



HD332-H81 MicroATX Industrial Motherboard User's Manual

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Trademarks

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

FCC and DOC Statement on Class B

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

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

Notice:

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

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About this Manual

This manual can be downloaded from the website, or acquired as an electronic file included in the optional CD/DVD. The manual is subject to change and update without notice, and may be based on editions that do not resemble your actual products. Please visit our website or contact our sales representatives for the latest editions.

Warranty

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

Static Electricity Precautions

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

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



Important:

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

Safety Measures

To avoid damage to the system:

• Use the correct AC input voltage range.

To reduce the risk of electric shock:

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

About the Package

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

- One HD332 motherboard
- One Serial ATA data cable
- One I/O shield
- One QR (Quick Reference)

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

Optional Items

- USB port cable
- COM port cable
- Serial ATA data cable
- I/O shield
- Heat sink with fan

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

Before Using the System Board

Before using the system board, prepare basic system components.

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

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

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

Chapter 1 - Introduction Specifications

Processor	 LGA 1150 socket for: 4th Generation Intel[®] Core[™] processors Intel[®] Core[™] i7-4790S (8M Cache, up to 4.0 GHz); 65W Intel[®] Core[™] i7-4770S (8M Cache, up to 3.9 GHz); 65W Intel[®] Core[™] i7-4770TE (8M Cache, up to 3.3 GHz); 45W Intel[®] Core[™] i5-4590S (6M Cache, up to 3.3 GHz); 35W Intel[®] Core[™] i5-4590T (6M Cache, up to 3.0 GHz); 35W Intel[®] Core[™] i5-4570S (6M Cache, up to 3.0 GHz); 35W Intel[®] Core[™] i5-4570TE (4M Cache, up to 3.3 GHz); 35W Intel[®] Core[™] i3-4360 (4M Cache, a.5 GHz); 54W Intel[®] Core[™] i3-4350T (4M Cache, 3.1 GHz); 35W Intel[®] Core[™] i3-4330TE (4M Cache, 3.6 GHz); 55W Intel[®] Core[™] i3-4330TE (4M Cache, 3.6 GHz); 55W Intel[®] Core[™] i3-4330TE (4M Cache, 2.6 GHz); 55W Intel[®] Core[™] i3-4330TE (4M Cache, 2.4 GHz); 55W Intel[®] Core[™] i3-4320TE (2M Cache, 2.4 GHz); 55W Intel[®] Pentium[®] G3320TE (3M Cache, 2.3 GHz); 53W Intel[®] Pentium[®] G320TE (2M Cache, 2.3 GHz); 53W Intel[®] Celeron[®] G1820 (2M Cache, 2.2 GHz); 35W Intel[®] Celeron[®] G1820TE (2M Cache, 2.2 GHz); 35W Zntel[®] Celeron[®] G1820TE (2M Cache, 2.2 GHz); 35W
Chipset	Intel [®] H81 Express Chipset
Super I/O Address	• NCT6102/4Eh (HD332-H81B) • NCT6106/4Eh (HD332-H81X)
System Memory	 Two 240-pin DDR3 DIMM sockets Supports DDR3 1333/1600MHz when operating at 1.5V Supports dual channel memory interface Supports up to 16GB system memory DRAM device technologies: 1Gb, 2Gb and 4Gb DDR3 DRAM technologies are supported for x8 and x16 devices, unbuffered, non-ECC
Expansion Slots	 1 PCIe x16 Gen 3 slot (PCIe 3.0) 2 PCIe x1 Gen 2 slots (PCIe 2.0) 1 PCI slot (PCI 2.3)
Graphics	 Intel[®] HD Graphics Display ports: 1 VGA, 1 VGA/DVI-I (DVI-D signal) VGA: 24-bit, resolution up to 1920x1200 @60Hz DVI-D: resolution up to 1920x1200 @60Hz Supports 20 Graphics Execution Units (EUS) Intel[®] Clear Video Technology DirectX Video Acceleration (DXVA) support for accelerating video processing Supports DirectX 11.1 and OpenGL 4.0
Audio	 Realtek ALC888 5.1-channel High Definition Audio Audio outputs: Mic-in/Center+Subwoofer, Line-in/Surround and Line-out
LAN	 2 Intel[®] 82574L Gigabit Ethernet Controllers; or 2 Intel[®] I210 PCI Express Gigabit Ethernet controllers* (optional) Integrated 10/100/1000 transceiver Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
Serial ATA	 2 SATA 3.0 ports with data transfer rate up to 6Gb/s 2 SATA 2.0 ports with data transfer rate up to 3Gb/s SATA port 1 provides adequate space for SATA DOM Integrated Advanced Host Controller Interface (AHCI) controller

Rear Panel I/O • 1 mini-DIN-6 port for PS/2 mouse/keyboard Ports • 2 DB-9 RS232 serial ports • 2 VGA ports; or 1 VGA and 1 DVI-I ports • 2 RJ45 LAN ports • 4 USB 3.0 ports • 2 USB 2.0 ports • 1 USA to the formation of the formatio of the formation of the formatio of the for	
Line-in/Surround, Line-out, Mic-in/Center+Subwoofer jacks	
I/O Connectors 2 connectors for 4 external USB 2.0 ports and 1 vertical USB 2.0/1.1 port; or 3 connectors for 6 external USB 2.0 ports* (optional) 8 connectors for 8 external serial ports (2.0mm pitch) - 1 RS232/RS422/RS485 (RS232 and/or power)* (optional) - 7 RS232 1 parallel connector 4 Serial ATA connectors 1 24-pin ATX power connector 1 chassis intrusion connector 1 chassis intrusion connector 1 front panel connector 2 fan connector 2 fan connectors 	
USB • XHCI Host Controller supports up to 2 super speed USB 3.0 ports Interface	
Trusted Platform • Provides a Trusted PC for secure transactions Module - TPM* • Provides software license protection, enforcement and password protection (optional) • Provides software license protection	tion
BIOS • AMI BIOS - 64Mbit SPI BIOS	
WatchDog Timer • Software programmable from 1 to 255 seconds	
Energy Efficient • Supports ErP Lot6 power saving* (optional) Design • Supports ACPI • Supports ACPI • System Power Management • Wake-On-Events include: • Wake-On-Events include: • Wake-On-PS/2 KB/Mouse • Wake-On-LAN • RTC timer to power-on the system • CPU stopped clock control • AC power failure recovery • AC	
Damage Free Intelligence • Monitors CPU/system temperature and overheat alarm • Monitors VCORE/5V/3.3V/V_DIMM/12V/3VSB/VBAT voltages and failure • Monitors CPU/system fan speed and failure alarm • Read back capability that displays temperature, voltage and fan speed	alarm
• HD332-H81X (VGA+DVI/VGA): 69.10W with i7-4770S at 3.10GHz and 2	2x 4GB

Temperature	 Operating: 0°C to 60°C Storage: -20°C to 85°C
Humidity	• 5% to 90%
OS Support	 Windows XP Professional x86 & SP3 (32-bit) (limited function) Windows 7 Ultimate x86 & SP1 (32-bit) Windows 7 Ultimate x64 & SP1 (64-bit) Windows 8 Enterprise x86 (32-bit) Windows 8 Enterprise x64 (64-bit)
Dimensions	 microATX form factor 244mm (9.6") x 244mm (9.6")
Certification	• CE, FCC Class B, RoHS

Note:

*Optional and is not supported in standard model. Please contact your sales representative for more information.

Features

Watchdog Timer

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

• DDR3

DDR3 delivers increased system bandwidth and improved performance. It offers peak data transfer rate of up to 16Gb/s bandwidth. The advantages of DDR3 are its higher bandwidth and its increase in performance at a lower power than DDR2.

• Graphics

The integrated Intel[®] HD graphics engine delivers an excellent blend of graphics performance and features to meet business needs. It provides excellent video and 3D graphics with outstanding graphics responsiveness. These enhancements deliver the performance and compatibility needed for today's and tomorrow's business applications.

• PCI Express

PCI Express is a high bandwidth I/O infrastructure that possesses the ability to scale speeds by forming multiple lanes. The PCI Express architecture also supports high performance graphics infrastructure by enhancing the capability of a PCIe x16 Gen 3 at 16GB/s bandwidth.

Serial ATA

Serial ATA is a storage interface that is compliant with SATA 1.0a specification. With speed of up to 3Gb/s (SATA 2.0) and 6Gb/s (SATA 3.0), it improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s. The bandwidth of the SATA 3.0 will be limited by carrier board design.

• Gigabit LAN

Two Intel[®] Gigabit LAN controllers, Intel[®] 82574L Gigabit Ethernet controllers or Intel[®] I210 PCI Express Gigabit Ethernet controllers (optional), support up to 1Gbps data transmission.

Audio

The Realtek ALC888 audio codec provides 5.1-channel High Definition audio output.

Wake-On-LAN

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



Important: The 5V_standby power source of your power supply must support \geq 720mA.

Wake-On-USB

This function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state.

Important:

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

RTC Timer

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

• ACPI STR

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

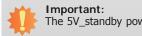
With the Suspend to RAM function enabled, you can power-off the system at once by pressing the power button or selecting "Standby" when you shut down Windows® without having to go through the sometimes tiresome process of closing files, applications and operating system. This is because the system is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



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Wake-On-PS/2

This function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system.



The 5V_standby power source of your power supply must support \geq 720mA.

Power Failure Recovery

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

• USB

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

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Appendix P. Troublesheeting
Appendix B - Troubleshooting

About this Manual

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- 2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.
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To avoid damage to the system:

• Use the correct AC input voltage range.

To reduce the risk of electric shock:

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

About the Package

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

- One HD332 motherboard
- One Serial ATA data cable
- One I/O shield
- One DVD
- One QR (Quick Reference)

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

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Audio	 Realtek ALC888 5.1-channel High Definition Audio Audio outputs: Mic-in/Center+Subwoofer, Line-in/Surround and Line-out
LAN	 2 Intel[®] 82574L Gigabit Ethernet Controllers; or 2 Intel[®] I210 PCI Express Gigabit Ethernet controllers* (optional) Integrated 10/100/1000 transceiver Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
Serial ATA	 2 SATA 3.0 ports with data transfer rate up to 6Gb/s 2 SATA 2.0 ports with data transfer rate up to 3Gb/s SATA port 1 provides adequate space for SATA DOM Integrated Advanced Host Controller Interface (AHCI) controller

Rear Panel I/O • 1 mini-DIN-6 port for PS/2 mouse/keyboard Ports • 2 DB-9 RS232 serial ports • 2 VGA ports; or 1 VGA and 1 DVI-I ports • 2 RJ45 LAN ports • 4 USB 3.0 ports • 2 USB 2.0 ports • 1 USA to the formation of the formatio of the formation of the formatio of the for	
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WatchDog Timer • Software programmable from 1 to 255 seconds	
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• HD332-H81X (VGA+DVI/VGA): 69.10W with i7-4770S at 3.10GHz and 2	2x 4GB

Temperature	 Operating: 0°C to 60°C Storage: -20°C to 85°C
Humidity	• 5% to 90%
OS Support	 Windows XP Professional x86 & SP3 (32-bit) (limited function) Windows 7 Ultimate x86 & SP1 (32-bit) Windows 7 Ultimate x64 & SP1 (64-bit) Windows 8 Enterprise x86 (32-bit) Windows 8 Enterprise x64 (64-bit)
Dimensions	• microATX form factor • 244mm (9.6") x 244mm (9.6")

Note:

*Optional and is not supported in standard model. Please contact your sales representative for more information.

Features

Watchdog Timer

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

• DDR3

DDR3 delivers increased system bandwidth and improved performance. It offers peak data transfer rate of up to 16Gb/s bandwidth. The advantages of DDR3 are its higher bandwidth and its increase in performance at a lower power than DDR2.

• Graphics

The integrated Intel[®] HD graphics engine delivers an excellent blend of graphics performance and features to meet business needs. It provides excellent video and 3D graphics with outstanding graphics responsiveness. These enhancements deliver the performance and compatibility needed for today's and tomorrow's business applications.

• PCI Express

PCI Express is a high bandwidth I/O infrastructure that possesses the ability to scale speeds by forming multiple lanes. The PCI Express architecture also supports high performance graphics infrastructure by enhancing the capability of a PCIe x16 Gen 3 at 16GB/s bandwidth.

Serial ATA

Serial ATA is a storage interface that is compliant with SATA 1.0a specification. With speed of up to 3Gb/s (SATA 2.0) and 6Gb/s (SATA 3.0), it improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s. The bandwidth of the SATA 3.0 will be limited by carrier board design.

• Gigabit LAN

Two Intel[®] Gigabit LAN controllers, Intel[®] 82574L Gigabit Ethernet controllers or Intel[®] I210 PCI Express Gigabit Ethernet controllers (optional), support up to 1Gbps data transmission.

Audio

The Realtek ALC888 audio codec provides 5.1-channel High Definition audio output.

Wake-On-LAN

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



Important: The 5V_standby power source of your power supply must support \geq 720mA.

Wake-On-USB

This function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state.

Important:

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

RTC Timer

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

• ACPI STR

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

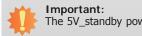
With the Suspend to RAM function enabled, you can power-off the system at once by pressing the power button or selecting "Standby" when you shut down Windows® without having to go through the sometimes tiresome process of closing files, applications and operating system. This is because the system is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



Important: The 5V_standby power source of your power supply must support \geq 720mA.

Wake-On-PS/2

This function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system.



The 5V_standby power source of your power supply must support \geq 720mA.

Power Failure Recovery

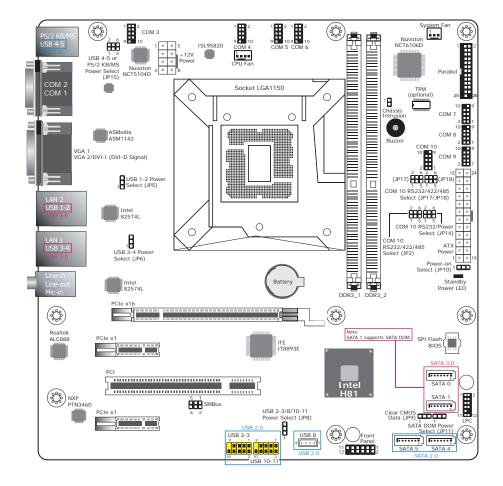
When power returns after an AC power failure, you may choose to either power-on the system manually or let the system power-on automatically.

• USB

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

Chapter 2 - Hardware Installation

Board Layout



HD332-H81B has LAN 1 only. .

HD330-H81X: 10 COM (COM 1 to COM 10). HD330-H81B: 2 COM (COM 1 and COM 2).



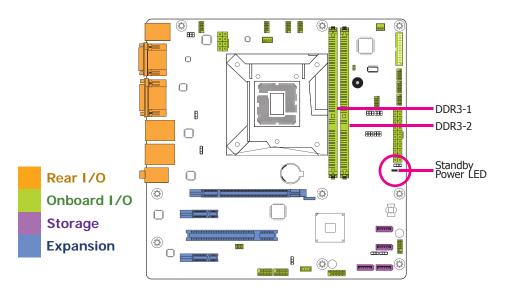
Important:

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

System Memory

Important:

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



Features

9

- Two 240-pin DDR3 DIMM sockets
- Supports DDR3 1333/1600MHz when operating at 1.5V
- Supports dual channel memory interface
- Supports up to 16GB system memory .

The system board supports the following memory interface.

Single Channel (SC)

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

Dual Channel (DC)

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

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

Installing the DIMM Module

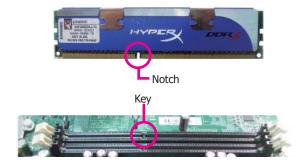


<u>Note:</u> The system board used in the following illustrations may not resemble the actual board. These illustrations are for reference only.

- 1. Make sure the PC and all other peripheral devices connected to it has been powered down.
- 2. Disconnect all power cords and cables.
- 3. Locate the DIMM socket on the system board.
- 4. Push the "ejector tabs" which are at the ends of the socket to the side.



5. Note how the module is keyed to the socket.



6. Grasping the module by its edges, position the module above the socket with the "notch" in the module aligned with the "key" on the socket. The keying mechanism ensures the module can be plugged into the socket in only one way.



7. Seat the module vertically, pressing it down firmly until it is completely seated in the socket.



8. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.



CPU

The system board is equipped with a surface mount LGA 1150 socket. This socket is exclusively designed for installing a LGA 1150 packaged Intel CPU.



- 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.

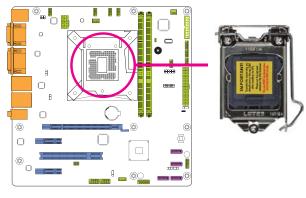




The system board used in the following illustrations may not resemble the actual board. These illustrations are for reference only.

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.



- 5. Lifting the load lever will at the same time lift the load plate.
 - Lift the load lever up to the angle shown on the photo.
- Remove the protective cap from the CPU socket. The cap is used to protect the CPU socket against dust and harmful particles. Remove the protective cap only when you are about to install the CPU.

Load lever







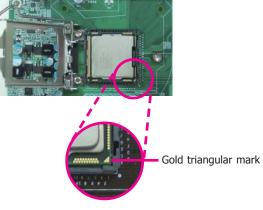
Important:

The CPU socket must not come in contact with anything other than the CPU. Avoid unnecessary exposure. Remove the protective cap only when you are about to install the CPU.

 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.



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.



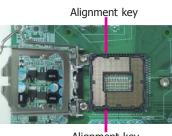
Retention knob

9. Hook the load lever under the retention tab.

Load lever



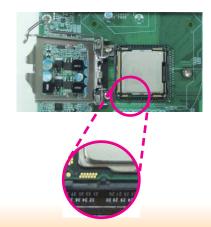
The CPU's notch will at the same time fit into the socket's alignment key.



Alignment key



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.

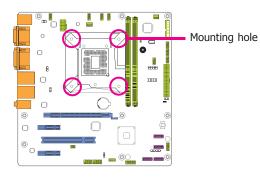


A boxed Intel[®] processor already includes the CPU fan and heat sink assembly. If your CPU was purchased separately, make sure to only use Intel[®]-certified fan and heat sink.

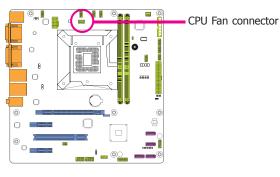
1. Before you install the fan / heat sink, you must apply a thermal paste onto the top of the CPU. The thermal paste is usually supplied when you purchase the fan / heat sink assembly. Do not spread the paste all over the surface. When you later place the heat sink on top of the CPU, the compound will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

 Place the heat sink on top of the CPU. The 4 pushpins 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.



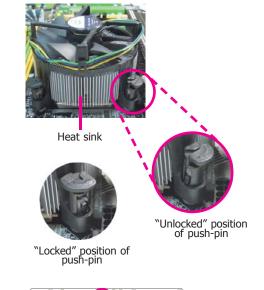
 Orient the heat sink such that the CPU fan's cable is nearest the CPU fan connector.

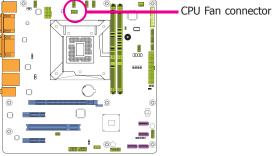


 Rotate each push-pin according to the direction of the arrow shown on top of the pin.

> 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.

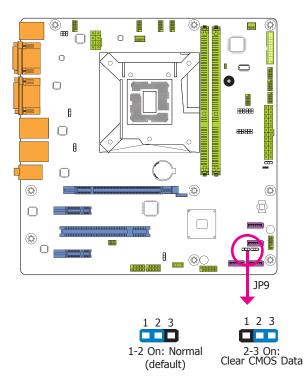




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Jumper Settings

Clear CMOS Data



If you encounter the followings,

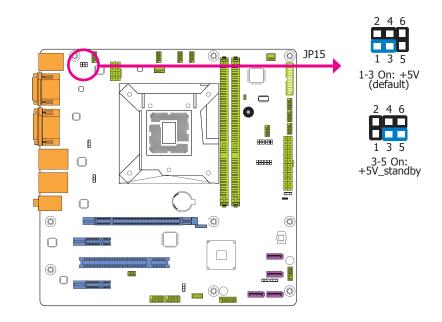
- a) CMOS data becomes corrupted.
- b) You forgot the supervisor or user password.

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

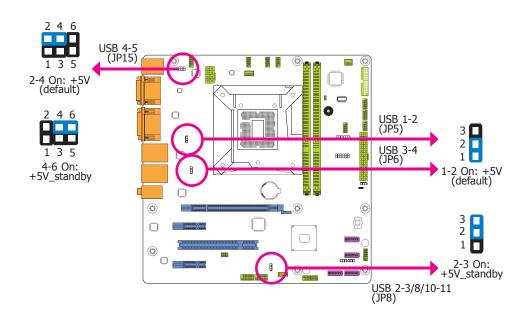


JP15 is used to select the power of the PS/2 keyboard/mouse port. Selecting $+5V_{standby}$ will allow you to use the PS/2 keyboard or the PS/2 mouse to wake up the system.



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

USB Power Select

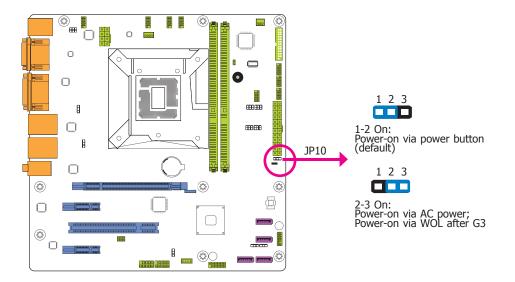


JP5, JP6, JP8 and JP15 are used to select the power of the USB devices. Selecting $+5V_{standby}$ will allow you to use a USB device to wake up the system.

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



JP10 is used to select the method of powering on the system. If you want to use the power button, set pins 1 and 2 to On.

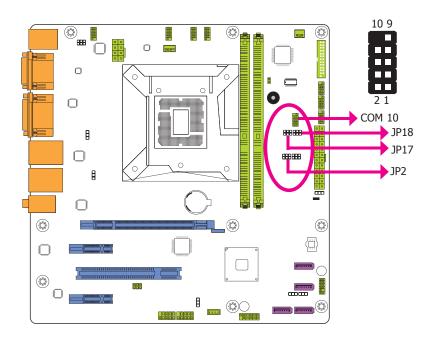
To power-on via WOL after G3:

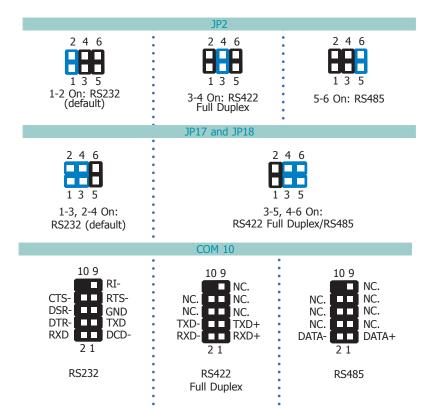
- 1. Set JP10 pins 2 and 3 to On.
- 2. Set the "Wakeup Event After G3" field to Enable.

To power-on via AC Power:

- 1. Set JP10 pins 2 and 3 to On.
- 2. Set the "Wakeup Event After G3" field to **Disable**.

COM 10 RS232/422/485 Select



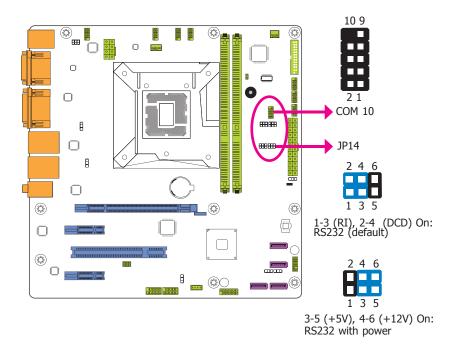


JP2, JP17 and JP18 are used to configure the COM port 10 to RS232, RS422 (Full Duplex) or RS485.

The pin functions of the COM port 10 will vary according to these jumpers' setting.

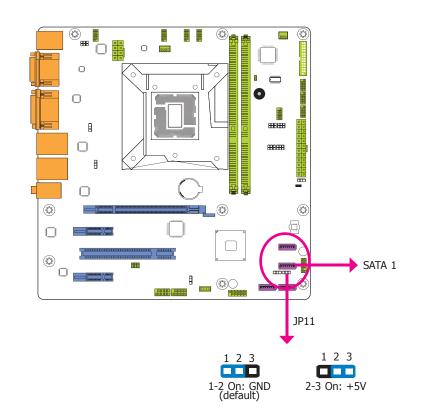


COM 10 RS232/Power Select



JP14 is used to configure the Serial COM port 10 to pure RS232 or RS232 with power.

SATA DOM Power Select



JP11 is designed to select the power level for the Serial ATA port supporting SATA DOM.



SATA port 1 provides adequate space for SATA DOM.

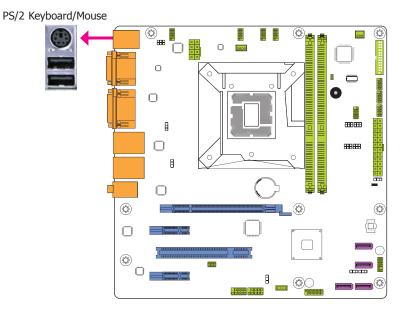
Rear Panel I/O Ports



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

- 1 PS/2 Keyboard/Mouse port
- 2 Serial COM ports
- 2 VGA ports; or 1 VGA and 1 DVI-I ports
- 2 RJ45 LAN ports
- (HD332-H81B has LAN 1 only.)
- 4 USB 3.0 ports
 2 USB 2.0 ports
- 2 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 $\mathsf{PS/2}$ mouse and a $\mathsf{PS/2}$ keyboard. The $\mathsf{PS/2}$ 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

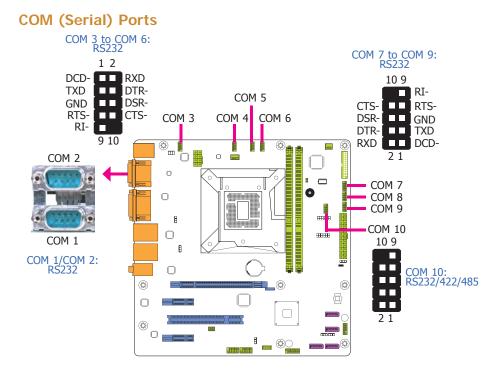
JP15 must be set to "3-5 On: +5V_standby". Refer to "PS/2 Keyboard/Mouse Power Select" in this chapter for more information.

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 3 for more information.

Important: The +5V_sta

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



Note: 1. HD3

 HD332-H81X: 10 COM (COM 1 to COM 10). HD332-H81B: 2 COM (COM 1 and COM 2).
 When COM 10 RS232/422/485 is selected, JP17 and JP18 must be set in accordance to JP2.

COM 1 to COM 9 are fixed at RS232.

The pin functions of the COM port 10 will vary according to jumpers' setting. JP2, JP17 and JP18 are used to configure the Serial COM port 10 to to RS232, RS422 (Full Duplex) or RS485 and JP14 allows you to configure it to pure RS232 or RS232 with power. Refer to "COM 10 RS232/422/485 Select" and "COM 10 RS232/Power Select" in this chapter for more information.

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

Connecting External Serial Ports

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

BIOS Setting

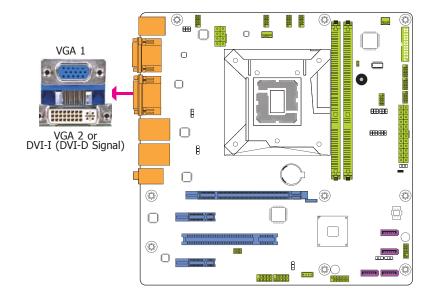
Configure the serial COM ports in the Advanced menu ("Super IO Configuration" submenu) of the BIOS. Refer to the chapter 3 for more information.

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Graphics Interfaces

The display ports consist of the following:

• 2 VGA ports; or 1 VGA and 1 DVI-I ports



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-I Port (DVI-D Signal)

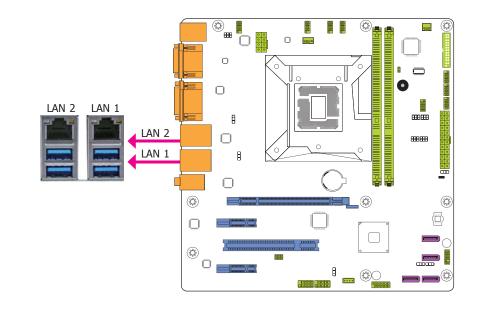
The DVI-I port is used to connect an LCD monitor.

Connect the display device's cable connector to the DVI-I port. After plugging the cable connector into the 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 3 for more information.

RJ45 LAN Ports



Features

 2 Intel[®] 82574L Gigabit Ethernet Controllers; or 2 Intel[®] I210 PCI Express Gigabit Ethernet controllers (optional)

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 3 for more information.

Driver Installation

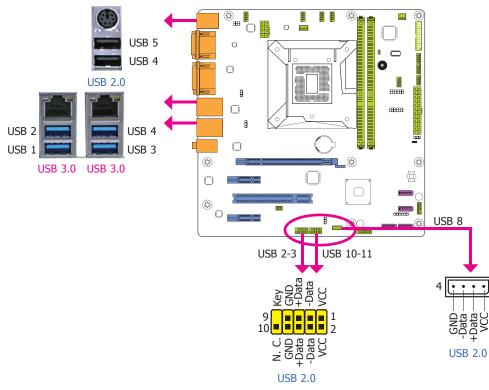
Install the LAN drivers. Refer to the chapter 4 for more information.



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Note: HD332-H81B supports 1 Intel[®] 82574L Gigabit Ethernet controller (LAN 1) only.





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 four onboard USB 3.0 ports (USB 1-2/USB 3-4) and two onboard USB 2.0 ports (USB 4-5). The 10-pin connectors allows you to connect 4 additional USB 2.0/1.1 ports (USB 2-3/USB 10-11) and the vertical USB connector is designed to connect 1 external USB 2.0/1.1 port (USB 8). 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 3 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:

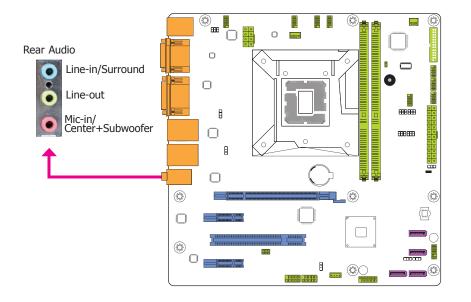
• Jumper Setting

JP5, JP6, JP8 and JP15 must be set to "2-3 On: +5V_standby". Refer to "USB Power Select" in this chapter 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.

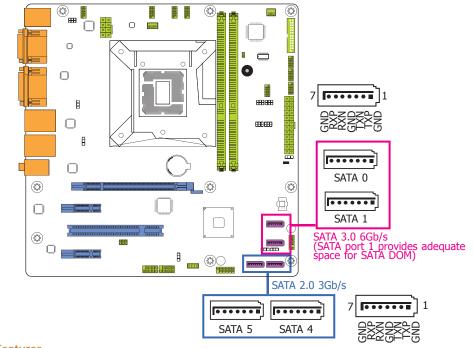
- Line-in/Surround Jack (Light Blue) This jack is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc.
- Line-out Jack (Lime) This jack is used to connect a headphone or external speakers.
- Mic-in/Center+Subwoofer Jack (Pink) This jack is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

Driver Installation

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

I/O Connectors

SATA (Serial ATA) Connectors



Features

- 4 Serial ATA connectors
 - 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

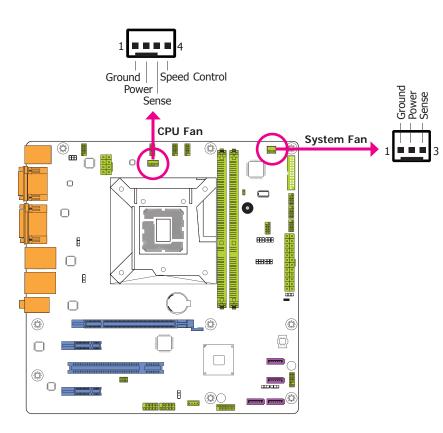
Configure the Serial ATA drives in the Advanced menu ("SATA Configuration" submenu) of the BIOS. Refer to the chapter 3 for more information.

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.

Cooling Fan Connectors

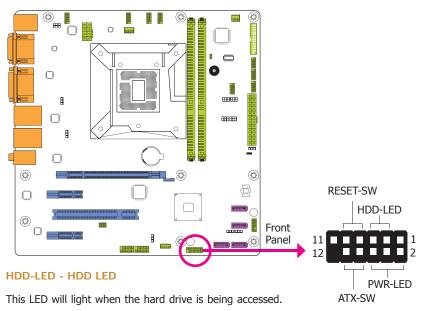


These fan connectors are used to connect cooling fans. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

BIOS Setting

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

Front Panel Connector



RESET SW - Reset Switch

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

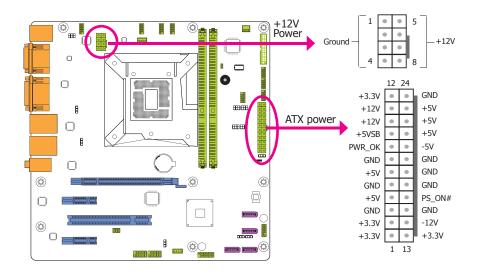
ATX-SW - ATX Power Switch

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



Power Connectors

Use a power supply that complies with the A TX12V Power Supply Design Guide V ersion 1.1. An ATX12V power supply unit has a standard 24-pin A TX main power connector that must be inserted into the 24-pin connector . The 8-pin +12V power connector enables the deliv ery of more +12VDC current to the processor 's Voltage Regulator Module (VRM).

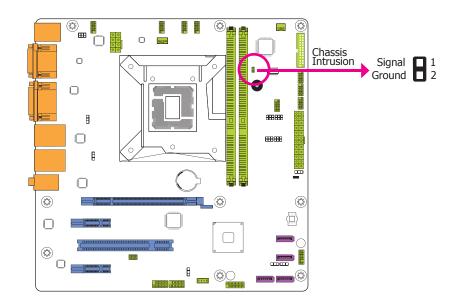
The power connectors from the power supply unit are designed to fit the 24-pin and 8-pin connectors in only one orientation. Mak e sure to find the proper orientation bef ore plugging the connectors.

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

Important:

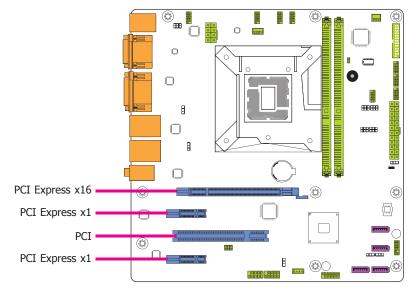
Insufficient power supplied to the system may result in instability or the add-in boards and peripherals not functioning properly. Calculating the system's approximate power usage is important to ensure that the power supply meets the system' s consumption requirements.

Chassis Intrusion Connector



The board supports the chassis intrusion detection f unction. 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 of f and a chassis intrusion occurred, the alarm will sound only when the system restarts.

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.

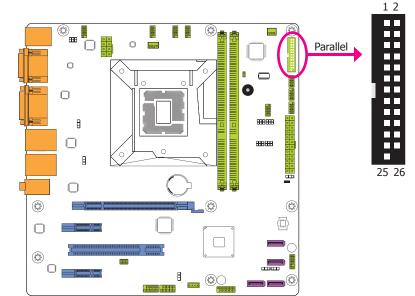
PCI Slot

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 x1 Slot

Install PCI Express cards such as network cards or other cards that comply to the PCI Express specifications into the PCI Express x1 slot.

Parallel Port



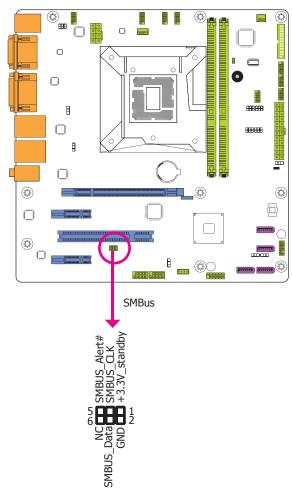
The 25-pin connector is used to connect an external parallel port. The parallel port connects your PC to a parallel printer. It supports SPP, ECP and EPP.

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.



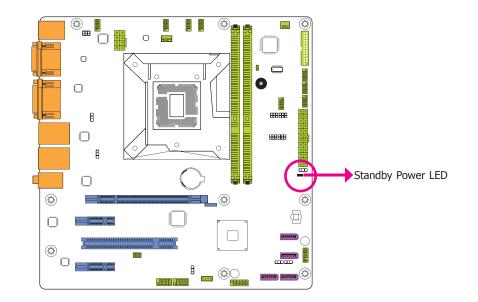
Note: The parallel connector on the HD330-H81D system board is optional.

SMBus Connector



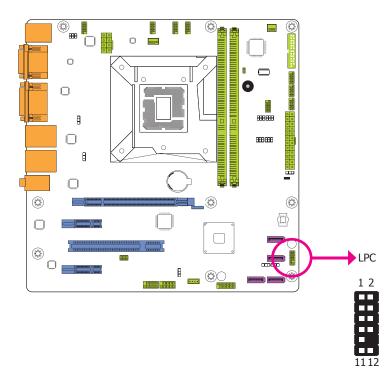
The SMBus (System Management Bus) connector is used to connect SMBus devices. It is a multiple device bus that allows multiple chips to connect to the same bus and enable each one to act as a master by initiating data transfer.

Standby Power LED

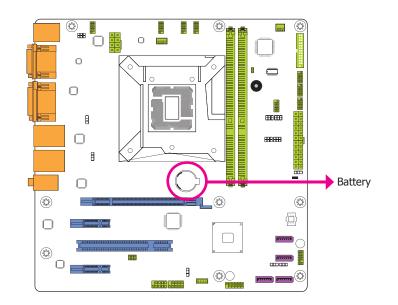


This LED will lit red when the system is in the standby mode. It indicates that there is power on the system board. Power-off the PC and then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.

LPC Connector



Battery



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

Safety Measures

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

The LPC connector is used	for the debug	function and its	pin functions are	e 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	х
11	SERIRQ	12	48MHz

Chapter 2 Hardware Installation

Chapter 3 - BIOS Setup

Overview

The BIOS is a program that takes care of the basic level of communication between the CPU and peripherals. It contains codes for various advanced features found in this system board. The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data retains even when the power is of f. 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 bat tery will fail causing CMOS data loss. If this happens, y ou need to install a new CMOS bat tery and reconfigure the BIOS set tings.



The BIOS is constantly updated to impro ve 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 f or reference purpose only.

Default Configuration

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

Entering the BIOS Setup Utility

The BIOS Setup Utility can only be oper ated from the keyboard and all commands are k eyboard commands. The commands are a vailable at the right side of each setup screen.

The BIOS Setup Utility does not require an oper ating system to run. After y ou 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 "R eset" button. You may also restart the system by pressing the <Ctrl> <Alt> and k eys 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 f elds.	
<esc></esc>	Exit to the BIOS Setup Utility.	
+ (plus key)	Scrolls forward through the values or options of the highlighted f eld.	
- (minus key)	Scrolls backward through the values or options of the highlighted f eld.	
Tab	Select a f eld.	
<f1></f1>	Displays general help	
<f2></f2>	Pervious values	
<f3></f3>	Optimized defaults	
<f4></f4>	Saves and resets the setup program.	
<enter></enter>	Press <enter> to enter the highlighted submenu.</enter>	

Scroll Bar

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

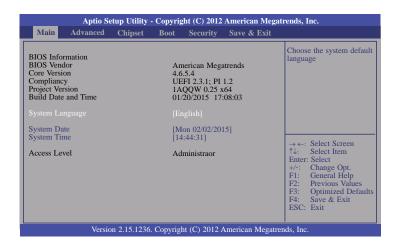
Submenu

When " \blacktriangleright " appears on the left of a particular field, it indicates that a submenu which contains additional options are a vailable 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 y ou will see when y ou enter the BIOS Setup Utilit y.



System Date

The date format is <day>, <month>, <date>, <y ear>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December . Date displays the date, from 1 to 31. Y ear 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 y ou to configure y our 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 y ou set some features according to y our preference.



Main	Advanced Cl	ipset Boot	Security	Save & Exit	
 Trustee CPU C SATA O PCH-F USB C Super I PC Hea Second 	ower Management Computing onfiguration Sonfiguration W Configuration O Configuration O Configuration Idh Status Super IO Configur k Stack				ACPI Power Manageme Configuration → ←: Select Screen ↑↓: Select Item Enter: Select Item Enter: Select Fil: General Help F2: Previous Values F3: Optimized Defau F4: Save & Exit ESC: Exit

ACPI Power Management Configuration

This section is used to configure the ACPI P ower Management.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.				
Advanced				
ACPI Power Management Config Resume by PME Resume by Ring Resume by RTC Alarm Wakeup Event After G3	uration [Disabled] [Disabled] [Disabled] [Disabled]	About Resume by PME (PCI, PCIE, LAN). If PME is enabled then PCH After-G3 function is ena- bled, too. But Auto Power on function is fail.		
		→ \leftarrow : Select Screen ↑4: Select Item Enter: Select Item +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit		
Version 2.15.1	236. Copyright (C) 2012 American	Megatrends, Inc.		

Resume by PME

Enables this field to use the PME signal to w ake up the system.

Resume by Ring

Enables this field to use the Ring signal to w ake up the system.

Resume by RTC Alarm

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

Wakeup Event After G3

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

Trusted Computing

This section configures set tings relevant to Trusted Computing innovations.

Aptio Setup Utility - Advanced	Copyright (C) 2012 American Megati	rends, Inc.
Configuration Security Device Support Current Status Information No Security Device Found	[Disable]	Enables or Disables BIOS support for security device. O.S will not show Security Device. TCG EFI protocol and INT1A interface will not be available. → ←: Select Screen ↑↓: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset
Version 2.15.1236.	Copyright (C) 2012 American Megatrer	ESC: Exit

Security Device Support

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

CPU Configuration

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

Aptio Setup Utility -	Copyright (C) 2012 Americ	can Megatrends, Inc.
Advanced		
CPU Configuration Intel(R) Core(TM) i3-4340TE CPU @ CPU Signature Processor Family Microcode Patch FSB Speed Max CPU Speed Min CPU Speed CPU Speed Processor Cores Intel HT Technology Intel YT-X Technology Intel SMX Technology HelsT Technology CPU C3 State CPU C3 State CPU C3 State CPU C7 State L1 Data Cache L1 Code Cache L2 Cache L3 Cache Hyper-threading Active Processor Cores Intel Virtualization Technology EIST	306c3 6 1c 100 MHz 2600 MHz 2600 MHz 2600 MHz 2 Supported Supported Supported Supported Supported Supported Supported Supported Supported 32 KB x 2 32 KB x 2 32 KB x 2 32 KB x 2 4096 KB [Enabled] [Enabled] [Enabled]	 Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). When Disabled only one thread per enabled core is enabled. → ←: Select Screen ↑↓: Select Item Enter: Select Item Enter: Select Item Enter: Select Item Enter: Select Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.15.1236.	Copyright (C) 2012 America	n Megatrends, Inc.

Hyper-threading

Enables this field for Windows XP and Linux which are optimized f or Hyper-Threading technology. Select disabled for other OSes not optimized f or 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, the VMM can utilize the additional hardw are capabilities provided by Vanderpool Technology.

EIST

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

SATA Configuration

This section is used to configure the f unctions of Serial ATA devices.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc. Advanced				
SATA Controller(s) SATA Mode Selection	[Enabled] [IDE]	Enable or disable SATA Device.		
Serial ATA Port 0 Sofiware Preserve Serial ATA Port 1 Sofiware Preserve Serial ATA Port 4 Software Preserve Serial ATA Port 5 Software Preserve	Empty Unknown Empty Unknown Empty Unknown Empty Unknown			
		$\begin{array}{rrr} \rightarrow \leftarrow: & \text{Select Screen} \\ \uparrow \downarrow: & \text{Select Item} \\ & \text{Enter: Select} \\ +/-: & \text{Change Opt.} \\ F1: & \text{General Help} \\ F2: & \text{Previous Values} \\ F3: & \text{Optimized Defaults} \\ F4: & \text{Save and Reset} \\ ESC: & \text{Exit} \end{array}$		
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.				

SATA Controller(s)

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

SATA Mode Selection

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

IDE Mode

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

AHCI Mode

This option allows the Serial A TA devices to use AHCI (Adv anced Host Controller Interface).

When IDE mode is selected in the S ATA Mode Selection, it will displa y the following information:

Aptio Setup U Advanced	Jtility - Copyright (C) 2012 An	nerican Megatrends, Inc.		
SATA Controller(s) SATA Mode Selection Software Preserve Serial ATA Port 0 Software Preserve Serial ATA Port 4 Software Preserve Serial ATA Port 5 Software Preserve	[Enabled] [IDE] Empty Unknown Empty Unknown Empty Unknown Empty Unknown	Determines how SATA controller(s) operate.		
		→ \leftarrow : Select Screen \uparrow ¼: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit		
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.				

When AHCI mode is selected in the S ATA Mode Selection, it will displa y the following information:

trends, Inc.
Determines how SATA controller(s) operate.
→ ←: Select Screen 1\: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit

SATA Controller Speed

Indicates the maximum speed that the Serial A TA controller can support.

Port 0, Port 1, Port 4 and Port 5

Enables or disables these Serial A TA ports.

Hot Plug

Designates the serial ATA port as hot pluggable.

PCH-FW Configuration

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

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.				
Advanced				
ME FW Version ME Firmware Mode ME Firmware Type ME Firmware SKU Firmware Update Configuration	9.1.2.1010 Normal Mode Full Sku Firmware 1.5MB	Configure Management Engine Technology Parameters		
		→ ←: Select Screen ↑↓: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit		
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.				

Firmware Update Configuration

Enables or disables the Me FW Image R e-Flash function.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc. Advanced				
Me FW Image Re-Flash	[Disabled]	Enable/Disable Me FW Image Re-Flash function.		
		 → ←. Select ltem ↑↓: Select ltem Enter: Select +/-: Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit 		
Version 2.15.12	236. Copyright (C) 2012 American	Megatrends, Inc.		

USB Configuration

This section is used to configure the par ameters of the USB device.

USB Configuration		Enables Legacy USB support. AUTO option
USB Module Version	8.10.27	disables legacy support if
USB Devices:		connected. DISABLE
1 Keyboard, 1 Mouse, 2 Hubs		option will keep USB devices available only for
Legacy USB Support	[Enabled]	EFI applications.
USB3.0 Support XHCI Hand-off	[Enabled] [Enabled]	
EHCI Hand-off	[Disabled]	
		$\rightarrow \leftarrow$: Select Screen $\uparrow \downarrow$: Select Item
		Enter: Select
		+/-: Change Opt. F1: General Help
		F2: Previous Values
		F3: Optimized Default F4: Save and Reset
		ESC: Exit

Legacy USB Support

Enabled

Enables legacy USB.

Auto

Disables support for legacy when no USB devices are connected.

Disabled

Keeps USB devices a vailable only for EFI applications.

USB3.0 Support

Enable or disable the support of the USB 3.0 (XHCI) controller .

XHCI Hand-off

This is a workaround f or OSes without the support of XHCI hand-of f. The change of XHCI ownership should be claimed by the XHCI driv er.

EHCI Hand-off

This is a workaround f or OSes without the support of EHCI hand-of f. The change of EHCI ownership should be claimed by the EHCI driv er.

Super IO Configuration

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

Aptio Setup Utility - Advanced	Copyright (C) 2012 America	an Megatrends, Inc.
Super IO Configuration Super IO Chip Restore AC Power Loss WatchDog Timer Unit Super IO Watchdog Timer	NCT6106D [Power Off] [Second] 0	Restore AC Power Loss Help.
 Serial Port 5 Configuration Serial Port 6 Configuration Serial Port 7 Configuration Serial Port 8 Configuration Serial Port 9 Configuration Serial Port 10 Configuration Parallel Port Configuration 		$\rightarrow \leftarrow: Select Screen$ $\uparrow \downarrow: Select Item$ Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Varian 2 15 1226	Copyright (C) 2012 American	

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 f ailure, the system will automatically power -on.

Last State

When power returns after an AC power f ailure, 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 of f 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 v alue of the super IO w atchdog timer. 0 means disabled.

Serial Port 5 Configuration to Serial Port 10 Configuration

Sets parameters of serial port 5 (COM E) to serial port 10 (COM J).

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.			
Advanced			
Serial Port 5 Configuration		Enable or Disable Serial	
Serial Port Device Settings	[Enabled] IO=3F8h; IRQ=4;	Port (COM)	
Change Settings	[Auto]		
Version 2.15.1236. Co	pyright (C) 2012 American Megatrei	nds, Inc.	

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc. Advanced		
Serial Port 6 Co Serial Port Device Settings Change Settings	[Enabled] IO=2F8h; IRQ=3;	Enable or Disable Serial Port (COM)
		$ \rightarrow \leftarrow: Select Screen \uparrow i: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit$
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

Aptio Setup Utilit Advanced	y - Copyright (C) 2012 American	Megatrends, Inc.
Serial Port 7 Configuration Serial Port Device Settings Change Settings	[Enabled] IO=3E8h; IRQ=7; [Auto]	Enable or Disable Serial Port (COM)
Version 2.15.123	36. Copyright (C) 2012 American M	egatrends, Inc.

Aptio Setup Utility Advanced	- Copyright (C) 2012 American M	legatrends, Inc.
Serial Port 8 Configuration Serial Port Device Settings Change Settings	[Enabled] IO=2E8h; IRQ=7; [Auto]	Enable or Disable Serial Port (COM)
		→ \leftarrow : Select Screen $\uparrow\downarrow$: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc. Advanced		
Serial Port 9 Configuration Serial Port Device Settings Change Settings	[Enabled] IO=2E0h; IRQ=10; [Auto]	Enable or Disable Serial Port (COM)
		→ \leftarrow : Select Screen \uparrow L: Select Item Enter: Select +/-: Change Opt, F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit

Aptio Setup Utility Advanced	- Copyright (C) 2012 American M	Megatrends, Inc.
Serial Port 10 Configuration Serial Port Device Settings Change Settings RS485 Auto Flow	[Enabled] IO=2F0h; IRQ=10; [Auto] [Disabled]	Enable or Disable Serial Port (COM)
		$\rightarrow \leftarrow: Select Screen$ $\uparrow \downarrow: Select Item$ Enter: Select + /-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit
Version 2.15.1236	6. Copyright (C) 2012 American Me	egatrends, Inc.

Serial Port

Enables or disables these serial ports (COM).

Change Settings

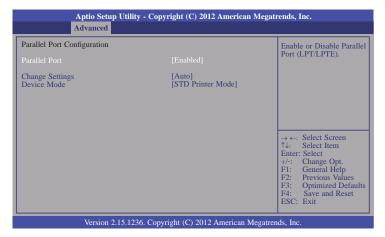
Selects the IO/IRQ set tings for the super I/O device.

RS485 Auto Flow

Enables or disables the serial port 10 RS485 auto flow $% \mathcal{A}$.

Parallel Port Configuration

Sets parameters of Parallel port (LPT/LPE).



Parallel Port

Enables or disables the par allel port (LPT/LPTE).

Change Settings

Selects the IO set ting for the super I/O device.

Device Mode.

Selects the mode for the printer port.

PC Health Status

This section displays the hardware health monitor.

	7 - Copyright (C) 2012 America	m Megatrends, Inc.
Advanced PC Health Status Smart Fan Function Case Open CPU Temperature System Temperature CPU Fan Speed System Fan Speed VCore +5V +12V +1.5V +3.3V 3VSB VBAT	[Disabled] : +26.5 C : +32.0 C : 4411 RPM : N/A : +1.744 V : +5.077 V : +12.232 V : +1.504 V : +3.392 V : +3.392 V : +3.072 V	Smart Fan Function Setting → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

Smart Fan Function

Advanced		
Smart Fan Function		Enable CPU Smart Fan
CPU Smart Fan Control Boundary 4 Boundary 3 Boundary 2 Boundary 1 Speed Count 5 Speed Count 5 Speed Count 3 Speed Count 2 Speed Count 1	[Enabled] 60 50 40 30 100 75 50 40 30	
System Smart Fan Control Boundary 3 Boundary 2 Boundary 1 Speed Count 5 Speed Count 4 Speed Count 3 Speed Count 2 Speed Count 1	[Enabled] 60 50 40 30 100 75 50 40 30	$\rightarrow \leftarrow: \text{Select Screen}$ $\uparrow \downarrow: \text{Select Item}$ Enter: Select $\downarrow /\cdot: \text{Change Opt.}$ F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit

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 temper ature, the faster the speed of rotation.

System Smart Fan Control

When this feature is set to Automatic, the S ystem's fan speed will rotate according to the System's temperature. The higher the temper ature, 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 y ou of a chassis intrusion ev ent.

Second Super IO Configuration

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

Aptio Setup Utility - Advanced	Copyright (C) 2012 America	an Megatrends, Inc.
Second Super IO Configuration Second Super IO Chip Serial Port 1 Configuration Serial Port 2 Configuration Serial Port 3 Configuration Serial Port 4 Configuration	NCT5104D	Set Parameters of Serial Port 1 (COMA).
		→ \leftarrow : Select Screen \uparrow ¼: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

Serial Port 1 Configuration to Serial Port 4 Configuration

Sets the parameters of serial port 1 (COM A) to serial port 4 (COM D).

Aptio Setup Utility Advanced	7 - Copyright (C) 2012 American N	Megatrends, Inc.
Serial Port 1 Configuration Serial Port Device Settings Change Settings	[Enabled] IO=240h; IRQ=5; [Auto]	Enable or Disable Serial Port (COM)
		→ \leftarrow : Select Screen \uparrow ↓: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc. Advanced		
Serial Port 2 Configuration Serial Port Device Settings Change Settings	[Enabled] IO=248h; IRQ=5; [Auto]	Enable or Disable Serial Port (COM)
		$\begin{array}{l} \rightarrow \leftarrow: \text{ Select Screen} \\ \uparrow_{4:} & \text{ Select Item} \\ \hline\\ \text{Enter: Select} \\ +/: & \text{Change Opt.} \\ F1: & \text{General Help} \\ F2: & \text{Previous Values} \\ F3: & \text{Optimized Defaults} \\ F4: & \text{Save and Reset} \\ \hline\\ \text{ESC: Exit} \end{array}$
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc. Advanced		
Serial Port 3 Configuration Serial Port Device Settings Change Settings	[Enabled] IO=250h; IRQ=5; [Auto]	Enable or Disable Serial Port (COM)
		→ \leftarrow : Select Screen \uparrow '. Select Item Enter: Select +/-: Change Opt. FI: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

Aptio Setup Uti	lity - Copyright (C) 2012 American I	Megatrends, Inc.
Advanced		
Serial Port 4 Configuration Serial Port Device Settings	[Enabled] IO=258h; IRQ=5;	Enable or Disable Serial Port (COM)
Change Settings	[Auto]	
		→ \leftarrow : Select Screen \uparrow .': Select Item Enter: Select $+/^{-\epsilon}$: Change Opt, F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit
Version 2.15.1	236. Copyright (C) 2012 American M	egatrends, Inc.

Serial Port

Enables or disables these serial ports (COM).

Change Settings

Selects the IO/IRQ set tings for the super I/O device.

Network Stack

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

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc. Advanced				
Network Stack	network stack. → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. FI: General Help F2: Previous Values F3: Optimized Defaul F4: Save and Reset ESC: Exit Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.			
Version 2.15.1236. Copyright (C) 2012 American Megatrends. Inc.				

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

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc. Advanced		
Network Stack Ipv4 PXE Support Ipv6 PXE Support	(Enabled) [Enabled] [Enabled]	Enable/Disable UEFI network stack. → ←: Select Screen ↑↓: Select Item Enter: Select +/: Change Opt. FI: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit
Version 2.15.1236.	Copyright (C) 2012 American Me	gatrends, Inc.

Ipv4 PXE Support

When enabled, $\ensuremath{\text{Ipv4}}\xspace$ PXE boot supports. When disabled, $\ensuremath{\text{Ipv4}}\xspace$ 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.

Chipset

This section configures relevant chipset functions.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.						
Main	Advanced	Chipset	Boot	Security	Save & Exit	
	Agent (SA) C O Configuration					System Agent (SA) Parameters → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit
	Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.			ds, Inc.		

System Agent (SA) Configuration

This section is used to configure the par ameters of System Agent.

Aptio Setup Utility Chipset	- Copyright (C) 2012 America	in Megatrends, Inc.
System Agent Bridge Name System Agent RC Version VT-d Capability Graphics Configuration NB PCIe Configuration Memory Configuration	Haswell 1.5.0.0 Unsupported	Config graphics settings. → ←: Select Screen ↑↓: Select Item Enter: Select
Version 2.15.123	5. Copyright (C) 2012 American	+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Default F4: Save and Reset ESC: Exit

Graphics Configuration

This field configures the graphics settings.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Chipset	t	
Graphics Configuration IGFX VBIOS Version IGFX requency Primary Display Internal Graphics DVMT Pre-Allocated DVMT Pre-Allocated DVMT Total Gfx Mem ► LCD Control	2171 700 MHz [Auto] [Auto] [32M] [256M]	Select which of IGFX/ PEG/PCI Graphics device should be Primary Display.
		→ \leftarrow : Select Screen $\uparrow \downarrow$: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and Reset ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

Primary Display

Auto When the system boots, it will auto detects the displa y 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 gr aphics card.

Internal Graphics

Keeps IGD enabled based on the setup options .

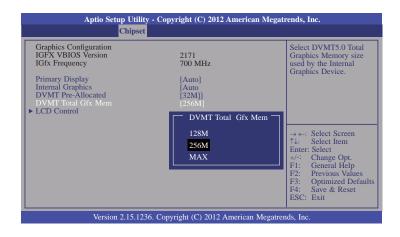
DVMT Pre-Allocated

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

Aptio Setup Utili Chipse	ity - Copyright (C) 2012 American Me t	gatrends, Inc.
Graphics Configuration IGFX VBIOS Version IGfx Frequency	2171 700 MHz	Select DVMT5.0 Pre- Allocated (Fixed) Graph- ics Memory size used
Primary Display Internal Graphics DVMT Pre-Allocated DVMT Total Gfx Mem ▶ LCD Control	DVMT Pre-Allocated 32M 64M 96M 128M 160M 192M 224M 256M 288M 320M 352M 352M 384M 416M 448M 480M 512M 1024M	by the Internal Graphics Device. → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.15.12	236. Copyright (C) 2012 American Mega	trends, Inc.

DVMT Total Gfx Mem

Selects DVMT 5.0 total gr aphics memory size used by the internal gr aphics device. Please ref er to the screen shown below .



LCD Control

This field configures the L CD control.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Chipset		
LCD Control Primary IGFX Boot Display Active LVDS	[VBIOS Default] [Disabled]	Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be sup- ported only on primary display. → ←: Select Screen ↑↓: Select Item Enter: Select +/: Change Opt. F1: General Help P2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

When any device is selected in the Primary IGFX Boot Displa $\,$ y, it will display the following information:

LCD Control Select the Video Device which will be activated during POST. This has no effect if external graphics present. Active LVDS [Disabled] Secondary IGFX Boot Display [Disabled] Get and the second secon	Aptio Setup Utility - Chipset	- Copyright (C) 2012 Americ	an Megatrends, Inc.
	Primary IGFX Boot Display Secondary IGFX Boot Display	[None]	which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be sup- ported only on primary display. $\rightarrow \leftarrow$: Select Screen $\uparrow \downarrow$: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F3: Save & Reset

Secondary IGFX Boot Display

Selects the secondary displa y device.

Active LVDS

Enable or disable the L VDS unction. When enabled, y ou can select the L CD panel type.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Chipset		
LCD Control Primary IGFX Boot Display Active LVDS LCD Panel Type	[VBIOS Default] [Enabled] [VBIOS Default]	Enable/Disable LVDS Function → ←: Select Screen ↑↓: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

LCD Panel Type

Selects LCD panel used by Internal Gr aphics Device by selecting the appropriate setup item.

	tility - Copyright (C) 2012 American Megatr Iset	ends, Inc.
LCD Control Primary IGFX Boot Display Active LVDS LCD Panel Type	(VBIOS Default) LCD Panel Type VBIOS Default Type 1 640x480 18 Bit Type 2 800x600 18 Bit Type 3 1024x768 18 Bit Type 4 1280x1024 36 Bit Type 5 1400x1050 (108MHz) 36 Bit 36 Bit Type 7 1600x1200 36 Bit Type 1 1366x768 18 Bit Type 1 1360x700 36 Bit Type 1 1360x700 36 Bit Type 10 1920x1200 36 Bit Type 11 1280x1050 36 Bit Type 12 1280x1024 48 Bit Type 13 1280x1024 48 Bit Type 14 1280x800 36 Bit Type 15 1920x1080 48 Bit Type 16 2048x1536 48 Bit	Select LCD panel used by Internal Graphics Device by selecting the appropri- ate setup item. → ←: Select Screen ↑↓- Select Item Enter: Select +/-: Change Opt. +/-: Change Opt. +/-: Change Opt. +/-: Change Opt. +/-: Select Heth Enter: Select +/-: Select Item Enter: Select Esc: Exit
Version 2.15	.1236. Copyright (C) 2012 American Megatren	ds, Inc.

NB PCIe Configuration

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

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Chip	oset	
NB PCIe Configuration PEG0 - Gen X	[Auto]	Configure PEG0 B0:D1:F0 Gen1-Gen2.
Enable PEG	[Auto]	→ ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.		

Enable PEG

Enables or disables the PEG.

Memory Configuration

This field only displays the memory configuration.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc. Chipset		
Memory Information Memory RC Version Memory Frequency Total Memory Memory Voltage DIMM#1 CAS Latency (tCL) Minimum delay time CAS tatency (tCL) Minimum delay time CAS to RAS (tRCDmin) Row Precharge (tRPmin) Active to Precharge (tRASmin)	1.5.0.0 1333 Mhz 2048 MB (DDR3) 1.50V 2048 MB (DDR3) Not Present 9 9 9 24	→ \leftarrow : Select Screen \uparrow ↓: Select Item Enter: Select +/<: Change Opt. F1: General Help F2: Previous Values F3: Optimized Default F4: Save & Reset ESC: Exit

PCH-IO Configuration

This section illustrates the PCH parameters.

Aptio Setup Utility - Copy Chipset	right (C) 2012 American Megat	rends, Inc.
Intel PCH RC Version Intel PCH SKU Name Intel PCH Rev ID > PCI Express Configuration > USB Configuration > PCH Azalia Configuration	1.5.0.0 H81 05/C2	PCI Express Configuration settings.
Onboard 82574 LAN 2 Controller Onboard 82574 LAN 1 Controller Onboard NEC USB 3.0 Controller High Precision Event Timer Configuration High Precision Timer	[Enabled] [Enabled] [Enabled] [Enabled]	→ ←: Select Screen T↓: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.15.1236. Copy	right (C) 2012 American Megatrer	nds, Inc.

Onboard 82574 LAN Controller

Enables or disables the onboard 82574 L AN controller.

Onboard NEC USB 3.0 Controller

Enables or disables the USB 3.0 controller .

High Precision Timer

Enables or disables the High Precision Ev ent Timer.

PCI Express Configuration

This field is used to configure the PCI Express set tings.

Aptio Setup Utility - Copyright (C) 2012	American Megatrends, Inc.
Chipset	
PCI Express Configuration PCIe Port 2 is assigned to USB 3.0 PCIe Port 3 is assigned to LAN. PCIe Port 4 is assigned to LAN. ▶ PCI Express Root Port 5 ▶ PCI Express Root Port 6	NEC USB 3.0 Port 3, 4.
	 → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
- Version 2.15.1236. Copyright (C) 2012 A	merican Megatrends, Inc.

PCI Express Root Port 5 and 6

Enables or disables the PCI Express R oot Port 5 and 6.

Aptio Setup Uti Chips	llity - Copyright (C) 2012 Ameri set	ican Megatrends, Inc.
PCI Express Root Port 5 PCIe Speed	[Enabled] [Auto]	Control the PCI Express Root Port. → ←: Select Screen ↑↓: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.15.	1236. Copyright (C) 2012 America	an Megatrends, Inc.

PCIe Speed

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

45

USB Configuration

This field is used to configure the USB set tings.

Aptio Setup Utility - C Chipset	opyright (C) 2012 Americ	can Megatrends, Inc.
USB Configuration USB Precondition XHCI Mode USB Ports Per-Port Disable Control	[Disabled] [Auto] [Disabled]	Precondition work on USB host controller and root ports for faster enumeration.
		→ ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.15.1236. Co	opyright (C) 2012 America	n Megatrends, Inc.

USB Precondition

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

XHCI Mode

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

USB Configuration		Mode of operation of
USB Precondition XHCI Mode	[Disabled] [Disabled]	XHCI controller.
EHCI1 EHCI2	[Enabled] [Enabled]	
USB Ports Per-Port Disable Control	[Disabled]	
		→ \leftarrow : Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Default F4: Save & Reset ESC: Exit

EHCI 1 and EHCI 2

These fields are used to control the f $\,$ unctions of USB EHCI (USB 2.0) controllers . One EHCI controller must alw ays be enabled.

USB Ports Per-Port Disable Control

This field is used to control each of the USB ports($0\sim13$) disabling. When enabled, it will displa y the following information:

Aptio Setup Utility - Co Chipset	opyright (C) 2012 Americ	can Megatrends, Inc.
USB Configuration USB Precondition XHCI Mode USB Ports Per-Port Disable Control USB Port #1 USB Port #2 USB Port #3 USB Port #3 USB Port #4 USB Port #5 USB Port #4 USB Port #10 USB Port #11 USB30 Port #1 USB30 Port #1 USB30 Port #2 USB30 Port #3	[Disabled] [Auto] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled] [Enabled]	Control each of the USB ports (0~13) disabling. → ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.15.1236. Co	ppyright (C) 2012 America	n Megatrends, Inc.

USB Port #0/1/2/3/4/5/9/10/11 and USB30 Port #0/1/2/3

Enables or disables these USB ports.

PCH Azalia Configuration

This field is used to configure the PCH Azalia set tings.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc. Chipset				
PCH Azalia Configuration Azalia	[Auto]	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$		
Version 2.15.	1236. Copyright (C) 2012 Americ	can Megatrends, Inc.		

Boot

Aptio Se	tup Utility - C	opyrigh	t (C) 2012	American Megati	rends, Inc.
Main Advanced	Chipset I	Boot	Security	Save & Exit	
Boot Configuration Setup Prompt Timeout Bootup NumLock State Quiet Boot		1 [On] [Disa	bled]		Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Boot Option Priorities CSM Parameters					
					→ ←: Select Screen ↑↓: Select Item Enter: Select +/:: Change Opt. +/:: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version	n 2.15.1236. C	opyright	(C) 2012 A	American Megatrer	ids, Inc.

Setup Prompt Timeout

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

Bootup NumLock State

This allows you to determine the def ault state of the numeric k eypad. By default, the system boots up with NumLock on wherein the f unction of the numeric k eypad is the number keys. When set to Of f, the function of the numeric k eypad is the arrow k eys.

Quiet Boot

Enables or disables the quiet boot f unction.

CSM Parameters

Aptio Setup Utility	- Copyright (C) 2012	American Megati	ends, Inc.
Main Advanced Chipset	Boot Security	Save & Exit	
Launch CSM Boot option filter Launch PXE OpROM policy Launch Storage OpROM policy	[Enabled] [UEFI and Lega [Do not launch] [Legacy only]		This option controls if CSM will be launched. → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. +1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
Version 2.15.1236	6. Copyright (C) 2012 A	American Megatren	ids, Inc.

Launch CSM

This option controls if CSM will be launched.

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 stor age OpROM.

Security

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.						
Main	Advanced	Chipset	Boot	Security	Save & Exit	
then this on asked for w If ONLY th is a power of boot or ente Administrat The passwo in the follow Minimum le Maximum l	e Administratu dy limits accer hen entering S e User's passy on password a r Setup. In Se tor rights. rd length mus wing range: ength length tor Password	ss to Setup a Setup. vord is set, tl nd must be e etup the User	nd is only hen this entered to			Set Administrator Password. → ←: Select Screen 1↓: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit
	Versio	n 2.15.1236.	Copyrig	ht (C) 2012.	American Megatrer	ids, Inc.

Administrator Password

Sets the administrator password.

User Password

Sets the user password.

Save & Exit

	Aptio Se	tup Utility	- Copyri	ght (C) 2012	American Mega	trends, Inc.
Main	Advanced	Chipset	Boot	Security	Save & Exit	
	iges and Reset hanges and Res	set				Reset the system after saving the changes.
Restore D	efaults					
Boot Over	ride					
Launch El	FI Shell from fi	lesystem dev	vice			
						$\begin{array}{l} \rightarrow \leftarrow: \ \text{Select Screen} \\ \uparrow_{4}: \ \text{Select Item} \\ \text{Enter: Select} \\ +'^{-:} \ \text{Change Opt.} \\ \uparrow_{1}: \ \text{General Help} \\ F1: \ \text{General Help} \\ F2: \ \text{Previous Values} \\ F3: \ \text{Optimized Defaults} \\ F4: \ \text{Save \& Reset} \end{array}$
	Versio	on 2.15.1236	. Copyrig	ht (C) 2012.	American Megatre	ESC: Exit

Save Changes and Reset

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

Discard Changes and Reset

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

Restore Defaults

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

Launch EFI Shell from filesystem device

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

Updating the BIOS

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

To execute the utility, type:

A:> AFUDOS BIOS_File_Name /b /p /n

then press <Enter>.

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

Notice: **BIOS SPI ROM**

- 1. The Intel® Management Engine has already been integr ated into this system board. Due to the safety concerns, the BIOS (SPI ROM) chip cannot be remo ved 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 f actory 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 ef fective.

Note:

- a. You can take advantage of flash tools to update the def ault configuration of the BIOS (SPI ROM) to the latest v ersion anytime.
- b. When the BIOS IC needs to be replaced, y ou have to populate it properly onto the system board after the EEPROM progr ammer has been burned and f ollow the technical person's instructions to confirm that the MAC address should be burned or not.

Chapter 4 - Supported Software

Install drivers, utilities and software applications that are required to facilitate and enhance the performance of the system board. You may acquire the software from your sales representatives, from an optional DVD included in the shipment, or from the website download page at <u>https://www.dfi.com/DownloadCenter</u>.

For Windows 8





For Windows 7





For Windows XP





Note:

This step can be ignored if the applications are standalone files.

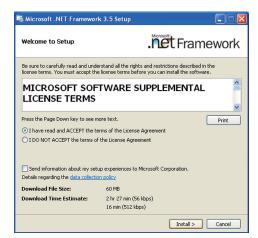
Microsoft Framework 3.5 (For Windows XP)



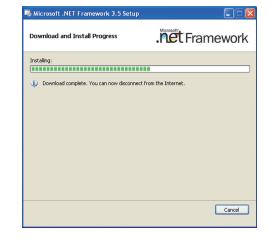
Before installing Microsoft Framework 3.5, make sure you have updated your Windows XP operating system to Service Pack 3.

To install the driver, click "Microsoft Framework 3.5" on the main menu.

- 1. Read the license agreement carefully.
- Click "I have read and accept the terms of the License Agree ment" then click Install.

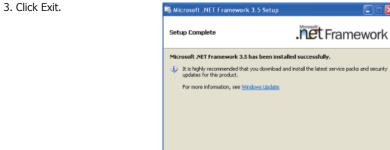


2. Setup is now installing the driver.



創

Exit



Intel Chipset Software Installation Utility

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

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

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

Intel® Chipset Device Software	
Intel® Chipset Device Software	intel
Welcome to the Setup Program	
This setup program will install the Intel® Chipset Device Software ont strongly recommended that you exit all programs before continuing.	o this computer. It is
< Back N	ext >

2. Read the license agreement then click Yes.



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

	tel® Chipset Device Software
Sec. 1	
	er to the Readme file below to view the system requirements and installation information. ss the Page Down key to view the rest of the file.
* *	*****
	Product: Intel(R) Chipset Device Software
ŧ	Release: Production Version
*	Version: 9.0.0.1008
۲	Target Chipset#: Intel(R) 4 Series Chipset
١.	Date: May 01 2008
* *	
	>
<	
٢	< Back Next > Cancel

4. Click Finish to exit setup.



Microsoft DirectX 9.0C (For Windows XP)

To install the utility, click "Microsoft DirectX 9.0C Driv er" on the main menu.

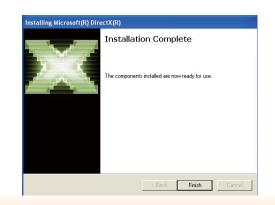
1. Click "I accept the agreement" then click Next.



2. To start installation, click Next.

irectX Setup Install DirectX runtime components			2
DirectX Runtime Install: This install package will search for upd and update as necessary. It may take a To start installation, please click Next.		ne Components	
	< Back	Next>	Cancel

 Click Finish. Reboot the system for DirectX to tak e effect.



4. Setup is now installing the

driver. Click Next to continue.

ntel® Graphics Media Accelerator Driver

Intel® Graphics Media Accelerator Drive

nte

31 Next >

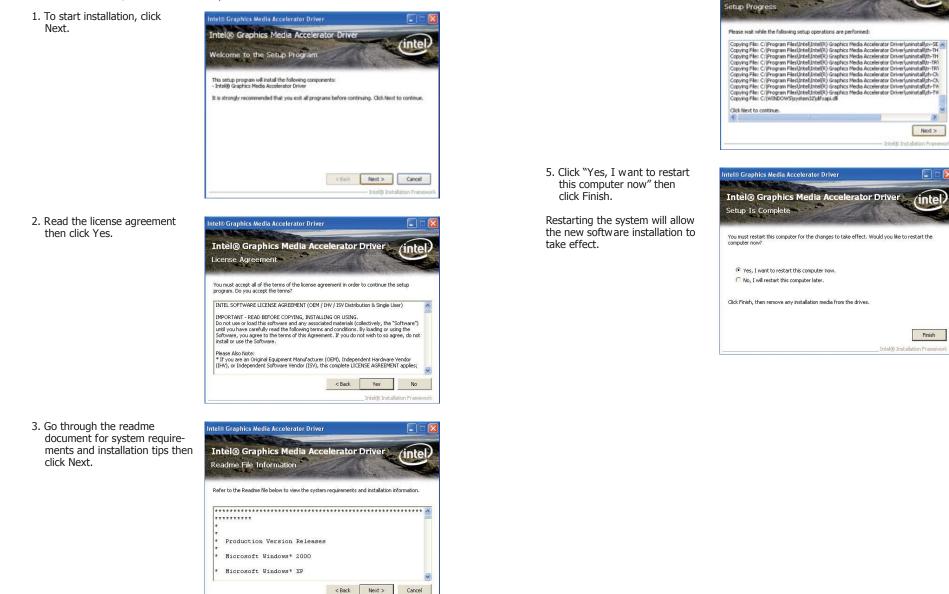
(intel

Finish

Intel® Installatio

Intel HD Graphics Drivers (For Windows XP)

To install the driver, click "Intel HD Gr aphics Drivers" on the main menu.



Intel® Installation Framework

Intel HD Graphics Drivers (For Windows 7 and Windows 8)

To install the driver, click "Intel HD Gr aphics Drivers" on the main menu.

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

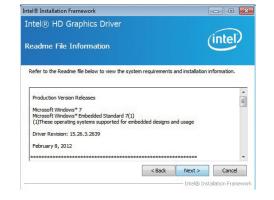
Intel® Installation Framework		[
Intel® HD Graphics Driver Welcome to the Setup Program		(intel
This setup program will install the following compone - Intel® HD Graphice Driver - Intel® Display Audio Driver I It is strongly recommended that you exit all program		nuing. Click Nex	t to continue.
I Automatically run WinSAT and enable the Windo	ws Aero deskte	op theme (if sup	ported).
	< Back	Next >	Cancel
		Intel® Inch	allation Framewo

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

2. Read the license agreement then click Yes.

tel® Installation Framework			
ntel® HD Graphics Driver			
icense Agreement		(intel
You must accept all of the terms of the license program. Do you accept the terms?	agreement in order	to continue the	e setup
INTEL SOFTWARE LICENSE AGREEMENT (OEN IMPORTANT - READ BEFORE COPYING, INST/ Do not use or load this software and any asso until you have carefully read the following ter Software, you agree to the terms of this Agre install or use the Software.	ALLING OR USING. Idated materials (co	lectively, the "	Software")
Please Also Note: * If you are an Original Equipment Manufactu (IHV), or Independent Software Vendor (ISV) * If you are an End-User, then only Exhibit A,	this complete LICE	VSE AGREEMEN	IT applies;
	< Back	Yes	No
		— Intel® Insi	allation Framewo

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



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

ntel® HD (etup Progre	iraphics Driver ss	(intel)
Please wait while !	he following setup operations are perf	ormed:
Creating Registry Creating Registry		dows Media Foundation \HardwareMFT dows Media Foundation \HardwareMFT
Registering DLL: Registering DLL: Registering DLL: Registering DLL: Deleting Registry	:: YPogram Files (Common Files Untell/M :: YPogram Files (Common Files Untell/M :: YPogram Files (Common Files Untell/M :: YPogram Files (Common Files Untell/M (Wer; HKLM)(SCFTWARE(Intell/MedaSD) E: Vsraphices (WIN7/8.15.10.2639)(Wir nue.	edia SDK/j213.0/mfx_mft_h264vd_32.i edia SDK/j213.0/mfx_mft_h264ve_32.i edia SDK/j213.0/mfx_mft_mp2vd_32.d edia SDK/j213.0/mfx_mft_vc1vd_32.dl edia SDK/j213.0/mfx_mft_vpg_32.dll K/Dispatch/jws32-s1-1
Registering DLL: Registering DLL: Registering DLL: Registering DLL: Deleting Registry Creating Process	:: \Program Files\Common Files\Intel\Mi. : \Program Files\Common Files\Intel\Mi. : \Program Files\Common Files\Intel\Mi. : \Program Files\Common Files\Intel\Mi. : \Program Files\Common Files\Intel\Mi. (Key: HKLM\SOFTWARE\Intel\MediaSDI E:\Graphices\WIN7\8.15.10.2639\Wir	edia SDK/213.0/mfx_mft_h264vd_32.i edia SDK/213.0/mfx_mft_h264ve_32.i edia SDK/213.0/mfx_mft_mp2vd_32.d edia SDK/213.0/mfx_mft_vc1vd_32.dl edia SDK/213.0/mfx_mft_vpp_32.dll K/Dispatch/l/wi32-s1-1
Registering DLL: Registering DLL: Registering DLL: Registering DLL: Deleting Registry Creating Process	:: YPogram Files (Common Files Untell/M :: YPogram Files (Common Files Untell/M :: YPogram Files (Common Files Untell/M :: YPogram Files (Common Files Untell/M (Wer; HKLM)(SCFTWARE(Intell/MedaSD) E: Vsraphices (WIN7/8.15.10.2639)(Wir nue.	edia SDK/j213.0/mfx_mft_h264vd_32.i edia SDK/j213.0/mfx_mft_h264ve_32.i edia SDK/j213.0/mfx_mft_mp2vd_32.d edia SDK/j213.0/mfx_mft_vc1vd_32.dl edia SDK/j213.0/mfx_mft_vpg_32.dll K/Dispatch/jws32-s1-1

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



3. Setup is currently installing

the driver. After installation

has completed, click Next.

Intel® Installation Framework

Setup Progress

Intel® Management Engine Components

Please wait while the following setup operations are performed:

(intel)

- - ×

Intel Management Engine Drivers (For Windows 7 and Windows 8)

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

 Setup is ready to install the driver. Click Next. 	Intel® Installation Framework Intel® Management Engine Components Welcome to the Setup Program This setup program will install the Intel® Management Engine Components. It is strongly recommended that you exit all programs before continuing. Click I Install Intel® Control Center	Next to continue.		Ureaning Process: region 32.exe Creating Process: Creating Proc	Components/FWService/Inte Components/FWService/Inte gine Components/FWService gine Components/FWService
	Intel® Control Center provides a centralized starting point for Intel applicate easier to find the programs that you need.	ations making it			
			 After completing tion, click Finish 		
			LIOH, CICK FILISH	Intel® Management Engine Components	
	<back next=""></back>	Cancel		Setup Is Complete	(intel)
2. Read the license agreement then click Yes.	Intel® Installation Framework Intel® Management Engine Components License Agreement You must accept all of the terms of the leense agreement in order to continue program. Do you accept the terms? INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. Do not use or load the following terms and conditions. So you do not water activity rate the following terms and conditions. So you do not water to the terms of this Agreement. If you do not wish to so install or use the Software. Please Abo Note: *If you are on Original Equipment Manufacturer (CEM), Independent Hardw (IPH), or independent Software Yendor (ISD), this complete LICENSE AGREE If Joyu are an End/Jeep. The INTE. SOFTWARE LICENSE	le User) the 'Software') to agree, do not ware Vendor ware Vendor		The setup program successfully installed the following components: - Intel® (Wanagement Engine Interface - Intel® (Jednetity Protection Technology (Intel® IPT) - Serial Over LMN - Intel® Management and Security Status - Local Management Service - User Notification Service Click Finish to complete the setup process.	Finish — Intel® Installation Framew

< Back Yes

No

- Intel® Installation

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 softw are installation to take effect.



Intel LAN Drivers (For Windows XP)

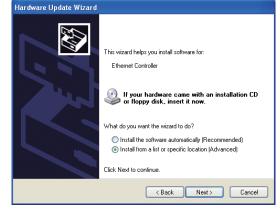
The LAN drivers for Windows XP supporting on the HD332-H81 system board has to be installed manually. When you want to install the LAN driver for Windows XP, please follow the steps below to accomplish the installation.

🖳 Computer Management

1. Launch the Hardw are Update Wizard for the selected device. Select "Update Driver."

	J 🕺 ≈ 🗶 🔕
Computer Management (Local) Computer Management (Local) Computer Management (Local) Computer Management Compu	Computer Computer

2. Choose "Install from a list or specific location (Advanced)" and click "Next" to continue the installation.



3. Choose the option "Don't Hardware Update Wizard search. I will choose the Please choose your search and installation options. driver to install" in order to select the device driver from a list, and click "Next," O Search for the best driver in these locations. Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed. On't search. I will choose the driver to install. Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware <Back Next> Cancel 4. Select a hardware type: Hardware Update Wizard DVD/CD-ROM drives. Then, Hardware Type. click "Next." Select a hardware type, and then click Next. Common hardware types: Batteries ^ 3 Computer Disk drives 🧕 Display adapters DVD/CD-ROM drives B Floppy disk controllers Interstation and the second states and the s 1011 Human Interface Devices < Back Next > Cancel 5. Select your hardware disk Hardware Update Wizard and then click "Have Disk ... " Select the device driver you want to install for this hardware. E S Select the manufacturer and model of your hardware device and then click Next. If you 0 have a disk that contains the driver you want to install, click Have Disk.

Model

CD-ROM Drive (force CDDA accurate CD-ROM Drive (force CDDA inaccurate) CD-ROM Drive (force IMAPI disable) CD-ROM Drive (IMAPI settings 0,1) 📑 This driver is digitally signed.

Tell me why driver signing is important

6. Insert the installation disk and make sure the selected drive is correct.

7. Select the device driv er

"Next."

hardware and then click



(For 32-bit, the f le name is "e1d5132.inf".)

Hardware Update Wizard you want to install for this

Select the device driver you want to i	nstall for this hardware.
Select the manufacturer and model of have a disk that contains the driver yo	your hardware device and then click Next. If you u want to install, click Have Disk.
Show compatible hardware	
Model Intel(R) Ethernet Connection I217-LM	
A This driver is not digitally signed!	Have Disk
Tell me why driver signing is important	

8. Check the software you are installing, Then, click "Continue An yway" to start the installation.



~

Have Disk...

<Back Next> Cancel

9. Click "Finish" to close the wizard.



10. After completing the installation, the Network adapters "Intel(R) Ethernet Connection I217LM" will appear on the computer management list.

IFile Action View Window + 수 수 包回 田母 않고		_ Ø
Computer Management (Local)	Crit-Critesson's CriteCritesson's Social Adds and Critesson's Social Adds and Critesson's CriteCritesson's Social Adds and Critesson's	

Intel LAN Drivers (For Windows 7 and Windows 8)

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

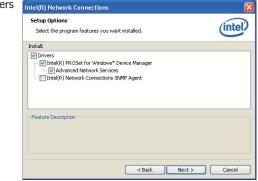
1. Setup is ready to install the driver. Click Next.



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



 Select the program featuers you want installed then click Next.



4. Click Install to begin the installation.

Ready to Install the Program	(intel
The wizard is ready to begin installation.	
Click Install to begin the installation.	
If you want to review or change any of your installation settings exit the wizard.	, click Back. Click Cancel to

5. After completing installation, click Finish.



DFI Utility

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



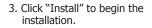
<u>Note:</u> If you are using Windows 7, you need to access the oper ating system as an administrator to be able to install the utilit y.

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



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

1	cense Agreement Please read the following license agreement carefully,
	add your own license text to this dialog, specify your license agreement file in the Dialog tor.
1. 2. 3. 4. 5.	Navigate to the User Interface view. Select the LicenseAgreement dialog. Choose to edit the dialog layout. Once in the Dialog editor, select the Memo ScolableText control. Set FileIlame to the name of your license agreement RTF file.
Aft	er you build your release, your license text will be displayed in the License Agreement dialog.



exit the wizard.	nstallation :	settings, click Bac	ck. Click Cancel to
If you want to review or change any of your i exit the wizard.	nstallation :	settings, click Bac	ck. Click Cancel to
exit the wizard.	nstallation :	settings, click Bac	k. Click Cancel to
Current Settings:			
Setup Type:			
Typical			
Destination Folder:			
C:\Program Files\DFI\DFI Utility\			
User Information:			
Name:			
Company:			
I			
allShield			

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



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



Information



HW Health

/oltage	Set				Case Open	
Vcore	Max	2.00	Min	1.50		
+5	Max	5.25	Min	4.75	Case Close	Enable Disable
+1.05	Max	1.15	Min	0.95		
+1.5	Max	1.60	Min	1.40		Clear Status
+1.8	Max	1.95	Min	1.65		
+12	Max	12.50	Min	11.50		
+3.3	Max	3.60	Min	3.10		
5VSB	Max	5.25	Min	4.75		
3VSB	Max	3.60	Min	3.10		
VBAT	Max	3.50	Min	2.70		
VGFX	Max	1.25	Min	0.80		
VDDR	Max	1.80	Min	1.30		
					📕 BeepAlarm	Smart

HW Health Set

PT HW Center		
Information	HW Health HW Health Set Watchdog	
	Enable watchdog function	
	Setting	
	Timer Value Counting Mode Reset Mode	
	255 Sec 💙 Software 🗸 Keyboard 🗸 Mouse	
	UUU sec	

WatchDog

Intel USB 3.0 Drivers (For Windows 7 Only)

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

1. Setup is ready to install the driv er. Click Next.



2. Read the license agreement then click Yes.



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



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



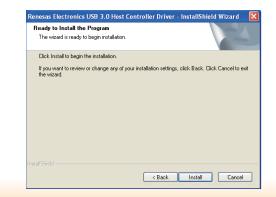
5. After completing installation, click Finish.



RENESAS USB 3.0 Driver

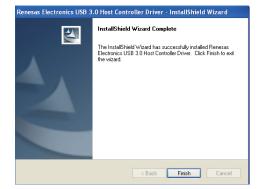
To install the driver, click "RENESAS USB 3.0 Driver" on the main menu.

- 1. The setup program is now ready Renesas Electronics USB 3.0 Host Controller Driver - InstallShield Wizard 🛛 🔀 to install the utility. Click "Next." 4 Welcome to the InstallShield Wizard for Renesas Electronics USB 3.0 Host Controller Driver The InstallShield Wizard will install Renesas Electronics USB 3.0 Host Controller Driver on your computer. To continue, click Next. < Back Next > Cancel 2. Read the license agreement. Renesas Electronics USB 3.0 Host Controller Driver - InstallShield Wizard 🛛 💈 Then, click "I accept the terms of License Aareement the license agreement." Please read the following license agreement carefully. Click "Next." End User License Agreement IMPORTANT - READ CAREFULLY: This End User License Agreement ("EULA") is a legal agreement between you (either an individual or an entity) and RENESAS Electronics Corporation ("RENESAS") for USB3.0 Software ("Software").
 - (RENESAS) TOF USB3.0 Software (Software). YOU AGREE TO BE BOUIND BY THE TERMS AND CONDITIONS OF THIS EULA BY INSTALLING, COPYING ON OTHERWISE USING SOFTWARE. IF YOU DO NOT AGREE THE TERMS AND ✓ ○ I accept the terms of the license agreement ● I do not accept the terms of the license agreement retolStried < Back Next> Cancel
- 3. Click "Install" to begin the installation.



Chapter 4 Supported Software

4. Click "Finish" to exit the wizard after the setup program is installed successfully.



Intel Rapid Storage Technology

(For Windows 7 and Windows 8)

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

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

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





2. Read the warning then click Yes.

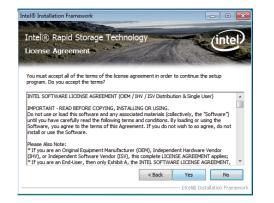


- - -

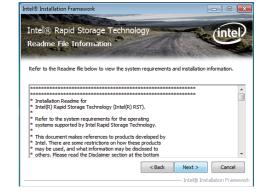
inte

< Back Next > Cancel Intel® Installation Fra

3. Read the license agreement then click Yes.



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



5. Setup is now installing the utilit y. Click Next to continue.



Intel® Installation Framework

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

Restarting the system will allow the new software installation to tak e effect.



Nuvton-SIO

To install the driver, click "Nuvton-SIO" on the main menu.

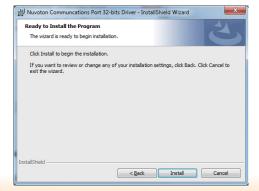
1. The setup program is preparing to install the driv er.



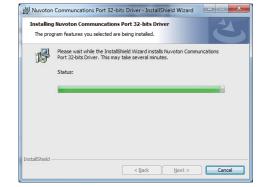
2. The setup program is now ready to install the utility. Click Next.



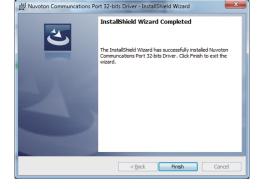
3. Click "Install" to begin the installation.



4. Installing status.



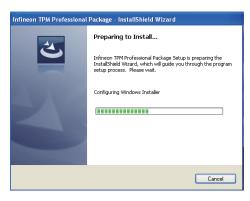
5. Click "Finish" to exit the wizard after the installation is completed.



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 driv er.



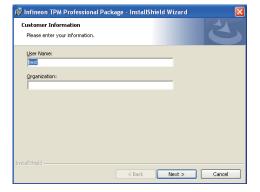
2. The setup program is now ready to install the utility. Click Next.

nfineon TPM Profession	al Package - InstallShield Wizard 🛛 🛛 🔀
1	Welcome to the InstallShield Wizard for Infineon TPM Professional Package
	Version 4.3.100.3287
	The InstallShield(R) Wizard will install Infineon TPM Professional Package on your computer. To continue, click Next.
	It is recommended that you close all other applications before starting Setup.
	WARNING: This program is protected by copyright law and international treades.
	< Back Next > Cancel

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.

🛱 Infineon TPM Professional Package - InstallShield Wizard	×
Ready to Install the Program The wizard is ready to begin installation.	
Click Install to begin the installation.	
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.	
InstaliShield	

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

😸 Infineo	n TPM Professional Package - InstallShield Wizard 🛛 🔲 🔀
	J Infineon TPM Professional Package gram features you selected are being installed.
17	Please wait while the InstallShield Wizard installs Infineon TPM Professional Package. This may take several minutes.
	Status:
	Installing Microsoft Visual C++ 2010 SP1 Redistributable Package
TostaliShield -	
unscalbhield -	< Back Next > Cancel

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

The prog	gram features you selected are being installed.
1	Please wait while the InstallShield Wizard installs Infineon TPM Professional Package. This may take several minutes.
UP S	Status:
	Status: Copying new files
	Copying new mes

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.

🗐 Adobo Doodor, 9, 2

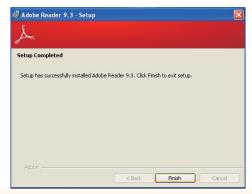
1.	Click Next to install or click
	Change Destination Folder
	to select another folder.

🖥 A do be	Reader 9.3 - Setup	×
L		
Destinati Click Ne	on Folder xt to install to this folder, or click Change to install to a different folder.	
	Install Adobe Reader 9.3 to: C:\Program Files\Adobe\Reader 9.0\	
WARNI	VG: This program is protected by copyright law and international treaties.	
Adobe	Change Destination Folder < Back Next > Cancel	

2. Click Install to begin installation.

to whose wender 7.5 - Serup	\sim
Å.	
Ready to Install the Program	
Click Install to begin the installation.	
If you want to review or change any of your installation folder, click Back. Click Cancel to exit setup.	
Adobe	_
< Back Install Cancel	

3. Click Finish to exit installation.



Chapter 5 - Digital I/O Programming Guide

Register Description

The Input Port Register (register 0) reflects the incoming logic levels of the pins, regardless of whether the pin if defined as an input or output by the Configur ation Register. They act only on the red oper ation. Writes to this register have no effect. The default value (X) is determined by the externally applied logic level. Before a red oper ation, a write transmission is sent with the command byte to indicate to the I ^{2}C device that the Input P ort Regiser will be accessed next.

Register 0 (Input Port Register)

BIT	1-7	1-6	1-5	1-4	1-3	1-2	I-1	I-0
DEFAULT	Х	Х	Х	Х	Х	Х	Х	Х

The Onput Port Register (register 1) shows the outgoing logic lev els of the pins defined as outputs by the Configuration Register. Bit values in this register ha ve no effect on pins defined as inputs. In turns, reads from this register reflect the v alue that is in the flip-flop contolling the output selection, not the actual pin v alue.

Register 1 (Onput Port Register)

віт	0-7	0-6	0-5	O-4	0-3	0-2	0-1	0-0
DEFAULT	1	1	1	1	1	1	1	1

The Polarity Inversion Register (register 2) allows polarity inversion of the pins defined as inputs by the Configuration Register. If a bit in this register is set (writ ten with 1), the corresponding port pin's polarity is inverted. If a bit in this register is clear (writ ten with a 0), the corresponding port pin's original polarity is retained.

Register 2 (Polarity Inversion Register)

віт	N-7	N-6	N-5	N-4	N-3	N-2	N-1	N-0
DEFAULT	0	0	0	0	0	0	0	0

The Configuration Register (register 3) configures the direction of the I/O pins. If a bit in this register is set to 1, the corresponding port pin is enabled as an input with a high-impedence output driver. If a bit in this register is cleared to 0, the corresponding port is enabled as an input.

Register 3 (Configuration Register)

BIT	C-7	C-6	C-5	C-4	C-3	C-2	C-1	C-0
DEFAULT	1	1	1	1	1	1	1	1

Function Description

I2CWriteByte(SlaveAddr, SubAddr, Data): Write a Byte data to a specified I2C Device.

I2CReadByte(SlaveAddr, SubAddr, *Data): Read a Byte data from a specified I2C Device.

SetBit(*Data, Bit) : Set Data bit n as "1".

ClrBit(*Data, Bit) : Set Data bit n as "0".

GetBit(Data, Bit) : Return the value of data bit n.

Sample Code

GPIO Configuration

#def ne SLAVE_ADDR	0x42
#def ne INPUT_PORT	0x00
#def ne OUTPUT_PORT	0x01
#def ne INVERSION_POI	RT 0x02
#def ne COMFIG_PORT	0x03

GpioConf g(int PinNum, int Mode)

BYTE Data; BYTE TempPinNum = PinNum%8;

//Pin0-7 Input/Output Conf guration
I2C_ReadByte(SLAVE_ADDR, CONFIG_PORT, &Data);
if(Mode == 1){SetBit(&Data, TempPinNum);} //Input
else {CIrBit(&Data, TempPinNum);} //Output
I2C_WriteByte(SLAVE_ADDR, CONFIG_PORT, Data);

return 1;

GPIO Output Process

0x42
0x00
0x01
0x02
0x03

GpioOut(int PinNum, int Level)

BYTE Data; BYTE TempPinNum = PinNum%8;

//Pin0-7

//Pindo-7
I2C_ReadByte(SLAVE_ADDR, OUTPUT_PORT, &Data);
if(Level == 0){ClrBit(&Data, TempPinNum);}
else {SetBit(&Data, TempPinNum);}
I2C_WriteByte(SLAVE_ADDR, OUTPUT_PORT, Data);

return 1;

GPIO Iutput Process

#def ne SLAVE ADDR	0x42
#def ne INPUT PORT	0x00
#def ne OUTPUT PORT	0x01
#def ne INVERSION PORT	0x02
#def ne COMFIG_PORT	0x03

GpioIn(int PinNum, int *Status)

BYTE Data; BYTE Group = PinNum/8; BYTE TempPinNum = PinNum%8;

//Pin0-7

I2C_ReadByte(SLAVE_ADDR, INPUT_PORT, &Data); *Status = GetBit(Data, TempPinNum);

return 1;

Appendix A - Watchdog Sample Code

;Software programming example:

MOV OUT	DX,4EH AL,87H DX,AL		
	DX,AL		
;(2) Cor timer)	n f guration Logic	al Device 8, register CRF0/CRF1 (WD	T Control/WD T
; MOV DX MOV OUT DX	(,4EH AL,07H	;Ready to Program Logical Device	
Mov dy Mov Out dx	AL,08H	;Select Logical Device 8	
MOV DX MOV OUT DX	AL, F1H	;Select watchdog timer register	
MOV DX MOV OUT DX	AL,10H	;Set watchdog timer value	
MOV DX,4EH MOV AL, F0H OUT DX,AL		;Select watchdog Control Register	
MOV DX,4FH MOV AL,02H OUT DX,AL		;Set Watchdog Control Value	
	t extended f uncti	on mode	
; MOV MOV	DX,4EH AL,AAH		

OUT DX,AL

Appendix B

Appendix B - Troubleshooting Checklist

Troubleshooting Checklist

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

Some of the most common things to check when $y\;$ ou encounter problems while using y our system are listed below .

- 1. The power switch of each peripher al device is turned on.
- 2. All cables and power cords are tightly connected.
- 3. The electrical outlet to which y our peripheral devices are connected is working. T est the outlet by plugging in a lamp or other electrical device.
- 4. The monitor is turned on.
- 5. The display's brightness and contr ast 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 at tached 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 at tached to the monitor and the system's display adapter.
- 4. Adjust the brightness of the displa y by turning the monitor 's brightness control knob.

The picture seems to be constantly moving.

- 1. The monitor has lost its v ertical sync. Adjust the monitor 's vertical sync.
- 2. Move away any objects, such as another monitor or f an, 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 of f. Fluorescent lights adjacent to the monitor may also cause screen w avering.

Power Supply

When the computer is turned on, nothing happens.

- 1. Check that one end of the AC power cord is plugged into a liv e outlet and the other end properly plugged into the back of the system.
- 2. Make sure that the v oltage selection switch on the back panel is set f or 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 disk ette that is not write-protected.
- 3. You may be writing to the wrong driv e. Check the path statement to mak e sure you are writing to the targeted driv e.
- 4. There is not enough space left on the disk ette. Use another disk ette with adequate stor age space.

Appendix B

Hard Drive

Hard disk failure.

- 1. Make sure the correct driv e type for the hard disk driv e has been entered in the BIOS .
- 2. If the system is configured with two hard driv es, make sure the bootable (first) hard driv e is configured as Master and the second hard driv e is configured as Sla ve. 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 f ormat, 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 at taching 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 set ting.
- 4. Make sure the COM set tings 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 k eys 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 set tings to ensure that the jumpers are properly set.
- 3. Verify that all memory modules are seated securely into the memory sock ets.
- 4. Make sure the memory modules are in the correct locations.
- 5. If the board fails to function, place the board on a flat surf ace and seat all sock eted components. Gently press each component into the sock et.
- 6. If you made changes to the BIOS set tings, re-enter setup and load the BIOS def aults.