HR900-B COM Express Board User's Manual

A16590443

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Trademarks

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FCC and DOC Statement on Class B

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

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

Notice:

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

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About this Manual

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

Warranty

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

Static Electricity Precautions

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

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



Important:

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

Safety Measures

To avoid damage to the system:

• Use the correct AC input voltage range.

To reduce the risk of electric shock:

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

About the Package

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

- ☑ One HR900-B board
- ☑ One drivers/utilities disk
- ☑ 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 with 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

- ☑ COM630-B carrier board kit
- ☑ Heat spreader
- ☑ Heat sink with fan
- Heat spreader with heat sink and fan

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

Before Using the System Board

Before using the system board, prepare basic system components.

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

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

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

Chapter I - Introduction

Specifications

| Processor | Socket G2 988B for: 3rd Generation Intel[®] Core[™] processors (22nm process technology) Intel[®] Core[™] i7-3610QE (6M Cache, up to 3.3 GHz); 45W Intel[®] Core[™] i5-3610ME (3M Cache, up to 3.3 GHz); 35W Intel[®] Core[™] i3-3120ME (3M Cache, 2.4 GHz); 35W 2nd Generation Intel[®] Core[™] processors (32nm process technology) Intel[®] Core[™] i7-2710QE (6M Cache, up to 3.0 GHz); 45W Intel[®] Core[™] i5-2510E (3M Cache, up to 3.1 GHz); 35W Intel[®] Core[™] i3-2330E (3M Cache, 2.2 GHz); 35W Intel[®] Celeron[®] B810 (2M Cache, 1.6 GHz); 35W | | |
|--------------------------|--|-----------------------------------|--|
| | Intel [®] Turbo Boost Technology | | |
| Chipset System Memory | Intel [®] QM67 Express Chipse Two 204 pip DDP2 SODIMM | t sockots | |
| | 2rd Constation Processors | and Concretion Dressessors | |
| | 3rd Generation Processors | 2nd Generation Processors | |
| | DDR3 1066/1333/1600MHz | DDR3 1066/1333MHz (15/13/Celeron) | |
| | | DDR3 1600MHz (i7) | |
| | 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 | | |
| Graphics | fered, non-ECC Intel[®] HD Graphics 4000 (3rd generation processors) Intel[®] HD Graphics 3000 (2nd generation processors) Intel[®] HD Graphics (Intel[®] Celeron[®] processors) Supports VGA, LVDS and DDI interfaces VGA: resolution up to 2048x1536 @ 75Hz LVDS: Single Channel - 18/24-bit; Dual Channel - 36/48-bit, resolution up to 1920x1200 @ 60Hz Digital Display Interfaces: HDMI, DP and SDVO (for Port B) HDMI, DP: resolution up to 1920x1200 @ 60Hz Supports 6 or 16 Graphics Execution Units (EUs) (3rd generation processors) Supports 6 or 12 Graphics Execution Units (EUs) (2nd generation processors) Intel[®] Clear Video Technology DirectX Video Acceleration (DXVA) support for accelerating video processing Supports DirectX 11/10.1/10/9 and OpenGL 3.0 (3rd generation processors) | | |
| Audio | Supports High Definition Au | dio interface | |

Introduction

| LAN | Intel 82579LM Gigabit Ethernet PHY Integrated 10/100/1000 transceiver Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab |
|-----------------------------|---|
| SATA | Supports 4 Serial ATA interfaces 2 SATA 2.0 with data transfer rate up to 3Gb/s 2 SATA 3.0 with data transfer rate up to 6Gb/s Integrated Advanced Host Controller Interface (AHCI) controller |
| IDE | Supports up to two IDE devices DMA mode: Ultra ATA up to 100MB/s PIO mode: up to 16MB/s |
| Expansion Interfaces | Supports 8 USB ports (USB 1.1/2.0 host controllers) Supports 4 PCI slots (PCI 2.3 interface) Supports PCIe x16/SDVO/HDMI/Display Port switchable interface Uses QM67's DDI (Digital Display Interface) Port B for SDVO/HDMI and DDI Port C for Display Port/HDMI VBIOS default setting at Port C only; VBIOS settings modified upon request Supports 1 PCIE x16 interface Supports Gen 3.0 (3rd generation processors) Supports 5 PCIE x1 interfaces Supports LPC interface Supports SMBus interface Supports IDE interface Supports 8-bit Digital I/O |
| Damage Free Intelligence | Monitors CPU temperature and overheat alarm Monitors CPU fan speed and failure alarm Monitors Vcore/V_{GFX}/1.5V voltages and failure alarm Watchdog timer function |
| BIOS | 64Mbit UEFI SPI BIOS |
| Power Consumption | • 54.70 W with i7-2710QE at 2.10GHz and 2x 4GB DDR3 SODIMM |
| OS Support | Windows XP Professional x86 & SP3 (32-bit) Windows XP Professional x64 & SP2 (64-bit) 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) |
| Temperature | • 0°C to 60°C |
| Humidity | • 10% to 90% |
| Power | Input: 12V, 5VSB (optional), VCC_RTC |
| Certification | • CE, FCC Class B, UL, RoHS |
| PCB | Dimensions Basic COM Express form factor 95mm (3.74") x 125mm (4.9") Compliance PICMG COM Express R1.0 basic form factor, Type 2 |

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. 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. Supports LVDS, VGA and DDI interfaces for display outputs.

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

The Intel 82579LM Gigabit LAN controller supports up to 1Gbps data transmission.

Chapter 2 - Hardware Installation

Board Layout



Top View



Buttom View

Mechanical Diagram





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

The system board is equipped with two 204-pin SODIMM sockets that support DDR3 memory modules.



Important:

When the Standby Power LED lit red, it indicates that there is power on the 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 board and components.



Installing the DIM Module



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

- 1. Make sure the PC and all other peripheral devices connected to it has been powered down.
- 2. Disconnect all power cords and cables.
- 3. Locate the SODIMM socket on the system board.
- 4. Note the key on the socket. The key ensures the module can be plugged into the socket in only one direction.



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



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



CPU

Overview

The system board is equipped with a surface mount rPGA 988B CPU socket.



Note: The system board used in the following illustrations may not resemble the actual one. 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 rPGA 988B socket on the board.



 Make sure the screw is in its unlock position. If it's not, use a screwdriver to turn the screw to its unlock position.



5. Position the CPU above the socket. The gold triangular mark on the CPU must align with pin 1 of the CPU socket.



Handle the CPU by its edges and avoid touching the pins.

 Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force. Use a screwdriver to turn the screw to its lock position.

Important:

Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.





Gold triangular mark



Pin 1

Screw in locked position

Jumper Settings

Clear CMOS Data



If you encounter the following,

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

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

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

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

2

Hardware Installation

Connectors

CPU Fan Connector



Connect the CPU fan's cable connector to the CPU fan connector on the board. The cooling fan will provide adequate airflow throughout the chassis to prevent overheating the CPU and board components.

BIOS Setting

"Module Board H/W Monitor" submenu in the Advanced menu of the BIOS will display the current speed of the cooling fan. Refer to chapter 3 of the manual for more information.

COM Express Connectors

The COM Express connectors are used to interface the HR900-B COM Express board to a carrier board. Connect the COM Express connectors (lcoated on the solder side of the board) to the COM Express connectors on the carrier board.

Refer to the "Installing HR900-B onto a Carrier Board" section for more information.



Refer to the following pages for the pin functions of these connectors.

| Row A | | | |
|----------|-----------------|-----------|-----------------|
| 1 | GNDA1 | 56 | PCIE TX8- |
| 2 | GBE0 MDI3- | 57 | GBD |
| 3 | GBE0 MDI3+ | 58 | PCIE TX4+ |
| 4 | GNE0_LINK100# | 59 | PCIE_TX4- |
| 5 | GBE0_LINK1000# | 60 | GNDA7 |
| 6 | GBE0_MDI2- | 61 | PCIE_TX3+ |
| 7 | GBE0_MDI2+ | 62 | PCIE_TX3- |
| 8 | NC | 63 | GPI1(PCH GPIO3) |
| 9 | GBE0_MDI1- | 64 | PCIE_TX2+ |
| 10 | GBE0_MDI1+ | 65 | PCIE_TX2- |
| 11 | GNDA2 | 66 | GNDA8 |
| 12 | GBE0_MDI0- | 67 | GPI2(PCH GPIO4) |
| 13 | GBE0_MDI0+ | 68 | PCIE_TX1+ |
| 14 | GBE0_CTREF | 69 | PCIE_TX1- |
| 15 | SUS_S3# | 70 | GNDA9 |
| 16 | SATA0_TX+ | 71 | LVDS_A0+ |
| 17 | SATA0_TX- | 72 | LVDS_A0- |
| 18 | SUS_S4# | 73 | LVDS_A1+ |
| 19 | SATA0_RX+ | 74 | LVDS_A1- |
| 20 | SATA0_RX- | 75 | LVDS_A2+ |
| 21 | GNDA3 | 76 | LVDS_A2- |
| 22 | SATA4_TX+ | 77 | LVDS_VDD_EN |
| 23 | SATA4_TX- | 78 | LVDS_A3+ |
| 24 | SUS_S5# | 79 | LVDS_A3- |
| 25 | SATA4_RX+ | 80 | GNDA10 |
| 26 | SATA4_RX- | 81 | LVDS_A_CK+ |
| 27 | BAILOW# | 82 | LVDS_A_CK- |
| 28 | AIA_ACI# | 83 | LVDS_12C_CK |
| 29 | AC_SYNC | 84 | LVDS_12C_DAT |
| 30 | AC_RST# | 85 | GPI3(PCH GPI05) |
| 31 | GNDA4 | 86 | KBD_RS1# |
| 32 | AC_BITCLK | 87 | KBD_AZUGATE |
| 33 | AC_SDOUT | 88 | PCIEU_CK_REF+ |
| 34 25 | | <u>89</u> | CNDA11 |
| 26 | | 90 | |
| 27 | | 91 | NC |
| 20 | USB 10 00% | 72 | |
| 20 | USB8- | 93 | NC |
| 40 | USB8+ | 95 | NC |
| 40 | GNDA5 | 96 | GNDA12 |
| 42 | USB2- | 97 | VCC 12VA1 |
| 43 | USB2+ | 98 | VCC 12VA2 |
| 44 | USB0_3_0C# | 99 | VCC 12VA3 |
| 45 | USB0- | 100 | GNDA13 |
| 46 | USB0+ | 101 | VCC 12VA4 |
| 47 | VCC RTC | 102 | VCC 12VA5 |
| 48 | PCH GPIO68 | 103 | VCC_12VA6 |
| 49 | PCH GPIO70 | 104 | VCC_12VA7 |
| 50 | LPC_SERIRQ | 105 | VCC_12VA8 |
| 51 | GNDA6 | 106 | VCC_12VA9 |
| 52 | NC | 107 | VCC_12VA10 |
| 53 | NC | 108 | VCC_12VA11 |
| 54 | GPIO(PCH GPIO2) | 109 | VCC_12VA12 |
| 55 | PCIE TX8+ | 110 | GNDA14 |

| Row B | | | |
|-------|------------------|-----|------------------|
| 1 | GNDB1 | 56 | PCIE RX8- |
| 2 | GBE0 ACT# | 57 | GPO2(PCH GPIO54) |
| 3 | LPC_FRAME# | 58 | PCIE_RX4+ |
| 4 | LPC_AD0 | 59 | PCIE_RX4- |
| 5 | LPC_AD1 | 60 | GNDB7 |
| 6 | LPC_AD2 | 61 | PCIE_RX3+ |
| 7 | LPC_AD3 | 62 | PCIE_RX3- |
| 8 | LPC_DRQ0# | 63 | GPO3(PCH GPIO55) |
| 9 | LPC_DRQ1# | 64 | PCIE_RX2+ |
| 10 | LPC_CLK | 65 | PCIE_RX2- |
| 11 | GNDB2 | 66 | WAKEO# |
| 12 | PWRBTN# | 67 | WAKE1# |
| 13 | SMB_CK | 68 | PCIE_RX1+ |
| 14 | SMB_DAT | 69 | PCIE_RX1- |
| 15 | SMB_ALERT# | 70 | GNDB8 |
| 16 | SATA1_TX+ | 71 | LVDS_B0+ |
| 17 | SATA1_TX- | 72 | LVDS_B0- |
| 18 | SUS_STAT# | 73 | LVDS_B1+ |
| 19 | SATA1_RX+ | 74 | LVDS_B1- |
| 20 | SATA1_RX- | 75 | LVDS_B2+ |
| 21 | GNDB3 | 76 | LVDS_B2- |
| 22 | SATA5_TX+ | 77 | LVDS_B3+ |
| 23 | SATA5_TX- | 78 | LVDS_B3- |
| 24 | PWR_OK | 79 | LVDS_BKLT_EN |
| 25 | SATA5_RX+ | 80 | GNDB9 |
| 26 | SATA5_RX- | 81 | LVDS_B_CK+ |
| 27 | WDT | 82 | LVDS_B_CK- |
| 28 | AC_SDIN2 | 83 | LVDS_BKLT_CTRL |
| 29 | AC_SDIN1 | 84 | VCC_5V_SBYB1 |
| 30 | AC_SDIN0 | 85 | VCC_5V_SBYB2 |
| 31 | GNDB4 | 86 | VCC_5V_SBYB3 |
| 32 | SPKR | 87 | VCC_5V_SBYB4 |
| 33 | 12C_CK | 88 | NC |
| 34 | I2C_DAT | 89 | VGA_RED |
| 35 | THRM# | 90 | GNDB10 |
| 36 | USB11- | 91 | VGA_GREEN |
| 37 | USB11+ | 92 | VGA_BLUE |
| 38 | USB8_11_0C# | 93 | VGA_HSYNC |
| 39 | USB9- | 94 | VGA_VSYNC |
| 40 | USB9+ | 95 | VGA_I2C_CK |
| 41 | GNDB5 | 96 | VGA_I2C_DAT |
| 42 | USB3- | 97 | NC |
| 43 | USB3+ | 98 | NC |
| 44 | USB0_3_0C# | 99 | NC |
| 45 | USB1- | 100 | GNDB11 |
| 46 | USB1+ | 101 | VCC_12VB1 |
| 47 | PCH_GPIO69 | 102 | VCC_12VB2 |
| 48 | PCH_GPIO71 | 103 | VCC_12VB3 |
| 49 | SYS_RESET# | 104 | VCC_12VB4 |
| 50 | CB_RESET# | 105 | VCC_12VB5 |
| 51 | GNDB6 | 106 | VCC_12VB6 |
| 52 | NC | 107 | VCC_12VB7 |
| 53 | NC | 108 | VCC_12VB8 |
| 54 | GPO1(PCH GPIO53) | 109 | VCC_12VB9 |
| 55 | PCIE_RX8+ | 110 | GNDB12 |

| Row C | | | |
|-------|----------------------|-----|--|
| 1 | GNDC1 | 56 | PEG_RX1-/SDVO_INT- |
| 2 | IDE_D7 | 57 | NC |
| 3 | IDE_D6 | 58 | PEG_RX2+/SDVO_STALL+ |
| 4 | IDE_D3 | 59 | PEG_RX2-/SDVO_STALL- |
| 5 | IDE_D15 | 60 | GNDC7 |
| 6 | IDE_D8 | 61 | PEG_RX3+/DDPB_HPD |
| 7 | IDE_D9 | 62 | PEG_RX3- |
| 8 | IDE_D2 | 63 | NC |
| 9 | IDE_D13 | 64 | NC |
| 10 | IDE_D1 | 65 | PEG_RX4+ |
| 11 | GNDC2 | 66 | PEG_RX4- |
| 12 | IDE_D14 | 67 | NC |
| 13 | IDE_IORDY | 68 | PEG_RX5+ |
| 14 | IDE_IOR# | 69 | PEG_RX5- |
| 15 | PCI_PME# | 70 | GNDC8 |
| 16 | PCI_GNT2# | 71 | PEG_RX6+/DDPC_AUX+ |
| 17 | PCI_REQ2# | 72 | PEG_RX6-/DDPC_AUX- |
| 18 | PCI_GNT1# | 73 | SDVOB_CTRLDATA |
| 19 | PCI_REQ1# | 74 | PEG_RX7+/DDPC_HPD |
| 20 | PCI_GNTO# | 75 | PEG_RX7- |
| 21 | GNDC3 | 76 | GNDC9 |
| 22 | PCI_REQ0# | 77 | NC |
| 23 | PCI_RESET# | 78 | PEG_RX8+ |
| 24 | PCI_AD0 | 79 | PEG_RX8- |
| 25 | PCI_AD2 | 80 | GNDC10 |
| 26 | PCI_AD4 | 81 | PEG_RX9+ |
| 27 | PCI_AD6 | 82 | PEG_RX9- |
| 28 | PCI_AD8 | 83 | NC/DDPC_CIRLDAIA |
| 29 | PCI_AD10 | 84 | GNDC11 |
| 30 | PCI_AD12 | 85 | PEG_RX10+ |
| 31 | GNDC4 | 86 | PEG_RX10- |
| 32 | PCI_AD14 | 87 | GNDC12 |
| 33 | | 88 | PEG_RXII+ |
| 34 | PCI_PERR# | 89 | PEG_RXTI- |
| 35 | | 90 | |
| 30 | PCI_DEVSEL# | 91 | $\frac{PEG_KXIZ+}{DEC_DX12}$ |
| 37 | | 92 | CNDC14 |
| 20 | | 93 | |
| 40 | | 95 | $\frac{1}{20} \frac{1}{100} \frac{1}{$ |
| 40 | GNDC5 | 96 | GNDC15 |
| 41 | | 90 | NC |
| 42 | | 98 | PEG RX14+ |
| 44 | PCL_C/BE3# | 99 | PEG_RX14- |
| 45 | PCL AD25 | 100 | GNDC16 |
| 46 | PCL AD27 | 100 | PEG RX15+ |
| 47 | PCL AD29 | 102 | PEG_RX15- |
| 48 | PCI AD31 | 103 | GNDC17 |
| 49 | PCI_IRQA# | 104 | VCC 12VC1 |
| 50 | PCI_IRQB# | 105 | VCC 12VC2 |
| 51 | GNDC6 | 106 | VCC 12VC3 |
| 52 | PEG RX0+/SDVO TVCLK+ | 107 | VCC 12VC4 |
| 53 | PEG_RX0-/SDVO_TVCLK- | 108 | VCC_12VC5 |
| 54 | NC | 109 | VCC_12VC6 |
| 55 | PEG RX1+/SDVO INT+ | 110 | GNDC18 |

| Row D | | | | |
|--------|------------------|-----|-----------------------|--|
| 1 | GNDD1 | 56 | PEG TX1-/DDPB 1- | |
| 2 | IDE D5 | 57 | NC | |
| 3 | IDE D10 | 58 | PEG TX2+/DDPB 2+ | |
| 4 | IDF D11 | 59 | PEG_TX2-/DDPB_2- | |
| 5 | IDF D12 | 60 | GNDD7 | |
| 6 | IDF D4 | 61 | PEG_TX3+/DDPB_3+ | |
| 7 | | 62 | PEG_TX3-/DDPB_3- | |
| , 8 | IDE REO# | 63 | | |
| 9 | IDF IOW# | 64 | NC | |
| 10 | | 65 | $PEG_TX4 + /DDPC_0 +$ | |
| 11 | GNDD2 | 66 | $PEG_TX4-/DDPC_0-$ | |
| 12 | | 67 | GNDD8 | |
| 13 | IDE AO | 68 | PFG_TX5+/DDPC_1+ | |
| 14 | IDF A1 | 69 | PEG_TX5-/DDPC_1- | |
| 15 | IDE A2 | 70 | GNDD9 | |
| 16 | IDE CS1# | 71 | PEG TX6+/DDPC 2+ | |
| 17 | IDE CS3# | 72 | PEG TX6-/DDPC 2- | |
| 18 | IDE_RESET# | 73 | SDVO_CLK | |
| 19 | PCI_GNT3# | 74 | PEG_TX7+/DDPC 3+ | |
| 20 | PCI REQ3# | 75 | PEG TX7-/DDPC 3- | |
| 21 | GNDD3 | 76 | GNDD10 | |
| 22 | PCI AD1 | 77 | IDE CBLID# | |
| 23 | PCI AD3 | 78 | PEG TX8+ | |
| 24 | PCI AD5 | 79 | PEG TX8- | |
| 25 | PCI_AD7 | 80 | GNDD11 | |
| 26 | PCI_C/BEO# | 81 | PEG_TX9+ | |
| 27 | PCI_AD9 | 82 | PEG_TX9- | |
| 28 | PCI_AD11 | 83 | NC/DDPC_CTRLCLK | |
| 29 | PCI_AD13 | 84 | GNDD12 | |
| 30 | PCI_AD15 | 85 | PEG_TX10+ | |
| 31 | GNDD4 | 86 | PEG_TX10- | |
| 32 | PCI_PAR | 87 | GNDD13 | |
| 33 | PCI_SERR# | 88 | PEG_TX11+ | |
| 34 | PCI_STOP# | 89 | PEG_TX11- | |
| 35 | PCI_TRDY# | 90 | GNDD14 | |
| 36 | PCI_FRAME# | 91 | PEG_TX12+ | |
| 37 | PCI_AD16 | 92 | PEG_TX12- | |
| 38 | PCI_AD18 | 93 | GNDD15 | |
| 39 | PCI_AD20 | 94 | PEG_TX13+ | |
| 40 | PCI_AD22 | 95 | PEG_TX13- | |
| 41 | GNDD5 | 96 | GNDD16 | |
| 42 | PCI_AD24 | 97 | NC | |
| 43 | PCI_AD26 | 98 | PEG_TX14+ | |
| 44 | PCI_AD28 | 99 | PEG_TX14- | |
| 45 | PCI_AD30 | 100 | GNDD17 | |
| 46 | PCI_IRQC# | 101 | PEG_TX15+ | |
| 47 | PCI_IRQD# | 102 | PEG_TX15- | |
| 48 | PCI_CLKRUN# | 103 | GNDD18 | |
| 49 | NC | 104 | VCC_12VD1 | |
| 50 | PCI_CLK | 105 | VCC_12VD2 | |
| 51 | GNDD6 | 106 | VCC_12VD3 | |
| 52 | PEG_IX0+/DDPB_0+ | 107 | VCC_12VD4 | |
| 53 | PEG_IX0-/DDPB_0- | 108 | VCC_12VD5 | |
| 54 | | 109 | VCC_12VD6 | |
| 55 | PEG_IX1+/DDPB_1+ | 110 | GNDD19 | |

2

PIN Mapping

DDI Port B

| COM Express BTB | QM67 Digital Display Interface Signal (Port B) | |
|-------------------|--|-------------------------|
| Connector Pin No. | SDVO | HDMI/DVI |
| D52 | DDPB_[0]P: red | DDPB_[0]P: TMDSB_DATA2 |
| D53 | DDPB_[0]N: red complement | DDPB_[0]N: TMDSB_DATA2B |
| D55 | DDPB_[1]P: green | DDPB_[1]P: TMDSB_DATA1 |
| D56 | DDPB_[1]N:green complement | DDPB_[1]N: TMDSB_DATA1B |
| D58 | DDPB_[2]P: blue | DDPB_[2]P: TMDSB_DATA0 |
| D59 | DDPB_[2]N: blue complement | DDPB_[2]N: TMDSB_DATA0B |
| D61 | DDPB_[3]P: clock | DDPB_[3]P: TMDSB_CLK |
| D62 | DDPB_[3]N: clock complement | DDPB_[3]N: TMDSB_CLKB |
| C52 | SDVO_TVCLKINP | |
| C53 | SDVO_TVCLKINN | |
| C55 | SDVO_INTP | |
| C56 | SDVO_INTN | |
| C58 | SDVO_STALLP | |
| C59 | SDVO_STALLN | |
| C61 | | DDPB_HPD |
| C73 | SDVO_CTRLDATA | HDMI Control Data. |
| D73 | SDVO_CTRLCLK | HDMI Control Clock |

DDI Port C

| COM Express BTB | QM67 Digital Display Interface Signal (Port C) | | |
|-------------------|--|-------------------------|--|
| Connector Pin No. | Display Port | HDMI/DVI | |
| D65 | DDPC_[0]P: Display Port Lane 0 | DDPC_[0]P: TMDSC_DATA2 | |
| D66 | DDPC_[0]N: Lane 0 complement | DDPC_[0]N: TMDSC_DATA2B | |
| D68 | DDPC_[1]P: Display Port Lane 1 | DDPC_[1]P: TMDSC_DATA1 | |
| D69 | DDPC_[1]N: Lane 1 complement | DDPC_[1]N: TMDSC_DATA1B | |
| D71 | DDPC_[2]P: Display Port Lane 2 | DDPC_[2]P: TMDSC_DATA0 | |
| D72 | DDPC_[2]N: Lane 2 complement | DDPC_[2]N: TMDSC_DATA0B | |
| D74 | DDPC_[3]P: Display Port Lane 3 | DDPC_[3]P: TMDSC_CLK | |
| D75 | DDPC_[3]N: Lane 3 complement | DDPC_[3]N: TMDSC_CLKB | |
| C71 | DDPC_AUX_P | | |
| C72 | DDPC_AUX_N | | |
| C74 | DDPC_HPD | DDPC_HPD | |
| C83 | SDVO_CTRLDATA | HDMI Control Data. | |
| D83 | SDVO_CTRLCLK | HDMI Control Clock | |

2

Standby Power LED



This LED will light when the system is in the standby mode.

Cooling Option

Heat Sink with Cooling Fan



Top View of the Heat Sink



- "1" and "2" denote the locations of the thermal pads designed to contact the corresponding components that are on HR900-B.
- Remove the plastic covering from the thermal pads prior to mounting the heat sink onto HR900-B.

Dimensions



2

Installing HR900-B onto a Carrier Board



Important:

The carrier board used in this section is for reference purpose only and may not resemble your carrier board. These illustrations are mainly to guide you on how to install HR900-B onto the carrier board of your choice.

1. The photo below shows the locations of the mounting holes.



2. Insert the provided mounting screws into the mounting holes - from the bottom through the top of the carrier board.



2

3. While supporting the mounting screw at the bottom, from the top side of the board, fasten a bolt into the screw.



4. The photo below shows the solder side of the board with the screws already fixed in place.



5. The photo below shows the component side of the board with the bolts already fixed in place.



6. Position the heat sink on top of HR900-B with the heat sink's mounting holes aligned with HR900-B's mounting holes. Insert one of the provided long screws into the mounting hole shown in the photo below.



Long screw

2

7. From the bottom of the board, fasten the provided bolt into the screw and then connect the cooling fan's cable to the fan connector on HR900-B.



8. Grasping HR900-B by its edges, position it on top of the carrier board with its mounting holes aligned with the bolts on the carrier board. This will also align the COM Express connectors of the two boards to each other.



COM Express connectors on HR900-B



COM Express connectors on the carrier board

9. Press HR900-B down firmly until it is completely seated on the COM Express connectors of the carrier board.



10. Use the provided mounting screws to secure HR900-B with heat sink to the carrier board. The photo below shows the locations of the long/short mount-ing screws.



Chapter 3 - BIOS Setup

Overview

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

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



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

Default Configuration

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

Entering the BIOS Setup Utility

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

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

| Keys | Function | |
|-----------------------|--|--|
| Right and Left arrows | Moves the highlight left or right to select a menu. | |
| Up and Down arrows | Moves the highlight up or down between submenus or fields. | |
| <esc></esc> | Exits to the BIOS Setup Utility. | |
| + (plus key) | Scrolls forward through the values or options of the highlighted field. | |
| - (minus key) | Scrolls backward through the values or options of the highlighted field. | |
| Tab | Selects a field. | |
| <f1></f1> | Displays General Help. | |
| <f4></f4> | Saves and exits the Setup program. | |
| <enter></enter> | Press <enter> to enter the high- lighted submenu.</enter> | |

Scroll Bar

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

Submenu

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

BIOS Setup

AMI BIOS Setup Utility

Main

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

| Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. | | | | | |
|---|---|---|--|--|--|
| Main Advanced | Chipset Boot Security Save & Exit | | | | |
| BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time System Date System Time Access Level | American Megatrends 4.6.5.3 UEFI 2.3; PI 1.2 1APTJ 0.18 x64 02/01/2013 17:32:35 [Thu 01/01/2009] [06:39:22] Administrator | Set the Date. Use Tab to switch between Date elements. → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. El. General Hab | | | |
| | | F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit | | | |
| Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc. | | | | | |

System Date

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

System Time

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

Advanced

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



| Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. | | | | | |
|---|--|--------------------------|----------|-------------|--|
| Main Advanced | Chipset | Boot | Security | Save & Exit | |
| ACPI Settings CPU Configuration SATA Configuration Intel TXT(LT) Config PCH-FW Configurati Intel(R) Anti-Theft Te USB Configuration F75387 Module Boar Onboard ATA Contro WatchDog Configurat Network Stack CPU PPM Configurat | uration on echnology Cor d H/W Monit ler Configura ion ion | nfiguratio or tion | n | | → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit |
| Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc. | | | | | |

Launch PXE OpROM

Enables or disables the boot option for legacy network devices.

Launch Storage OpROM

Enables or disables the boot option for legacy mass storage devices with option ROM.

BIOS Setup

ACPI Settings

This section is used to configure the ACPI settings.

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

ACPI Sleep State

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

- S1(POS) Enables the Power On Suspend function.
- S3(STR) Enables the Suspend to RAM function.

Resume by PME

Enable this field to use the PME signal to wake up the system (via PCI, PCIE, onboard LAN and PS2 KB/MB).

Resume by RTC Alarm

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

CPU Configuration

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

| Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. | | |
|---|---|--|
| CPU Configuration Intel (R) Core (TM) i7-2710QE C EMT64 Processor Speed Processor Stepping Microcode Revision Processor Cores Intel HT Technology Hyper-threading Limit CUPID Maximum Intel Virtualization Technology | CPU @ 2.10GHz Supported 2100 MHz 206a7 d 4 Supported [Enabled] [Disabled] [Disabled] | 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. $\rightarrow \leftarrow$: Select Screen $\uparrow \downarrow$: Select Item Enter: Select $\pm /-$: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit |
| Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc. | | |

Hyper-threading

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

Limit CUPID Maximum

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

Intel Virtualization Technology

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

BIOS Setup

SATA Configuration

This section is used to configure SATA functions.

| Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. | | | | |
|--|--|--|--|--|
| Advanced | | | | |
| SATA Controller(s) SATA Mode Selection | [Enabled] [IDE] | Enable or disable SATA Device. | | |
| Serial ATA Port 0 Software Preserve Serial ATA Port 1 Software Preserve Serial ATA Port 4 Software Preserve Serial ATA Port 5 Software Preserve | Empty Unknown Empty Unknown Empty Unknown Empty Unknown | | | |
| | | → \leftarrow : Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit | | |
| Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc. | | | | |

SATA Controller(s)

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

SATA Mode Selection

IDE Mode

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

AHCI Mode

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

PCH-FW Configuration

| Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. Advanced | | | | |
|---|---|--|--|--|
| ME FW Version ME Firmware Mode ME Firmware Type ME Firmware SKU Firmware Update Configuration | 8.0.3.1427 Normal Mode Full Sku Firmware 5MB | → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit | | |
| Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc. | | | | |

Anti-Theft Configuration

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

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

Anti-Theft

The options are Enabled and Disabled.

Enter AT Suspend Mode

The options are Enabled and Disabled.

BIOS Setup

USB Configuration

This section is used to configure USB.

| Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. | | |
|---|--------------------------------|---|
| Advanced | | |
| USB Configuration USB Devices: 2 Hubs | | Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE |
| Legacy USB Support EHCI Hand-off | [Enabled] [Disabled] | option will keep USB devices available only for EFI applications. |
| USB hardware delays and time-outs: USB transfer time-out Device reset time-out Device power-up delay | [20 sec] [20 sec] [Auto] | $\rightarrow \leftarrow: Select Screen \\\uparrow \downarrow: Select Item \\Enter: Select \\+/-: Change Opt. \\F1: General Help \\F2: Previous Values \\F3: Optimized Defaults \\ESC: Exit$ |
| Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc. | | |

Legacy USB Support

Enabled Enables legacy USB. *Auto* Disables support for legacy when no USB devices are connected. *Disabled* Keeps USB devices available only for EFI applications.

EHCI Hand-off

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

USB transfer time-out

The time-out value for Bulk and Interrupt transfers.

Device reset time-out

Selects the USB mass storage device start unit command timeout.

Device power-up delay

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

F75387 Module Board H/W Monitor

| Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. | | |
|---|--|--|
| Advanced | | |
| === Module Board H/W Monitor = | == | Enables CPU SmartFan |
| Current CPU Temperature Vcore VGFX +1.5(V) +3.3(V) Current CPU FAN Speed CPU Smart Fan Mode Setting Manual Value | : +52.0 C : +1.104 V : +0.448 V : +1.520 V : +3.328 : N/A [Manual Mode] 255 | |
| | | → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit |
| Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc. | | |

CPU Smart Fan Mode Setting

The options are Manual Mode and PWM mode.

Manual Value

Allows you to manually enter the CPU fan's speed.

Onboard ATA Controller Configuration

BIOS Setup

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

WatchDog Configuration

| Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. | | | |
|--|------------|---|--|
| Advanced | | | |
| WatchDog function | [Disabled] | Enable/Disable XC2C64A WatchDog Timer. | |
| | | → \leftarrow : Select Screen ↑↓: Select Item Enter: Select +/: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit | |
| Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc. | | | |

WatchDog function

This field is used to enable or disable the Watchdog timer function.

Network Stack

| | Aptio Setup Utility - Copyright (C) 2011 American Megatr Advanced | ends, Inc. | | | | | |
|--------------|--|---------------------------------------|--|--|--|--|--|
| Network Stac | [Disable Link] | Enable/Disable UEFI network stack. | | | | | |
| | Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc. | | | | | | |

BIOS Setup

CPU PPM Configuration

| Aptio Setuj | p Utility - Copyright (C) 2011 American M | egatrends, Inc. | | | | |
|---|---|---|--|--|--|--|
| Advanced | | | | | | |
| CPU PPM Configuration EIST Turbo Mode | [Enabled] [Enabled] | Enable/Disable Intel SpeedStep →←: Select Screen ↑↓: Select Item Enter: Select Item | | | | |
| | | Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit | | | | |
| Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc. | | | | | | |

EIST

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

Turbo Mode

The options are Enabled and Disabled.

Chipset

Configures relevant chipset functions.

| | Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. | | | | | | | |
|----------------------|--|---------------|----------|---------------|-------------------|--|--|--|
| Main | Advanced | Chipset | Boot | Security | Save & Exit | | | |
| ► System ► PCH-IC | Agent (SA) C O Configuration | onfiguration | | | | System Agent (SA) Parameters ←→: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit | | |
| | Versio | on 2.14.1219. | Copyrigh | nt (C) 2011 A | American Megatren | ds, Inc. | | |

System Agent (SA) Configuration



Graphics Configuration

| Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. | | | | | | |
|--|---|--|--|--|--|--|
| Graphics Configuration IGFX VBIOS Version IGFX Frequency Primary Display Internal Graphics GTT Size Aperture Size DVMT Pre-Allocated Gfx Low Power Mode Graphics Performance Analyzers LCD Control | 2143 650 MHz [Auto] [Auto] [2MB] [256MB] [64M] [Enabled] [Disabled] | Select which of IGFX/ PEG/PCI Graphics device should be Primary Display Or select SG for Switch- able Gfx. → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit | | | | |
| Version 2.14.1219. 0 | Copyright (C) 2011 American | Megatrends, Inc. | | | | |

Primary Display

| Auto | When | the | system | boots, | it | will | auto | detects | the | display | de- |
|------|--------|-----|--------|--------|----|------|------|---------|-----|---------|-----|
| | vice. | | | | | | | | | | |
| | 1 4 /1 | | | | | | | | | | |

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

Internal Graphics

Keeps IGD enabled based on the setup options.

GTT Size

Selects the GTT Size. The options are 1MB and 2 MB.

Aperture Size

This field is relevant to the memory-mapped graphics data of the PCIe x16. Leave this in its default setting.

DVMT Pre-Allocated

Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

Gfx Low Power Mode

This option is applicable for SFF only. Enable or Disable the Gfx Low Power Mode.

Graphics Performance Analyzers

Enable or disable Intel Graphics Performance Analyzers Counters.

LCD Control

| Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. | | | | | |
|---|--|--|--|--|--|
| Chipset | | | | | |
| LCD Control Primary IGFX Boot Display Secondary IGFX Boot Display LCD Panel Type | [CRT] [Disabled] [VBIOS Default] | Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be sup- ported only on primary display. | | | |
| | | → \leftarrow : Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit | | | |
| Version 2.14.121 | 9. Copyright (C) 2011 American Meg | atrends, Inc. | | | |

Primary IGFX Boot Display and Secondary IGFX Boot Display

The options are Disabled, CRT, EFP, LFP, EFP3 and EFP2.

LCD Panel Type

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

NB PCIe Configuration

| Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. | | | | | | | |
|--|-----------------------------------|--|--|--|--|--|--|
| Chips | Chipset Chipset | | | | | | |
| NB PCIe Configuration PEG0 - Gen X | [Gen1] | Configure PEG0 B0: D1: F0 Gen1-Gen3 | | | | | |
| Display present Enable PEG | [PCIe x16] [Enabled] | → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit | | | | | |
| Version 2.14. | 1219. Copyright (C) 2011 American | Megatrends, Inc. | | | | | |

Display Present

Selects the display mode. The options are PCIe x16 and SDVO/HDMI/DP.

Enable PEG

To enable or disable the PEG.

Memory Configuration

| Aptio Setup Utility - C Chipset | opyright (C) 2011 American M | legatrends, Inc. |
|---|---|--|
| Memory Information Memory RC Version Memory Frequency Total Memory DIMM#0 DIMM#2 CAS Latency (tCL) Minimum delay time CAS to RAS (tRCDmin) Row Precharge (tRPmin) Active to Precharge (tRASmin) | 1.0.0.1 1333 Mhz 4096 MB (DDR3) Not Present 2048 MB (DDR3) 9 9 9 24 | → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit |
| Version 2.14.1219. Co | opyright (C) 2011 American Me | gatrends. Inc. |

PCH-IO Configuration

| Aptio Setup Utility Chipset | y - Copyright (C) 2011 America | n Megatrends, Inc. |
|---|--------------------------------|--|
| Intel PCH RC Version Intel PCH SKU Name Intel PCH Rev ID > PCI Express Configuration | 1.1.0.0 QM67 05/B3 | PCI Express Configuration Settings. |
| PCH LAN Controller Wake on LAN | [Enabled] [Disabled] | |
| High Precision Event Timer Con | figuration | |
| Restore AC Power Loss | [Power On] | → \leftarrow : Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit |
| Version 2.14.121 | 9. Copyright (C) 2011 American | Megatrends, Inc. |

PCH LAN Controller

Enables or disables the PCH LAN Controller.

Wake on LAN Enable

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

Restore AC Power Loss

Off

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

On

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

Former-Sts

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

USB Configuration

| | Aptio Setup Utility - Copyright (C) 2011 American Megat | ends, Inc. |
|----------------|---|--|
| | Chipset | |
| EHCI1 EHCI2 | [Enabled] [Enabled] | Control the USB EHCI (USB 2.0) functions. One EHCI controller must always be enabled. → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit |
| | Version 2.14.1219. Copyright (C) 2011 American Megatren | ids, Inc. |

EHCI1 and EHCI2

These fields are used to enable or disable USB 2.0.

PCI Express Configuration

| Aptio Setup Util Chipse | ity - Copyright (C) 2011 American s <mark>t</mark> | Megatrends, Inc. |
|----------------------------|---|---|
| PCI Express Clock Gating | [Enabled] | Enable or disable PCI Express Clock Gating for each root port. → ←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values |
| Varian 2.14.1 | 210 Conversion (C) 2011 American (| F2: Previous Values F3: Optimized Defaults ESC: Exit |
| version 2.14.12 | 219. Copyright (C) 2011 American r | viegatienus, mc. |

PCI Express Clock Gating

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

Boot

| | | Aptio Se | tup Utility | - Copyrig | ht (C) 2011 | American Megati | ends, Inc. |
|---|----------------------|------------------------------|-------------|------------------------|--------------|-------------------|--|
| | Main | Advanced | Chipset | Boot | Security | Save & Exit | |
| | Boot Cor Bootup N | nfiguration NumLock State | | [On] | | | Select the Keyboard NumLock state. |
| | Quiet Bo Fast Boo | ot t | | [Disabled [Disabled |]] | | |
| | CSM16 N | Module Version | 1 | 07.69 | | | |
| | Boot Opt | tion Priorities | | | | | |
| • | CSM par | ameters | | | | | ← →: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit |
| | | Versio | n 2.14.1219 | . Copyrigh | t (C) 2011 A | American Megatren | ds, Inc. |

Bootup NumLock State

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

Quiet Boot

Enables or disables the quiet boot function.

Fast Boot

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

Security

| Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. | | | | | | |
|--|---|--|--|---------------|-------------------|--|
| Main | Advanced | Chipset | Boot | Security | Save & Exit | |
| Password I If ONLY ti then this o asked for v If ONLY ti is a power boot or ent Administra The passw | Description he Administrat nly limits acce when entering 5 he User's passy on password a ter Setup. In S ator rights. ord must be 3 | or's passwor ss to Setup a Setup. word is set, t ind must be etup the Use to 20 charac | d is set, and is only hen this entered to r will hav ters long. | y e | | Set Setup Administrator Password. |
| Administra User Passy | ntor Password vord | | | | | → \leftarrow : Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit |
| | Versio | on 2.14.1219 | . Copyrig | ht (C) 2011 A | American Megatrei | nds, Inc. |

Administrator Password

Sets the administrator password.

User Password

Sets the user password.

Save & Exit

| Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc. | | | | | | |
|--|------------------------------------|--------------|---------|--------------|-------------------|---|
| Main Adva | nced C | hipset B | Boot | Security | Save & Exit | |
| Save Changes and Discard Changes a Save Options Restore Defaults Save as User Defa Restore User Defa Boot Override | Reset and Reset ults ults | | | | | Reset the system after saving the changes. |
| Launch EFI Shell | from file s | ystem device | e | | | |
| | | | | | | ←→: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults ESC: Exit |
| | Version 2 | .14.1219. Co | opyrigh | t (C) 2011 A | American Megatren | ds, Inc. |

Save Changes and Reset

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

Discard Changes and Reset

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

Restore Defaults

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

Save as User Defaults

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

Restore User Defaults

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

Updating the BIOS

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

To execute the utility, type:

A: > AFUDOS BIOS_File_Name /b /p /n

then press <Enter>.

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

After finishing BIOS update, please turn off the AC power. Wait about 10 seconds and then turn on the AC power again.

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

Note:



BIOS Setup

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

Chapter 4 - Supported Software

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

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



Auto Run Pages (for Windows 7)



Auto Run Pages (for Windows 8)



Microsoft .NET Framework 3.5 (for Windows XP only)

Note: Before installing Microsoft .NET Framework 3.5 SP1, make sure you have updated your Windows XP operating system to Service Pack 3.

To install the driver, click "Microsoft .NET Framework 3.5 SP1" on the main menu.

 Read the license agreement carefully.
 Microsoft .NET Framework 3.5 Setup

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



 Setup is now installing the driver.



3. Click Exit.



Intel Chipset Device Software

The Intel Chipset Device Software 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 Device Software" on the main menu.

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



2. Read the license agreement then click Yes.



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



4. After all setup operations are done, click Next.



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

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



Intel HD Graphics Drivers

Note: Before installing Intel HD Graphics Drivers, make sure you have installed Microsoft .NET Framework 3.5 SP1.

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

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



2. Read the license agreement then click Yes.



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

| Intel® Graphics Media Accelerator Di | river | | |
|--|---|--------------------|--------------|
| Intel® Graphics Media A Readme File Information | Accelerator | Driver | intel |
| Refer to the Readme file below to view the s ************ * * * * Production Version Rele: * * Microsoft Windows* 2000 * Microsoft Windows* XP | system requirements . ************************************ | and installation i | information. |
| | < Back | Next > | Cancel |

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

| Intel® Graphics Media Ac | celerator Driver (intel |
|---|--|
| Setup Progress | |
| Please wait while the following setup operations | s are performed: |
| Copying File: HDMIENU.dll Creating Key: HKLM\System\CurrentControlSet Creating Key: HKLM\System\CurrentControlSet Creating Key: HKLM\System\CurrentControlSet Creating Key: HKLM\SOFTWARE\Microsoft\Win Creating Key: HKLM\SOFTWARE\Microsoft\Win Installing Driver: Mobile Intel(R) 965 Express C Version: 6.14.10.4935 | Control/Windows/SystemDirectory=C:\WINDC \Services\lam\Device1\SystemDirectory=C:\W \Services\lam\Device1\SystemDirectory=C:\W dows\CurrentVersion\Uninstall\HDMI\DisplayNa dows\CurrentVersion\Uninstall\HDMI\UninstallS hipset Family |
| Click Next to continue. | |
| | |

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

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



Intel Management Engine Drivers

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

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



2. Read the license agreement then click Yes.



3. 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.



Realtek Audio Drivers (Optional)

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

- 1. Setup is now ready to install the audio driver. Click Next.
- Follow the remainder of the steps on the screen; clicking "Next" each time you finish a step.

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

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



| InstallShield Wizard Complete |
|--|
| The Installitied Wigad has successfully installed Realeti. High Delivition Audo Diver. Belare you can use the pergamin you must restart your computer. |
| Yes, I want to restart my computer now. Play, I will write the computer later. Planove and status from their clines, and then click. Finish to complete setup. |
| |
Intel LAN Drivers

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

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



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

| License Agreement Please read the following licens | e agreement carefully. | (intel) |
|--|--|--|
| INTEL SOFTWARE LI | ICENSE AGREEMEN | Г (Final, License) 🌰 |
| IMPORTANT - READ | BEFORE COPYING, I <u>USING</u> . | NSTALLING OR |
| | | |
| Do not use or load thi materials (collectively carefully read the follo oading or using the S | s software and any as , the "Software") until owing terms and cond Software, you agree to | ssociated I you have ditions. By o the terms of this <u>∞</u> |

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

| Select the program features you want installed. | (intel |
|--|--------|
| install: | |
| ✓ Intel(R) PROSet for Windows* Device Manager ✓ Intel(R) Advanced Network Services ✓ Intel(R) Network Connections SNMP Agent | |
| Feature Description | |
| | |

4. Click Install to begin the installation.



5. After completing installation, click Finish.

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| 0 |

Intel Turbo Boost Monitor (for Windows 7 only)

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

1. The setup program is configuring the new software installation.



2. Click Next.

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



< Back

Next >

Cancel

MyGuard Hardware Monitor

- 1. Locate for the MyGuard folder in the provided disc.
- In the MyGuard folder, right-click on the "setup" file.
- 3. Select Run As Administrator.
- 4. Double-click Setup.

Important:

Perform steps 1-3 only when using Windows 7 or Windows Vista.

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

| Jeganian * 💆 Open Have f | Care 1 | | | E . CL . |
|---|---|--|--|---|
| Prositia: Textrap Textrap | L Lea Lead 2002 2000 2000 2000 2000 2000 2000 20 | Date multifiel 12/0,000 3 Jan Hel 12/0,000 3 Jan Hel 12/0,000 3 Jan Hel 20/0,000 1 Jan Hel 20/0,000 1 Jan Hel 20/0 3 Jan | Type Contrast File Listen File Contrast File Contrast File District Bit File Configurations ant Bit File Configurations ant Bit File | Con 309-03 3,201 04 400-04 400-04 309-04 309-04 309-04 40-049 |



6. Click Install to begin installation.



7. Setup is currently installing the utility.



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



DFI Utility

Click "DFI Utility" on the main menu, it provides Board Information, Watchdog, SBDIO and Backlight information.

| HW Center v1.3 | |
|--------------------------------------|----------|
| Infomation Watch Dog SBDIO Backlight | |
| HR900-B | |
| | |
| AMD G-T56N Processor | |
| | |
| HAM 1643 MBrtee | |
| iono mojico | |
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| | |
| | |
| | O O |
| | DFI Inc. |
| | |

Microsoft DirectX 9.0C Driver (for Windows XP only)

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

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



 To start installation, click Next.

| talling Microsoft(R) DirectX(R) | | |
|---|---|--------|
| DirectX Setup Install DirectX runtime components | | 2 |
| DirectX Runtime Install: This install package will search for upda and update as necessary. It may take a | ated DirectX Runtime Components a few minutes. | |
| To start installation, please click Next. | | |
| | | |
| | | |
| | | |
| | <back next=""></back> | Cancel |

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

| Installing Microsoft(R) Dir | ectX(R) |
|-----------------------------|---|
| | Installation Complete |
| | The components installed are now ready for use. |
| | |
| | |
| | K Back Finish Cancel |

Intel Rapid Storage Technology

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

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

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



2. Read the license agreement Intel® Installation Framework then click Yes.



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

| Intel® I Readme | installa File Info | tion Frommation | amew | ork | A SALAN | (intel |
|--|-------------------------------|-----------------------------|-----------------------------|-------------------------|--|-------------------------|
| Refer to the R | nadme files t | o view the s | ystem requ | irements and in | etalation inform | ation. |
| | | | | | | |
| | | | | ******** | | |
| | | | | | | |
| | | | | | | |
| * Insta | llation | Readme | for Int | el(R) Mat | rix Stores | 7e |
| * Insta Manager. | llation | Readme | for Int | el(R) Mat | rix Stores | 7e |
| * Insta Manager. * | llation to the | Readme | for Int | ments for | the operation | pe |
| * Insta Manager. * Refer * syste | to the | Readme system | for Int require | ments for (R) Matrix | the operation of the storage h | pe ating Manager. |
| * Insta Manager. * * Refer * syste | llation to the ms suppo | Readme system sted by | for Int require Intel | ments for (R) Matrix | the operation of the op | ge sting Manager. |

4. Setup is now installing the utility. Click Next to continue. Intel® Installation Framework



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

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



6. Run the Intel Matrix Storage Console utility to view the hard drives' configuration.

| te Vev datas | n hrip | | |
|--------------|---|--|--|
| inter | in the interfit Man Stange Manage in the interfit Offic STA STA And Chantes interfit of State Office interfit office | Printmoon Print - Print - P | View Homed J Hannel Generation J Hearth HCCSTISTERULASSS PROSMISSER P2004054 H2005 H2005 H2005 |
| | | | |

F6 Floppy

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

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

32-bit CD Drive:\AHCI_RAID\F6FLOPPY\f6flpy32

64-bit CD Drive:\AHCI_RAID\F6FLOPPY\f6flpy64

Adobe Acrobat Reader 9.3

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

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



2. Click Install to begin installation.



3. Click Finish to exit installation.



Appendix A - NLITE and AHCI Installation Guide

nLite

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



Note:

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

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

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

2. Install nLite.



Important:

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

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

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



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



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

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



7. Click Next.

| Available Treats | Date |
|------------------|------|
| | |
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| | |

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

| Taik Selectio Utoore the one choose | en Hender sons werde fo To medier en 120 en | nertiana. Yosa ona interese eker roamber af hada titola betres, e g. yosa. A dag the reat |
|---|---|--|
| | | 0 Service Pack |
| | lubgab | Hoffort, Add-our sal Uplete Fachs |
| | | 9 Dávio |
| | Remove | Compression |
| | | Unoficialed |
| | Setup | Optimu |
| | | Tetak |
| | Carste | Booteble 130 |
| | | AE Bese |
| 🔊 Tage | | Q link Not Q Canal X |

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



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

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

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| | |
| sectul Be sure to select only appropri | inte dravers for your Windows version. For example |
| ssefull Be sure to select only appropri or integrate 64 bit textmode drivers in stellation will fed | iate drivers for your Windows version. For example to 32bit Windows there will be file load errors and |
| azefull Be suze to select only appropri to integrate 64 bit textmode drivers mi stallation will fail. | iate drivers for your Windows version. For example to 32bit Windows there will be file load errors and |
| weful! Be sure to select only appropro to integrate 64bit textmode durvers in stallstion will fiel | iate dravers for your Windows version. For example to 32bit Windows there will be file load emors and |
| asefull Be sure to select only appropr on integrate 64 bit textmode drivers in stallation will feil | inte dravers for your Windows version. For example to 32bit Windows there will be file load errors and |

 If you are uncertain of the southbridge chip used on your motherboard, select all RAID/AHCI controllers and then click OK.



12. Click Next.

| Provider . | Hode Type | Version . | Delto Futh |
|------------|----------------------|--------------------------|--|
| luel | TXT - Ma TXT - Ma | 89.0.1023 89.0.1023 | 05042009 CAHCI 05042009 CAHCI |
| lubl | TXTNec TXTNec | 8901023 | 05/04/2009 C'AHCI 05/04/2009 C'AHCI |
| latel | TXT Ma | 9901023 | 06/04/2009 CAAHCI |
| latel | IXI - Mr | 8.9.0.1023 | 06/04/2009 C/AHCI |
| lund | TXT Mis | 8 9 0 1023 | DEDAGDOS CARLE |
| latel | TXT - Ma | 8.9.0.1023 | 05/04/2009 C/AHCI 05/04/2009 C/AHCI |
| lund | IXI - Mr | 8 9 0 1023 | 06/04/2009 C:VAHCI |
| land | TXT Me | 8.9.0.1023 | 06/04/2009 C1AHCI |
| Intel | TXT hdz TXT hdz | 8.9.0.1023 8.9.0.1023 | 06/04/2009 C:\AHCI 06/04/2009 C:\AHCI |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

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



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

| Preparing telested tasks |
|---|
| Integrating Politices, packs and theman |
| Remaining components |
| Processing setup files |
| Integrating drivers |
| Finalizing |
| Finalded! Totel size is 657.77MB Integrated driver: 0.18MB |
| The sambledon gave by 0.54MB germal + |

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

| General | | 1000 C | | | | |
|-------------------------|---------------------|--------------------|-------------|---|--|----------------|
| Stole | | Leves | | | | |
| Tabal | 100 m | Second | | 10.00 | | - |
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| maste | | | | | | 14 |
| 100 Farmer | | Bestmeter | | | | |
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| and the | | C. C. C. C. | 100 | | | |
| Engen | | | | | | |
| | | | | Cirkhen | to that -> Ma | aks 100 |
| ALC: NOT | | | | | and the second s | and the second |
| If you want to include | le additional film | on your CD/D/D, | copy them t | to the working day | ritery | |
| before starting, or its | it click sent if yo | o weat to make the | 390 Jami | 0.0000000000000000000000000000000000000 | | spilor |

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

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

| Genetal Mode | | Desire | | | |
|--|--|---|---|-------------------|----|
| Duert Base | | 110.P PIONEE | R DVD-RW DVR-111D | 123 | 4 |
| Lakel | | Bux geed | Melia | | |
| Wallie | | Maannan | Me media | | 12 |
| Atomet | | | Lander Lander | | |
| 100 Eague | | Boot writer | | - Qualitation | |
| Deited | 0.0 | Deled | W Traty | Tert with | |
| Ingen | | | | | |
| | | | | | |
| | | | Cack he | an to start Dico. | |
| Information. | antester. | | | | |
| If you want to not before starting, or | ede additional film just olich seot if yo | ton your CDRDVD, or yo went to racke the P | opy them to the working to 30 lefts: | arkey . | - |
| 32 | | | | Esqlor | |

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

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



AHCI

The installation steps below will guide you in configuring your SATA drive to AHCI mode.

- 1. Enter the BIOS utility and configure the SATA controller to IDE mode.
- 2. Install Windows XP but do not press F6.
- 3. Download relevant RAID/AHCI driver files supported by the motherboard chipset from Intel's website.

Transfer the downloaded driver files to C:\AHCI.



4. Open Device Manager and right click on one of the Intel Serial ATA Storage Controllers, then select **Update Driver**.

If the controller you selected did not work, try selecting another one.



In the Hardware Update Hardware Update Wizard
 Wizard dialog box, select
 "No, not this time" then click Next.



 Select "Install from a list or specific location (Advanced)" and then click Next.



7. Select "Don't search. I will choose the driver to install" and then click Next.



8. Click "Have Disk".



9. Select C:\AHCI\iaAHCI.inf Locate File and then click **Open**.



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



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

| | 4 | Initialing this device driver in not reconvended because Windows cerent verify that it is compatible with your hardware. If the driver is not compatible, your hardware will not work correctly and your computer night become unstable or stop working completely. Do your hardware with an orthogen the driver? |
|--|---|---|
|--|---|---|

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

12. Click Finish.



- The system's settings have been changed. Windows XP requires that you restart the computer. Click Yes.
- Enter the BIOS utility and modify the SATA controller from IDE to AHCI. By doing so, Windows will work normally with the SATA controller that is in AHCI mode.

| Q. | Your hardware settings have changed. You must restart your computer for these changes to take effect | | | | |
|----|--|--|--|--|--|
|----|--|--|--|--|--|



Appendix B - Watchdog Sample Code

;Software programming example:

| ;;(1) Enter | Super IO Configu | uration mode |
|-------------------------------|---|--|
| ; MOV MOV OUT OUT | DX,2EH AL,87H DX,AL DX,AL DX,AL | |
| ; (2) Conf timer) | iguration Logical | Device 7, register CRF5/CRF6 (WDT Control /WDT |
| MOV MOV OUT | DX,2EH AL,07H DX,AL | ;Ready to Program Logical Device |
| MOV MOV OUT | DX,2FH AL,07H DX,AL | ;Select Logical Device 7 |
| MOV MOV OUT | DX,2EH AL, F6H DX,AL | ;Select watchdog timer register |
| MOV MOV OUT | DX,2FH AL,10H DX,AL | ;Set watchdog timer value |
| MOV MOV OUT | DX,2EH AL, F5H DX,AL | ;Select watchdog Control Register |
| MOV MOV OUT | DX,2FH AL,61H DX,AL | ;Set Watchdog Control Value |
| ; ;(1) Exit e | extended function | mode |
| ; MOV MOV OUT | DX,2EH AL,AAH DX,AL | |

Appendix C - System Error Message

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

Error Messages

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

CMOS BATTERY HAS FAILED

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



Important

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

CMOS CHECKSUM ERROR

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

DISPLAY SWITCH IS SET INCORRECTLY

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

Appendix D - Troubleshooting

Troubleshooting Checklist

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

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

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

Monitor/Display

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

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

Troubleshooting

The picture seems to be constantly moving.

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

The screen seems to be constantly wavering.

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

Power Supply

When the computer is turned on, nothing happens.

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

Floppy Drive

The computer cannot access the floppy drive.

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

Hard Drive

Hard disk failure.

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

Excessively long formatting period.

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

Serial Port

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

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

Keyboard

Nothing happens when a key on the keyboard was pressed.

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

System Board

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