DFI®

RM641-HD

Desktop Box IPC
User's Manual

A-402-M-2008

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Changes after the publication's first release will be based on the product's revision. The website will always provide the most updated information.

Trademarks

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

FCC and DOC Statement on Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

Notice:

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

Table of Contents

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 consequencial damages to the product that has been modified or altered.

Static Electricity Precautions

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

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.

2. Wear an antistatic wrist strap.

3. Do all preparation work on a static-free surface.

4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.

5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or con nectors by their ends.

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

Safety Measures

To avoid damage to the system:
- Use the correct AC input voltage range.

To reduce the risk of electric shock:
- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

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

Safety Precautions

- Use the correct DC input voltage range.
- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.
- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.
- Keep this system away from humidity.
- Place the system on a stable surface. Dropping it or letting it fall may cause damage.
- The openings on the system are for air ventilation to protect the system from overheating. DO NOT COVER THE OPENINGS.
- Place the power cord in such a way that it will not be stepped on. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the system and that it matches the voltage and current marked on the system's electrical range label.
- If the system will not be used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
- If one of the following occurs, consult a service personnel:

  - The power cord or plug is damaged.

  - Liquid has penetrated the system.

  - The system has been exposed to moisture.

  - The system is not working properly.

  - The system dropped or is damaged.

  - The system has obvious signs of breakage.

- The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace the outlet.
- Disconnect the system from the DC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

About the Package

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

- 1 RM641 system unit
- 1 SATA Cable
- 1 Quick Installation Guide

Chapter 1 - Introduction

Overview

Front View

Rear View

Key Features

Model Name	RM641-HD
Processor	4th generation Intel® Core™ processors
Chipset	Intel® H81 Chipset
LAN	2 LAN ports
COM	2 COM ports
Display	1 VGA, DVI-I (DVI-D signal)
USB	4 USB 2.0 ports at the rear panel I/O ports; 2 USB 3.0 ports at the rear panel I/O ports
Audio	Realtek ALC886

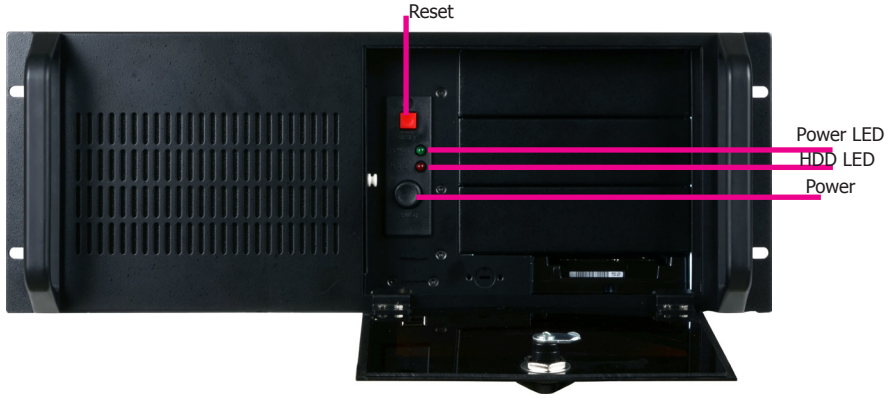
Specifications

Processor System	**Processor**	LGA 1150 Socket 4th Generation Intel® Core™ Processors Intel® Core™ i7-4790S Processor (8M Cache, up to 4.0 GHz); 65W Intel® Core™ i7-4770S Processor (8M Cache, up to 3.9 GHz); 65W Intel® Core™ i7-4770TE Processor (8M Cache, up to 3.3 GHz); 45W Intel® Core™ i5-4590S Processor (6M Cache, up to 3.7 GHz); 65W Intel® Core™ i5-4590T Processor (6M Cache, up to 3.0 GHz); 35W Intel® Core™ i5-4570S Processor (6M Cache, up to 3.6 GHz); 65W Intel® Core™ i5-4570TE Processor (4M Cache, up to 3.3 GHz); 35W Intel® Core™ i3-4360 Processor (4M Cache, 3.7 GHz); 54W Intel® Core™ i3-4350T Processor (4M Cache, 3.1 GHz); 35W Intel® Core™ i3-4340TE Processor (4M Cache, 2.6 GHz); 35W Intel® Core™ i3-4330 Processor (4M Cache, 3.5 GHz); 54W Intel® Core™ i3-4330TE Processor (4M Cache, 2.4 GHz); 35W Intel® Pentium® Processor G3420 (3M Cache, 3.2 GHz); 53W Intel® Pentium® Processor G3320TE (3M Cache, 2.3 GHz); 35W Intel® Celeron® Processor G1820 (2M Cache, 2.7 GHz); 53W Intel® Celeron® Processor G1820TE (2M Cache, 2.2 GHz); 35W
	Chipset	Intel® H81 Chipset
	Memory	Two 240-pin DIMM up to 16GB Dual Channel DDR3 1333/1600MHz
	BIOS	AMI SPI 64Mbit
Graphics	**Controller**	Intel® HD Graphics
	Feature	Direct X, Supports 6 Graphics Execution Units (EUs), Intel® Clear Video Technology
	Display	1 x VGA (resolution up to 1920x1200 @ 60Hz) 1 x DVI-I (DVI-D signal, resolution up to 1920x1200 @ 60Hz)
	Dual Display	VGA + DVI-I (DVI-D signal)
Storage		3 x 5.25" Optical Drive Bays (Front Accessible) 1 x 3.5"/2.5" SATA 3.0 Drive Bay (Front Accessible)
EXPANSION	**Interface**	1 PCIe x16 (Gen 3) 1 PCIe x4 (Gen 2, x1 signal) 4 PCI (PCI 2.3, one shared with ISA slot) 2 ISA
AUDIO	**Audio Codec**	Realtek ALC886
Ethernet	**Controller**	1 x Intel® 82574 PCIe (10/100/1000Mbps) 1 x Intel® I217LM PCIe (10/100/1000Mbps)
LED	**Indicators**	1 x Power LED 1 x HDD LED
Front I/O	**USB**	2 x USB 2.0 (available upon request)
	Front Door	1 x Drive Panel Door With Keylock
	Buttons	1 x Power Switch 1 x Reset Switch

REAR I/O	**Ethernet**	2 x GbE (RJ-45)
	Serial	2 x RS-232/422/485 (DB-9)
	USB	2 x USB 3.0 4 x USB 2.0
	PS/2	1 x PS/2 (mini-DIN-6)
	Display	1 x VGA 1 x DVI-I (DVI-D signal)
	Audio	1 x Line-in (available upon request) 1 x Line-out 1 x Mic-in
	Buttons	1 x ATX Switch
Cooling	**Fan**	2 x 92cm System Fan with Quick Access Filter
WATCHDOG TIMER	**Output & Interval**	System Reset, Programmable via Software from 1 to 255 Seconds
POWER	**Supply**	ATX PS/2 Power Supply 500W AC Power Input : 90~264V
OS SUPPORT		WES 7
MECHANISM	**Construction**	SECC, Flexible Hold Down Bar
	Dimensions (W x H x D)	483mm x 177mm x 451mm
	Weight	TBD
ENVIRONMENT	**Operating Temperature**	0 to 45°C
	Storage Temperature	-20 to 60°C
	Relative Humidity	0 to 90% RH (non-condensing)
STANDARDS AND CERTIFICATIONS	**Shock**	Operating: 3G Non-operating: 3G
	Vibration	Operating: Random 5~500Hz 1G Non-operating: Sweep Sine 10~500Hz 1.5G
	Package Drop	ISTA Project 1A
	Certification	TBD

Getting to Know the RM641-HD

Front View



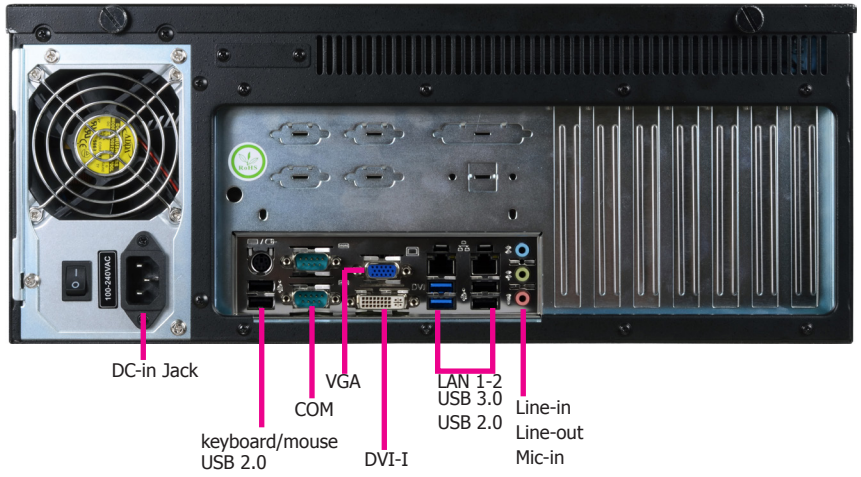
Power Button
Press to power on or power off the system.

Reset Button
Press to reset the system.

Power LED
Indicates the power status of the system.

HDD LED
Indicates the status of the hard drive.

Rear View



DC-in jack
Used to plug a power adapter.

Keyboard/mouse

Used to connect to a PS/2 keyboard or mouse

COM Port
Used to connect serial devices.

VGA Port

Used to connect to a VGA display.

DVI-I

Used to connect to a DVI-I display (DVI-D signal).

USB 2.0 and 3.0 Ports
Used to connect USB 2.0/3.0 devices.

LAN 1-2 Ports
Used to connect the system to a local area network.

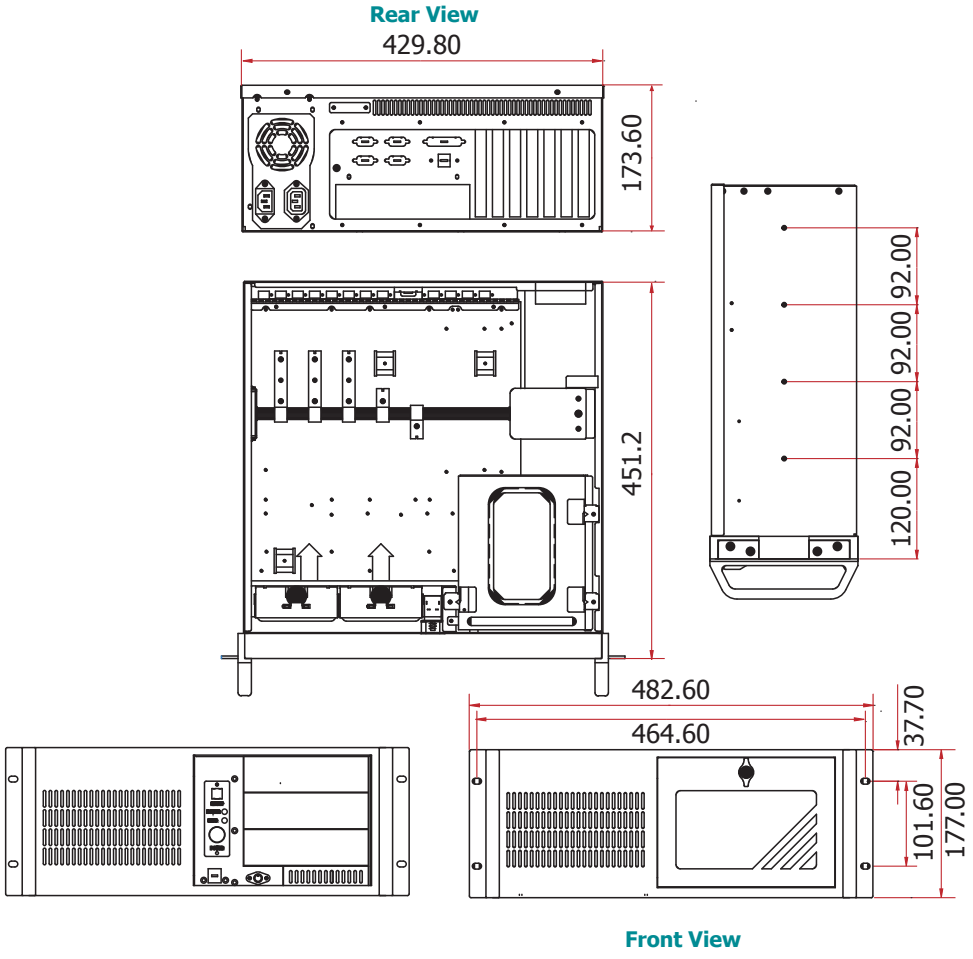
Line-in (Light Blue)
Used to connect to your audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer.

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

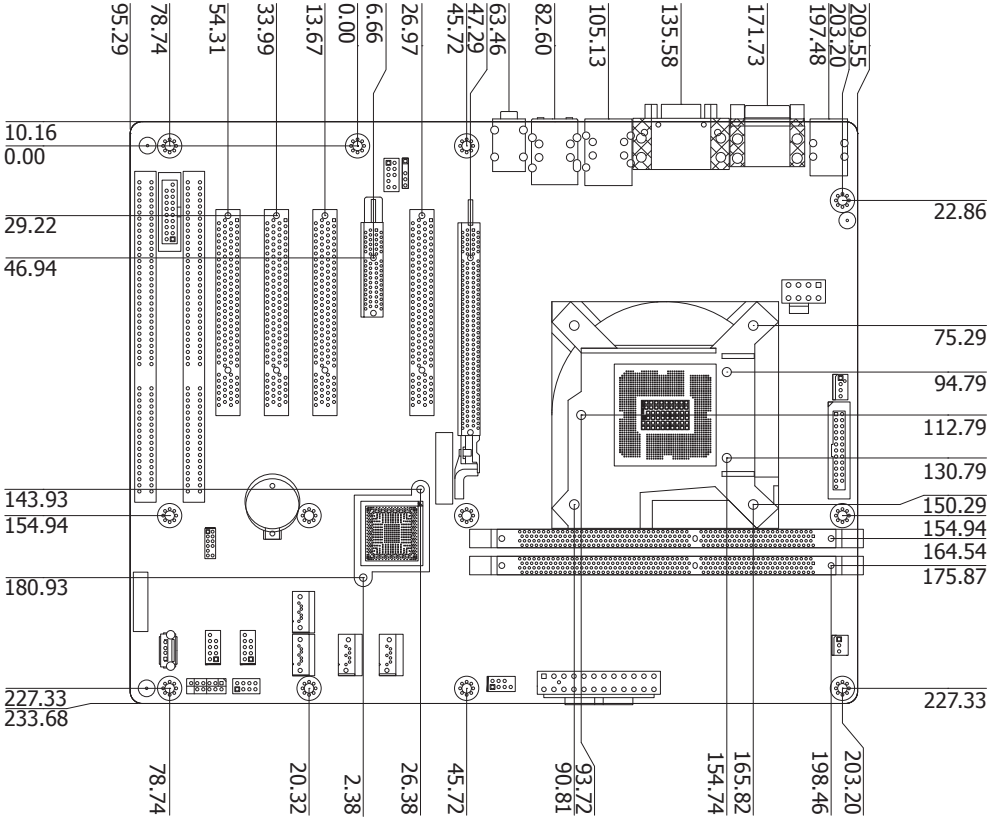
Mic-in jack
Used to connect to a microphone.

Mechanical Dimensions

Chassis Dimensions



Motherboard Dimensions



Chapter 2 - Getting Started

Preparing the System

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

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

Installing Devices

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

- Memory module
- CPU
- SATA hard drive
- PCI/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 the Device

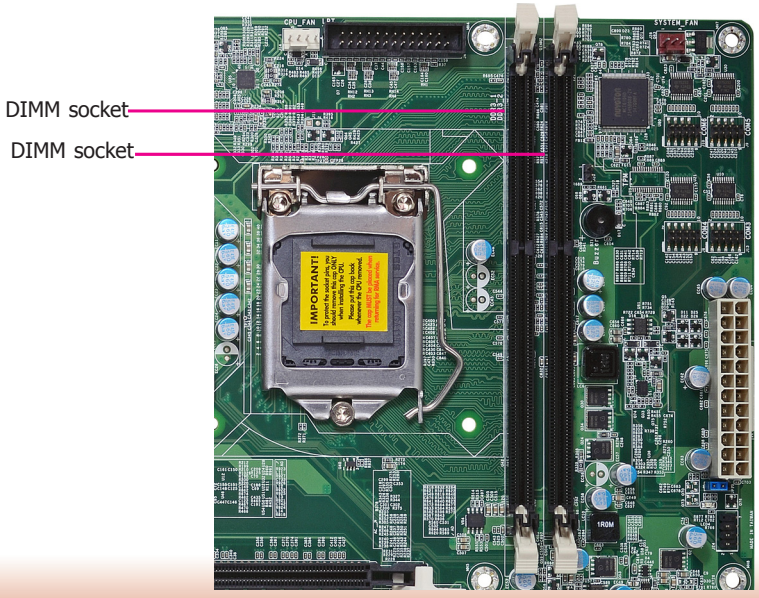
Removing the Chassis Cover

1. Make sure the system and all other peripheral devices connected to it have been powered-off.

2. Disconnect all power cords and cables.

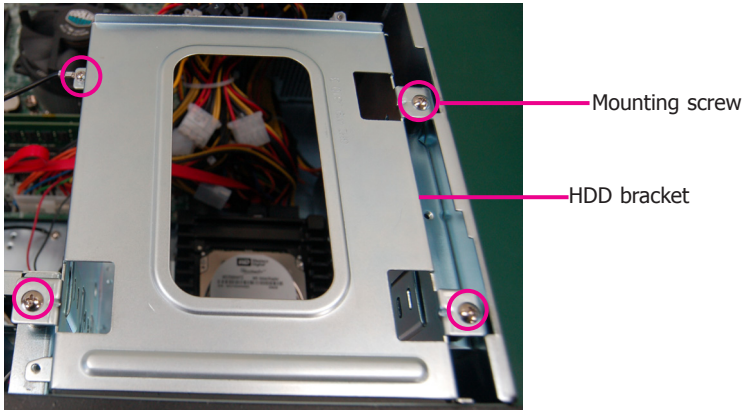
3. Remove the 2 chassis screws to open the top cover.

4. The DIMM sockets are readily accessible after removing the chassis cover.

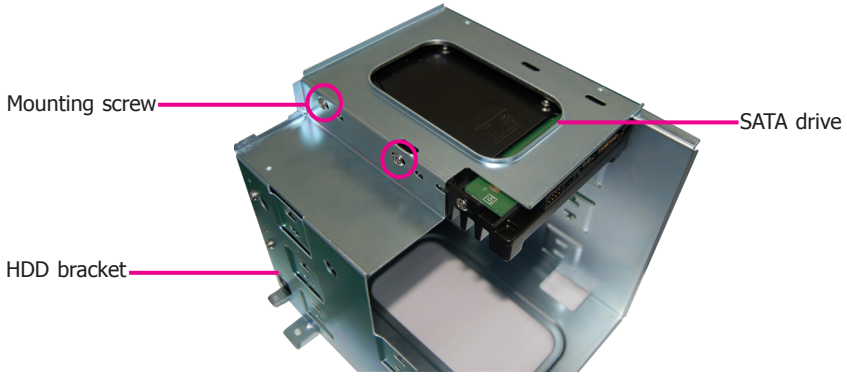


Installing the SATA Drive

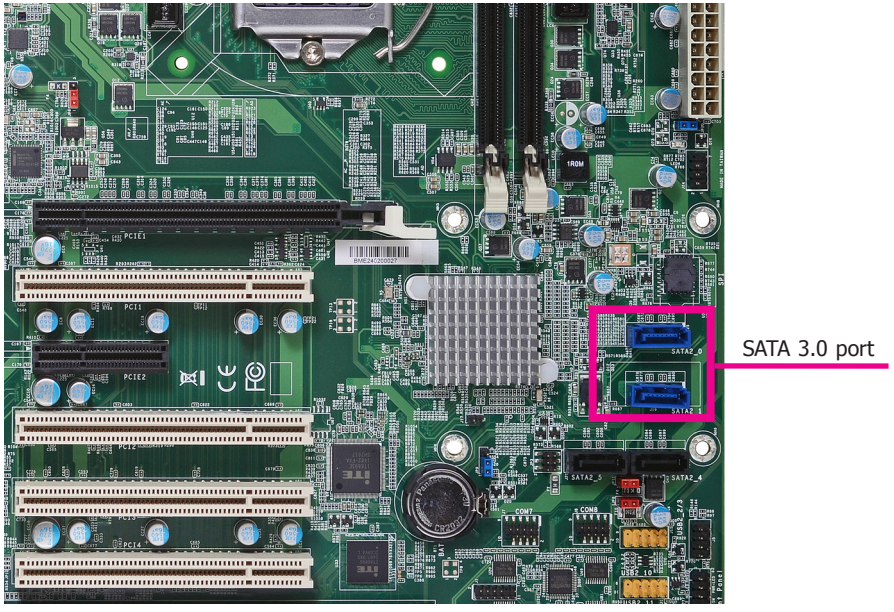
1. Unfasten the 4 mounting screws that secure HDD bracket to the system.



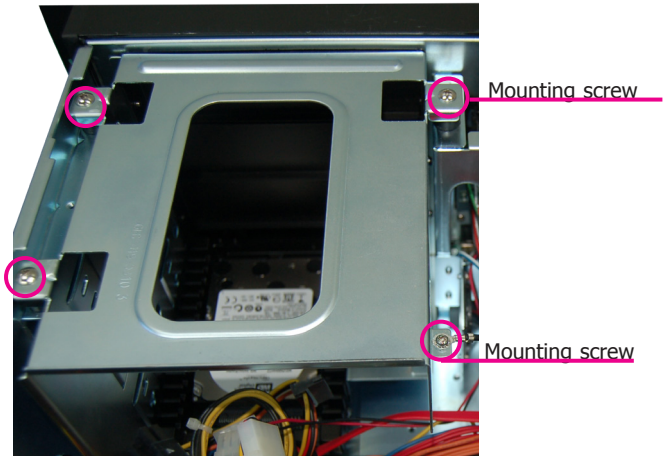
2. Align the mounting holes of the SATA drive with the mounting holes on the HDD brackets and then use the mounting screws to secure the drive in place.



3. Connect the SATA data cable and the SATA power cable to the connectors on the SATA drive.



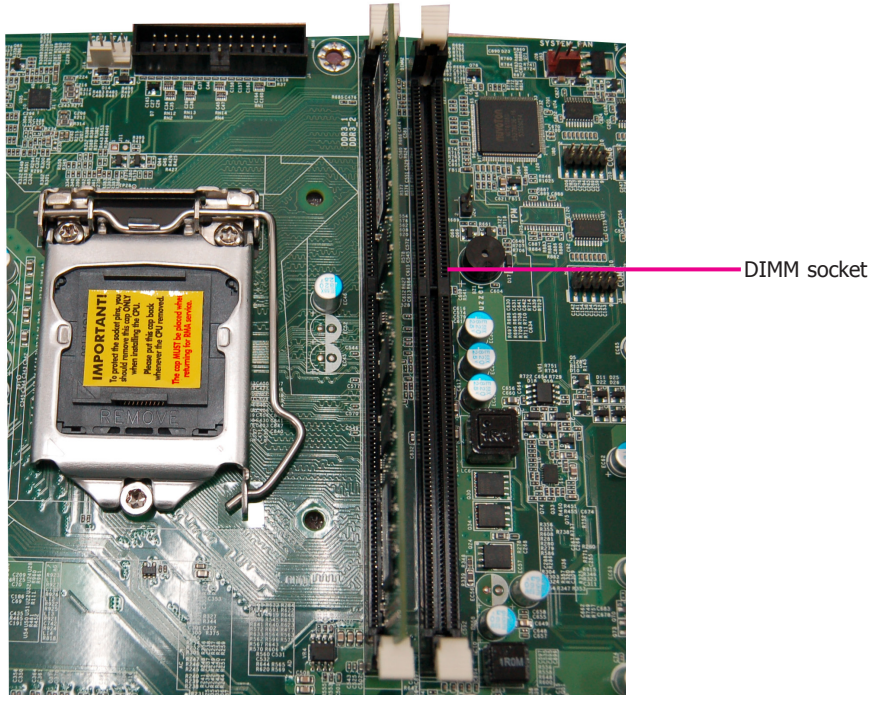
4. Secure the HDD bracket back to the system.



Note:
The system can accommodate 4 disks (3.5" or 2.5"). However, 3.5" to 5.25" or 2.5" to 5.25" drive mounting bracket adapters will be required to install HDDs in the optical bays.

Installing the DIMM module

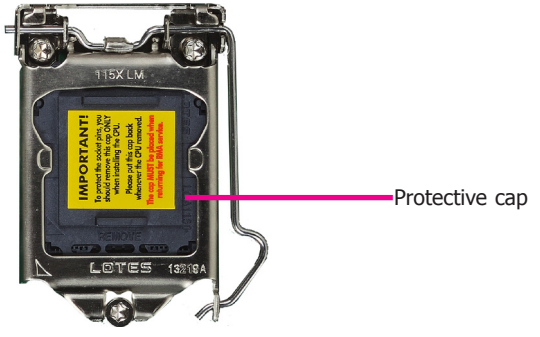
1. The DIMM socket is located on the system board. Note the key on the socket. The key ensures that the memory module can be plugged into the socket in one direction only.



Installing the CPU

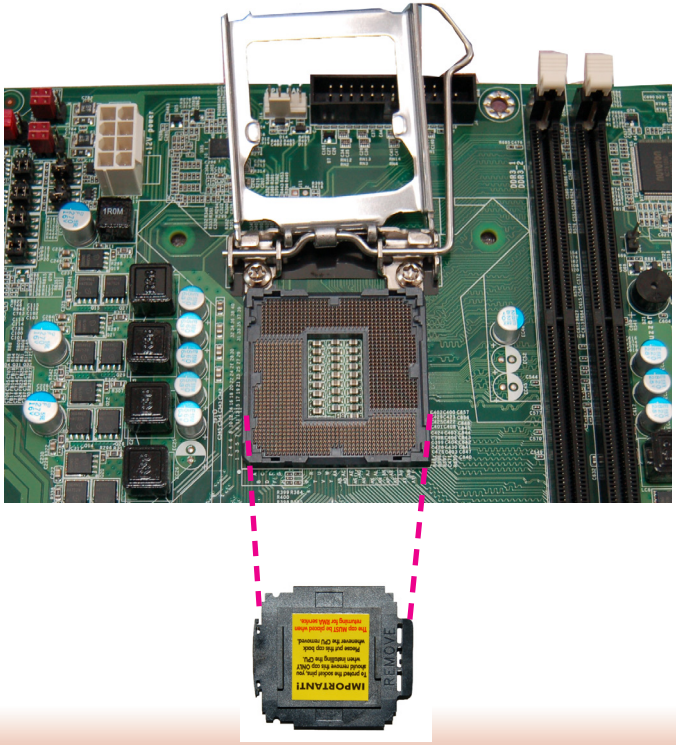
1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.
3. Locate the LGA 1150 CPU socket on the system board.

Important:
1. Before you proceed, make sure (1) the LGA 1150 socket comes with a protective cap, (2) the cap is not damaged and (3) the socket's contact pins are not bent. If the cap is missing or the cap and/or contact pins are damaged, contact your dealer immediately.
2. Make sure to keep the protective cap. RMA requests will be accepted and processed only if the LGA 1150 socket comes with the protective cap.

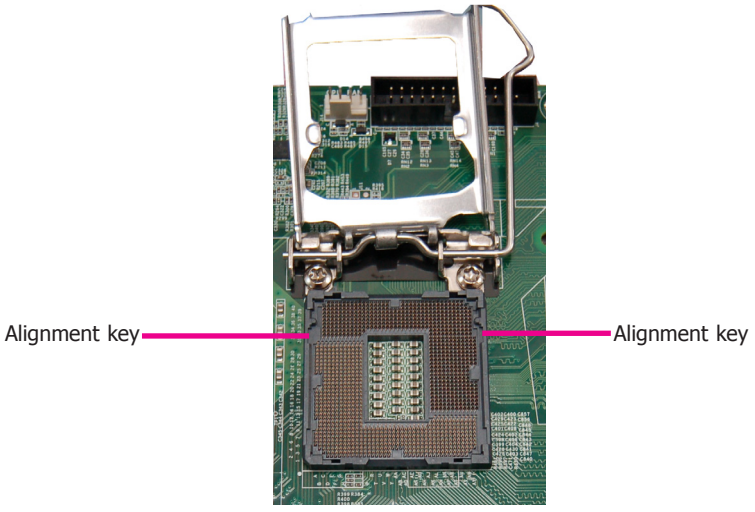


4. Unlock the socket by pushing the load lever down, moving it sideways until it is released from the retention tab; then lift the load lever up.

5. Lift the load lever to lift the load plate. Lift the load lever up to the angle shown on the photo.



The CPU's notch will at the same time fit into the socket's alignment key.



7. Insert the CPU into the socket. The gold triangular mark on the CPU must align with the corner of the CPU socket shown on the photo.

8. Close the load plate then push the load lever down. While closing the load plate, make sure the front edge of the load plate slides under the retention knob.

9. Hook the load lever under the retention tab.

Important:
The CPU will fit in only one orientation and can easily be inserted without exerting any force.

Installing the fan and heat sink

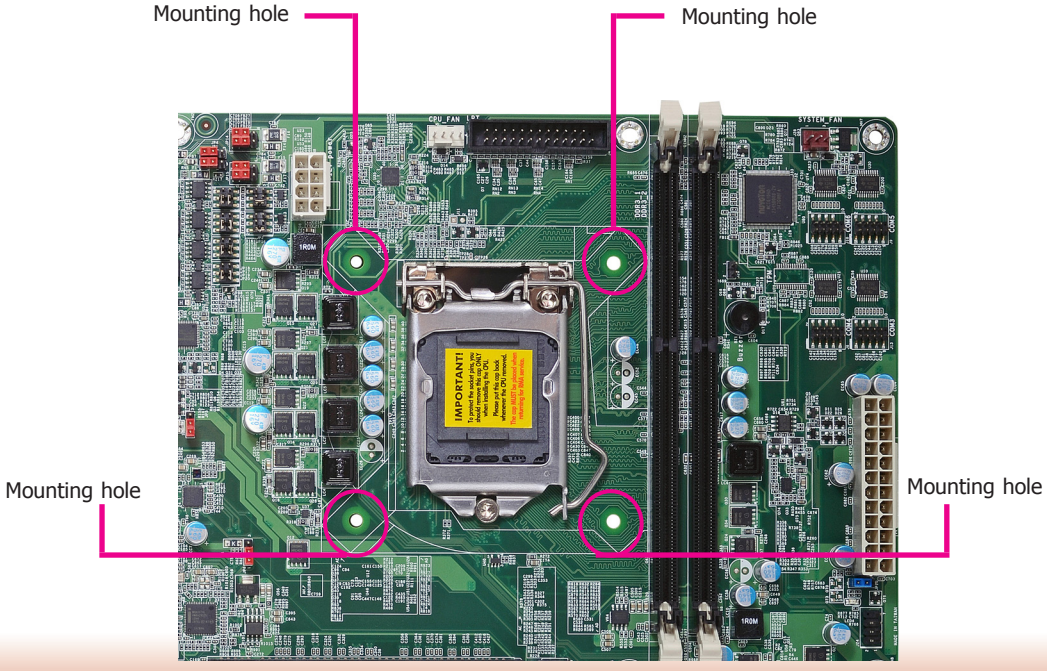
The CPU must be kept cool by using a CPU fan with heat sink. Without sufficient air circulation across the CPU and heat sink, the CPU will overheat damaging both the CPU and system board.

Note:
A boxed Intel® processor already includes the CPU fan and heat sink assembly. If your CPU was purchased separately, make sure to only use Intel®-certified fan and heat sink.

1. Before you install the fan / heat sink, you must apply a thermal paste onto the top of the CPU. The thermal paste is usually supplied when you purchase the fan / heat sink assembly. Do not spread the paste all over the surface. When you later place the heat sink on top of the CPU, the compound will disperse evenly.

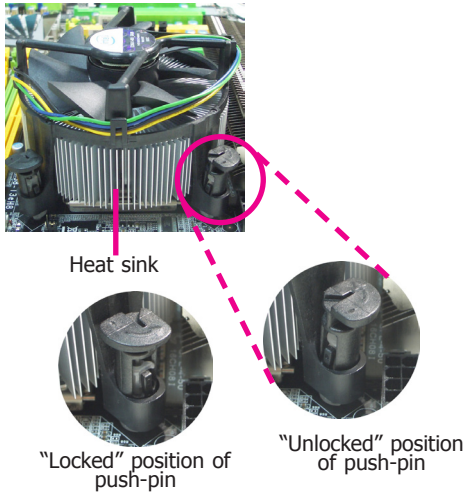
   Some heat sinks come with a patch of pre-applied thermal paste. Do not apply thermal paste if the fan / heat sink already has a patch of thermal paste on its underside. Peel the strip that covers the paste before you place the fan / heat sink on top of the CPU.

2. Place the heat sink on top of the CPU. The 4 push-pins around the heat sink, which are used to secure the heat sink onto the system board, must match the 4 mounting holes around the socket.

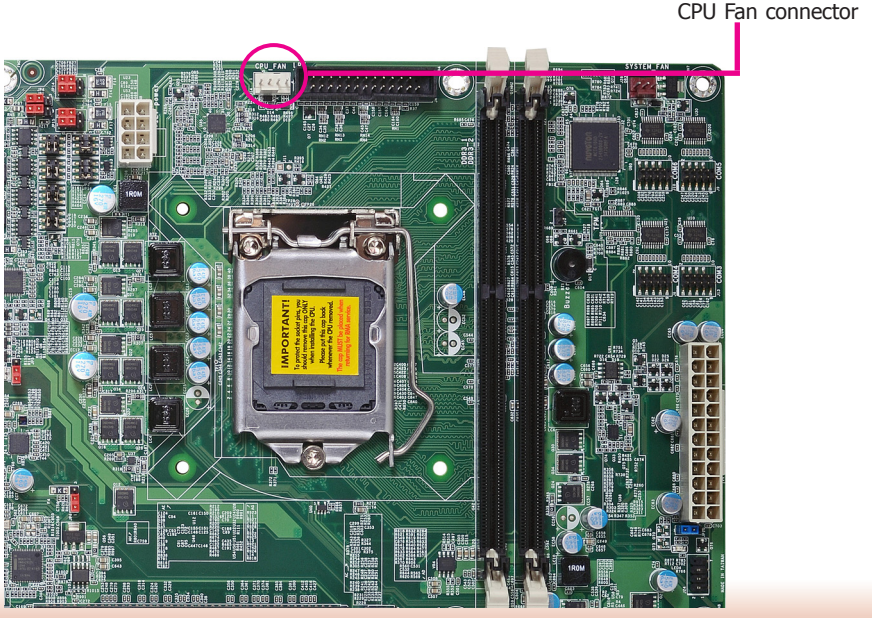


4. Rotate each push-pin according to the direction of the arrow shown on top of the pin.

   Push down two pushpins that are diagonally across the heat sink. Perform the same procedure for the other two push-pins.

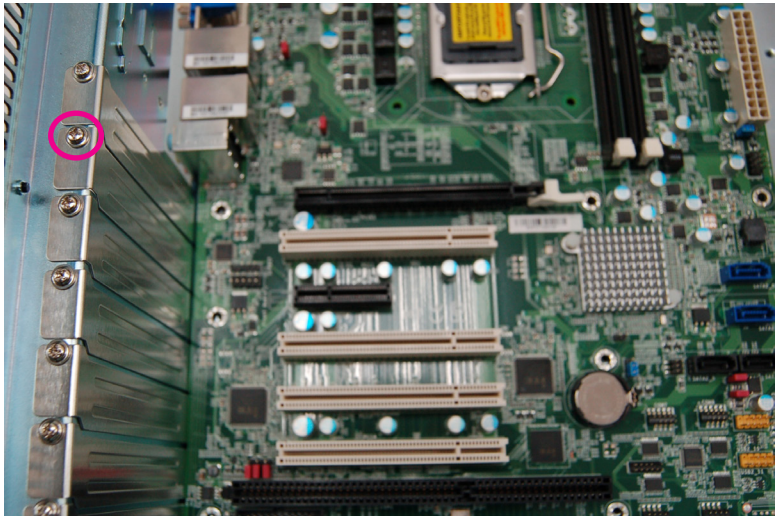


5. Connect the CPU fan's cable to the CPU fan connector on the system board.



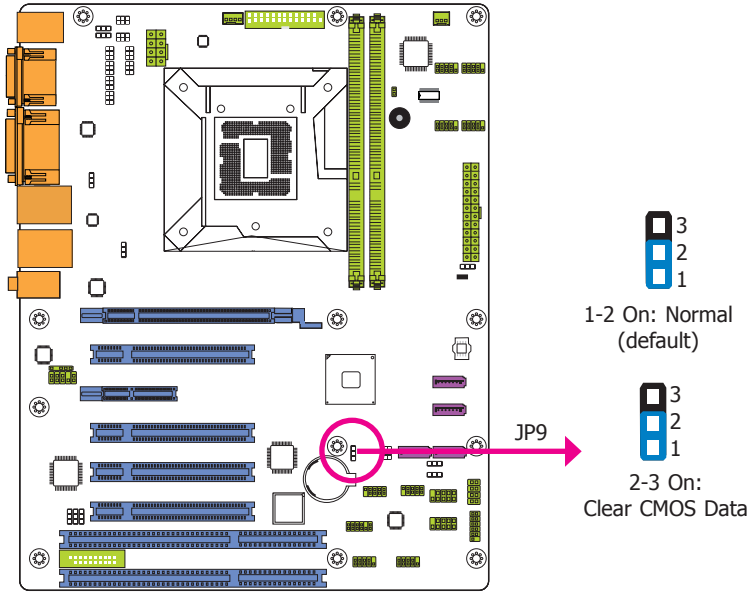
Installing the PCI/PCIe expansion card

1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.
3. Take off the card bracket secured on the system's chassis.
4. Install the PCIe expansion card on the system.
5. Secure the PCIe expansion card to the system with the screws.



Chapter 4 - Jumper Settings

Clear CMOS Data



If you encounter the followings,

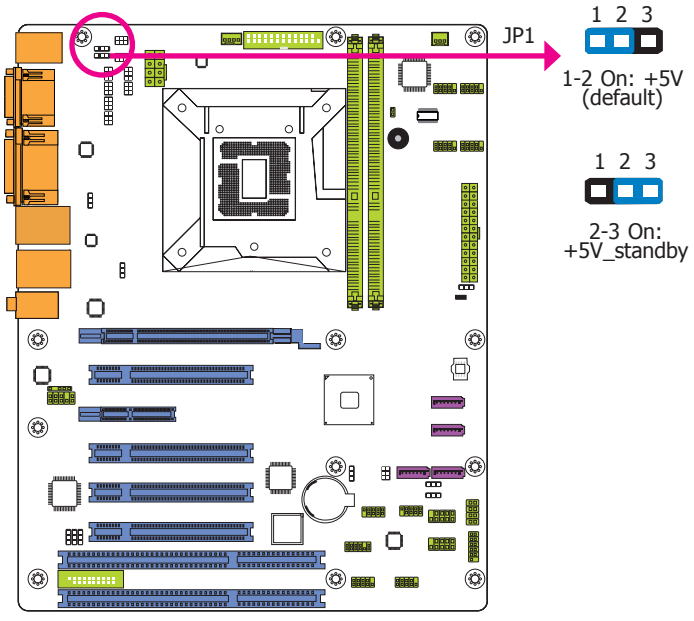
a) CMOS data becomes corrupted.
b) You forgot the supervisor or user password.

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

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

1. Power-off the system and unplug the power cord.
2. Set JP9 pins 2 and 3 to On. Wait for a few seconds and set JP9 back to its default setting, pins 1 and 2 On.
3. Now plug the power cord and power-on the system.

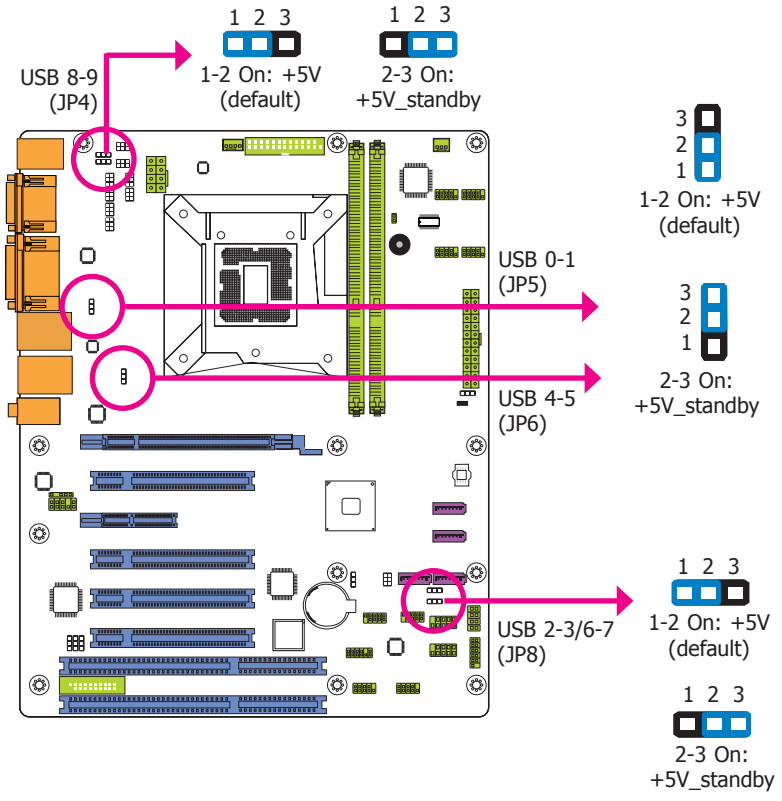
PS/2 Keyboard/Mouse Power Select



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 the PS/2 mouse to wake up the system.

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

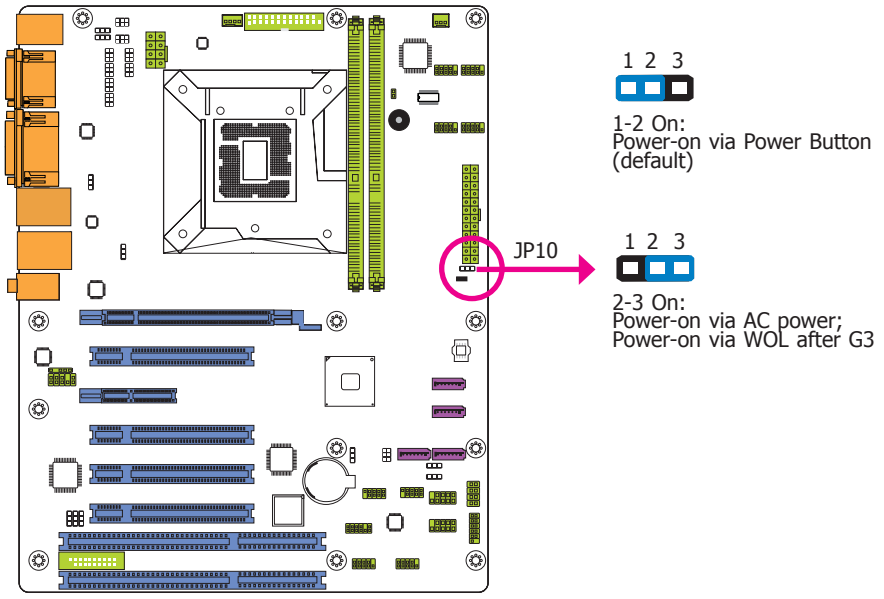
USB Power Select



JP4, JP5, JP6 and JP8 are used to select the power of the USB devices. Selecting +5V_standby will allow you to use a USB device to wake up the system.

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

Power-on Select



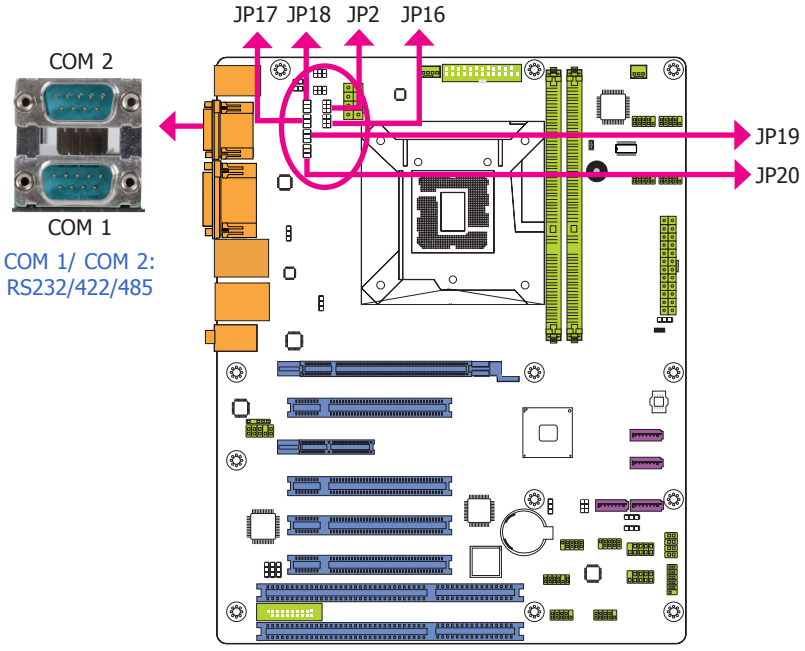
To power-on via WOL after G3:

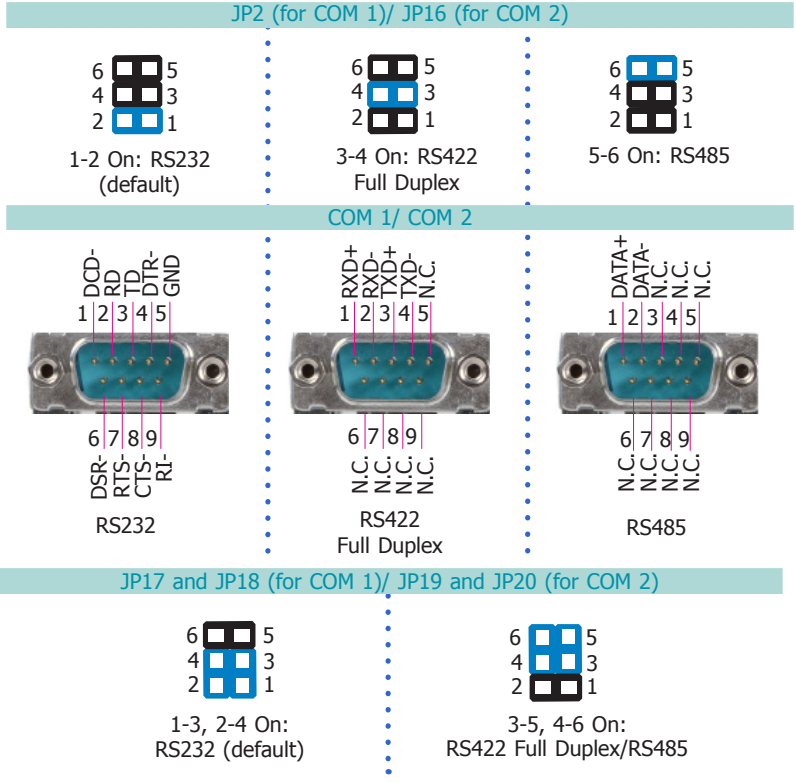
1. Set JP10 pins 2 and 3 to On.
2. Set the "After G3" field to **Power Off/WOL**.
3. Set the "GbE Wake Up From S5" to **Enabled**.

To power-on via AC Power:

1. Set JP10 pins 2 and 3 to On.
2. Set the "After G3" field to **Power On**.

COM 1/COM 2 RS232/422/485 Select

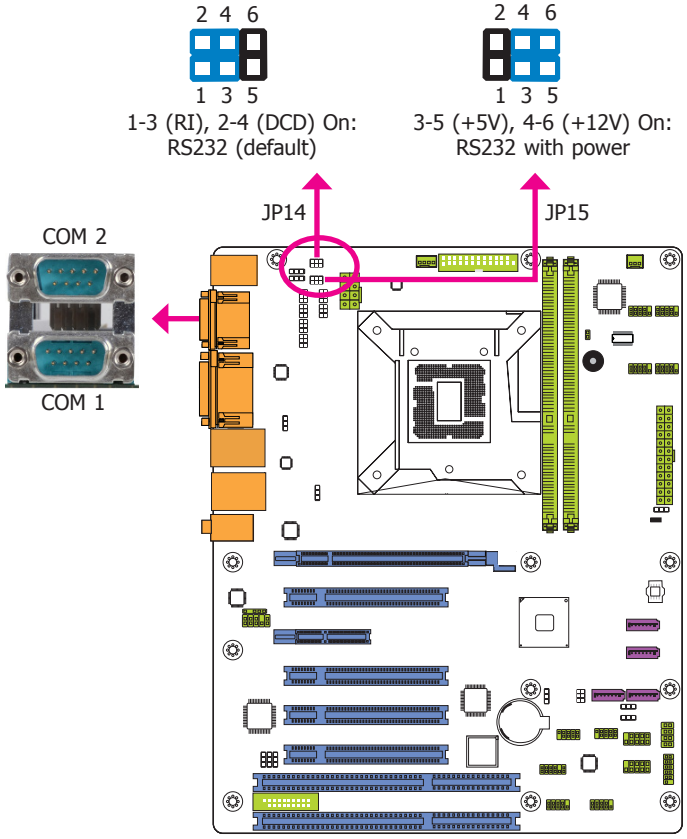




These jumpers allow you to configure the Serial COM ports to RS232, RS422 (Full Duplex) or RS485. JP2, JP17 and JP18 are used to configure the Serial COM port 1. JP16, JP19 and JP20 are used to configure the Serial COM port 2. The pin functions of Serial COM ports 1 and 2 will vary according to these jumpers' setting.

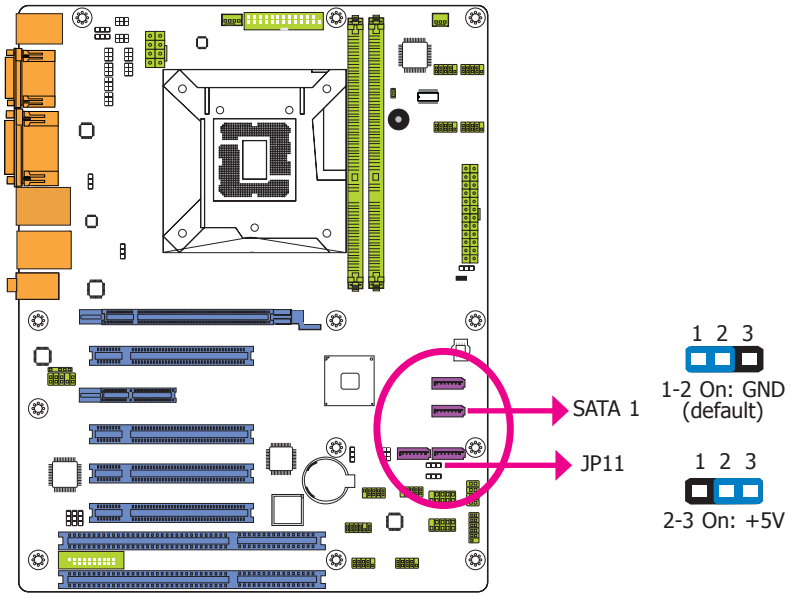
Note:
When COM 1 RS232/422/485 is selected, JP17 and JP18 must be set in accordance to JP2. And when COM 2 RS232/422/485 is selected, JP19 and JP20 must be set in accordante to JP16.

COM 1/COM 2 RS232/Power Select



JP14 (for COM 1) and JP15 (for COM 2) are used to configure Serial COM ports to pure RS232 or RS232 with power.

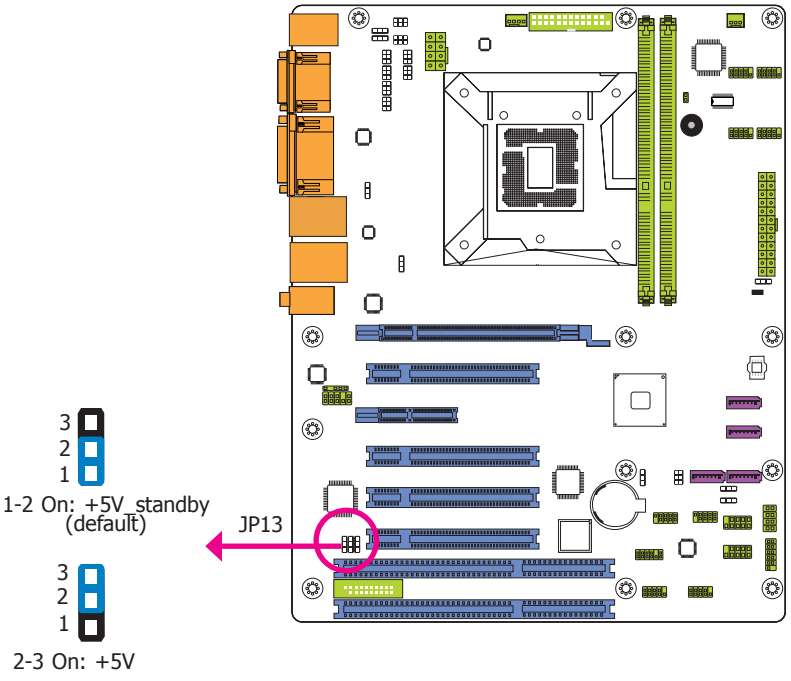
SATA DOM Power Select



JP11 is used to select the power of SATA DOM.

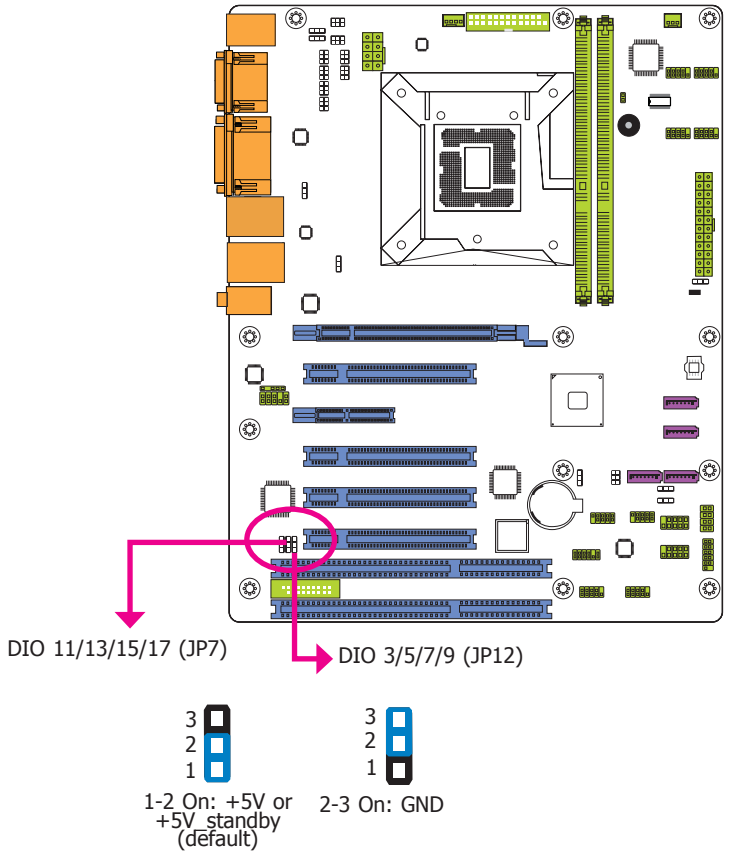
Note:
SATA port 1 provides adequate space for SATA DOM.

Digital I/O Power Select



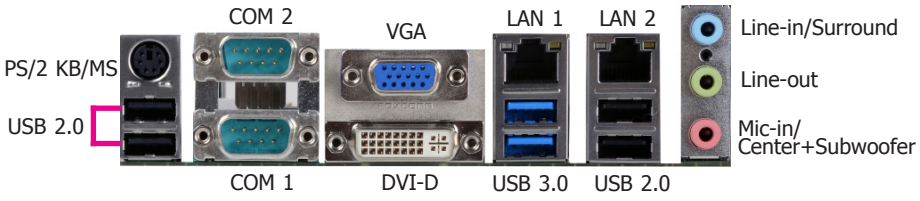
JP13 is used to select the power of DIO (Digital I/O) signal.

Digital I/O Output State



Based on the power level of DIO (Digital I/O) selected on JP13, JP12 (DIO pin 3/5/7/9) and JP7 (DIO pin 11/13/15/17) are used to select the state of DIO output: pull high or pull low. When selecting pull high, the power selection will be the same as JP13's setting.

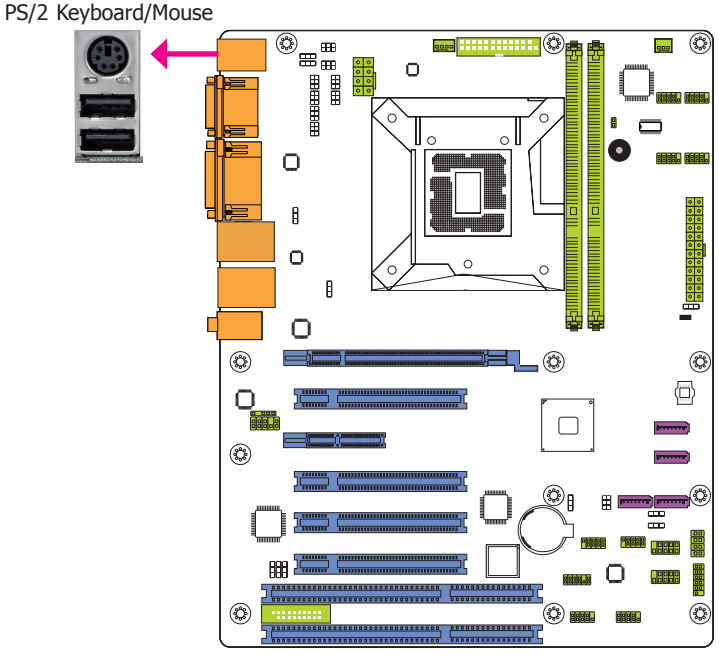
Chapter 5 - Ports and Connectors
Rear Panel I/O Ports



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

- 1 PS/2 Keyboard/Mouse port
- 2 Serial COM ports
- 1 VGA port
- 1 DVI-D port
- 2 RJ45 LAN ports
  (HD620-H81B has LAN 1 only.)
- 2 USB 3.0 ports
- 4 USB 2.0 ports
- Line-in/Surround jack
- Line-out jack
- Mic-in/Center+Subwoofer jack

PS/2 Keyboard/Mouse Port



This rear I/O port is used to connect a PS/2 keyboard/mouse. The PS/2 mouse port uses IRQ12.

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

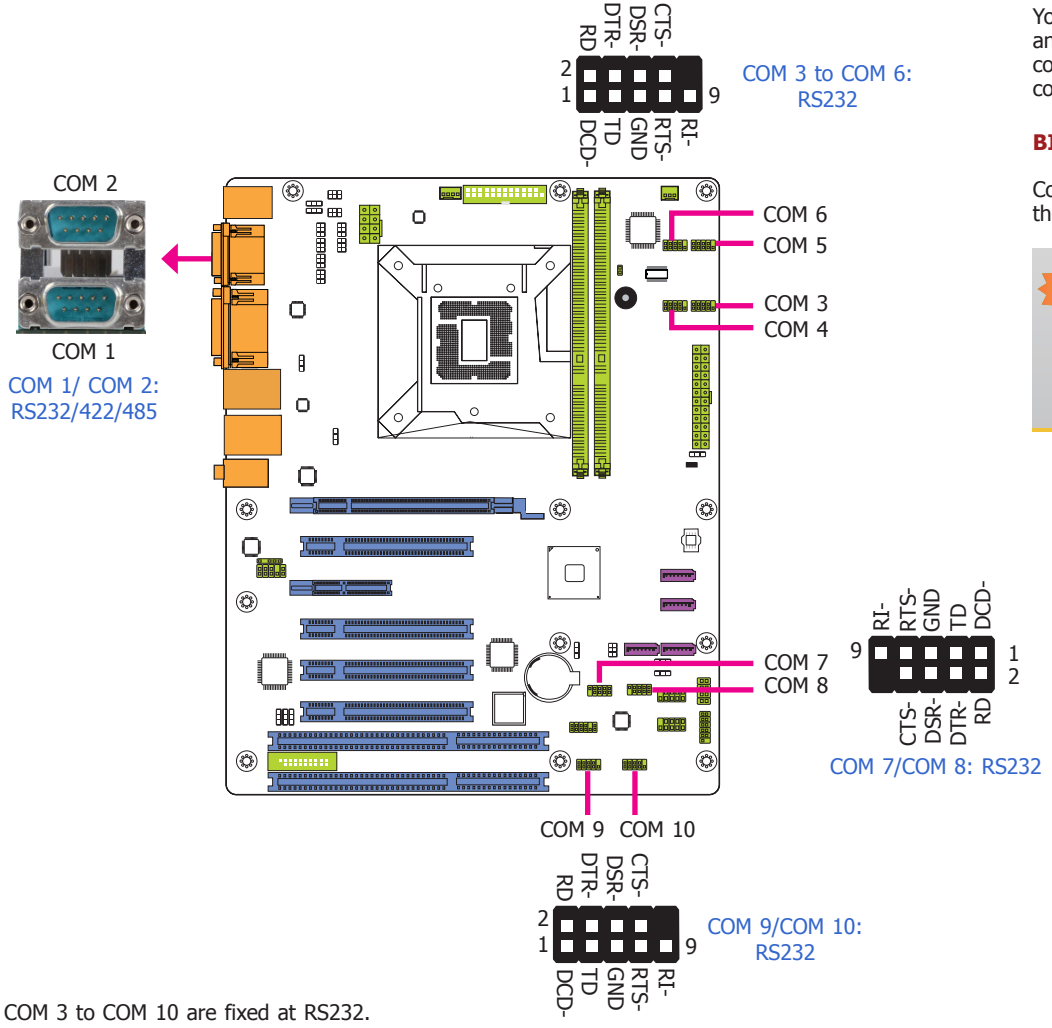
JP1 must be set to "2-3 On: +5V_standby". Refer to "PS/2 KB/MS Power Select" in chapter 4 for more information.

• BIOS Setting

Configure the wake-up function of PS/2 keyboard/mouse in the Advanced menu ("ACPI Power Management Configuration" submenu) of the BIOS. Refer to the chapter 7 for more information.

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

COM (Serial) Ports



COM 3 to COM 10 are fixed at RS232.

The pin functions of COM 1 and COM 2 will vary according to jumpers' setting. JP2, JP17 and JP18 are used to configure the Serial COM port 1. JP16, JP19 and JP20 are used to configure the Serial COM port 2. JP14 (for COM 1) and JP15 (for COM 2) are used to configure Serial COM ports to pure RS232 or RS232 with power. 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.

Connecting External Serial Ports

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

BIOS Setting

Configure the serial COM ports in the Advanced menu ("Super IO Configuration" submenu) of the BIOS. Refer to the chapter 7 for more information.

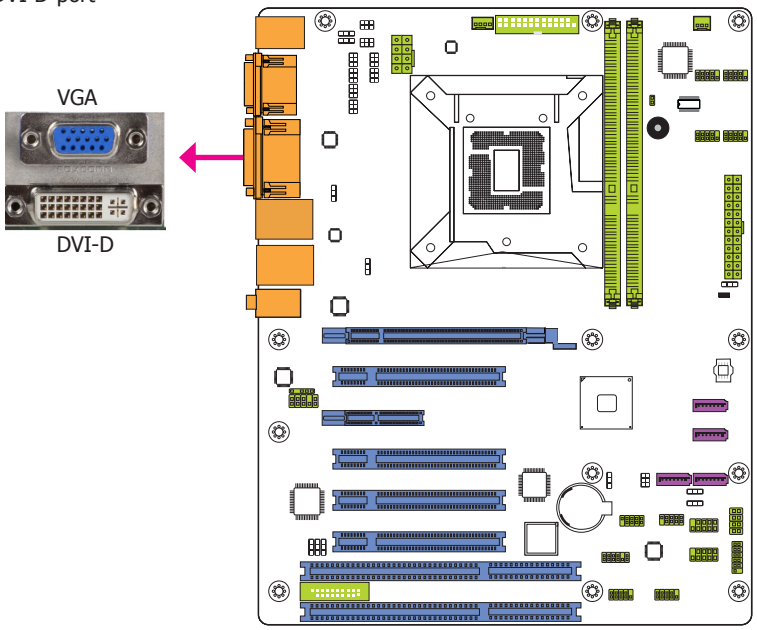
Note:

1. HD620-H81X: 10 COM (COM 1 to COM 10).
   HD620-H81B/D: 2 COM (COM 1 and COM 2).
2. When COM 1 RS232/422/485 is selected, JP17 and JP18 must be set in accordance to JP2.
3. When COM 2 RS232/422/485 is selected, JP19 and JP20 must be set in accordance to JP16.

Graphics Interfaces

The display ports consist of the following:

- 1 VGA port
- 1 DVI-D port



VGA Port

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

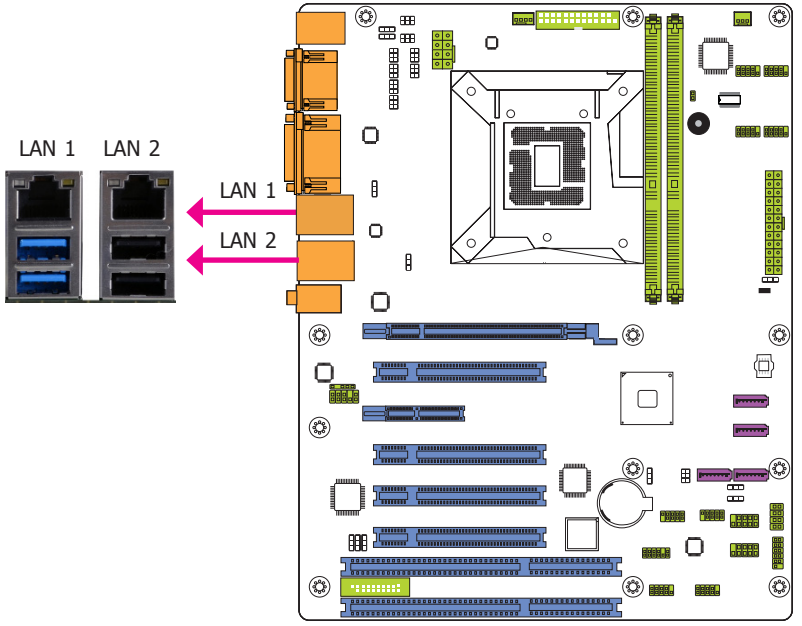
DVI-D Port

The DVI-D (Digital Visual Interface) port is used to connect a digital LCD monitor or LCD TV. Connect the display device's cable connector to the DVI-D port at location CN13. After you plug the cable connector into the DVI-D port, gently tighten the cable screws to hold the connector in place.

BIOS Setting

Configure the display devices in the Chipset menu ("System Agent Configuration" submenu) of the BIOS. Refer to the chapter 7 for more information.

RJ45 LAN Ports



Features

- Intel® 82574 PCI Express Gigabit Ethernet controller
- Intel® I217 Gigabit Ethernet Phy (HD620-H81X/D)

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

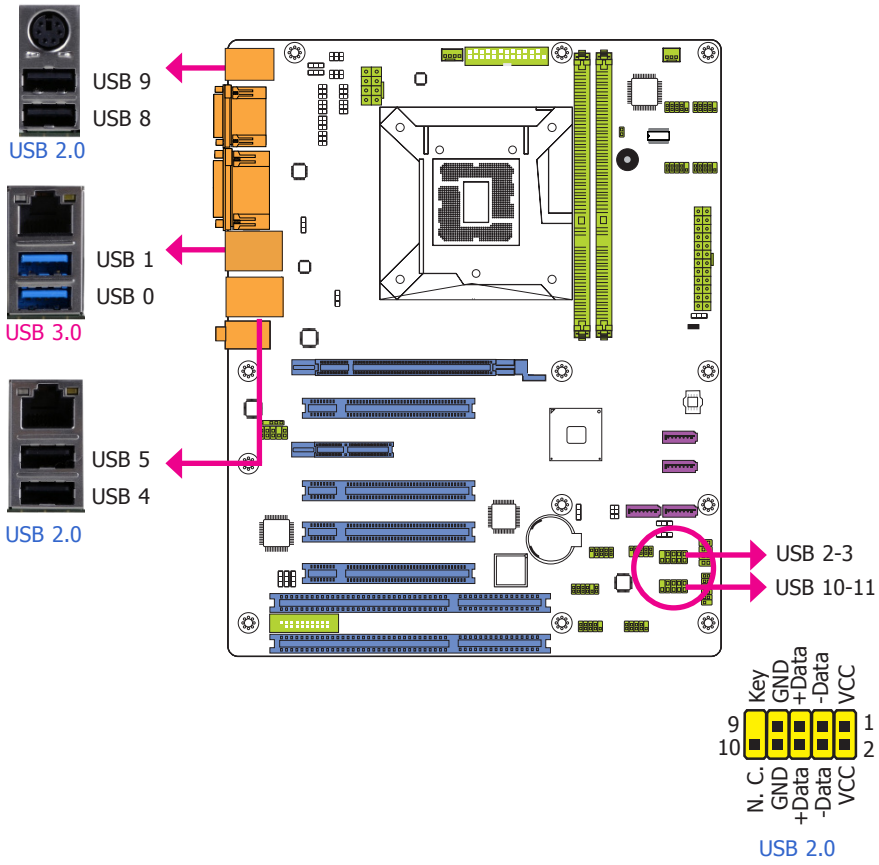
BIOS Setting

Configure the onboard LAN ports in the Chipset menu ("PCH-IO Configuration" submenu) of the BIOS. Refer to the chapter 7 for more information.

Driver Installation

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

USB Ports



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

The system board is equipped with two onboard USB 3.0 ports (USB 0-1) and four onboard USB 2.0 ports (USB 4-5/8-9). The 10-pin connectors allow you to connect 4 additional USB 2.0/1.1 ports (USB 2-3/10-11). The additional USB ports may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis and then insert the USB port cables to a connector.

BIOS Setting

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

Driver Installation

You may need to install the proper drivers in your system operation to use the USB device. Refer to your operating system's manual or documentation for more information.

Wake-On-USB Keyboard/Mouse

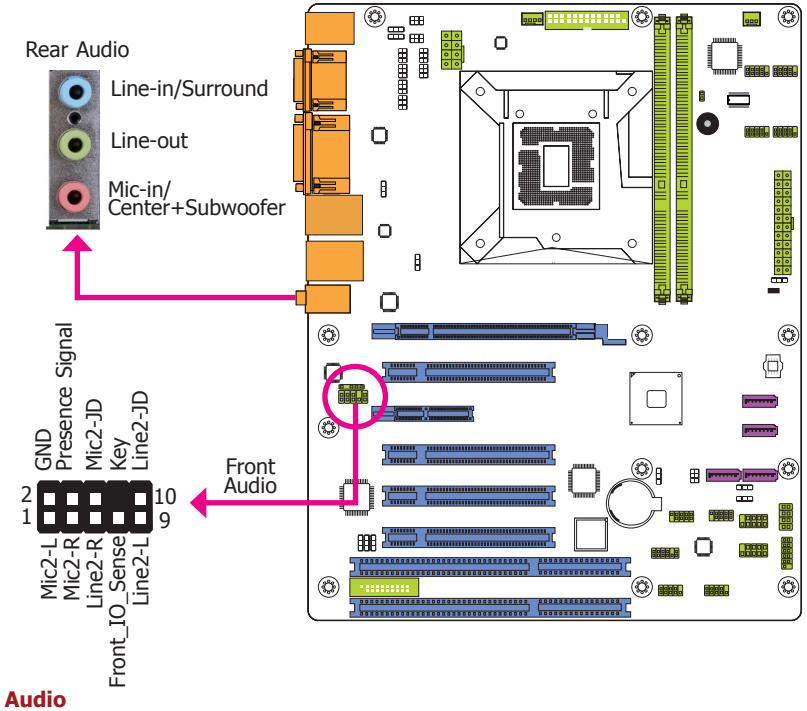
The Wake-On-USB Keyboard/Mouse function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state. To use this function:

- **Jumper Setting**

JP4, JP5, JP6 and JP8 must be set to "2-3 On: +5V_standby". Refer to "USB Power Select" in chapter 4 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 ≥1.5A. For 3 or more USB ports, the +5V_standby power source of your power supply must support ≥2A.

Audio



Rear Audio

The system board is equipped with 3 audio jacks. A jack is a one-hole connecting interface for inserting a plug.

- Line-in/Surround Jack (Light Blue)
  This jack is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc.
- Line-out Jack (Lime)
  This jack is used to connect a headphone or external speakers.
- Mic-in/Center+Subwoofer Jack (Pink)
  This jack is used to connect an external microphone.

Front Audio

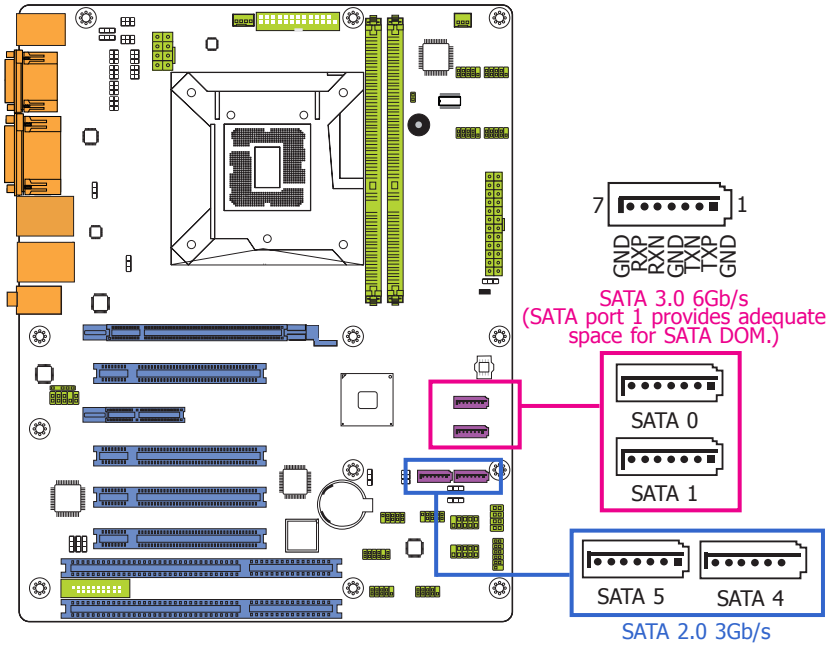
The front audio connector allows you to connect to the second line-out and mic-in jacks that are at the front panel of your system.

Driver Installation

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

I/O Connectors

SATA (Serial ATA) Connectors



Features

- 4 Serial ATA ports
  - 2 SATA 3.0 ports with data transfer rate up to 6Gb/s (SATA 0 and SATA 1)
  - 2 SATA 2.0 ports with data transfer rate up to 3Gb/s (SATA 4 and SATA 5)
- Integrated Advanced Host Controller Interface (AHCI) controller

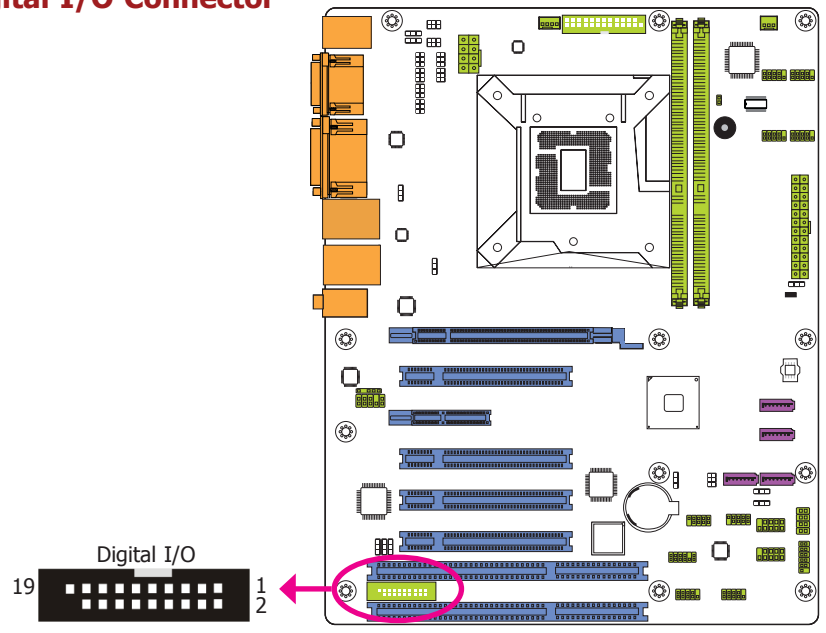
The Serial ATA connectors are used to connect Serial ATA devices. Connect one end of the Serial ATA data cable to a SATA connector and the other end to your Serial ATA device.

BIOS Setting

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

Note:
Some 3rd party SATA Gen 2 speed device controllers used on the system board paired with the Intel® 8 series chipset are intermittently detected. Before using SSD devices or mSATA SSD devices, please check whether the device and the cable which are used on the system board conform to Intel's official regulations.

Digital I/O Connector

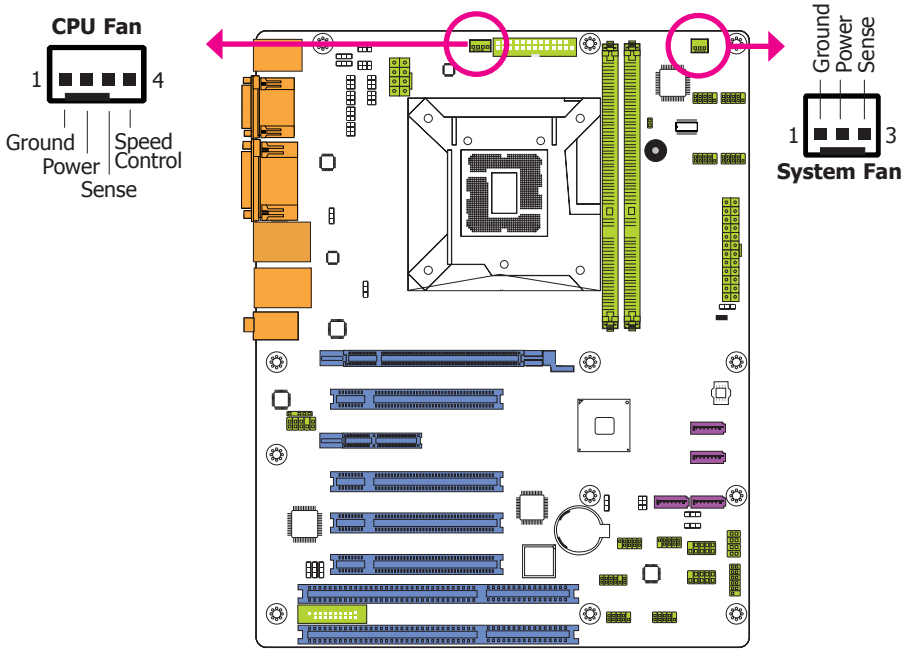


The 8-bit Digital I/O connector provides powering-on function to external devices that are connected to these connectors.

Digital I/O Connector

Pins	Pin Assignment	Pins	Pin Assignment
1	GND	2	+12V
3	DIO7	4	+12V
5	DIO6	6	GND
7	DIO5	8	+5V
9	DIO4	10	+5V
11	DIO3	12	GND
13	DIO2	14	+5V_Standby
15	DIO1	16	+5V_Standby
17	DIO0	18	GND
19	GND		

Cooling Fan Connectors

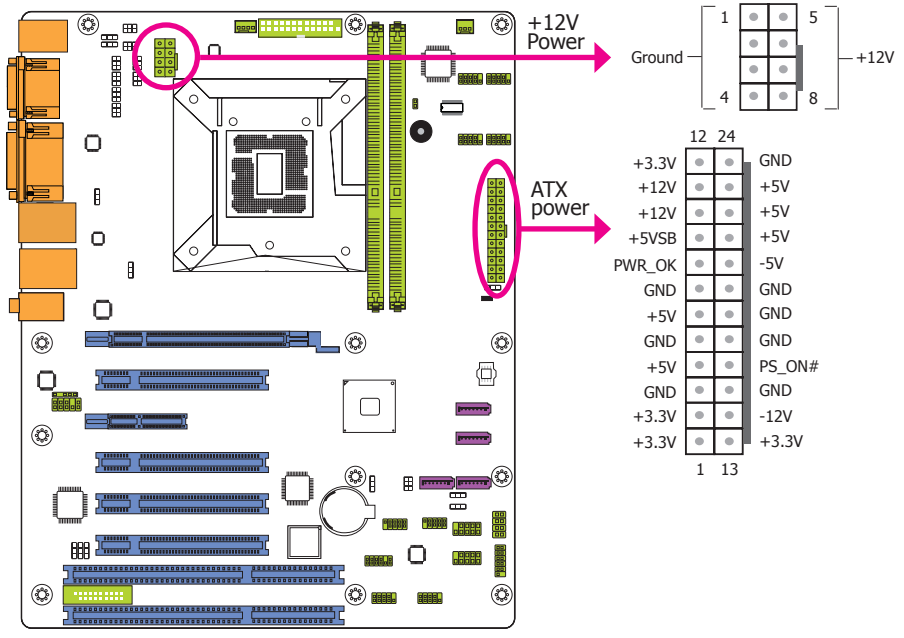


These fan connectors are used to connect cooling fans. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

BIOS Setting

The Advanced menu ("PC Health Status" submenu) of the BIOS will display the current speed of the cooling fans. Refer to chapter 7 for more information.

Power Connectors



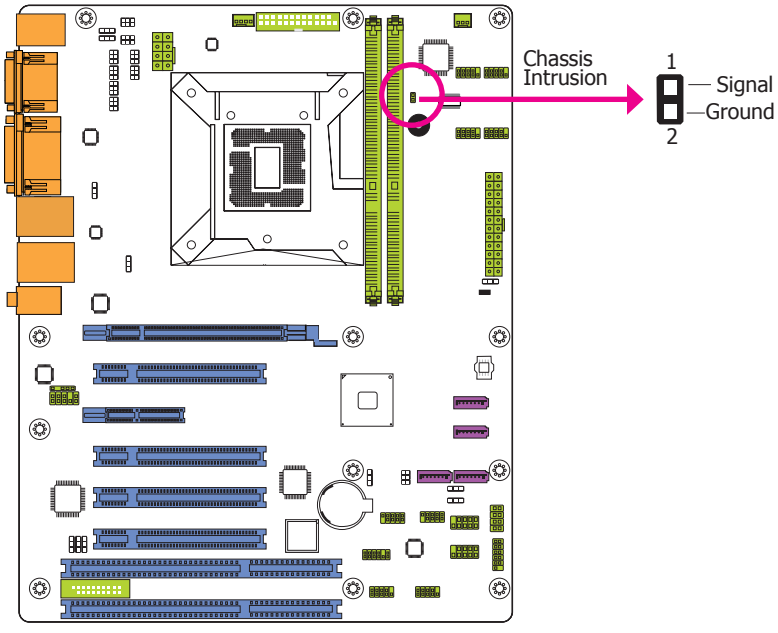
Use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1. An ATX12V power supply unit has a standard 24-pin ATX main power connector that must be inserted into the 24-pin connector. The 8-pin +12V power connector enables the delivery of more +12VDC current to the processor's Voltage Regulator Module (VRM).

The power connectors from the power supply unit are designed to fit the 24-pin and 8-pin connectors in only one orientation. Make sure to find the proper orientation before plugging the connectors.

The system board requires a minimum of 300 Watt power supply to operate. Your system configuration (CPU power, amount of memory, add-in cards, peripherals, etc.) may exceed the minimum power requirement. To ensure that adequate power is provided, we strongly recommend that you use a minimum of 400 Watt (or greater) power supply.

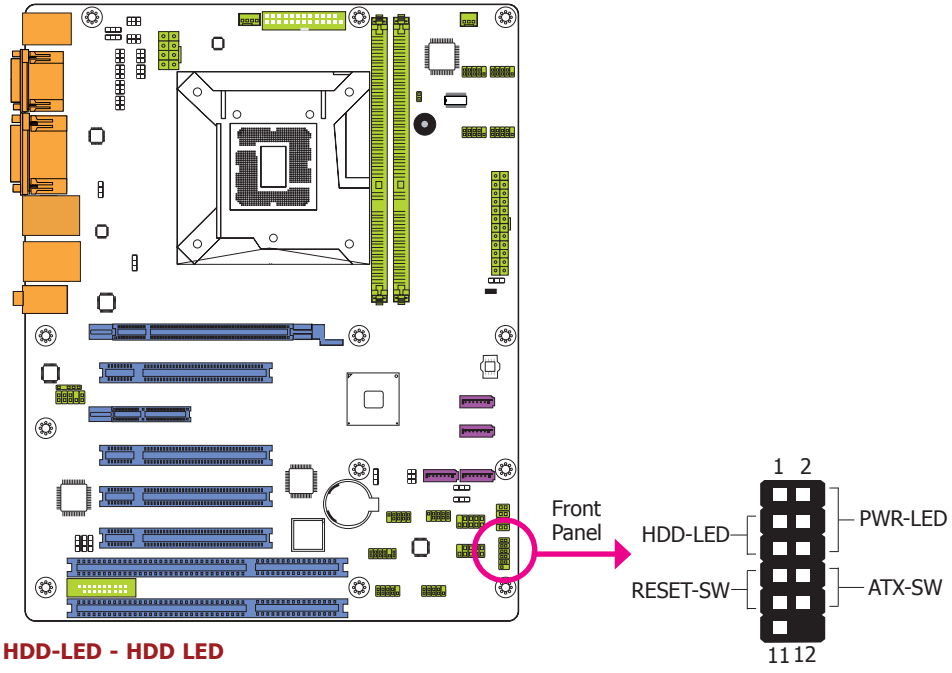
Important:
Insufficient power supplied to the system may result in instability or the add-in boards and peripherals not functioning properly. Calculating the system's approximate power usage is important to ensure that the power supply meets the system's consumption requirements.

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.

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.

ATX-SW - ATX Power Switch

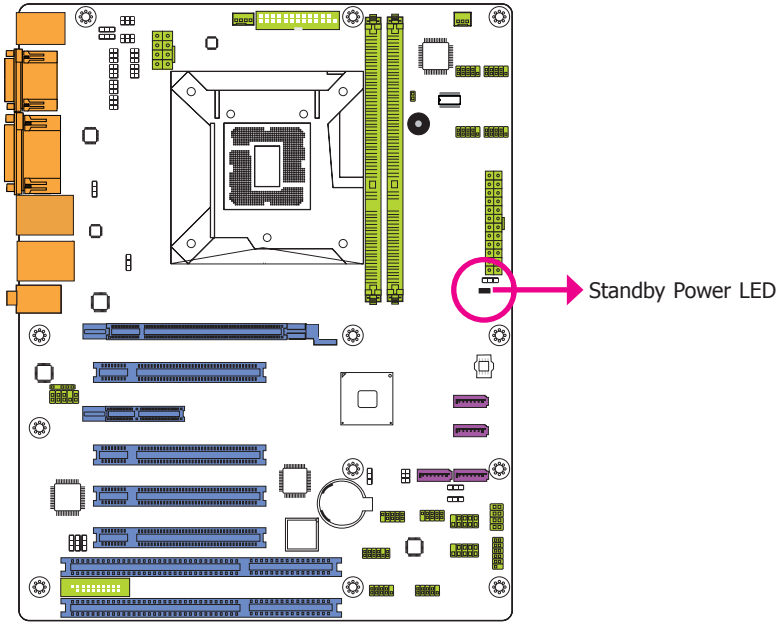
This switch is used to power on or off the system.

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.

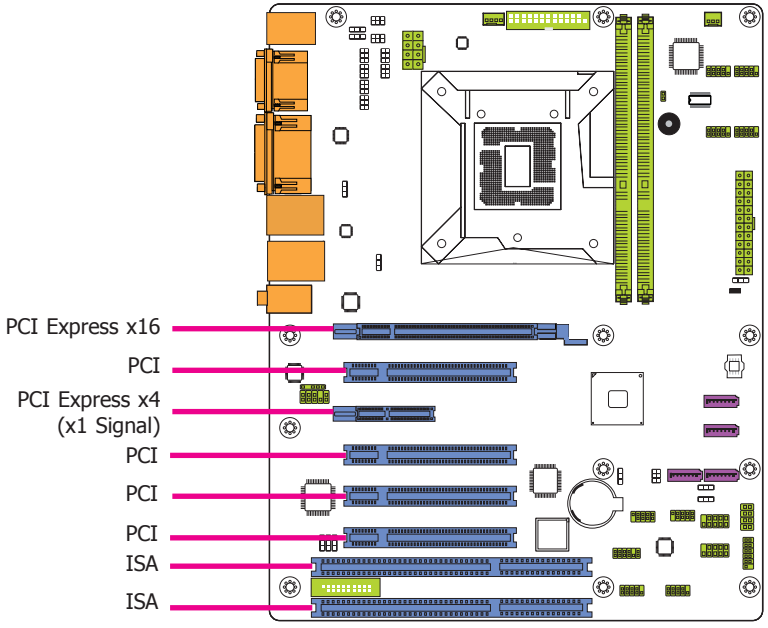
	Pin	Pin Assignment		Pin	Pin Assignment
HDD-LED	3	HDD Power	PWR-LED	2	LED Power
	5	Signal		4	LED Power
RESET SW	7	Ground		6	Signal
	9	RST Signal	ATX-SW	8	Ground
	11	N.C.		10	Signal

Standby Power LED



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

Expansion Slots



PCI Express x16 Slot

Install PCI Express x16 graphics card, that comply to the PCI Express specifications, into the PCI Express x16 slot. To install a graphics card into the x16 slot, align the graphics card above the slot then press it down firmly until it is completely seated in the slot. The retaining clip of the slot will automatically hold the graphics card in place.

PCI Slot

The PCI slot supports expansion cards that comply with PCI specifications. You can install a PCI expansion card or a customized riser card designed for only 2 PCI slots expansion (for low profile PCI card only) into the PCI slot.

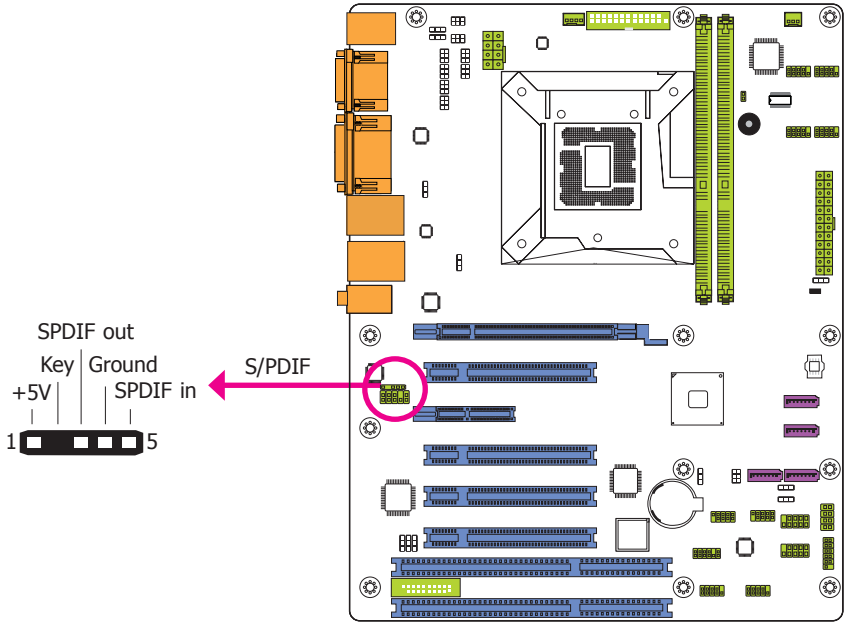
PCI Express x4 Slot

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

ISA Slot

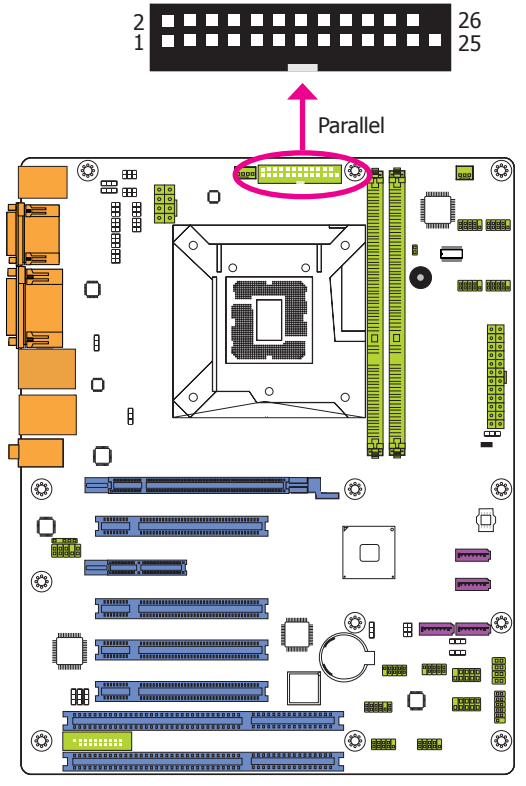
The ISA slot is used to connect ISA-compatible expansion cards.

S/PDIF Connector



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

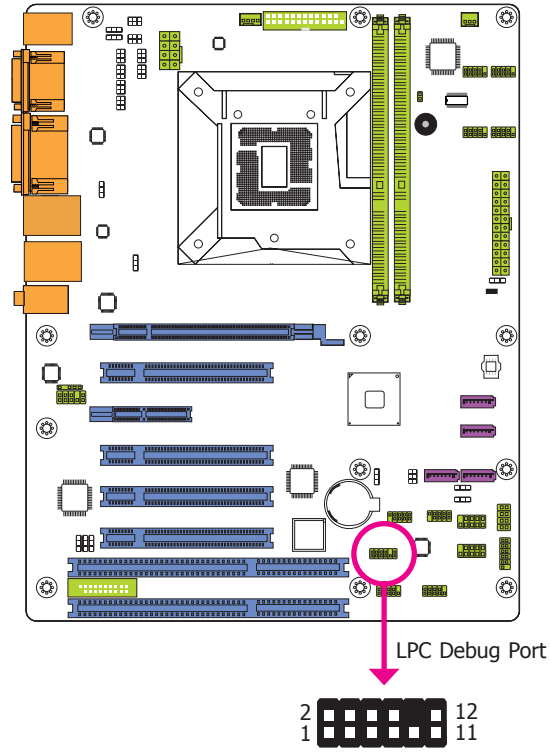
Parallel Port



The 25-pin connector is used to connect an external parallel port. The parallel port connects your PC to a parallel printer. It supports SPP, ECP and EPP.

SPP (Standard Parallel Port)	Allows normal speed operation but in one direction only.
ECP (Extended Capabilities Port)	Allows parallel port to operate in bidirectional mode and at a speed faster than the SPP's data transfer rate.
EPP (Enhanced Parallel Port)	Allows bidirectional parallel port operation at maximum speed.

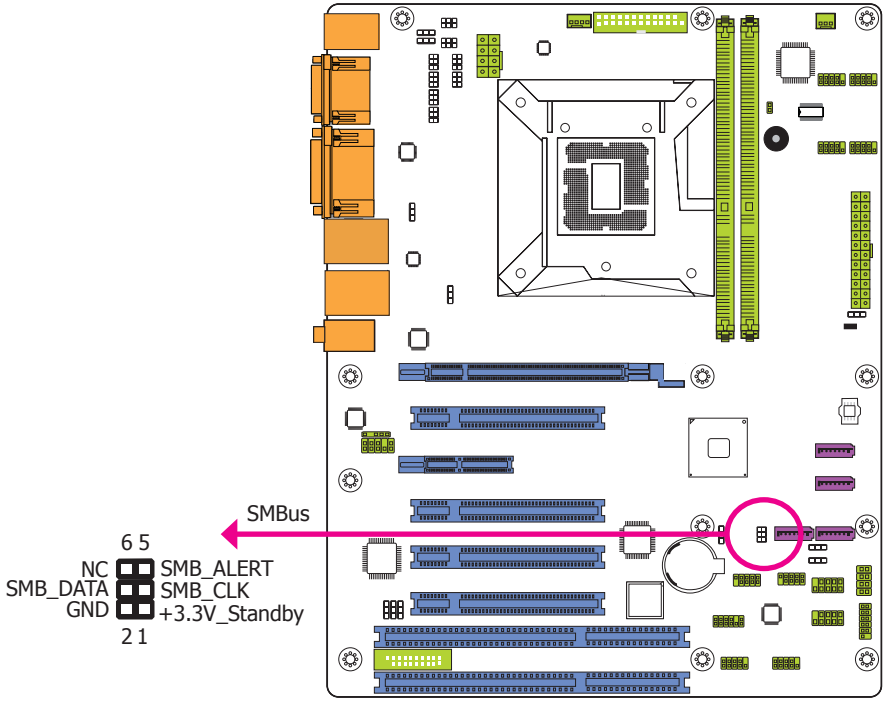
LPC Debug Port



The LPC connector is used for the debug function and its pin functions are listed below.

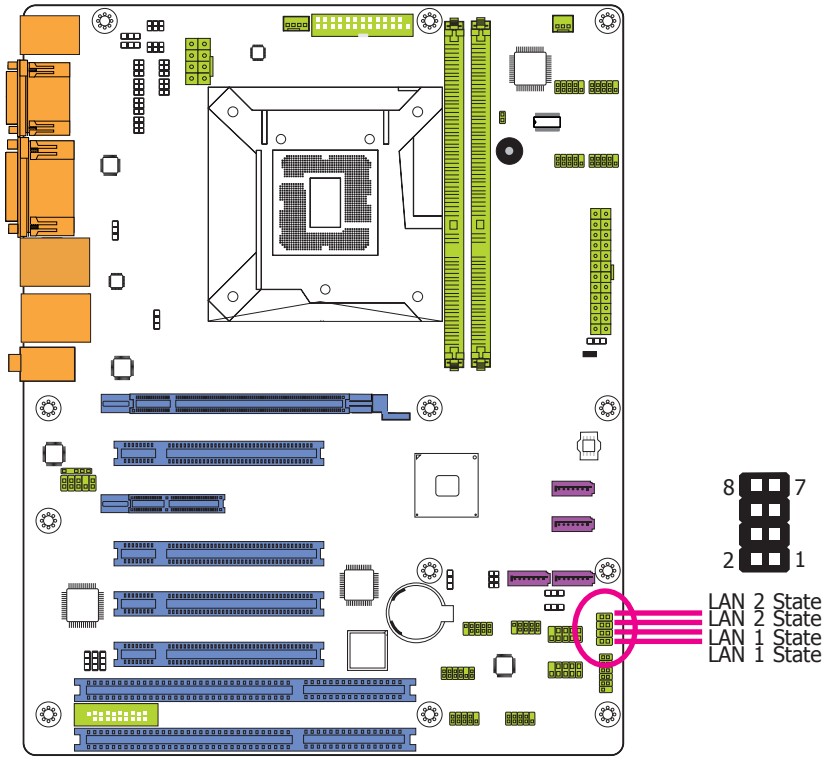
Pins	Pin Assignment	Pins	Pin Assignment
1	CLK	2	LAD1
3	RST#	4	LAD0
5	FRAME#	6	VCC_+3V
7	LAD3	8	GND
9	LAD2	10	x
11	SERIRQ	12	48MHz

SMBus Connector



The SMBus (System Management Bus) connector is used to connect the SMBus device. It is a multiple device bus that allows multiple chips to connect to the same bus and enable each one to act as a master by initiating data transfer.

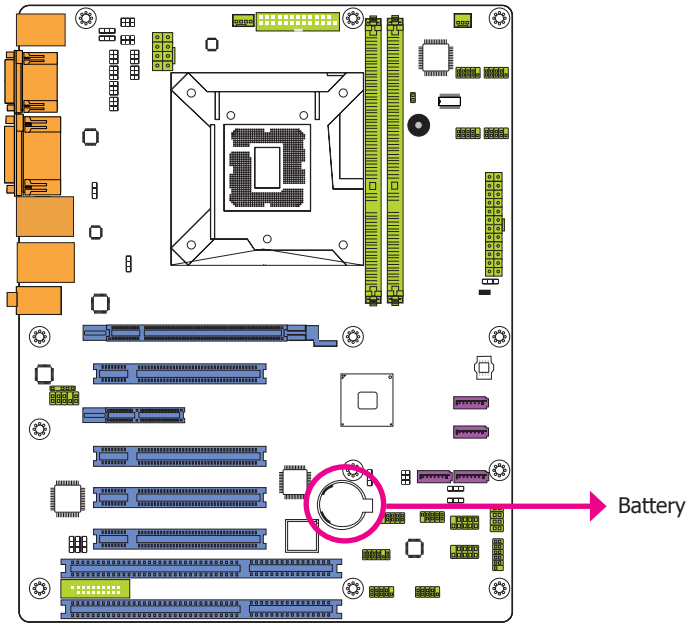
LAN LED Connector



The LAN LED connector is used to detect the connection state of RJ45 LAN ports when the connection is made to an active network via a cable. The pin functions of the LAN LED connector are listed below.

Pins	Pin Assignment	Pins	Pin Assignment
1	Link Activity	2	+3V_standby
3	GLED_LED_1000-	4	GLED_LED_100-
5	Link Activity	6	+3V_standby
7	GLED_LED_1000-	8	GLED_LED_100-

Battery



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

Safety Measures

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

Chapter 6 - BIOS Setup

Overview

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

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

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

Default Configuration

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

Entering the BIOS Setup Utility

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

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

Legends

Keys	Function
Right and Left arrows	Moves the highlight left or right to select a menu.
Up and Down arrows	Moves the hightlight up or down between submenu or fields.
<Esc>	Exit to the BIOS Setup Utility.
+ (plus key)	Scrolls forward through the values or options of the highlighted field.
- (minus key)	Scrolls backward through the values or options of the highlighted field.
Tab	Select a field.
<F1>	Displays general help
<F2>	Pervious values
<F3>	Optimized defaults
<F4>	Saves and resets 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.

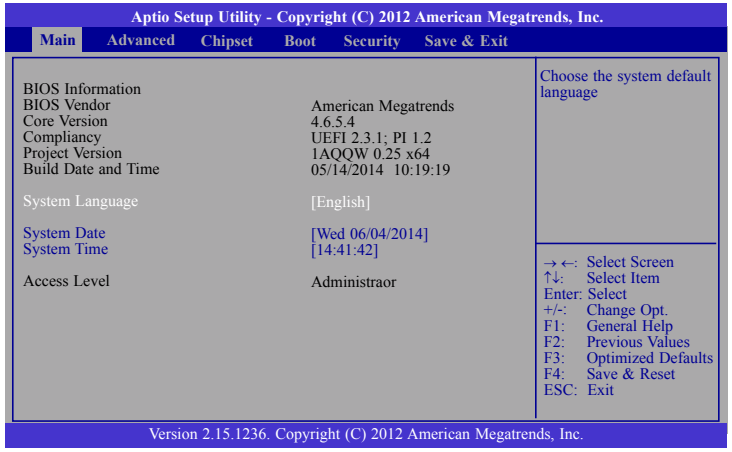
Submenu

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.

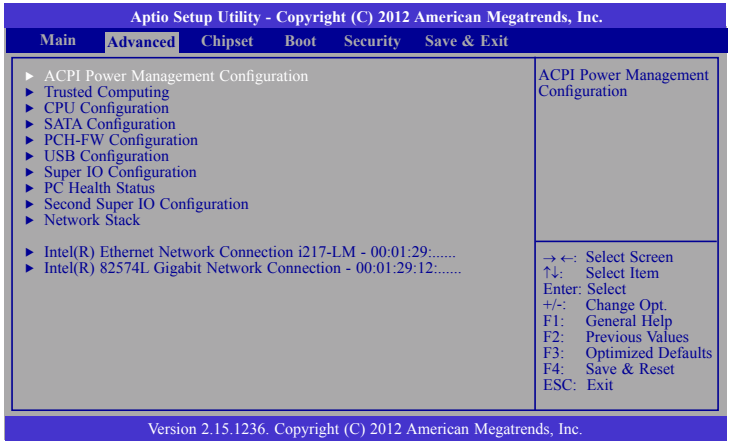
System Time

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

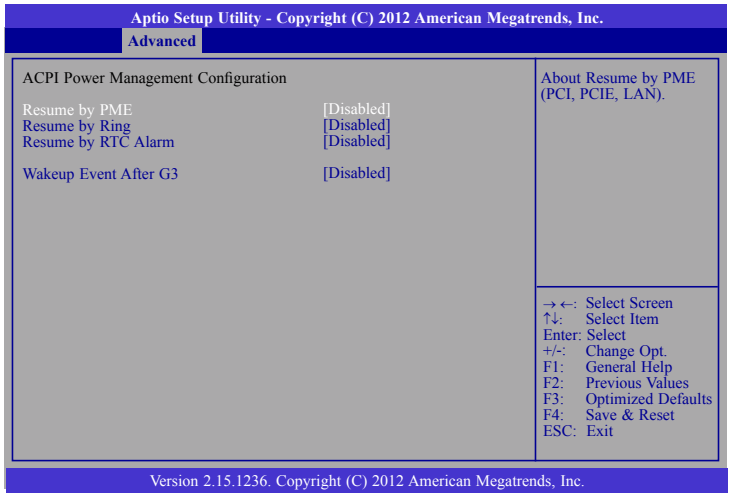
The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

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.



Resume by PME

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

Resume by Ring

Enables this field to use the Ring signal to wake up the system.

Resume by RTC Alarm

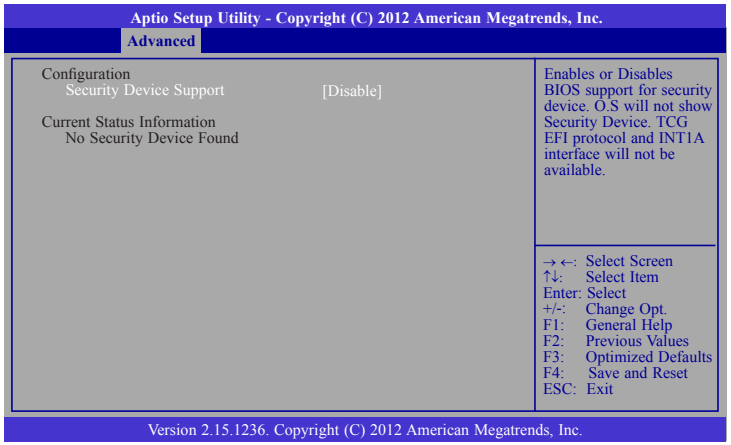
When Enabled, the system uses the RTC to generate a wakeup event.

Wakeup Event After G3

This field is used to enable or disable the specific wakeup event after G3. It needs to switch the hardware jumper (for AC power on) to the proper setting.

Trusted Computing

This section configures settings relevant to Trusted Computing innovations.

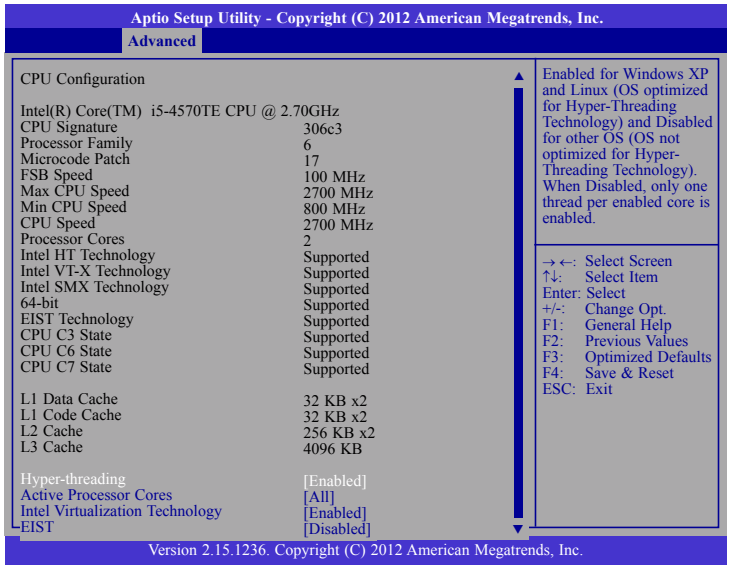


Security Device Support

This field is used to enable or disable BIOS supporting for the security device. O.S will not show the security device. TCG EFI protocol and INT1A interface will not be available.

CPU Configuration

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



Hyper-threading

Enables 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.

Intel Virtualization Technology

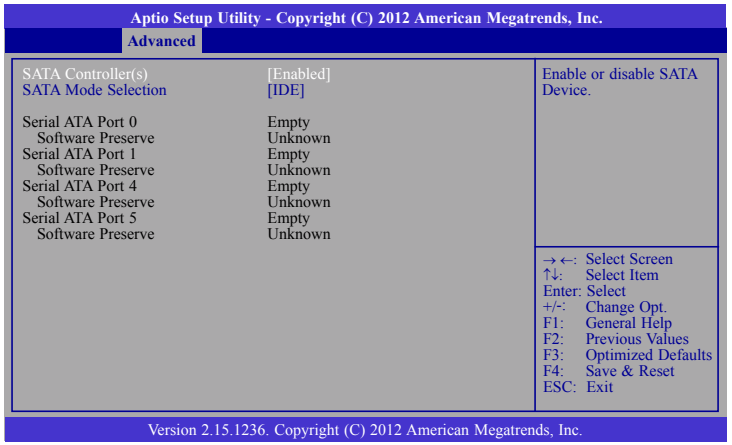
When this field is set to enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

EIST

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

SATA Configuration

This section is used to configure the settings of SATA device.



SATA Controller(s)

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

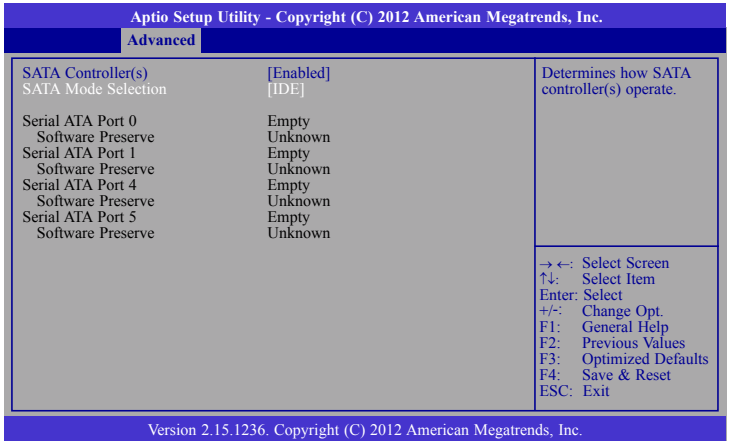
SATA Mode Selection

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

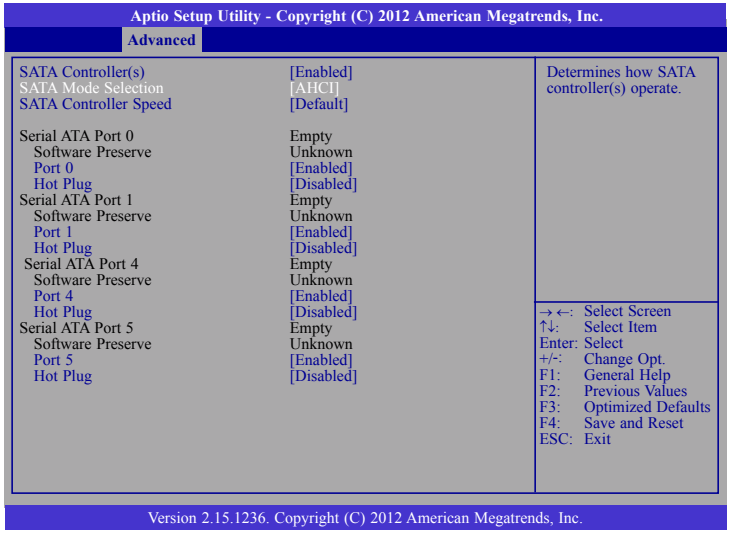
IDE Mode
This option configures the Serial ATA drives as Parallel ATA storage devices.

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

When IDE mode is selected in the SATA Mode Selection, it will display the following information:



When AHCI mode is selected in the SATA Mode Selection, it will display the following information:



SATA Controller Speed

Indicates the maximum speed that the SATA controller can support.

Port 0, Port 1, Port 4 and Port 5

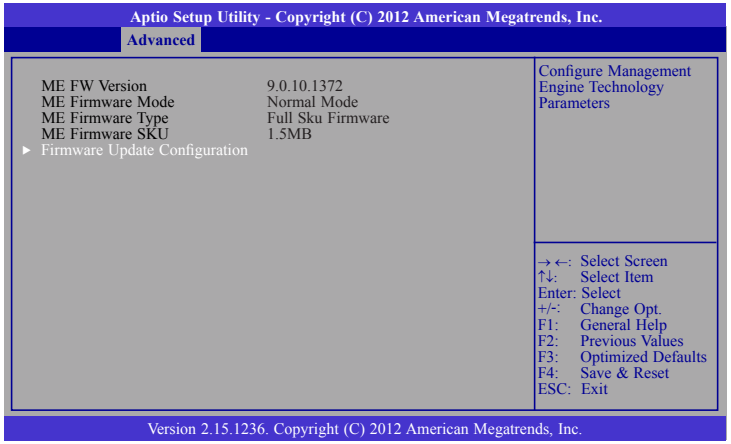
Enables or disables the SATA port.

Hot Plug

Designates the SATA port as hot pluggable.

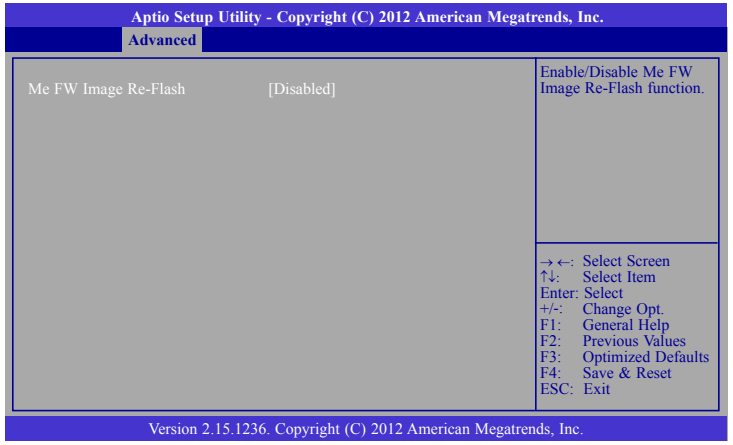
PCH-FW Configuration

This section is used to configure the parameters of Management Engine Technology.



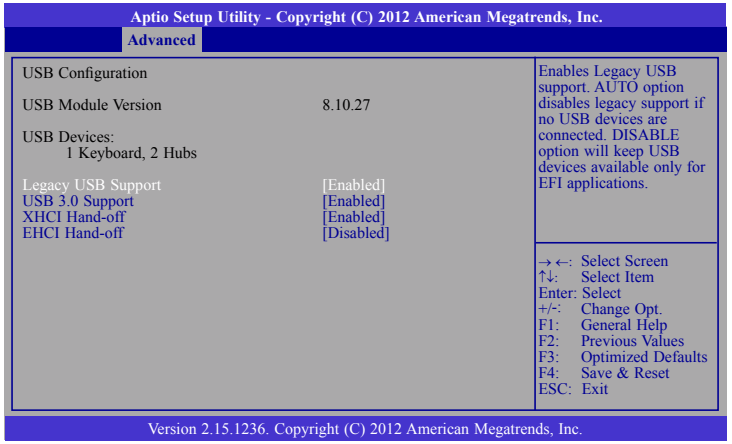
Firmware Update Configuration

This field is used to configure the parameters of Management Engine Technology.



USB Configuration

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



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

Enables or disables USB 3.0 (XHCI) Controller support.

XHCI Hand-off

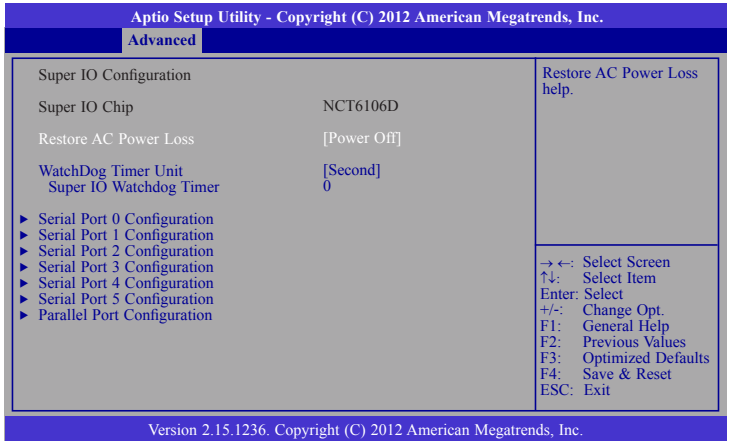
This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

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.

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

Power 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.

Power 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 Unit

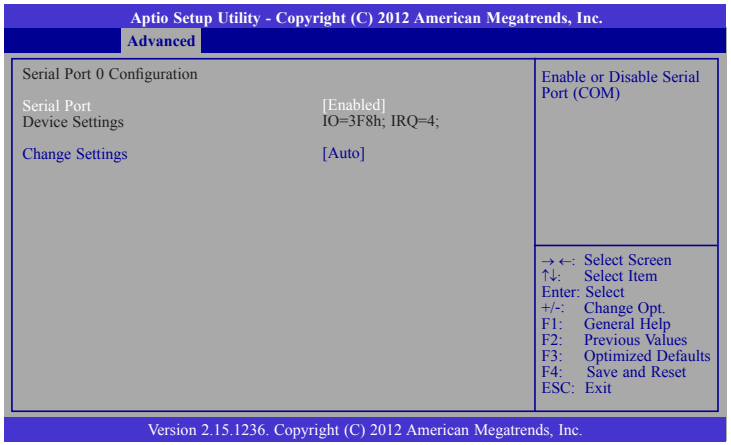
Selects the watchdog timer unit: second or minute.

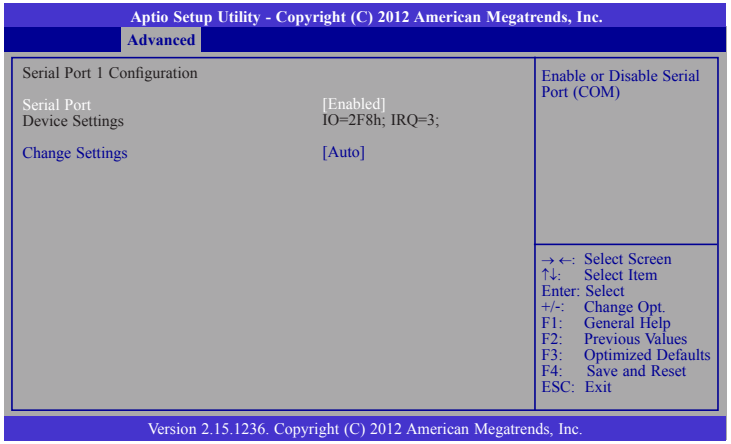
Super IO Watchdog Timer

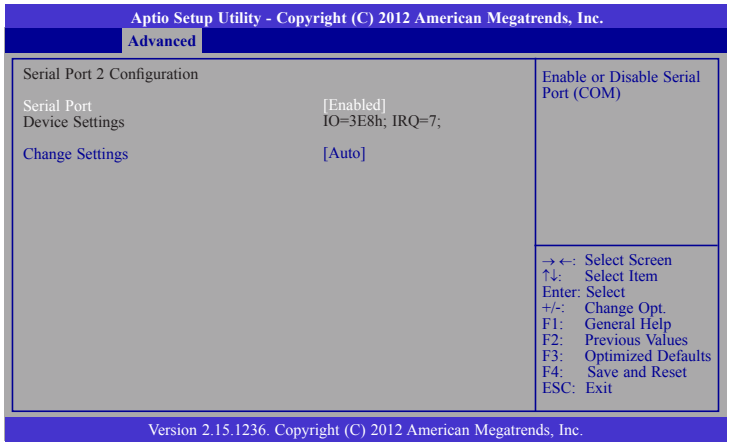
Sets the timeout value of the super IO watchdog timer. 0 means disabled.

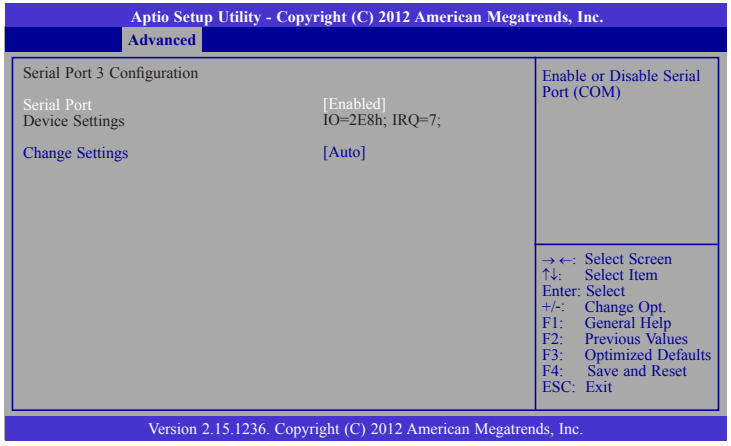
Serial Port 0 Configuration to Serial Port 5 Configuration

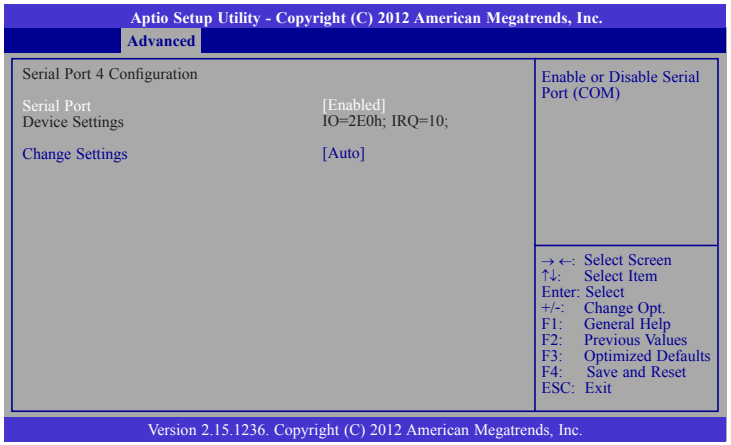
Sets the parameters of serial port 0 (COM A) to serial port 5 (COM F).

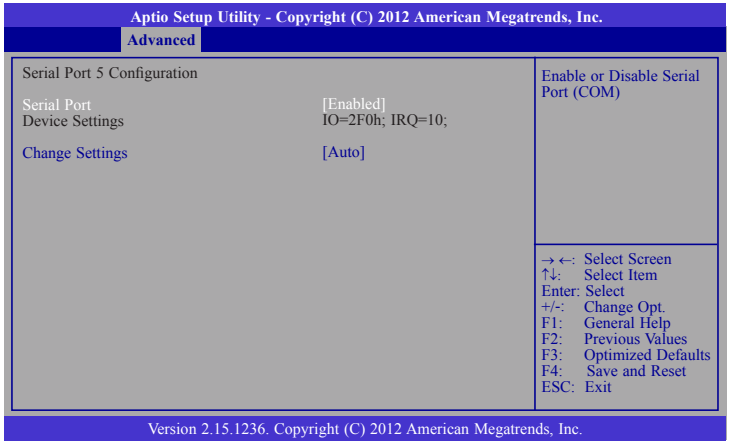












Serial Port

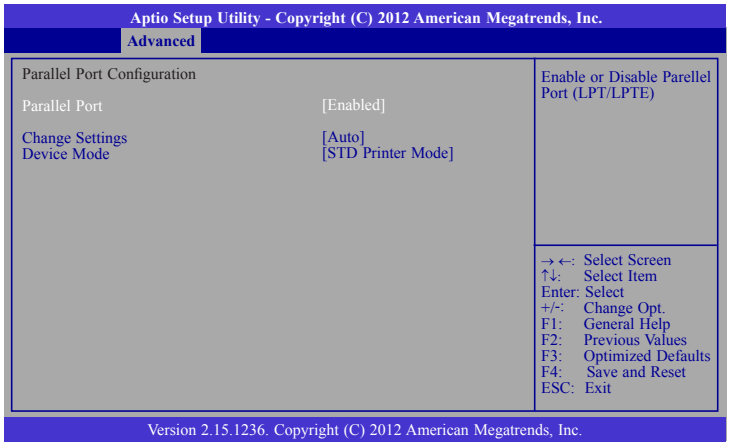
Enables or disables these serial ports (COM).

Change Settings

Selects the IO/IRQ settings for the super I/O device.

Parallel Port Configuration

Sets the parameters of the parallel port (LPT/LPTE).



Parallel Port

Enables or disables the parallel port (LPT/LPTE).

Change Settings

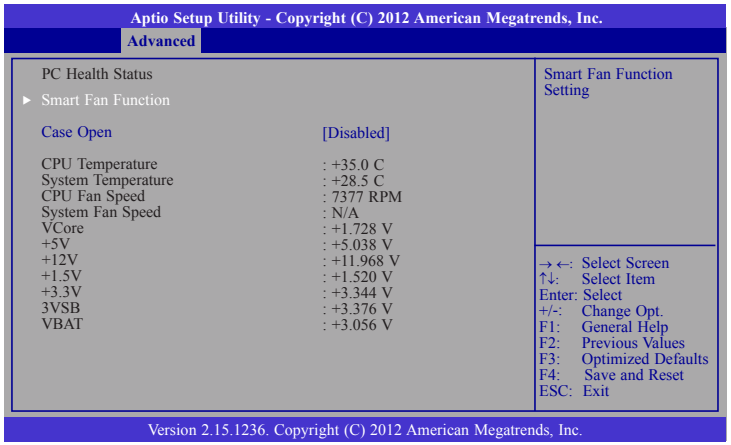
Selects an optimal setting for the super IO device.

Device Mode

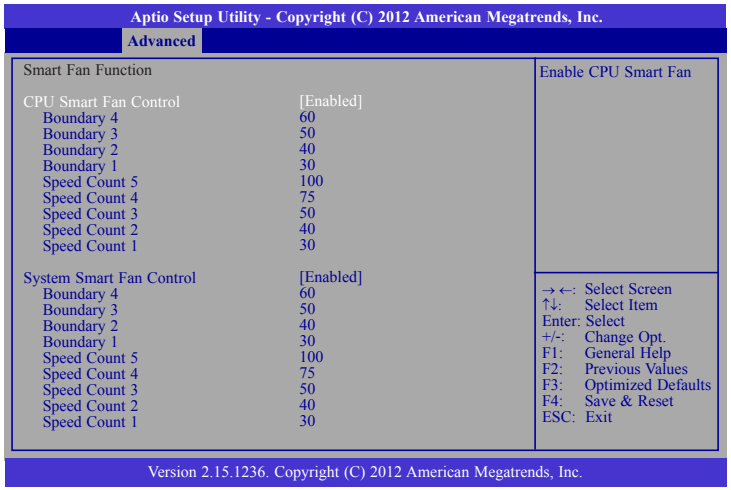
Changes the mode of the printer port.

PC Health Status

This section displays the hardware health monitor.



Smart Fan Function



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.

System Smart Fan Control

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

Boundary 1 to Boundary 4

The range is 0-127.

Speed Count 1 to Speed Count 5

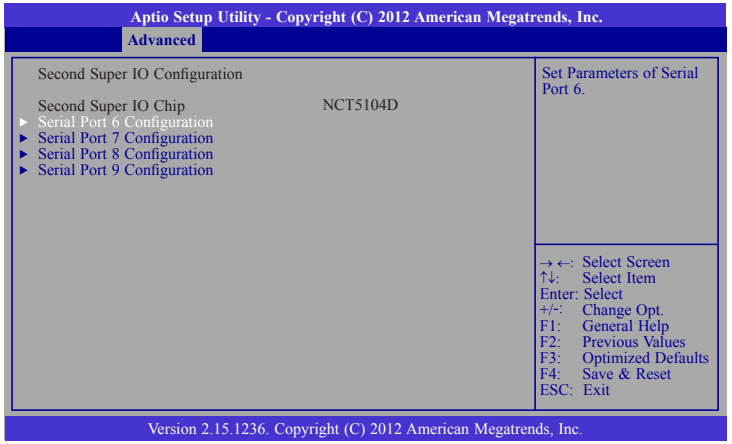
The range is 1-100%.

Case Open

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

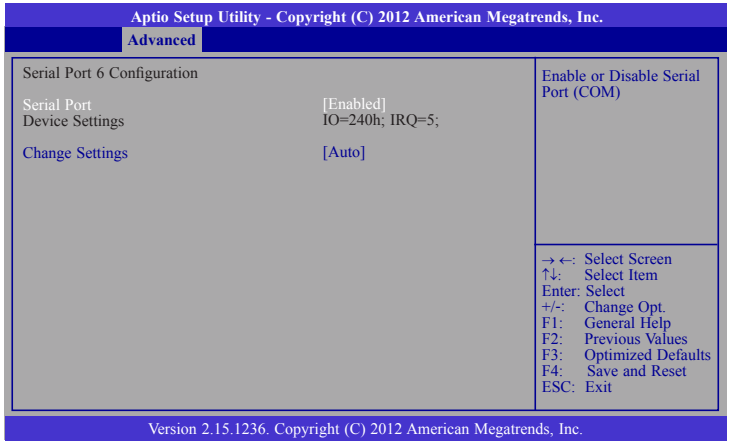
Second Super IO Configuration

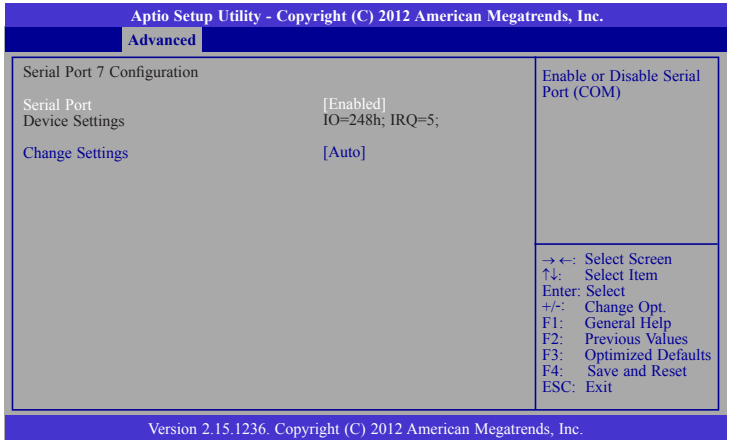
This section is used to configure the parameters of the system second super I/O chip.

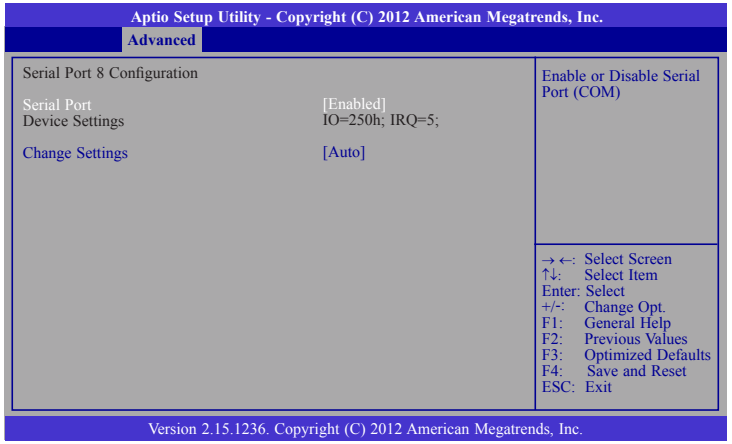


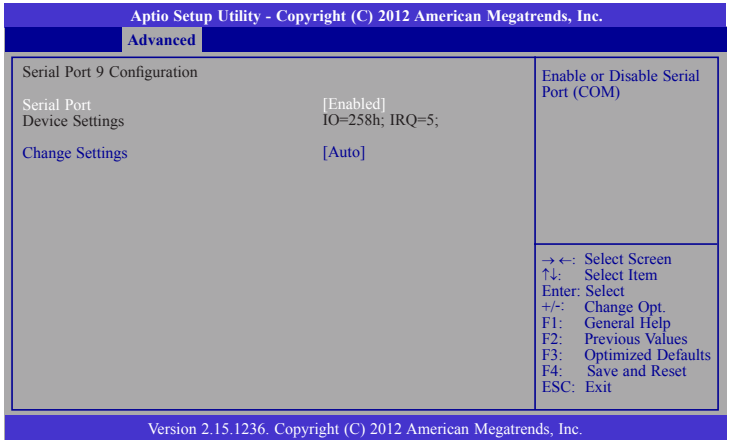
Serial Port 6 Configuration to Serial Port 9 Configuration

Sets the parameters of serial port 6 to serial port 9.









Serial Port

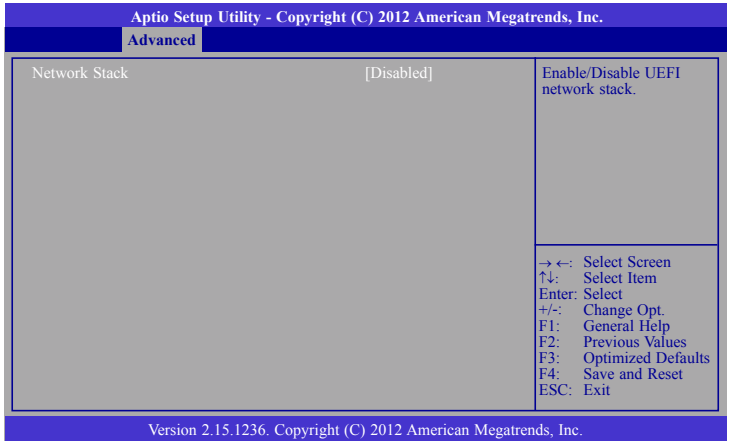
Enables or disables these serial ports (COM).

Change Settings

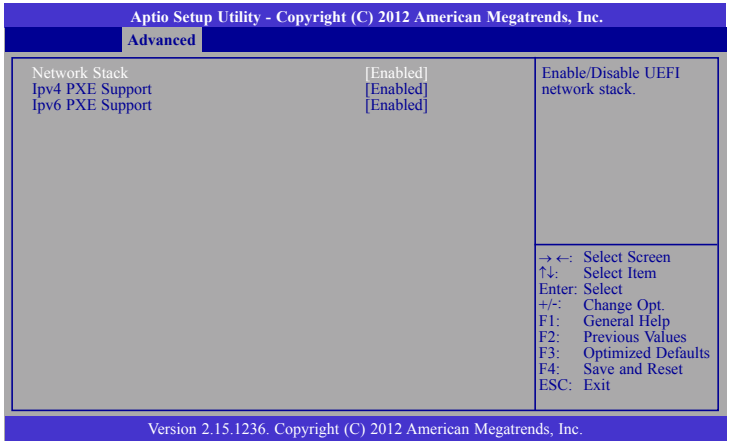
Selects the IO/IRQ settings for the super I/O device.

Network Stack

This section is used to enable or disable UEFI network stack.



When Network Stack is enabled, it will display the following information:



Ipv4 PXE Support

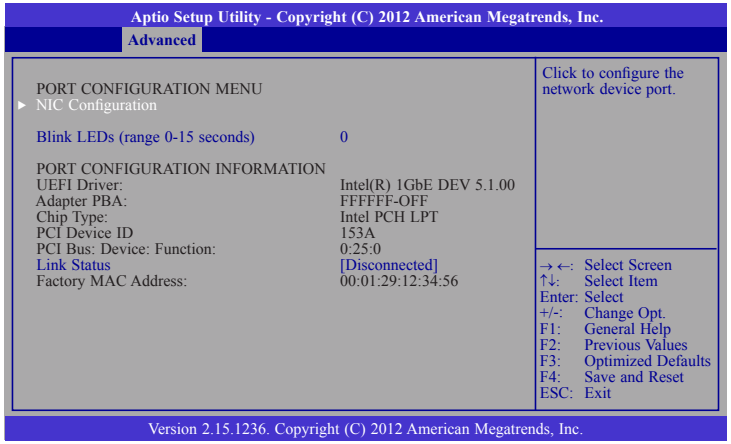
When enabled, Ipv4 PXE boot supports. When disabled, Ipv4 PXE boot option will not be created.

Ipv6 PXE Support

When enabled, Ipv6 PXE boot supports. When disabled, Ipv6 PXE boot option will not be created.

Intel(R) Ethernet Network Connection i217-LM - 00:01:29:...

This section is used to configure the parameters of the Gigabit Ethernet device.



NIC Configuration

This field is used to configure the network device.

Blink LEDs

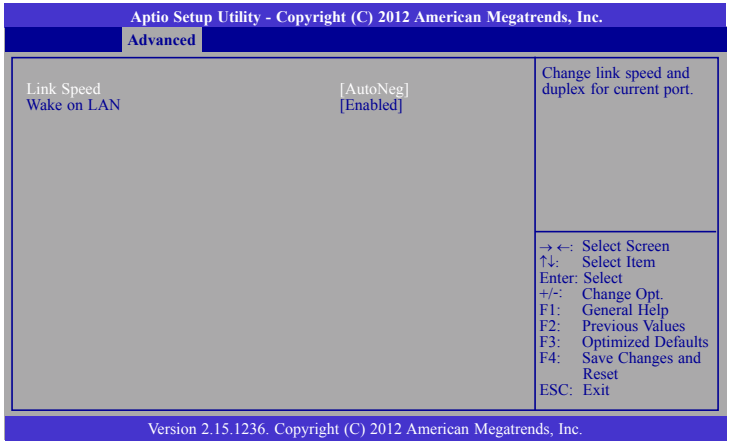
Blink LEDs for the specified duration (up to 15 seconds).

Link Status

This field indicates the link status of the network device.

NIC Configuration

This field is used to configure the network device.



Link Speed

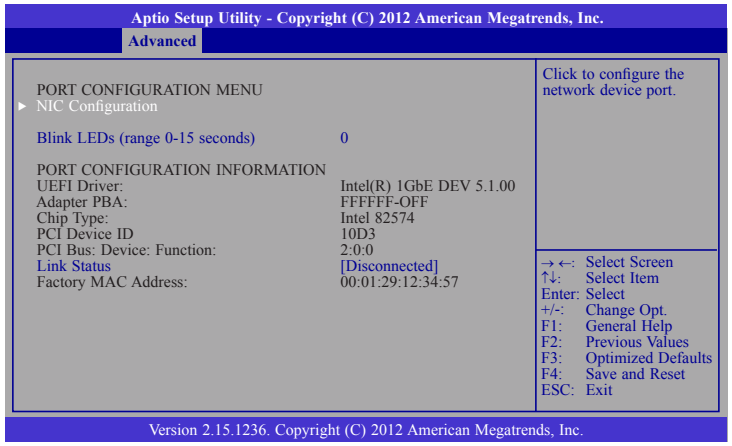
Selects the link speed and duplex for the current network port.

Wake on LAN

Enables this option to wake the system with a magic packet.

Intel(R) 82574L Gigabit Network Connection - 00:01:29:12...

This section is used to configure the parameters of the Gigabit Ethernet device.



Blink LEDs

Blink LEDs for the specified duration (up to 15 seconds).

Link Status

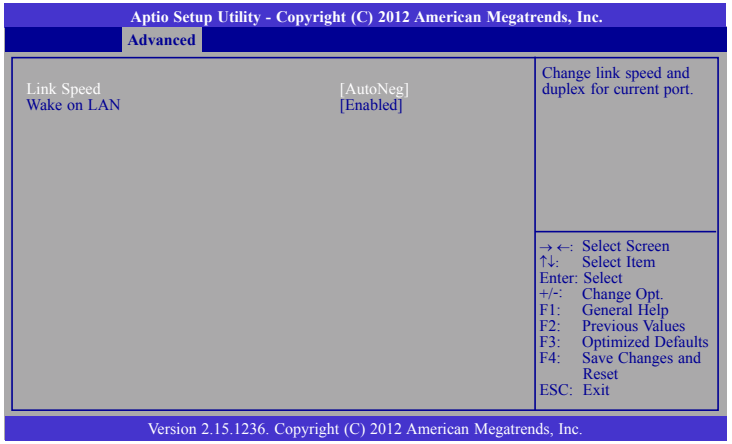
This field indicates the link status of the network device.

Alternate MAC Address

Alternates assigned MAC address of Ethernet port.

NIC Configuration

This field is used to configure the network device.



Link Speed

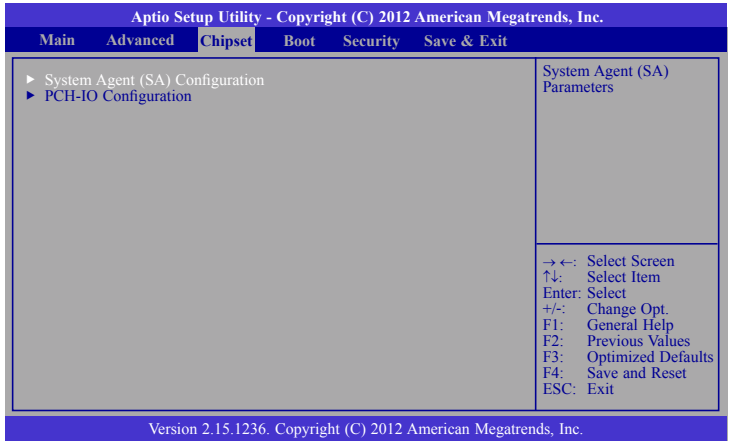
Selects the link speed and duplex for the current network port.

Wake on LAN

Enables this option to wake the system with a magic packet.

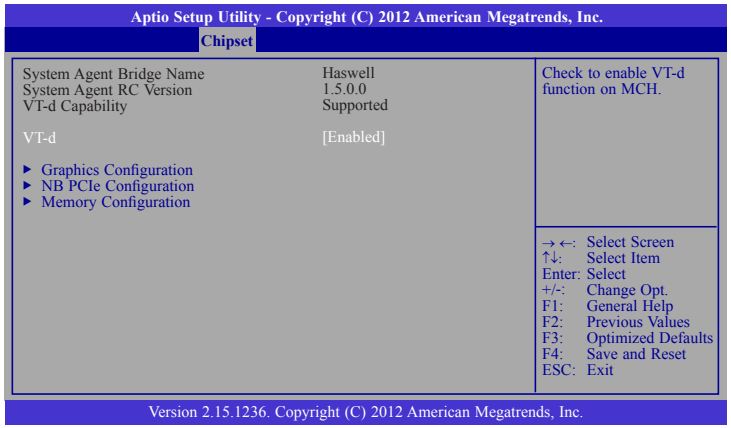
Chipset

This section configures relevant chipset functions.



System Agent (SA) Configuration

This section is used to configure the parameters of System Agent.

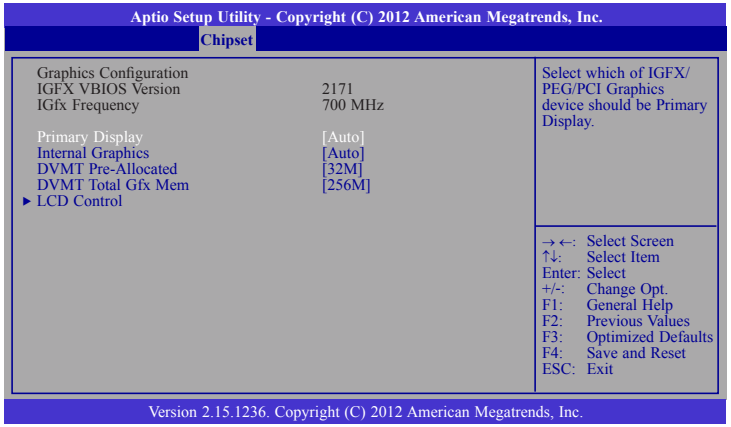


VT-d

Enables the VT-d function on MCH.

Graphics Configuration

This field configures the graphics settings.



Primary Display

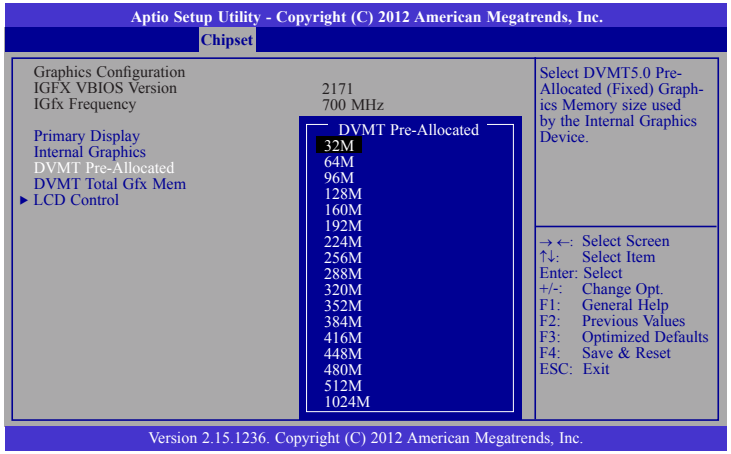
Auto When the system boots, it will automatically detects the display device.
IGFX When the system boots, it will first initialize the onboard VGA.
PEG When the system boots, it will first initialize the PCI Express x16 graphics card.

Internal Graphics

Keeps IGD enabled based on the setup options.

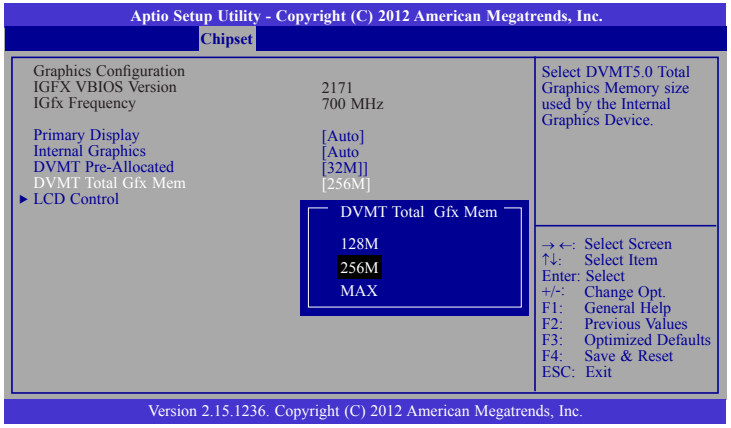
DVMT Pre-Allocated

Selects DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device. Please refer to the screen shown below.



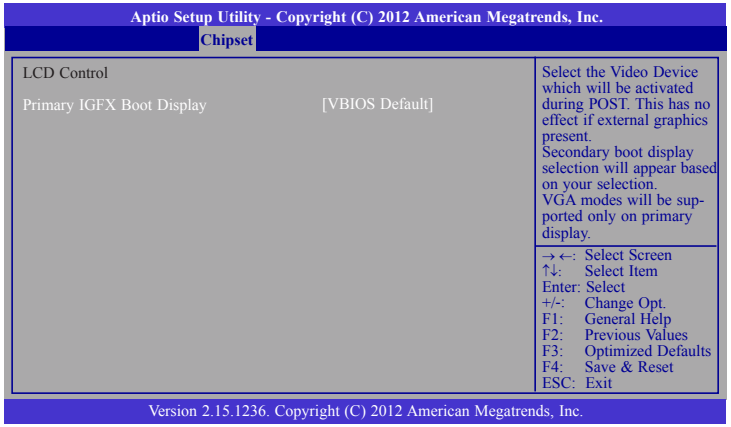
DVMT Total Gfx Mem

Selects DVMT 5.0 total graphics memory size used by the internal graphics device. Please refer to the screen shown below.

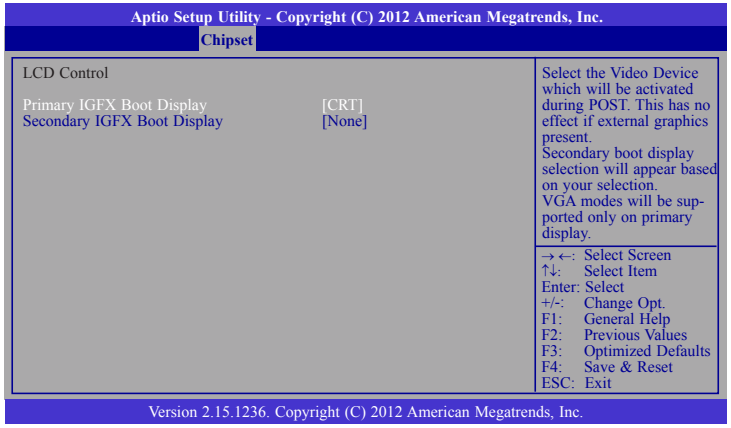


LCD Control

This field configures the LCD control.



When any device is selected in the Primary IGFX Boot Display, it will display the following information:

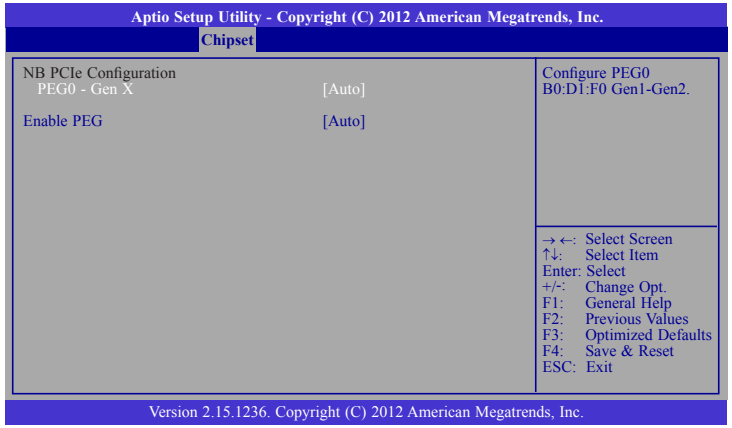


Secondary IGFX Boot Display

Selects the secondary display device.

NB PCIe Configuration

This field is used to configure the settings of NB PCI Express.

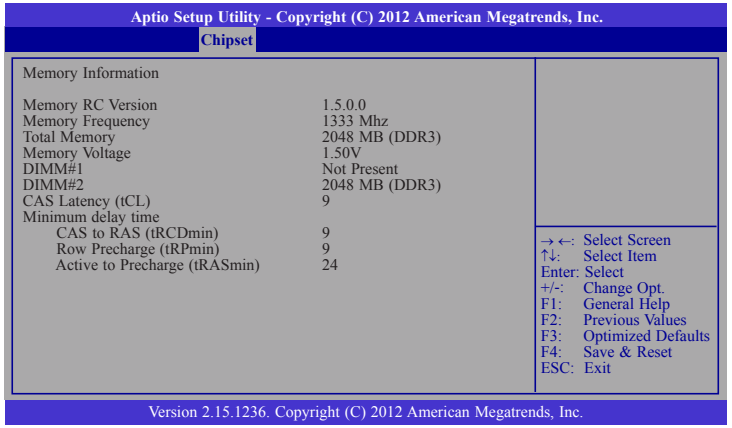


Enable PEG

Enables or disables the PEG.

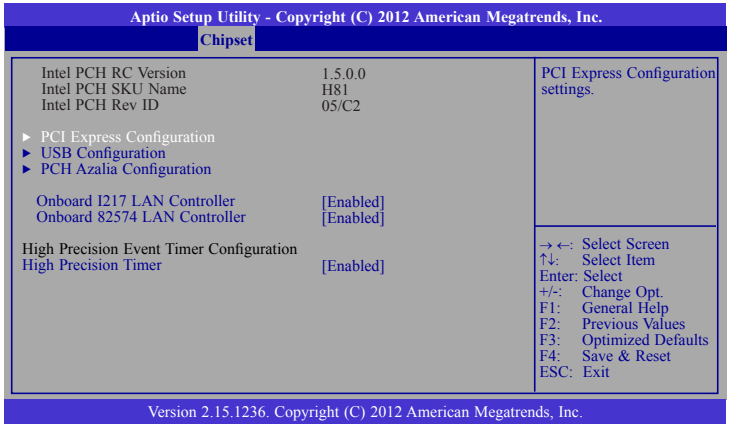
Memory Configuration

This field only displays the memory configuration.



PCH-IO Configuration

This section illustrates the PCH parameters.



Onboard I217 LAN Controller

Enables or disables the onboard I217 LAN controller.

Onboard 82574 LAN Controller

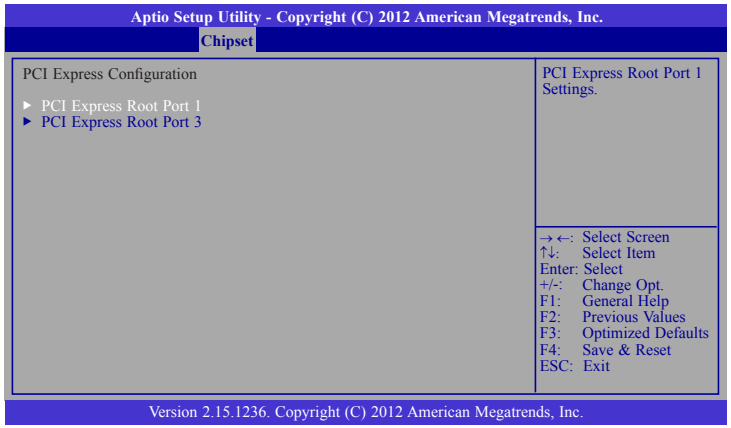
Enables or disables the onboard 82574 LAN controller

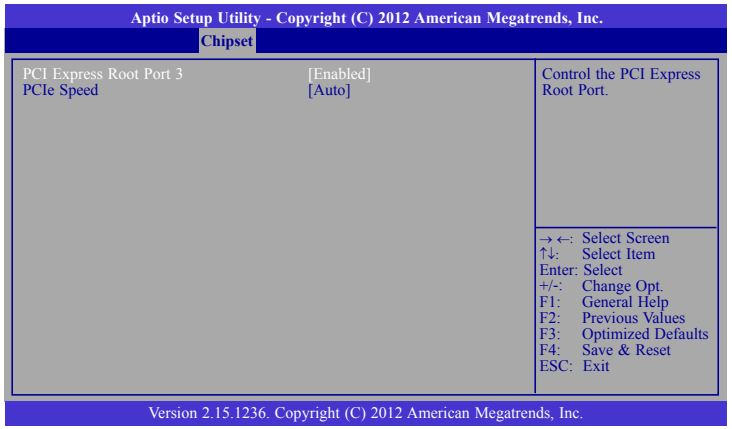
High Precision Timer

Enables or disables the High Precision Event Timer.

PCI Express Configuration

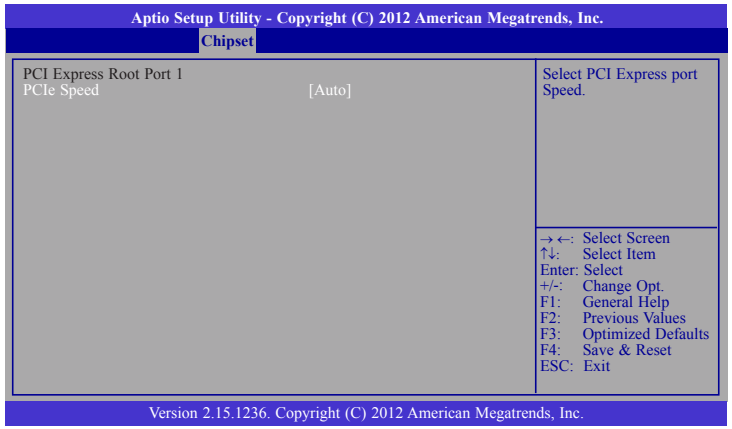
This field is used to configure the PCI Express settings.





PCI Express Root Port 1 and 3

Controls the PCI Express Root Port.

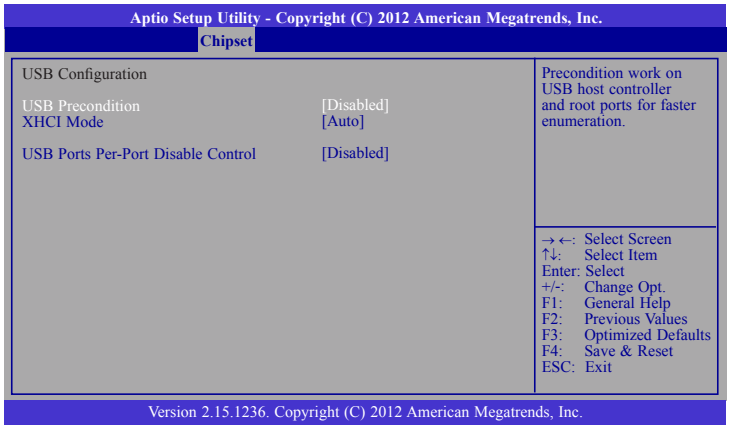


PCIe Speed

Selects the speed of PCI Express port: Auto, Gen 1 or Gen 2.

USB Configuration

This field is used to configure the USB settings.

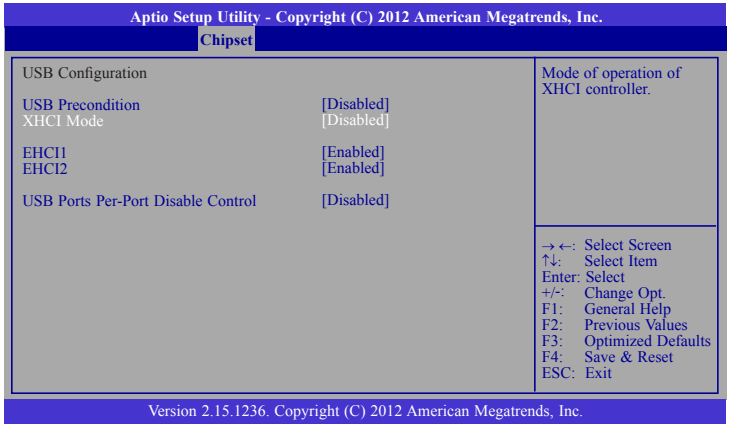


USB Precondition

Precondition works on USB host controller and root ports for faster enumeration.

XHCI Mode

Selects the operation mode of XHCI controller. These options are Auto, Enabled, and Disabled. When Disabled is selected in the XHCI Mode, it will display the following information:

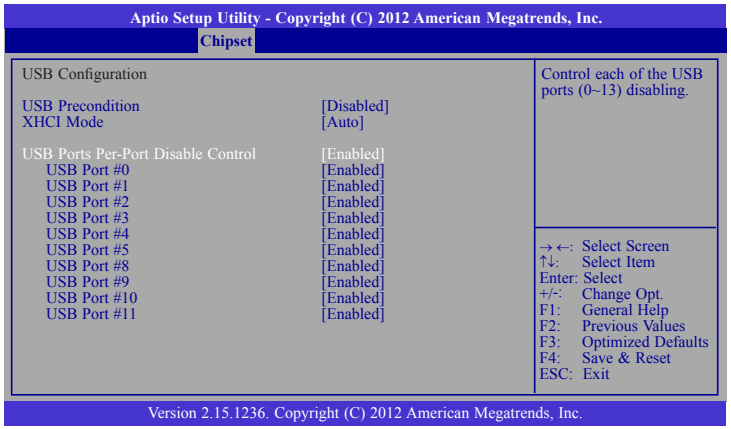


EHCI 1 and EHCI 2

These fields are used to control the functions of USB EHCI (USB 2.0) controllers. One EHCI controller must always be enabled.

USB Ports Per-Port Disable Control

This field is used to control each of the USB ports(0~13) disabling. When enabled, it will display the following information:

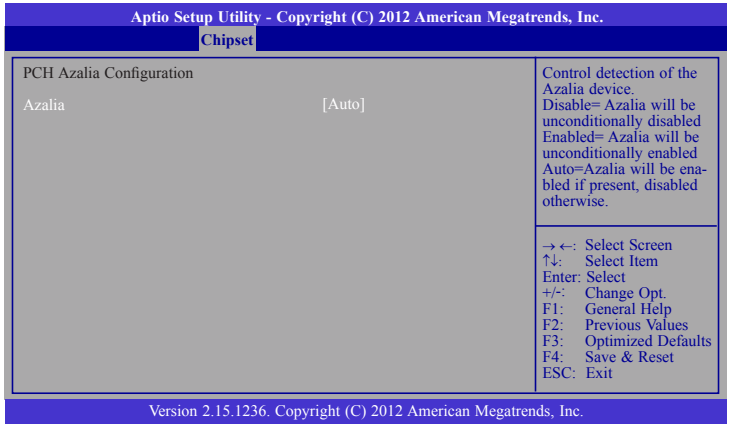


USB Port #0/1/2/3/4/5/8/9/10/11

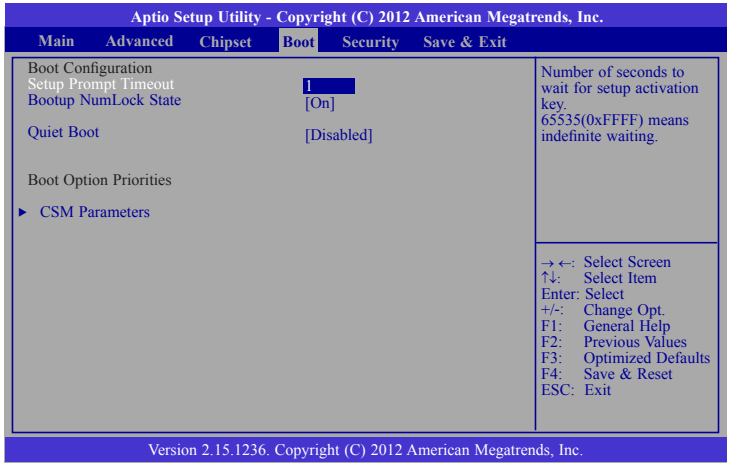
Enables or disables these USB ports.

PCH Azalia Configuration

This field is used to configure the PCH Azalia settings.



Boot



Setup Prompt Timeout

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

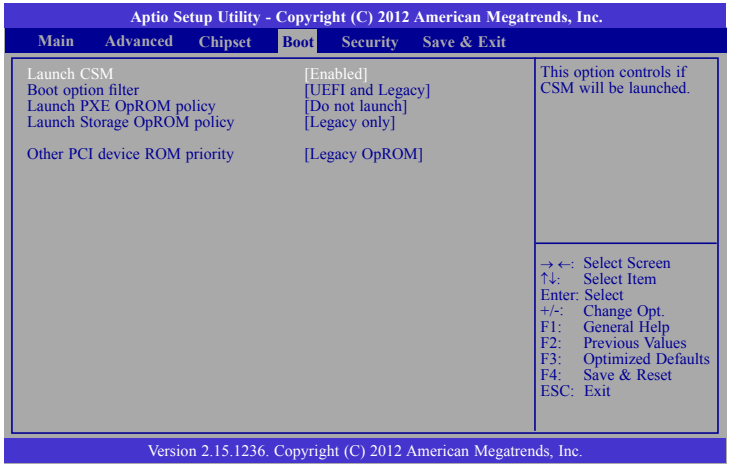
Bootup NumLock State

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.

CSM Parameters



Boot option filter

This option controls what devices system can be boot to.

Launch PXE OpROM policy

Controls the execution of UEFI and legacy PXE OpROM.

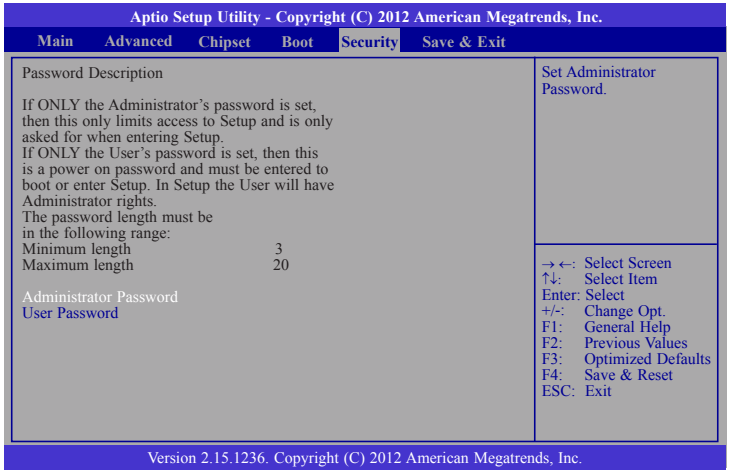
Launch Storage OpROM policy

Controls the execution of UEFI and legacy storage OpROM.

Other PCI device ROM priority

For PCI devices other than Network, Mass Storage, or Video defines which OpROM to launch.

Security



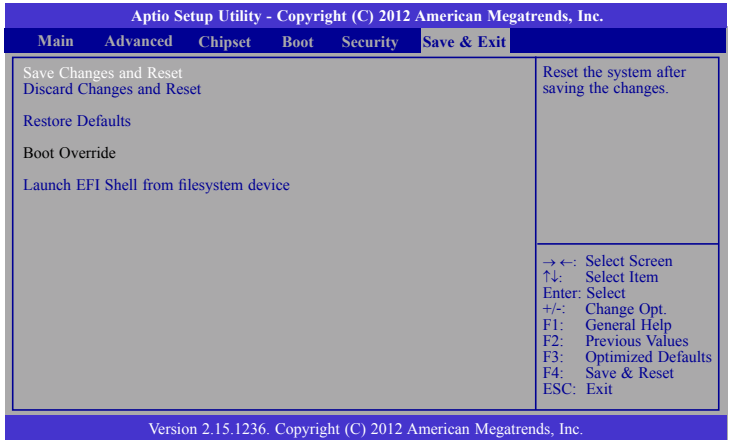
Administrator Password

Sets the administrator password.

User Password

Sets the user password.

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.

Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

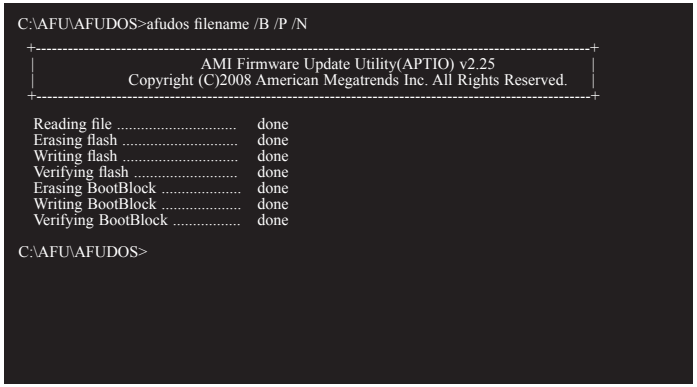
Updating the BIOS

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>.



Notice: BIOS SPI ROM

1. The Intel® Management Engine has already been integrated into this system board. Due to the safety concerns, the BIOS (SPI ROM) chip cannot be removed from this system board and used on another system board of the same model.

2. The BIOS (SPI ROM) on this system board must be the original equipment from the factory and cannot be used to replace one which has been utilized on other system boards.

3. If you do not follow the methods above, the Intel® Management Engine will not be updated and will cease to be effective.

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

Chapter 7 - Supported Software

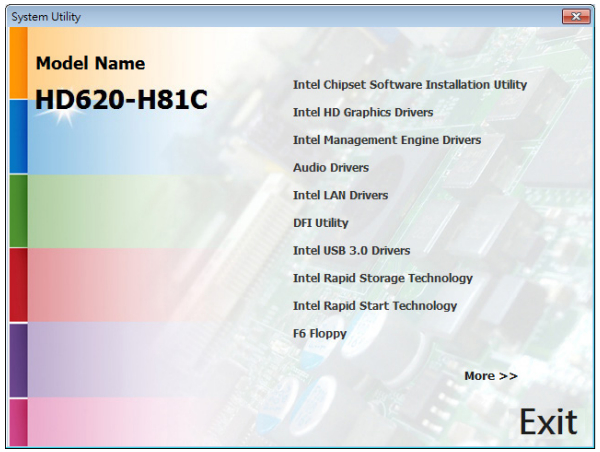
Some devices of the system require drivers from hardware manufactures to operate properly. The system may come with a CD/DVD that contains drivers, utilities and software applications. Insert the CD into a CD-ROM drive. The auto-run screen (Mainboard Utility CD) will appear. If the "Autorun" does not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

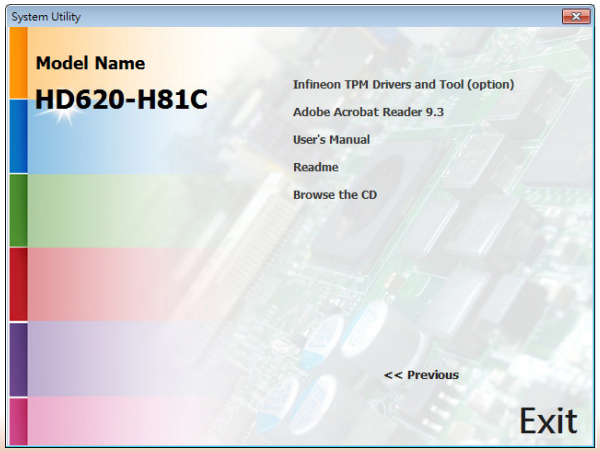
If your product package does not include a CD/DVD, you can download the latest drivers from the DFI Download Center:

http://www.dfi.com/DownloadCenter

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

For Windows Embedded Standard 7





Intel Chipset Software Installation Utility

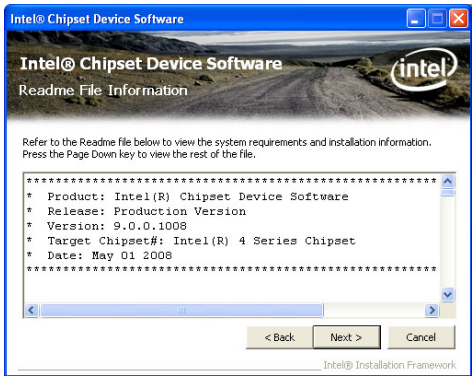
The Intel Chipset Software Installation Utility is used for updating Windows® INF files so that the Intel chipset can be recognized and configured properly in the system.

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

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

2. Read the license agreement then click Yes.

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

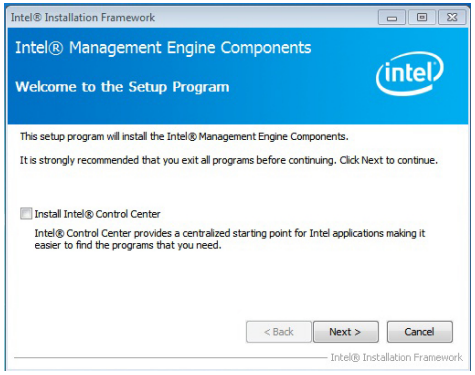


4. Click Finish to exit setup.

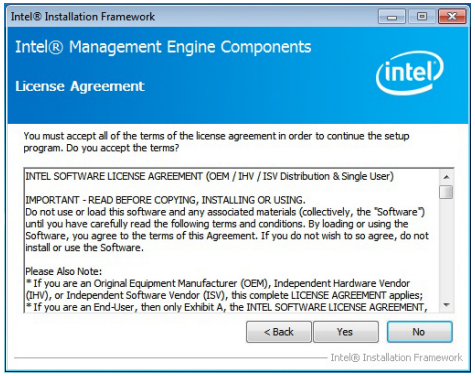
Intel Management Engine Drivers

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

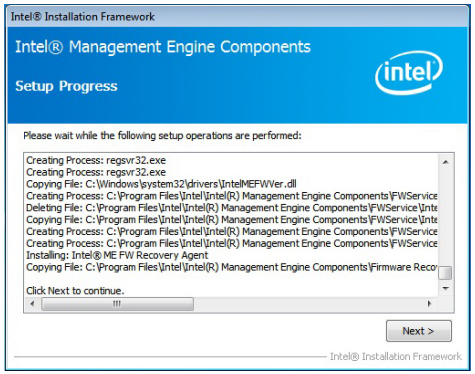
1. Setup is ready to install the driver. Click Next.



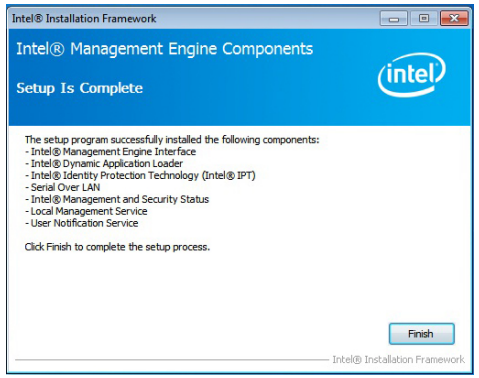
2. Read the license agreement then click Yes.



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



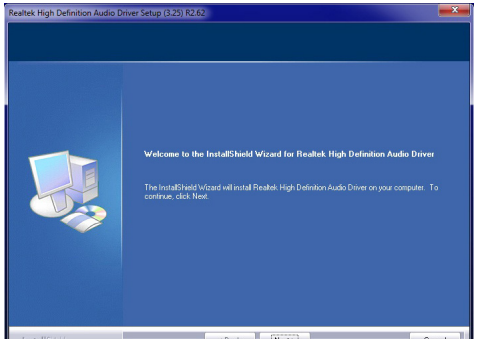
4. After completing installation, click Finish.



Audio Drivers

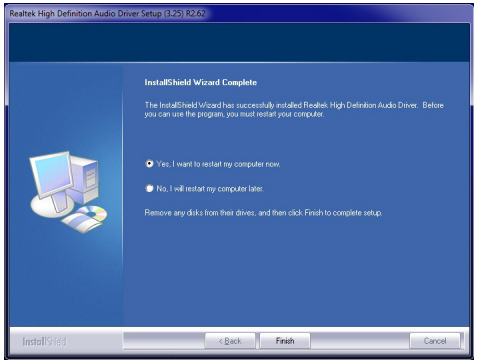
To install the driver, click "Audio Drivers" on the main menu.

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.

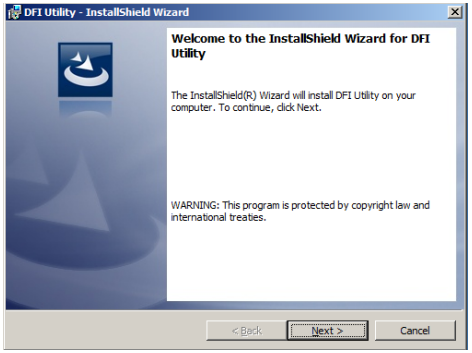


DFI Utility

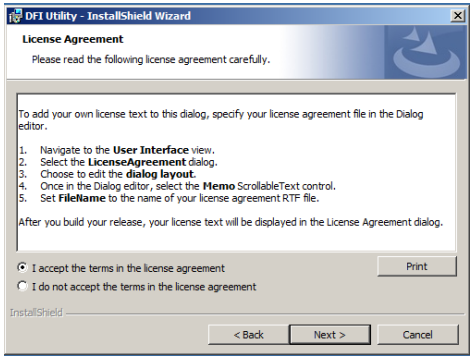
DFI Utility provides information about the board, Watchdog,and DIO. To access the utility, click "DFI Utility" on the main menu.

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

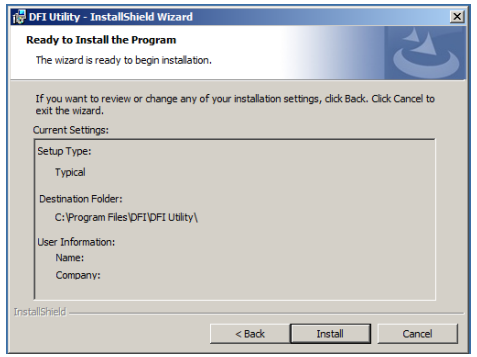
1. Setup is ready to instal the DFI Utility driver Click "Next".



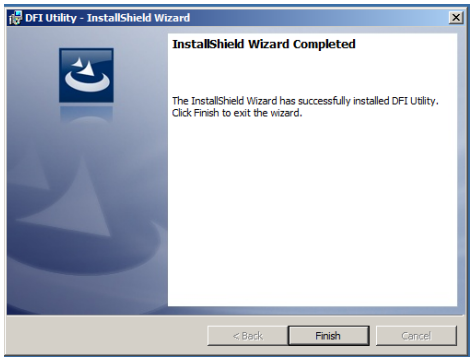
2. Click "I accept the terms in the license agreement" then click "Next".



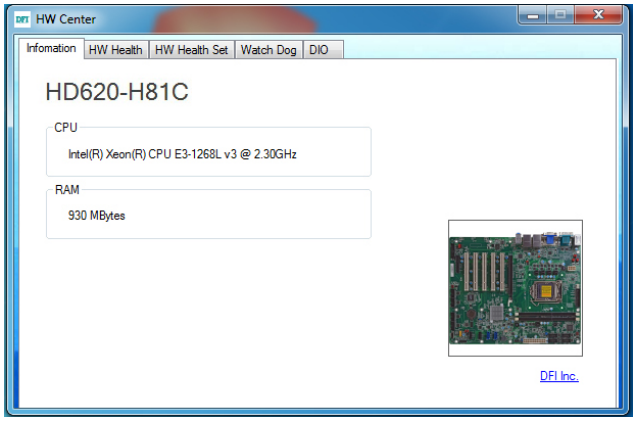
3. Click "Install" to begin the installation.



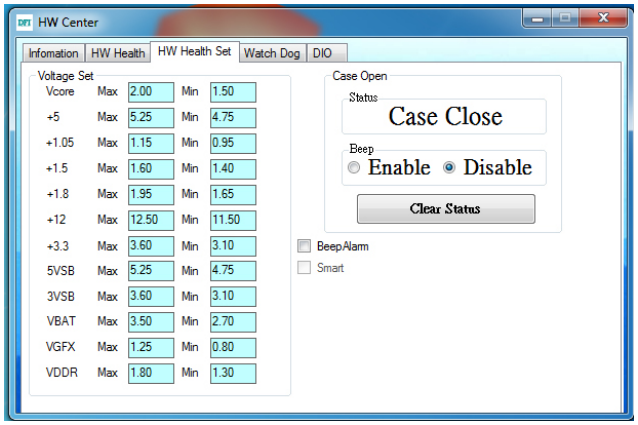
4. After completing installation, click "Finish".



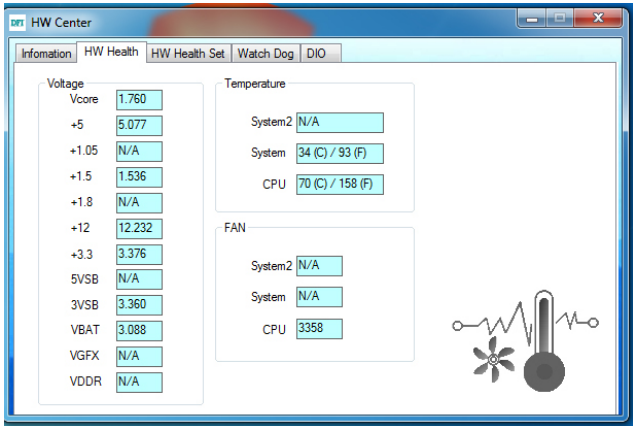
The DFI Utility icon will appear on the desktop. Double-click the icon to open the utility.



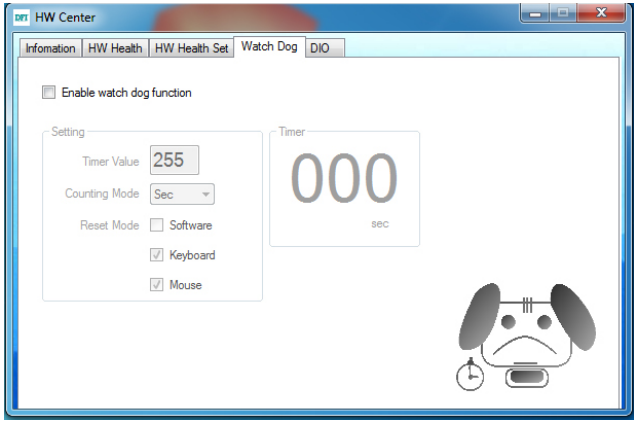
Information



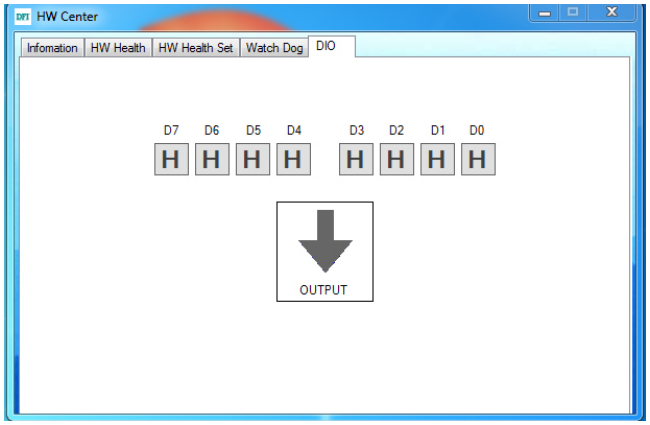
HW Health Set



HW Health



WatchDog

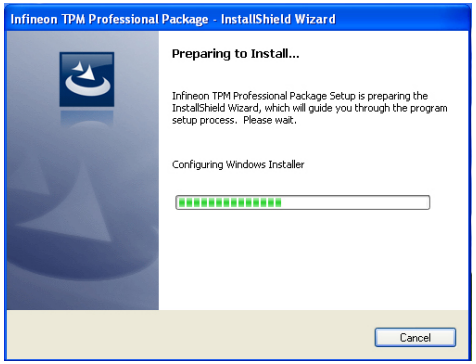


DIO

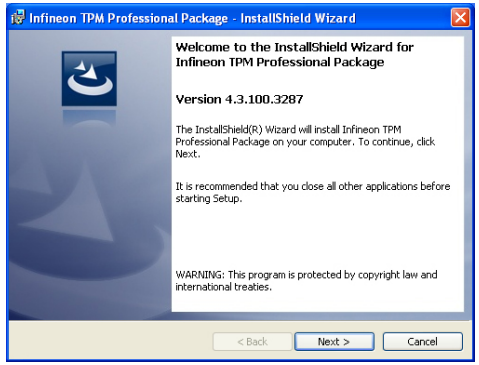
Infineon TPM Driver and Tool (optional)

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

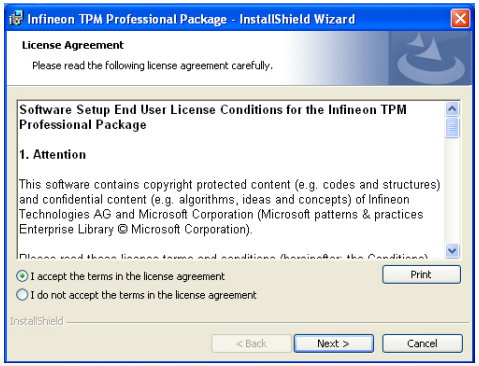
1. The setup program is preparing to install the driver.



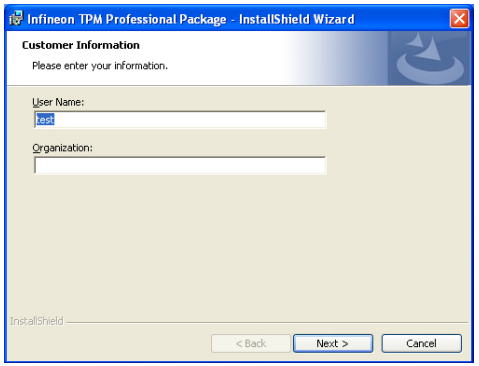
2. The setup program is now ready to install the utility. Click Next.



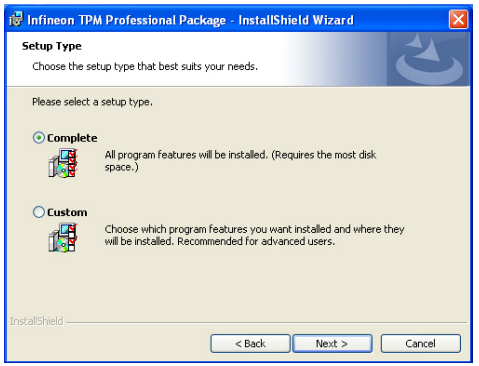
3. Click "I accept the terms in the license agreement" and then click "Next".



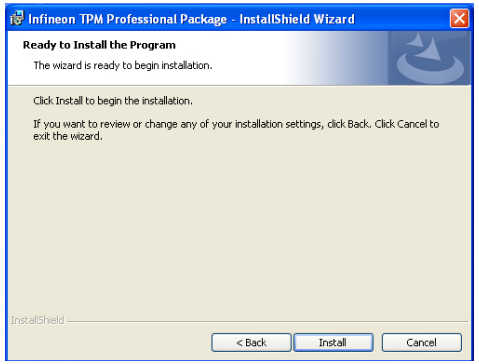
4. Enter the necessary information and then click Next.



5. Select a setup type and then click Next.

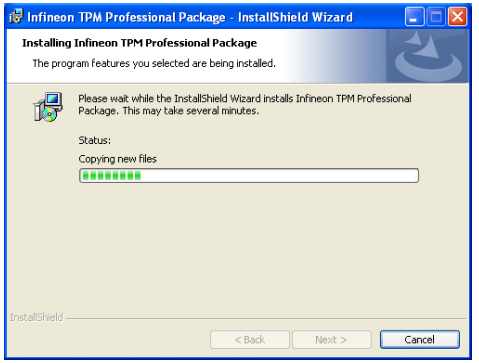


6. Click Install.

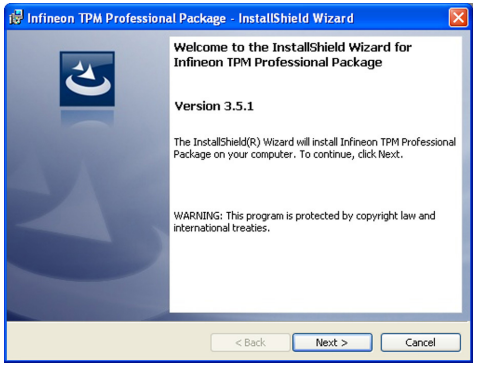


7. TPM requires installing the Microsoft Visual C++ package prior to installing the utility. Click Install.

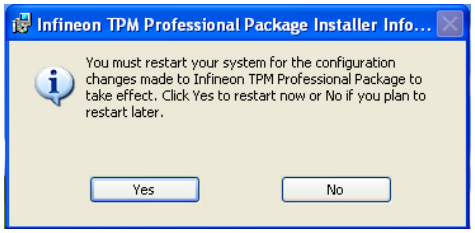
8. The setup program is currently installing the Microsoft Visual C++ package.



9. Click Finish.



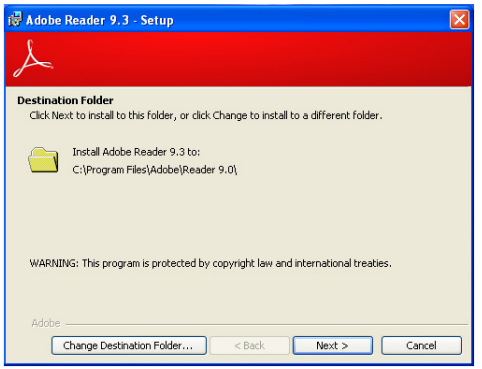
10. Click "Yes" to restart your system.



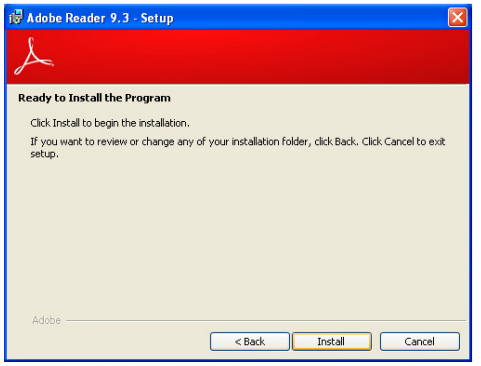
Adobe Acrobat Reader 9.3

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

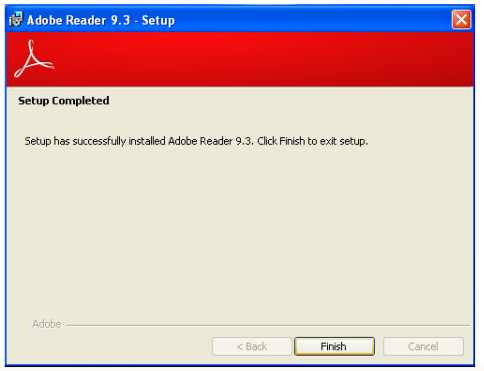
1. Click Next to install or click Change Destination Folder to select another folder.



2. Click Install to begin installation.



3. Click Finish to exit installation.



Appendix A - System Error Message

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

Error Messages

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

CMOS BATTERY HAS FAILED

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

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

CMOS CHECKSUM ERROR

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

DISPLAY SWITCH IS SET INCORRECTLY

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

FLOPPY DISK(S) fail (80)

Unable to reset floppy subsystem.

FLOPPY DISK(S) fail (40)

Floppy type mismatch.

Hard Disk(s) fail (80)

HDD reset failed.

Hard Disk(s) fail (40)

HDD controller diagnostics failed.

Hard Disk(s) fail (20)

HDD initialization error.

Hard Disk(s) fail (10)

Unable to recalibrate fixed disk.

Hard Disk(s) fail (08)

Sector Verify failed.

Keyboard is locked out - Unlock the key

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

Keyboard error or no keyboard present

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

Manufacturing POST loop

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

BIOS ROM checksum error - System halted

The checksum of ROM address F0000H-FFFFFH is bad.

Memory test fail

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

Appendix B - Troubleshooting Checklist

Troubleshooting Checklist

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

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

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

Monitor/Display

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

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

The picture seems to be constantly moving.

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

The screen seems to be constantly wavering.

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

Power Supply

When the computer is turned on, nothing happens.

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

Floppy Drive

The computer cannot access the floppy drive.

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

Hard Drive

Hard disk failure.

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

Excessively long formatting period.

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

Serial Port

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

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

Keyboard

Nothing happens when a key on the keyboard was pressed.

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

System Board

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