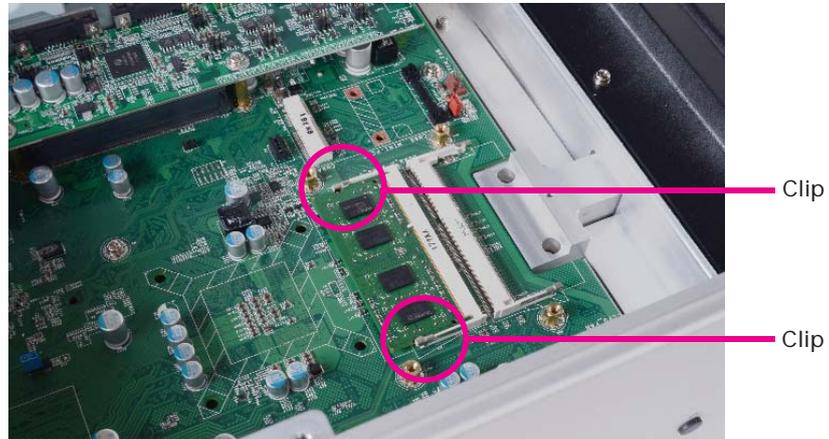
3. Note the key on the socket. The key ensures the module can be plugged into the socket in only one direction.



4. 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.

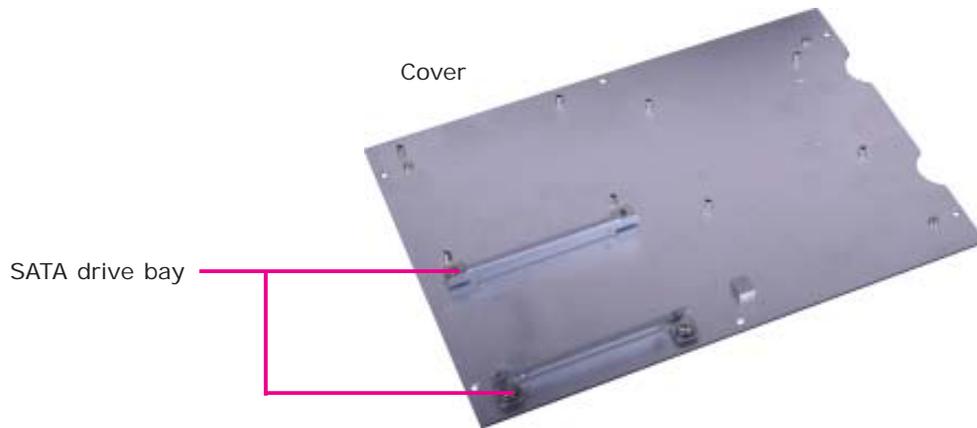


5. Push the module down until the clips at each end of the socket lock into position. You will hear a distinctive "click", indicating the module is correctly locked into position.



Installing a SATA Drive

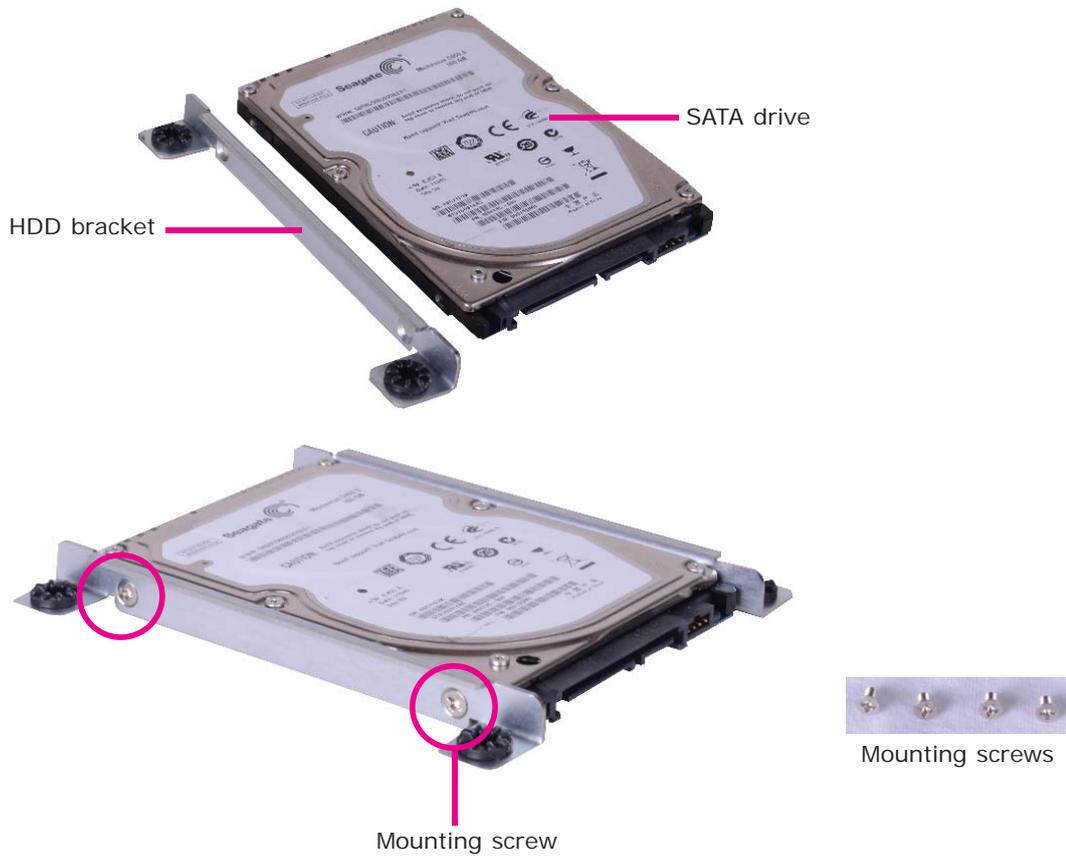
1. Locate the SATA drive bay on the cover.



2. Remove the 4 mounting screws that secure the HDD brackets to the drive bay.

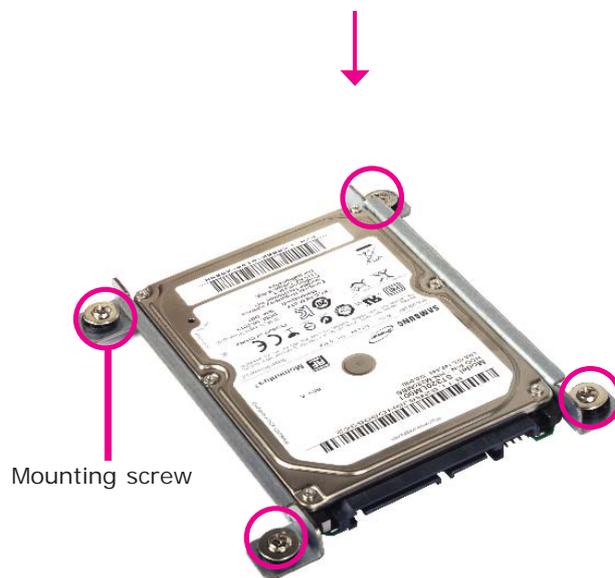
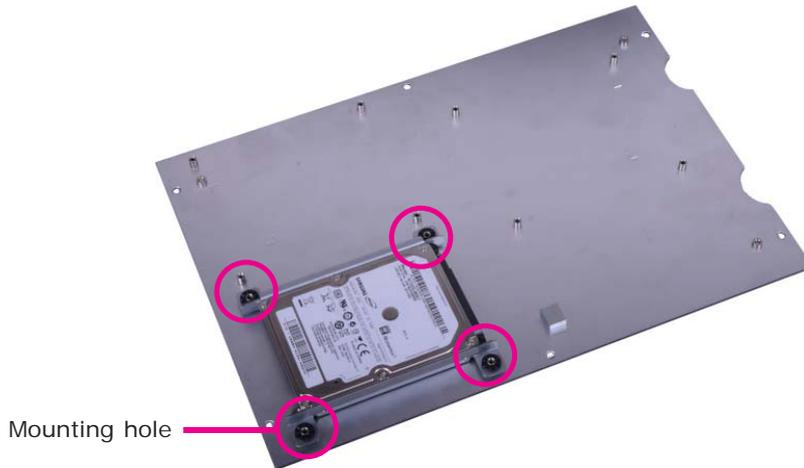


- Align the mounting holes of the SATA drive with the mounting holes on the HDD bracket and then use the provided mounting screws to secure the drive in place.

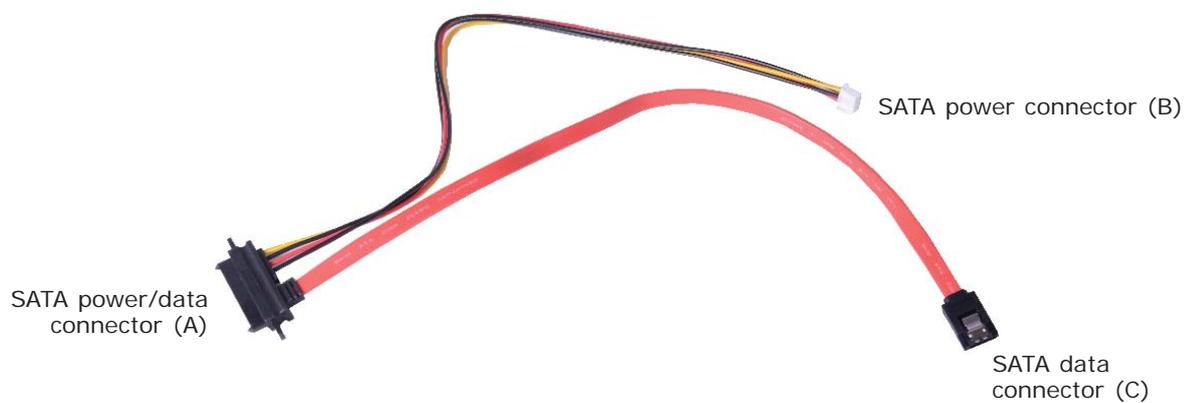


- Place the SATA drive (with HDD bracket) into the cover. Align the mounting holes on the HDD bracket with the mounting holes on the SATA drive bay and then use the provided mounting screws to secure the drive in place.



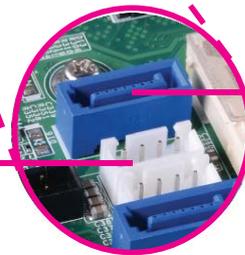
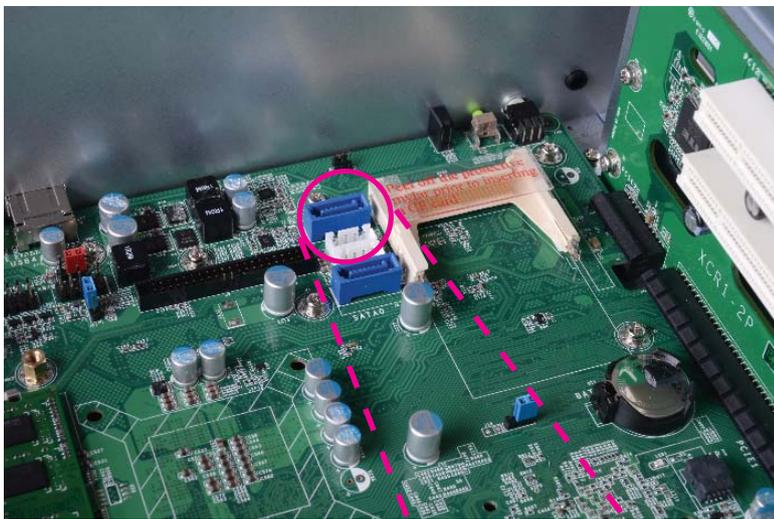


5. Connect A to the SATA power/data connector on the SATA drive, B and C to the SATA power connector and SATA data connector respectively on the system board.





SATA power/data connector



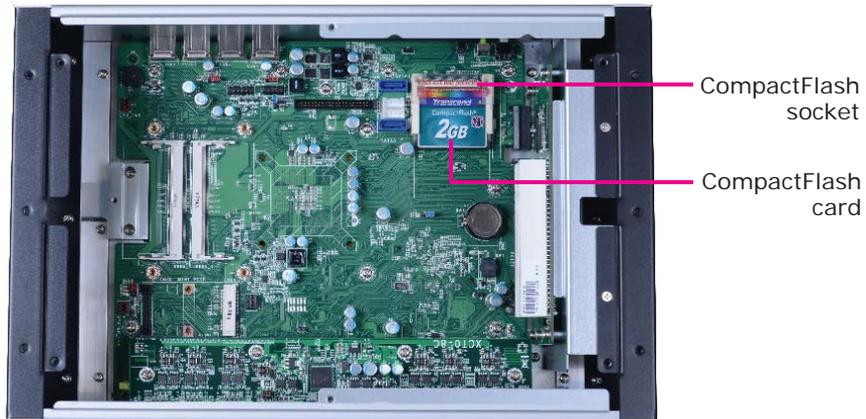
SATA data connector

SATA power connector



Installing a CompactFlash Card

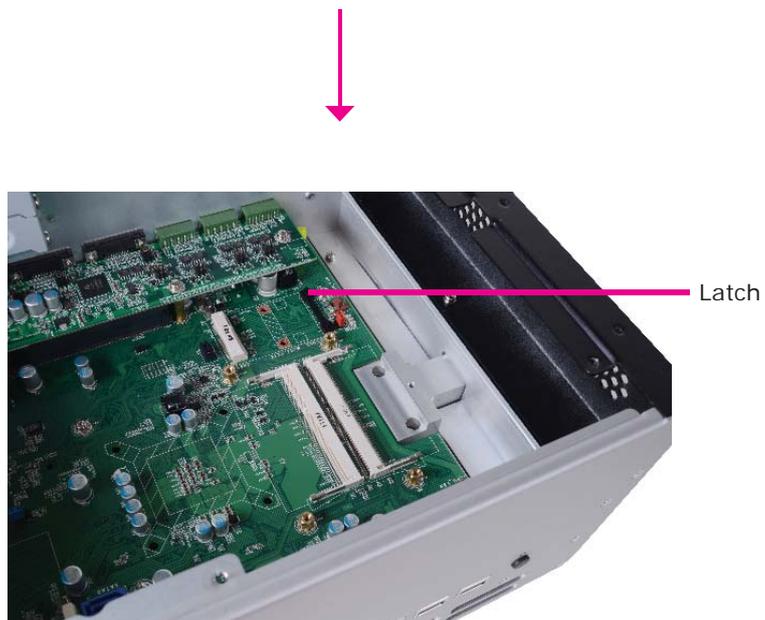
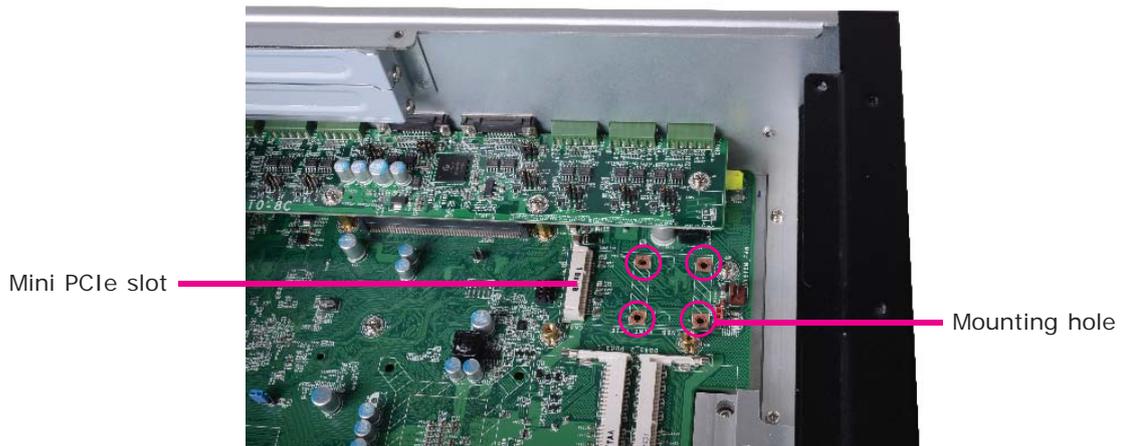
1. Locate the CompactFlash socket. With the label facing up, insert the CompactFlash card until it is completely seated in the socket.



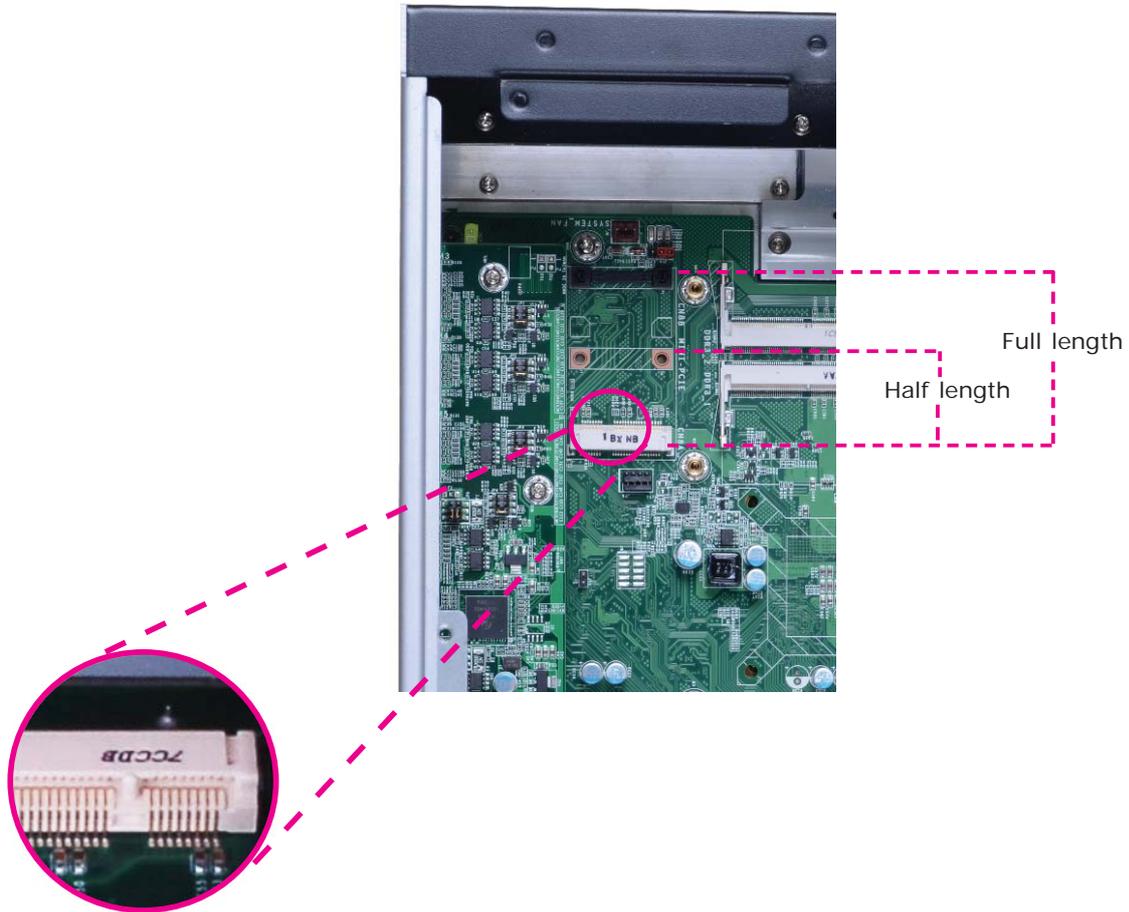
Installing a Mini PCIe and/or mSATA Card

Latch

1. The latch is used to lock the Mini PCIe / mSATA card into position. Insert the latch into the mounting holes and then push the latch down until the clips at each end of the latch lock into position. You will hear a distinctive "click", indicating the latch is correctly locked into position.



- The system board is equipped with a Mini PCIe slot. The Mini PCIe slot supports full length or half length Mini PCIe / mSATA card. Note the key on the slot. The key ensures the Mini PCIe / mSATA card can be plugged into the slot in only one direction.



Removing the latch

If you want to move the latch in order to use the desired card, please follow below steps:

- Remove the clips at each end of the latch once at a time.
- Press the clips to the center of the latch and pull it up.



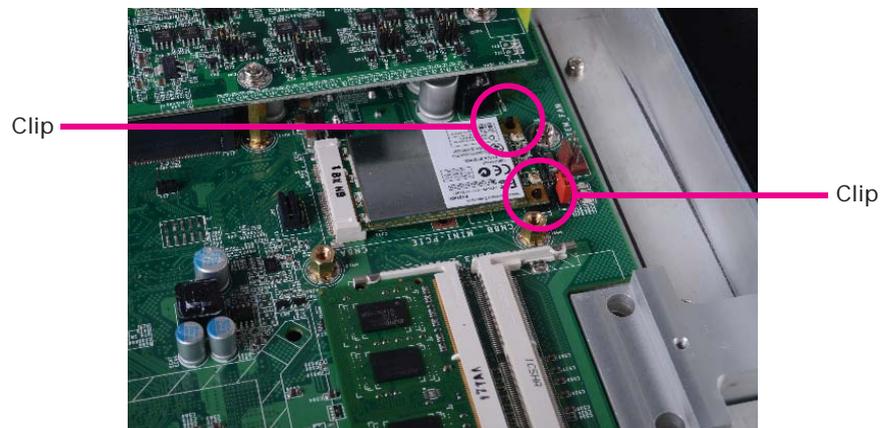
- Pull the clips up and remove the latch.

Installing the Mini PCIe Card

1. Grasping the Mini PCIe card by its edges, align the card into the slot at an approximately 30 degrees angle. Apply firm even pressure to each end of the card until it slips down into the slot. The contact fingers on the edge of the card will almost completely disappear inside the slot.

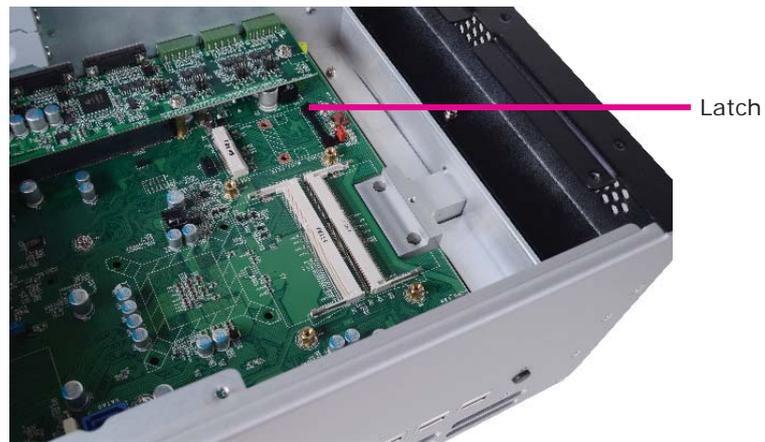


2. Push the Mini PCIe card down until the clips at each end of the latch lock into position. You will hear a distinctive “click”, indicating the card is correctly locked into position.



Installing the mSATA Card

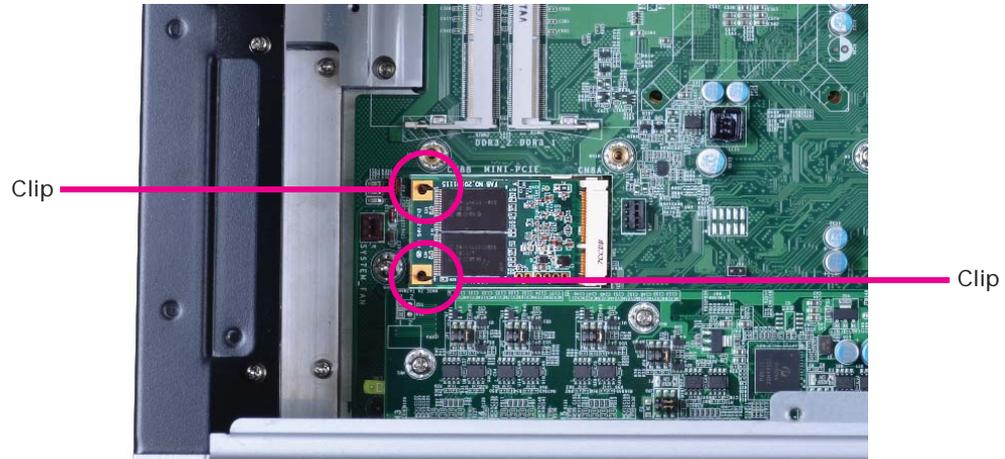
1. Insert the latch into the mounting holes in accordance with the length of the mSATA card. Push the latch down until the clips at each end of the latch lock into position. You will hear a distinctive "click", indicating the latch is correctly locked into position.



2. Grasping the mSATA card by its edges, align the card into the slot at an approximately 30 degrees angle. Apply firm even pressure to each end of the card until it slips down into the slot. The contact fingers on the edge of the card will almost completely disappear inside the slot.



3. Push the mSATA card down until the clips at each end of the latch lock into position. You will hear a distinctive “click”, indicating the card is correctly locked into position.



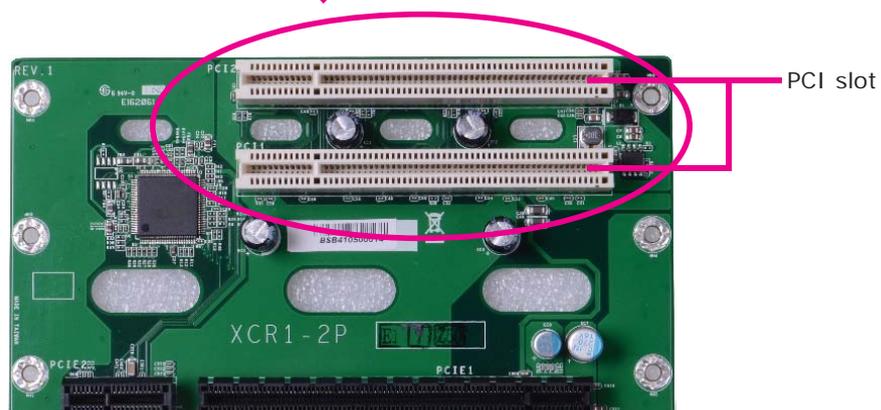
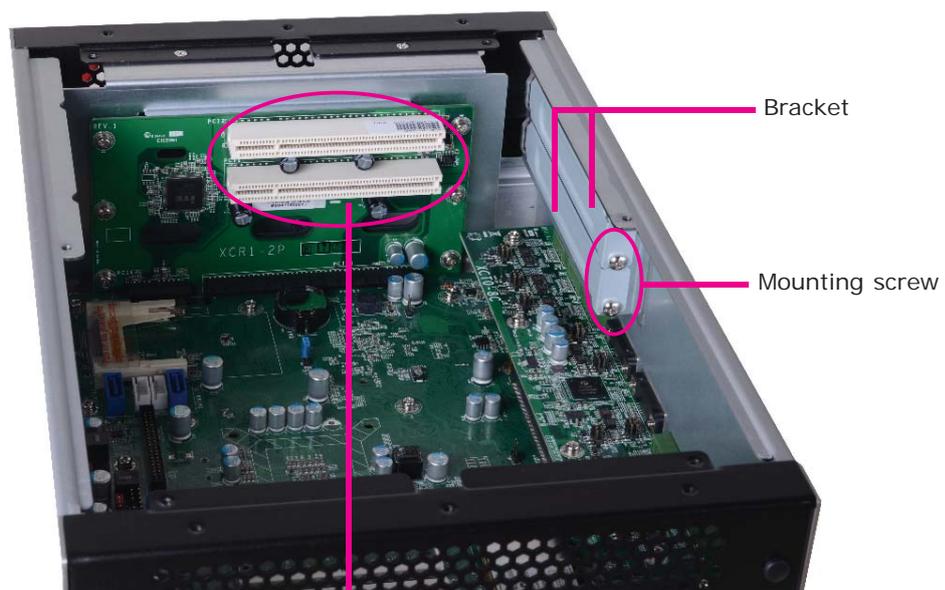
Installing the PCI and PCIe Expansion Cards

**Important:**

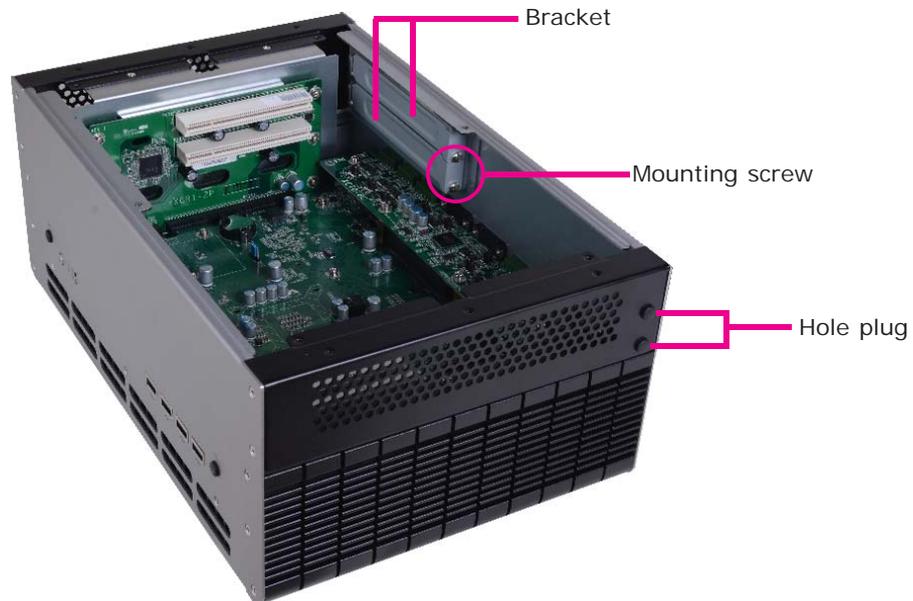
When inserting the riser card, please select a card within 175mm (as shown on the next picture) in order to fit in the slot.



1. The PCI and PCIe x16 slots on the riser card are used to install the expansion cards. To install the expansion cards, you need to remove the mounting screws that secure the brackets to the chassis then remove the brackets.



2. To remove the mounting screws and the brackets, you need to remove the hole plugs and insert the screwdriver through the hole to access the mounting screws.



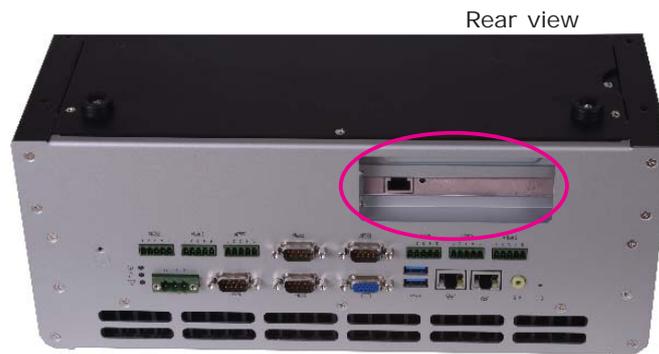
3. Remove these mounting screws and brackets, and then put them in a safe place for later use.



3

Installing Devices

4. Insert the Expansion card with a bracket into the PCI slot that is on the riser card. Replace the screw you removed in step 3 to secure the bracket in place.

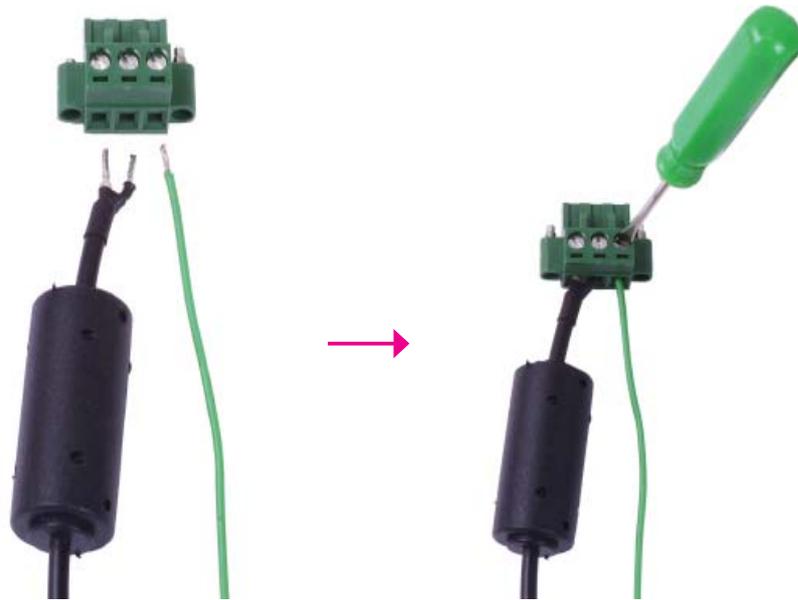


Note:

The Expansion cards used in the above illustrations may not resemble the actual cards. These illustrations are for reference only.

Connecting Cables to Terminal Blocks

1. Insert one end of the power adaptor and the cable into the holes on the power jack, and use the screwdriver to fasten the cables.



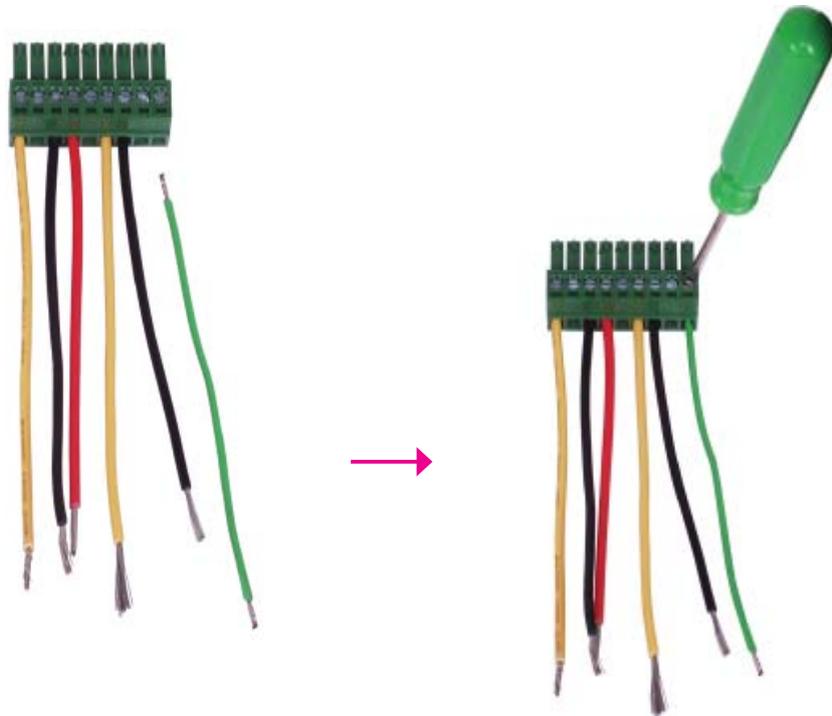
2. Connect the power jack to the connector on the system, and use the screwdriver to secure the power jack in place.



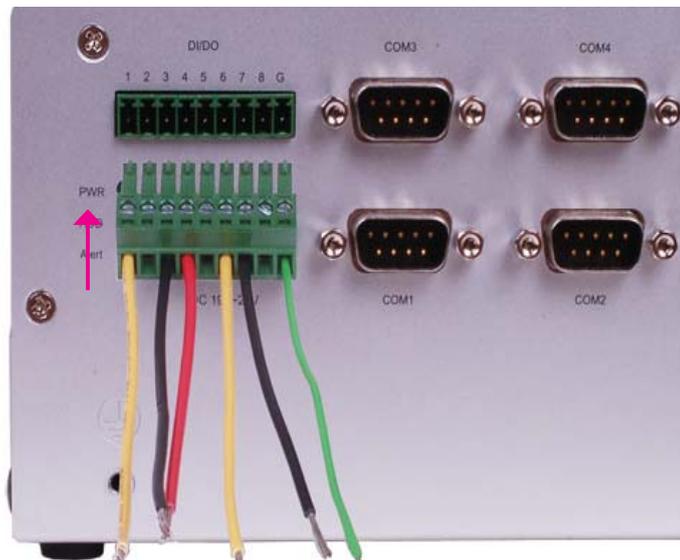
3

Installing Devices

3. Insert one end of the cables into the holes on the terminal block, and use the screwdriver to fasten the cables.



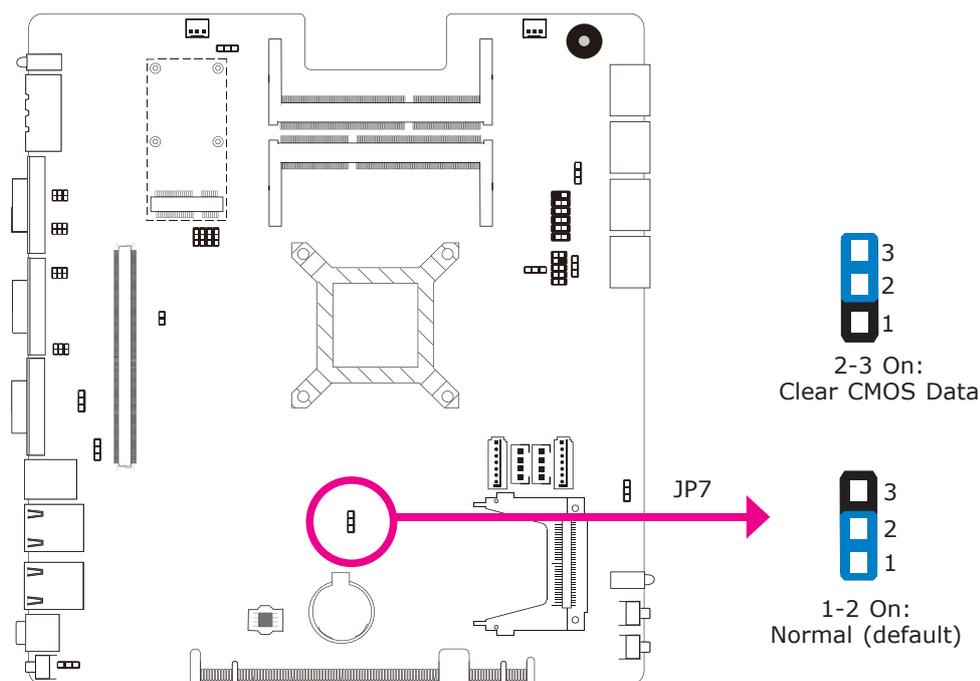
4. Connect the terminal block to the connector on the system, and use the screwdriver to secure the terminal block in place.



Chapter 4 - Jumper Settings

Jumper Settings - System Board

Clear CMOS Data



If you encounter the following,

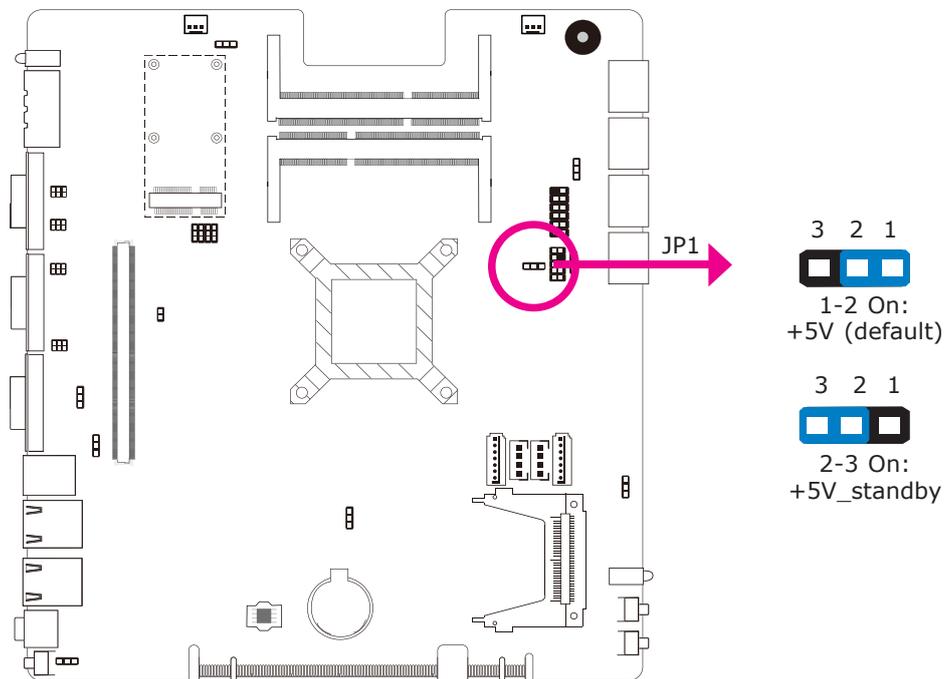
- CMOS data becomes corrupted.
- You forgot the supervisor or user password.

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.

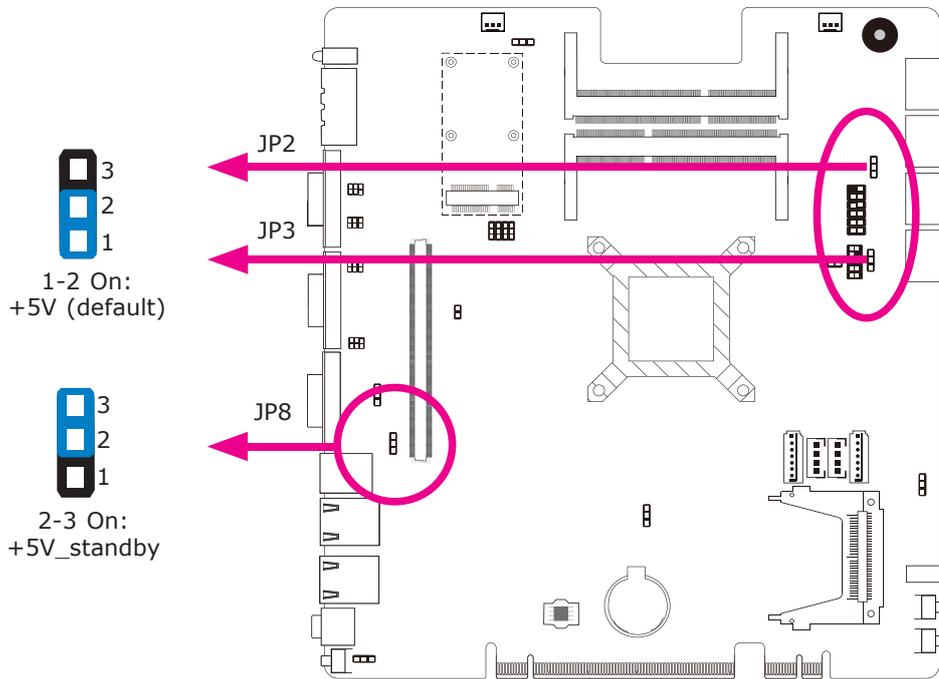
- Power-off the system and unplug the power cord.
- Set JP7 pins 2 and 3 to On. Wait for a few seconds and set JP7 back to its default setting, pins 1 and 2 On.
- Now plug the power cord and power-on the system.

PS/2 Power Select



JP1 is used to select the power of the PS/2 keyboard/mouse port. Selecting +5V_standby will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

USB Power Select



JP2 (for USB 6-7), JP3 (for USB 4-5) and JP8 (for USB 0-1) are used to select the power of the USB ports. Selecting +5V_standby will allow you to use a USB device to wake up the system.

BIOS Setting

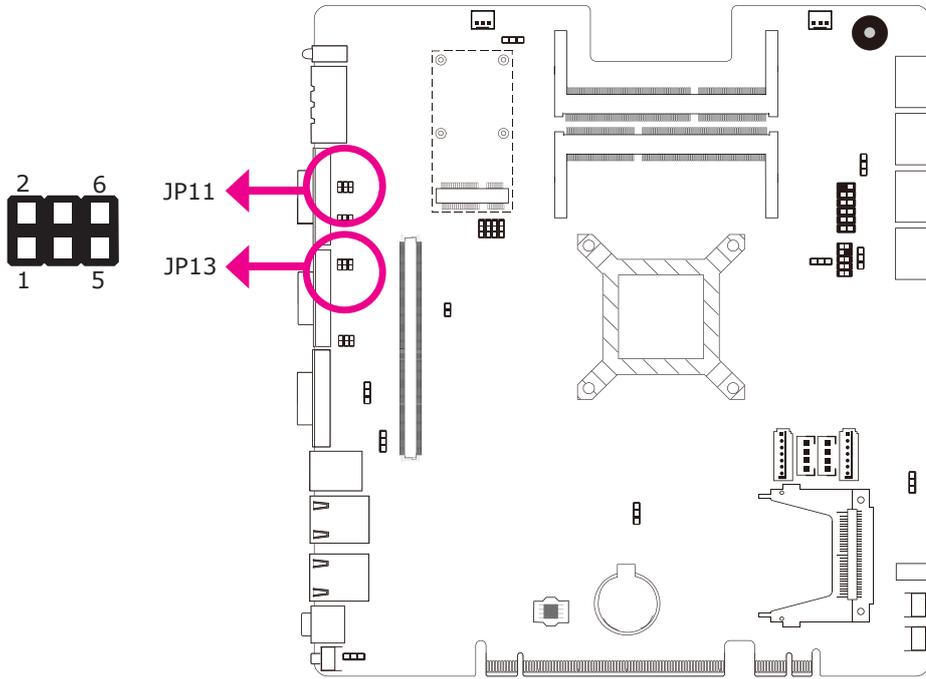
"USB Device Wakeup From S3/S4" in the Advanced menu ("ACPI Configuration" submenu) of the BIOS must be set to Enabled. Refer to chapter 7 for more information.



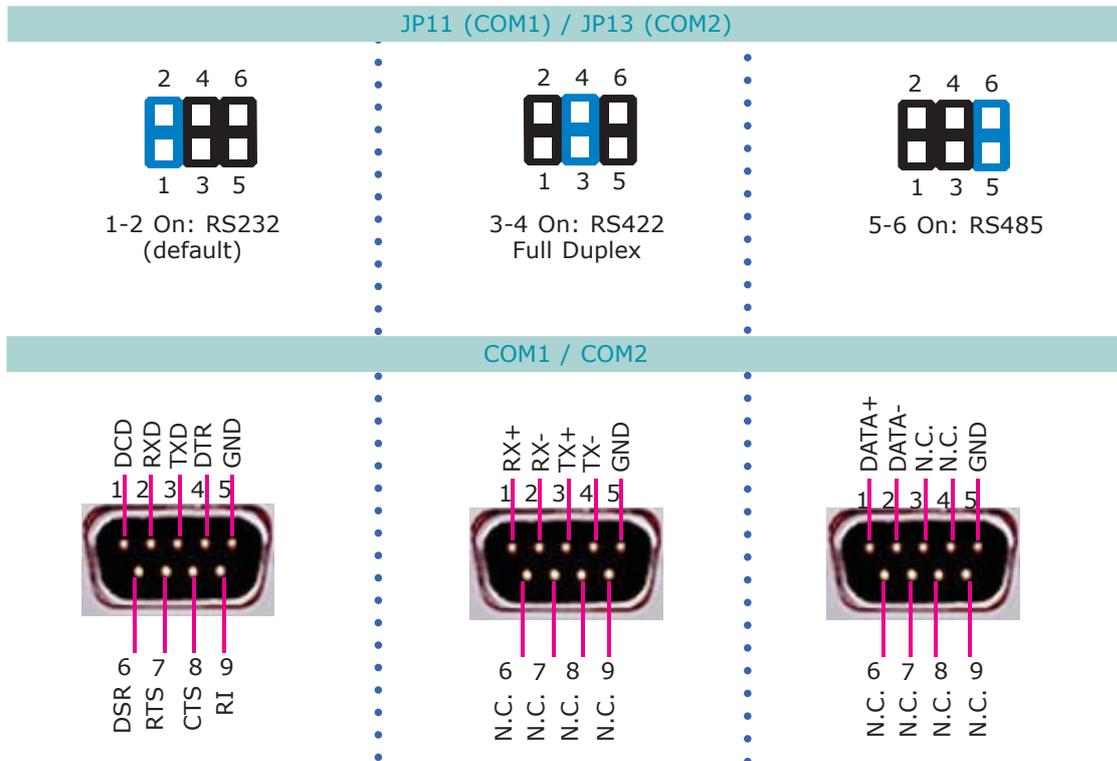
Important:

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

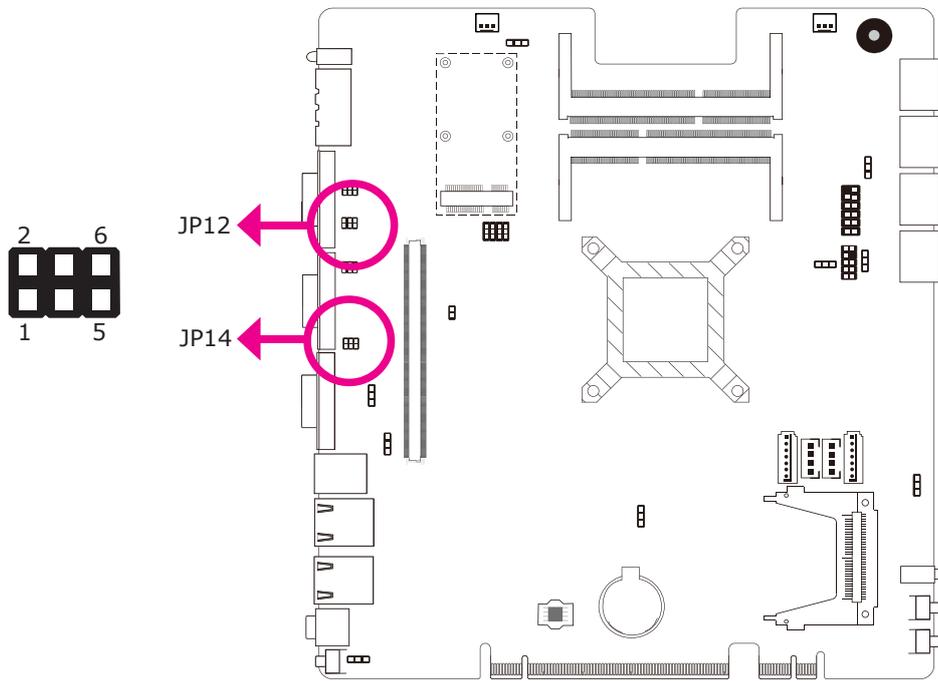
COM1 and COM2 RS232/422/485 Select



JP11 (COM1) and JP13 (COM2) are used to configure COM1 and COM2 to RS232, RS422 (Full Duplex) or RS485 respectively.

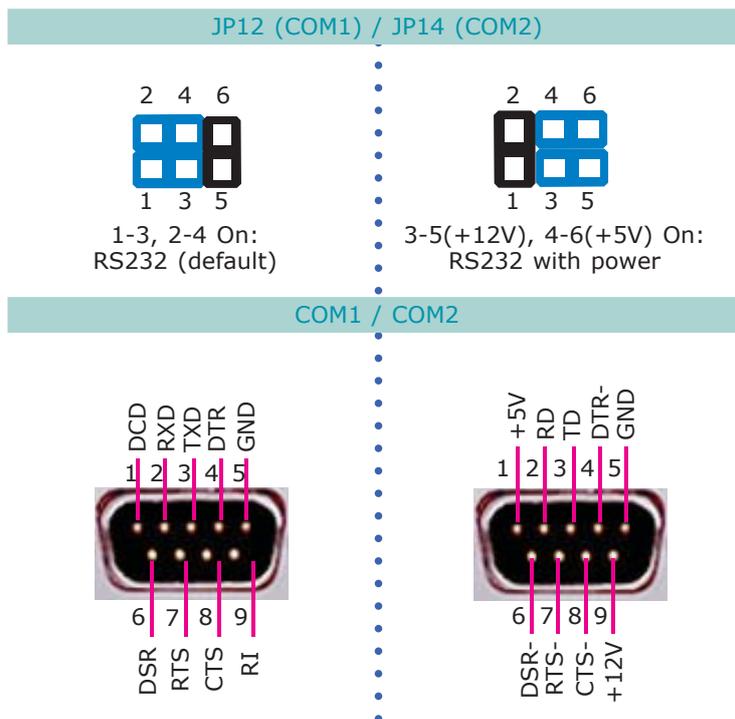


COM1 and COM2 RS232/Power Select

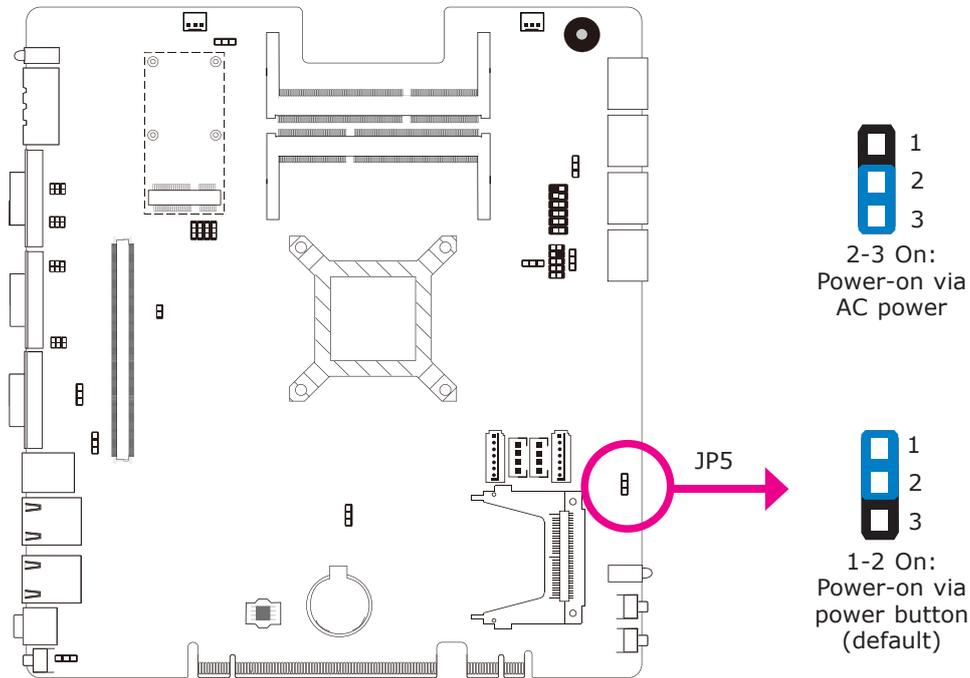


JP12 (COM1) and JP14 (COM2) are used to configure COM1 and COM2 to pure RS232 or RS232 with power.

The pin function of COM1 and COM2 will vary according to JP12's and JP14's setting respectively.



Power-on Select



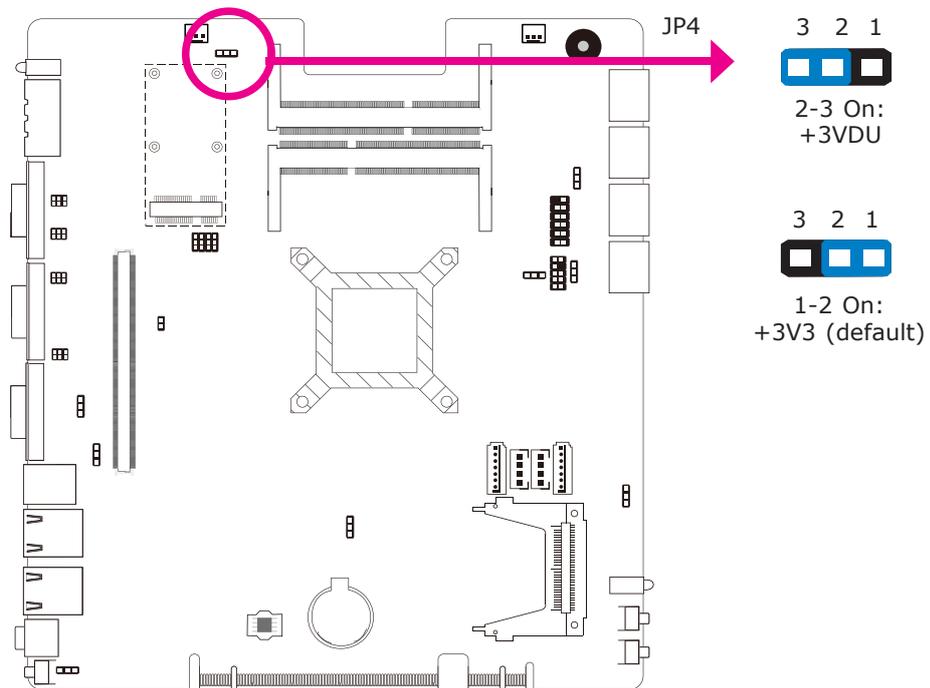
JP5 is used to select the method of powering on the system. If you want the system to power-on whenever AC power comes in, set JP5 pins 2 and 3 to On. If you want to use the power button, set pins 1 and 2 to On.

When using the JP5 "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).

Note:

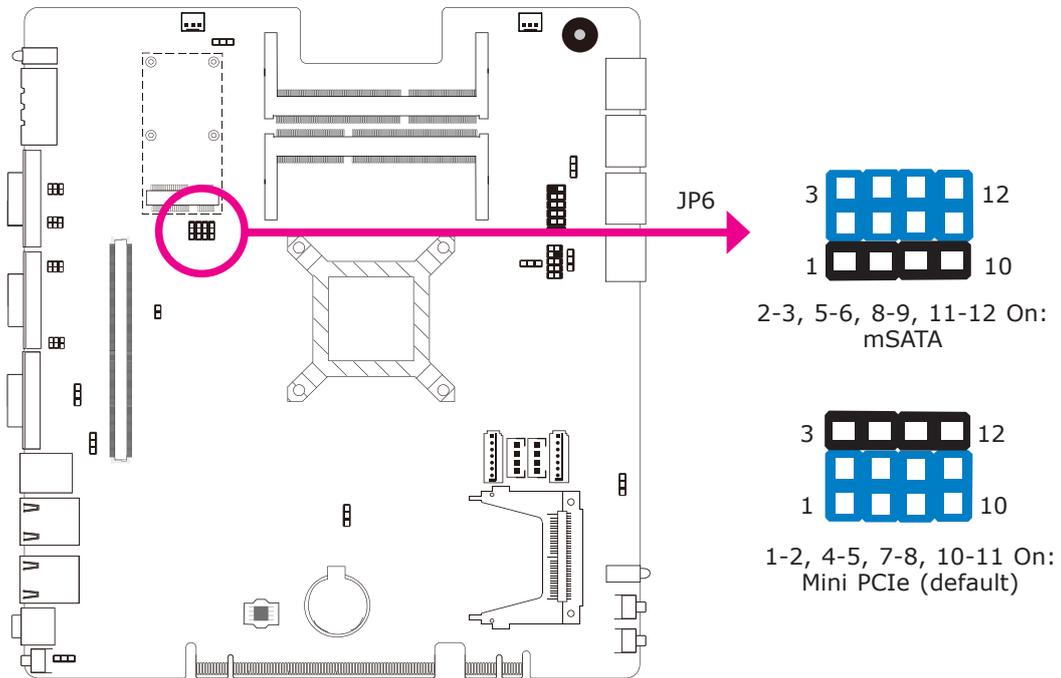
In order to ensure that power is resumed after a power failure that recovers within a 5 second period, JP5 must be set to pins 2-3 and the "PWRON After PWR-Fail" in CMOS is set to "On".

Mini PCIe/ mSATA Power Select



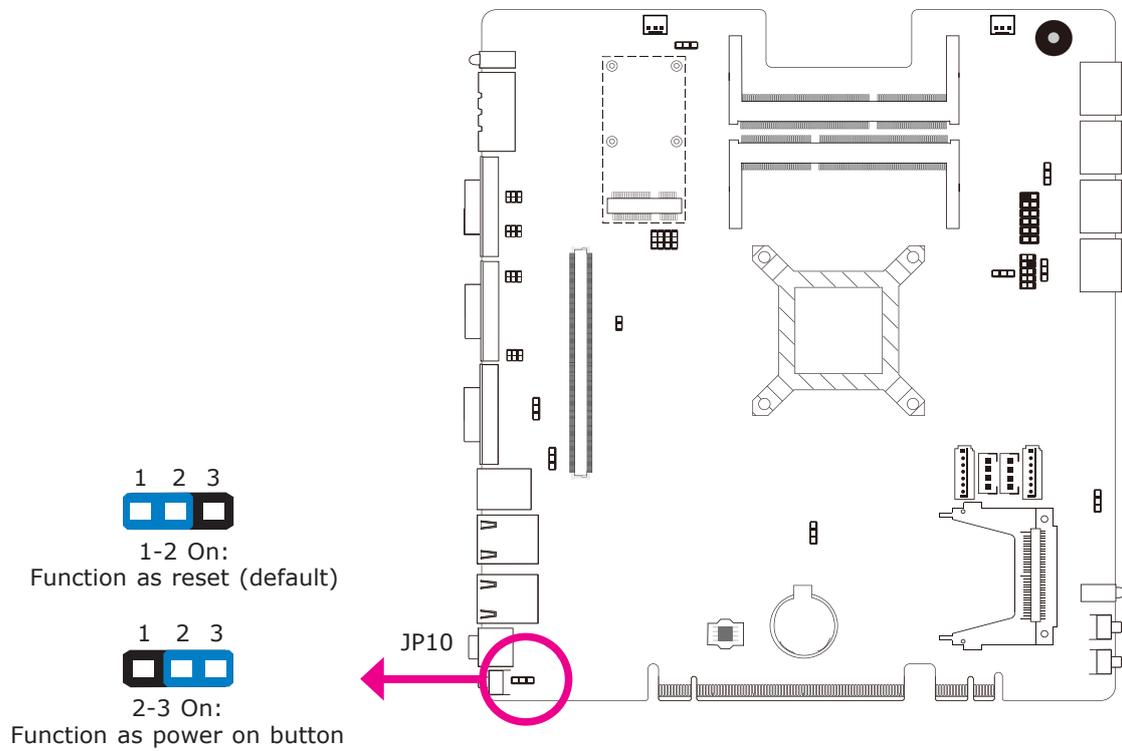
JP4 is used to select the power supplied to the Mini PCIe and mSATA card that is on the motherboard. Selecting +3V3 will be the default setting.

Mini PCIe/ mSATA Select



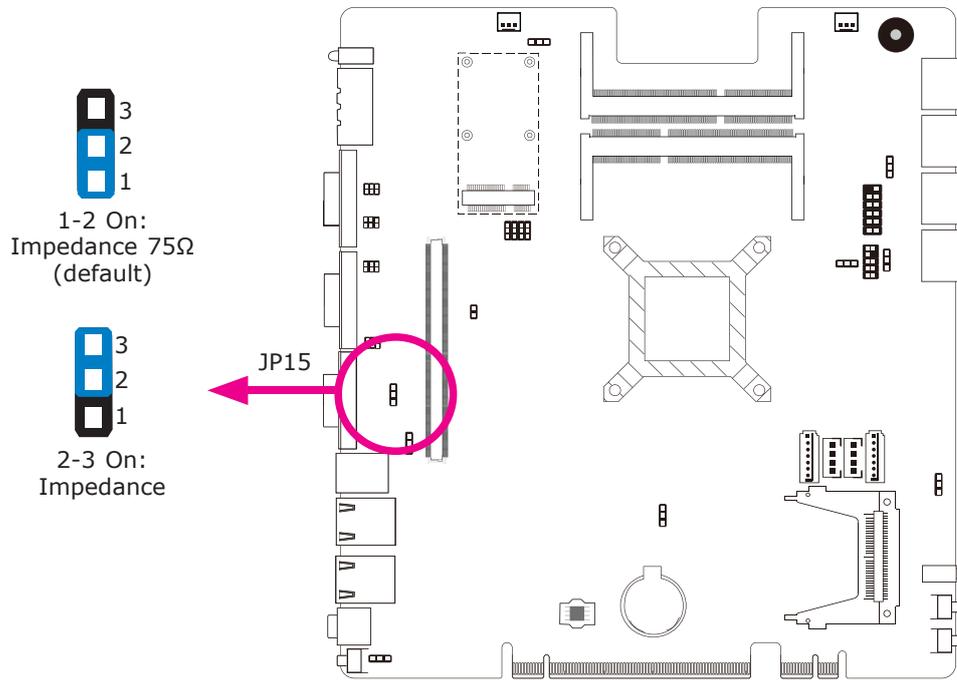
JP6 is used to select Mini PCIe or mSATA. Mini PCIe is set as default.

Reset/ Power on Select



The Reset/ Power on Select is used to select the function of the reset bottom.

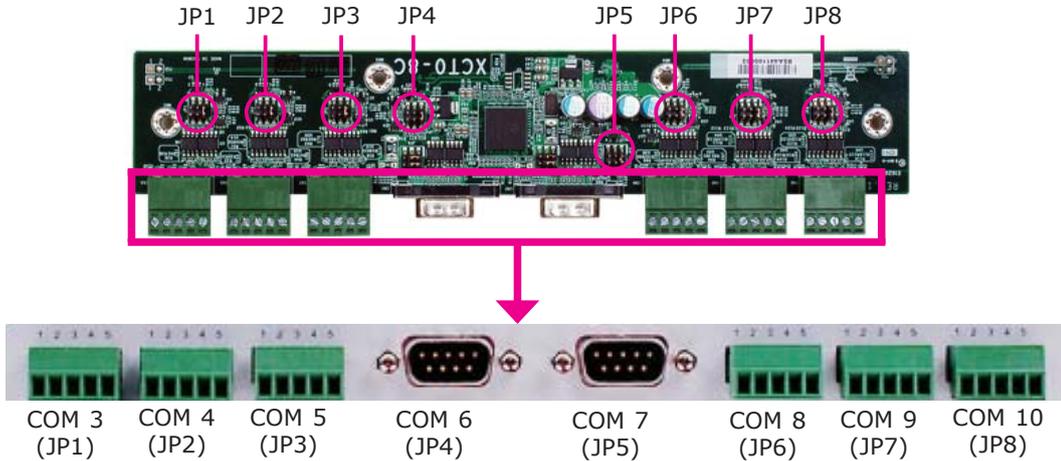
Factory Testing



Jumper Settings - IO Board

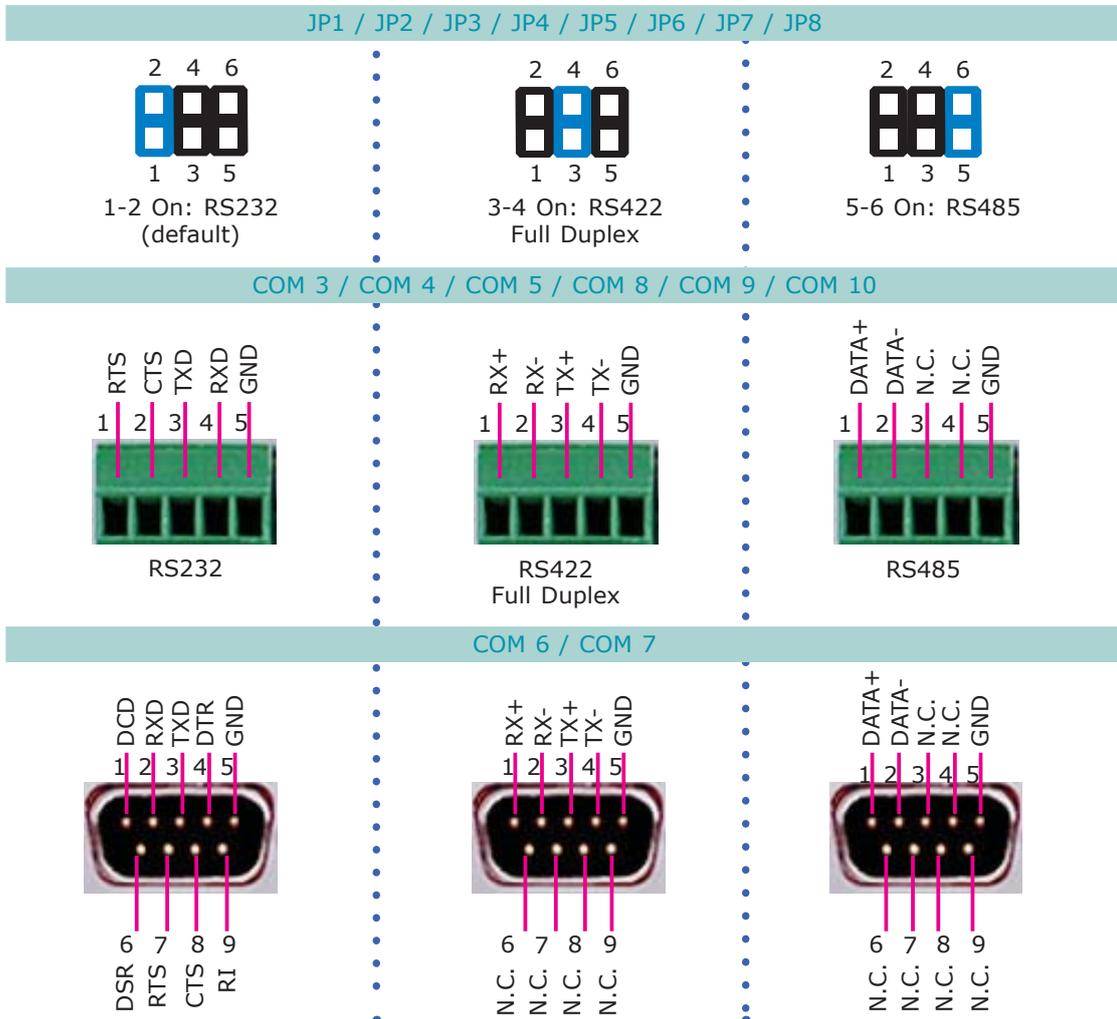
EC300/310/320/321/322-CRA060

COM 3 to COM 10 RS232/RS422/RS485 Select

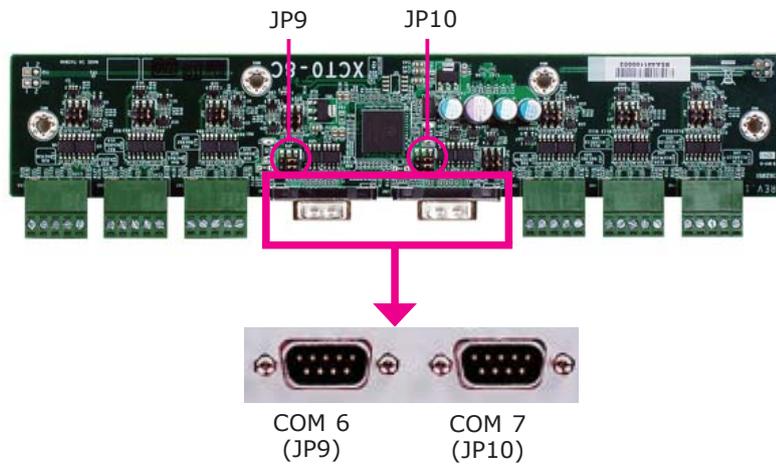


JP1 (for COM 3) to JP8 (for COM 10) are used to configure the COM ports to RS232, RS422 (Full Duplex) or RS485.

The pin function of the COM ports will vary according to the jumper's setting.

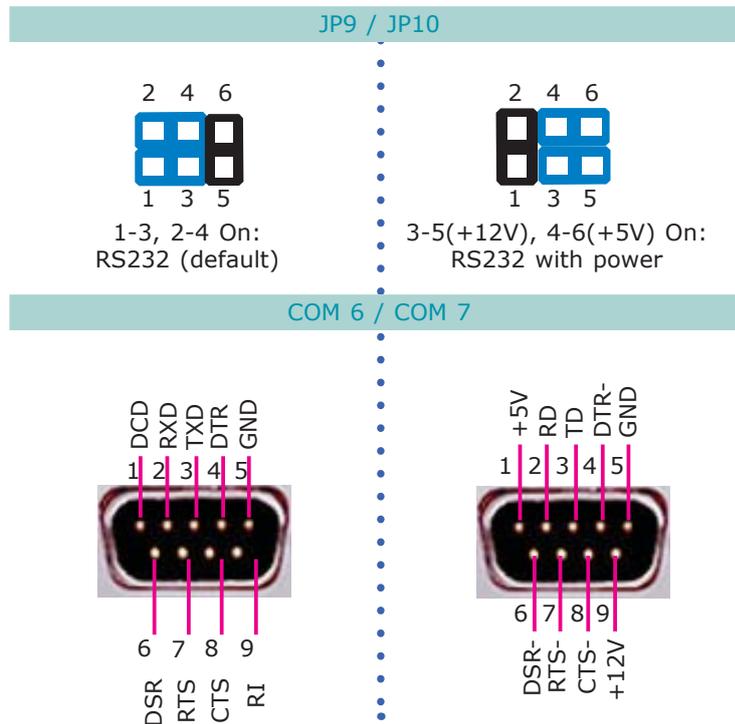


COM 6 and COM 7 RS232/Power Select



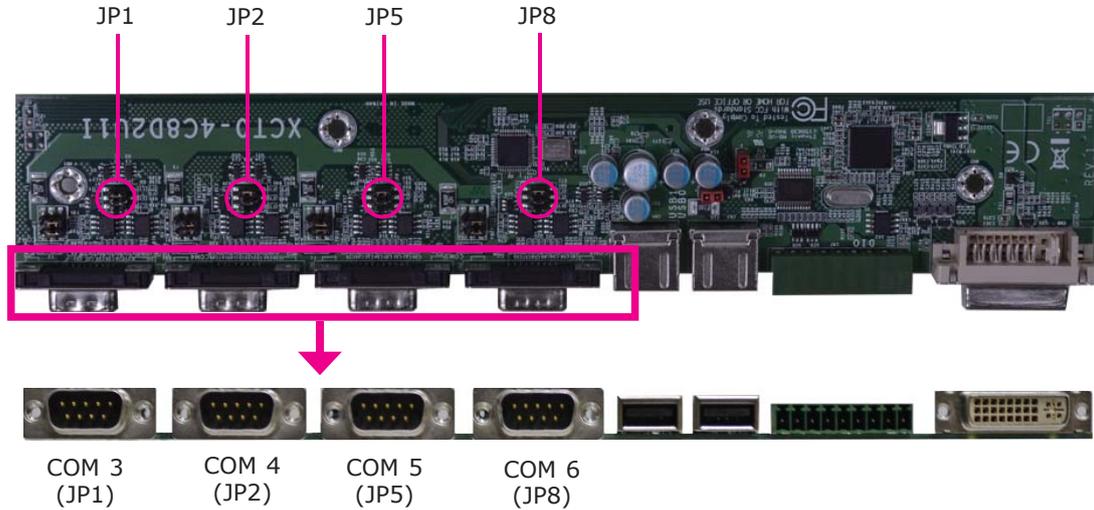
JP9 and JP10 are used to configure COM 6 and COM 7 to pure RS232 or RS232 with power.

The pin function of COM 6 and COM 7 will vary according to JP9's and JP10's setting respectively.



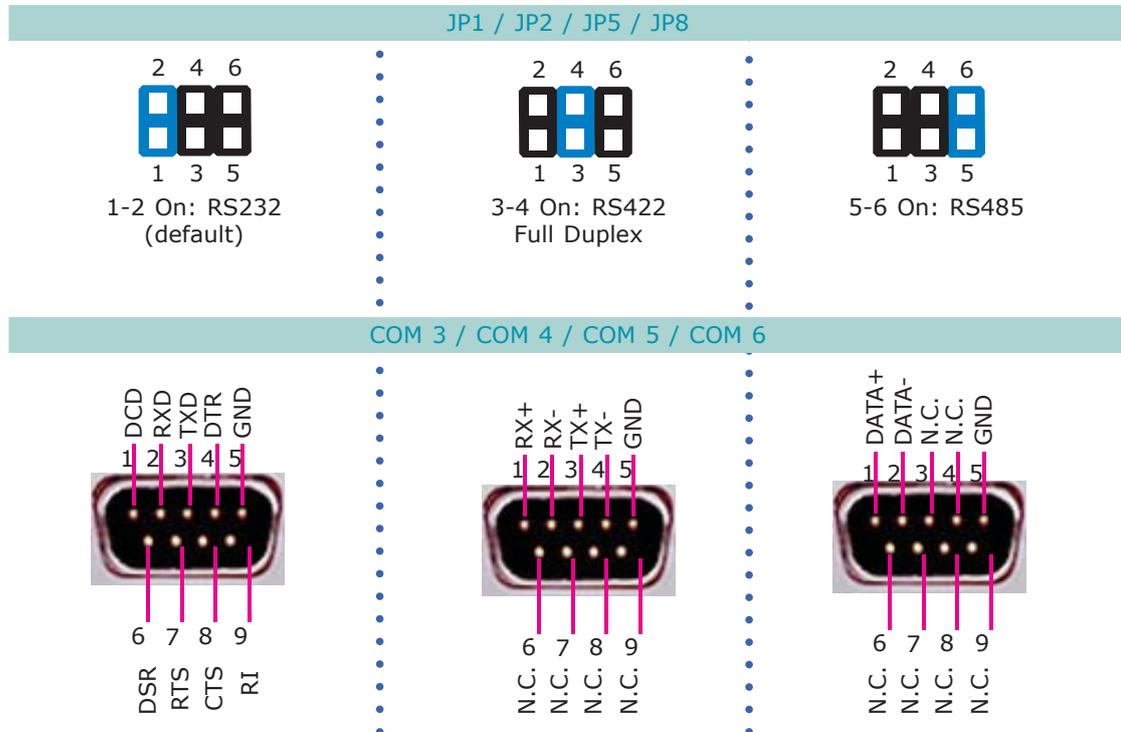
EC300/310/320/321/322-CR688I

COM 3 to COM 6 RS232/RS422/RS485 Select

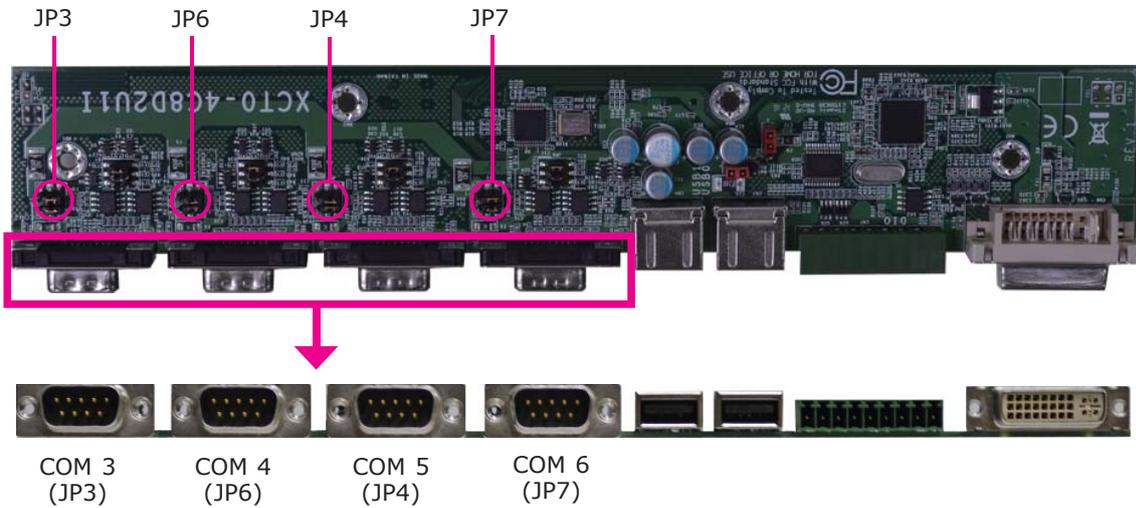


JP1 (for COM 3), JP2 (for COM 4), JP5 (for COM 5) and JP8 (for COM 6) are used to configure the COM ports to RS232, RS422 (Full Duplex) or RS485.

The pin function of the COM ports will vary according to these jumpers' setting.

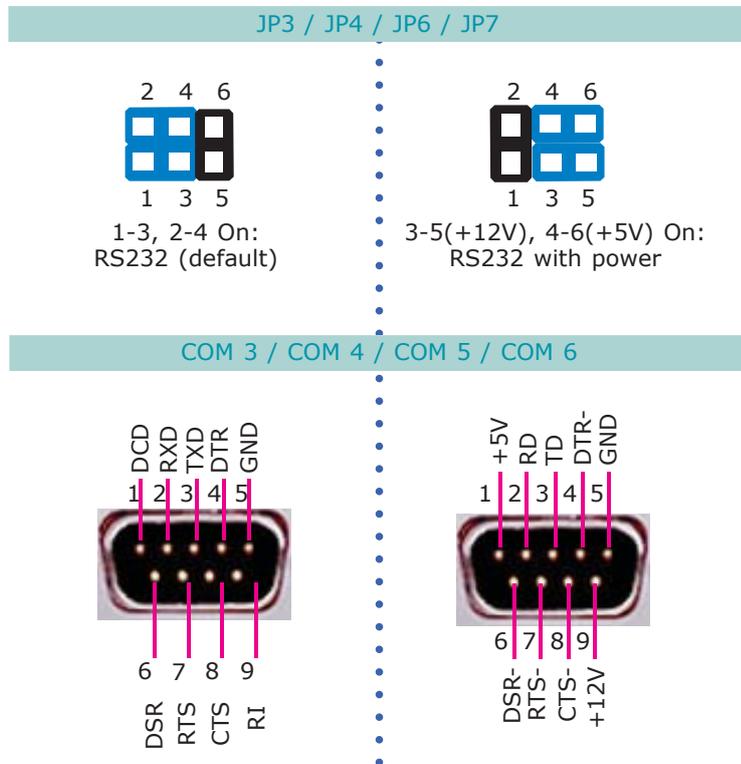


COM 3 to COM 6 RS232/Power Select

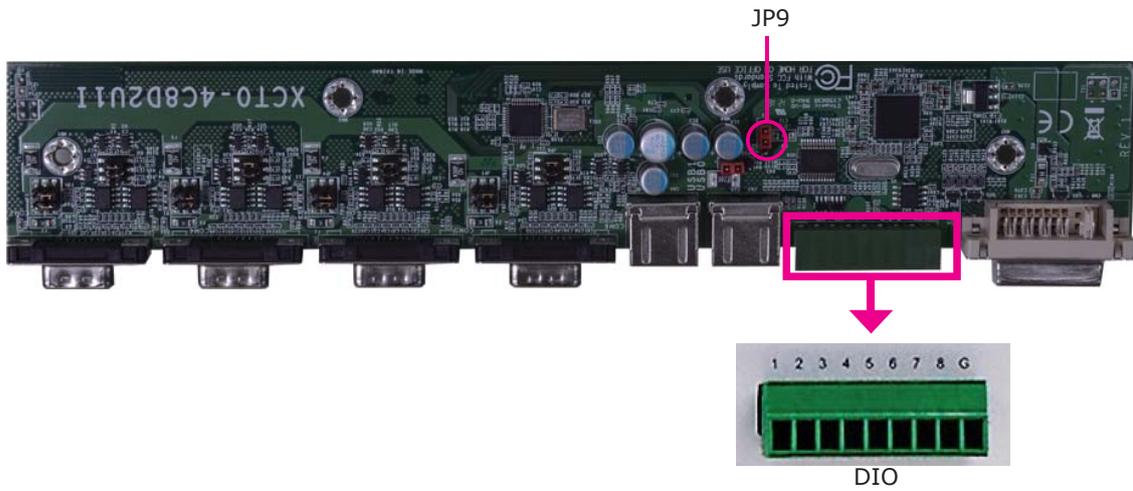


JP3, JP4, JP6 and JP7 are used to configure COM 3 to COM 6 to pure RS232 or RS232 with power.

The pin function of COM 3 to COM 6 will vary according to JP3's, JP4's, JP6's and JP7's setting respectively.

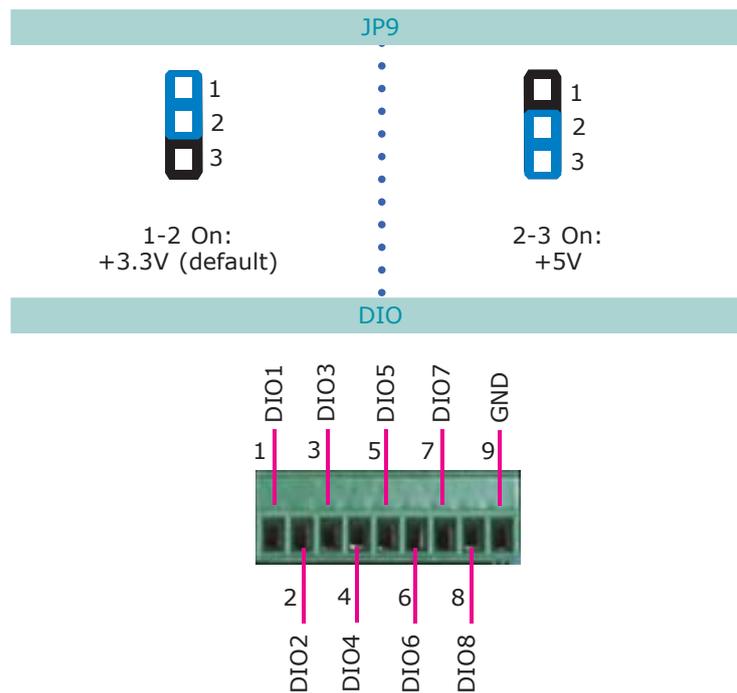


Digital I/O Signal Voltage Select

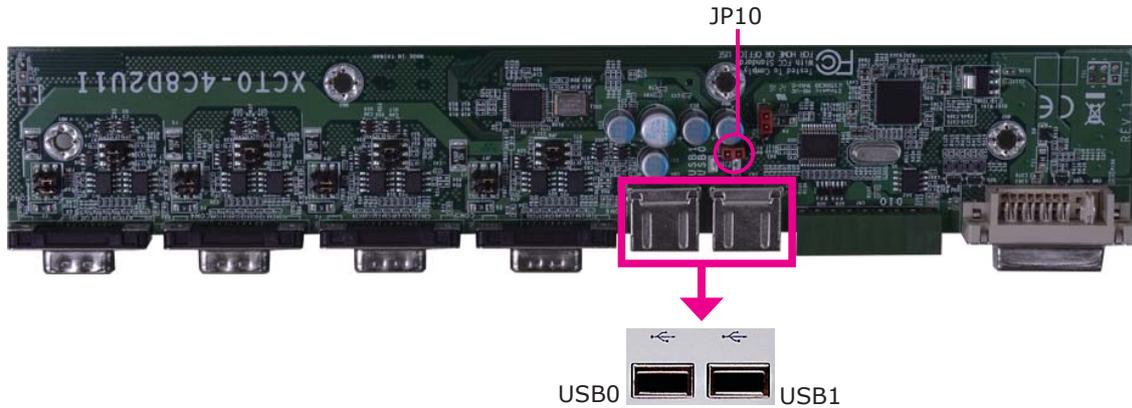


JP9 is used to configure DIO to signal voltage select.

The pin function of DIO port will vary according to the jumper's setting respectively.



USB Power Select



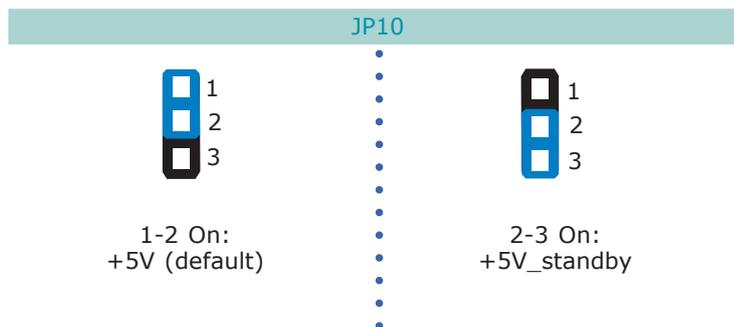
JP10 (for USB 0-1) is used to select the power of the USB ports. Selecting +5V_ standby will allow you to use a USB device to wake up the system.

BIOS Setting

"USB Device Wakeup From S3/S4" in the Advanced menu ("ACPI Configuration" submenu) of the BIOS must be set to Enabled. Please refer to the user's manual on Chapter 7 for more information.

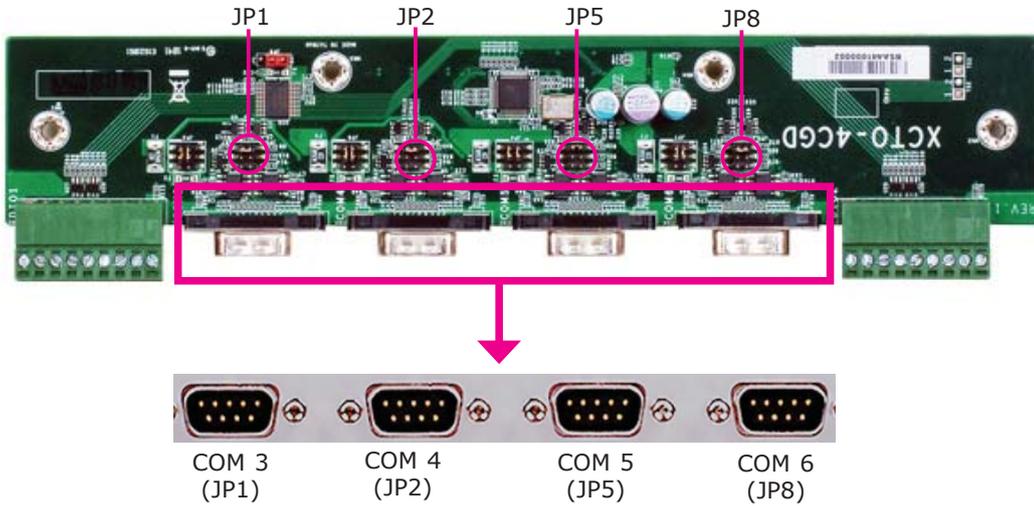
**Important:**

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



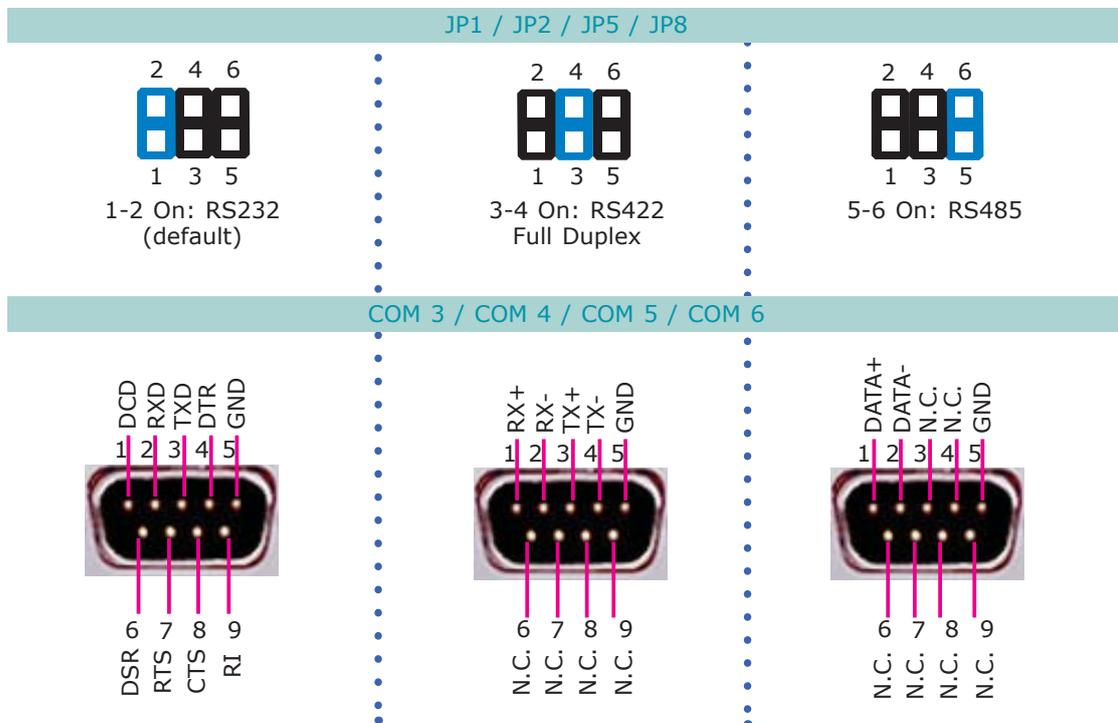
EC300/310/320/321/322-CR6G60

COM 3 to COM 6 RS232/RS422/RS485 Select

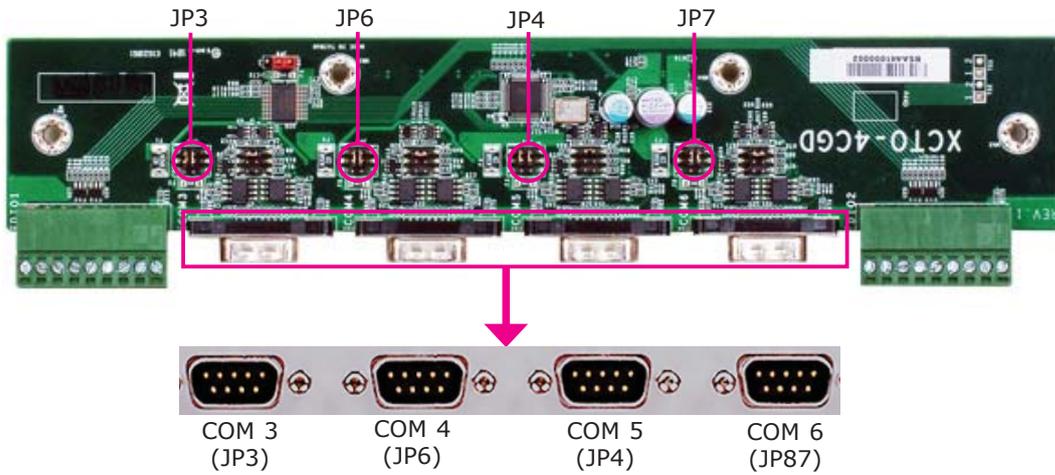


JP1 (for COM 3), JP2 (for COM 4), JP5 (for COM 5) and JP8 (for COM 6) are used to configure the COM ports to RS232, RS422 (Full Duplex) or RS485.

The pin function of the COM ports will vary according to these jumpers' setting.

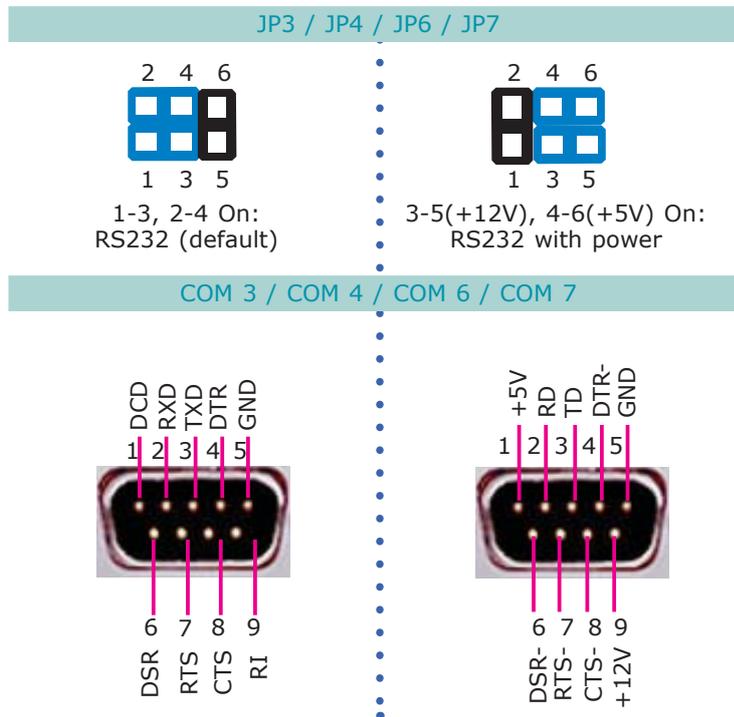


COM 3 to COM 6 RS232/Power Select

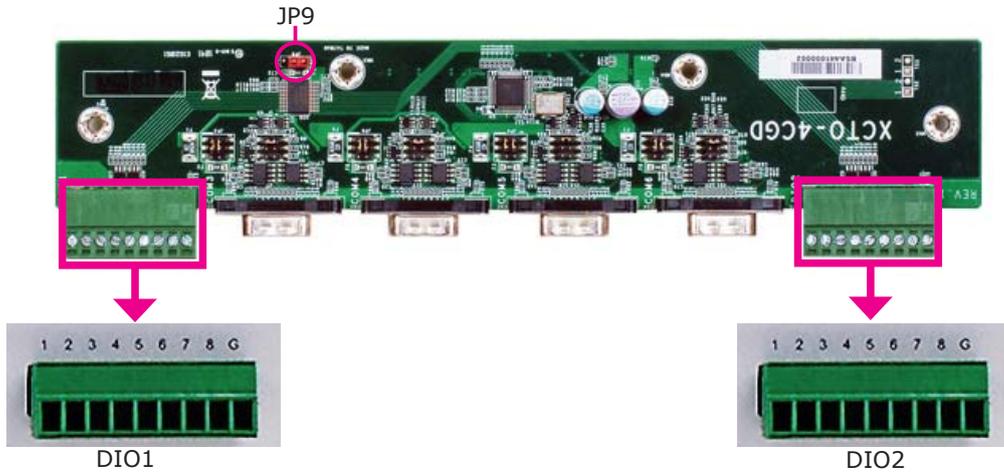


JP3, JP4, JP6 and JP7 are used to configure COM 3 to COM 6 to to pure RS232 or RS232 with power.

The pin function of COM 3 to COM 6 will vary according to JP3's, JP4's, JP6's and JP7's setting respectively.

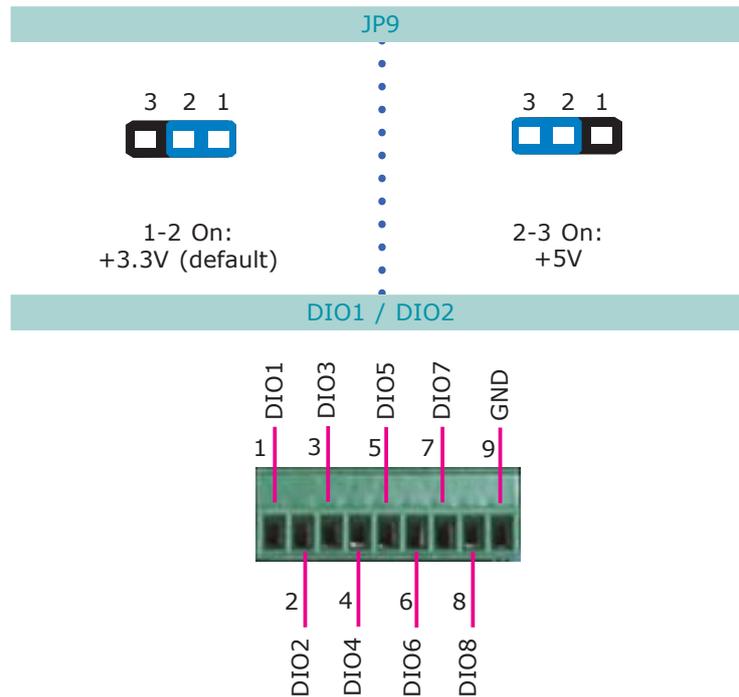


Digital I/O Signal Voltage Select



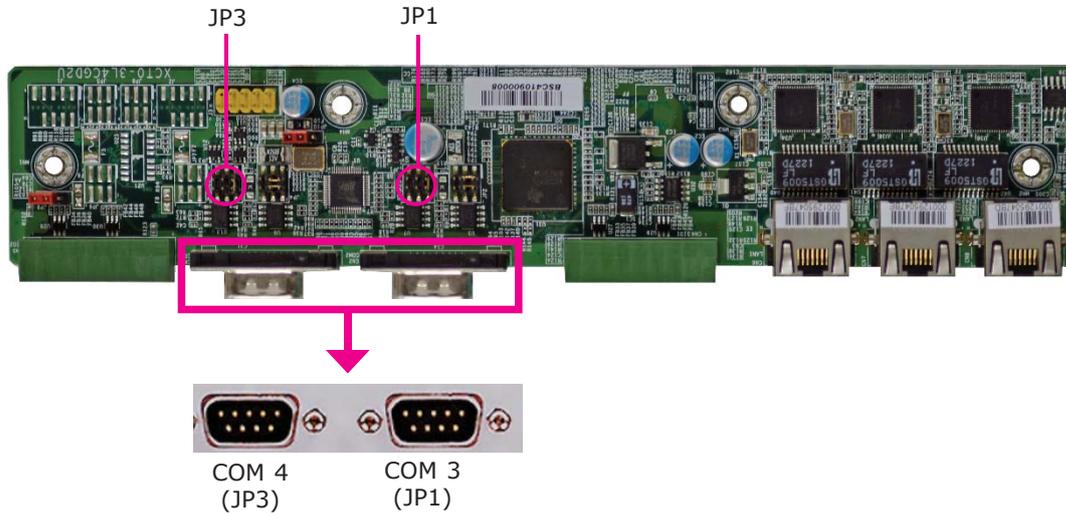
JP9 is used to configure DIO to signal voltage select.

The pin function of DIO port will vary according to the jumper's setting respectively.



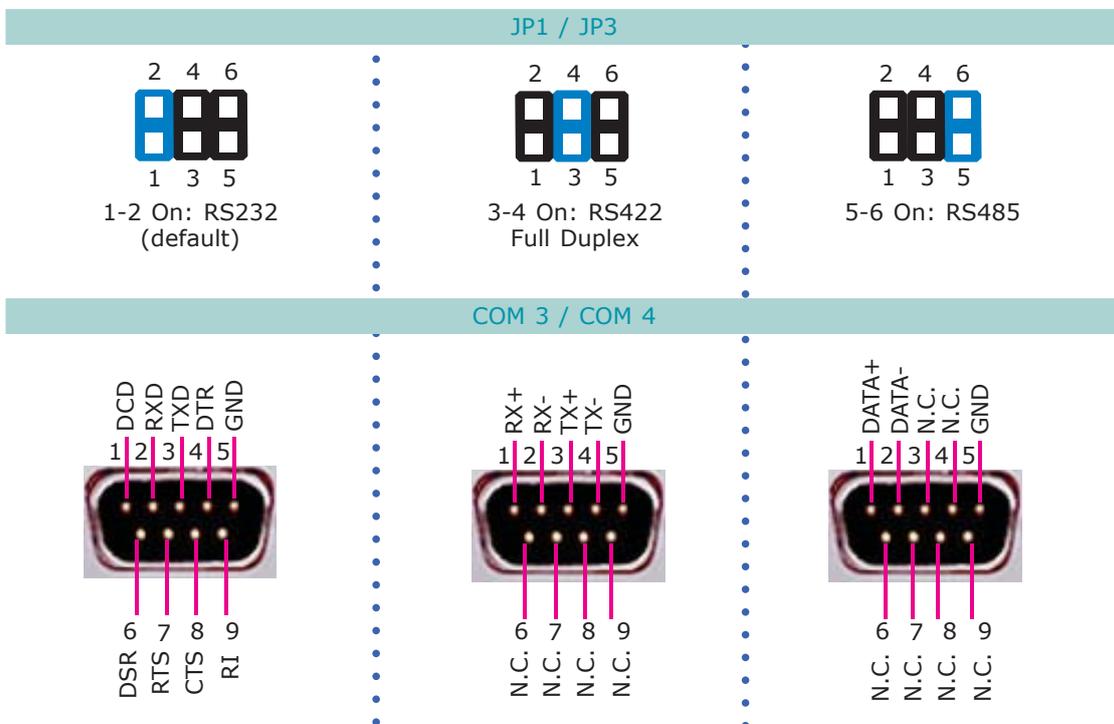
EC300/320/321/322-CR4G65

COM 3 and COM 4 RS232/RS422/RS485 Select

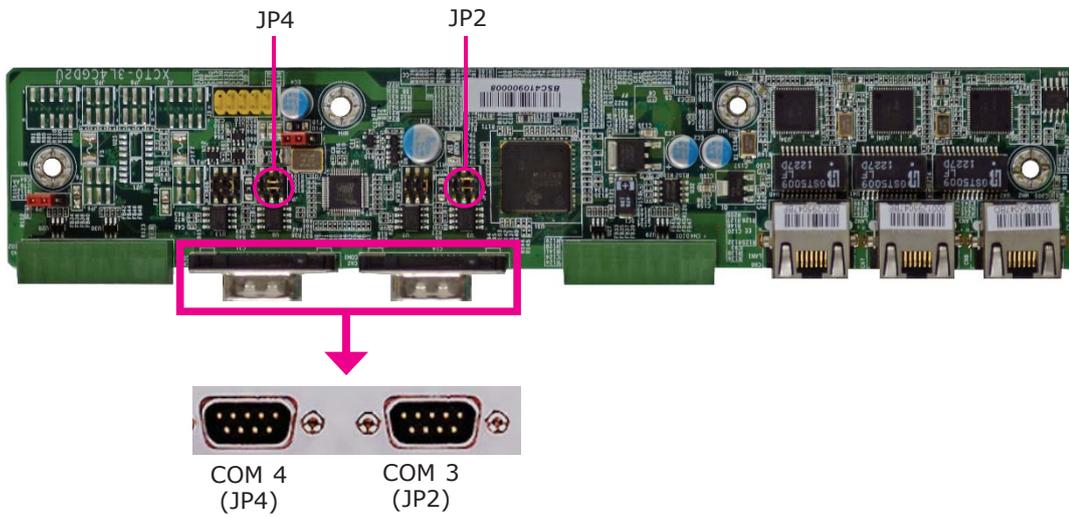


JP1 (for COM 3) and JP3 (for COM 4) are used to configure the COM ports to RS232, RS422 (Full Duplex) or RS485.

The pin function of the COM ports will vary according to these jumpers' setting.

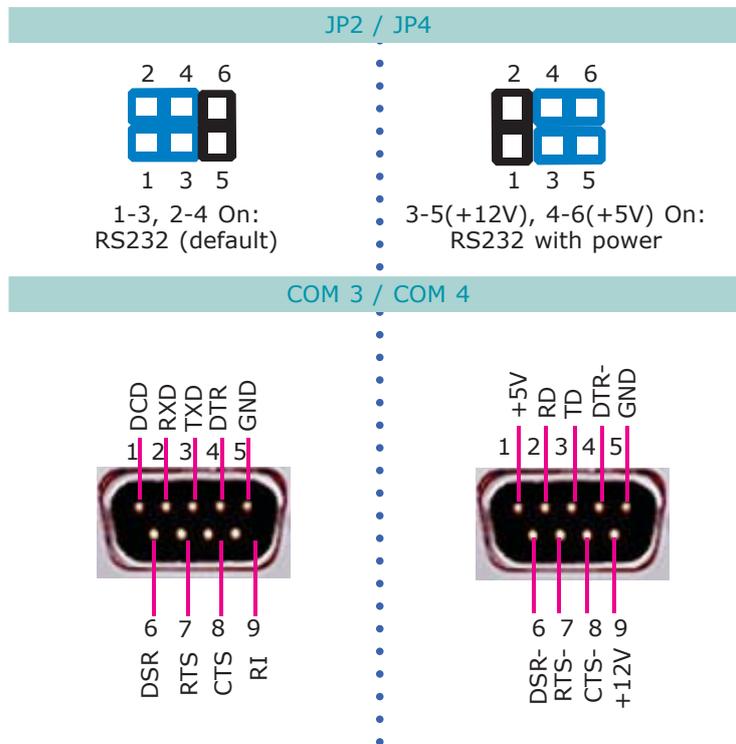


COM 3 and COM 4 RS232/Power Select

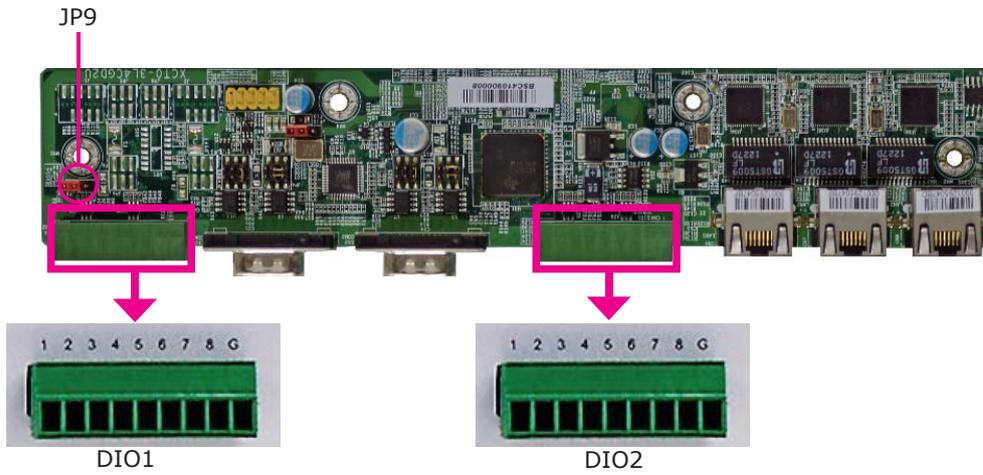


JP2 and JP4 are used to configure COM 3 and COM 4 to pure RS232 or RS232 with power.

The pin function of COM 3 and COM 4 will vary according to JP2's and JP4's setting respectively.

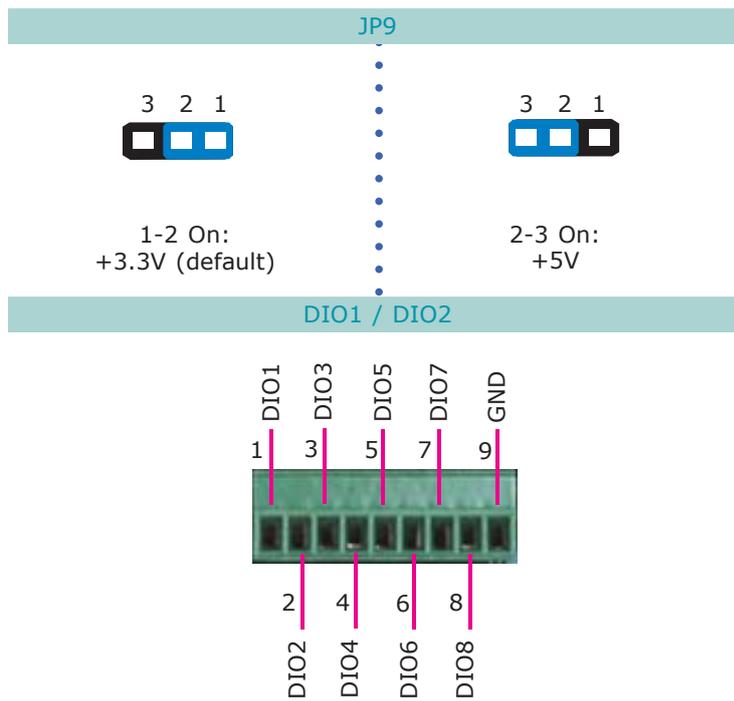


Digital I/O Signal Voltage Select



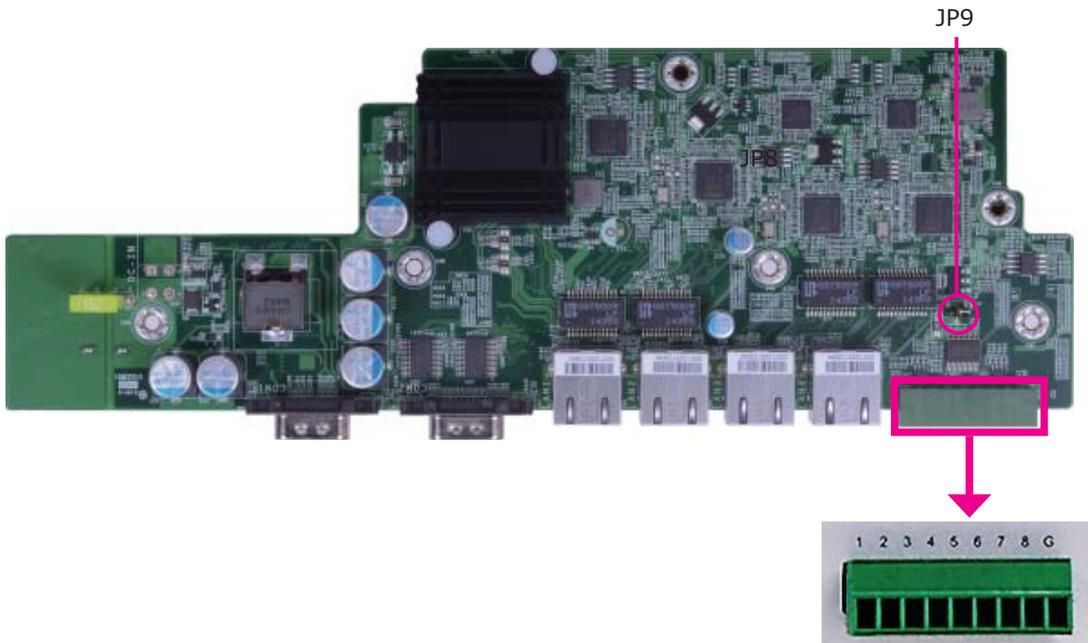
JP9 is used to configure DIO to signal voltage select.

The pin function of DIO port will vary according to the jumper's setting respectively.



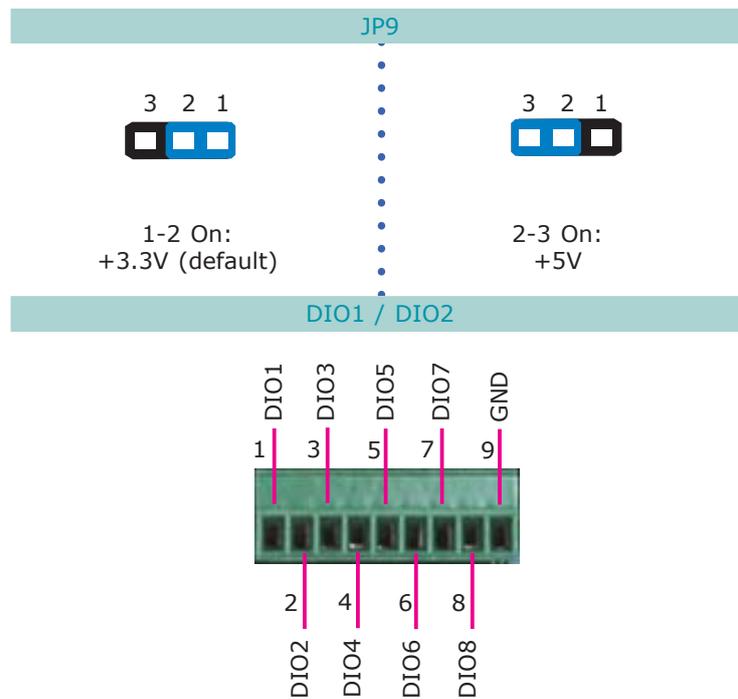
EC300/310/320/321/322-CR4866

Digital I/O Signal Voltage Select



JP9 is used to configure DIO to signal voltage select.

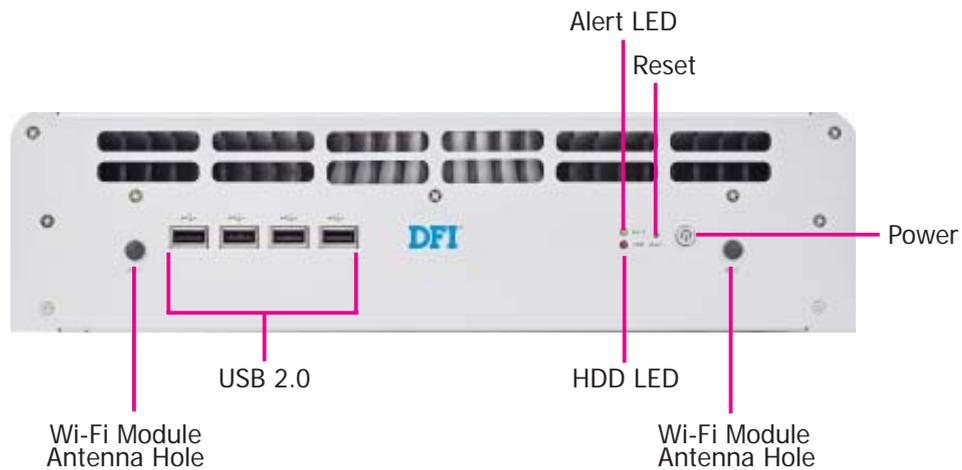
The pin function of DIO port will vary according to the jumper's setting respectively.



Chapter 5 - Ports and Connectors

Front Panel I/O Ports

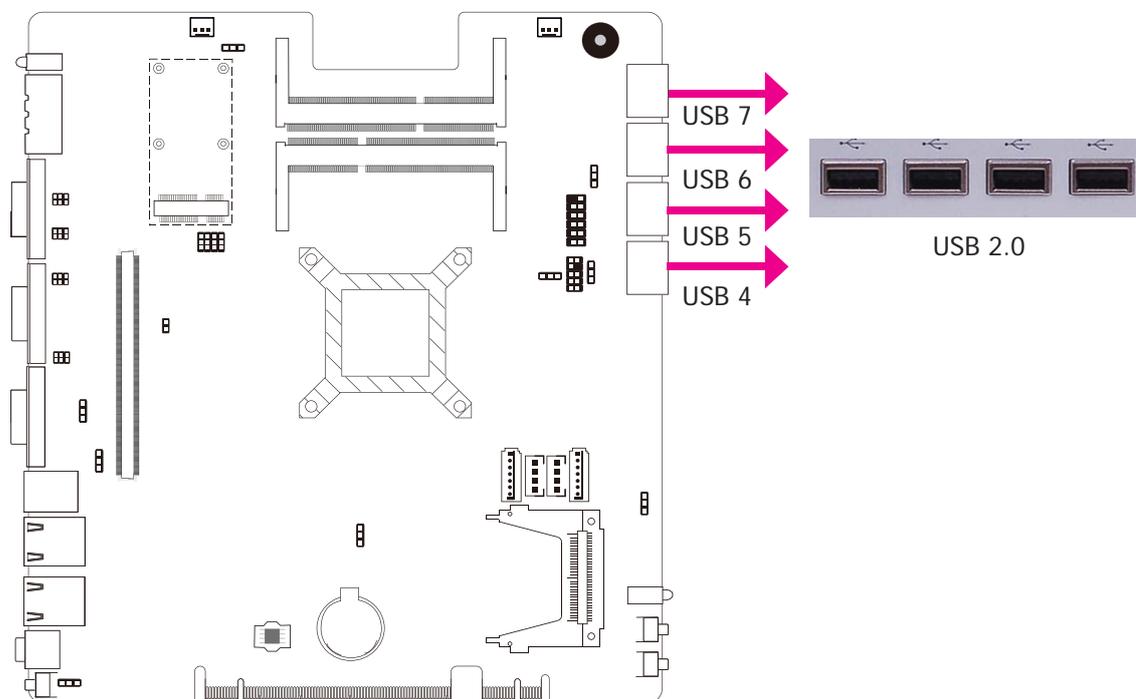
For EC300/310/320/321/322



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

- 4 USB 2.0 Type A ports
- Power button
- Reset button
- HDD LED
- Alert LED
- 2 Wi-Fi module antenna holes

USB Ports



USB allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

The system board is equipped with 4 USB 2.0/1.1 ports at the front panel I/O ports.

BIOS Setting

Configure the onboard USB in the Advanced menu ("USB Configuration" sub-menu) of the BIOS. Refer to chapter 7 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/S4 (STR - Suspend To RAM) state. To use this function:

- **Jumper Setting**

It must be set to "2-3 On: +5V_standby". Refer to "USB Power Select" in chapter 4 for more information.

- **BIOS Setting**

"USB Device Wakeup From S3/S4" in the Advanced menu ("ACPI Configuration" submenu) of the BIOS must be set to Enabled. Refer to chapter 7 for more information.

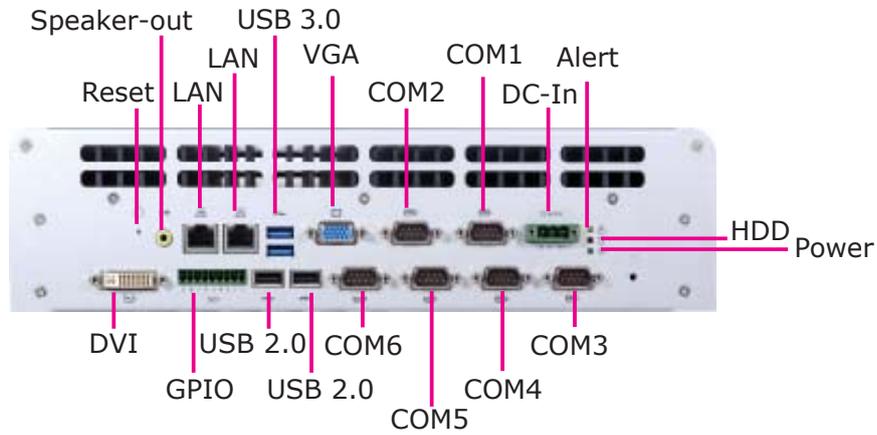


Important:

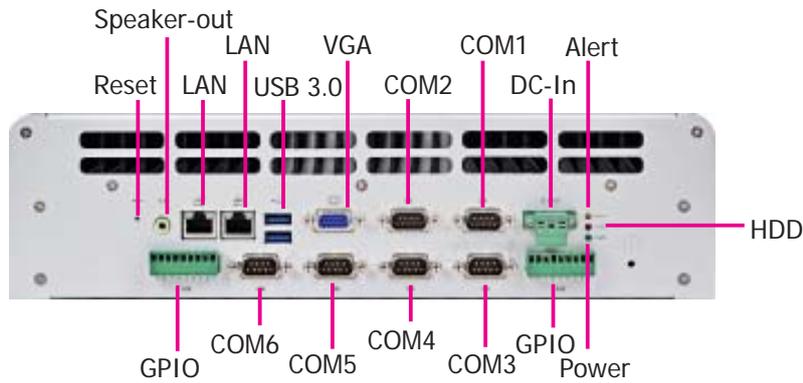
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the +5V_standby power source of your power supply must support $\geq 1.5A$. For 3 or more USB ports, the +5V_standby power source of your power supply must support $\geq 2A$.

Rear Panel I/O Ports

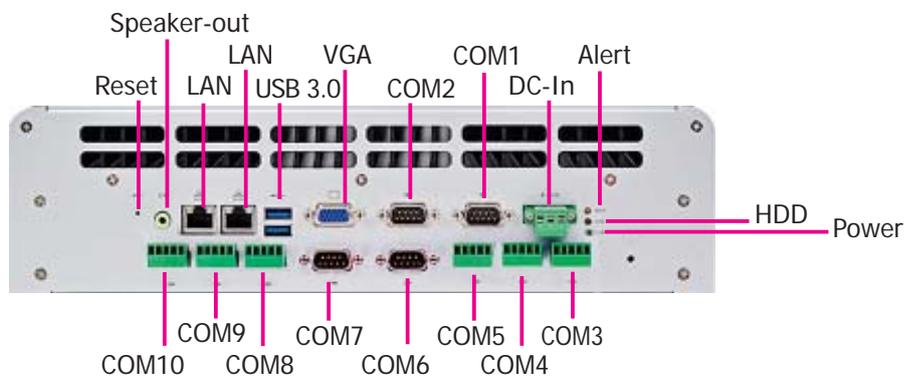
For EC300



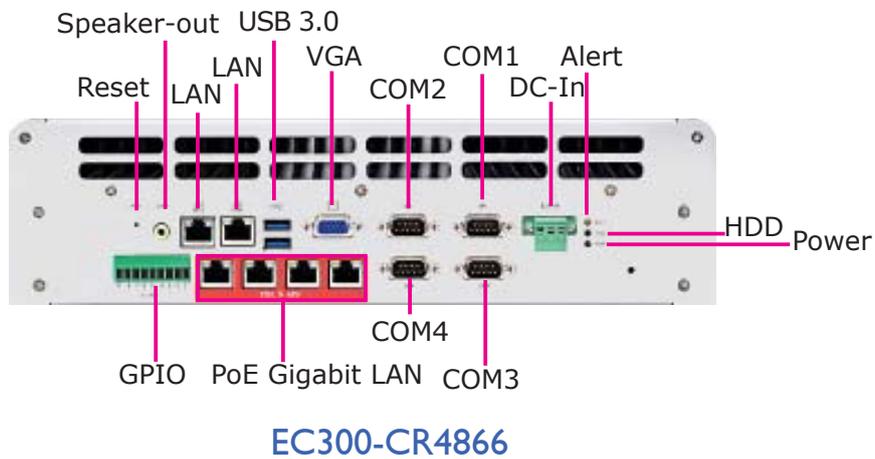
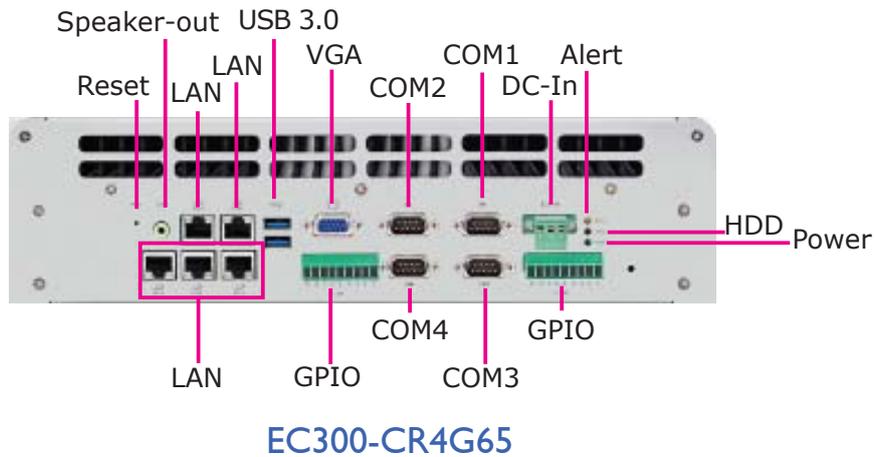
EC300-CR688I



EC300-CR6G60



EC300-CRA060



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

EC300 - CR6881

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 DVI
- 1 VGA: DB-15 D-sub
- 2 Gigabit LAN: RJ45 with LEDs
- 6 COM: DB-9 D-sub (RS232/422/485)
- 2 USB 3.0 Type A
- 2 USB 2.0 Type A
- GPIO: 9-pole terminal block
- Reset button
- Power LED
- HDD LED
- Alert LED

EC300 - CR6G60

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 VGA: DB-15 D-sub
- 2 Gigabit LAN: RJ45 with LEDs
- 6 COM: DB-9 D-sub (RS232/422/485)
- 2 USB 3.0 Type A
- GPIO: 9-pole terminal block
- Reset button
- Power LED
- HDD LED
- Alert LED

EC300 - CRA060

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 VGA: DB-15 D-sub
- 2 Gigabit LAN: RJ45 with LEDs
- 4 COM: DB-9 D-sub (RS232/422/485)
- 6 COM: 5-pole terminal block (RS232/422/485)
- 2 USB 3.0 Type A
- Reset button
- Power LED
- HDD LED
- Alert LED

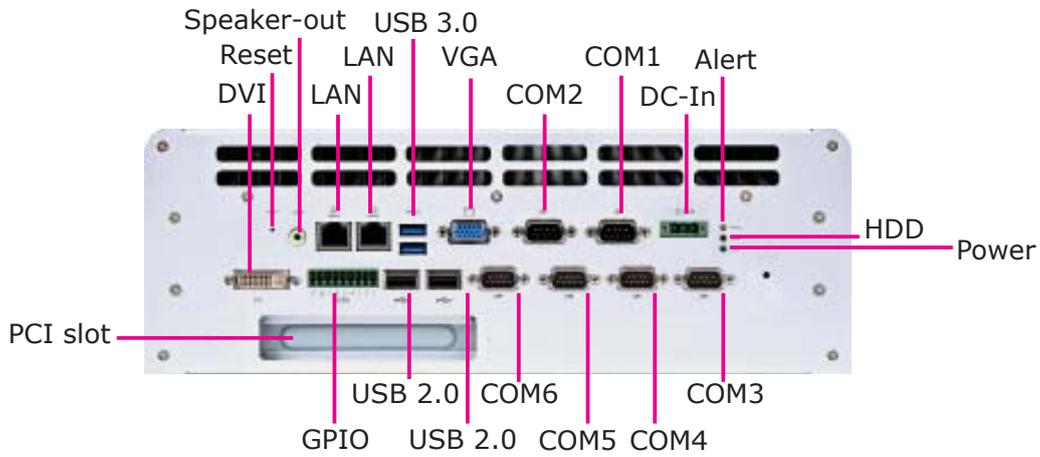
EC300 - CR4G65

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 VGA: DB-15 D-sub
- 5 Gigabit LAN: RJ45 with LEDs
- 4 COM: DB-9 D-sub (RS232/422/485)
- 2 USB 3.0 Type A
- GPIO: 9-pole terminal block
- Reset button
- Power LED
- HDD LED
- Alert LED

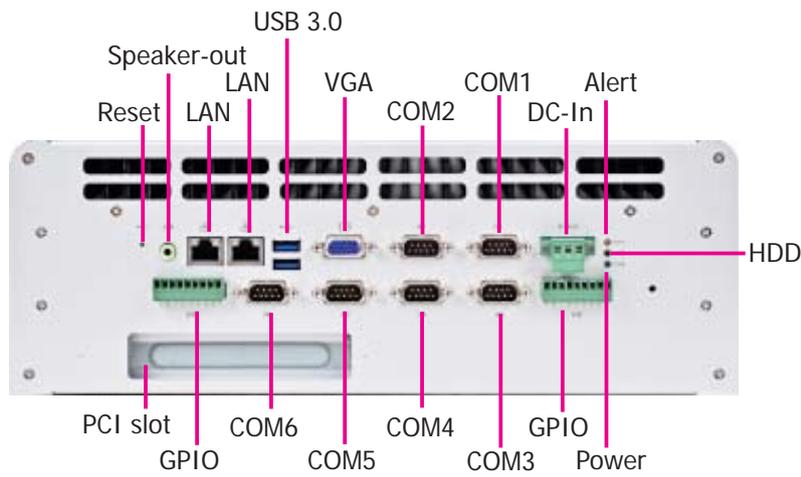
EC300 - CR4866

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 VGA: DB-15 D-sub
- 2 Gigabit LAN: RJ45 with LEDs
- 4 PoE Gigabit LAN: RJ45 with LEDs
- 2 COM: DB-9 D-sub (RS232/422/485)
- 2 COM: DB-9 D-sub (RS232)
- 2 USB 3.0 Type A
- GPIO: 9-pole terminal block
- Reset button
- Power LED
- HDD LED
- Alert LED

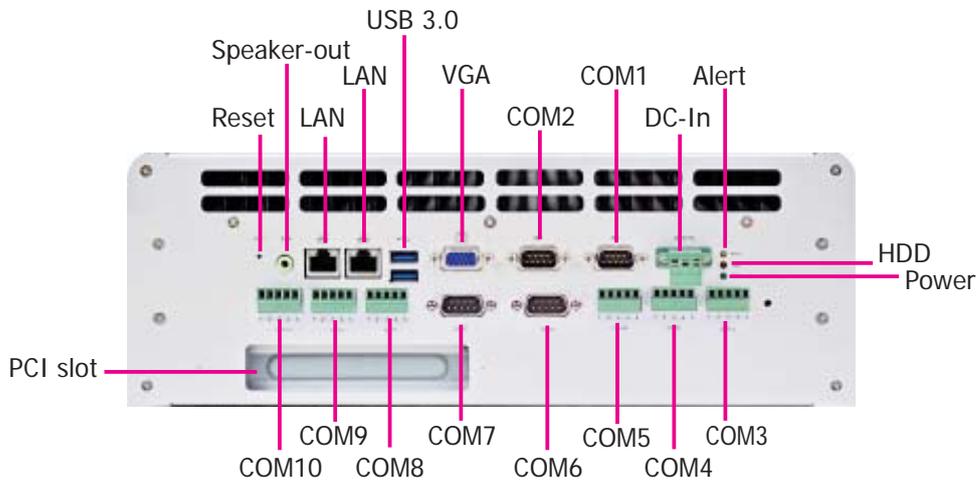
For EC310



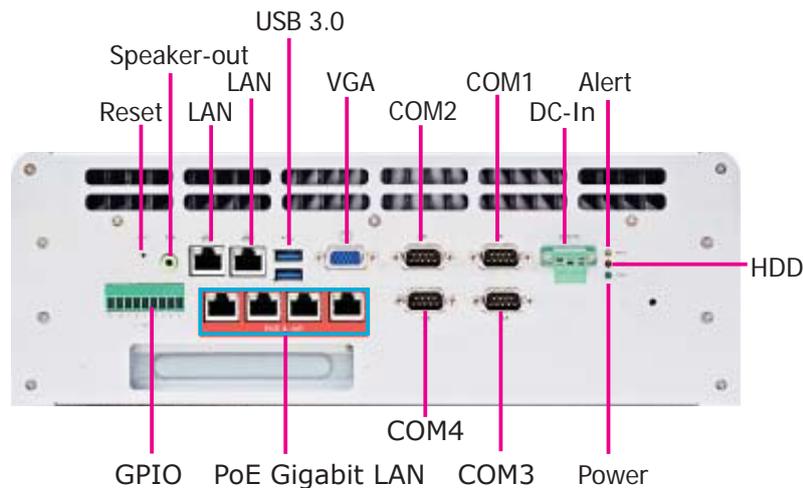
EC310-CR688I



EC310-CR6G60



EC310-CRA060



EC310-CR4866

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

EC310 - CR6881

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 DVI
- 1 VGA: DB-15 D-sub
- 2 Gigabit LAN: RJ45 with LEDs
- 6 COM: DB-9 D-sub (RS232/422/485)
- 2 USB 3.0 Type A
- 2 USB 2.0 Type A
- GPIO: 9-pole terminal block
- Power LED
- Reset button
- HDD LED
- Alert LED

EC310 - CR6G60

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 VGA: DB-15 D-sub
- 2 Gigabit LAN: RJ45 with LEDs
- 6 COM: DB-9 D-sub (RS232/422/485)
- 2 USB 3.0 Type A
- GPIO: 9-pole terminal block
- Reset button
- Power LED
- HDD LED
- Alert LED

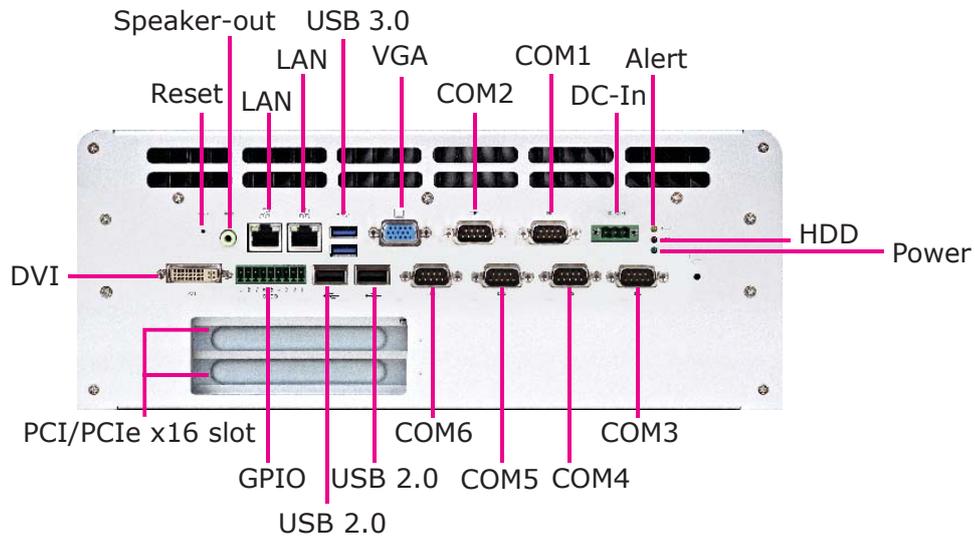
EC310 - CRA060

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 VGA: DB-15 D-sub
- 2 Gigabit LAN: RJ45 with LEDs
- 4 COM: DB-9 D-sub (RS232/422/485)
- 6 COM: 5-pole terminal block (RS232/422/485)
- 2 USB 3.0 Type A
- Reset button
- Power LED
- HDD LED
- Alert LED

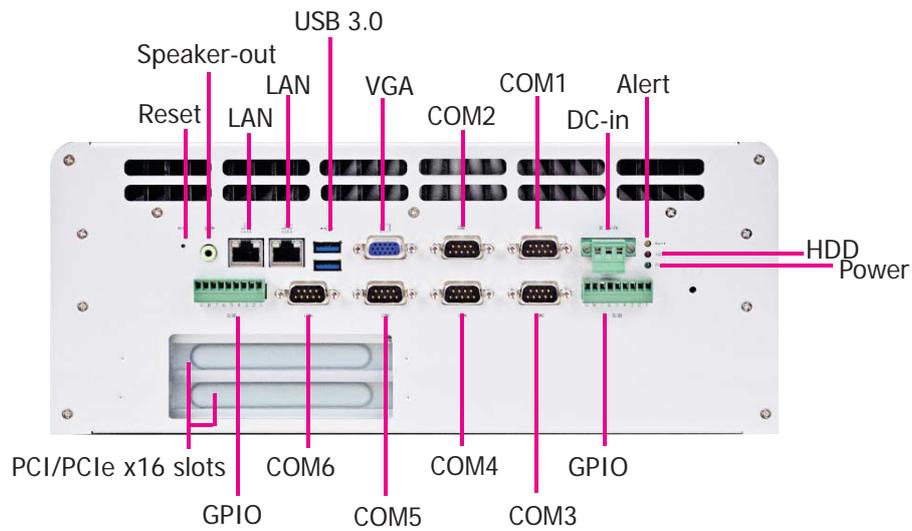
EC310 - CR4866

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 VGA: DB-15 D-sub
- 2 Gigabit LAN: RJ45 with LEDs
- 4 PoE Gigabit LAN: RJ45 with LEDs
- 2 COM: DB-9 D-sub (RS232/422/485)
- 2 COM: DB-9 D-sub (RS232)
- 2 USB 3.0 Type A
- GPIO: 9-pole terminal block
- Reset button
- Power LED
- HDD LED
- Alert LED

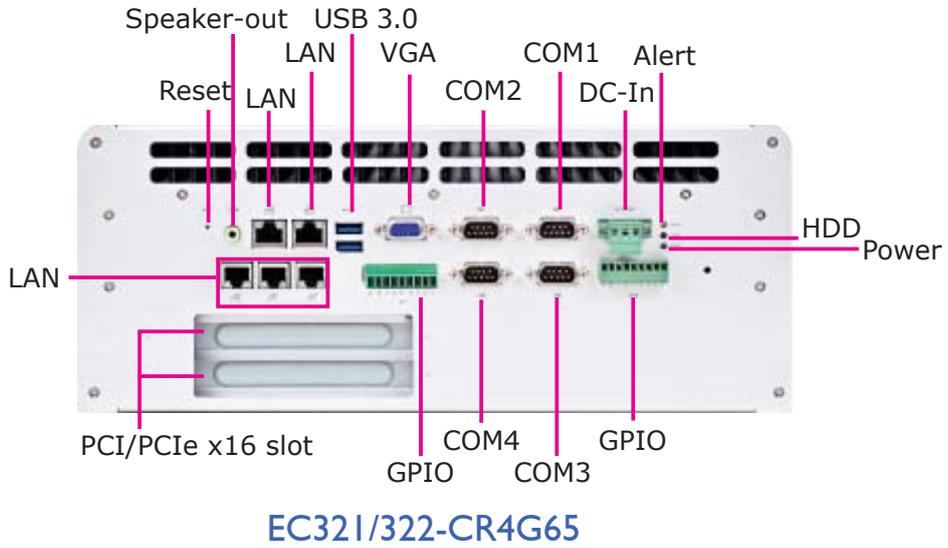
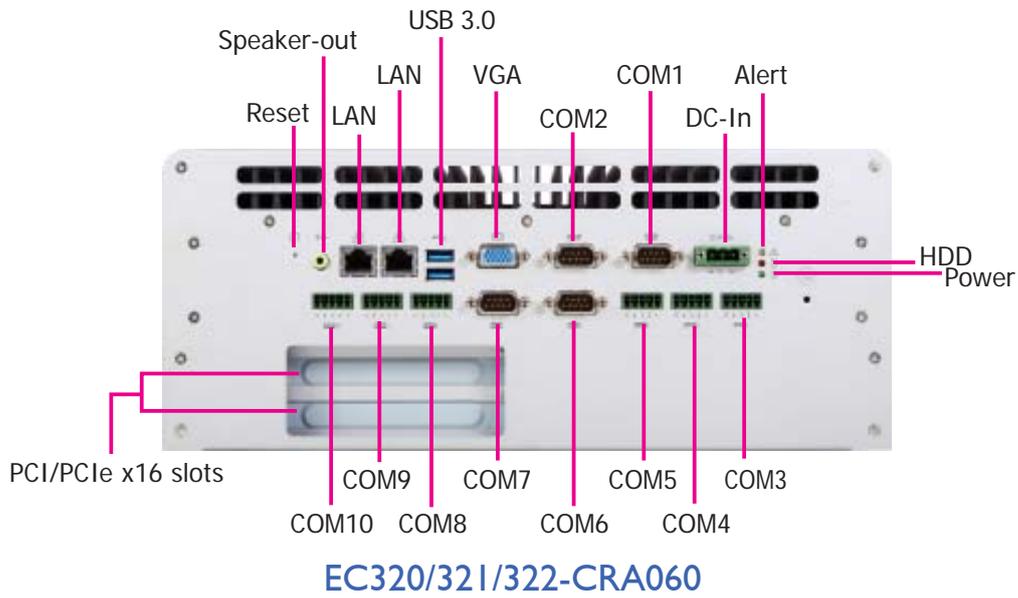
For EC320/321/322

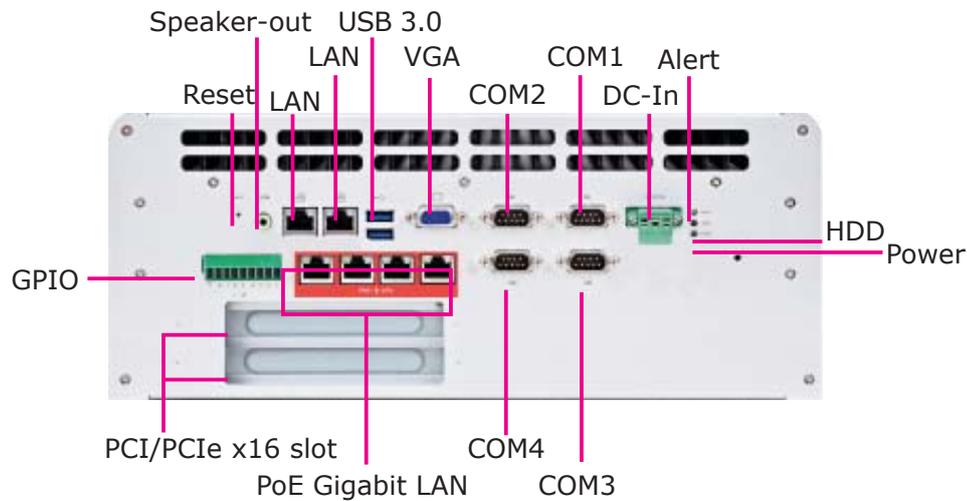


EC320/321/322-CR688I



EC320/321/322-CR6G60





EC320/321/322-CR4866

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

EC320/321/322 - CR6881

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 DVI
- 1 VGA: DB-15 D-sub
- 2 Gigabit LAN: RJ45 with LEDs
- 6 COM: DB-9 D-sub (RS232/422/485)
- 2 USB 3.0 Type A
- 2 USB 2.0 Type A
- GPIO: 9-pole terminal block
- Reset button
- Power LED
- HDD LED
- Alert LED

EC320/321/322 - CR6G60

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 VGA: DB-15 D-sub
- 2 Gigabit LAN: RJ45 with LEDs
- 6 COM: DB-9 D-sub (RS232/422/485)
- 2 USB 3.0 Type A
- GPIO: 9-pole terminal block
- Reset button
- Power LED
- HDD LED
- Alert LED

EC320/321/322 - CRA060

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 VGA: DB-15 D-sub
- 2 Gigabit LAN: RJ45 with LEDs
- 4 COM: DB-9 D-sub (RS232/422/485)
- 6 COM: 5-pole terminal block (RS232/422/485)
- 2 USB 3.0 Type A
- Reset button
- Power LED
- HDD LED
- Alert LED

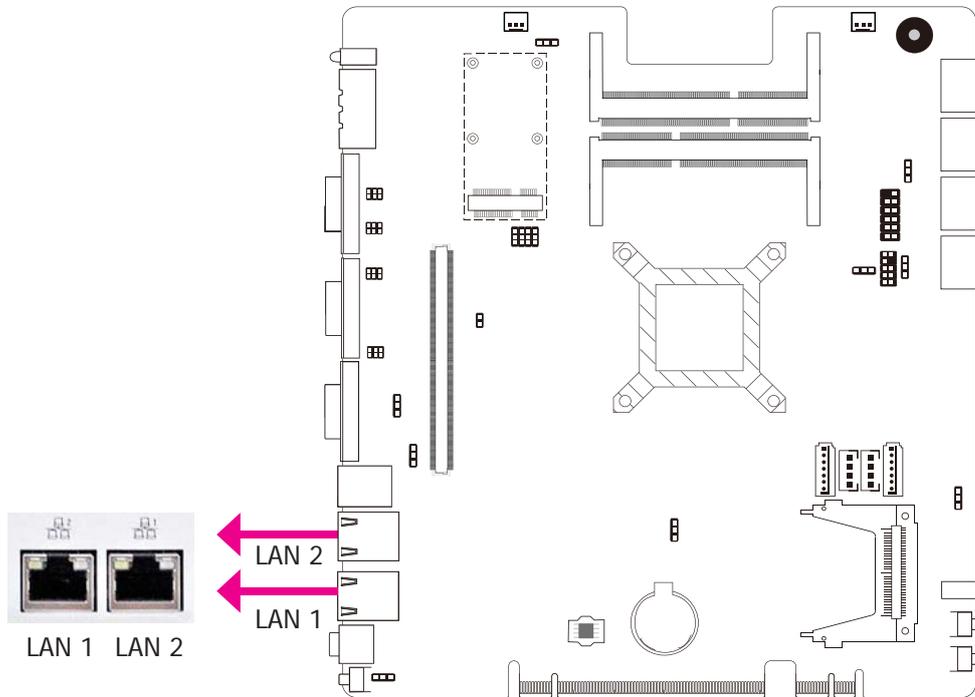
EC321/322 - CR4G65

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 VGA: DB-15 D-sub
- 5 Gigabit LAN: RJ45 with LEDs
- 4 COM: DB-9 D-sub (RS232/422/485)
- 2 USB 3.0 Type A
- GPIO: 9-pole terminal block
- Reset button
- Power LED
- HDD LED
- Alert LED

EC320/321/322 - CR4866

- 1 DC-in power jack: 3-pole Phoenix terminal block
- 1 Speaker-out: 2W 3.5mm audio jack
- 1 VGA: DB-15 D-sub
- 2 Gigabit LAN: RJ45 with LEDs
- 4 PoE Gigabit LAN: RJ45 with LEDs
- 2 COM: DB-9 D-sub (RS232/422/485)
- 2 COM: DB-9 D-sub (RS232)
- 2 USB 3.0 Type A
- GPIO: 9-pole terminal block
- Reset button
- Power LED
- HDD LED
- Alert LED

LAN Ports



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

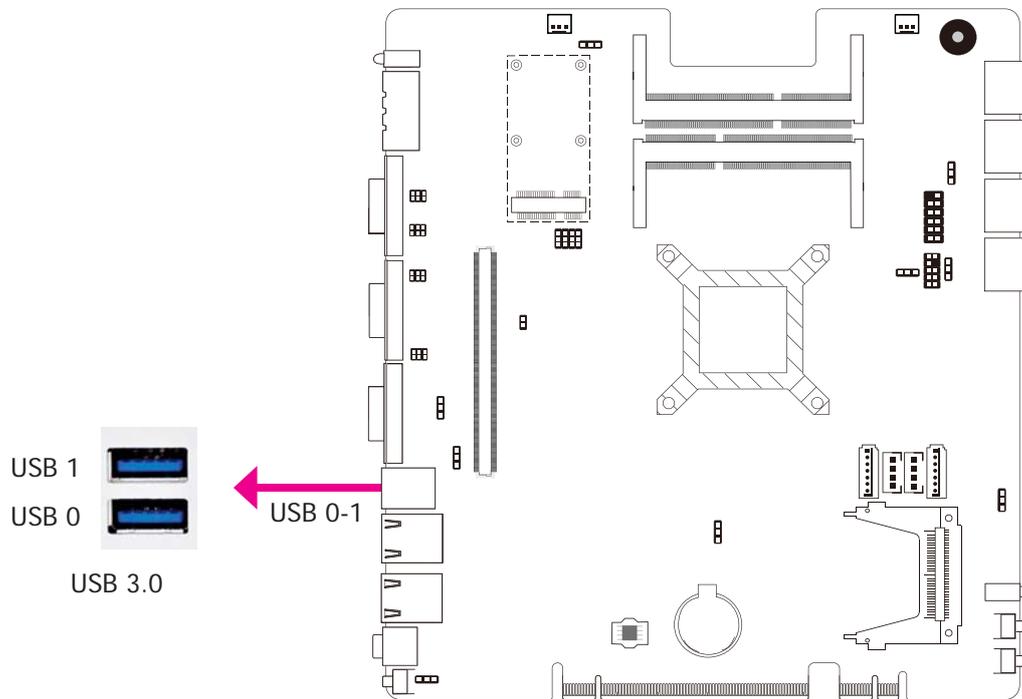
BIOS Setting

Configure "Wake on LAN" in the Advanced menu ("SuperIO Configuration" sub-menu) of the BIOS. Refer to chapter 7 for more information.

Driver Installation

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

USB Ports



USB allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

The system board is equipped with 2 USB 3.0 port at the rear panel I/O ports.

DVI Port



The DVI-I port is used to connect an LCD monitor.

Connect the display device's cable connector to the DVI-I port. After you plug the cable connector into the port, gently tighten the cable screws to hold the connector in place.

BIOS Setting

Configure the display device in the Chipset menu ("North Bridge Configuration" submenu) of the BIOS. Refer to chapter 7 for more information.

Driver Installation

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

VGA Port



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

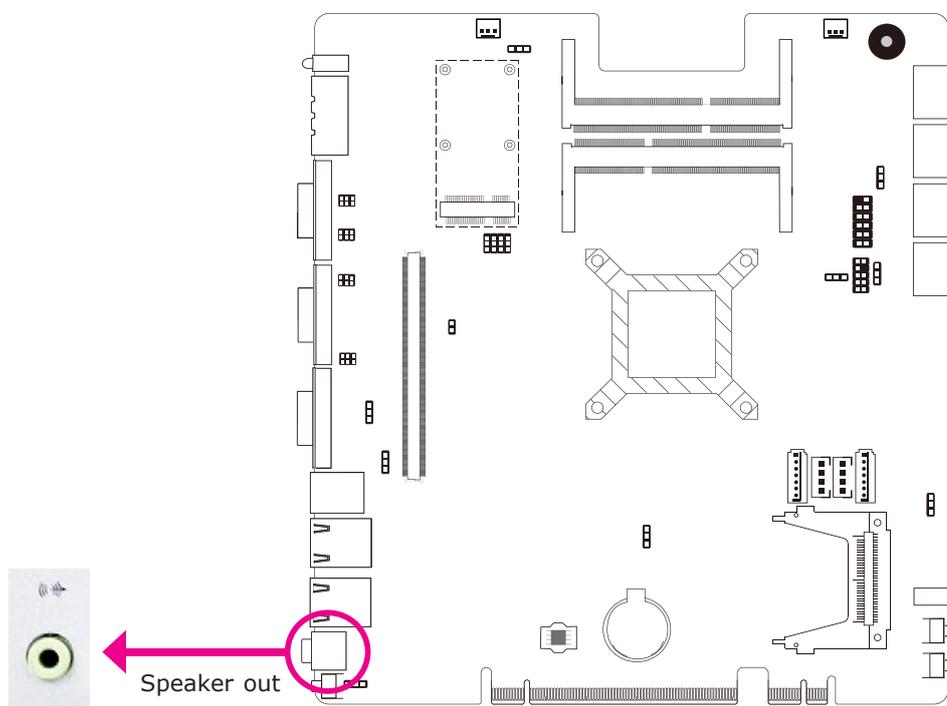
BIOS Setting

Configure the onboard VGA in the Advanced menu ("ACPI Settings" submenu) of the BIOS. Refer to chapter 7 for more information.

Driver Installation

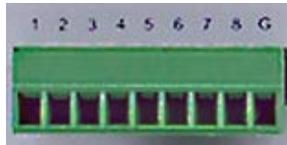
Install the graphics driver. Refer to chapter 8 for more information.

Speaker-out



This jack is used to connect a headphone or external speakers.

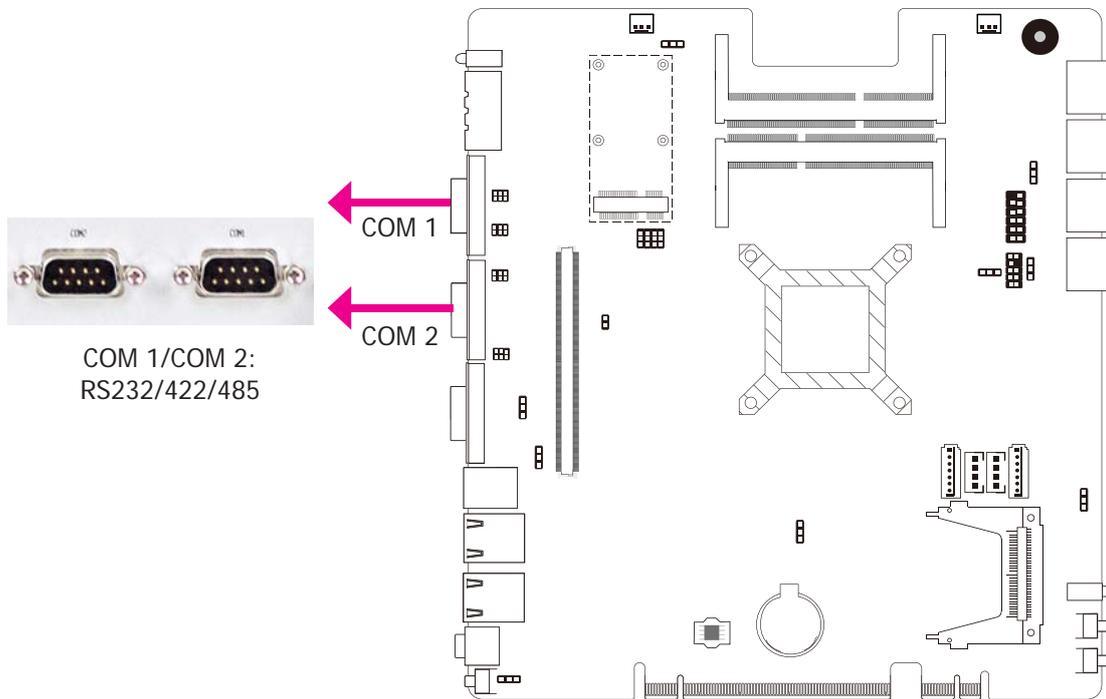
Digital Input/Output



The Digital I/O connector provides powering-on function to an external device that is connected to this connector.

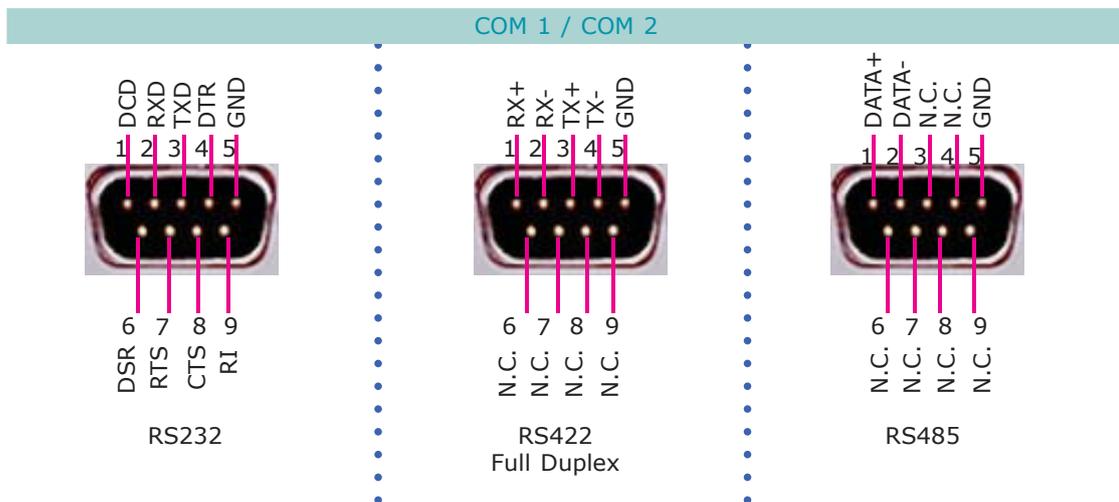
Pin	Digital Output/ Input Pin Assignment
1	DIO1
2	DIO2
3	DIO3
4	DIO4
5	DIO5
6	DIO6
7	DIO7
8	DIO8
9	GND

COM Ports



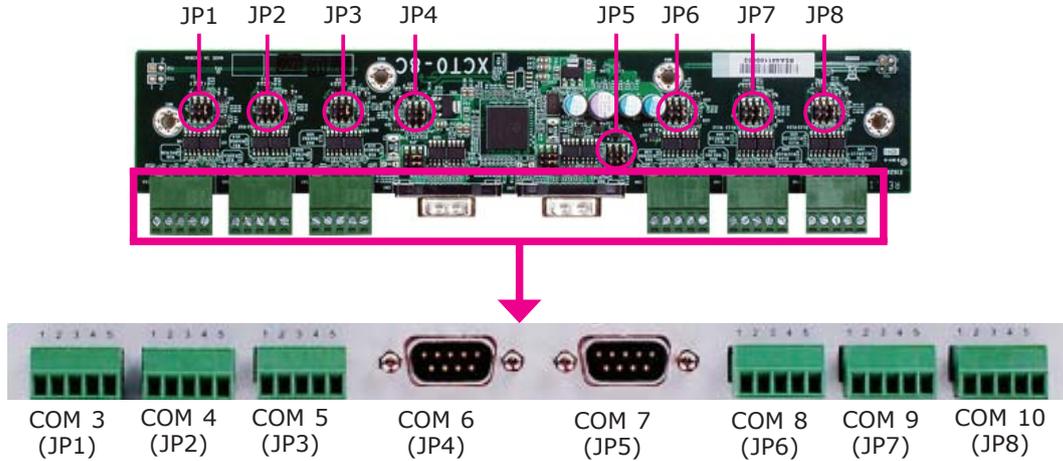
The pin functions of COM port 1 and COM port 2 will vary according to JP11's and JP13's setting. The jumpers allow you to configure the Serial COM ports to RS232, RS422 (Full Duplex) or RS485. Refer to "COM 1/COM 2 RS232/422/485 Select" and "COM 1/COM 2 RS232/Power Select" in chapter 4 for more information.

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.



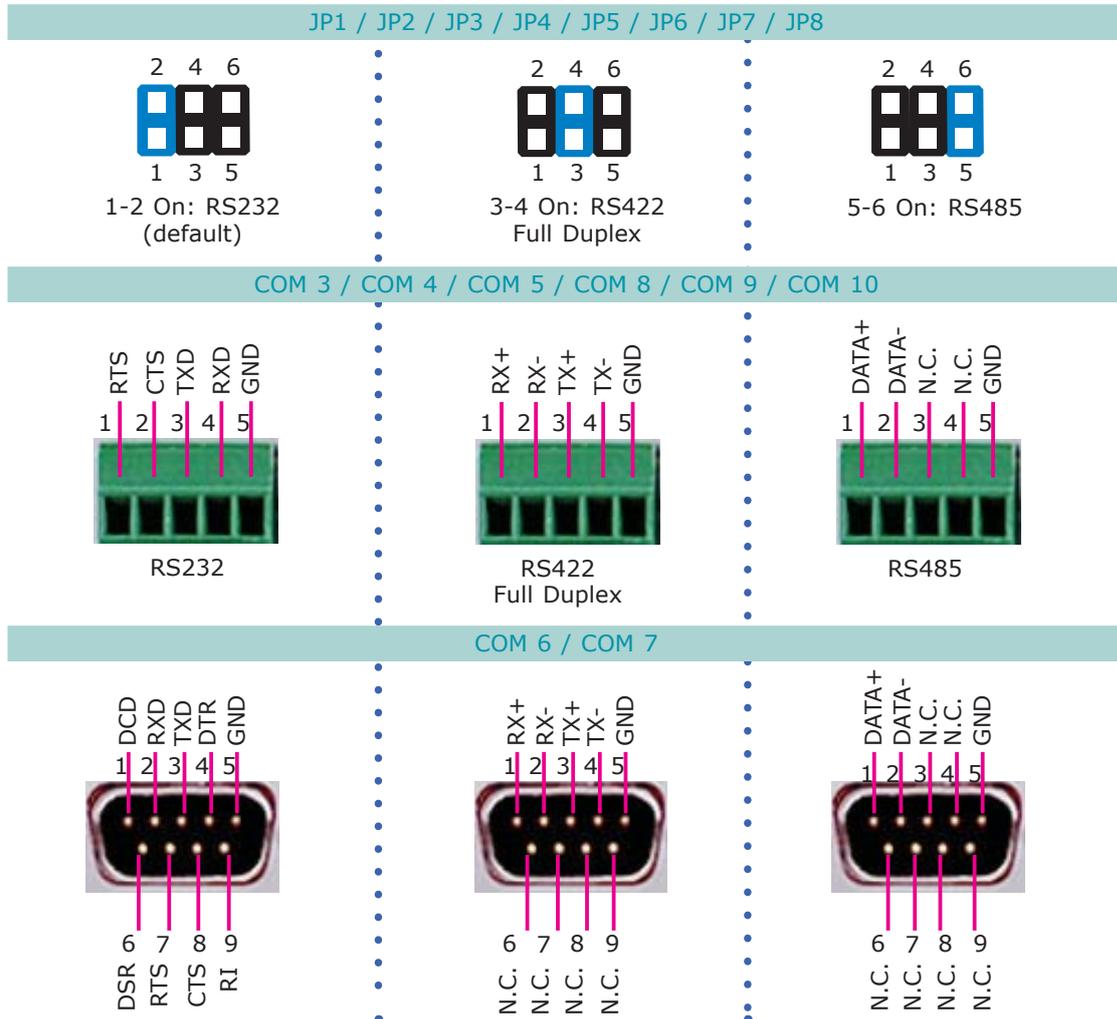
COM 3 to COM 10 RS232/RS422/RS485 Select

EC300/310/320/321/322-CRA060

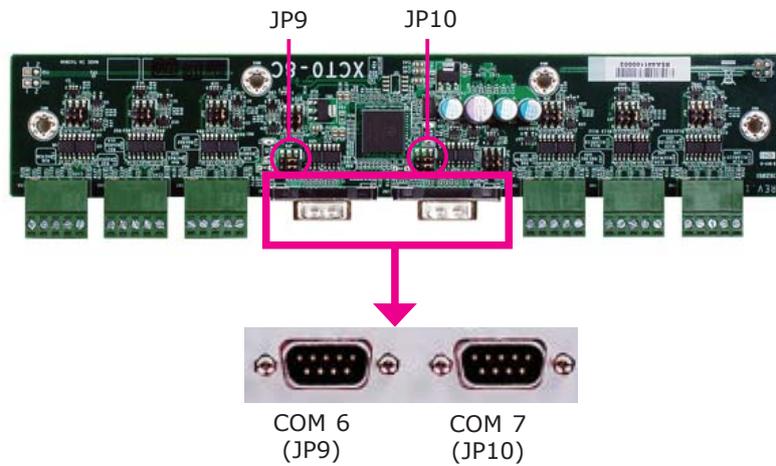


JP1 (for COM 3) to JP8 (for COM 10) are used to configure the COM ports to RS232, RS422 (Full Duplex) or RS485.

The pin function of the COM ports will vary according to the jumper's setting.

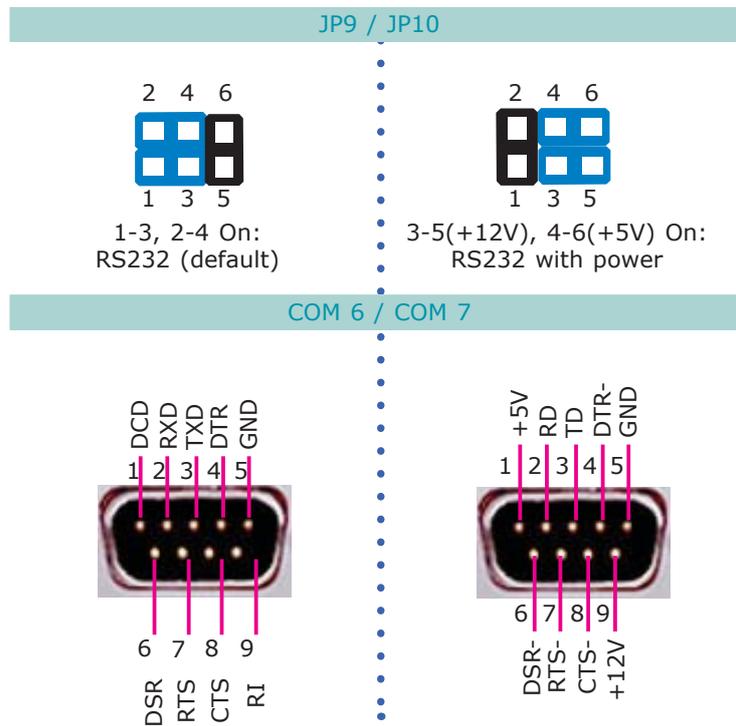


COM 6 and COM 7 RS232/Power Select



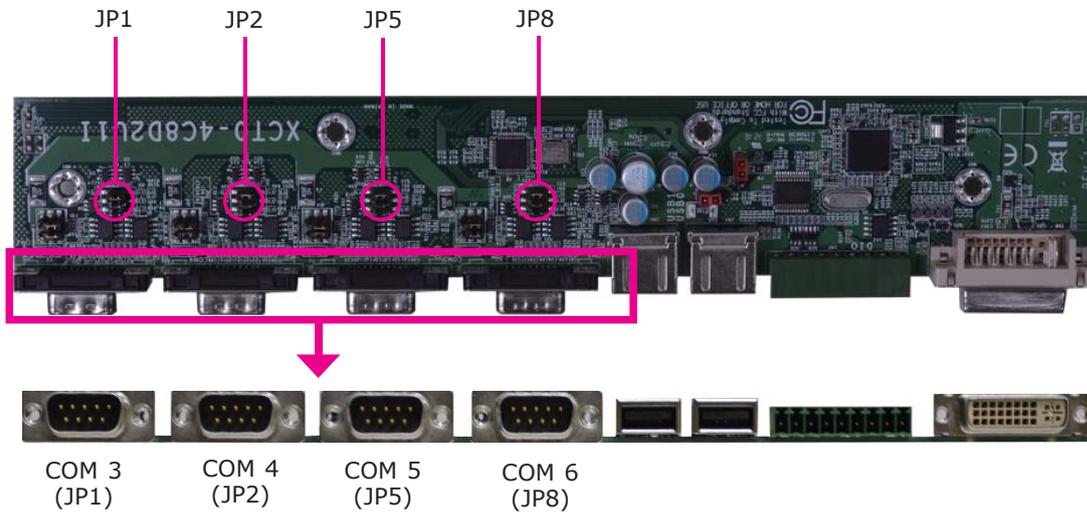
JP9 and JP10 are used to configure COM 6 and COM 7 to pure RS232 or RS232 with power.

The pin function of COM 6 and COM 7 will vary according to JP9's and JP10's setting respectively.



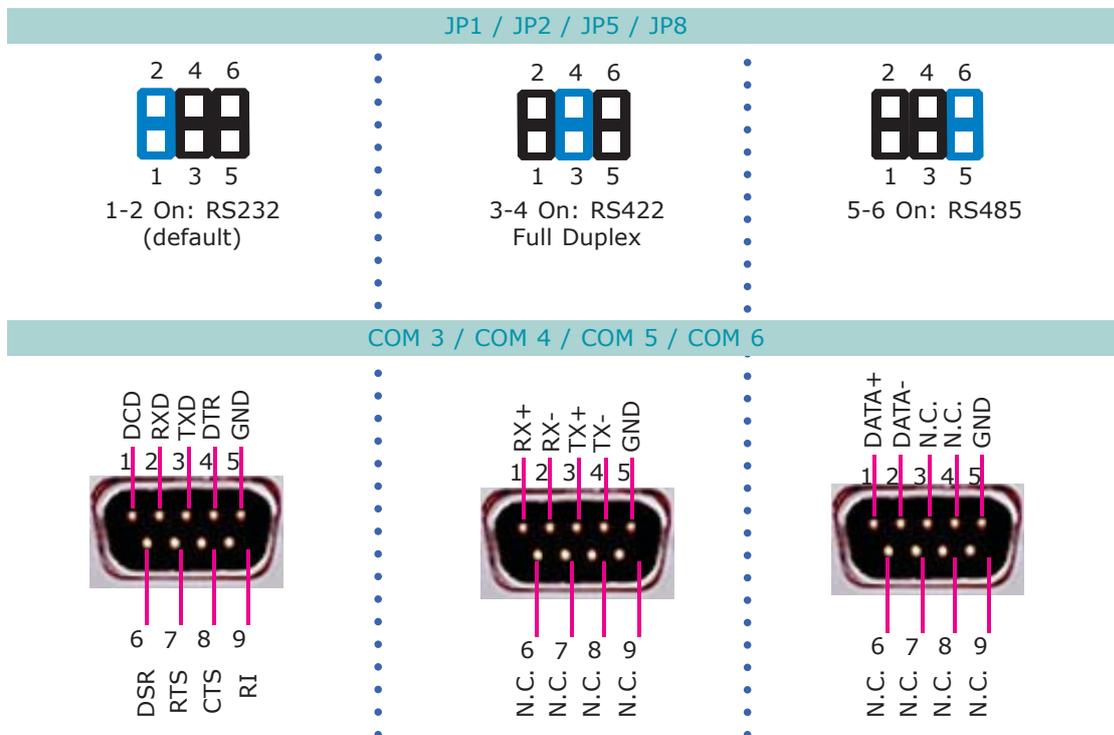
COM 3 to COM 6 RS232/RS422/RS485 Select

EC300/310/320/321/322-CR688 I

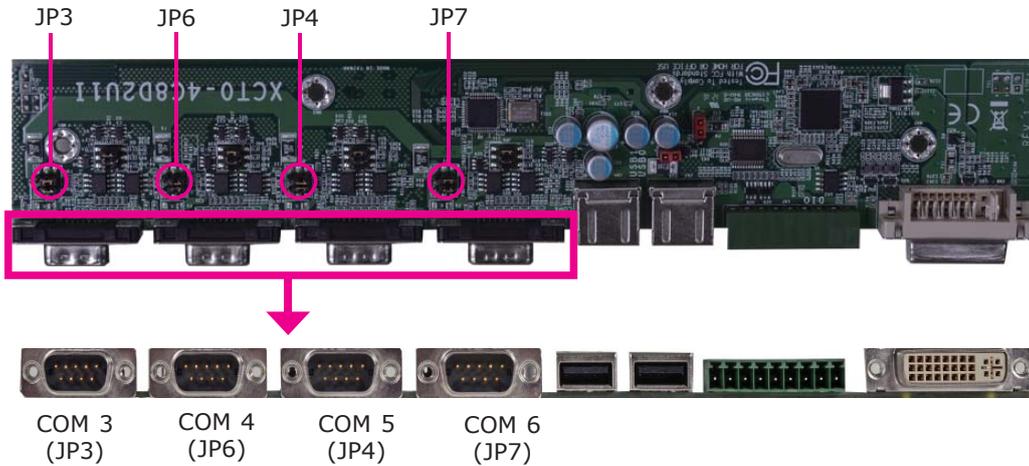


JP1 (for COM 3), JP2 (for COM 4), JP5 (for COM 5) and JP8 (for COM 6) are used to configure the COM ports to RS232, RS422 (Full Duplex) or RS485.

The pin function of the COM ports will vary according to these jumpers' setting.

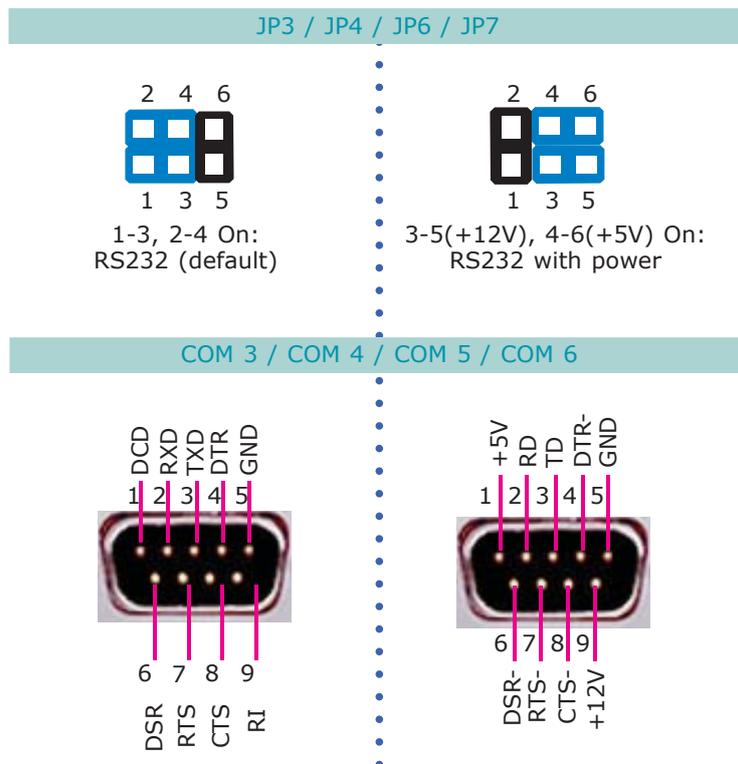


COM 3 to COM 6 RS232/Power Select



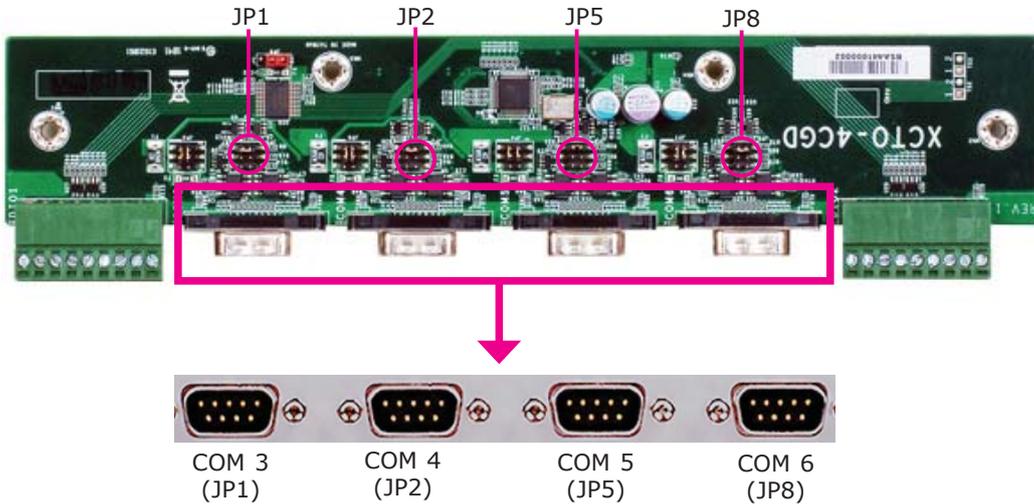
JP3, JP4, JP6 and JP7 are used to configure COM 3 to COM 6 to pure RS232 or RS232 with power.

The pin function of COM 3 to COM 6 will vary according to JP3's, JP4's, JP6's and JP7's setting respectively.



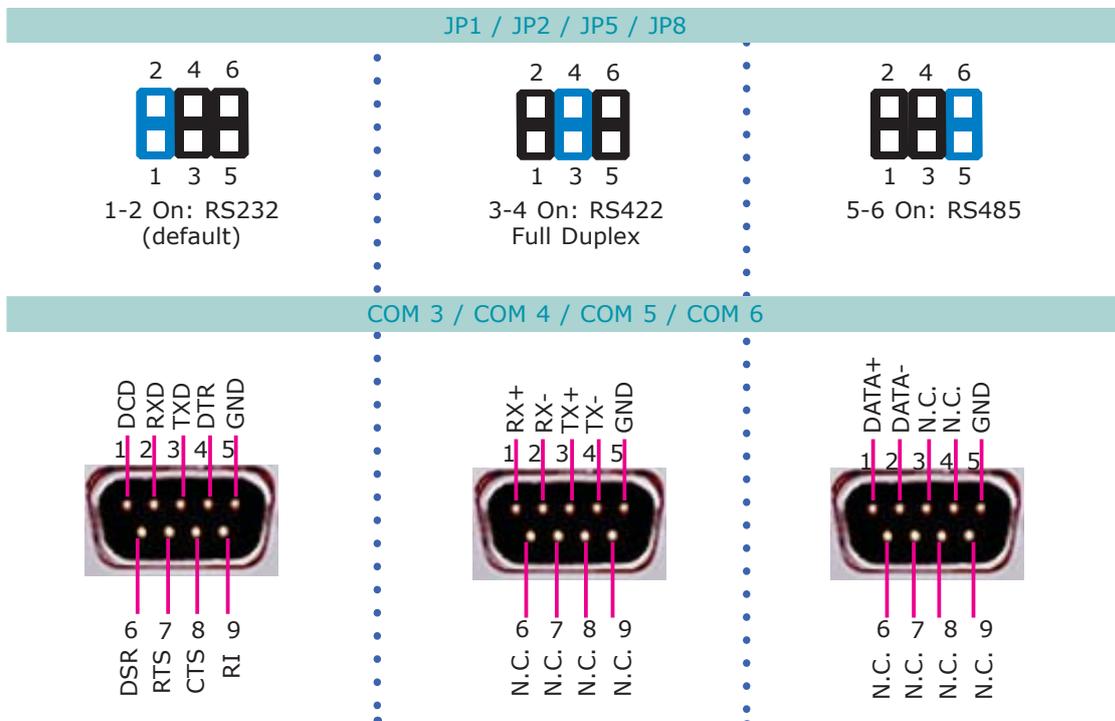
COM 3 to COM 6 RS232/RS422/RS485 Select

EC300/310/320/321/322-CR6G60

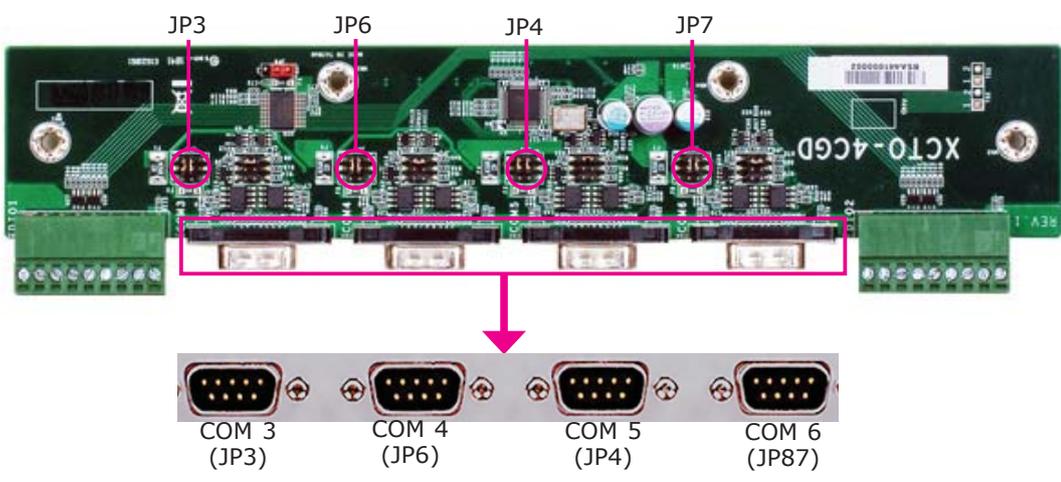


JP1 (for COM 3), JP2 (for COM 4), JP5 (for COM 5) and JP8 (for COM 6) are used to configure the COM ports to RS232, RS422 (Full Duplex) or RS485.

The pin function of the COM ports will vary according to the jumper's setting.

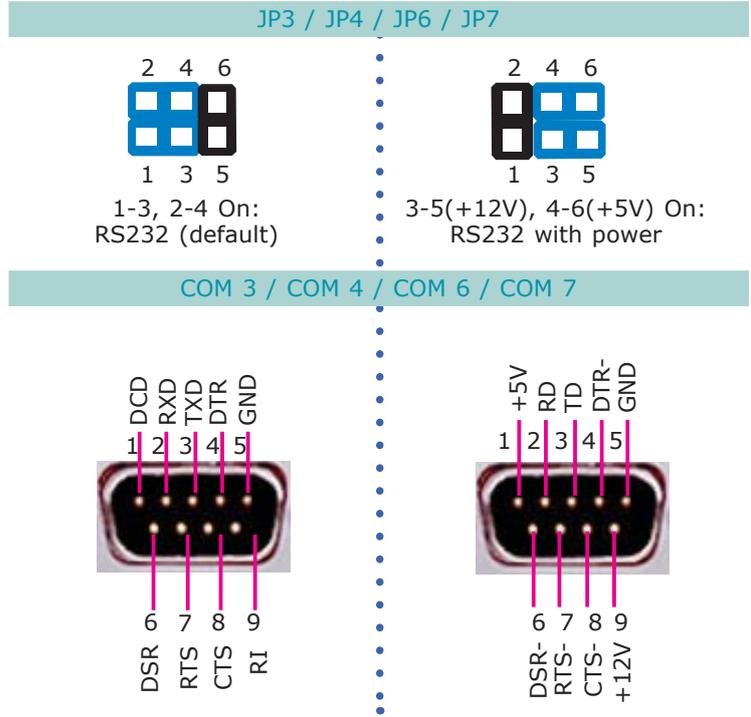


COM 3 to COM 6 RS232/Power Select



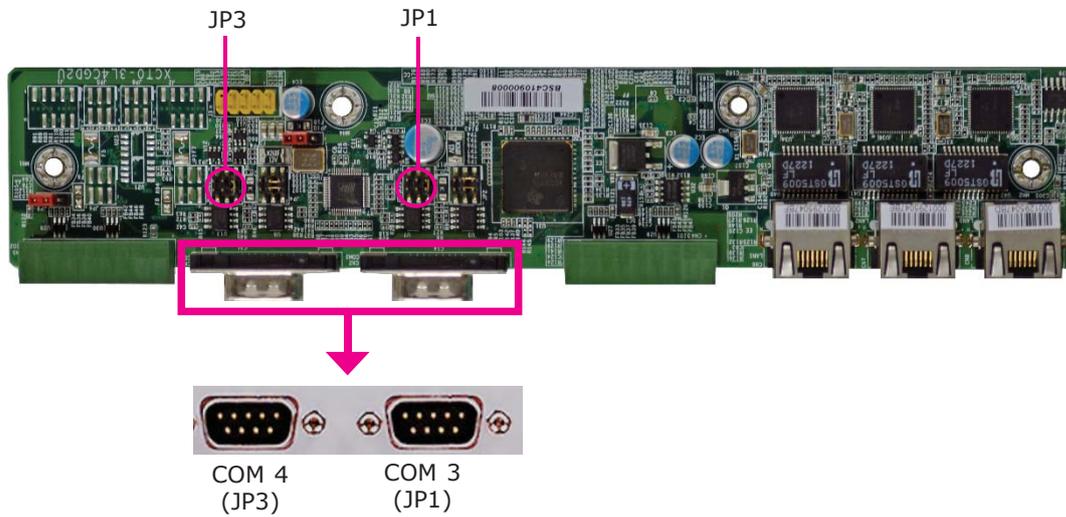
JP3, JP4, JP6 and JP7 are used to configure COM 3 to COM 6 to to pure RS232 or RS232 with power.

The pin function of COM 3 to COM 6 will vary according to JP3's, JP4's, JP6's and JP7's setting respectively.



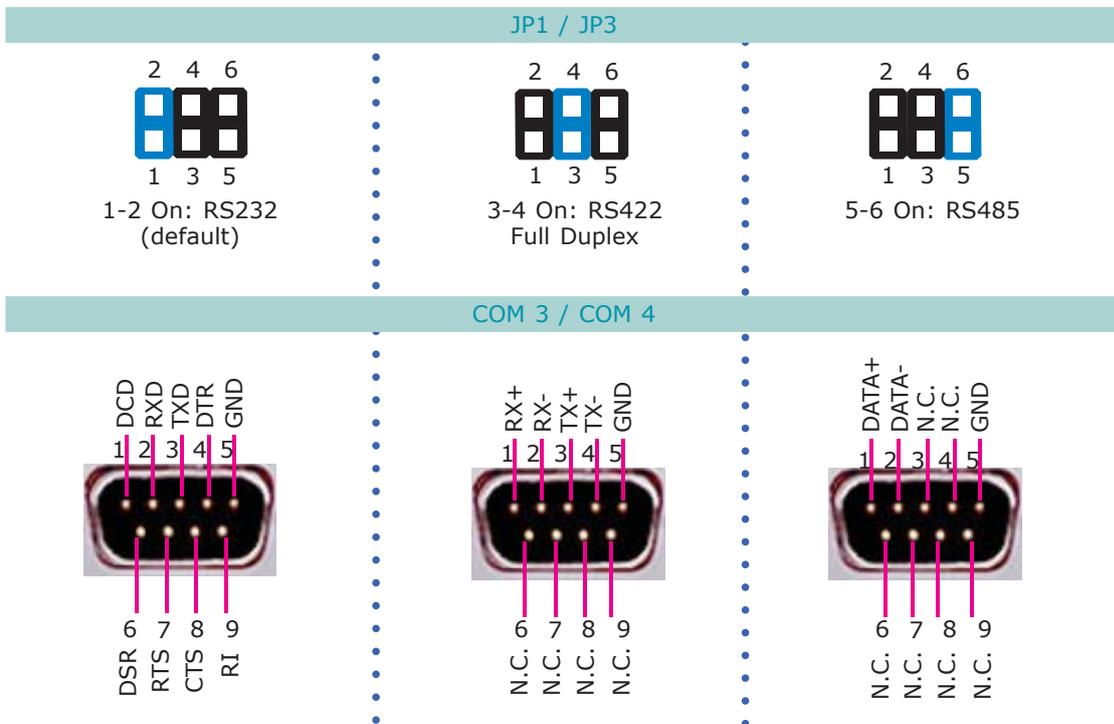
COM 3 and COM 4 RS232/RS422/RS485 Select

EC300/320/321/322-CR4G65

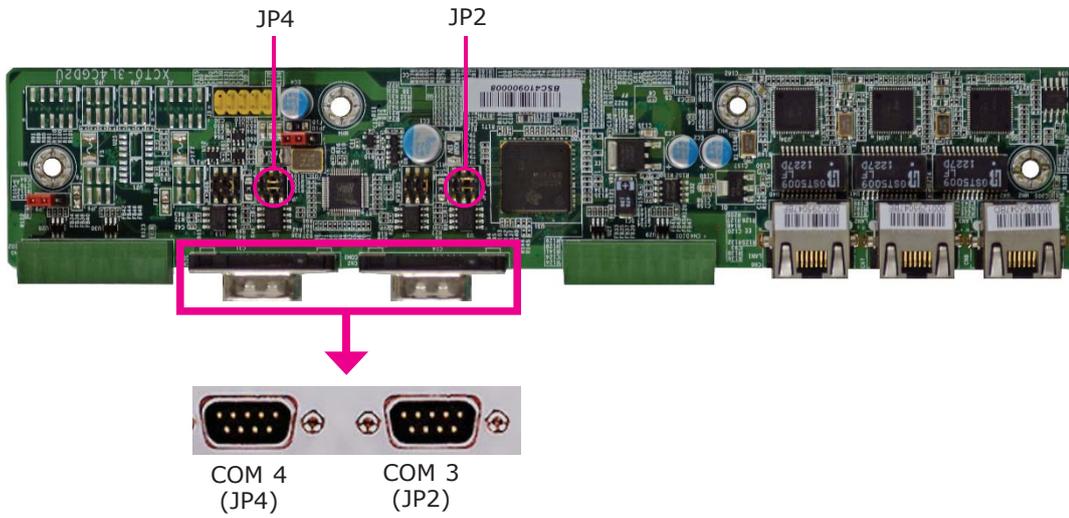


JP1 (for COM 3) and JP3 (for COM 4) are used to configure the COM ports to RS232, RS422 (Full Duplex) or RS485.

The pin function of the COM ports will vary according to the jumper's setting.

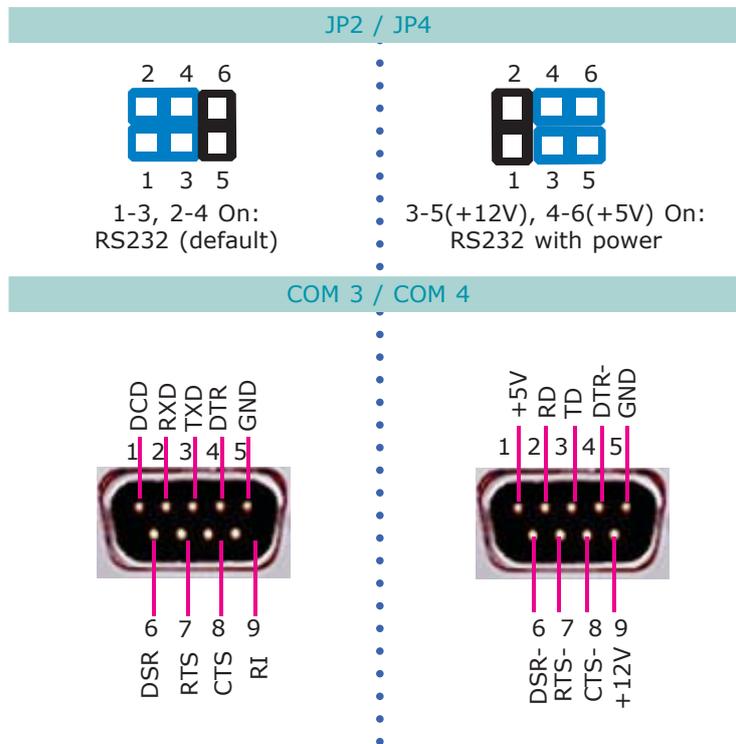


COM 3 and COM 4 RS232/Power Select

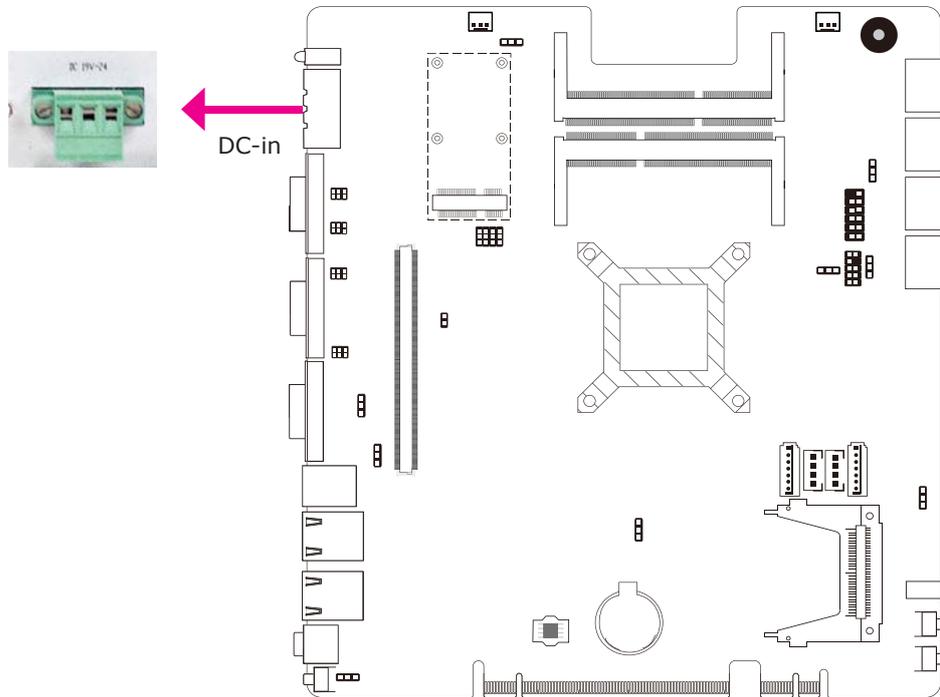


JP2 and JP4 are used to configure COM 3 and COM 4 to pure RS232 or RS232 with power.

The pin function of COM 3 and COM 4 will vary according to JP2's and JP4's setting respectively.

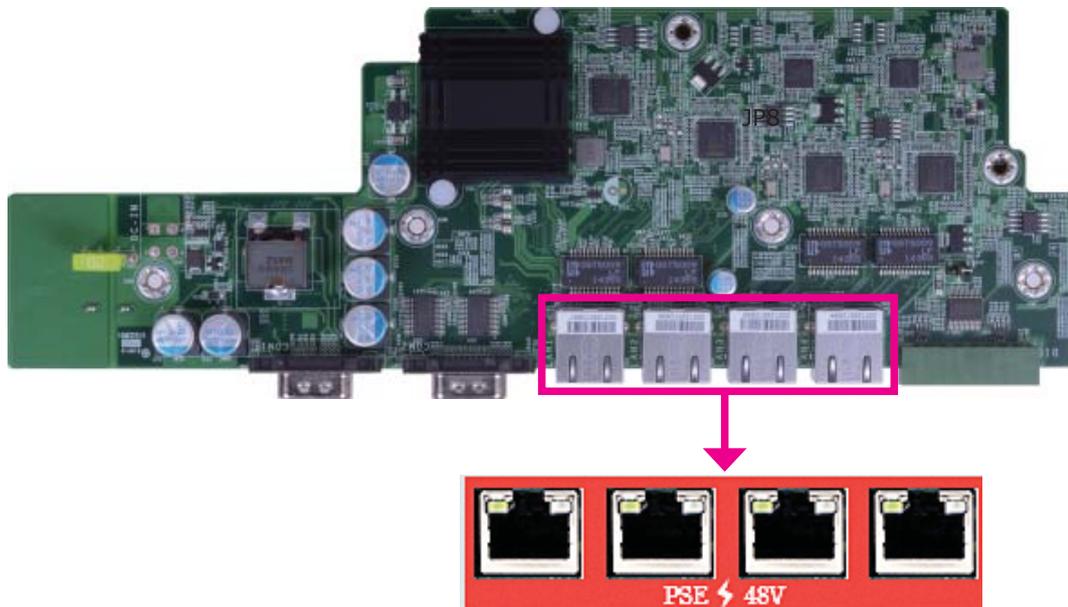


DC-in



This jack is considered a low power solution. Connect a DC power cord to this jack.

PoE LAN Ports



The PoE (Power over Ethernet) LAN port allows the system board to connect to a local area network and provide electrical power by means of a network hub. The port is fully IEEE std 802.3af-2003 compliant. Per PoE port power outputs 48V DC 15.4 watts.

BIOS Setting

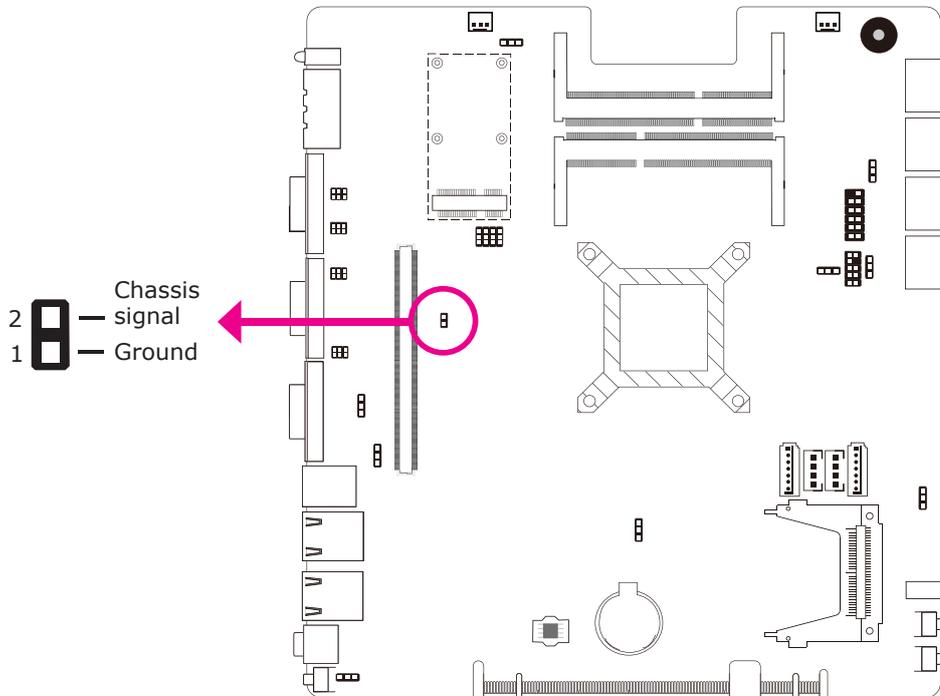
Configure "Wake on LAN" in the Advanced menu ("SuperIO Configuration" sub-menu) of the BIOS. Refer to chapter 7 for more information.

Driver Installation

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

I/O Connectors

Chassis Intrusion Connector

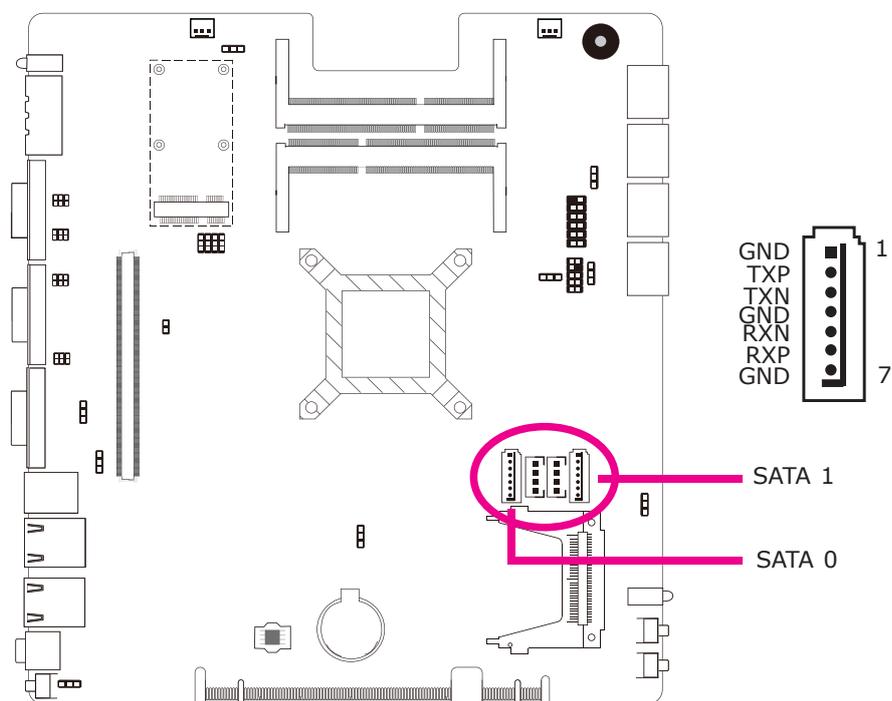


The board supports the chassis intrusion detection function. Connect the chassis intrusion sensor cable from the chassis to this connector. When the system's power is on and a chassis intrusion occurred, an alarm will sound. When the system's power is off and a chassis intrusion occurred, the alarm will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

Hardware Monitor for Windows

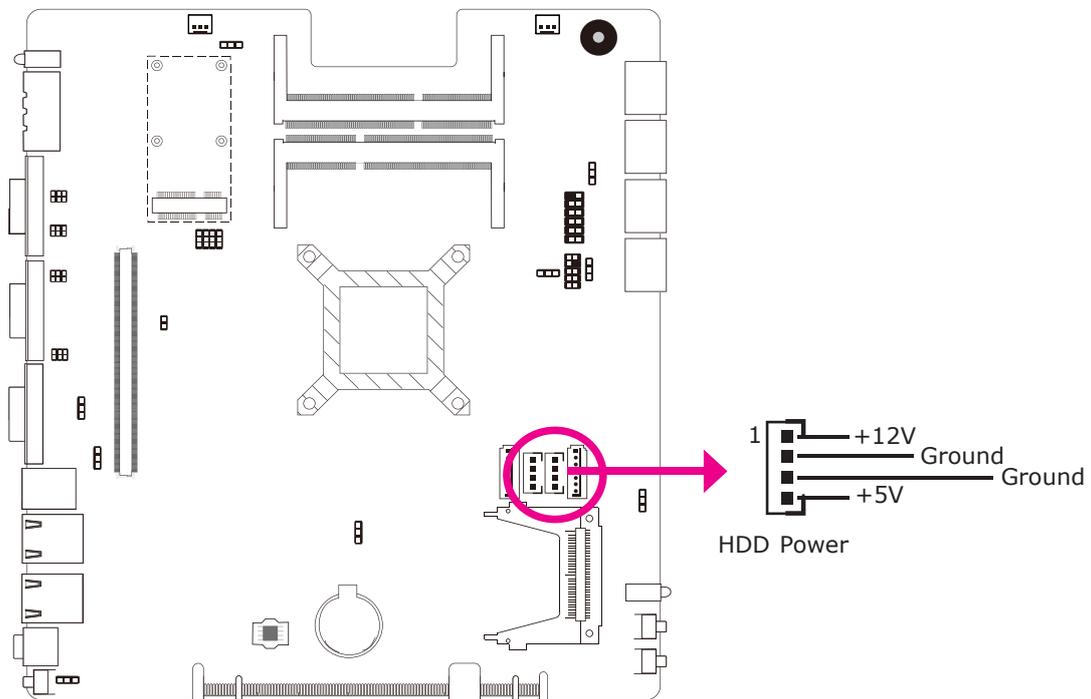
Install the "Hardware Monitor for Windows" utility. By default, the chassis intrusion detection function is disabled. When enabled, a warning message will appear when the chassis is open. The utility can also be configured so that a beeping alarm will sound when the chassis is open. Refer to the "Hardware Monitor for Windows" section in chapter 8 for more information.

SATA (Serial ATA) Connectors



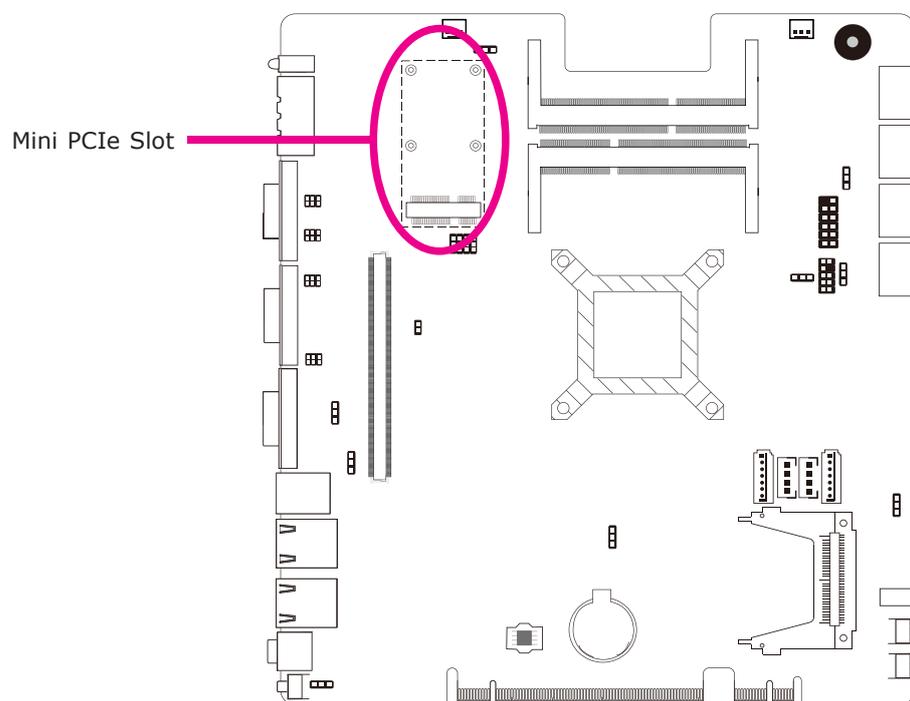
The Serial ATA connectors are used to connect Serial ATA devices. Connect one end of the Serial ATA cable to a SATA connector and the other end to your Serial ATA device.

HDD Power Connectors



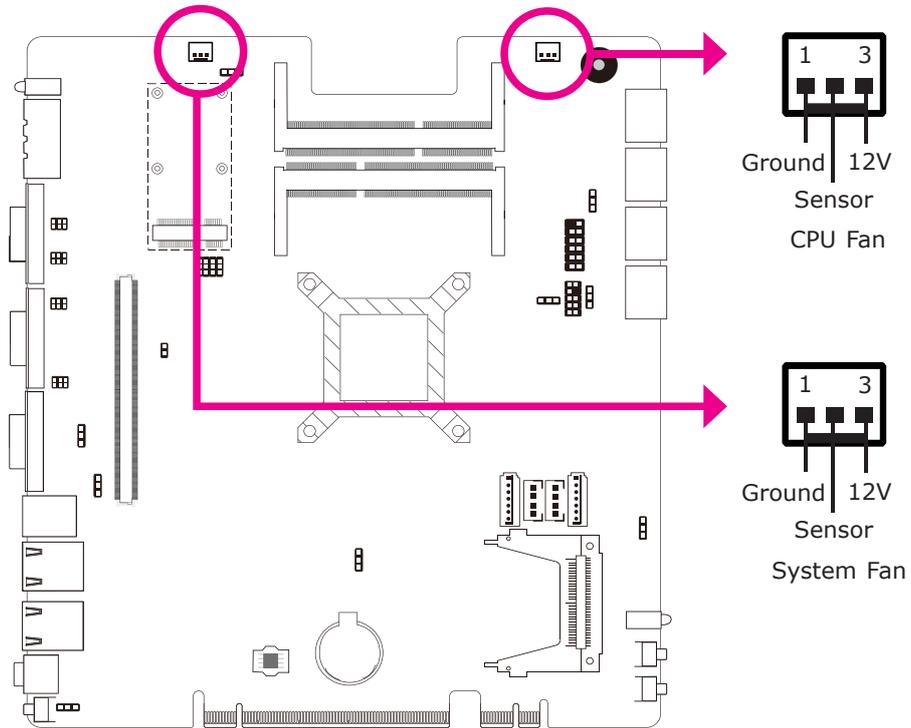
The HDD power connectors supply power to SATA drives. Connect one end of the provided power cable to the HDD power connector and the other end to your storage device.

Mini PCIe Slot



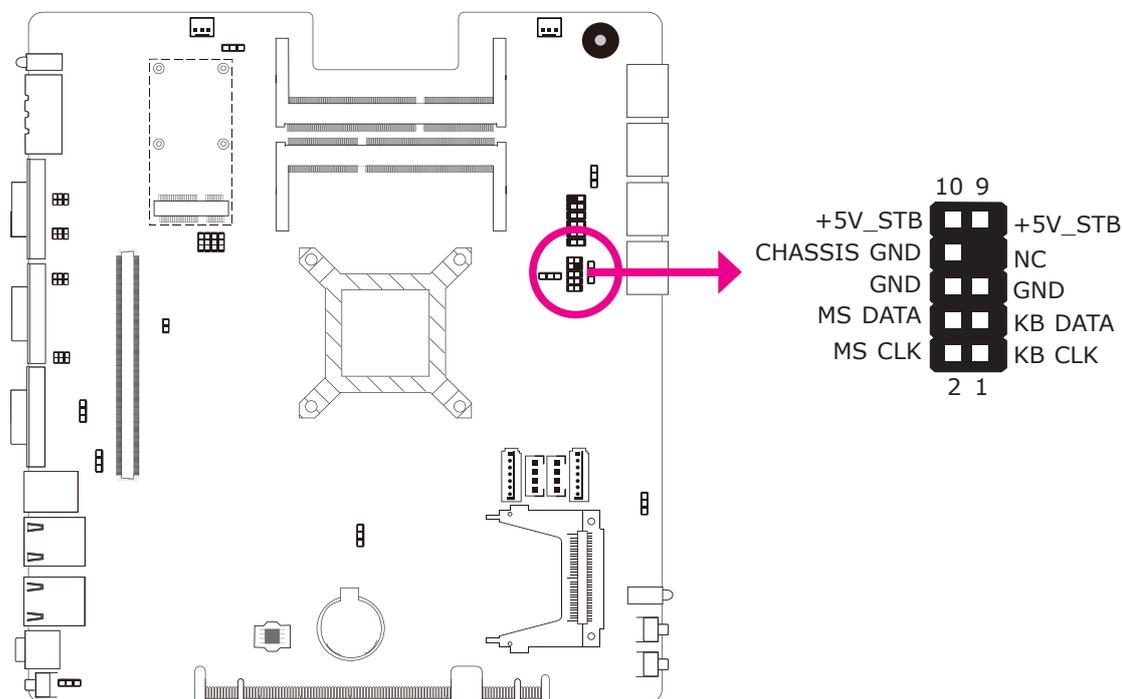
Install Mini PCI Express cards such as network cards or other cards that comply to the Mini PCI Express specifications into the Mini PCI Express slot.

Cooling Fan Connectors



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

PS/2 Keyboard/Mouse Connector



The PS/2 Keyboard/Mouse connector is used to connect PS/2 keyboard and PS/2 mouse by means of a PS/2 cable.

Wake-On-PS/2 Keyboard/Mouse

The Wake-On-PS/2 Keyboard/Mouse function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system. To use this function:

- **Jumper Setting**

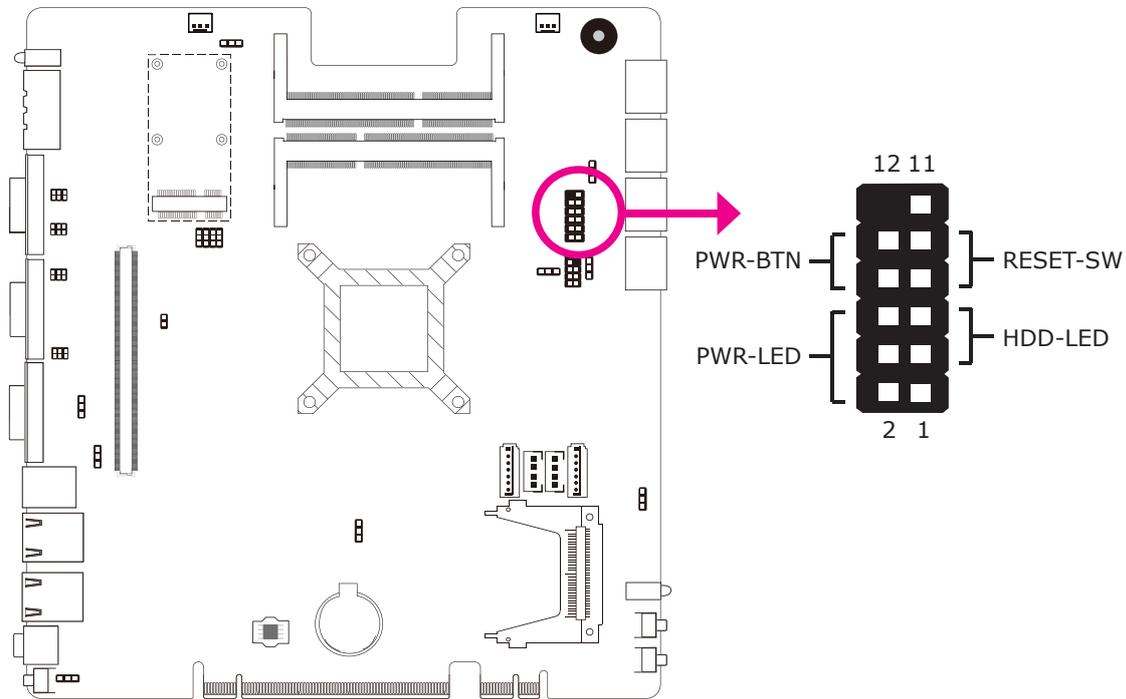
JP1 must be set to "2-3 On: +5V_standby". Refer to "PS/2 Power Select" in chapter 4 for more information.



Important:

The +5V_standby power source of your power supply must support $\geq 720\text{mA}$.

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

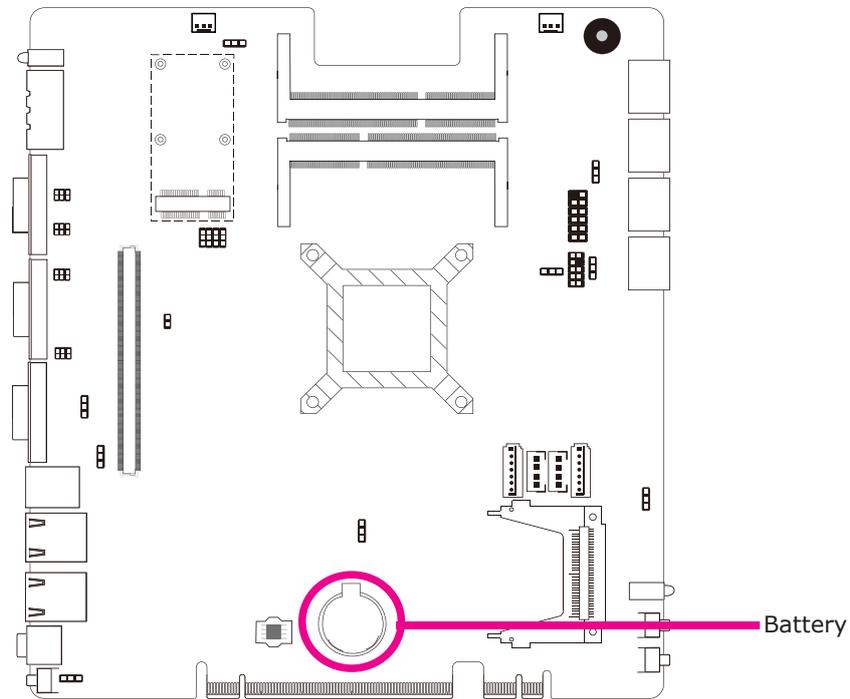
This switch is used to power on or off the system.

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

Battery

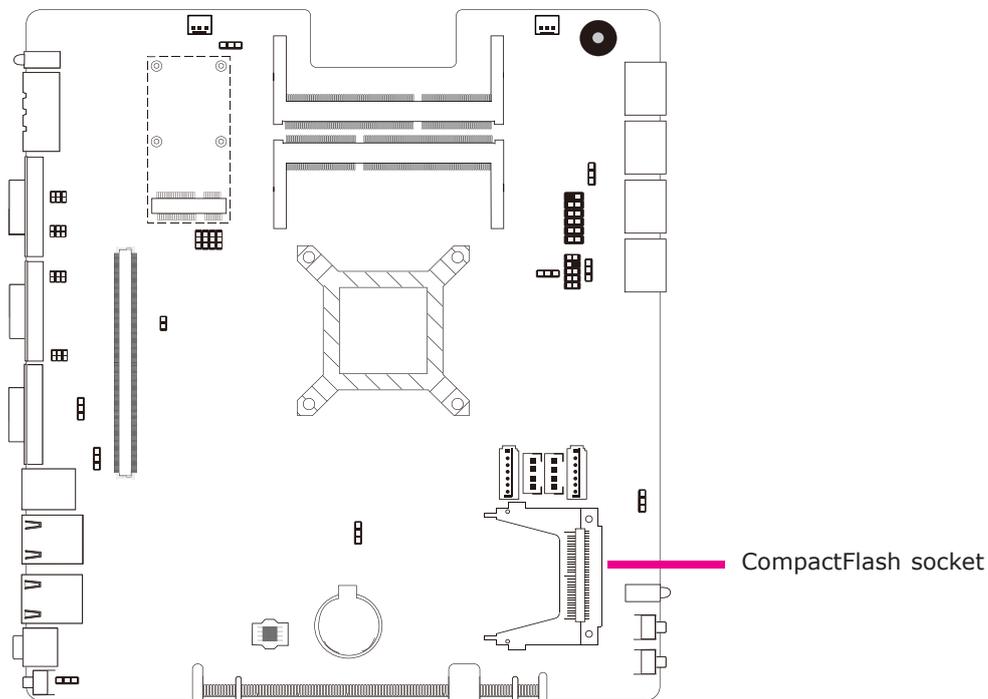


The lithium ion battery powers the real-time clock and CMOS memory. It is an auxiliary source of power when the main power is shut off.

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.

CompactFlash Socket



The CompactFlash™ socket is used for inserting a CompactFlash™ card. CompactFlash™ card is a small removable mass storage device designed with flash technology - a non-volatile storage solution that does not require a battery to retain data indefinitely. The CompactFlash™ technology is widely used in products such as portable and desktop computers, digital cameras, handheld data collection scanners, PDAs, Pocket PCs, handy terminals and personal communicators.

Chapter 6 - Mounting Options

Wall Mounting

The Wall Mounting kit includes the following:

- 2 Wallmount brackets
- Bracket screws

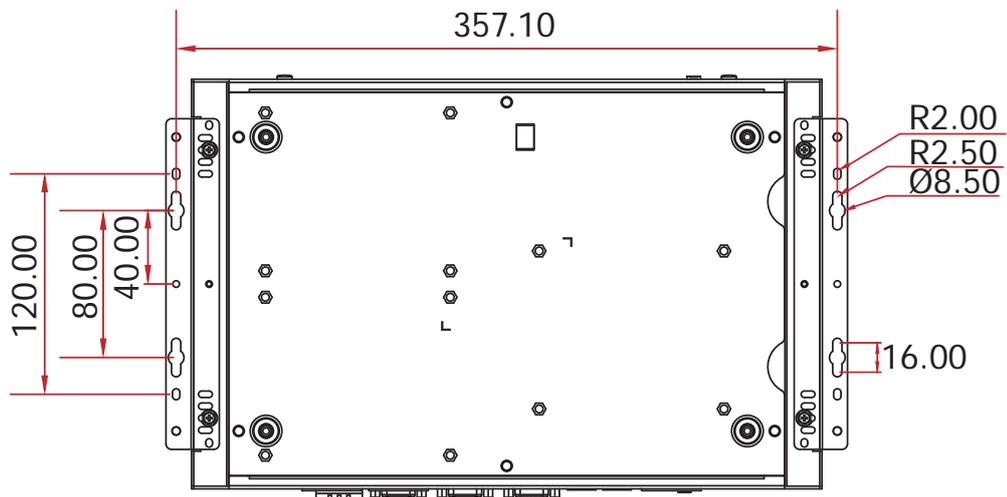
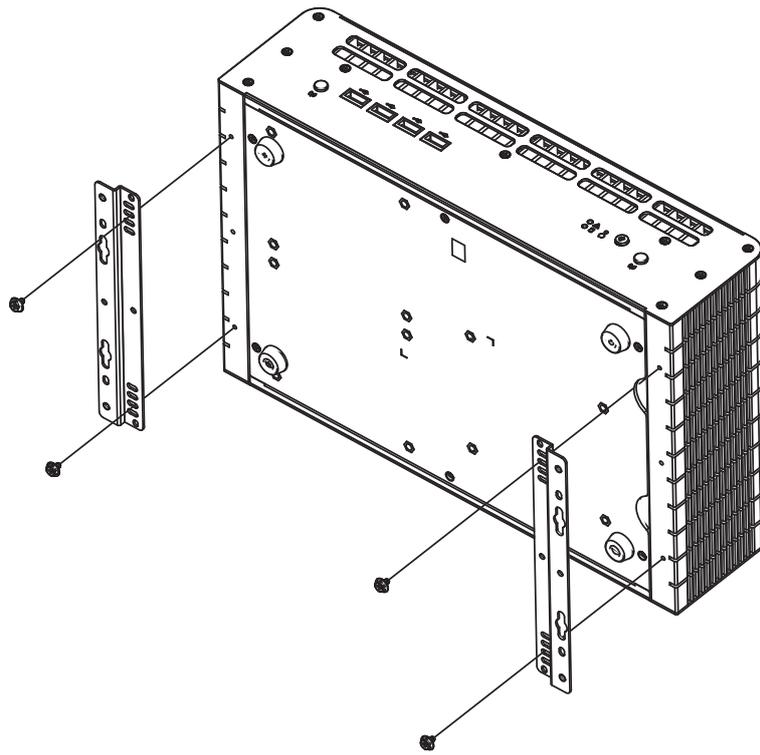


1. If rubber feet has been previously attached at the bottom of the system, please remove them first.



2. At the bottom side of the system, use the provided mounting screws to secure the wallmount brackets on each side of the system.





Chapter 7 - BIOS Setup

Overview

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

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



Note:

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

Default Configuration

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

Entering the BIOS Setup Utility

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

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

Legends

Keys	Function
Right and Left arrows	Moves the highlight left or right to select a menu.
Up and Down arrows	Moves the highlight up or down between submenus or fields.
<Esc>	Exits 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	Selects a field.
<F1>	Displays General Help.
<F4>	Saves and exits the Setup program.
<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.

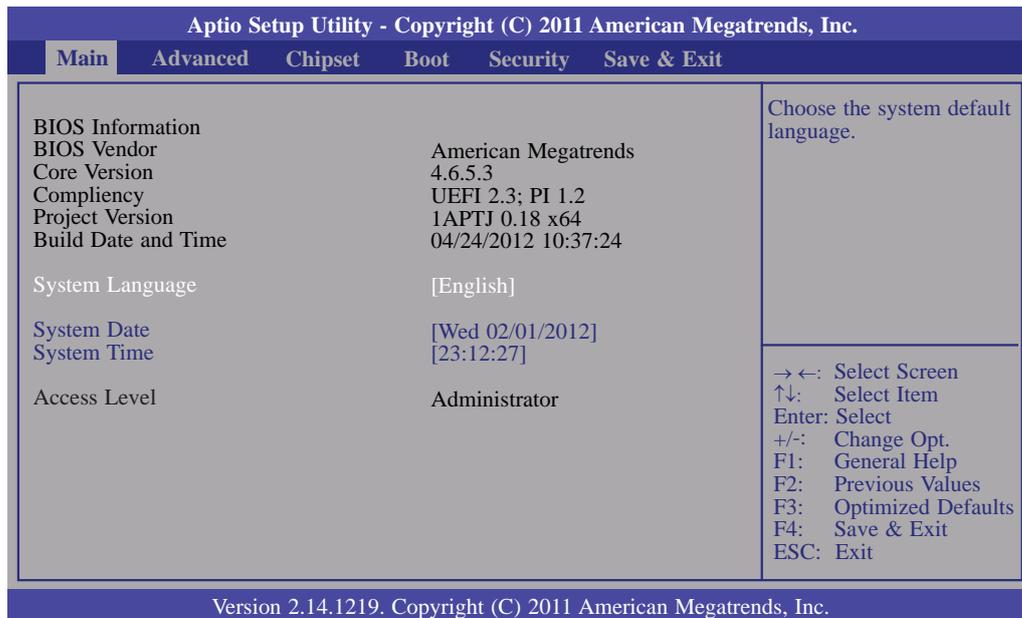
Submenu

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>.

AMI BIOS Setup Utility

Main

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



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.

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.

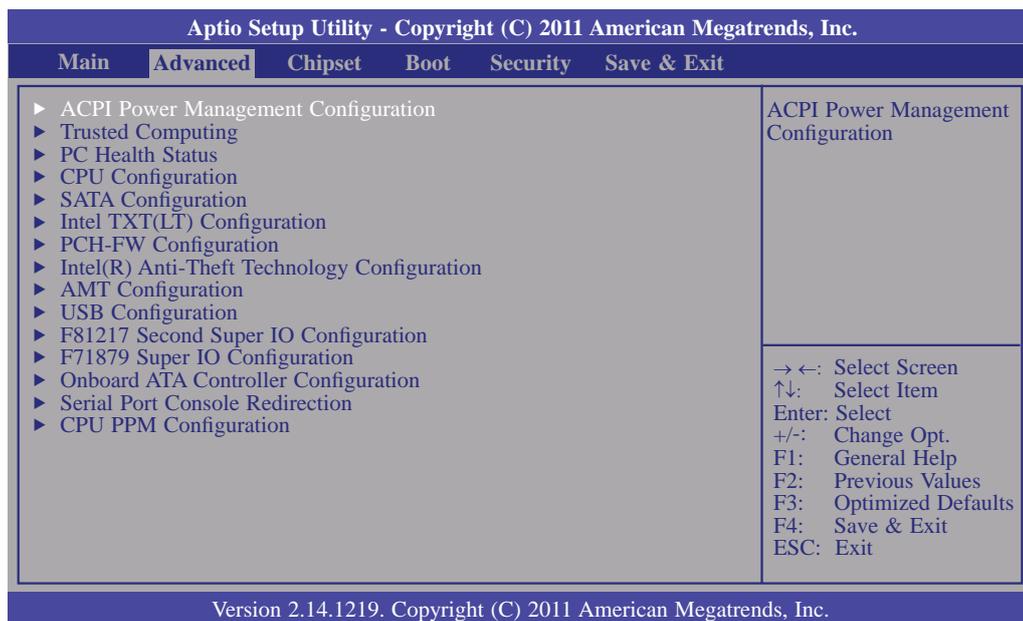
Advanced

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



Important:

Setting incorrect field values may cause the system to malfunction.



ACPI Power Management Configuration

This section is used to configure the ACPI Power Management.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
ACPI Power Management Configuration		Enables or Disables BIOS ACPI Auto Configuration.
Enable ACPI Auto Configuration	[Disable]	
ACPI Sleep State	[S3 (Suspend to RAM)]	
Resume by PME	[Disabled]	
Resume by Ring	[Disabled]	
Resume by RTC Alarm	[Disabled]	
		→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

ACPI Sleep State

Selects the highest ACPI sleep state the system will enter when the Suspend button is pressed.

S1(POS) Enables the Power On Suspend function.

S3(STR) Enables the Suspend to RAM function.

Resume by PME

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

Resume by Ring

Set this field to Enabled to use the modem ring-on function. This will allow your system to power-on to respond to calls coming through an external or internal modem.

Resume by RTC Alarm

When Enabled, the system uses the RTC to generate a wakeup event.

Trusted Computing

This section configures settings relevant to Trusted Computing innovations.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Configuration Security Device Support [Disabled]	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
Current Status Information SUPPORT TURNED OFF	
→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.	

Security Device Support

Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

PC Health Status

This section displays the SIO hardware health monitor.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
▶ Smart Fan Function		Smart Fan Function
Case Open Beep	[Disabled]	
CPU Temperature	: +66 C	
System Temperature	: +39 C	
CPU FAN Speed	: N/A	
System FAN Speed	: N/A	
VCore	: +0.872V	
Vccp	: +1.05V	
+1.5V	: +1.536V	
+3.3V	: +3.248 V	
+5.0V	: +4.912 V	
+12V	: +12.144 V	
		→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

Smart Fan Function

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
Smart Fan Function		Enable CPU SmartFan
CPU Smart Fan Control	[Automatic]	
Boundary 1	70	
Boundary 2	60	
Boundary 3	50	
Boundary 4	40	
Speed Count 1	100	
Speed Count 2	75	
Speed Count 3	50	
Speed Count 4	25	
Speed Count 5	10	
		→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

CPU Smart Fan Control

When this feature is set to Automatic, the CPU's fan speed will rotate according to the CPU's temperature. The higher the temperature, the faster the speed of rotation.

Boundary 1 to Boundary 4

The range is from 0-127.

Speed Count 1 to Speed Count 5

The range is from 1-100.

Case Open Beep

Set this field to Enabled to allow the system to alert you of a chassis intrusion event.

CPU Configuration

This section is used to configure the CPU. It will also display the detected CPU information.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
CPU Configuration		Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled.
Intel (R) Core (TM) i7-2710QE CPU @ 2.10GHz		
CPU Signature	206a7	→ ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Microcode Patch	25	
Max CPU Speed	2300 MHz	
Min CPU Speed	1200 MHz	
CPU Speed	2300 MHz	
Processor Cores	4	
Intel HT Technology	Supported	
Intel VT-x Technology	Supported	
Intel SMX Technology	Supported	
64-bit	Supported	
L1 Data Cache	32 kB x 4	
L1 Code Cache	32 kB x 4	
L2 Cache	256kB x 4	
L3 Cache	6144 kB	
Hyper-threading	[Enabled]	
Active Processor Cores	[All]	
Limit CPUID Maximum	[Disabled]	
Intel Virtualization Technology	[Disabled]	
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

Hyper-threading

Enable this field for Windows XP and Linux which are optimized for Hyper-Threading technology. Select disabled for other OSes not optimized for Hyper-Threading technology. When disabled, only one thread per enabled core is enabled.

Active Processor Cores

Number of cores to enable in each processor package.

Limit CPUID Maximum

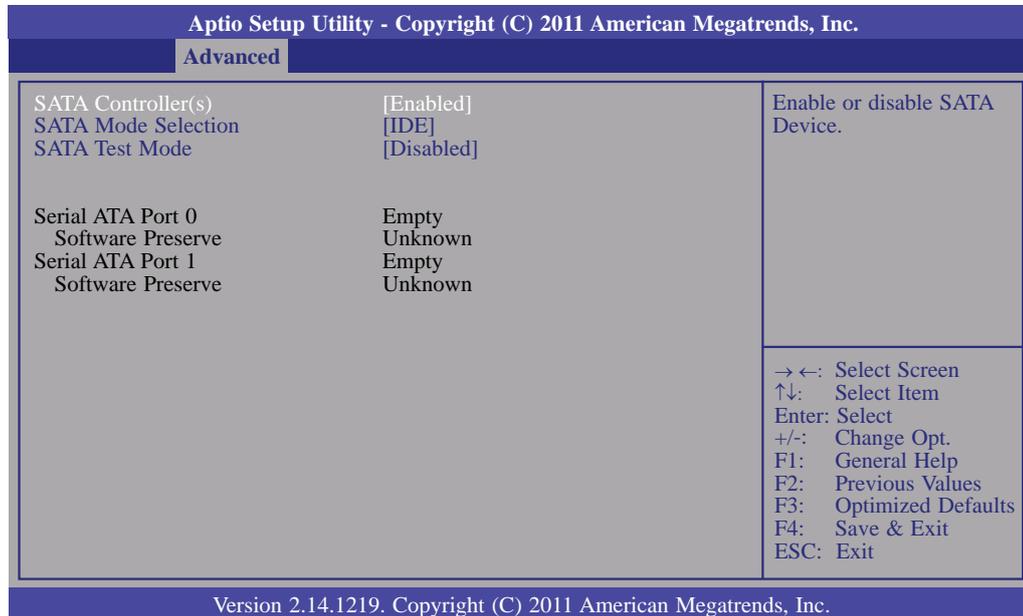
The CPUID instruction of some newer CPUs will return a value greater than 3. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid this problem, enable this field to limit the return value to 3 or less than 3.

Intel Virtualization Technology

When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

SATA Configuration

This section is used to configure SATA functions.



SATA Controller(s)

This field is used to enable or disable the Serial ATA channels.

SATA Mode Selection

IDE Mode

This option configures the Serial ATA drives as Parallel ATA storage devices.

AHCI Mode

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

RAID Mode

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

SATA Test Mode

This field is used to enable or disable the Serial ATA test mode.

If AHCI or RAID is selected in the SATA Mode Selection, it will display the following information:



Serial ATA Port 0 to Serial ATA Port 3

These fields are used to configure the connected SATA devices.

Aggressive LPM Support

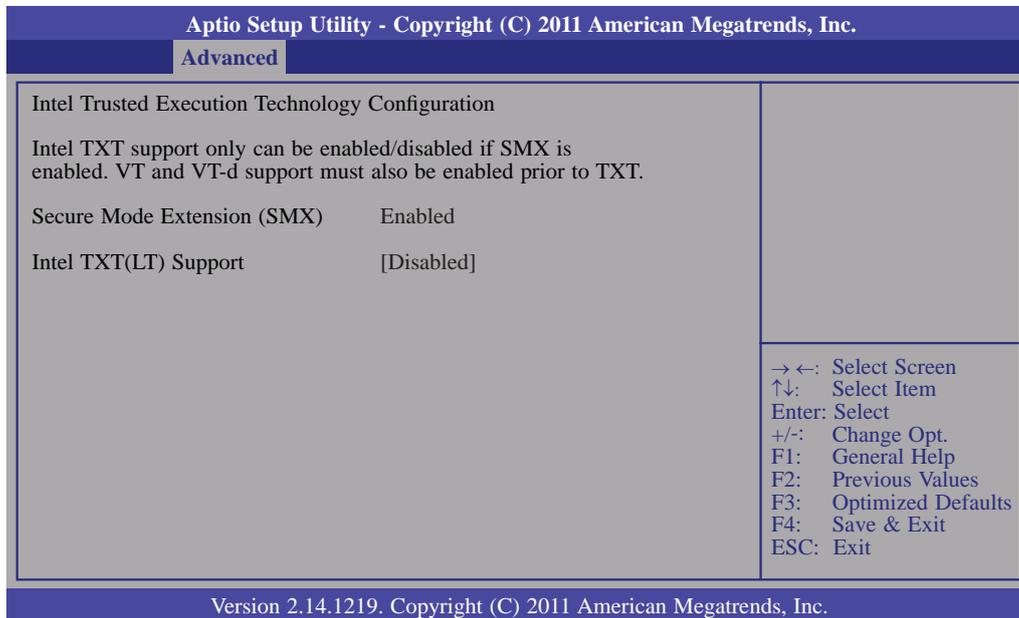
Enter PCH to aggressively enter link power state.

Software Feature Mask Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
<ul style="list-style-type: none"> ▶ Software Feature Mask Configuration Serial ATA Port 0 <ul style="list-style-type: none"> Software Preserve Empty Port 0 Unknown Hot Plug [Enabled] External SATA [Disabled] SATA Device Type [Disabled] Spin Up Device [Hard Disk Driver] Serial ATA Port 1 <ul style="list-style-type: none"> Software Preserve Empty Port 1 Unknown Hot Plug [Enabled] External SATA [Disabled] SATA Device Type [Hard Disk Driver] Spin Up Device [Disabled] Port 4 [Enabled] Hot Plug [Disabled] External SATA [Disabled] Spin Up Device [Disabled] Port 5 [Enabled] 		Enable or disable SATA device.
		→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

Intel TXT (LT) Configuration

This section is used to configure the Intel Trusted Execution technology.



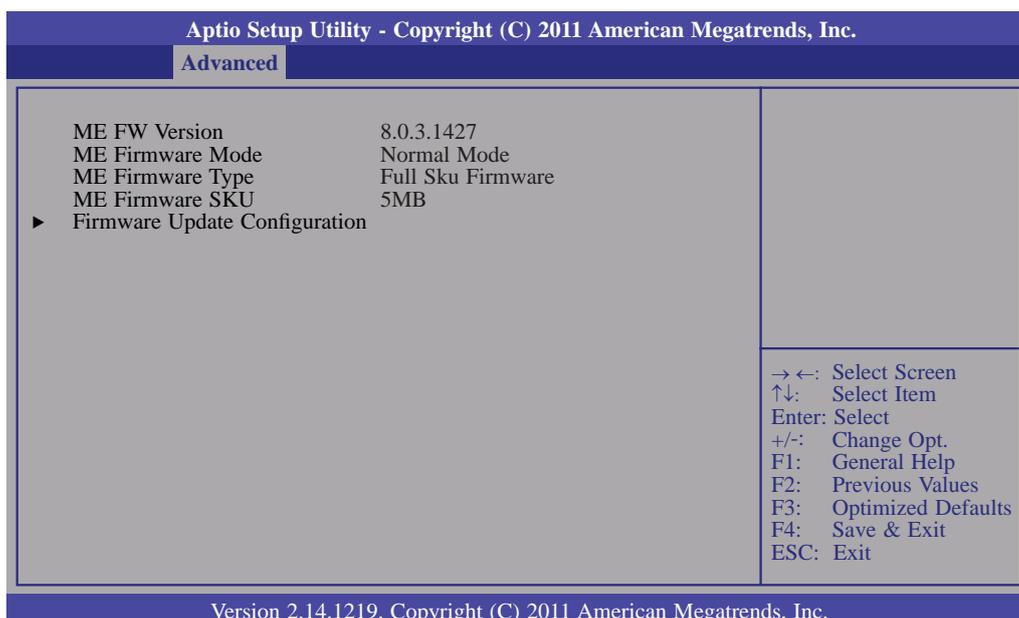
Secure Mode Extensions (SMX)

The options are Enabled and Disabled.

Intel TXT(LT) Support

The options are Enabled and Disabled.

PCH-FW Configuration



Intel Anti-Theft Configuration

This section is used to disable the PC at the hardware level in the event of loss or theft.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Intel Anti-Theft Technology Configuration	
Intel Anti-Theft Technology	[Disabled]
Intel Anti-Theft Technology Rec	3
Enter Intel AT Suspend Mode	[Disabled]
Enable/Disable Intel AT in BIOS for testing only.	
→ ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.	

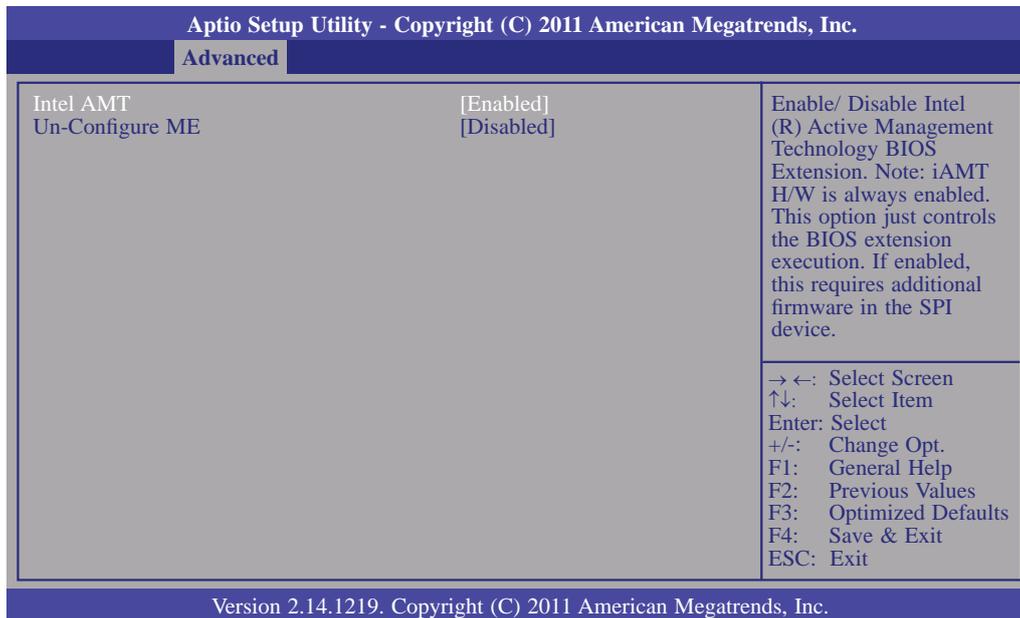
Intel Anti-Theft Technology

The options are Enabled and Disabled.

Enter Intel AT Suspend Mode

The options are Enabled and Disabled.

Intel AMT Configuration



Intel AMT

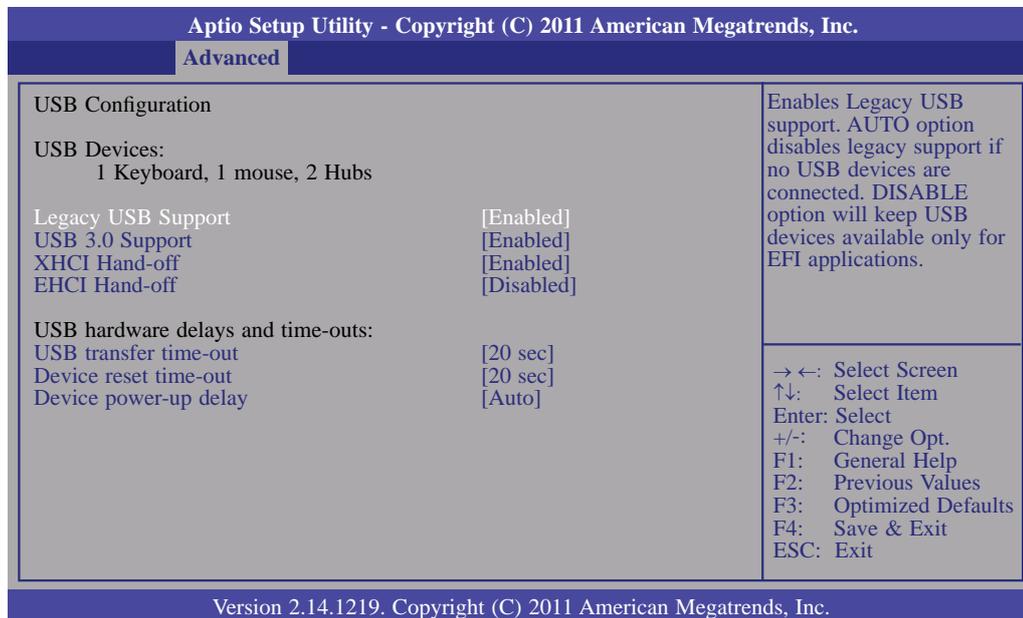
Enables or disables the AMT function.

Un-Configure ME

Select Enabled to unconfigure the ME function without the need for a password.

USB Configuration

This section is used to configure USB.



Legacy USB Support

Enabled

Enables legacy USB.

Auto

Disables support for legacy when no USB devices are connected.

Disabled

Keeps USB devices available only for EFI applications.

USB 3.0 Support

If you are using USB 3.0, this field must be set to Enabled.

XHCI Hand-off

This is a workaround for OSES that does not support XHCI hand-off.

EHCI Hand-off

This is a workaround for OSES that does not support EHCI hand-off. The EHCI ownership change should be claimed by the EHCI driver.

USB transfer time-out

The time-out value for Bulk and Interrupt transfers.

Device reset time-out

Selects the USB mass storage device start unit command timeout.

Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller. "Auto" uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

F81217 Second Super IO Configuration

This section is used to configure the serial port functions.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
F81217 Second Super IO Configuration		Set Parameters of Serial Port 4 (COMB)
F81217 Second Super IO Chip	F81217 Second IO	
<ul style="list-style-type: none"> ▶ Serial Port 3 Configuration ▶ Serial Port 4 Configuration ▶ Serial Port 5 Configuration ▶ Serial Port 6 Configuration 		
		→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

Serial Port 3 Configuration to Serial Port 6 Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
Serial Port 3 Configuration		Select an Optimal Setting for Super IO device
Serial Port Device Settings	[Enabled] Reset Required	
Change Settings	[Auto]	
		→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

Serial Port

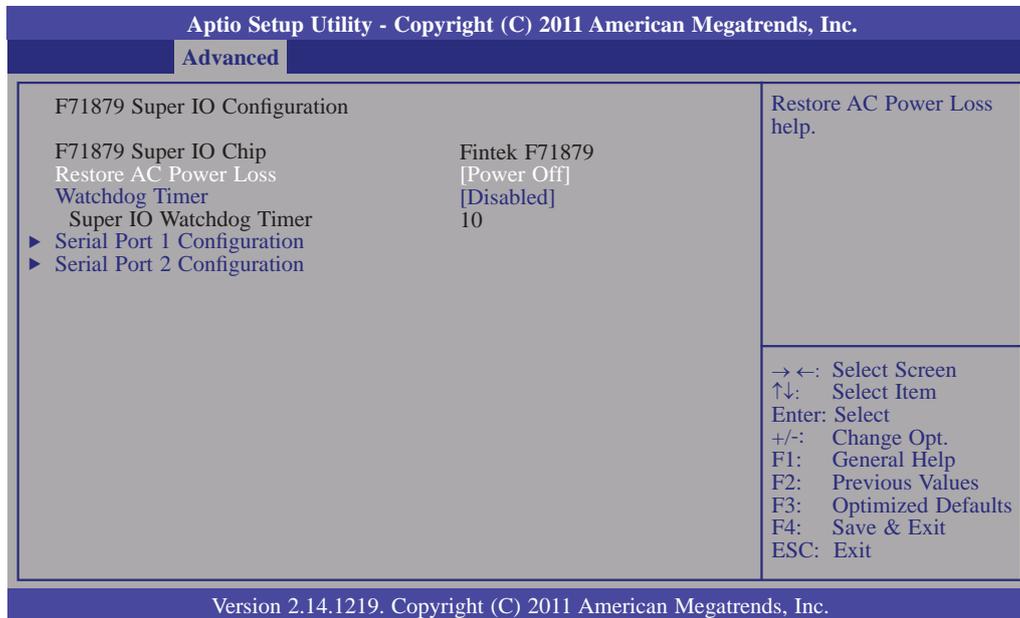
Enables or disables the serial port.

Change Settings

Selects the IO/IRQ setting of the I/O device.

F71879 Super IO Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.



Restore AC Power Loss

Off

When power returns after an AC power failure, the system's power is off. You must press the Power button to power-on the system.

On

When power returns after an AC power failure, the system will automatically power-on.

Last State

When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

Watchdog Timer

Enable or disable Super I/O watchdog timer.

Serial Port 1 Configuration to Serial Port 2 Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
Serial Port 1 Configuration		Enable or Disable Serial Port (COM)
Serial Port Device Settings	[Enabled] IO=3F8h; IRQ=4;	
Change Settings	[Auto]	
		→ ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
Serial Port 2 Configuration		Enable or Disable Serial Port (COM)
Serial Port Device Settings	[Enabled] IO=2F8h; IRQ=3;	
Change Settings Device Mode	[Auto] [Serial Port Funct...]	
		→ ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

Serial Port

Enables or disables the serial port.

Change Settings

Selects the IO/IRQ setting of the I/O device.

Device Mode

Enable or disable serial port (COM)

Onboard ATA Controller Configuration

This section is used to enable or disable the onboard ATA controller.

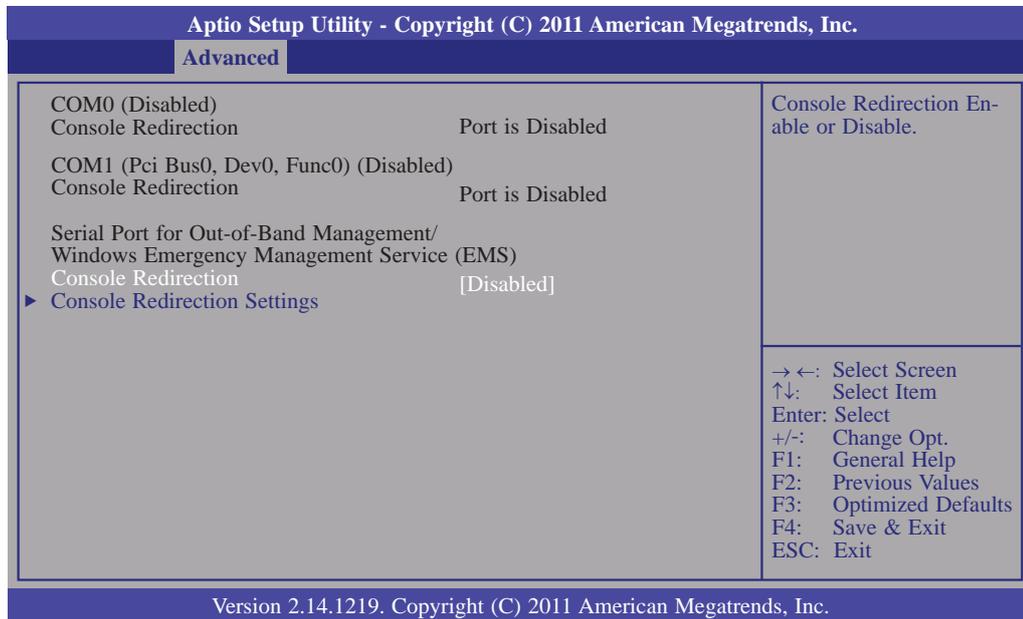
Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
PATA Primary Master	Not Present	Select an operative mode for ATA controller.
ATA Controller	[IDE Mode]	
		→ ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

ATA Controller

Select an operative mode for ATA controller.

Serial Port Console Redirection

This section is used to enable or disable the console redirection.



Console Redirection Settings

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or the compatible settings.

CPU PPM Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Advanced		
CPU PPM Configuration		Enable/Disable Intel SpeedStep
EIST	[Enabled]	
Turbo Mode	[Enabled]	
CPU C3 Report	[Enabled]	
CPU C6 Report	[Enabled]	
CPU C7 Report	[Enabled]	
Config TDP Lock	[Disabled]	
Long Duration Power Limit	0	
Long Duration Maintained	28	
Short Duration Power Limit	0	
ACPI T State	[Disabled]	
		→ ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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EIST

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

Turbo Mode

The options are Enabled and Disabled.

CPU C3 Report to CPU C7 Report

Enables or disables CPU C3 (ACPI C2), C6 and C7 (ACPI C3) report to OS.

Config TDP Lock

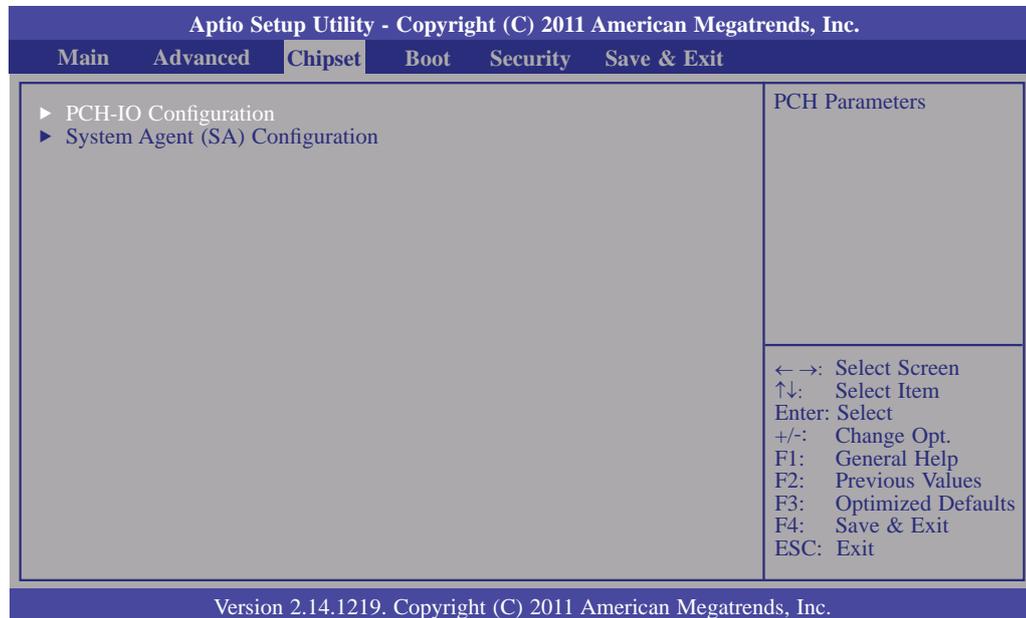
Lock the Config TDP Control register.

ACPI T State

Enables or disables ACPI T State support.

Chipset

Configures relevant chipset functions.



PCH-IO Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
Intel PCH RC Version	1.1.0.0	PCI Express Configuration settings.
Intel PCH SKU Name	QM77	
Intel PCH Rev ID	04/C1	
▶ PCI Express Configuration		→ ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
▶ USB Configuration		
▶ PCH Azalia Configuration		
PCH LAN Controller	[Enabled]	
Wake on LAN	[Enabled]	
After G3	[Power on]	
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

PCH LAN Controller

Enables or disables the PCH LAN Controller.

Wake on LAN

Set this field to Enabled to wake up the system via the onboard LAN or via a LAN card that supports the remote wake up function.

After G3*Power Off / WOL*

Power-on the system via WOL after G3.

Power On

Power-on the system after G3.

PCI Express Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
PCI Express Configuration PCI Express Clock Gating [Enabled]	Enable or disable PCI Express Clock Gating for each root port.	
PCIE Port 1 is assigned to LAN ▶ PCI Express Root Port 2 ▶ PCI Express Root Port 3 ▶ PCI Express Root Port 4 ▶ PCI Express Root Port 5		→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

PCI Express Clock Gating

Enables or disables PCI Express Clock Gating for each root port.

PCI Express Root Port 2 to PCI Express Root Port 5

Controls the PCI Express Root Port.

USB Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
USB Configuration XHCI Pre-Boot Driver [Enabled]	Enable or disable XHCI pre-boot driver support.	
xHCI Mode [Smart Auto] HS Port #1 Switchable [Enabled] HS Port #2 Switchable [Enabled] HS Port #3 Switchable [Enabled] HS Port #4 Switchable [Enabled] xHCI Streams [Enabled]		
EHCI1 [Enabled]		
EHCI2 [Enabled]		→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

xHCI Pre-Boot Driver

Enables or disables xHCI Pre-Boot Driver support.

xHCI Mode

Mode of operation of xHCI controller. Options are Smart Auto, Auto, Enabled, Disabled.

EHCI1 and EHCI2

These fields are used to enable or disable USB 2.0.

PCH Azalia Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Chipset	
PCH Azalia Configuration	
Azalia	[Auto]
Azalia Internal HDMI Codec	[Enabled]
Azalia HDMI Code Port B	[Enabled]
Control detection of the Azalia device. Disable= Azalia will be unconditionally disabled Enabled= Azalia will be unconditionally enabled Auto=Azalia will be enabled if present, disabled otherwise.	
→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.	

Azalia internal HDMI codec

Enables or disables the Azalia internal HDMI codec.

System Agent (SA) Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
System Agent Bridge Name	SandyBridge	Config Graphics Settings.
System Agent RC Version	1.1.0.0	
VT-d Capability	Supported	
▶ Graphics Configuration		
▶ NB PCIe Configuration		
▶ Memory Configuration		
		→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

Graphics Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
Graphics Configuration		Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.
IGFx VBIOS Version	2126	
IGfx Frequency	650 MHz	
Primary Display	[Auto]	
DVMT Total Gfx Mem	[256M]	
▶ LCD Control		
		→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

Primary Display

- Auto When the system boots, it will auto detects the display device.
- IGFX When the system boots, it will first initialize the onboard VGA.
- PEG When the system boots, it will first initialize the PCI Express x16 graphics card.

DVMT Total Gfx Mem

This field is used to select the graphics memory size used by DVMT mode.

LCD Control

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Chipset	
LCD Control	
Primary IGFX Boot Display	[VBIOS Default]
LCD Panel Type	[VBIOS Default]
Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.	
→ ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.	

Primary IGFX Boot Display and Secondary IGFX Boot Display

The options are VBIOS Default, CRT, HDMI, LVDS, DVI-I and DVI-D.

LCD Panel Type

This field is used to select the type of LCD panel used by the internal graphics device.

NB PCIe Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Chipset		
NB PCIe Configuration PEG0 Enable PEG	Not Present [Auto]	To enable or disable the PEG.
		→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		

Enabled PEG

To enable or disable the PEG.

Memory Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Chipset

Memory Information		
Memory RC Version	1.2.2.0	
Memory Frequency	1060 Mhz	
Total Memory	8192 MB (DDR3)	
DIMM#1	4096 MB (DDR3)	
DIMM#2	4096 MB (DDR3)	
CAS Latency (tCL)	11	
Minimum delay time		
CAS to RAS (tRCDmin)	11	
Row Precharge (tRPmin)	11	
Active to Precharge (tRASmin)	28	
		→ ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Boot

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
Boot Configuration				Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.	
Setup Prompt Timeout			1		
Bootup NumLock State			[On]		
Quiet Boot			[Disabled]		
Fast Boot			[Disabled]		
CSM16 Module Version			07.69		
GateA20 Active			[Upon Request]		
Option ROM Messages			[Force BIOS]		
INT19 TRAP Response			[Immediate]		
Boot Option Priorities					← →: Select Screen
Boot Option #1					↑↓: Select Item
▶ CSM Parameters					Enter: Select
					+/-: Change Opt.
					F1: General Help
					F2: Previous Values
					F3: Optimized Defaults
					F4: Save & Exit
					ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.					

Setup Prompt Timeout

Selects the number of seconds to wait for the setup activation key. 65535(0xFFFF) denotes indefinite waiting.

Bootup NumLock State

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Quiet Boot

Enables or disables the quiet boot function.

Fast Boot

Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

GateA20 Active

Upon Request- GA20 can be disabled using BIOS services.

Always- Do not allow disabling GA20; this option is useful when any RT code is executed above 1MB.

Option ROM Messages

Set display mode for option ROM.

INT19 TRAP Response

When enabled, it allows the optional ROM to trap Int 19.

CSM Parameters

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
Launch PXE OpROM policy			[Do not launch]		This option controls if CSM will be launched.
Launch Storage OpROM policy			[Legacy only]		
					← →: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.					

Launch PXE OpROM policy

Controls the execution of UEFI and legacy PXE OpROM.

Launch Storage OpROM policy

Controls the execution of UEFI and legacy storage OpROM.

Security

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
Password Description If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights. The password length must be in the following range: Minimum length Maximum length Administrator Password User Password UEFI Secure Boot Management Secure Boot Control [Enabled] ▶ Secure Boot Policy ▶ Key Management HDD Security Configuration				Set Administrator Password. → ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.					

Administrator Password

Sets the administrator password.

User Password

Sets the user password.

Secure Boot Policy

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
Internal FV				[Always Execute]	Image Execution Policy on Security Violation. Image load device path.
Option ROM				[Deny Execute]	
Removable Media				[Deny Execute]	
Fixed Media				[Deny Execute]	
					← →: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.					

Internal FV, Option ROM, Removable Media, Fixed Media

Image Execution Policy on Security Violation. Image load device path.

Key Management

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
System Mode				Setup	Launches the file browser to set the platform key from file.
Secure Boot Mode				Disabled	
Platform Key (PK)				NOT INSTALLED	← →: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
▶ Set PK from File					
▶ Get PK to File					
▶ Delete the PK					
Key Exchange Key Database (KEK)				NOT INSTALLED	
▶ Set KEK from File					
▶ Get KEK to File					
▶ Delete the KEK					
▶ Append an entry to KEK					
Authorized Signature Database (DB)				NOT INSTALLED	
▶ Set DB from File					
▶ Get DB to File					
▶ Delete the DB					
▶ Append an entry to DB					
Forbidden Signature Database (DBX)				NOT INSTALLED	
▶ Set DBX from File					
▶ Get DBX to File					
▶ Delete the DBX					
▶ Append an entry to DBX					
Manage All Factory Keys (PK, KEK, DB, DBX)					
Install Factory Defaults					

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Set PK from File

Launches the file browser to set the platform key from file.

Get PK to File

Stores the existing platform key to file name OK in selected file system's root.

Delete the PK

Deletes the platform key.

Set KEK from file

Launches the file browser to set the key exchange key signature database from file.

Get KEK to File

Stores the existing key exchange key signature database to file name KEK in selected file system's root.

Delete the KEK

Deletes the key exchange key signature database.

Append an entry to KEK

Launches the file browser to append the key exchange key signature database entry from file.

Set DB from file

Launches the file browser to set the authorized signature database from file.

Get DB to File

Stores the existing authorized signature database to file name DB in selected file system's root.

Delete the DB

Deletes the authorized signature database.

Append an entry to DB

Launches the file browser to append the authorized security database entry from file.

Set DBX from file

Launches the file browser to set the forbidden signature database from file.

Get DBX to File

Stores the existing forbidden signature database to file name DB in selected file system's root.

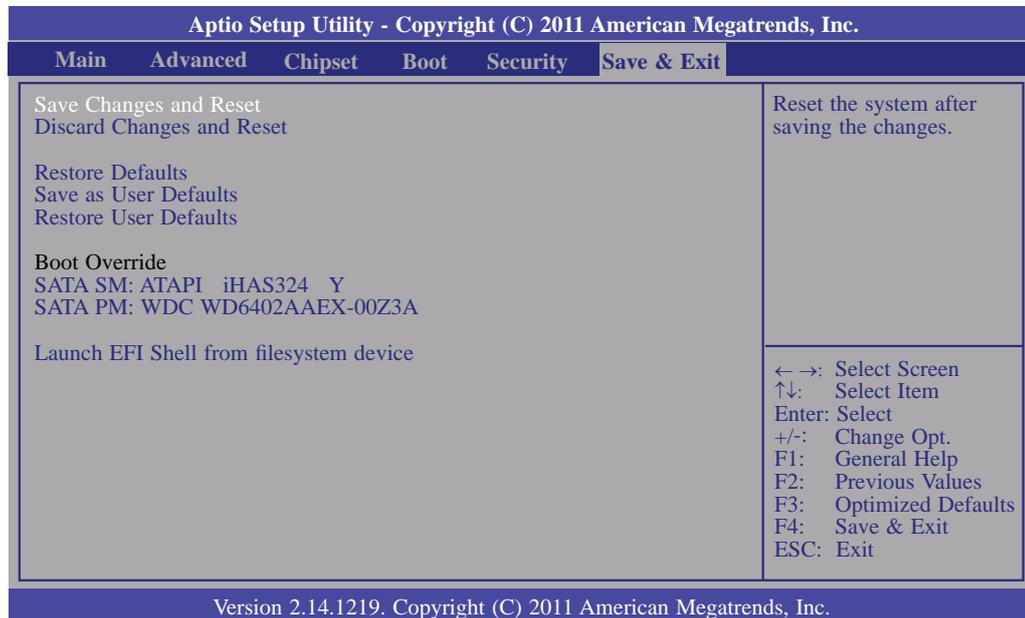
Delete the DBX

Deletes the forbidden signature database.

Append an entry to DBX

Launches the file browser to append the forbidden signature database entry from file.

Save & Exit



Save Changes and Reset

To save the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system after saving all changes made.

Discard Changes and Reset

To discard the changes, select this field and then press <Enter>. A dialog box will appear. Select Yes to reset the system setup without saving any changes.

Restore Defaults

To restore and load the optimized default values, select this field and then press <Enter>. A dialog box will appear. Select Yes to restore the default values of all the setup options.

Save as User Defaults

To save changes done so far as user default, select this field and then press <Enter>. A dialog box will appear. Select Yes to save values as user default.

Restore User Defaults

To restore user default to all the setup options, select this field and then press <Enter>. A dialog box will appear. Select Yes to restore user default.

Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility, AFUDOS.EXE. Please contact technical support or your sales representative for the files.

To execute the utility, type:

```
A: > AFUDOS BIOS_File_Name /b /p /n
```

then press <Enter>.

```
C:\AFU\AFUDOS>afudos filename /B /P /N
+-----+
|              AMI Firmware Update Utility(APTIO) v2.25              |
|              Copyright (C)2008 American Megatrends Inc. All Rights Reserved.              |
+-----+
Reading file ..... done
Erasing flash ..... done
Writing flash ..... done
Verifying flash ..... done
Erasing BootBlock ..... done
Writing BootBlock ..... done
Verifying BootBlock ..... done

C:\AFU\AFUDOS>
```

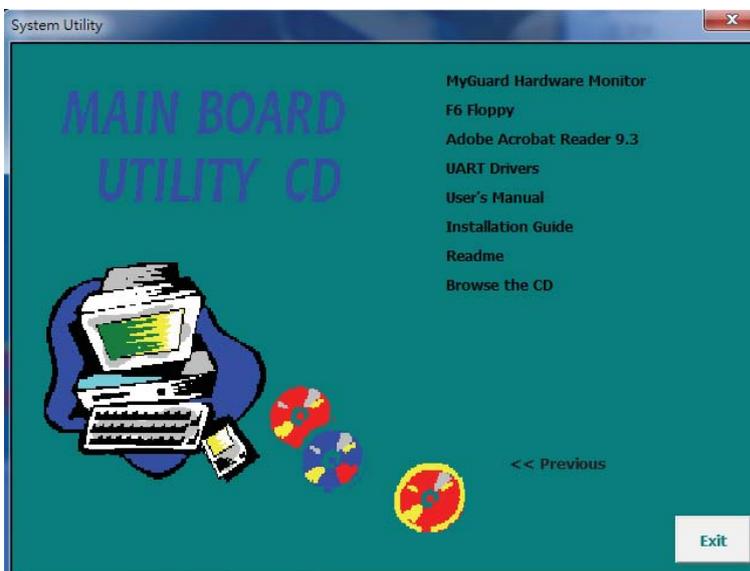
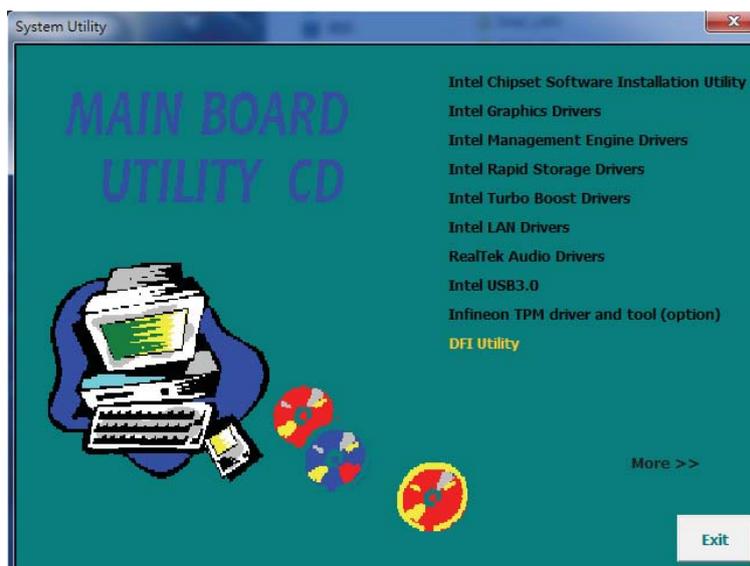
Chapter 8 - Supported Software

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

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

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

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



Microsoft .NET Framework 3.5 (for Windows XP only)

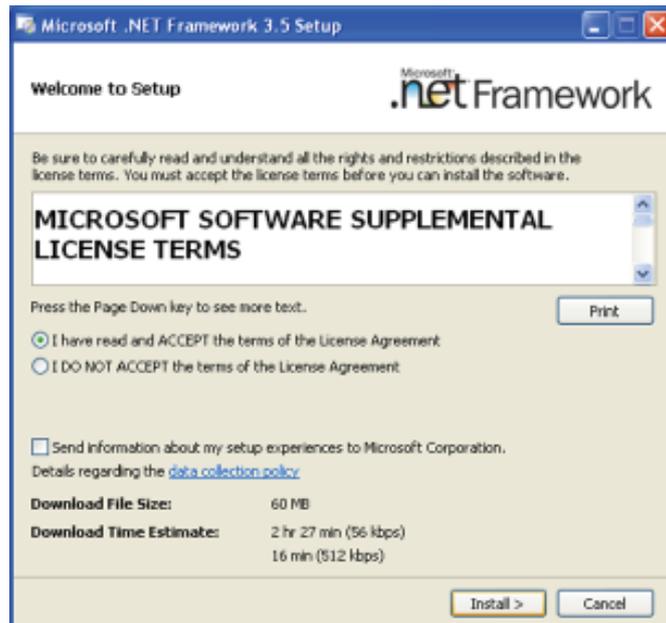
**Note:**

Before installing Microsoft .NET Framework 3.5, make sure you have updated your Windows XP operating system to Service Pack 3.

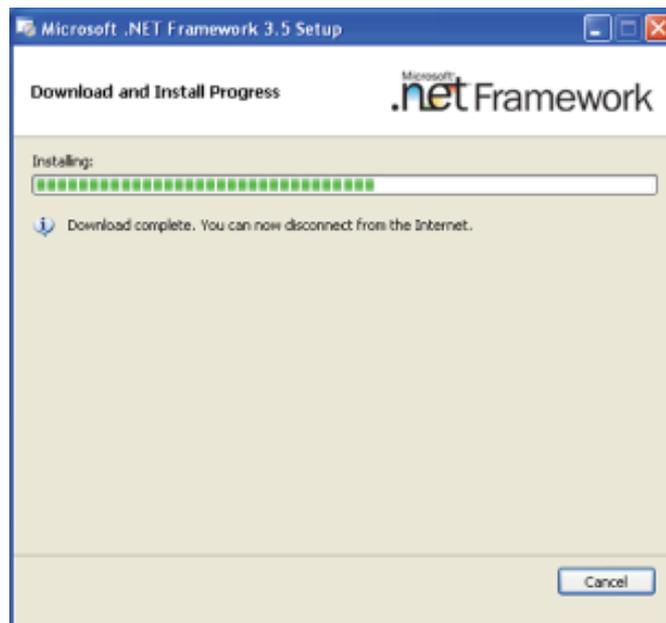
To install the driver, click “Microsoft .NET Framework 3.5” on the main menu.

1. Read the license agreement carefully.

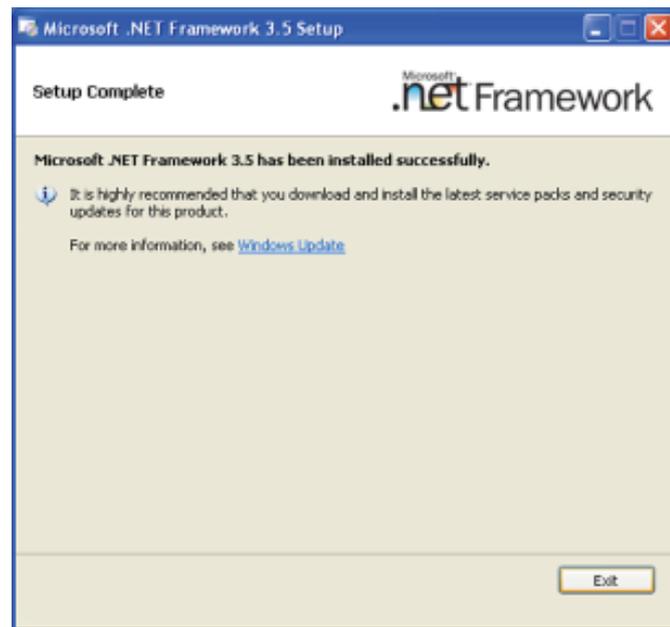
Click “I have read and accept the terms of the License Agreement” then click Install.



2. Setup is now installing the driver.



3. Click Exit.



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.



3. Go through the readme document for more installation 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.

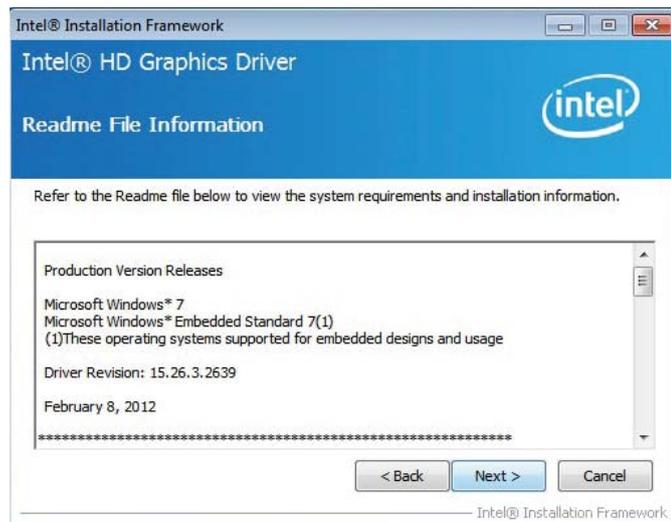


By default, the "Automatically run WinSAT and enable the Windows Aero desktop theme" is enabled. With this enabled, after installing the graphics driver and the system rebooted, the screen will turn blank for 1 to 2 minutes (while WinSAT is running) before the Windows Vista desktop appears. The "blank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

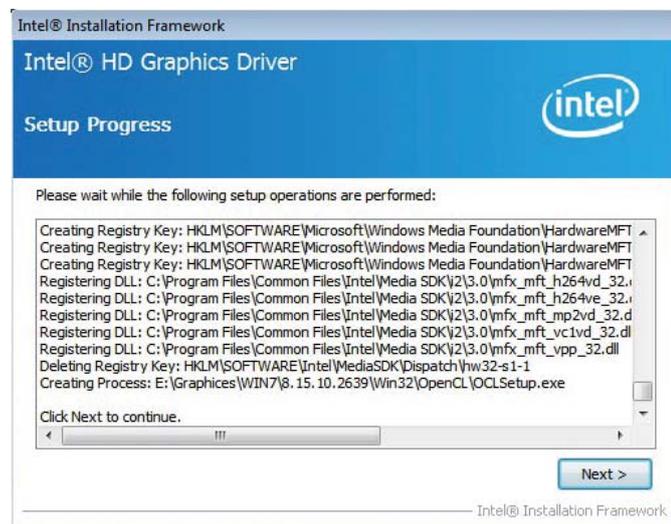
2. Read the license agreement then click Yes.



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

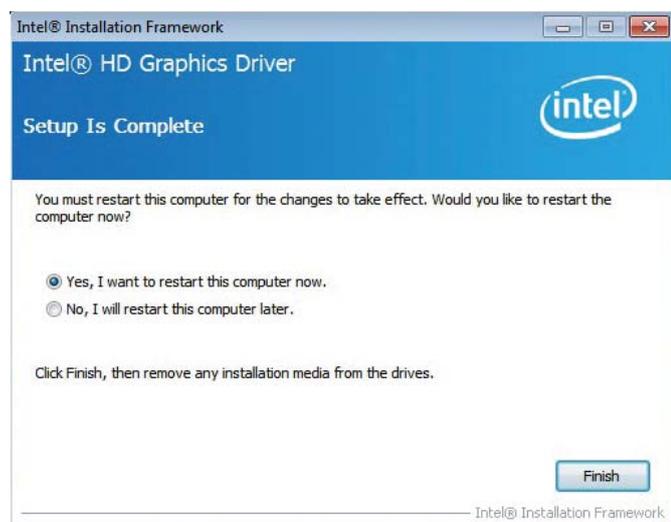


- Setup is now installing the driver. Click Next to continue.



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

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



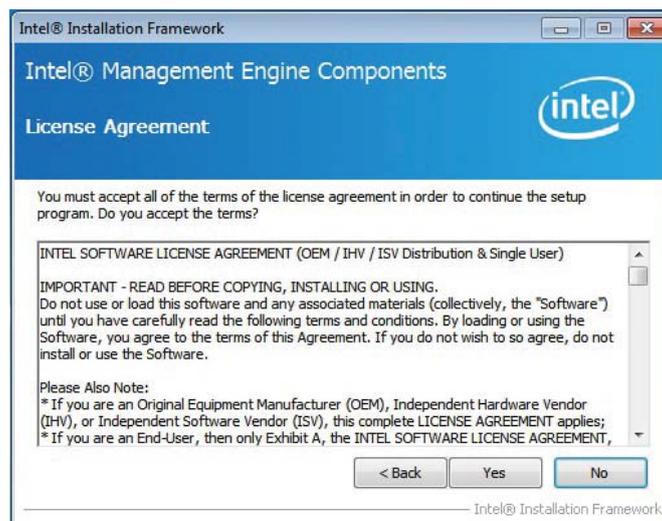
Intel Management Engine Drivers

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

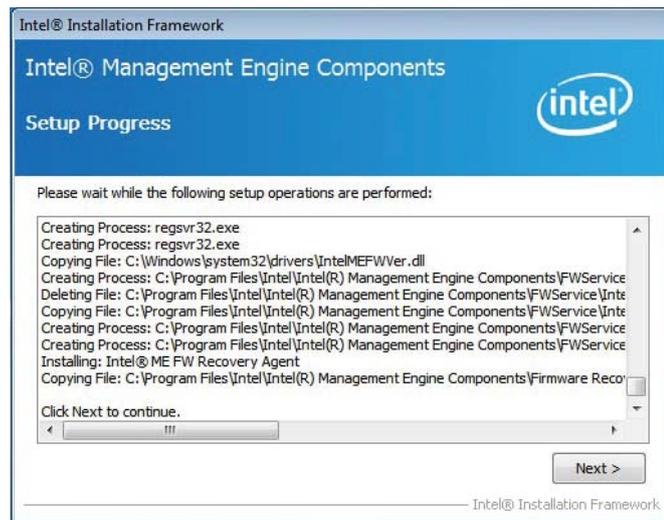
1. Setup is ready to install the driver. Click Next.



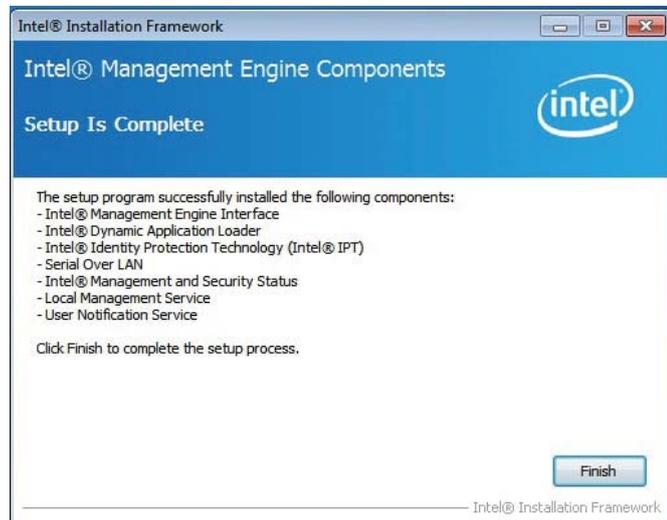
2. Read the license agreement then click Yes.



3. Setup is currently installing the driver. After installation has completed, click Next.



4. After completing installation, click Finish.



Intel Rapid Storage Drivers

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



Note:

Windows Vista is not supported.

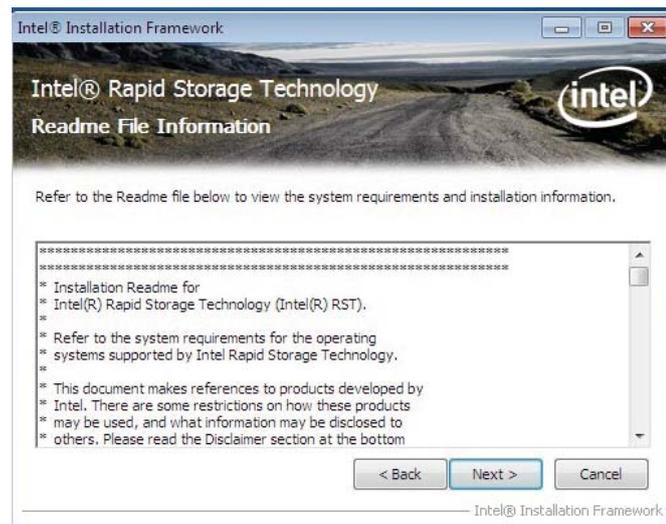
1. Setup is ready to install the driver. Click Next.



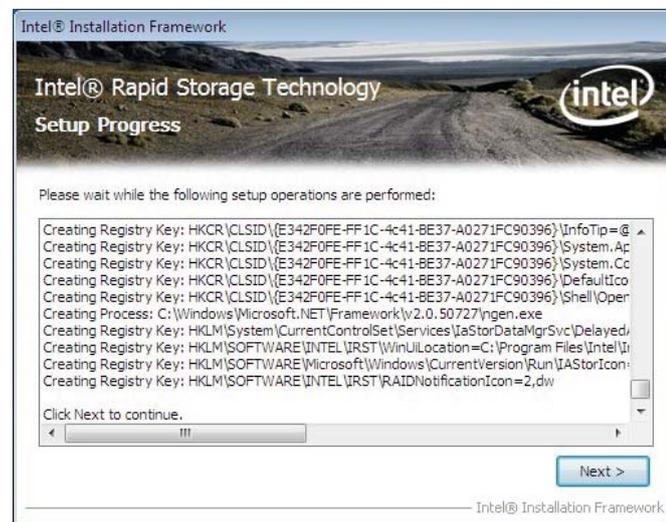
2. Read the license agreement then click Yes.



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



- Setup is currently installing the driver. After installation has completed, click Next.



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

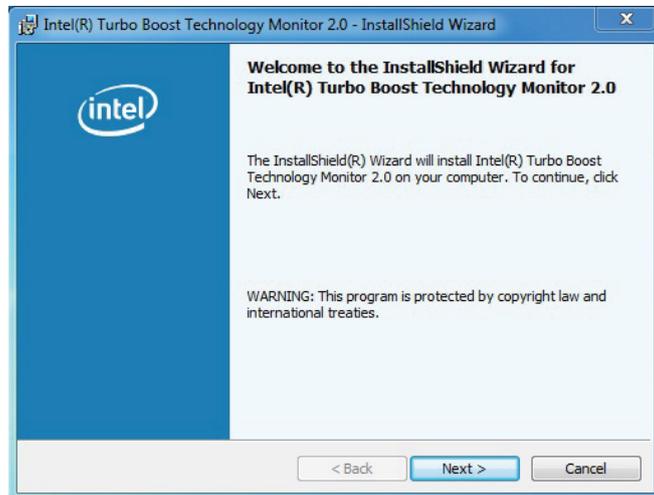
Restarting the system will allow the new software installation to take effect.



Intel Turbo Boost Monitor

To install the driver, click "Intel Turbo Boost" on the main menu.

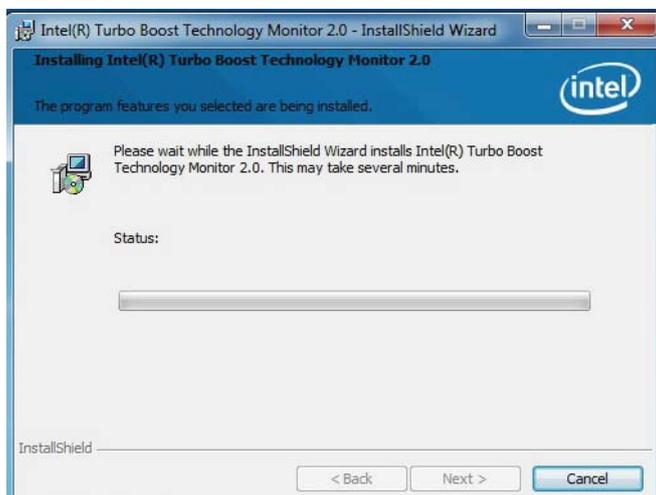
1. Setup is now ready to install the utility. Click Next.



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



3. The setup program is currently installing the software.



4. Click Finish.



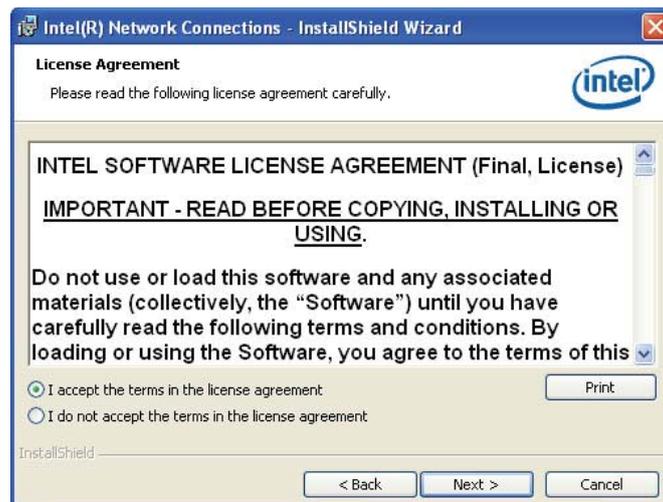
Intel LAN Drivers

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

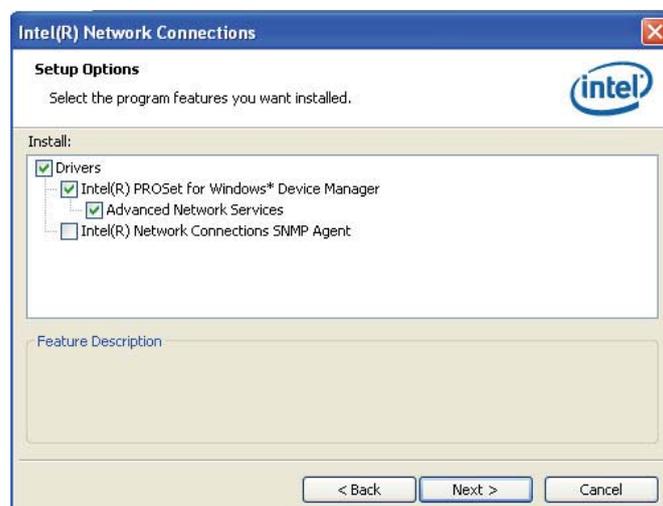
1. Setup is ready to install the driver. Click Next.



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



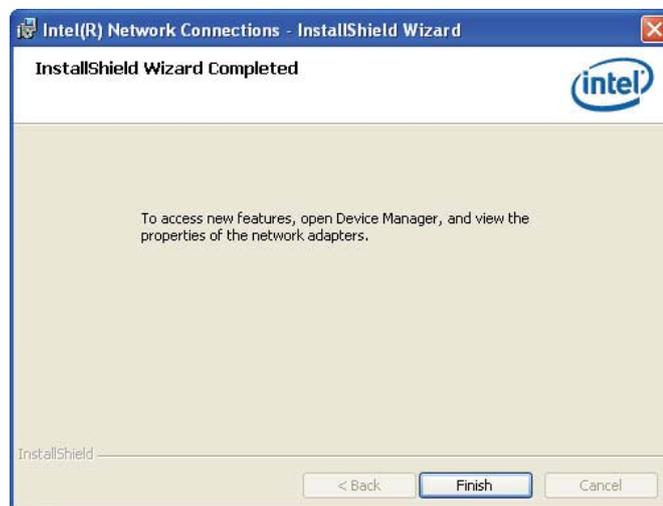
3. Select the program features you want installed then click Next.



- Click Install to begin the installation.



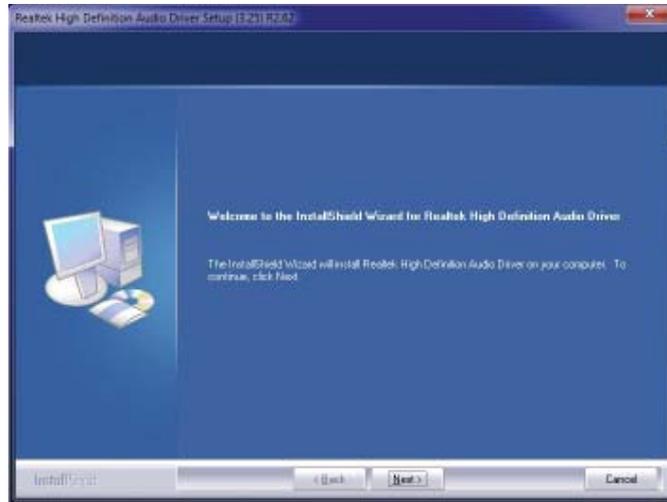
- After completing installation, click Finish.



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.



Intel USB 3.0

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

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



2. Read the license agreement then click Yes.



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



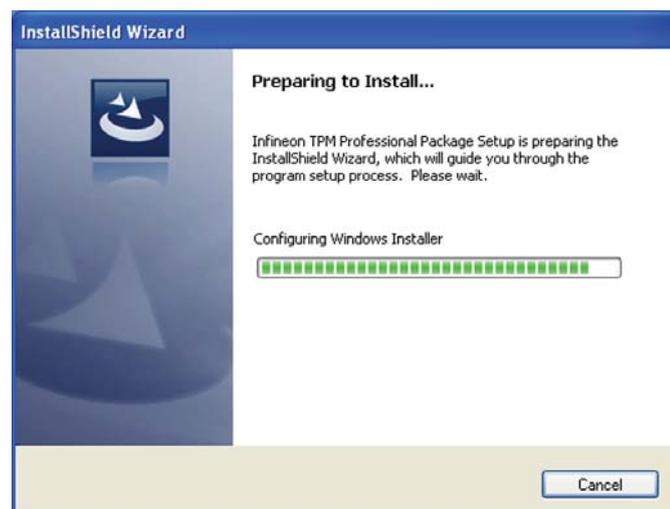
Infineon TPM Driver and Tool (optional)

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

1. TPM requires installing the Microsoft Visual C++ package prior to installing the driver. Click Install.



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



3. The setup program is ready to install the driver. Click Next.



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



- Enter the necessary information and then click Next.



- Select a setup type and then click Next.



7. Click Install.



8. The setup program is currently installing the driver.



9. Click Finish.



10. Click Yes to restart the system.

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



DFI Utility

DFI Utility provides information about the board, Watchdog, DIO, and Backlight. 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.

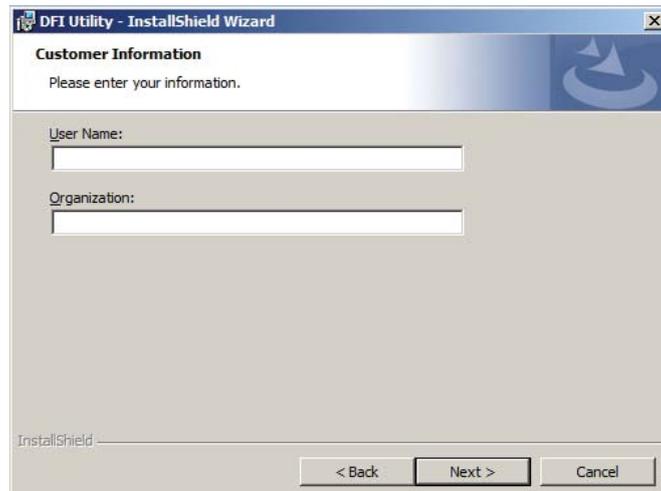
1. Setup is ready to install the DFI Utility driver
Click “Next”.



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



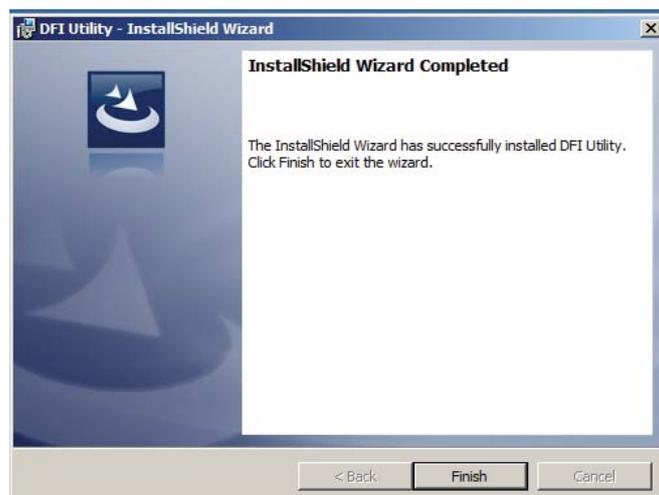
3. Enter "User name" and "Organization" information then click "Next".



4. Click "Install" to begin the installation.



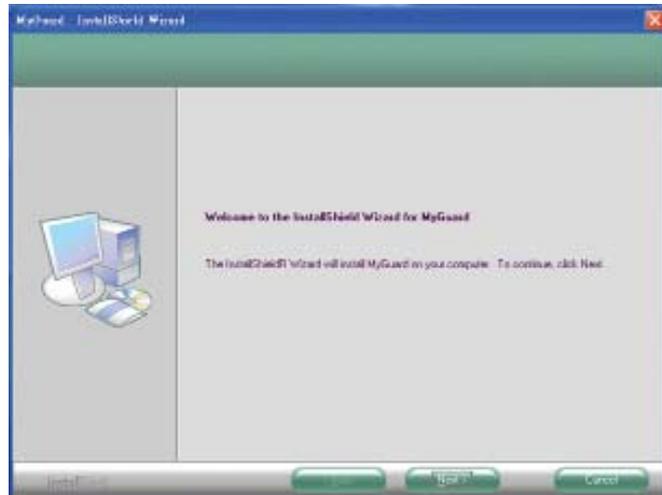
5. After completing installation, click "Finish".



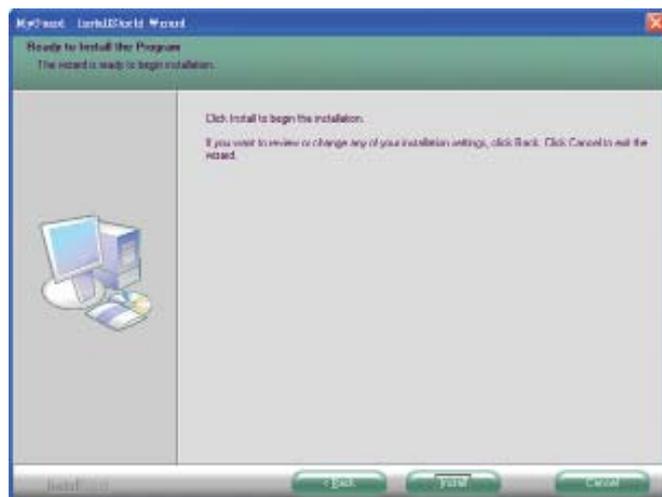
MyGuard Hardware Monitor

To install the driver, click “MyGuard Hardware Monitor” on the main menu.

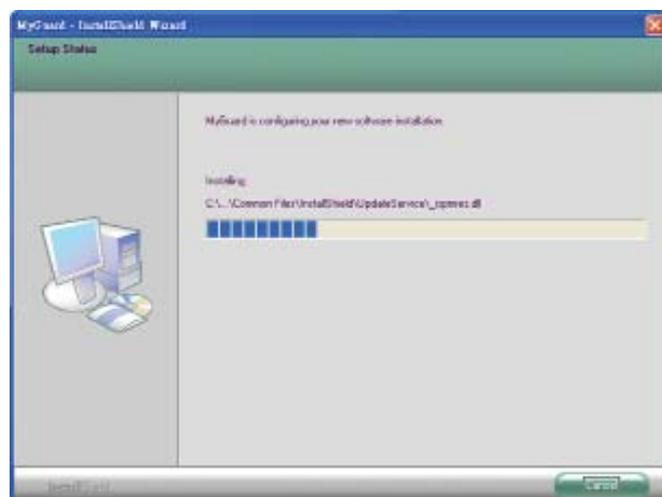
1. Setup is ready to install the utility. Click Next.



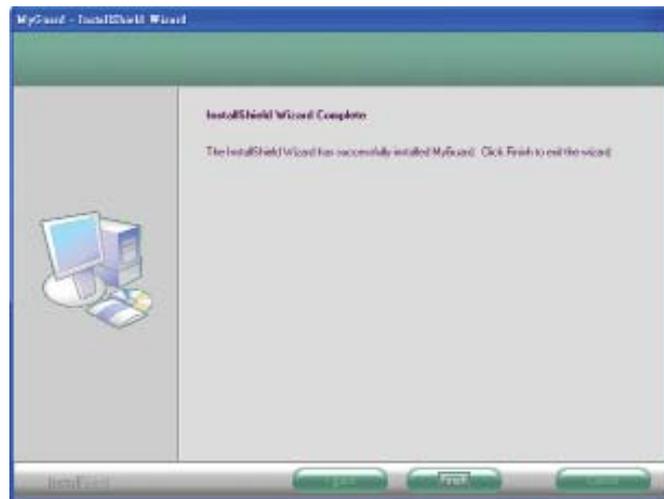
2. Click Install to begin installation.



3. Setup is currently installing the utility.



4. After completing installation, click Finish to exit setup.



F6 Floppy

This is used to create a floppy driver diskette needed when you install Windows® XP using the F6 installation method. This will allow you to install the operating system onto a hard drive when in AHCI mode.

1. Insert a blank floppy diskette.
2. Locate for the drivers in the CD then copy them to the floppy diskette. The CD includes drivers for both 32-bit and 64-bit operating systems. The path to the drivers are shown below.

32-bit

CD Drive: \AHCI_RAID\F6FLOPPY\f6flpy32

64-bit

CD Drive: \AHCI_RAID\F6FLOPPY\f6flpy64

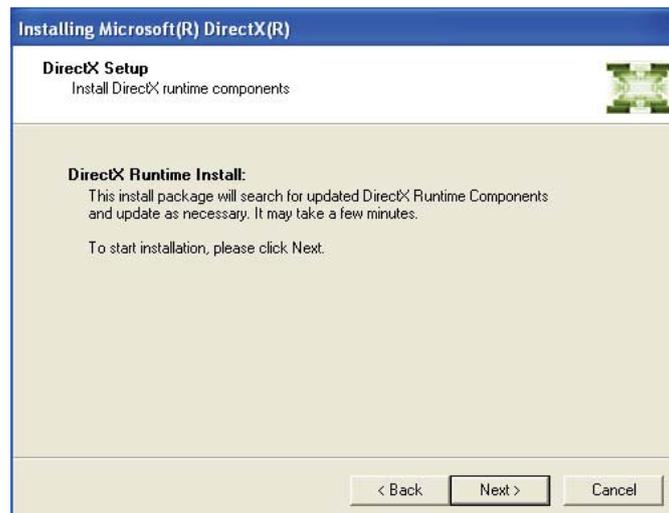
Microsoft DirectX 9.0C (for Windows XP only)

To install the driver, click "Microsoft DirectX 9.0C" on the main menu.

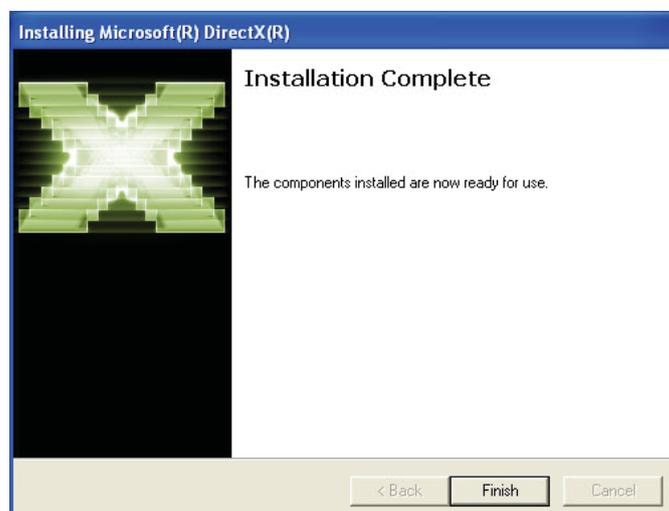
1. Click "I accept the agreement" then click Next.



2. To start installation, click Next.



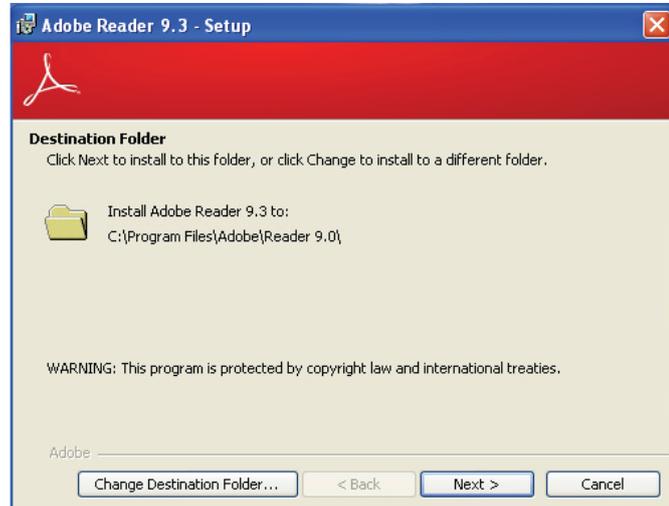
3. Click Finish. Reboot the system for DirectX to take effect.



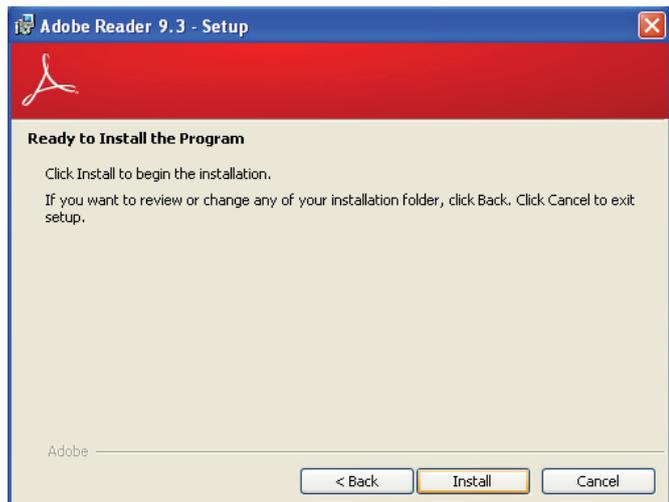
Adobe Acrobat Reader 9.3

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

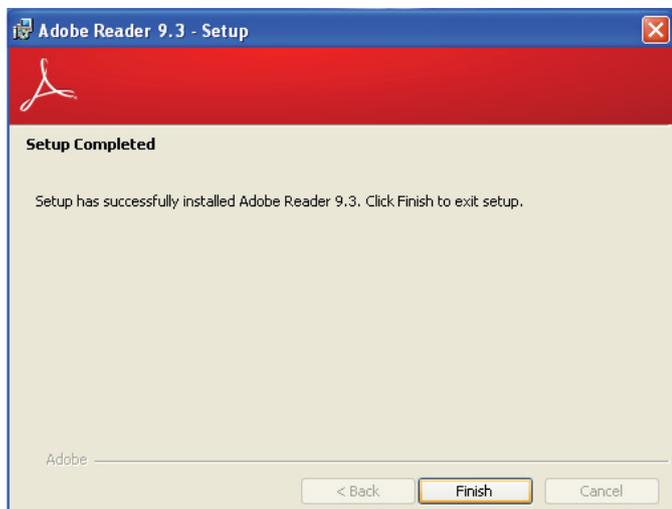
1. Click Next to install or click Change Destination Folder to select another folder.



2. Click Install to begin installation.

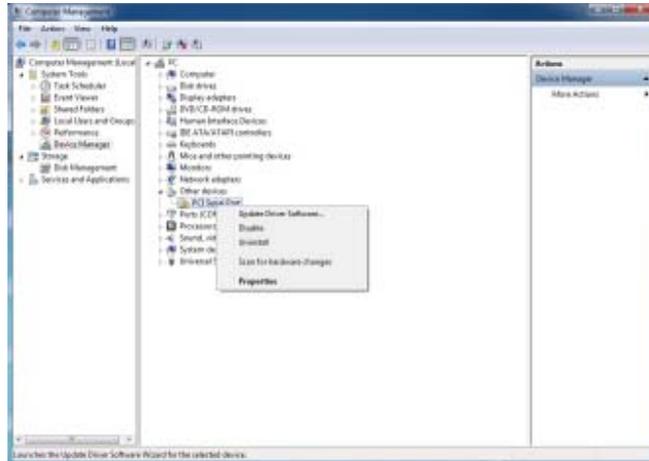


3. Click Finish to exit installation.

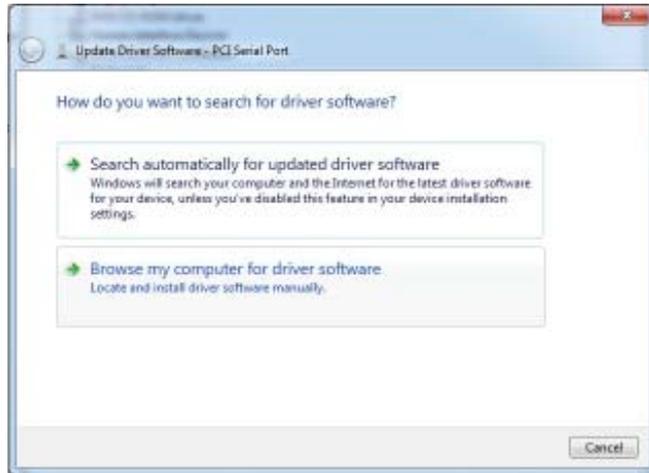


UART Drivers

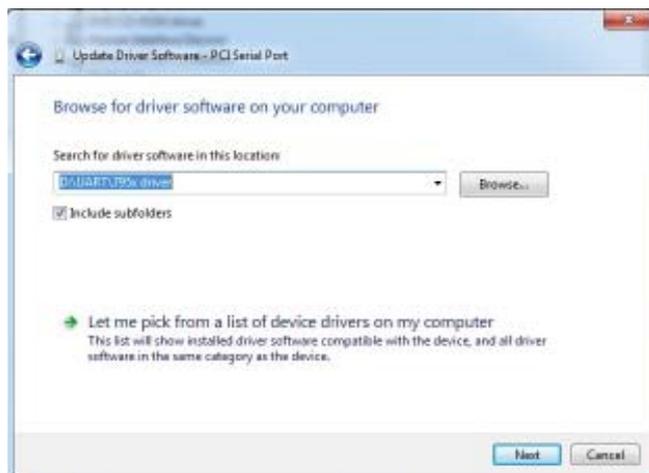
1. Locate for PCI Serial Port in Computer Manager.
2. Right-click on "PCI Serial Port".
3. Select "Update Driver Software".
4. Double-click Setup.



5. Click "Browse my computer for driver software".



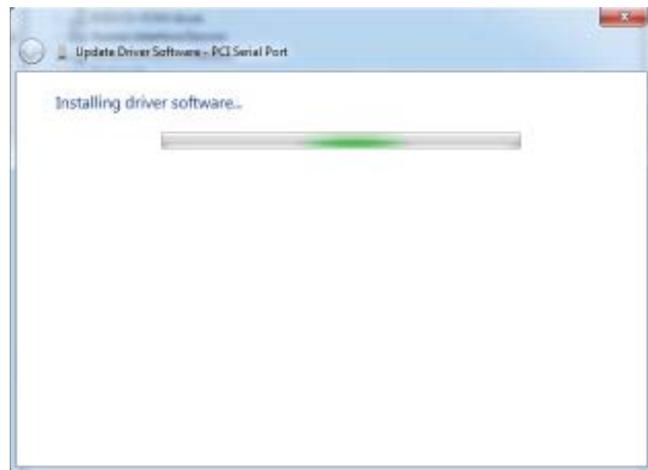
6. Click "Browse" to select the folder where the driver is located.
7. Click "Next".



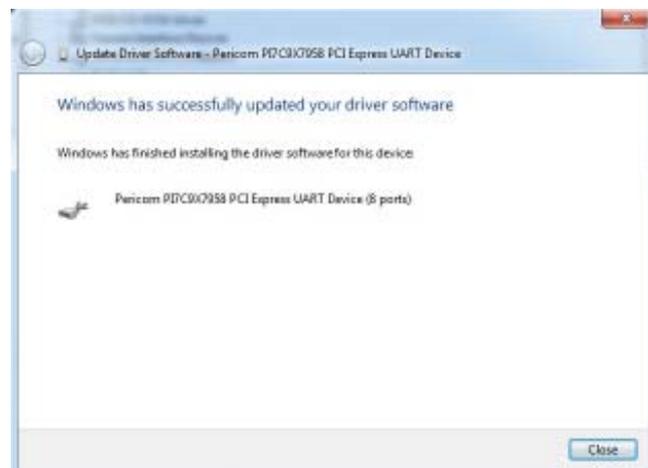
8. Click "Install this driver software anyway".



9. Setup is now installing the driver.



10. After completing installation, click "Close".



Appendix A - NLITE and AHCI Installation Guide

nLite

nLite is an application program that allows you to customize your XP installation disc by integrating the RAID/AHCI drivers into the disc. By using nLite, the F6 function key usually required during installation is no longer needed.



Note:

The installation steps below are based on nLite version 1.4.9. Installation procedures may slightly vary if you're using another version of the program.

1. Download the program from nLite's official website.

<http://www.nliteos.com/download.html>

2. Install nLite.

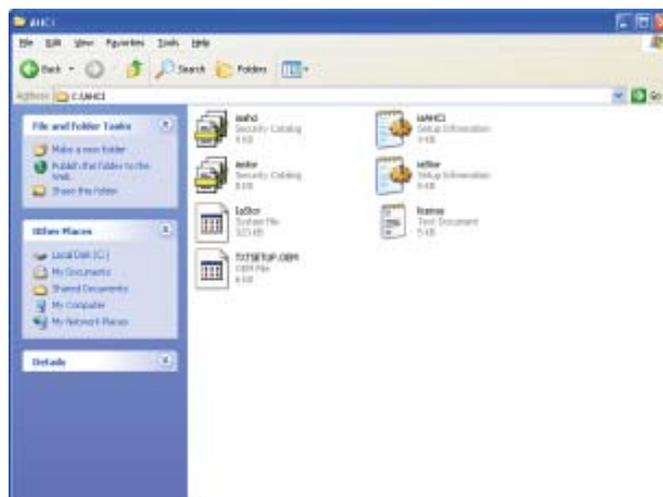


Important:

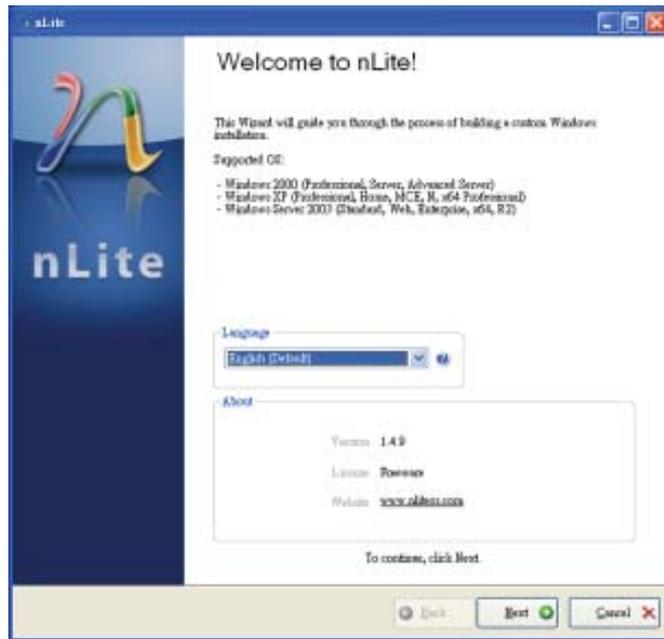
Due to its coding with Visual.Net, you may need to first install .NET Framework prior to installing nLite.

3. Download relevant RAID/AHCI driver files from Intel's website. The drivers you choose will depend on the operating system and chipset used by your computer.

The downloaded driver files should include iaahci.cat, iaAHCI.inf, iastor.cat, iaStor.inf, iaStor.sys, license.txt and TXTSETUP.OEM.

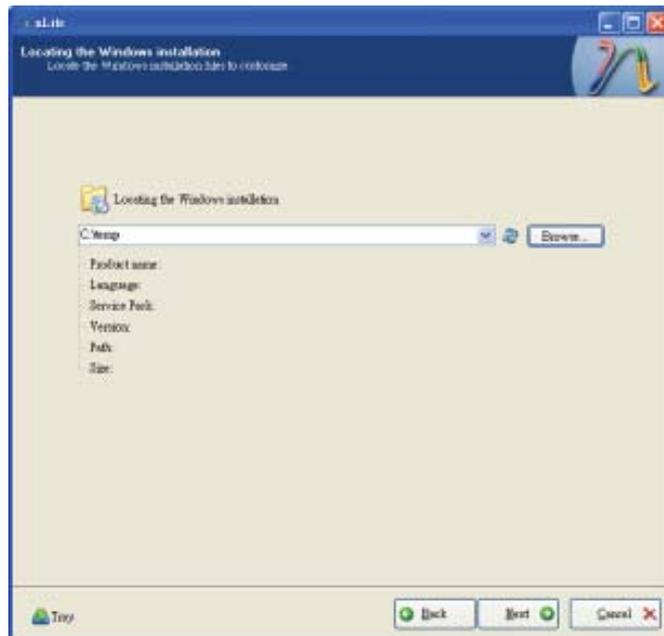


4. Insert the XP installation disc into an optical drive.
5. Launch nLite. The Welcome screen will appear. Click **Next**.

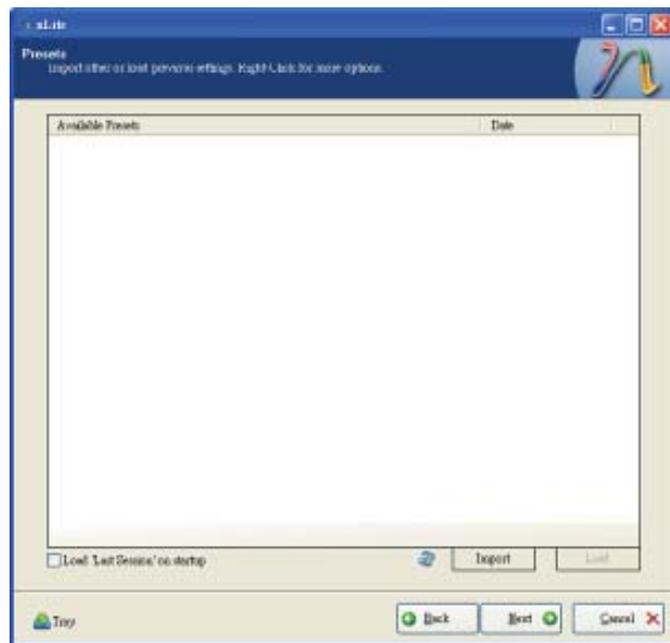


6. Click **Next** to temporarily save the Windows installation files to the designated default folder.

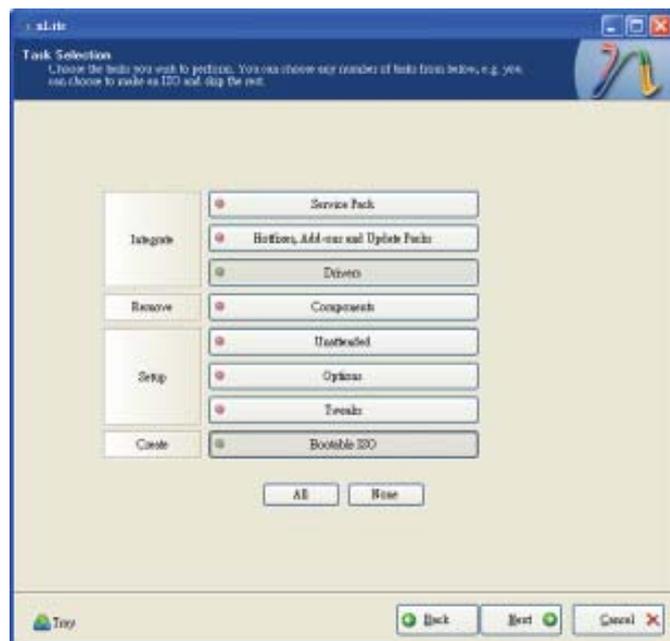
If you want to save them in another folder, click **Browse**, select the folder and then click **Next**.



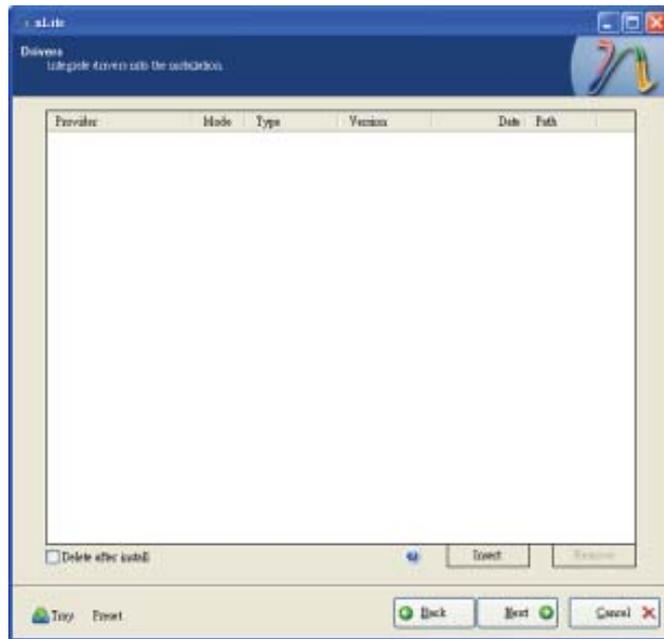
7. Click **Next**.



8. In the Task Selection dialog box, click **Drivers** and **Bootable ISO**. Click **Next**.



- Click **Insert** and then select **Multiple driver folder** to select the drivers you will integrate. Click **Next**.

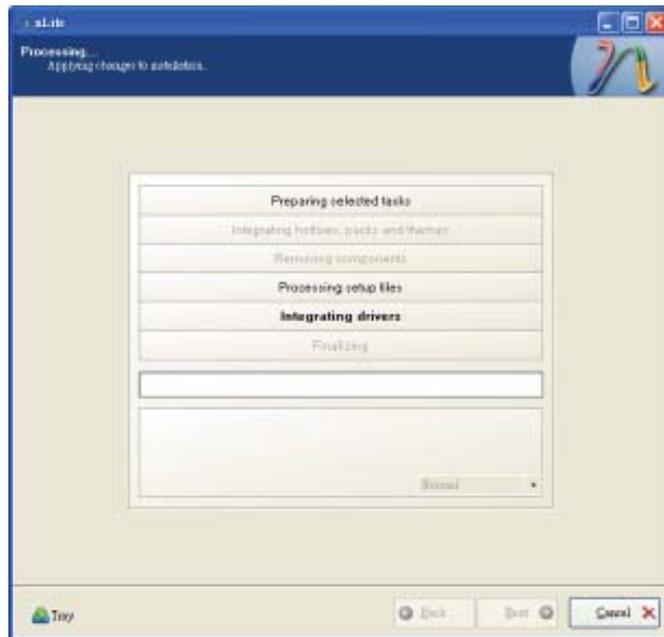


- Select only the drivers appropriate for the Windows version that you are using and then click **OK**.

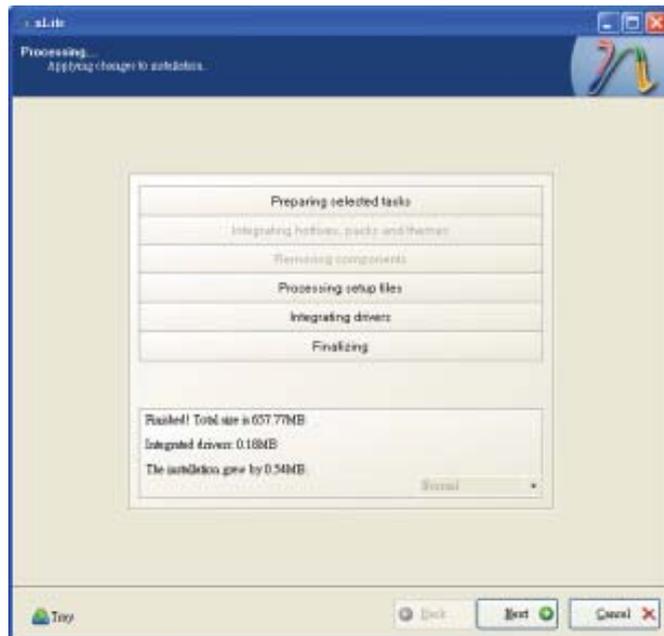
Integrating 64-bit drivers into 32-bit Windows or vice versa will cause file load errors and failed installation.



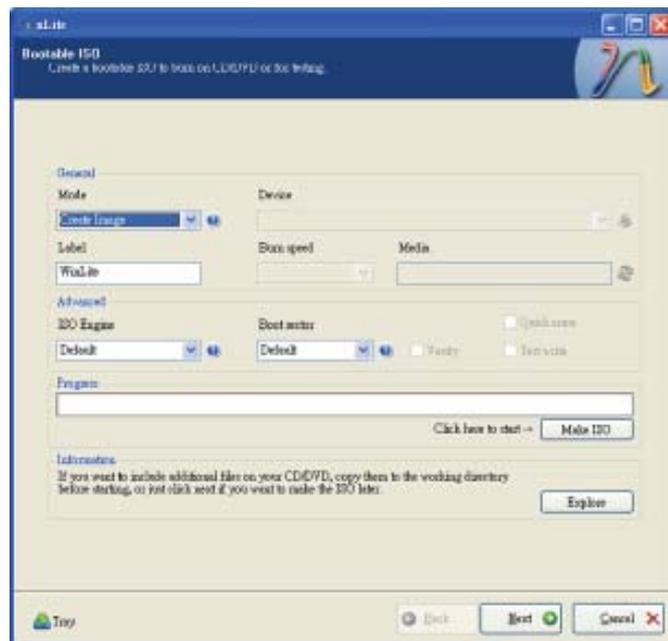
13. The program is currently integrating the drivers and applying changes to the installation.



14. When the program is finished applying the changes, click **Next**.

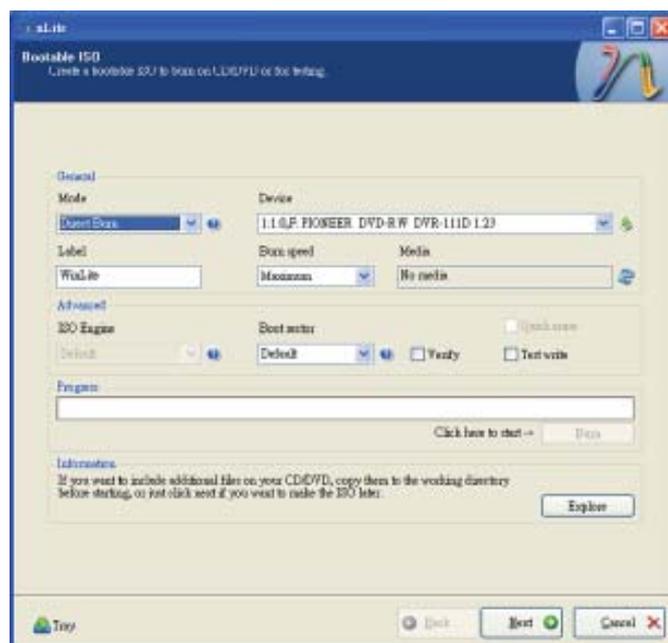


15. To create an image, select the **Create Image** mode under the General section and then click **Next**.



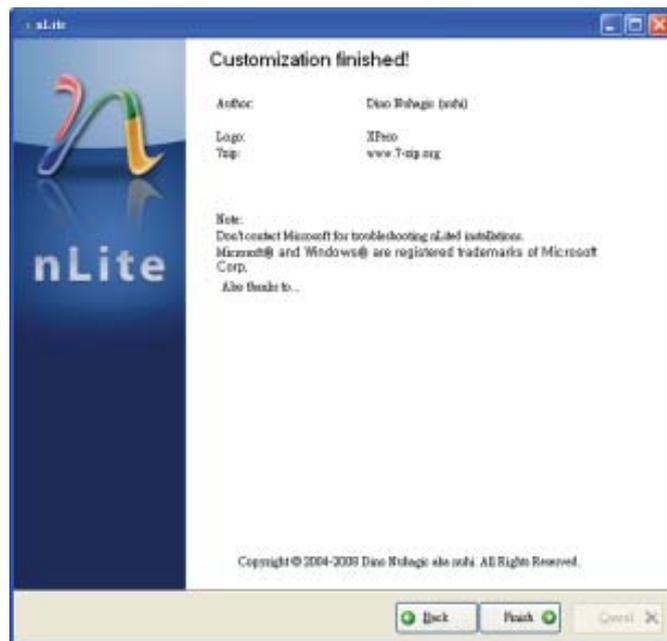
16. Or you can choose to burn it directly to a disc by selecting the **Direct Burn** mode under the General section.

Select the optical device and all other necessary settings and then click **Next**.



17. You have finished customizing the Windows XP installation disc. Click **Finish**.

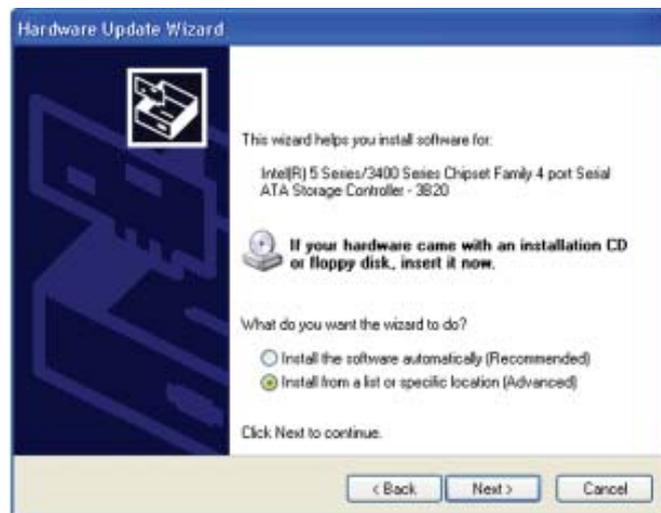
Enter the BIOS utility to configure the SATA controller to RAID/AHCI. You can now install Windows XP.



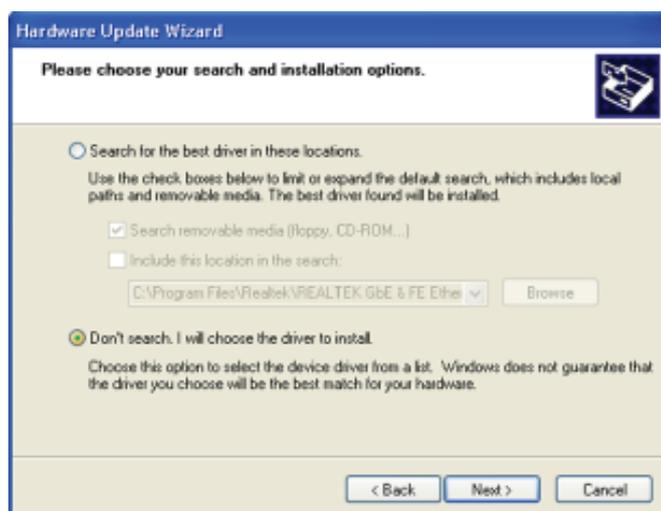
- In the Hardware Update Wizard dialog box, select **“No, not this time”** then click **Next**.



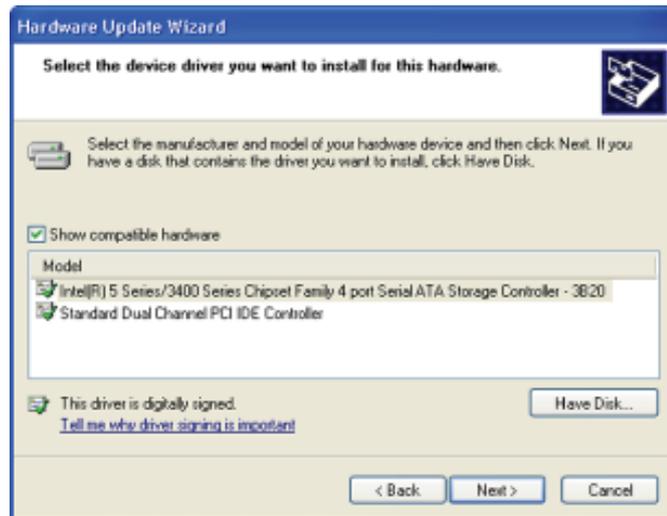
- Select **“Install from a list or specific location (Advanced)”** and then click **Next**.



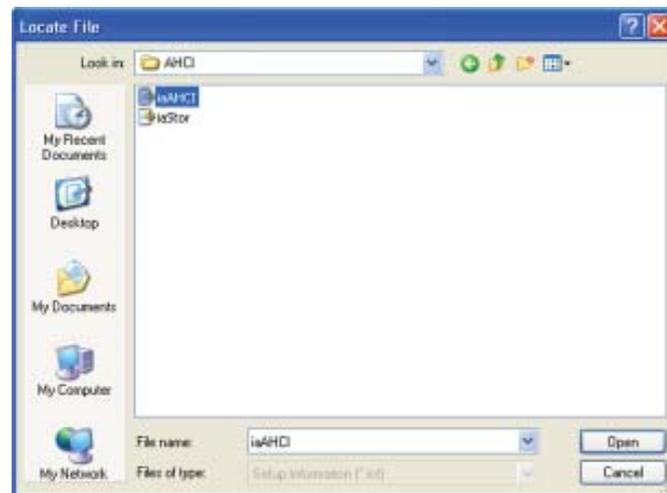
- Select **“Don't search. I will choose the driver to install”** and then click **Next**.



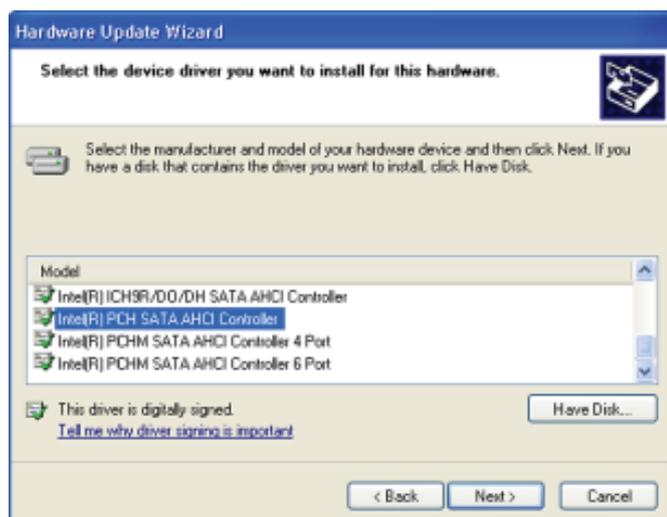
- Click **"Have Disk"**.



- Select C:\AHCI\iaAHCI.inf and then click **Open**.



- Select the appropriate AHCI Controller of your hardware device and then click **Next**.



11. A warning message appeared because the selected SATA controller did not match your hardware device.

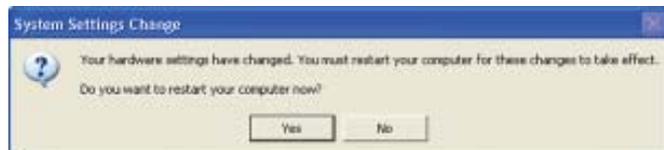


Ignore the warning and click **Yes** to proceed.

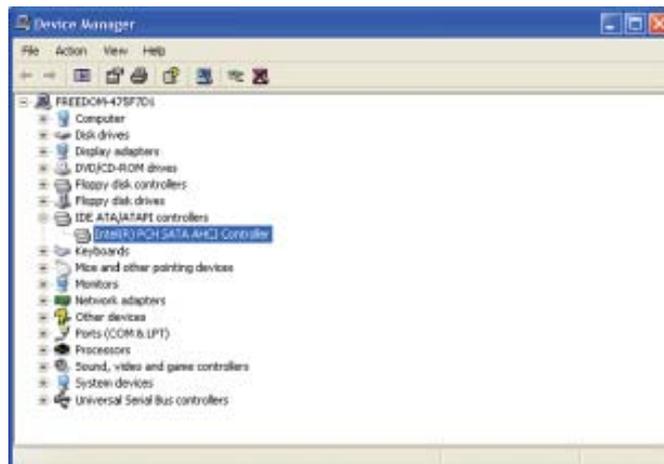
12. Click **Finish**.



13. The system's settings have been changed. Windows XP requires that you restart the computer. Click **Yes**.



14. Enter the BIOS utility and modify the SATA controller from IDE to AHCI. By doing so, Windows will work normally with the SATA controller that is in AHCI mode.



Appendix B - Watchdog Timer

Watchdog Timer

The following parameters are references for setting the time interval of the Watchdog Timer function. The system will regularly be “cleared” according to the set time interval. If the system hangs or fails to function, it will also reset according to the time interval so that your system will continue to operate.

```
.model small
.386

;-----
;Port defination
;-----
SuperIo_CFG_Port EQU 2Eh ;Super I/O Config port. (2Eh/4Eh)
SuperIo_DAT_Port EQU SuperIo_CFG_Port + 1

WDT_Counter EQU 10 ; 1 to 255 (Sec./Min), 0 means disabled

mSuperio_Enter_Config Macro
    mov dx, SuperIo_CFG_Port
    mov al, 87h
    out dx, al
    NEWIODELAY
    out dx, al
endM

mSuperio_Exit_Config Macro
    mov dx, SuperIo_CFG_Port
    mov al, 0AAh
    out dx, al
endM

mSuperio_GetSet_Reg Macro RegIndex, AndMask, OrValue
    mov dx, SuperIo_CFG_Port
    mov al, RegIndex
    out dx, al
    NEWIODELAY
    mov dx, SuperIo_DAT_Port
    in al, dx
    NEWIODELAY
    mov ah, al
    and al, AndMask
    or al, OrValue
    out dx, al
    NEWIODELAY
endM

mSuperio_Get_Reg Macro RegIndex
    mov dx, SuperIo_CFG_Port
    mov al, RegIndex
    out dx, al
```

```

        NEWIODELAY
        mov     dx, SuperIo_DAT_Port
        in     al, dx
        NEWIODELAY
endM

mSuperio_LDN_Select      Macro   LDN
        mSuperio_Set_Reg 07h, LDN
endM

mSuperio_Set_Reg Macro RegIndex, SetValue
        mov     dx, SuperIo_CFG_Port
        mov     al, RegIndex
        out    dx, al
        NEWIODELAY
        mov     dx, SuperIo_DAT_Port
        mov     al, SetValue
        out    dx, al
        NEWIODELAY
endM

NEWIODELAY      Macro
        out     0EBh, al ;Dummy I/O output for delay
endM

.code

start:
        call    W83627Hx_WDT

        mov     ah, 4ch
        int     21h

W83627Hx_WDT Proc near
;LDN8
;CRF5[3] :RW 0/1 = WDTO Second/Minute
;CRF5[2] :RW 0/1 = Keyboard Reset Low/High when WDTO Timeout

;CRF6[7:0]:RW 00h = Disable , 01h~0FFh = 1~255 Sec/Min.

;CRF7[7] :RW 0/1 = Disable/Enable Mouse interrupt reset WDTO counting.
;CRF7[6] :RW 0/1 = Disable/Enable Keyboard interrupt reset WDTO counting.
;CRF7[5] :WO 1 = Force WDTO time out(Auto clear).
;CRF7[4] :RW 0/1 = WDTO time status TimeOut/Counting.
;CRF7[3:0]:RW 0~7 = Low IRQ for WDTO (Typical is 2, means SMI).

        mSuperio_Enter_Config
        mSuperio_LDN_Select 08h

```

```
; PLED mode register, WDTO time unit as second, Keyboard reset when WDTO  
time out
```

```
    mSuperio_GetSet_Reg 0F5h, 11110111b, 00000100b
```

```
; , Disable MS/KB interrupt reset WDTO counting, IRQ2 for WDTO
```

```
    mSuperio_GetSet_Reg 0F7h, 11111111b, 11000010b
```

```
; , WDTO Time out Value
```

```
    mSuperio_Set_Reg 0F6h, WDT_Counter
```

```
mSuperio_Exit_Config
```

```
@@:
```

```
    ret
```

```
W83627Hx_WDT    endP
```

```
end start
```

Appendix C - System Error Message

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

Error Messages

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

CMOS BATTERY HAS FAILED

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



Important

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

CMOS CHECKSUM ERROR

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

DISPLAY SWITCH IS SET INCORRECTLY

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

Hard Disk(s) fail (80)

HDD reset failed.

Hard Disk(s) fail (40)

HDD controller diagnostics failed.

Hard Disk(s) fail (20)

HDD initialization error.

Hard Disk(s) fail (10)

Unable to recalibrate fixed disk.

Hard Disk(s) fail (08)

Sector Verify failed.

Keyboard is locked out - Unlock the key

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

Keyboard error or no keyboard present

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

Manufacturing POST loop

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

BIOS ROM checksum error - System halted

The checksum of ROM address F0000H-FFFFFFH is bad.

Memory test fail

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

Appendix D - Troubleshooting

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.

Hard Drive

Hard disk failure.

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

Excessively long formatting period.

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

Serial Port

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

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

Keyboard

Nothing happens when a key on the keyboard was pressed.

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

System Board

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