You can read the recommendations in the user guide, the technical guide or the installation guide for ASROCK H77 PRO4-M. You'll find the answers to all your questions on the ASROCK H77 PRO4-M in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual ASROCK H77 PRO4-M
User guide ASROCK H77 PRO4-M
Operating instructions ASROCK H77 PRO4-M
Instructions for use ASROCK H77 PRO4-M
Instruction manual ASROCK H77 PRO4-M

ASRock

H77 Pro4-M

User Manual

Version 1.1
Published June 2013
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I

Manual abstract:

In no event shall ASRock, its directors, officers, employees, or agents be liable for any indirect, special, incidental, or consequential damages (including damages for loss of profits, loss of business, loss of data, interruption of business and the like), even if ASRock has been advised of the possibility of such damages arising from any defect or error in the manual or product. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. CALIFORNIA, USA ONLY The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance. "Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"
ASRock Website: http://www.asrock.
com 2

Contents

Chapter 1: Introduction

Thank you for purchasing ASRock H77 Pro4-M motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, chapter 1 and 2 contains introduction of the motherboard and stepby-step guide to the hardware installation. Chapter 3 and 4 contains the configuration guide to BIOS setup and information of the Support CD. Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock website without further notice. You may find the latest VGA cards and CPU support lists on ASRock website as well.

ASRock website http://www.asrock.com If you require technical support related to this motherboard, please visit our website for specific information about the model you are using. www.asrock.com/support/index.asp

1.1 Package Contents

ASRock H77 Pro4-M Motherboard (Micro ATX Form Factor: 9.6-in x 9.6-in, 24.4 cm x 24.4 cm) ASRock H77 Pro4-M Quick Installation Guide ASRock H77 Pro4-M Support CD 2 x Serial ATA (SATA) Data Cables (Optional) 1 x I/O Panel Shield

ASRock Reminds You... To get better performance in Windows® 7 / 7 64-bit / VistaTM / VistaTM 64bit, it is recommended to set the BIOS option in Storage Configuration to AHCI mode.

For the BIOS setup, please refer to the "User Manual" in our support CD for details.

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1.2 Specifications

Platform	- Micro ATX Form Factor: 9.6-in x 9.6-in, 24.4 cm x 24.4 cm - All Solid Capacitor design (100% Japan-made high-quality Conductive Polymer Capacitors)
CPU	- Supports 3rd and 2nd Generation Intel® CoreTM i7 / i5 / i3 in LGA1155 Package - Digi Power Design - 4 + 2 Power Phase Design - Supports Intel® Turbo Boost 2.0 Technology - Supports Intel® K-Series unlocked CPU - Supports Hyper-Threading Technology (see CAUTION 1) - Supports Intel® Rapid Start Technology and Smart Connect Technology with Intel® Ivy Bridge CPU
Chipset	- Intel® H77
Memory	- Dual Channel DDR3 Memory Technology (see CAUTION 2) - 4 x DDR3 DIMM slots - Supports DDR3 1600/1333/1066 non-ECC, un-buffered memory (DDR3 1600 with Intel® Ivy Bridge CPU, DDR3 1333 with Intel® Sandy Bridge CPU) - Max. capacity of system memory: 32GB (see CAUTION 3) - Supports Intel® Extreme Memory Profile (XMP)1.3/1.2
Expansion Slot	- 1 x PCI Express 3.0 x16 slot (PCIE1: x16 mode) (see CAUTION 4) * PCIE 3.0 is only supported with Intel® Ivy Bridge CPU. With Intel® Sandy Bridge CPU, it only supports PCIE 2.0. - 2 x PCI Express 2.0 x16 slots (PCIE3: x1 mode; PCIE4: x4 mode) - 1 x PCI Express 2.0 x 1 slot - Supports AMD Quad CrossFireXTM and CrossFireXTM
Graphics	* Intel® HD Graphics Built-in Visuals and the VGA outputs can be supported only with processors which are GPU integrated. - Supports Intel® HD Graphics Built-in Visuals: Intel® Quick Sync Video, Intel® InTruTM 3D, Intel® Clear Video HD Technology, Intel® InsiderTM, Intel® HD Graphics 2500/4000, Intel® Advanced Vector Extensions (AVX) - Pixel Shader 5.0, DirectX 11 with Intel® Ivy Bridge CPU. Pixel Shader 4.1, DirectX 10.1 with Intel® Sandy Bridge CPU. - Max. shared memory 1760MB (see CAUTION 5)

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Audio	
LAN	
Rear Panel I/O	- Three VGA Output options: D-Sub, DVI-D and HDMI (see CAUTION 6) - Supports HDMI 1.4a Technology with max. resolution up to 1920x1200 @ 60Hz - Supports DVI with max. resolution up to 1920x1200 @ 60Hz - Supports D-Sub with max. resolution up to 2048x1536 @ 75Hz - Supports Auto Lip Sync, Deep Color (12bpc), xvYCC and HBR (High Bit Rate Audio) with HDMI (Compliant HDMI monitor is required) (see CAUTION 7) - Supports HDCP function with DVI and HDMI ports - Supports Full HD 1080p Blu-ray (BD) / HD-DVD playback with DVI and HDMI ports - 7.
SATA3	

1 CH HD Audio with Content Protection (Realtek ALC892 Audio Codec) - Premium Blu-ray audio support - PCIE x1 Gigabit LAN 10/100/1000 Mb/s - Realtek RTL8111E - Supports Wake-On-LAN - Supports LAN Cable Detection - Supports Energy Efficient Ethernet 802.

3az - Supports PXE I/O Panel - 1 x PS/2 Keyboard Port - 1 x D-Sub Port - 1 x DVI-D Port - 1 x HDMI Port - 1 x Optical SPDIF Out Port - 4 x Ready-to-Use USB 2.0 Ports - 1 x eSATA3 Connector - 2 x Ready-to-Use USB 3.0 Ports - 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED) - HD Audio Jack: Rear Speaker/Central/Bass/Line in/Front Speaker/Microphone (see CAUTION 8) - 2 x SATA3 6.0 Gb/s connectors by Intel® H77, support RAID (RAID 0, RAID 1, RAID 5, RAID 10, Intel Rapid Storage and Intel Smart Response Technology), NCQ, AHCI and Hot Plug functions 7 USB3.0 Connector - 2 x SATA3 6.0 Gb/s connectors by ASMedia ASM1061, support NCQ, AHCI and Hot Plug functions (SATA3_A1 connector is shared with eSATA3 port) - 2 x Rear USB 3.0 ports, support USB 1.0/2.0/3.0 up to 5Gb/s - 1 x Front USB 3.

0 header (supports 2 USB 3.0 ports), supports USB 1.0/2.0/3.0 up to 5Gb/s - 4 x SATA2 3.

0 Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 5, RAID 10, Intel Rapid Storage and Intel Smart Response Technology), NCQ, AHCI and Hot Plug functions - 4 x SATA3 6.0Gb/s connectors - 1 x IR header - 1 x CIR header - 1 x Print port header - 1 x COM port header - 1 x HDMI_SPDIF header - 1 x Power LED header - CPU/Chassis/Power FAN connector - 24 pin ATX power connector - 8 pin 12V power connector - Front panel audio connector - 3 x USB 2.0 headers (support 6 USB 2.0 ports) - 1 x USB 3.0 header (supports 2 USB 3.

0 ports) - 64Mb AMI UEFI Legal BIOS with GUI support - Supports "Plug and Play" - ACPI 1.1 Compliance Wake Up Events - Supports jumperfree - SMBIOS 2.3.1 Support - CPU Core, IGPU, DRAM, 1.8V PLL, VTT, VCCSA Voltage Multi-adjustment - Drivers, Utilities,nd share it with your friends. Your friends then can load the OC profile to their own system to get the same OC settings. In IES (Intelligent Energy Saver), the voltage regulator can reduce the number of output phases to improve efficiency when the CPU cores are idle without sacrificing computing performance. Please visit our website for the operation procedures of ASRock Extreme Tuning Utility (AXTU). ASRock website: http://www.asrock.

com 10 10. ASRock Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update system BIOS without entering operating systems first like MS-DOS or Windows®. With this utility, you can press the <F6> key during the POST or the <F2> key to enter into the BIOS setup menu to access ASRock Instant Flash. Just launch this tool and save the new BIOS file to your USB flash drive, floppy disk or hard drive, then you can update your BIOS only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. 11. If you desire a faster, less restricted way of charging your Apple devices, such as iPhone/iPad/iPod Touch, ASRock has prepared a wonderful solution for you - ASRock APP Charger. Simply install the APP Charger driver, it makes your iPhone charge much quickly from your computer and up to 40% faster than before. ASRock APP Charger allows you to quickly charge many Apple devices simultaneously and even supports continuous charging when your PC enters into Standby mode (S1), Suspend to RAM (S3), hibernation mode (S4) or power off (S5).

With APP Charger driver installed, you can easily enjoy the marvelous charging experience. ASRock website: http://www.asrock.com/Feature/AppCharger/index.asp 12.

ASRock SmartView, a new function for internet browsers, is the smart start page for IE that combines your most visited web sites, your history, your Facebook friends and your real-time newsfeed into an enhanced view for a more personal Internet experience. ASRock motherboards are exclusively equipped with the ASRock SmartView utility that helps you keep in touch with friends on-the-go. To use ASRock SmartView feature, please make sure your OS version is Windows® 7 / 7 64 bit / VistaTM / VistaTM 64 bit, and your browser version is IE8. ASRock website: http://www.asrock. com/Feature/SmartView/index.asp 13. ASRock XFast USB can boost USB storage device performance. The performance may depend on the properties of the device. 14. ASRock XFast LAN provides a faster internet access, which includes the benefits listed below. LAN Application Prioritization: You can configure your application's priority ideally and/or add new programs. Lower Latency in Game: After setting online game's priority higher, it can lower the latency in games. Traffic Shaping: You can watch Youtube HD videos and download simultaneously. Real-Time Analysis of Your Data: With the status window, you can easily recognize which data streams you are transferring currently.

15. ASRock XFast RAM is a new function that is included into ASRock Extreme Tuning Utility (AXTU). It fully utilizes the memory space that cannot be used under Windows® OS 32-bit CPU. ASRock XFast RAM shortens the loading time of previously visited websites, making web surfing faster than ever. And it also boosts the speed of Adobe Photoshop 5 times faster. Another advantage of ASRock XFast RAM is that it reduces the frequency of accessing your SSDs or HDDs in order to extend their lifespan. 11 16. ASRock Crashless BIOS allows users to update their BIOS without fear of failing. If power loss occurs during the BIOS update process, ASRock Crashless BIOS will automatically finish the BIOS update procedure after regaining power. Please note that BIOS files need to be placed in the root directory of your USB disk.

Only USB2.0 ports support this feature. ASRock On/Off Play Technology allows users to enjoy the great audio experience from the portable audio devices, such like MP3 player or mobile phone to your PC, even when the PC is turned off (or in ACPI S5 mode)! This motherboard also provides a free 3.5mm audio cable (optional) that ensures users the most convenient computing environment. While CPU overheat is detected, the system will automatically shutdown. Before you resume the system, please check if the CPU fan on the motherboard functions properly and unplug the power cord, then plug it back again. To improve heat dissipation, remember to spray thermal grease between the CPU and the heatsink when you install the PC system. Combo Cooler Option (C.C.O.

) provides the flexible option to adopt three different CPU cooler types, Socket LGA 775, LGA 1155 and LGA 1156. Please be noticed that not all the 775 and 1156 CPU Fan can be used. ASRock XFast RAM is not supported by Microsoft® Windows® XP / XP 64-bit. Intel® Smart Connect Technology and Intel® USB 3.0 ports are not supported by Microsoft® Windows® VistaTM / VistaTM 64-bit / XP / XP 64bit. EuP stands for Energy Using Product, was a provision regulated by the European Union to define the power consumption for the completed system.

According to EuP, the total AC power of the completed system should be under 1.00W in off mode condition. To meet EuP standards, an EuP ready motherboard and an EuP ready power supply are required. According to Intel's suggestion, the EuP ready power supply must meet the standard of 5v, and the standby power efficiency should be higher than 50% under 100 mA current consumption.

For EuP ready power supply selection, we recommend you to check with the power supply manufacturer for more details. 17. 18. 19. 20. 21. 12 1.3 Motherboard Layout 1 2 3 4 5 6 7 24.4cm (9.6 in) Designed in Taipei CPU_FAN2 CPU_FAN1 ATX12V1 PWR_FAN1 DDR3 DDR3_A1 (64 bit, 240-pin module) HDMI DDR3_A2 (64 bit, 240-pin module) DDR3_B1 (64 bit, 240-pin module) DDR3_B2 (64 bit, 240-pin module) ATXPWR1 24.

4cm (9.6 in) 8 USB3_12_13 eSATA USB 3.0 T: USB4 B: USB5 PS2 Keyboard USB 2.0 T: USB0 B: USB1 VGA1 USB 2.0 T: USB2 B: USB3 DVI1 LAN PHY Top: RJ-45 CHA_FAN2 35 Top: Central/Bass Center: REAR SPK Center: FRONT 34 33 32 Front USB 3.

0 1 1 31 30 X Fast RAM SATA3_A0_A1 X Fast LAN X Fast USB 29 LPT1 1 SATA3_0_1 COM1 USB_6_7 USB_8_9 USB_10_11 PLED PWRBTN 1 SPEAKER1 SATA2_2_3 Bottom: Optical SPDIF Bottom: MIC IN AUDIO CODEC CMOS Battery 9 Top: LINE IN HD_AUDIO1 HDMI_SPDIF1 ErP/EuP Ready PCI Express 3.0 PCIE1 10 1 H77 Pro4-M Super I/O PCIE2 RoHS PCIE3 PCIE4 CHA_FAN1 Intel H77 SATA2_4 1 IR1 11 12 64Mb BIOS 13 CLRCMOS1 1 PLED1 SATA2_5 14 1 1 CIR1 1 1 1 HDLED RESET 1 PANEL1 28 27 26 25 24 23 22 21 20 19 18 17 1615 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 CPU Fan Connector (CPU_FAN2) Power Fan Connector (PWR_FAN1) CPU Fan Connector (CPU_FAN1) ATX 12V Power Connector (ATX12V1) 1155-Pin CPU Socket 2 x 240-pin DDR3 DIMM Slots (DDR3_A1, DDR3_B1, Black) 2 x 240-pin DDR3 DIMM Slots (DDR3_A2, DDR3_B2, Black) ATX Power Connector (ATXPWR1) USB 3.0 Header (USB3_12_13, Black) Intel H77 Chipset SPI Flash Memory (64Mb) SATA3 Connectors (SATA3_A0_A1, Gray) SATA3 Connectors (SATA3_0_1, Gray) SATA2 Connectors (SATA2_2_3, Black) Clear CMOS Jumper (CLRCMOS1) Chassis Speaker Header (SPEAKER1, Black) Power LED Header (PLED1) System Panel Header (PANEL1, Black) 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 Infrared Module Header (IR1) SATA2 Connector (SATA2_5, Black) SATA2 Connector (SATA2_4, Black) Chassis Fan Connector (CHA_FAN1) USB 2.0 Header (USB_10_11, Black) USB 2.0 Header (USB_8_9, Black) USB 2.

0 Header (USB_6_7, Black) Consumer Infrared Module Header (CIR1, Gray) COM Port Header (COM1) Print Port Header (LPT1) PCI Express 2.0 x16 Slot (PCIE4, Black) PCI Express 2.0 x16 Slot (PCIE3, Black) PCI Express 2.0 x1 Slot (PCIE2, Black) PCI Express 3.0 x16 Slot (PCIE1, Black) Front Panel Audio Header (HD_AUDIO1, Black) HDMI_SPDIF Header (HDMI_SPDIF1, Black) Chassis Fan Connector (CHA_FAN2) 13 1.4 I/O Panel 1 2 3 4 5 6 7 8 9 15 1 2 3 * 4 5 6 7 ** 8 14 13 9 10 11 *** 12 13 14 15 12 11 10 USB 2.0 Ports (USB01) D-Sub Port (VGA1) USB 2.0 Ports (USB23) LAN RJ-45 Port Central / Bass (Orange) Rear Speaker (Black) Line In (Light Blue) Front Speaker (Lime) Microphone (Pink) Optical SPDIF Out Port USB 3.0 Ports (USB45) eSATA3 Connector HDMI Port (HDMI1) DVI-D Port (DVI1) PS/2 Keyboard Port (Purple) * There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.

Status LAN Port LED Indications Activity/Link LED Description Status SPEED LED Description ACT/LINK LED SPEED LED Off No Link Blinking Data Activity On Link Off Orange Green 10Mbps connection 100Mbps connection 1Gbps connection LAN Port ** If you use 2-channel speaker, please connect the speaker's plug into "Front Speaker Jack". See the table below for connection details in accordance with the type of speaker you use. TABLE for Audio Output Connection Audio Output Channels Front Speaker Rear Speaker (No. 8) (No. 6) 2 V -- 4 V V 6 V V 8 V V Central / Bass (No. 5) -- -- V V Line in (No. 7) ---V 14 To enable Multi-Streaming function, you need to connect a front panel audio cable to the front panel audio header. After restarting your computer, you will find "Mixer" tool on your system. Please select "Mixer ToolBox", click "Enable playback multi-streaming", and click "ok". Choose "2CH", "4CH", "6CH", or "8CH" and then you are allowed to select "Realtek HDA Primary output" to use Rear Speaker, Central/Bass, and Front Speaker, or select "Realtek HDA Audio 2nd output" to use front panel audio.

*** eSATA3 connector supports SATA Gen3 in cable 1M. 15 Chapter 2: Installation This is a micro ATX form factor (9.6" x 9.6", 24.4 x 24.

4 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it. Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components. 2.

1 Screw Holes Place screws into the holes indicated by circles to secure the motherboard to the chassis. Do not over-tighten the screws! Doing so may damage the motherboard. 2.2 Pre-installation Precautions Take note of the following precautions before you install motherboard components or change any motherboard settings. 1. 2. Unplug the power cord from the wall socket before touching any components. To avoid damaging the motherboard's components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components. Hold components by the edges and do not touch the ICs.

Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that comes with the component. When placing screws into the screw holes to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard. Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components. 3. 4. 5. 16 2.3 CPU Installation In order to provide the LGA 1155 CPU sockets more protection and make the installation process easier, ASRock has added a new protection cover on top of the load plate to replace the former PnP caps that were under the load plate. For the installation of Intel® 1155-Pin CPUs with the new protection cover, please follow the steps below.

Load Plate Load Lever Cover Contact Array Socket Body 1155-Pin Socket Overview Before you insert the 1155-Pin CPU into the socket, please check if the CPU surface is unclean or if there are any bent pins in the socket.

Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged. Step 1. Open the socket: Step 1-1. Disengage the lever by pressing it down and sliding it out of the hook. You do not have to remove the protection cover. Step 1-2. Keep the lever positioned at about 135 degrees in order to flip up the load plate. Step 2.

Insert the 1155-Pin CPU: Step 2-1. Hold the CPU by the edge which is marked with a black line. Step 2-2. Orient the CPU with the IHS (Integrated Heat Sink) up. Locate Pin1 and the two orientation key notches. black line 17 orientation key notch Pin1 alignment key Pin1 alignment key orientation key notch 1155-Pin CPU 1155-Pin Socket For proper installation, please ensure to match the two orientation key notches of the CPU with the two alignment keys of the socket. Step 2-3. Carefully place the CPU into the socket. Step 2-4. Verify that the CPU is within the socket and properly mated to the orient keys.

Step 3. Close the socket: Step 3-1. Flip the load plate onto the IHS. Step 3-2. Press down the load lever, and secure it with the load plate tab under the retention tab. The protection cover will automatically come off by itself. Please save and replace the cover if the processor is removed. The cover must be placed if you wish to return the motherboard for after service. 18 2.4 Installation of CPU Fan and Heatsink This motherboard is equipped with 1155-Pin socket that supports Intel 1155-Pin CPUs.

Please adopt the type of heatsink and cooling fan compliant with Intel 1155Pin CPU to dissipate heat. Before you install the heatsink, you need to spray thermal interface material between the CPU and the heatsink to improve heat dissipation. Ensure that the CPU and the heatsink are securely fastened and in good contact with each other. Then connect the CPU fan to the CPU_FAN connector (CPU_ FAN1, see page 13, No. 3 or CPU_FAN2, see page 13. No. 1). For proper installation, please kindly refer to the instruction manuals of your CPU fan and heatsink. Below is an example to illustrate the installation of the heatsink for 1155-Pin CPUs. Step 1.

Apply thermal interface material onto the center of the IHS on the socket's surface. Apply Thermal Interface Material Step 2. Place the heatsink onto the socket. Ensure that the fan cables are oriented on side closest to the CPU fan connector on the motherboard (CPU_FAN1, see page 13, No. 3 or CPU_ FAN2, see page 13. No. 1). Step 3. Align fasteners with the motherboard throughholes. Step 4.

Rotate the fastener clockwise, then press down on fastener caps with thumb to install and lock. Repeat with remaining fasteners. Fan cables on side closest to MB header Fastener slots pointing straight out Press Down (4 Places) If you press down the fasteners without rotating them clockwise, the heatsink cannot be secured on the motherboard. Step 5. Connect fan header with the CPU fan connector on the motherboard. Step 6. Secure redundant cable with tie-wrap to ensure the cable does not interfere with fan operation or contact other components. Please be noticed that this motherboard supports Combo Cooler Option (C.C.O.

), which provides flexible options to adopt three different CPU cooler types, Socket LGA 775, LGA 1155 and LGA 1156. The white throughholes are for Socket LGA 1155/1156 CPU fan. 19 2.5 Installation of Memory Modules (DIMM) This motherboard provides four 240-pin DDR3 (Double Data Rate 3) DIMM slots, and supports Dual Channel Memory Technology. For dual channel configuration, you always need to install identical (the same brand, speed, size and chip-type) DDR3 DIMM pair in the slots: You have to install identical DDR3 DIMMs in Dual Channel A (DDR3_A1 and DDR3_B1; Black slots; see p.

13 No. 6) or identical DDR3 DIMMs in Dual Channel B (DDR3_A2 and DDR3_ B2; Black slots; see p.13 No. 7), so that Dual Channel Memory Technology can be activated. This motherboard also allows you to install four DDR3 DIMMs for dual channel configuration, please install identical DDR3 DIMMs in all four slots.

You may refer to the Dual Channel Memory Configuration Table below. Dual Channel Memory Configuration (1) (2) (3)* DDR3_A1 (Black Slot) Populated - Populated DDR3_A2 (Black Slot) - Populated Populated DDR3_B1 DDR3_B2 (Black Slot) (Black Slot) Populated Populated Populated Populated * For configuration (3), please install identical DDR3 DIMMs in all four slots. 1. If you want to install two memory modules, for optimal compatibility and reliability, it is recommended to install them in the slots: DDR3_ A1 and DDR3_B1, or DDR3_A2 and DDR3_B2. 2. If only one memory module or three memory modules are installed in the DDR3 DIMM slots on this motherboard, it is unable to activate Dual Channel Memory Technology. 3. If a pair of memory modules is NOT installed in the same Dual Channel, for example, installing a pair of memory modules in DDR3_A1 and DDR3_A2, it is unable to activate Dual Channel Memory Technology. 4. It is not allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and DIMM may be damaged.

5. Some DDR3 1GB double-sided DIMMs with 16 chips may not work on this motherboard. It is not recommended to install them on this motherboard. 20 Installing a DIMM Please make sure to disconnect power supply before adding or removing DIMMs or the system components. Step 1. Unlock a DIMM slot by pressing the retaining clips outward. Step 2. Align a DIMM on the slot such that the notch on the DIMM matches the break on the slot. notch break notch break The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot in incorrect orientation.

Step 3. Firmly insert the DIMM into the slot until the retaining clips at both ends fully snap back in place and the DIMM is properly seated. 21 2.6 Expansion Slots (PCI Express Slots) There are 4 PCI Express slots on this motherboard. PCIE slots: CIE1 (PCIE 3.

0 x16 slot) is used for PCI Express x16 lane width P graphics cards, or to install PCI Express graphics cards to support CrossFireXTM function. PCIE2 (PCIE 2.0 x1 slot) is used for a PCI Express x1 lane width card, such as a Gigabit LAN card or SATA2 card, etc. PCIE3 (PCIE 2.0 x16 slot) is used for PCI Express x1 lane width graphics cards.

PCIE4 (PCIE 2.0 x16 slot) is used for PCI Express x4 lane width graphics cards, or to install PCI Express graphics cards to support CrossFireXTM function. And for installing ASRock Game Blaster. 1. In single VGA card mode, it is recommended to install a PCI Express x16 graphics card on PCIE1 slot. 2. In CrossFireXTM mode, please install the PCI Express x16 graphics cards on PCIE1 and PCIE4 slots. Therefore, PCIE1 will work at x16 bandwidth, while PCIE4 works at x4 bandwidth. 3. Please connect a chassis fan to the motherboard's chassis fan connector (CHA_FAN1 or CHA_FAN2) when using multiple graphics cards for better thermal environment.

4. Only PCIE1 slot supports Gen 3 speed. To run the PCI Express in Gen 3 speed, please install an Ivy Bridge CPU. If you install a Sandy Bridge CPU, the PCI Express will run only at PCI Express Gen 2 speed. Installing an expansion card Step 1. Step 2. Step 3. Step 4. Step 5. Step 6.

Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation. Remove the system unit cover (if your motherboard is already installed in a chassis). Remove the bracket facing the slot that you intend to use. Keep the screws for later use.

Align the card connector with the slot and press firmly until the card is completely seated on the slot. Fasten the card to the chassis with screws. Replace the system cover. 22 2.7 CrossFireXTM and Quad CrossFireXTM Operation Guide This motherboard supports CrossFireXTM and Quad CrossFireXTM. CrossFireXTM technology offers the most advantageous means available of combining multiple high performance Graphics Processing Units (GPU) in a single PC. Combining a range of different operating modes with intelligent software design and an innovative interconnect mechanism, CrossFireXTM enables the highest possible level of performance and image quality in any 3D application. Currently CrossFireXTM is supported by Windows® XP with Service Pack 2 / VistaTM / 7 OS. Quad CrossFireXTM is supported by Windows® VistaTM / 7 OS only. Please check AMD's website for AMD CrossFireXTM driver updates. 1. If a customer incorrectly configures their system they will not see the performance benefits of CrossFireXTM. All three CrossFireXTM components, a CrossFireXTM Ready graphics card, a CrossFireXTM Ready motherboard and a CrossFireXTM Edition co-processor graphics card, must be installed correctly to benefit from the CrossFireXTM multi-GPU platform. 2. If you pair a 12-pipe CrossFireXTM Edition card with a 16-pipe card, both cards will operate as 12-pipe cards while in CrossFireXTM mode.

2.7.1 Installing Two CrossFireXTM-Ready Graphics Cards Different CrossFireXTM cards may require different methods to enable CrossFireXTM feature. For other CrossFireXTM cards that AMD has released or will release in the future, please refer to AMD graphics card manuals for detailed installation guide. Step 1. Insert one Radeon graphics card into PCIE1 slot and the other Radeon graphics card to PCIE4 slot. Make sure that the cards are properly seated on the slots. 23 Step 2. Connect two Radeon graphics cards by installing a CrossFire Bridge on the CrossFire Bridge Interconnects on the top of the Radeon graphics cards. (The CrossFire Bridge is provided with the graphics card you purchase, not bundled with this motherboard.

Please refer to your graphics card vendor for details.) CrossFire Bridge or Step 3. Connect the DVI monitor cable to the DVI connector on the Radeon graphics card on PCIE1 slot. (You may use the DVI to D-Sub adapter to convert the DVI connector to D-Sub interface, and then connect the D-Sub monitor cable to the DVI to D-Sub adapter.) 24 2.

7.2 Driver Installation and Setup Step 1. Power on your computer and boot into OS. Step 2. Remove the AMD drivers if you have any VGA drivers installed in your system.

The Catalyst Uninstaller is an optional download. We recommend using this utility to uninstall any previously installed Catalyst drivers prior to installation. Please check AMD's website for AMD driver updates. Step 3. Install the required drivers to your system. For Windows® XP OS: A. AMD recommends Windows® XP Service Pack 2 or higher to be installed (If you have Windows® XP Service Pack 2 or higher installed in your system, there is no need to download it again): http://www.microsoft.com/windowsxp/sp2/default.mspx B.

You must have Microsoft .NET Framework installed prior to downloading and installing the CATALYST Control Center. Please check Microsoft's website for details. For Windows® 7 / VistaTM OS: Install the CATALYST Control Center. Please check AMD's website for details. Step 4. Restart your computer. Step 5. Install the VGA card drivers to your system, and restart your computer. You will find "AMD Catalyst Control Center" on your Windows® taskbar. AMD Catalyst Control Center Step 6. Double-click "ATI Catalyst Control Center". Click "View", select "CrossFireXTM", and then check the item "Enable CrossFireXTM". Select "2 GPUs" and click "Apply". 25 Although you have selected the option "Enable CrossFireTM", the CrossFireXTM function may not work actually.

*Your computer will automatically reboot. After restarting your computer, please confirm whether the option "Enable CrossFireTM" in "ATI Catalyst Control Center" is selected or not; if not, please select it again, and then you are able to enjoy the benefits of CrossFireXTM. Step 7. You can freely enjoy the benefits of CrossFireXTM or Quad CrossFireXTM. * CrossFireXTM appearing here is a registered trademark of AMD Technologies Inc.*

*, and is used only for identification or explanation and to the owners' benefit, without intent to infringe. * For further information of AMD CrossFireXTM technology, please check AMD's website for updates and details. 26 2.8 Dual Monitor and Surround Display Features Dual Monitor Feature This motherboard supports dual monitor feature. With the internal VGA output support (DVI-D, D-Sub and HDMI), you can easily enjoy the benefits of dual monitor feature without installing any add-on VGA cards to this motherboard. This motherboard also provides independent display controllers for DVI-D, D-Sub and HDMI to support dual VGA output so that DVI-D, D-sub and HDMI can drive same or different display contents. To enable dual monitor feature, please follow the steps below: 1. Connect a DVI-D monitor cable to the DVI-D port on the I/O panel, connect a D-Sub monitor cable to the D-Sub port on the I/O panel and connect a HDMI monitor cable to the HDMI port on the I/O panel. D-Sub port DVI-D port HDMI port 2. If you have already installed the onboard VGA driver from our support CD to your system, you can freely enjoy the benefits of dual monitor function after your system boots.*

If you haven't installed the onboard VGA driver yet, please install the onboard VGA driver from our support CD to your system and restart your computer. D-Sub, DVI-D and HDMI monitors cannot be enabled at the same time. You can only choose the combination: DVI-D + HDMI, DVI-D + D-Sub, or HDMI + D-Sub. 27 Surround Display Feature This motherboard supports surround display upgrade. With the internal VGA output support (DVI-D, D-Sub and HDMI) and external add-on PCI Express VGA cards, you can easily enjoy the benefits of surround display feature.

Please refer to the following steps to set up a surround display environment: 1. Install the PCI Express VGA cards on PCIE1 and PCIE4 slots. Please refer to page 22 for proper expansion card installation procedures. 2. Connect a DVI-D monitor cable to the DVI-D port on the I/O panel, connect a D-Sub monitor cable to the D-Sub port on the I/O panel and connect a HDMI monitor cable to the HDMI port on the I/O panel.

Then connect other monitor cables to the corresponding connectors of the add-on PCI Express VGA cards on PCIE1 and PCIE4 slots. 3. Boot your system. Press <F2> or <Del> to enter UEFI setup. Enter "Share Memory" option to adjust the memory capability to [32MB], [64MB], [128MB], [256MB] or [512MB] to enable the function of D-sub.

Please make sure that the value you select is less than the total capability of the system memory. If you do not adjust the UEFI setup, the default value of "Share Memory", [Auto], will disable D-Sub function when an add-on VGA card is inserted to this motherboard. 4. Install the onboard VGA driver and the add-on PCI Express VGA card driver to your system. If you have installed the drivers already, there is no need to install them again.

5. Set up a multi-monitor display. For Windows® XP / XP 64-bit OS: Right click on desktop, choose "Properties", and select the "Settings" tab so that you can adjust the parameters of the multi-monitors according to the steps below. A. Click the "Identify" button to display a large number on each monitor. B. Right-click the display icon in the Display Properties dialog that you wish to be your primary monitor, and then select "Primary". When you use multiple monitors with your card, one monitor will always be Primary, and all additional monitors will be designated as Secondary. C. Select the display icon identified by the number 2.

D. Click "Extend my Windows desktop onto this monitor". E. Right-click the display icon and select "Attached", if necessary. F. Set the appropriate "Screen Resolution" and "Color Quality" for the second monitor. Click "Apply" or "OK" to apply these new values. G. Repeat steps C through E for the display icon identified by the numbers three to six. 28 For Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS: Right click the desktop, choose "Personalize", and select the "Display Settings" tab so that you can adjust the parameters of the multi-monitors according to the steps below.

A. Click the number "2" icon. B. Click the items "This is my main monitor" and "Extend the desktop onto this monitor". C. Click "OK" to save your change. D. Repeat steps A through C for the display icons identified by the number three to six. 6. Use Surround Display. Click and drag the display icons to positions representing the physical setup of your monitors that you would like to use. The placement of display icons determines how you move items from one monitor to another. HDCP Function HDCP function is supported on this motherboard. To use HDCP function with this motherboard, you need to adopt a monitor that supports HDCP function as well. Therefore, you can enjoy the superior display quality with high-definition HDCP encryption contents. Please refer to the instructions below for more details about HDCP function. What is HDCP? HDCP stands for High-Bandwidth Digital Content Protection, a specification developed by Intel® for protecting digital entertainment content that uses the DVI interface. HDCP is a copy protection scheme to eliminate the possibility of intercepting digital data midstream between the video source, or transmitter - such as a computer, DVD player or set-top box and the digital display, or receiver - such as a monitor, television or projector. In other words, HDCP specification is designed to protect the integrity of content as it is being transmitted. Products compatible with the HDCP scheme such as DVD players, satellite and cable HDTV set-top-boxes, as well as few entertainment PCs requires a secure connection to a compliant display.

Due to the increase in manufacturers employing HDCP in their equipment, it is highly recommended that the HDTV or LCD monitor you purchase is compatible. 29 2.9 ASRock Smart Remote Installation Guide ASRock Smart Remote is only used for ASRock motherboards with CIR header. Please refer to below procedures for the quick installation and usage of ASRock Smart Remote. Step1. Step2. Find the CIR header located next to the USB 2.0 header on ASRock motherboard. Connect the front USB cable to the USB 2.0 header (as below, pin 1-5) and the CIR header.

Please make sure the wire assignments and the pin assignments are matched correctly. USB_PWR PP+ GND DUMMY USB 2.0 header (9-pin, black) CIR header (4-pin, gray) 1 2 3 4 5 GND IRTX IRRX ATX+5VSB Step3. Install Multi-Angle CIR Receiver to the front USB port. If Multi-Angle CIR Receiver cannot successfully receive the infrared signals from MCE Remote Controller, please try to install it to the other front USB port.

3 CIR sensors in different angles 1. 2. 3. Only one of the front USB port can support CIR function. When the CIR function is enabled, the other port will remain USB function.

Multi-Angle CIR Receiver is used for front USB only. Please do not use the rear USB bracket to connect it on the rear panel. Multi-Angle CIR Receiver can receive the multi-direction infrared signals (top, down and front), which is compatible with most of the chassis on the market. The Multi-Angle CIR Receiver does not support Hot-Plug function. Please install it before you boot the system. * ASRock Smart Remote is only supported by some of ASRock's motherboards. Please refer to ASRock's website for the motherboard support list: http://www.asrock.com 30 2.10 Jumpers Setup The illustration shows how jumpers are setup.

When the jumper cap is placed on pins, the jumper is "Short". If no jumper cap is placed on pins, the jumper is "Open". The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when jumper cap is placed on these 2 pins. Jumper Clear CMOS Jumper (CLRCMOS1) (see p.13, No. @@@@@@@@@@@@@Do NOT place jumper caps over these headers and connectors. @@14) (SATA2_4: see p.13, No. 21) (SATA2_5: see p.13, No. 20) Serial ATA3 Connectors (SATA3_A0_A1: see p.13, No. 12) (SATA3_0_1: see p.13, No. @@The current SATA2 interface allows up to 3. 0 Gb/s data transfer rate. @@The current SATA3 interface allows up to 6.0 Gb/s data transfer rate. @@@@@@@25) (9-pin USB_8_9) (see p.13, No. @@@@@@@@@@@@@@@@@Please follow the instruction in our manual and chassis manual to install your system. 2. If you use AC'97 audio panel, please install it to the front panel audio header as below: A.

Connect Mic_IN (MIC) to MIC2_L. B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L. C. Connect Ground (GND) to Ground (GND). D. MIC_RET and OUT_RET are for HD audio panel only.

You don't need to connect them for AC'97 audio panel. E. To activate the front mic. For Windows® XP / XP 64-bit OS: Select "Mixer". Select "Recorder". Then click "FrontMic". For Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS: Go to the "FrontMic" Tab in the Realtek Control panel. Adjust "Recording Volume". System Panel Header (9-pin PANEL1) (see p.13, No.

18) This header accommodates several system front panel functions. Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables. PWRBTN (Power Switch): Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

RESET (Reset Switch): Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart. 34 PLED (System Power LED): Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1/S3 sleep state.

The LED is off when the system is in S4 sleep state or powered off (S5). HDLED (Hard Drive Activity LED): Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data. The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assign-ments are matched correctly. Chassis Speaker Header (4-pin SPEAKER 1) (see p.13, No. 16) Please connect the chassis speaker to this header. Power LED Header (3-pin PLED1) (see p.

13, No. 17) Chassis and Power Fan Connectors CHA_FAN_SPEED (4-pin CHA_FAN1) +12V FAN_SPEED_CONTROL (see p.13, No. 22) GND (3-pin CHA_FAN2) GND (see p.13, No. 35) +12V CHA_FAN_SPEED Please connect the chassis power LED to this header to indicate system power status. The LED is on when the system is operating. The LED keeps blinking in S1/S3 state. The LED is off in S4 state or S5 state (power off). Please connect the fan cables to the fan connectors and match the black wire to the ground pin.

CHA_FAN1 and CHA_FAN2 supports Fan Control. (3-pin PWR_FAN1) (see p.13, No. 2) 35 CPU Fan Connectors (4-pin CPU_FAN1) (see p.13, No. 3) FAN_SPEED_CONTROL CPU_FAN_SPEED +12V GND 1 2 3 4 Please connect the CPU fan cable to the connector and match the black wire to the ground pin. Though this motherboard provides 4-Pin CPU fan (Quiet Fan) support, the 3-Pin CPU fan still can work successfully even without the fan speed control function. If you plan to connect the 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3. Pin 1-3 Connected 3-Pin Fan Installation (3-pin CPU_FAN2) (see p.13, No.

1) GND +12V CPU_FAN_SPEED ATX Power Connector (24-pin ATXPWR1) (see p.13, No. 8) 12 24 Please connect an ATX power supply to this connector. 1 13 Though this motherboard provides 24-pin ATX power connector, it can still work if you adopt a traditional 20-pin ATX power supply. To use the 20-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 13. 20-Pin ATX Power Supply Installation 12 24 1 13 ATX 12V Power Connector (8-pin ATX12V1) (see p.13, No. 4) 8 4 5 1 Please connect an ATX 12V power supply to this connector. Though this motherboard provides 8-pin ATX 12V power connector, it can still work if you adopt a traditional 4-pin ATX 12V power supply. To use the 4-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 5.

8 5 4-Pin ATX 12V Power Supply Installation 4 1 36 Serial port Header (9-pin COM1) (see p.13, No. 27) This COM1 header supports a serial port module. HDMI_SPDIF Header (2-pin HDMI_SPDIF1) (see p.13, No. 34) HDMI_SPDIF header, providing SPDIF audio output to HDMI VGA card, allows the system to connect HDMI Digital TV/ projector/LCD devices. Please connect the HDMI_SPDIF connector of HDMI VGA card to this header. 37 2.12 Serial ATA (SATA) / Serial ATA2 (SATA2) Hard Disks Installation This motherboard adopts Intel® H77 chipset that supports Serial ATA (SATA) / Serial ATA2 (SATA2) hard disks and RAID (RAID 0, RAID 1, RAID 5, RAID 10, Intel Rapid Storage and Intel Smart Response Technology) functions. You may install SATA / SATA2 hard disks on this motherboard for internal storage devices.

This section will guide you to install the SATA / SATA2 hard disks. STEP 1: Install the SATA / SATA2 hard disks into the drive bays of your chassis. STEP 2: Connect the SATA power cable to the SATA / SATA2 hard disk. STEP 3: Connect one end of the SATA data cable to the motherboard's SATA2 connector. STEP 4: Connect the other end of the SATA data cable to the SATA / SATA2 hard disk.

2.13 Serial ATA3 (SATA3) Hard Disks Installation This motherboard adopts Intel® H77 chipset that supports Serial ATA3 (SATA3) hard disks and RAID (RAID 0, RAID 1, RAID 5, RAID 10, Intel Rapid Storage and Intel Smart Response Technology) functions for SATA3_0 and SATA3_1 connectors. It also adopts ASMedia ASM1061 chipsets that supports Serial ATA3 (SATA3) hard disks for SATA3_A0 and SATA3_A1 connectors. You may install SATA3 hard disks on this motherboard for internal storage devices. This section will guide you to install the SATA3 hard disks.

STEP 1: Install the SATA3 hard disks into the drive bays of your chassis. STEP 2: Connect the SATA power cable to the SATA3 hard disk. STEP 3: Connect one end of the SATA data cable to the motherboard's SATA3 connector. STEP 4: Connect the other end of the SATA data cable to the SATA3 hard disk. Please be noted that SATA3_A0 and SATA3_A1 do not support RAID function. If you want to use RAID function on SATA3 connectors, please use SATA3_0 and SATA3_1 connectors. 38 2.14 Hot Plug and Hot Swap Functions for SATA / SATA2 HDDs This motherboard supports Hot Plug and Hot Swap functions for SATA / SATA2 in RAID / AHCI mode. Intel® H77 chipset provides hardware support for Advanced Host controller Interface (AHCI), a new programming interface for SATA host controllers developed through a joint industry effort. NOTE What is Hot Plug Function? If the SATA / SATA2 HDDs are NOT set for RAID configuration, it is called "Hot Plug" for the action to insert and remove the SATA / SATA2 HDDs while the system is still power-on and in working condition.

However, please note that it cannot perform Hot Plug if the OS has been installed into the SATA / SATA2 HDD.

What is Hot Swap Function? If SATA / SATA2 HDDs are built as RAID 1 or RAID 5 then it is called "Hot Swap" for the action to insert and remove the SATA / SATA2 HDDs while the system is still power-on and in working condition. 2.15 Hot Plug and Hot Swap Functions for SATA3 HDDs This motherboard supports Hot Plug and Hot Swap functions for SATA3 in RAID / AHCI mode. Intel® H77 and ASMedia ASM1061 chipsets provide hardware support for Advanced Host controller Interface (AHCI), a new programming interface for SATA host controllers developed through a joint industry effort. NOTE What is Hot Plug Function? If the SATA3 HDDs are NOT set for RAID configuration, it is called "Hot Plug" for the action to insert and remove the SATA3 HDDs while the system is still power-on and in working condition. However, please note that it cannot perform Hot Plug if the OS has been installed into the SATA3 HDD. What is Hot Swap Function? If SATA3 HDDs are built as RAID 1 or RAID 5 then it is called "Hot Swap" for the action to insert and remove the SATA3 HDDs while the system is still power-on and in working condition. 39 2.16 SATA / SATA2 / SATA3 HDD Hot Plug Feature and Operation Guide This motherboard supports Hot Plug feature for SATA / SATA2 / SATA3 HDD in RAID / AHCI mode.

Please read below operation guide of Hot Plug feature carefully. Before you process the SATA / SATA2 / SATA3 HDD Hot Plug, please check below cable accessories from the motherboard gift box pack. A. 7-pin SATA data cable B. SATA power cable with SATA 15-pin power connector interface A. SATA data cable (Red) B. SATA power cable SATA 7-pin connector The SATA 15-pin power connector (Black) connect to SATA / SATA2 / SATA3 HDD 1x4-pin conventional power connector (White) connect to power supply Caution 1. Without SATA 15-pin power connector interface, the SATA / SATA2 / SATA3 Hot Plug cannot be processed. 2. Even some SATA / SATA2 / SATA3 HDDs provide both SATA 15-pin power connector and IDE 1x4-pin conventional power connector interfaces, the IDE 1x4-pin conventional power connector interface is definitely not able to support Hot Plug and will cause the HDD damage and data loss.

Points of attention, before you process the Hot Plug: 1. Below operation procedure is designed only for our motherboard, which supports SATA / SATA2 / SATA3 HDD Hot Plug. * The SATA / SATA2 / SATA3 Hot Plug feature might not be supported by the chipset because of its limitation, the SATA / SATA2 / SATA3 Hot Plug support information of our motherboard is indicated in the product spec on our website: www.asrock.com 2. Make sure your SATA / SATA2 / SATA3 HDD can support Hot Plug function from your dealer or HDD user manual. The SATA / SATA2 / SATA3 HDD, which cannot support Hot Plug function, will be damaged under the Hot Plug operation. 3. Please make sure the SATA / SATA2 / SATA3 driver is installed into system properly. The latest SATA / SATA2 / SATA3 driver is available on our support website: www.

asrock.com 4. Make sure to use the SATA power cable & data cable, which are from our motherboard package. 5. Please follow below instructions step by step to reduce the risk of HDD crash or data loss. 40 How to Hot Plug a SATA / SATA2 / SATA3 HDD: Points of attention, before you process the Hot Plug: Please do follow below instruction sequence to process the Hot Plug, improper procedure will cause the SATA / SATA2 / SATA3 HDD damage and data loss. Step 1 Please connect SATA power cable 1x4pin end (White) to the power supply 1x4-pin cable. Step 2 Connect SATA data cable to the motherboard's SATA2 / SATA3 connector. SATA power cable 1x4-pin power connector (White) Step 3 Connect SATA 15-pin power cable connector (Black) end to SATA / SATA2 / SATA3 HDD. Step 4 Connect SATA data cable to the SATA / SATA2 / SATA3 HDD.

How to Hot Unplug a SATA / SATA2 / SATA3 HDD: Points of attention, before you process the Hot Unplug: Please do follow below instruction sequence to process the Hot Unplug, improper procedure will cause the SATA / SATA2 / SATA3 HDD damage and data loss. Step 1 Unplug SATA data cable from SATA / SATA2 / SATA3 HDD side. Step 2 Unplug SATA 15-pin power cable connector (Black) from SATA / SATA2 / SATA3 HDD side. 41 2.17 Driver Installation Guide To install the drivers to your system, please insert the support CD to your optical drive first.

Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly. 2.18 Installing Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit With RAID Functions If you want to install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS on your SATA / SATA2 / SATA3 HDDs with RAID functions, please follow the steps below.

RAID mode is not supported under Windows® XP / XP 64-bit. STEP 1: Set up UEFI. A. Enter UEFI SETUP UTILITY Advanced screen Storage Configuration. B. Set the option "SATA Mode Selection" to [RAID] for SATA2_2 to SATA2_5 and SATA3_0 and SATA3_1 ports. STEP 2: Use "RAID Installation Guide" to set RAID configuration. Before you start to configure the RAID function, you need to check the installation guide in the Support CD for proper configuration. Please refer to the document in the Support CD, "Guide to SATA Hard Disks Installation and RAID Configuration", which is located in the folder at the following path: ..

\ RAID Installation Guide STEP 3: Install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS on your system. After the installation of Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS, if you want to manage RAID functions, you are allowed to use both "RAID Installation Guide" and "Intel Rapid Storage Information" for RAID configuration. Please refer to the document in the Support CD, "Guide to SATA Hard Disks Installation and RAID Configuration", which is located in the folder at the following path: .. \ RAID Installation Guide and the document in the support CD, "Guide to Intel Rapid Storage", which is located in the folder at the following path: .. \ Intel Rapid Storage Information If you want to use "Intel Rapid Storage" in Windows® environment, install "SATA2 driver" from the Support CD again so that "Intel Rapid Storage" will be installed to your system as well. 42 2.19 Installing Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit / XP / XP 64-bit Without RAID Functions If you want to install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit / XP / XP 64-bit OS on your SATA / SATA2 / SATA3 HDDs without RAID functions, please follow the procedures below according to the OS you install. 2.

19.1 Installing Windows® XP / XP 64-bit Without RAID Functions If you want to install Windows® XP / XP 64-bit OS on your SATA / SATA2 / SATA3 HDDs without RAID functions, please follow the steps below.

AHCI mode is not supported under Windows® XP / XP 64-bit. Using SATA / SATA2 / SATA3 HDDs without NCQ function STEP 1: Set Up UEFI. A. Enter UEFI SETUP UTILITY Advanced screen Storage Configuration. B. Set the option "SATA Mode Selection" to [IDE]. (For SATA2_2 to SATA2_5, SATA3_0 and SATA3_1 ports.) Set the option "ASMedia SATA3 Mode" to [IDE].

(For SATA3_A0 and SATA3_A1 ports.) STEP 2: Install Windows® XP / XP 64-bit OS on your system. 43 2.19.2 Installing Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit Without RAID Functions If you want to install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS on your SATA / SATA2 / SATA3 HDDs without RAID functions, please follow the steps below. Using SATA / SATA2 / SATA3 HDDs with NCQ function STEP 1: Set Up UEFI. A. Enter UEFI SETUP UTILITY Advanced screen Storage Configuration. B. Set the option "SATA Mode Selection" to [AHCI].

(For SATA2_2 to SATA2_5, SATA3_0 and SATA3_1 ports.) Set the option "ASMedia SATA3 Mode" to [AHCI]. (For SATA3_A0 and SATA3_A1 ports.) STEP 2: Install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS on your system. Using SATA / SATA2 / SATA3 HDDs without NCQ function STEP 1: Set Up UEFI. A. Enter UEFI SETUP UTILITY Advanced screen Storage Configuration. B. Set the option "SATA Mode Selection" to [IDE]. (For SATA2_2 to SATA2_5, SATA3_0 and SATA3_1 ports.

) Set the option "ASMedia SATA3 Mode" to [IDE]. (For SATA3_A0 and SATA3_A1 ports.) STEP 2: Install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS on your system. 44 Chapter 3: UEFI SETUP UTILITY 3.1 Introduction This section explains how to use the UEFI SETUP UTILITY to configure your system.

The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY, otherwise, POST will continue with its test routines. If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen. 3.1.1 UEFI Menu Bar The top of the screen has a menu bar with the following selections: Main To set up the system time/date information OC Tweaker To set up overclocking features Advanced To set up the advanced UEFI features H/W Monitor To display current hardware status Boot To set up the default system device to locate and load the Operating System Security To set up the security features Exit To exit the current screen or the UEFI SETUP UTILITY Use < > key or < > key to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen. You can also use the mouse to click your required item. 45 3.1.2 Navigation Keys Please check the following table for the function description of each navigation key. Navigation Key(s) / / + / - <Tab> <Enter> <PGUP> <PGDN> <HOME> <END> <F1> <F7> <F9> <F10> <F12> <ESC> Function Description Moves cursor left or right to select Screens Moves cursor up or down to select items To change option for the selected items Switch to next function To bring up the selected screen Go to the previous page Go to the next page Go to the top of the screen Go to the bottom of the screen To display the General Help Screen Discard changes and exit the UEFI SETUP UTILITY Load optimal default values for all the settings Save changes and exit the UEFI SETUP UTILITY Print screen Jump to the Exit Screen or exit the current screen 3.2 Main Screen When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.

System Browser System Browser can let you easily check your current system configuration in UEFI setup. 46 3.3 OC Tweaker Screen In the OC Tweaker screen, you can set up overclocking features. CPU Configuration CPU Turbo Ratio Use this item to change the ratio value of this motherboard. Intel SpeedStep Technology Intel SpeedStep technology is Intel's new power saving technology. Processors can switch between multiple frequencies and voltage points to enable power saving. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. If you install Windows® VistaTM / 7 and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology. Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issues with some power supplies. Please set this item to [Disabled] if above issues occur. Intel Turbo Boost Technology Use this item to enable or disable Intel Turbo Boost Mode Technology. Turbo Boost Mode allows processor cores to run faster than marked frequency in specific conditions. The default value is [Enabled].

Internal PLL Overvoltage Use this item to enable/disable CPU Internal PLL Overvoltage Function. Long Duration Power Limit Use this item to configure long duration power limit in watts. The default value is [Auto]. Long Duration Maintained Use this item to configure time window which the long duration power is maintained. The default value is [Auto].

47 Short Duration Power Limit Use this item to configure short duration power limit in watts. The default value is [Auto]. Primary Plane Current Limit Use this item to configure the maximum instantaneous current allowed for the primary plane. The default value is [Auto]. Secondary Plane Current Limit Use this item to configure the maximum instantaneous current allowed for the secondary plane. The default value is [Auto]. GT OverClocking Support Use this item to enable or disable GT OverClocking Support. The default value is [Disabled]. DRAM Timing Configuration Load XMP Setting Use this to load XMP setting. Configuration options: [Auto], [Default], [Profile 1] and [Profile 2].

The default value is [Auto]. DRAM Frequency If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assign the appropriate frequency automatically. DRAM Timing Control DRAM tCL Use this item to change CAS# Latency (tCL) Auto/Manual setting. The default is [Auto]. DRAM tRCD Use this item to change RAS# to CAS# Delay (tRCD) Auto/Manual setting. The default is [Auto]. 48 DRAM tRP Use this item to change Row Precharge Time (tRP) Auto/Manual setting. The default is [Auto]. DRAM tRAS Use this item to change RAS# Active Time (tRAS) Auto/Manual setting. The default is [Auto].

Command Rate (CR) Use this item to change Command Rate (CR) Auto/Manual setting. The default is [Auto].