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You can read the recommendations in the user guide, the technical guide or the installation guide for ASROCK P67 PRO3. You'll find the answers to all your questions on the ASROCK P67 PRO3 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual ASROCK P67 PRO3
User guide ASROCK P67 PRO3
Operating instructions ASROCK P67 PRO3
Instructions for use ASROCK P67 PRO3
Instruction manual ASROCK P67 PRO3

The ASRock logo, featuring the word "ASRock" in a green, stylized font.

P67 Pro3

User Manual

Version 1.0
Published September 2010
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Manual abstract:

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ASRock Website: <http://www.asrock.com>
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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 P67 Pro3 Motherboard (ATX Form Factor: 12.0-in x 9.

6-in, 30.5 cm x 24.4 cm) ASRock P67 Pro3 Quick Installation Guide ASRock P67 Pro3 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 / Vista™ / Vista™ 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. 5 1.2 Platform Specifications - ATX Form Factor: 12.0-in x 9.

6-in, 30.5 cm x 24.4 cm - All Solid Capacitor design (100% Japan-made high-quality Conductive Polymer Capacitors) - Supports 2nd Generation Intel® Core™ i7 / i5 / i3 in LGA1155 Package - Advanced V8 + 2 Power Phase Design - Supports Intel® Turbo Boost 2.0 Technology - Supports K-Series unlocked CPU - Supports Hyper-Threading Technology (see CAUTION 1) - Intel® P67 - Dual Channel DDR3 Memory Technology (see CAUTION 2) - 4 x DDR3 DIMM slots - Supports DDR3 2133(OC)/1866(OC)/1600/1333/1066 non-ECC, un-buffered memory (see CAUTION 3) - Max. capacity of system memory: 32GB (see CAUTION 4) - Supports Intel® Extreme Memory Profile (XMP) - 1 x PCI Express 2.0 x16 slot (blue @ x16 mode) - 3 x PCI Express 2.0 x1 slots - 3 x PCI slots - 7.1 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 I/O Panel - 1 x PS/2 Mouse Port - 1 x PS/2 Keyboard Port - 1 x Coaxial SPDIF Out Port - 1 x Optical SPDIF Out Port - 6 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) - 1 x Clear CMOS Switch with LED CPU Chipset Memory Expansion Slot Audio LAN Rear Panel I/O 6 SATA3 USB3.0 Connector - HD Audio Jack: Side Speaker/Rear Speaker/Central/Bass/ Line in/Front Speaker/Microphone (see CAUTION 5) - 2 x SATA3 6.0 Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 10, RAID 5 and Intel Rapid Storage), NCQ, AHCI and "Hot Plug" functions (SATA3_1 connector is shared with eSATA3 port) - 2 x USB 3.0 ports by Etron EJ168A, support 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 10, RAID 5 and Intel Rapid Storage), NCQ, AHCI and Hot Plug functions - 2 x SATA3 6.0Gb/s connectors - 1 x Floppy connector - 1 x IR 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.



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0 headers (support 6 USB 2.

0 ports) - 1 x Dr. Debug (7-Segment Debug LED) - 1 x Clear CMOS Switch with LED - 1 x Power Switch with LED - 1 x Reset Switch with LED - 64Mb AMI BIOS - 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 - DRAM, PCH, CPU PLL, VTT, VCCSA Voltage Multi-adjustment - Drivers, Utilities, AntiVirus Software (Trial Version), ASRock Software Suite (CyberLink DVD Suite - OEM and Trial; Creative Sound Blaster X-Fi MB - Trial) - ASRock Extreme Tuning Utility (AXTU) (see CAUTION 6) - Instant Boot - ASRock Instant Flash (see CAUTION 7) - ASRock AIWI (see CAUTION 8) - ASRock APP Charger (see CAUTION 9) Smart Switch BIOS Feature Support CD Unique Feature 7 Hardware Monitor OS Certifications - SmartView (see CAUTION 10) - Hybrid Booster: - CPU Frequency Stepless Control (see CAUTION 11) - ASRock U-COP (see CAUTION 12) - Boot Failure Guard (B.

F.G.) - Combo Cooler Option (C.C.O.

) (see CAUTION 13) - Good Night LED - CPU Temperature Sensing - Chassis Temperature Sensing - CPU/Chassis/Power Fan Tachometer - CPU/Chassis Quiet Fan (Allow Chassis Fan Speed Auto-Adjust by CPU or MB Temperature) - CPU/Chassis Fan Multi-Speed Control - Voltage Monitoring: +12V, +5V, +3.3V, CPU Vcore - Microsoft® Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit / XP / XP 64-bit compliant - FCC, CE, WHQL - ErP/EuP Ready (ErP/EuP ready power supply is required) (see CAUTION 14) * For detailed product information, please visit our website: <http://www.asrock.com> WARNING Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using the third-party overclocking tools. Overclocking may affect your 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 than ever. ASRock website: <http://www.asrock.com/Feature/AppCharger/index.asp> 10.

SmartView, a new function of internet browser, 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 SmartView utility that helps you keep in touch with friends on-the-go. To use 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> 11. Although this motherboard offers stepless control, it is not recommended to perform over-clocking. Frequencies other than the recommended CPU bus frequencies may cause the instability of the system or damage the CPU. 12.

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. 13. 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. 10 14.

EuP, stands for Energy Using Product, was a provision regulated by European Union to define the power consumption for the completed system. According to EuP, the total AC power of the completed system shall be under 1.00W in off mode condition. To meet EuP standard, 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 standby power efficiency is higher than 50% under 100 mA current consumption. For EuP ready power supply selection, we recommend you checking with the power supply manufacturer for more details. 11 1.3 Motherboard Layout 1 2 3 4 5 6 24.4cm (9.6 in) DDR3_A2 (64 bit, 240-pin module) USB 2.

0 T: USB4 B: USB5 USB 3.0 T: USB2 B: USB3 DDR3_A1 (64 bit, 240-pin module) DDR3_B1 (64 bit, 240-pin module) DDR3_B2 (64 bit, 240-pin module) USB 2.0 T: USB6 B: USB7 Dual Channel USB 2.0 T: USB0 B: USB1 Top: RJ-45 LAN PHY ATXPWR1 30.5cm (12.0 in) 7 8 CHA_FAN2 39 38 37 PCIE1 P67 Pro3 RoHS PCIE2 DDR3 2133 PWR_FAN1 CHA_FAN3 PS2 Keyboard Clr CMOS PS2 Mouse CPU_FAN2 CPU_FAN1 ATX12V1 Coaxial SPDIF Optical SPDIF eSATA Bottom: CTR BASS Bottom: MIC IN Center: REAR SPK Center: FRONT Top: SIDE SPK Top: LINE IN 36 9 35 34 ErP/EuP Ready PCI Express 2.0 Designed in Taipei PCIE3 SATA3 6Gb/s CMOS Battery 64Mb BIOS PLED1 10 11 12 13 1 SPEAKER1 PCIE4 Super I/O 1 CLRCMOS1 Intel P67 I PANEL1 PLED PWRBTN 1 HDLED RESET PCII USB 3.0 33 AUDIO CODEC SATA3_1 SATA3_0 PCI2 USB8_9 SATA2_3 SATA2_2 14 15 16 17 18 19 20 I SATA2_5 SATA2_4 32 HD_AUDIO1 1 HDMI_SPDIF1 PCI3 FLOPPY1 COM1 CHA_FAN1 IR1 USB10_11 USB12_13 PWRBTN RSTBTN 1 1 Dr. Debug 1 1 1 31 30 29 28 27 26 25 24 23 22 21 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 ATX 12V Power Connector (ATX12V1) CPU Fan Connector (CPU_FAN2) CPU Fan Connector (CPU_FAN1) 1155-Pin CPU Socket 2 x 240-pin DDR3 DIMM Slots (Dual Channel: DDR3_A1, DDR3_B1, Blue) 2 x 240-pin DDR3 DIMM Slots (Dual Channel: DDR3_A2, DDR3_B2, White) ATX Power Connector (ATXPWR1) Clear CMOS Jumper (CLRCMOS1) Chassis Fan Connector (CHA_FAN2) 64Mb SPI Flash Power LED Header (PLED1) Chassis Speaker Header (SPEAKER 1, White) System Panel Header (PANEL1, White) Intel P67 Chipset SATA3 Connector (SATA3_1, White) SATA3 Connector (SATA3_0, White) SATA2 Connector (SATA2_3, Blue) SATA2 Connector (SATA2_2, Blue) SATA2 Connector (SATA2_4, Blue) SATA2 Connector (SATA2_5, Blue) 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 Dr. Debug Reset Switch (RSTBTN) Power Switch (PWRBTN) USB 2.

0 Header (USB12_13, Blue) USB 2.0 Header (USB8_9, Blue) USB 2.0 Header (USB10_11, Blue) Chassis Fan Connector (CHA_FAN1) Infrared Module Header (IR1) Floppy Connector (FLOPPY1) COM Port Header (COM1) Front Panel Audio Header (HD_AUDIO1, White) HDMI_SPDIF Header (HDMI_SPDIF1, White) PCI Slots (PCII-3) PCI Express 2.0 x1 Slot (PCIE4, White) PCI Express 2.0 x1 Slot (PCIE3, White) PCI Express 2.

0 x16 Slot (PCIE2, Blue) PCI Express 2.0 x1 Slot (PCIE1, White) Chassis Fan Connector (CHA_FAN3) Power Fan Connector (PWR_FAN1) 12 1.4 1 I/O Panel 2 3 4 5 6 7 17 16 15 14 13 10 11 12 13 14 15 16 17 8 9 10 12 11 1 2 3 *4 5 6 7 8 ** 9 PS/2 Mouse Port (Green) Coaxial SPDIF Out Port USB 2.0 Port (USB67) LAN RJ-45 Port Side Speaker (Gray) Rear Speaker (Black) Central / Bass (Orange) Line In (Light Blue) Front Speaker (Lime) Microphone (Pink) USB 2.



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0 Ports (USB01) USB 3.

0 Ports (USB23) USB 2.0 Ports (USB45) eSATA3 Connector (eSATA3) Optical SPDIF Out Port Clear CMOS Switch (CLRCBTN) 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. LAN Port LED Indications Activity/Link LED Status 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. 9) (No. 6) 2 V -4 V V 6 V V 8 V V Central / Bass (No. 7) --V V Side Speaker (No. 5) --V 13 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. 14 Chapter 2: Installation This is an ATX form factor (12.0" x 9.6", 30.5 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. Unplug the power cord from the wall socket before touching any component. 2. To avoid damaging the motherboard 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 components. 3. Hold components by the edges and do not touch the ICs. 4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that comes with the component. 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. 15 2.3 CPU Installation For the installation of Intel 1155-Pin CPU, please follow the steps below. Load Plate Load Lever 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 is any bent pin on 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. Disengaging the lever by depressing down and out on the hook to clear retention tab. Step 1-2. Rotate the load lever to fully open position at approximately 135 degrees. Step 1-3. Rotate the load plate to fully open position at approximately 100 degrees. Step 2.

Remove PnP Cap (Pick and Place Cap). 1. It is recommended to use the cap tab to handle and avoid kicking off the PnP cap. 2. This cap must be placed if returning the motherboard for after service.

16 Step 3. Insert the 1155-Pin CPU: Step 3-1. Hold the CPU by the edge where is marked with black line. black line Step 3-2. Orient the CPU with IHS (Integrated Heat Sink) up.

Locate Pin1 and the two orientation key notches. orientation key notch Pin1 alignment key Pin1 alignment key orientation key notch 1155-Pin CPU 1155-Pin Socket For proper inserting, please ensure to match the two orientation key notches of the CPU with the two alignment keys of the socket. Step 3-3. Carefully place the CPU into the socket by using a purely vertical motion. Step 3-4. Verify that the CPU is within the socket and properly mated to the orient keys. Step 4. Close the socket: Step 4-1. Rotate the load plate onto the IHS. Step 4-2.

While pressing down lightly on load plate, engage the load lever. 17 2.4 Installation of CPU Fan and Heatsink This motherboard is equipped with 1155-Pin socket that supports Intel 1155-Pin CPU. Please adopt the type of heatsink and cooling fan compliant with Intel 1155Pin CPU to dissipate heat. Before you installed 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 12, No. 3). 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 CPU.

Step 1. Apply thermal interface material onto center of IHS on the socket surface. Apply Thermal Interface Material Step 2. Step 3. Step 4.

Place the heatsink onto the socket. Ensure fan cables are oriented on side closest to the CPU fan connector on the motherboard (CPU_FAN1, see page 12, No. 3). Align fasteners with the motherboard throughholes. 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. Step 6. Connect fan header with the CPU fan connector on the motherboard. Secure excess cable with tie-wrap to ensure 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 the flexible option 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. 18 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 of the same color. In other words, you have to install identical DDR3 DIMM pair in Dual Channel A (DDR3_A1 and DDR3_B1; Blue slots; see p.



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12 No.5) or identical DDR3 DIMM pair in Dual Channel B (DDR3_A2 and DDR3_B2; White slots; see p.12 No.6), so that Dual Channel Memory Technology can be activated. This motherboard also allows you to install four DDR3 DIMMs for dual channel configuration, and please install identical DDR3 DIMMs in all four slots.

You may refer to the Dual Channel Memory Configuration Table below. Dual Channel Memory Configurations DDR3_A1 (Blue Slot) Populated Populated DDR3_A2 (White Slot) Populated Populated DDR3_B1 (Blue Slot) Populated Populated DDR3_B2 (White Slot) Populated Populated (1) (2) (3)* * For the 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 of the same color. In other words, install them either in the set of blue slots (DDR3_A1 and DDR3_B1), or in the set of white slots (DDR3_A2 and DDR3_B2).

If only one memory module or three memory modules are installed in the DDR3 DIMM slots on this motherboard, it is unable to activate the Dual Channel Memory Technology. 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 the Dual Channel Memory Technology. It is not allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and DIMM may be damaged. 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.

2. 3. 4. 5. 19 Installing a DIMM Please make sure to disconnect power supply before adding or removing DIMMs or the system components. Step 1. Step 2. Unlock a DIMM slot by pressing the retaining clips outward. 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 at 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. 20 2.6 Expansion Slots (PCI and PCI Express Slots) There are 3 PCI slots and 4 PCI Express slots on this motherboard. PCI slots: PCI slots are used to install expansion cards that have the 32-bit PCI interface. PCIE slots: PCIE1 / PCIE3 / PCIE4 (PCIE x1 slot; White) is used for PCI Express cards with x1 lane width cards, such as Gigabit LAN card, SATA2 card, etc. PCIE2 (PCIE x16 slot; Blue) is used for PCI Express x16 lane width graphics cards. Installing an expansion card Step 1. Before installing the 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. Step 2. Step 3. Step 4.

Step 5. Step 6. 21 2.7 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 (CLR CMOS1) (see p.12, No. 8) Setting Description Default Clear CMOS Note: CLR CMOS1 allows you to clear the data in CMOS.

To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLR CMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, user default profile, 1394 GUID and MAC address will be cleared only if the CMOS battery is removed. The Clear CMOS Switch has the same function as the Clear CMOS jumper. 22 2.8 Onboard Headers and Connectors Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage of the motherboard! FDD connector (33-pin FLOPPY1) (see p.

12 No. 29) the red-striped side to Pin1 Note: Make sure the red-striped side of the cable is plugged into Pin1 side of the connector. Serial ATAII Connectors (SATA2_2: see p.12, No. 18) (SATA2_3: see p.

12, No. 17) (SATA2_4: see p.12, No. 19) (SATA2_5: see p.12, No.

20) SATA2_5 SATA2_4 SATA2_3 SATA2_2 These four Serial ATAII (SATAII) connectors support SATA data cables for internal storage devices. The current SATAII interface allows up to 3.0 Gb/s data transfer rate. These two Serial ATA3 (SATA3) connectors support SATA data SATA3_1 SATA3_0 Serial ATA3 Connectors (SATA3_0: see p.12, No. 16) (SATA3_1: see p.12, No. 15) cables for internal storage devices. The current SATA3 interface allows up to 6.0 Gb/s data transfer rate.

If you install the HDD on the eSATA port on the rear I/O, the internal SATA3_1 will not function. Either end of the SATA data cable can be connected to the SATA / SATAII / SATA3 hard disk or the SATAII / SATA3 connector on this motherboard. Serial ATA (SATA) Data Cable (Optional) 23 USB 2.0 Headers (9-pin USB8_9) (see p.12 No. 25) 1 USB_PWR P-9 P+9 GND DUMMY GND P+8 P-8 USB_PWR Besides six default USB 2.0 ports on the I/O panel, there are three USB 2.0 headers on this motherboard. Each USB 2.0 header can support two USB 2.

0 ports. (9-pin USB10_11) (see p.12 No. 26) USB_PWR P-11 P+11 GND DUMMY 1 GND P+10 P-10 USB_PWR (9-pin USB12_13) (see p.12 No.

24) 1 USB_PWR P-13 P+13 GND DUMMY GND P+12 P-12 USB_PWR Infrared Module Header (5-pin IRI1) (see p.12 No. 28) 1 IRTX +5VSB DUMMY This header supports an optional wireless transmitting and receiving infrared module. GND IRRX Front Panel Audio Header (9-pin HD_AUDIO1) (see p.12 No.

31) 1 GND PRESENCE# MIC_RET OUT_RET This is an interface for front panel audio cable that allows convenient connection and control of audio devices. OUT2_L J_SENSE OUT2_R MIC2_R MIC2_L 24 1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. 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.



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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 / Vista™ / Vista™ 64-bit OS: Go to the "FrontMic" Tab in the Realtek Control panel.

Adjust "Recording Volume". System Panel Header (9-pin PANEL1) (see p.12 No. 13) 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.

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 sleep state. The LED is off when the system is in S3/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. 25 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 assignments are matched correctly. Chassis Speaker Header (4-pin SPEAKER 1) (see p.

12 No. 12) Please connect the chassis speaker to this header. Power LED Header (3-pin PLED1) (see p.12 No. 11) 1 PLEDPLED+ PLED+ 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 state. The LED is off in S3/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. Chassis and

Power Fan Connectors (4-pin CHA_FAN1) (see p.

12 No. 27) GND FAN_SPEED_CONTROL +12V CHA_FAN_SPEED (3-pin CHA_FAN2) (see p.12 No. 9) GND CHA_FAN2_PWR CHA_FAN_SPEED (3-pin CHA_FAN3) (see p.12 No.

38) (3-pin PWR_FAN1) (see p.12 No. 39) PWR_FAN_SPEED +12V GND CPU Fan Connectors (4-pin CPU_FAN1) (see p.12 No. 3)

FAN_SPEED_CONTROL CPU_FAN_SPEED +12V GND Please connect the CPU fan cable to the connector and match the black wire to the ground pin. 1234 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 26 (3-pin CPU_FAN2) (see p.12 No. 2) GND +12V CPU_FAN_SPEED ATX Power Connector (24-pin ATXPWR1) (see p.12 No. 7) 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. 12 24 20-Pin ATX Power Supply Installation 1 13 ATX 12V Power Connector (8-pin ATX12V1) (see p.

12 No. @@@@Power Switch (PWRBTN) (see p.12 No. @@@@22) RESET Clear CMOS Switch (CLRCBTN) (see p.13 No. 16) clr CMOS 28 2.10 Dr. Debug Dr. @@@@Please see the diagrams below for reading the Dr. @@@@Serial Presence Detect (SPD) data reading Memory initialization. Memory presence detection Memory initialization. Programming memory timing information Memory initialization. @@@@SPD reading has failed 0x52 Memory initialization error. @@@@Cache initialization CPU post-memory initialization. @@@@Boot Strap Processor (BSP) selection CPU post-memory initialization.

@@@@@This section will guide you to install the SATA / SATAII hard disks. @@@@STEP 2: Connect the SATA power cable to the SATA / SATAII hard disk. STEP 3: Connect one end of the SATA data cable to the motherboard's SATAII connector. STEP 4: Connect the other end of the SATA data cable to the SATA / SATAII hard disk. 2.

12 Serial ATA3 (SATA3) Hard Disks Installation This motherboard adopts Intel® P67 chipset that supports Serial ATA3 (SATA3) hard disks and RAID (RAID 0, RAID 1, RAID 10, RAID 5 and Intel Rapid Storage) functions. 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. 34 2.13 Hot Plug and Hot Swap Functions for SATA / SATAII HDDs This motherboard supports Hot Plug and Hot Swap functions for SATA / SATAII in RAID / AHCI mode. Intel® P67 chipset provides hardware support for Advanced Host controller Interface (AHCI), a new programming interface for SATA host controllers developed thru a joint industry effort.

NOTE What is Hot Plug Function? If the SATA / SATAII HDDs are NOT set for RAID configuration, it is called "Hot Plug" for the action to insert and remove the SATA / SATAII 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 / SATAII HDD. What is Hot Swap Function? If SATA / SATAII HDDs are built as RAID 1 or RAID 5 then it is called "Hot Swap" for the action to insert and remove the SATA / SATAII HDDs while the system is still power-on and in working condition. 2.14 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® P67 chipset provides hardware support for Advanced Host controller Interface (AHCI), a new programming interface for SATA host controllers developed thru 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.



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15 SATA / SATAII / SATA3 HDD Hot Plug Feature and Operation Guide This motherboard supports Hot Plug feature for SATA / SATAII / SATA3 HDD in RAID / AHCI mode. Please read below operation guide of Hot Plug feature carefully. Before you process the SATA / SATAII / 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 / SATAII / SATA3 HDD 1x4-pin conventional power connector (White) connect to power supply Caution 1. Without SATA 15-pin power connector interface, the SATA / SATAII / SATA3 Hot Plug cannot be processed. 2.

Even some SATA / SATAII / 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 / SATAII / SATA3 HDD Hot Plug. * The SATA / SATAII / SATA3 Hot Plug feature might not be supported by the chipset because of its limitation, the SATA / SATAII / 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 / SATAII / SATA3 HDD can support Hot Plug function from your dealer or HDD user manual. The SATA / SATAII / SATA3 HDD, which cannot support Hot Plug function, will be damaged under the Hot Plug operation. 3. Please make sure the SATA / SATAII / SATA3 driver is installed into system properly.

The latest SATA / SATAII / 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. 36 How to Hot Plug a SATA / SATAII / 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 / SATAII / SATA3 HDD damage and data loss. Step 1 Please connect SATA power cable 1x4-pin end Step 2 (White) to the power supply 1x4-pin cable. Connect SATA data cable to the motherboard's SATAII / SATA3 connector. SATA power cable 1x4-pin power connector (White) Step 3 Connect SATA 15-pin power cable connector (Black) end to SATA / SATAII / SATA3 HDD.

Step 4 Connect SATA data cable to the SATA / SATAII / SATA3 HDD. How to Hot Unplug a SATA / SATAII / 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 / SATAII / SATA3 HDD damage and data loss. Step 1 Unplug SATA data cable from SATA / SATAII / SATA3 HDD side. Step 2 Unplug SATA 15-pin power cable connector (Black) from SATA / SATAII / SATA3 HDD side. 37 2.

16 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 up to bottom side to install those required drivers. Therefore, the drivers you install can work properly. 2.

17 Installing Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit With RAID Functions If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit OS on your SATA / SATAII / SATA3 HDDs with RAID functions, please follow below procedures according to the OS you install. 2.17.1 Installing Windows® XP / XP 64-bit With RAID Functions If you want to install Windows® XP / XP 64-bit on your SATA / SATAII / SATA3 HDDs with RAID functions, please follow below steps. STEP 1: Set up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen SATA Configuration. B. Set the option "SATA Mode" to [RAID]. STEP 2: Make a SATA / SATAII / SATA3 Driver Diskette.

A. Insert the Support CD into your optical drive to boot your system. B. During POST at the beginning of system boot-up, press <F11> key, and then a window for boot devices selection appears. Please select CD-ROM as the boot device. C. When you see the message on the screen, "Do you want to generate Serial ATA driver diskette [YN]?", press <Y>. D. Then you will see these messages, Please insert a diskette into the floppy drive. WARNING! Formatting the floppy diskette will lose ALL data in it! Start to format and copy files [YN]? Please insert a floppy diskette into the floppy drive, and press <Y>.

E. The system will start to format the floppy diskette and copy SATA / SATAII / SATA3 drivers into the floppy diskette. 38 STEP 3: 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 4: Install Windows® XP / XP 64-bit OS on your system. After making a SATA / SATAII / SATA3 driver diskette and using "RAID Installation Guide" to set RAID configuration, you can start to install Windows® XP / XP 64bit on your system. At the beginning of Windows setup, press F6 to install a thirdparty RAID driver. When prompted, insert the SATA / SATAII / SATA3 driver diskette containing the Intel® RAID driver.

After reading the floppy disk, the driver will be presented. Select the driver to install according to the mode you choose and the OS you install. After the installation of Windows® XP / XP-64bit 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, please install "SATAII driver" from the Support CD again so that "Intel Rapid Storage" will be installed to your system as well. 2.17.

2 Setting Up a "RAID Ready" System You can also set up a "RAID Ready" system with a single SATA / SATAII / SATA3 hard disk. A "RAID Ready" system can be seamlessly upgraded to RAID 0, RAID 1 or RAID 5 at a later date by using RAID migration feature of Intel Rapid Storage.



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The following steps outline how to build an Intel "RAID Ready" system. 1. Assemble the system and attach a single SATA / SATAII / SATA3 hard drive. 2. Set up system BIOS as step 1 of page 38. When done, exit Setup. 3. Make a SATA / SATAII / SATA3 driver diskette as step 2 of page 38.

Begin Windows® setup by booting from the installation CD. 4. At the beginning of Windows® setup, press F6 to install a third-party RAID driver. When prompted, insert the SATA / SATAII / SATA3 driver diskette containing the Intel® RAID driver. After reading the floppy disk, the driver will be presented. Select the driver to install according to the mode you choose and the OS you install. 39 5. Finish the Windows® installation and install all necessary drivers. 6. Install the Intel(R) Rapid Storage software via the CD-ROM included with your motherboard or after downloading it from the Internet.

This will add the Intel(R) Rapid Storage Console which can be used to manage the RAID configuration. 7. After setting up a "RAID Ready" system as the above steps, you can follow the procedures of the next section to migrate the system to RAID 0, RAID 1 or RAID 5. 2.17.3 Migrating a "RAID Ready" System to RAID 0, RAID 1 or RAID 5 If you have an existing "RAID Ready" system, then you can use the following steps to perform a migration from a single non-RAID configuration to a two drive RAID 0, RAID 1 configuration or three drive RAID 5 configuration. To prepare for this, you will need another SATA / SATAII hard drive with a capacity equal to or greater than that currently being used as the source hard drive. 1. Physically attach one additional SATA / SATAII / SATA3 hard drive to the SATAII / SATA3 port not being used. Note the serial number of the hard drive already in the system; you will use this to select it as the source hard drive when initiating the migration.

2. Boot Windows®, install the Intel(R) Rapid Storage software, if not already installed, using the setup package obtained from a CD-ROM or from the Internet. This will install the necessary Intel Storage Utility and start menu links. 3. Open the Intel Storage Utility from the Start Menu and select "Create RAID volume from Existing Hard Drive" from the Actions menu. This will activate the Create RAID volume from Existing Hard Drive Wizard. Click through the dialogs as prompted. It's important to understand what will occur during the migration process because any data on the destination hard drive will be lost. 4. Once the migration is complete, reboot the system.

If you migrated to a RAID 0 volume, use Disk Management from within Windows® in order to partition and format the empty space created when the two hard drive capacities are combined. You may also use third-party software to extend any existing partitions within the RAID volume. 40 2.17.4 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 on your SATA / SATAII / SATA3 HDDs with RAID functions, please follow below steps.

STEP 1: Set up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen SATA Configuration. B. Set the option "SATA Mode" to [RAID].

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, please install "SATAII driver" from the Support CD again so that "Intel Rapid Storage" will be installed to your system as well. 41 2.18 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 64bit OS on your SATA / SATAII / SATA3 HDDs without RAID functions, please follow below procedures according to the OS you install. 2.18.1 Installing Windows® XP / XP 64-bit Without RAID Functions If you want to install Windows® XP / XP 64-bit OS on your SATA / SATAII / SATA3 HDDs without RAID functions, please follow below steps. Using SATA / SATAII / SATA3 HDDs with NCQ function STEP 1: Set Up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen SATA Configuration. B. Set the option "SATA Mode" to [AHCI]. STEP 2: Make a SATA / SATAII / SATA3 driver diskette. Please make a SATA / SATAII / SATA3 driver diskette by following section 2.17.1 step 2 on page 38.

STEP 3: Install Windows® XP / XP 64-bit OS on your system. After making a SATA / SATAII / SATA3 driver diskette, you can start to install Windows® XP / XP 64-bit on your system. At the beginning of Windows® setup, press F6 to install a third-party AHCI driver. When prompted, insert the SATA / SATAII / SATA3 driver diskette containing the Intel® AHCI driver. After reading the floppy disk, the driver will be presented.

Select the driver to install according to the mode you choose and the OS you install. Using SATA / SATAII / SATA3 HDDs without NCQ function STEP 1: Set up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen SATA Configuration. B. Set the option "SATA Mode" to [IDE]. STEP 2: Install Windows® XP / XP 64-bit OS on your system. 42 2.18.2 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 / SATAII / SATA3 HDDs without RAID functions, please follow below steps.

Using SATA / SATAII / SATA3 HDDs with NCQ function STEP 1: Set Up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen SATA Configuration. B. Set the option "SATA Mode" to [AHCI]. STEP 2: Install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS on your system. Using SATA / SATAII / STA3 HDDs without NCQ function STEP 1: Set up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen SATA Configuration. B. Set the option "SATA Mode" to [IDE]. STEP 2: Install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS on your system.



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43 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 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 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. 44 3.1.2 Navigation Keys Please check the following table for the function description of each navigation key. Navigation Key(s) 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 <Enter> To bring up the selected screen <F1> To display the General Help Screen <F9> To load optimal default values for all the settings <F10> To save changes and exit the UEFI SETUP UTILITY <ESC> To 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. 45 3.

3 Advanced Screen In this section, you may set the configurations for the following items: CPU Configuration, Integrated Clock Chip Configuration, DRAM Configuration, North Bridge Configuration, South Bridge Configuration, Storage Configuration, Super IO Configuration, Voltage Configuration, ACPI Configuration and USB Configuration. Setting wrong values in this section may cause the system to malfunction. ASRock Instant Flash ASRock Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows®. Just launch this tool and save the new UEFI file to your USB flash drive, floppy disk or hard drive, then you can update your UEFI 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. If you execute ASRock Instant Flash utility, the utility will show the UEFI files and their respective information.

Select the proper UEFI file to update your UEFI, and reboot your system after UEFI update process completes. 46 3.3.

I CPU Configuration CPU Ratio Setting Use this item to change the ratio value of this motherboard. Intel SpeedStep Technology Intel SpeedStep technology is Intel's new power saving technology. Processor can switch between multiple frequency and voltage points to enable power savings. The default value is [Enabled]. Configuration options: [Auto], [Enabled] and [Disabled].

If you install Windows® XP and select [Auto], you need to set the "Power Schemes" as "Portable/Laptop" to enable this function. If you install Windows® Vista™ / 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 issue with some power supplies.

Please set this item to [Disable] if above issue occurs.

Intel TurboMode Technology Use this item to enable or disable Intel Turbo Mode Technology. Turbo mode allows processor cores to run faster than marked frequency in specific condition. The default value is [Enabled]. Turbo Power Limit Use this item to adjust Turbo power limit. Configuration options: [Auto] and [Manual]. The default value is [Auto]. Turbo Mode Extra Voltage (mV) Use this item to add voltage when CPU is in Turbo mode. Intel Hyper Threading

Technology To enable this feature, it requires a computer system with an Intel processor that supports Hyper-Threading technology and an operating 47 system that includes optimization for this technology, such as Microsoft® Windows® XP / Vista™ / 7. Set to [Enabled] if using Microsoft® Windows® XP, Vista™, 7, or Linux kernel version 2.4.

18 or higher. This option will be hidden if the installed CPU does not support Hyper-Threading technology. Active Processor Cores Use this item to select the number of cores to enable in each processor package. Configuration options: [All], [1] and [2]. The default value is [All]. Hardware Prefetcher Use this item to turn on/off the MLC streamer prefetcher. Adjacent Cache Line Prefetch Use this item to turn on/off prefetching of adjacent cache lines. Enhance Halt State (C1E) All processors support the Halt State (C1). The C1 state is supported through the native processor instructions HLT and MWAIT and requires no hardware support from the chipset. In the C1 power state, the processor maintains the context of the system caches.

CPU C3 Report Use this to enable or disable CPU C3 (ACPI C2) report to OS. CPU C6 Report Use this to enable or disable CPU C6 (ACPI C3) report to OS. Package C State Limit Selected option will program into C State package limit register. The default value is [No Limit]. CPU Thermal Throttling You may select [Enabled] to enable CPU internal thermal control mechanism to keep the CPU from overheated.

Intel Virtualization Technology When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel Virtualization Technology. No-Execute Memory Protection No-Execution (NX) Memory Protection Technology is an enhancement to the IA-32 Intel Architecture. An IA-32 processor with "No Execute (NX) Memory Protection" can prevent data pages from being used by malicious software to execute code. This option will be hidden if the current CPU does not support No-Execute Memory Protection.

Local x2APIC Use this to enable or disable Local x2APIC. The default value is [Disabled]. Please be noted that some OS do not support this function.



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48 3.3.2 Integrated Clock Chip Configuration DIV-1S Integrated Clock Control options. DIV-2S Integrated Clock Control options. DIV3 Integrated Clock Control options. DIV4 Integrated Clock Control options. DIV-INS Integrated Clock Control options.

DIV-2NS Integrated Clock Control options. 49 3.3.3 DRAM Configuration Load XMP Setting Use this to load XMP setting. Configuration options: [Auto], [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 assigns appropriate frequency automatically. CAS# Latency (tCL) Use this item to change CAS# Latency (tCL) Auto/Manual setting. The default is [Auto]. RAS# to CAS# Delay (tRCD) Use this item to change RAS# to CAS# Delay (tRCD) Auto/Manual setting.

The default is [Auto]. Row Precharge Time (tRP) Use this item to change Row Precharge Time (tRP) Auto/Manual setting. The default is [Auto]. RAS# Active Time (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. Min: 1N. Max: 2N. The default is [Auto]. Write Recovery Time (tWR) Use this item to change Write Recovery Time (tWR) Auto/Manual setting.

The default is [Auto]. Refresh Cycle Time (tRFC) Use this item to change Refresh Cycle Time (tRFC) Auto/Manual setting. The default is [Auto]. 50 RAS to RAS Delay (tRRD) Use this item to change RAS to RAS Delay (tRRD) Auto/Manual setting. The default is [Auto]. Write to Read Delay (tWTR) Use this item to change Write to Read Delay (tWTR) Auto/Manual setting. The default is [Auto]. Read to Precharge (tRTP) Use this item to change Read to Precharge (tRTP) Auto/Manual setting. The default is [Auto]. Four Activate Window (tFAW) Use this item to change Four Activate Window (tFAW) Auto/Manual setting.

The default is [Auto]. 51 3.3.4 North Bridge Configuration Low MMIO Align Low MMIO resources align at 64MB/1024MB. The default value is [64MB]. VT-d Use this to enable or disable Intel® VT-d technology (Intel® Virtualization Technology for Directed I/O). The default value of this feature is [Disabled].

Primary Graphics Adapter This allows you to select [PCI] or [PCI Express] as the boot graphic adapter priority. The default value is [PCI]. 3.

3.5 South Bridge Configuration 52 South Bridge Configuration Restore on AC/Power Loss This allows you to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers. Deep Sx Mobile platforms support Deep S4/S5 in DC only and desktop platforms support Deep S4/S5 in AC only.

Configuration options: [Disabled], [Enabled in S5] and [S4 and S5]. The default value is [Disabled]. Audio Configuration Onboard HD Audio Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio feature. If you select [Auto], the onboard HD Audio will be disabled when PCI Sound Card is plugged.

Front Panel Select [Auto] or [Disabled] for the onboard HD Audio Front Panel.

ACPI HPET Table Use this item to enable or disable ACPI HPET Table. The default value is [Enabled]. Please set this option to [Enabled] if you plan to use this motherboard to submit Windows® Vista™ certification. Onboard LAN This allows you to enable or disable the "Onboard LAN" feature. PCI Legacy Mode This allows you to enable or disable PCI legacy mode. The default value is [Enabled]. Voltage Droop Adjust This allows you to adjust voltage droop.

The default value is [Disabled]. 53 3.3.

6 Storage Configuration SATA Mode Use this to select SATA mode. Configuration options: [IDE Mode], [AHCI Mode] and [RAID Mode]. The default value is [IDE Mode]. AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages. SATA Controller 0 Please select [Compatible] when you install legacy OS. If native OS (Windows® XP / Vista™ / 7) is installed, please select [Enhanced]. SATA Controller 1 Please select [Compatible] when you install legacy OS. If native OS (Windows® XP / Vista™ / 7) is installed, please select [Enhanced]. Hard Disk S.M.

A.R.T. Use this item to enable or disable the S.M.

A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options: [Disabled], [Auto], [Enabled].

54 3.3.7 Super IO Configuration OnBoard Floppy Controller Use this item to enable or disable floppy drive controller. Serial Port Use this item to enable or disable the onboard serial port. Serial Port Address Use this item to set the address for the onboard serial port or disable it. Configuration options:

[Disabled], [3F8 / IRQ4], [2F8 / IRQ3], [3E8 / IRQ4], [2E8 / IRQ3]. Infrared Port Use this item to enable or disable the onboard infrared port. 55 3.3.8

Voltage Configuration CPU Core Voltage Offset Use this to select CPU Core Voltage Offset.

Configuration options: [Auto], [+0.005V] to [+0.300V]. The default value is [Auto]. DRAM Voltage Use this to select DRAM Voltage. Configuration options: [Auto], [1.200V] to [2.040V]. The default value is [Auto]. PCH Voltage Use this to select PCH Voltage.

Configuration options: [Auto], [0.780V] to [1.646V]. The default value is [Auto]. CPU PLL Voltage Use this to select CPU PLL Voltage.

Configuration options: [Auto], [1.586V] to [2.349V]. The default value is [Auto]. VTT Voltage Use this to select VTT Voltage.

Configuration options: [Auto], [0.726V] to [1.870V]. The default value is [Auto]. VCCSA Voltage Use this to select VCCSA Voltage. Configuration options: [Auto], [0.925V] to [1.200V]. The default value is [Auto]. 56 3.

3.9 ACPI Configuration Suspend to RAM Use this item to select whether to auto-detect or disable the Suspend-to-RAM feature. Select [Auto] will enable this feature if the OS supports it. PS/2 Keyboard Power On Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode.

PCI Devices Power On Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode. Ring-In Power On Use this item to enable or disable Ring-In signals to turn on the system from the power-soft-off mode. RTC Alarm Power On Use this item to enable or disable RTC (Real

Time Clock) to power on the system. 57 3.3.10 USB Configuration USB 2.

0 Controller Use this item to enable or disable the use of USB 2.0 controller. USB 3.0 Controller Use this item to enable or disable the use of USB 3.0 controller.

Legacy USB Support Use this option to select legacy support for USB devices. There are four configuration options: [Enabled], [Auto], [Disabled] and [UEFI Setup Only]. The default value is [Enabled]. Please refer to below descriptions for the details of these four options: [Enabled] - Enables support for legacy USB. [Auto] - Enables legacy support if USB devices are connected.

[Disabled] - USB devices are not allowed to use under legacy OS and UEFI setup when [Disabled] is selected.



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