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**User manual ASROCK 990FX EXTREME9**  
**User guide ASROCK 990FX EXTREME9**  
**Operating instructions ASROCK 990FX EXTREME9**  
**Instructions for use ASROCK 990FX EXTREME9**  
**Instruction manual ASROCK 990FX EXTREME9**

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**ASRock**

**990FX Extreme9**

User Manual

Version 1.0  
Published January 2013  
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**Manual abstract:**

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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. 10 ASRock APP Charger 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 XFast USB ASRock XFast USB can boost USB storage device performance. The performance may depend on the properties of the device. ASRock XFast LAN 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. ASRock XFast RAM 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 ASRock Crashless BIOS 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 OMG (Online Management Guard) Administrators are able to establish an internet curfew or restrict internet access at specified times via OMG.

You may schedule the starting and ending hours of internet access granted to other users. In order to prevent users from bypassing OMG, guest accounts without permission to modify the system time are required. ASRock Internet Flash ASRock Internet Flash searches for available UEFI firmware updates from our servers. In other words, the system can autodetect the latest UEFI from our servers and flash them without entering Windows® OS. ASRock UEFI System Browser ASRock UEFI system browser is a useful tool included in graphical UEFI.

It can detect the devices and configurations that users are currently using in their PC. With the UEFI system browser, you can easily examine the current system configuration in UEFI setup. ASRock Dehumidifier Function Users may prevent motherboard damages due to dampness by enabling "Dehumidifier Function". When enabling Dehumidifier Function, the computer will power on automatically to dehumidify the system after entering S4/S5 state. ASRock Easy RAID Installer ASRock Easy RAID Installer can help you to copy the RAID driver from a support CD to your USB storage device. After copying the RAID driver to your USB storage device, please change "SATA Mode" to "RAID", then you can start installing the OS in RAID mode. 12 ASRock Fast Boot With ASRock's exclusive Fast Boot technology, it takes less than 1.5 seconds to logon to Windows® 8 from a cold boot. No more waiting! The speedy boot will completely change your user experience and behavior. ASRock X-Boost ASRock's X-Boost Technology is a smart auto-overclocking function and is brilliantly designed to unlock the hidden power of your CPUs.

Simply press "X" when turning on the PC, X-Boost will automatically overclock the relative components to get up to 15.77% performance boost! With the smart X-Boost, overclocking CPU can become a near one-button process. \* The functionality of "Unlock CPU Cores" feature might vary by different processors. ASRock Restart to UEFI Windows® 8 brings the ultimate boot up experience. The lightning boot up speed makes it hard to access the UEFI setup.



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ASRock Restart to UEFI technology is designed for those requiring frequent UEFI access. It allows users to easily enter the UEFI automatically when turning on the PC next time. Just simply enable this function; the PC will be assured to access the UEFI directly in the very beginning. Turbo 50 / Turbo 60 Overclocking Simply click the Turbo 50 / Turbo 60 button in UEFI, the system performance will boost up to 50% or 60% increase by automatically overclocking CPU, Memory frequency and all related voltage settings. ASRock Good Night LED ASRock Good Night LED technology can offer you a better environment by extinguishing the unessential LED.

By enabling Good Night LED in BIOS, the Power / HDD / LAN LED will be switched off when system is on. Not only this, Good night LED will automatically switch off Power and Keyboard LED when the system enters into Standby / Hibernation mode as well. 13 1.4 Motherboard Layout 1 2 3 4 5 6 7 8 9 DDR3\_A2 (64 bit, 240-pin module) DDR3\_A1 (64 bit, 240-pin module) USB 3.0 T: USB0 B: USB1 USB 2.

0 T: USB0 B: USB1 DDR3\_B1 (64 bit, 240-pin module) DDR3\_B2 (64 bit, 240-pin module) FSB800 FSB800 USB 3.0 T: USB2 Top: RJ-45 B: USB3 LAN CMOS BATTERY AMD 990FX Chipset PCIE1 USB3\_6\_7 USB3\_4\_5 PS2 Keyboard Clr CMOS Optical SPDIF PS2 Mouse CPU\_FAN1 CPU\_FAN2 CHA\_FAN2 PWR\_FAN1 ATX12V1 Coaxial SPDIF SOCKET AM3b eSATA eSATA Bottom: CTR BASS Bottom: MIC IN 10 IEEE 1394 Center: REAR SPK Center: FRONT USB 2.0 T: USB2 B: USB3 11 12 Top: SIDE SPK Top: LINE IN 13 AUDIO CODEC 41 40 39 Super I/O 14 PCIE2 990FX Extreme9 PCIE3 AMD SB950 Chipset SATA3\_A1\_A2 15 16 17 18 19 CHA\_FAN1 38 37 36 35 HD\_AUDIO1 PCIE4 PC11 32Mb BIOS CHA\_FAN3 PCIE5 FRONT\_1394 IRI1 SPEAKER1 1 PLED1 USB4\_5 COM1 1 PANEL 1 PLED PWRBTN USB6\_7 1 1 Dr. Debug RSTBTN PWRBTN 1 1 1 1 1 CLRCMOS1 1 HDLED RESET 1 CIR1 1 1 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 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) 21 CPU Heatsink Retention Module 22 AM3+ CPU Socket 23 CPU Fan Connector (CPU\_FAN1) 24 CPU Fan Connector (CPU\_FAN2) 25 Chassis Fan Connector (CHA\_FAN2) 26 2 x 240-pin DDR3 DIMM Slots 27 (Dual Channel A: DDR3\_A1, DDR3\_B1) 28 2 x 240-pin DDR3 DIMM Slots 29 (Dual Channel B: DDR3\_A2, DDR3\_B2) 30 Power Fan Connector (PWR\_FAN1) 31 ATX Power Connector (ATXPWR1) 32 USB 3.0 Header (USB3\_6\_7) 33 USB 3.0 Header (USB3\_4\_5) Northbridge Controller 34 Southbridge Controller 35 SATA3 Connector (SATA3\_A1\_A2) 36 SATA3 Connector (SATA3\_5\_6) 37 SATA3 Connector (SATA3\_3\_4) 38 SATA3 Connector (SATA3\_1\_2) 39 Chassis Speaker Header (SPEAKER1) 40 Chassis Fan Connector (CHA\_FAN1) 41 Power Switch (PWRBTN) Reset Switch (RSTBTN) Dr. Debug (LED) Chassis Fan Connector (CHA\_FAN3) USB 2.0 Header (USB6\_7) USB 2.0 Header (USB4\_5) Consumer Infrared Module Header (CIR1) System Panel Header (PANEL1) Clear CMOS Jumper (CLRCMOS1) Power LED Header (PLED1) Serial Port Connector (COM1) Infrared Module Header (IR1) Front Panel IEEE 1394 Header (FRONT\_1394) Front Panel Audio Header (HD\_AUDIO1) PCI Express 2.0 x16 Slot (PCIE5) SPI Flash Memory (32Mb) PCI Slot (PC11) PCI Express 2.0 x16 Slot (PCIE4) PCI Express 2.0 x16 Slot (PCIE3) PCI Express 2.0 x1 Slot (PCIE2) PCI Express 2.0 x16 Slot (PCIE1) 14 SATA3\_1\_2 RoHS SATA3\_3\_4 SATA3\_5\_6 1.5 I/O Panel 1 2 3 4 5 6 7 8 9 10 11 19 1 2 3 4 \* 5 6 7 8 9 \*\* 10 18 17 16 15 14 13 11 12 13 \*\*\* 14 \*\*\* 15 16 17 18 19 12 PS/2 Mouse Port (Green) Coaxial SPDIF Out Port USB 2.

0 Ports (USB01) USB 2.0 Port (USB23) LAN RJ-45 Port Side Speaker (Gray) Rear Speaker (Black) Central / Bass (Orange) Line In (Light Blue) Front Speaker (Lime) Microphone (Pink) USB 3.0 Ports (USB3\_2\_3) IEEE 1394 Port (IEEE 1394) eSATA3 Connector (ESATA1) eSATA3 Connector (ESATA2) USB 3.0 Ports (USB3\_0\_1) 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 Status SPEED LED Description Activity/Link LED Status Description ACT/LINK SPEED LED 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. 10) (No. 7) 2 V -- 4 V V 6 V V 8 V V Central / Bass (No.

8) --- V V Side Speaker (No. 6) ---V 15 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. 16 2. Installation This is an ATX form factor motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it. Pre-installation Precautions Take note of the following precautions before you install motherboard components or change any motherboard settings.

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. 1. 2. 3. 4. 5. Unplug the power cord from the wall socket before touching any component. 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.

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. 17 2.1 CPU Installation Step 1. Unlock the socket by lifting the lever up to a 90 angle. Step 2. Position the CPU directly above the socket such that the CPU corner with the golden triangle matches the socket corner with a small triangle. Step 3. Carefully insert the CPU into the socket until it fits in place.

The CPU fits only in one correct orientation.



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*DO NOT force the CPU into the socket to avoid bending of the pins. o Step 4. When the CPU is in place, press it firmly on the socket while you push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.*

*Lever 90° Up CPU Golden Triangle Socket Corner Small Triangle STEP 1: Lift Up The Socket Lever STEP 2 / STEP 3: STEP 4: Match The CPU Golden Triangle Push Down And Lock To The Socket Corner Small The Socket Lever Triangle 2.2 Installation of CPU Fan and Heatsink After you install the CPU into this motherboard, it is necessary to install a larger heatsink and cooling fan to dissipate heat. You also need to spray thermal grease between the CPU and the heatsink to improve heat dissipation. Make sure 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 14, No.*

*4 or CPU\_FAN2, see Page 14, No. 5). For proper installation, please kindly refer to the instruction manuals of the CPU fan and the heatsink. 18 2.3 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. In other words, you have to install identical DDR3 DIMM pair in Dual Channel (DDR3\_A1 and DDR3\_B1; see p.14 No.7) or identical DDR3 DIMM pair in Dual Channel (DDR3\_A2 and DDR3\_B2; see p.14 No.*

*8), 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 (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 the configuration (3), please install identical DDR3 DIMMs in all four slots. 1. Please install the memory module into DDR3\_A2 and DDR3\_B2 slots for the first priority. 2. If you want to install two memory modules, for optimal compatibility and reliability, it is recommended to install them either in the set of DDR3\_A1 and DDR3\_B1 slots, or in the set of DDR3\_A2 and DDR3\_B2 slots. 3. 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.*

*4. 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 . 5. It is not allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and DIMM may be damaged. 6.*

*If you adopt DDR3 2450/2100 memory modules on this motherboard, it is recommended to install them on DDR3\_A2 and DDR3\_B2 slots. 19 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 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 2.4 Expansion Slots (PCI and PCI Express Slots) There is 1 PCI slot and 5 PCI Express slots on this motherboard. PCI Slot: PCI slot is used to install expansion cards that have the 32-bit PCI interface. PCIE Slots: PCIE1 (PCIE x16 slot) is used for PCI Express x16 lane width graphics cards. PCIE2 (PCIE x1 slot) is used for PCI Express cards with x1 lane width cards, such as ASRock Game Blaster, Gigabit LAN card, SATA card.*

*PCIE3 (PCIE x16 slot) is used for PCI Express x4 lane width graphics cards. PCIE4 (PCIE x16 slot) is used for PCI Express x16 lane width graphics cards. PCIE5 (PCIE x16 slot) is used for PCI Express x8 lane width graphics cards. PCIE Slot Configurations PCIE1 x16 x16 x16 PCIE2 N/A N/A N/A PCIE3 N/A N/A N/A PCIE4 N/A x16 x8 PCIE5 N/A N/A x8 Single Graphics Card Two Graphics Cards in CrossFireXTM or SLITM Mode Three Graphics Cards in 3-Way CrossFireXTM or 3-Way SLITM Mode 1. In single VGA card mode, it is recommended to install a PCI Express x16 graphics card in the PCIE1 slot. 2. In CrossFireXTM mode or SLITM mode, please install the PCI Express x16 graphics cards in PCIE1 and PCIE4 slots. Both these two slots will work at x16 bandwidth. 3. In 3-Way CrossFireXTM mode or 3-Way SLITM mode, please install the PCI Express x16 graphics cards in PCIE1, PCIE4 and PCIE5 slots. PCIE1 will work at x16 bandwidth, while PCIE4 and PCIE5 slots will work at x8 bandwidth. 4. Please connect a chassis fan to the motherboard's chassis fan connector (CHA\_FAN1, CHA\_FAN2 or CHA\_FAN3) when using multiple graphics cards for better thermal environment. 21 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. 22 2.5 SLITM, 3-Way SLITM and Quad SLITM Operation Guide This motherboard supports NVIDIA® SLITM, 3-Way SLITM and Quad SLITM (Scalable Link Interface) technology that allows you to install up to three identical PCI Express x16 graphics cards. Currently, NVIDIA® SLITM technology supports Windows® XP / XP 64-bit / VistaTM / VistaTM 64-bit / 7 / 7 64-bit / 8 / 8 64-bit OS.*

*NVIDIA® 3-Way SLITM and Quad SLITM technology support Windows® VistaTM / VistaTM 64-bit / 7 / 7 64-bit / 8 / 8 64-bit OS only. Please follow the installation procedures in this section. Requirements 1. For SLITM technology, you should have two identical SLITM-ready graphics cards that are NVIDIA® certified. For 3-Way SLITM technology, you should have three identical 3-Way SLITM-ready graphics cards that are NVIDIA® certified. For Quad SLITM technology, you should have two identical Quad SLITM-ready graphics cards that are NVIDIA® certified.*



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2. Make sure that your graphics card driver supports NVIDIA® SLITM technology. Download the driver from NVIDIA website (www.nvidia.com). 3. Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system. It is recommended to use NVIDIA® certified PSU. Please refer to NVIDIA® website for details.

#### 2.5.1 Graphics Card Setup 2.5.1.

1 Installing Two SLITM-Ready Graphics Cards Step 1. Install the identical SLITM-ready graphics cards that are NVIDIA® certified because different types of graphics cards will not work together properly. (Even the GPU chips version shall be the same.) Insert one graphics card into PCIE1 slot and the other graphics card to PCIE4 slot. Make sure that the cards are properly seated on the slots. Step2. If required, connect the auxiliary power source to the PCI Express graphics cards. 23 Step3. Align and insert the ASRock SLI\_Bridge\_2S Card to the goldfingers on each graphics card. Make sure the ASRock SLI\_Bridge\_2S Card is firmly in place.

ASRock SLI\_Bridge\_2S Card Step4. Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIE1 slot. 24 2.5.1.2 Installing Three SLITM-Ready Graphics Cards Step 1. Install the identical 3-Way SLITM-ready graphics cards that are NVIDIA® certified because different types of graphics cards will not work together properly. (Even the GPU chips version shall be the same.) Each graphics card should have two goldfingers for ASRock 3-Way SLI-2S1S Bridge Card connector. Insert one graphics card into PCIE1 slot, another graphics card to PCIE4 slot, and the other graphics card to PCIE5 slot.

Make sure that the cards are properly seated on the slots. Two Goldfingers Step2. Connect the auxiliary power source to the PCI Express graphics card.

Please make sure that both power connectors on the PCI Express graphics card are connected. Repeat this step on the three graphics cards.

Step3. Align and insert ASRock 3-Way SLI-2S1S Bridge Card to the goldfingers on each graphics card. Make sure ASRock 3-Way SLI-2S1S Bridge Card is firmly in place. ASRock 3-Way SLI-2S1S Bridge Card Step4. Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIE1 slot.

25 2.5.2 Driver Installation and Setup Install the graphics card drivers to your system. After that, you can enable the MultiGraphics Processing Unit (GPU) feature in the NVIDIA® nView system tray utility. Please follow the below procedures to enable the multi-GPU feature. For Windows® XP / XP 64-bit OS: (For SLITM mode only) A. Double-click NVIDIA Settings icon on your Windows® taskbar. B. From the pop-up menu, select Set SLI and PhysX configuration. In Set PhysX GPU acceleration item, please select Enabled.

In Select an SLI configuration item, please select Enable SLI. And click Apply. C. Reboot your system. D. You can freely enjoy the benefit of SLITM feature.

26 For Windows® VistaTM / VistaTM 64-bit / 7 / 7 64-bit / 8 / 8 64-bit OS: (For SLITM and Quad SLITM mode) A. Click the Start icon on your Windows taskbar. B. From the pop-up menu, select All Programs, and then click NVIDIA Corporation.

C. Select NVIDIA Control Panel tab. D. Select Control Panel tab. E.

From the pop-up menu, select Set SLI and PhysX configuration. In Set PhysX GPU acceleration item, please select Enabled. In Select an SLI configuration item, please select Enable SLI. And click Apply. F.

Reboot your system. G. You can freely enjoy the benefit of SLITM or Quad SLITM feature. 27 For Windows® VistaTM / VistaTM 64-bit / 7 / 7 64-bit / 8 / 8 64-bit OS: (For 3-Way SLITM mode) A. Follow steps A to D on page 27. B. From the pop-up menu, select Set SLI and PhysX configuration. In Select a hardware acceleration setting for PhysX item, please select Enabled. In Select an SLI configuration item, please select Enable 3-way SLI. And click Apply.

C. Reboot your system. D. You can freely enjoy the benefit of 3-Way SLITM feature. \* SLITM appearing here is a registered trademark of NVIDIA® Technologies Inc., and is used only for identification or explanation and to the owners' benefit, without intent to infringe. 28 2.6 CrossFireXTM, 3-Way CrossFireXTM and Quad CrossFireXTM Operation Guide This motherboard supports CrossFireX TM , 3-way CrossFireX TM and Quad CrossFireX TM feature. CrossFireX TM 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 feature is supported with Windows® XP with Service Pack 2 / VistaTM / 7 / 8 OS. 3-way CrossFireXTM and Quad CrossFireXTM feature are supported with Windows® VistaTM / 7 / 8 OS only. Please check AMD 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. 2.6.

1 Graphics Card Setup 2.6.1.1 Installing Two CrossFireXTM-Ready Graphics Cards Different CrossFireXTM cards may require different methods to enable CrossFireXTM feature. 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. 29 Step 2. Connect two Radeon graphics cards by installing CrossFire Bridge on CrossFire Bridge Interconnects on the top of Radeon graphics cards.

(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.) 30 2.6.1.2 Installing Three CrossFireXTM-Ready Graphics Cards Step 1. Install the identical 3-Way CrossFireXTM-ready graphics cards that are AMD certified because different types of graphics cards will not work together properly.

(Even the GPU chips version shall be the same.) Insert one graphics card into PCIE1 slot, another graphics card to PCIE4 slot, and the other graphics card to PCIE5 slot. Make sure that the cards are properly seated on the slots.



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Select "Recorder". Then click "FrontMic". @@@@Note the positive and negative pins before connecting the cables.

@@@@@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. 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. 39 Chassis Speaker Header (4-pin SPEAKER 1) (see p.14 No. 19) 1 SPEAKER DUMMY +5V DUMMY Please connect the chassis speaker to this header. Power LED Header (3-pin PLED1) (see p.14 No.

30) 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). Chassis and Power Fan Connectors (4-pin CHA\_FAN1) (see p.14 No. 20) GND FAN\_SPEED\_CONTROL +12V CHA\_FAN\_SPEED (3-pin CHA\_FAN2) (see p.14 No. 6) GND +12V CHA\_FAN\_SPEED GND +12V CHA\_FAN\_SPEED Please connect the fan cables to the fan connectors and match the black wire to the ground pin. CHA\_FAN1/2/3 fan speed can be controlled through UEFI or AXTU.

(3-pin CHA\_FAN3) (see p.14 No. 24) +12V (3-pin PWR\_FAN1) (see p.14 No. 9) GND PWR\_FAN\_SPEED CPU Fan Connectors FAN\_SPEED\_CONTROL (4-pin CPU\_FAN1) CPU\_FAN\_SPEED +12V GND (see p.

14 No. 4) 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 40 (3-pin CPU\_FAN2) GND (see p.

14 No. 5) +12V CPU\_FAN\_SPEED ATX Power Connector (24-pin ATXPWR1) (see p.14 No. 10) 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.14 No. 1) 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 IEEE 1394 Header (9-pin FRONT\_1394) (see p.14 No. 33) RXPAM\_0 GND RXPBM\_0 +12V GND 1 +12V RXPBP\_0 GND RXPAP\_0 Besides one default IEEE 1394 port on the I/O panel, there is one IEEE 1394 header (FRONT\_1394) on this motherboard. This IEEE 1394 header can support one IEEE 1394 port. 41 Serial port Header (9-pin COM1) (see p.14 No. 31) This COM1 header supports a serial port module. Consumer Infrared Module Header (4-pin CIR1) (see p.14 No.

27) 1 GND IRTX IRRX ATX+5VSB This header can be used to connect the remote controller receiver. 42 The Installation Guide of Front USB 3.0 Panel Step 1 Prepare the bundled Front USB 3.0 Panel, four Step 2 Screw the 2.5" HDD/SSD to the Front USB 3.

0 Panel with four HDD screws. HDD screws, and six chassis screws. Step 3 Intall the Front USB 3.0 Panel into the 2.5" drive bay of the chassis. Step 4 Screw the Front USB 3.0 Panel to the drive bay with six chassis screws. Step 5 Plug the Front USB 3.0 cable into the USB 3.0 header (USB3\_4\_5 or USB3\_6\_7) on the motherboard. Step 6 The Front USB 3.0 Panel is ready to use. The Installation Guide of Rear USB 3.0 Bracket Step 1 Unscrew the two screws from the Front USB 3.0 Step 2 Put the USB 3.

0 cable and the rear Panel. USB 3.0 bracket together. Step 3 Screw the two screws into the rear USB 3.0 bracket. Step 4 Put the rear USB 3.0 bracket into the chassis. 43 2.11 Smart Switches The motherboard has three smart switches: power switch, reset switch and clear CMOS switch, allowing users to quickly turn on/off or reset the sytem clear the CMOS values. Power Switch (PWRBTN) (see p.

14 No. 21) Reset Switch (RSTBTN) (see p.14 No. 22) Clear CMOS Switch (CLRCBTN) (see p.15 No.

18) Power Switch is a smart switch, allowing users to quickly turn on/off the system. Reset Switch is a smart switch, allowing users to quickly reset the system. Clear CMOS Switch is a smart switch, allowing users to quickly clear the CMOS values. Power Reset clr CMOS 44 2.12 Dr.

Debug Dr. Debug is used to provide code information, which makes troubleshooting even easier. Please see the diagrams below for reading the Dr. Debug codes. Status Code 00 0d 01 - 54 (except 0d), 5A- 60 55 61 - 91 92 - 99 A0 - A7 b0 b4 b7 d6 d7 d8 FF Description Please check if CPU is installed correctly and then clear CMOS. Problem related to memory, VGA card and other devices. Please clear CMOS, re-install memory and VGA card, and remove other USB, PCI devices. Problem related to memory. Please re-install CPU and memory then clear CMOS. If the problem still exists, please install only one memory module or try using other memory modules.

Memory could not be detected. Please re-install memory and CPU. If the problem still exists, please install only one memory module or try using other memory modules. Chipset initialization error. Please press reset or clear CMOS. Problem related to PCI-E devices. Please re-install PCI-E devices or try installing them in other slots. If the problem still exists, please remove all PCI-E devices or try using another VGA card. Problem related to IDE or SATA devices. Please re-install IDE and SATA devices.

If the problem still exists, please clear CMOS and try removing all SATA devices. Problem related to memory. Please re-install CPU and memory. If the problem still exists, please install only one memory module or try using other memory modules. Problem related to USB devices.

Please try removing all USB devices. Problem related to memory. Please re-install CPU and memory then clear CMOS. If the problem still exists, please install only one memory module or try using other memory modules.



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VGA could not be recognized.

Please clear CMOS and try re-installing the VGA card. If the problem still exists, please try installing the VGA card in other slots or using other VGA cards. Keyboard and mouse could not be recognized. Please try re-installing keyboard and mouse. Invalid Password. Please check if CPU is installed correctly and then clear CMOS. 45 2.13 Serial ATA3 (SATA3) Hard Disks Installation This motherboard adopts AMD SB950 chipset that supports Serial ATA3 (SATA3) hard disks and RAID (RAID 0, RAID 1, RAID 0+1, JBOD and RAID 5) functions. It also adopts ASMedia ASM1061 chipset that supports Serial ATA3 (SATA3) hard disks. 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\_A1 and SATA3\_A2 do not support RAID function. If you want to use RAID function on SATA3 connectors, please use SATA3\_0 to SATA3\_6 connectors. 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. AMD SB950 and ASMedia ASM1061 chipsets provide 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. 46 2.15 SATA3 HDD Hot Plug Feature and Operation Guide This motherboard supports Hot Plug feature for SATA3 HDD in RAID / AHCI mode.

Please read below operation guide of Hot Plug feature carefully. Before you process the 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 SATA3 HDD 1x4-pin conventional power connector (White) connect to power supply Caution 1. Without SATA 15-pin power connector interface, the SATA3 Hot Plug cannot be processed. 2. Even some 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 SATA3 HDD Hot Plug. \* The SATA3 Hot Plug feature might not be supported by the chipset because of its limitation, the SATA3 Hot Plug support information of our motherboard is indicated in the product spec on our website: [www.asrock.com](http://www.asrock.com) 2.

Make sure your SATA3 HDD can support Hot Plug function from your dealer or HDD user manual. The SATA3 HDD, which cannot support Hot Plug function, will be damaged under the Hot Plug operation. 3. Please make sure the SATA3 driver is installed into system properly. The latest SATA3 driver is available on our support website: [www.asrock.com](http://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.

47 How to Hot Plug a 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 SATA3 HDD damage and data loss. Step 1 Please connect SATA power cable 1x4-pin Step 2 Connect SATA data cable to end (White) to the power supply 1x4-pin the motherboard's SATA3 cable. connector. SATA power cable 1x4-pin power connector (White) Step 3 Connect SATA 15-pin power cable connector (Black) end to SATA3 HDD. Step 4 Connect SATA data cable to the SATA3 HDD.

How to Hot Unplug a 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 SATA3 HDD damage and data loss. Step 1 Unplug SATA data cable from SATA3 HDD side. Step 2 Unplug SATA 15-pin power cable connector (Black) from SATA3 HDD side. 48 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® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit With RAID Functions If you want to install Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit on a RAID disk composed of 2 or more 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 a RAID disk composed of 2 or more SATA3 HDDs with RAID functions, please follow below steps. STEP 1: Set up UEFI. A.

Enter UEFI SETUP UTILITY Advanced screen Storage Configuration. B. Set the "SATA Mode" option to [RAID]. (For SATA3\_1 to SATA3\_6 ports.) STEP 2: Make a SATA3 Driver Diskette. (Please use an USB floppy or a floppy disk.) A. Insert the ASRock 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, "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 any key. E. The system will start to format the floppy diskette and copy SATA3 drivers into the floppy diskette. 49 STEP 3: Use "RAID Installation Guide" to set RAID configuration. Before you start to configure RAID function, you need to check the RAID installation guide in the Support CD for proper configuration.



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Please refer to the BIOS RAID installation guide part of the document in the following path in the Support CD: .. \RAID Installation Guide STEP 4: Install Windows® XP / XP 64-bit OS on your system. After step 1, 2, 3, you can start to install Windows® XP / XP 64-bit OS on your system. At the beginning of Windows® setup, press F6 to install a third-party RAID driver. When prompted, insert the SATA3 driver diskette containing the AMD RAID driver. After reading the floppy disk, the driver will be presented. Select the driver to install according to the OS you install. 2.17.

2 Installing Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit With RAID Functions If you want to install Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit on a RAID disk composed of 2 or more SATA3 HDDs with RAID functions, please follow below steps. STEP 1: Set up UEFI. A. Enter UEFI SETUP UTILITY Advanced screen Storage Configuration. B. Set the “SATA Mode” option to [RAID]. (For SATA3\_1 to SATA3\_6 ports.) STEP 2: Use “RAID Installation Guide” to set RAID configuration. Before you start to configure RAID function, you need to check the RAID installation guide in the Support CD for proper configuration. Please refer to the BIOS RAID installation guide part of the document in the following path in the Support CD: . \RAID Installation Guide STEP 3: Make a SATA3 Driver Diskette. (Please use an USB floppy or a floppy disk.) Make a SATA3 driver diskette by following section 2.17.

1 step 2 on page 49. STEP 4: Install Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your system. 50 2.18 Installing Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit Without RAID Functions If you want to install Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit OS on your 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 on your SATA3 HDDs without RAID functions, please follow below steps. Using SATA3 HDDs with NCQ and Hot Plug functions (AHCI mode) STEP 1: Set up UEFI. A. Enter UEFI SETUP UTILITY Advanced screen Storage Configuration. B. Set the “SATA Mode” option to [AHCI]. (For SATA3\_1 to SATA3\_6 ports.) Set the option “ASMedia SATA3 Mode” to [AHCI]. (For SATA3\_A1 and SATA3\_A2 ports.

) STEP 2: Make a SATA3 Driver Diskette. (Please use an USB floppy or a floppy disk.) Make a SATA3 driver diskette by following section 2.17.1 step 2 on page 49. STEP 3: Install Windows® XP / XP 64-bit OS on your system. You can start to install Windows® XP / XP 64-bit OS on your system. At the beginning of Windows® setup, press F6 to install a third-party AHCI driver. When prompted, insert the SATA3 driver diskette containing the AMD AHCI driver. After reading the floppy disk, the driver will be presented.

Select the driver to install according to the OS you install. Using SATA3 HDDs without NCQ and Hot Plug functions (IDE mode) STEP 1: Set up UEFI. A. Enter UEFI SETUP UTILITY Advanced screen Storage Configuration. B.

Set the “SATA Mode” option to [IDE]. (For SATA3\_1 to SATA3\_6 ports.) Set the option “ASMedia SATA3 Mode” to [IDE]. (For SATA3\_A1 and SATA3\_A2 ports.) STEP 2: Install Windows® XP / XP 64-bit OS on your system.

51 2.18.2 Installing Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit Without RAID Functions If you want to install Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit on your SATA3 HDDs without RAID functions, please follow below steps. Using SATA3 HDDs with NCQ and Hot Plug functions (AHCI mode) STEP 1: Set up UEFI. A. Enter UEFI SETUP UTILITY Advanced screen Storage Configuration. B. Set the “SATA Mode” option to [AHCI]. (For SATA3\_1 to SATA3\_6 ports.) Set the option “ASMedia SATA3 Mode” to [AHCI].

(For SATA3\_A1 and SATA3\_A2 ports.) STEP 2: Install Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your system. Using SATA3 HDDs without NCQ and Hot Plug functions (IDE mode) STEP 1: Set up UEFI. A. Enter UEFI SETUP UTILITY Advanced screen Storage Configuration. B. Set the “SATA Mode” option to [IDE]. (For SATA3\_1 to SATA3\_6 ports.) Set the option “ASMedia SATA3 Mode” to [IDE]. (For SATA3\_A1 and SATA3\_A2 ports.

) STEP 2: Install Windows® 8 / 8 64-bit / 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your system. 2.19 Untied Overclocking Technology This motherboard supports Untied Overclocking Technology, which means during overclocking, FSB enjoys better margin due to fixed PCI / PCIE buses. Before you enable Untied Overclocking function, please enter “Overclock Mode” option of UEFI setup to set the selection from [Auto] to [Manual]. Therefore, CPU FSB is untied during overclocking, but PCI / PCIE buses are in the fixed mode so that FSB can operate under a more stable overclocking environment.

Please refer to the warning on page 8 for the possible overclocking risk before you apply Untied Overclocking Technology. 52 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 For setting system time/date information OC Tweaker For overclocking configurations Advanced For advanced system configurations Tool Useful tools H/W Monitor Displays current hardware status Boot For configuring boot settings and boot priority Security For security settings Exit Exit the current screen or the UEFI SETUP UTILITY Use <> key or <> key to choose among the selections on the menu bar, and use <> key or <> key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also navigate with a mouse. 53 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.



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