You can read the recommendations in the user guide, the technical guide or the installation guide for ASROCK 939A790GMH. You'll find the answers to all your questions on the ASROCK 939A790GMH in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual ASROCK 939A790GMH
User guide ASROCK 939A790GMH
Operating instructions ASROCK 939A790GMH
Instructions for use ASROCK 939A790GMH
Instruction manual ASROCK 939A790GMH

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939A790GMH

User Manual

Version 1.0
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Manual abstract:

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

1. Introduction

Thank you for purchasing ASRock 939A790GMH motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, chapter 1 and 2 contain introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 and 4 contain the configuration guide to BIOS setup and information of the Support CD.

Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock website without further notice. You may find the latest VGA cards and CPU support lists on ASRock website as well. ASRock website http://www.asrock.com If you require technical support related to this motherboard, please visit our website for specific information about the model you are using. www.asrock.com/support/index.asp

1.1 ackage P ack age Contents

ASRock 939A790GMH Motherboard (Micro ATX Form Factor: 9.6-in x 8.6-in, 24.4 cm x 21.8 cm)
ASRock 939A790GMH Quick Installation Guide
ASRock 939A790GMH Support CD
1 x Ultra ATA 66/100/133 IDE Ribbon Cable (80-conductor)
2 x Serial ATA (SATA) Data Cables (Optional)
1 x I/O Panel Shield

1.2 Specifications

- Micro ATX Form Factor: 9.6-in x 8.6-in, 24.4 cm x 21.8 cm
- Solid Capacitor for CPU power
- Socket 939 for AMD AthlonTM 64FX / 64X2 / 64 processors
- Supports AMD's Cool 'n' QuietTM Technology
- FSB 1000 MHz (2.0 GT/s)
- Supports Untied Overclocking Technology (see CAUTION 1)
- Supports Hyper-Transport Technology
- Northbridge: AMD 790GX
- Southbridge: AMD SB750
- Dual Channel DDR Memory Technology (see CAUTION 2)
- 4 x DDR DIMM slots
- Support DDR 400/333/266 non-ECC, un-buffered memory
- Max. capacity of system memory: 4GB (see CAUTION 3)
- 1 x PCI Express 2.0 x16 slot (blue @ x16 mode)
- 1 x PCI Express 2.0 x1 slot
- 2 x PCI slots
- Supports Hybrid CrossFireXTM
- Integrated AMD Radeon HD 3300 graphics
- DX10 class iGPU, Pixel Shader 4.0
- Max. shared memory 512MB (see CAUTION 4)
- Three VGA Output options: D-Sub, DVI-D and HDMI
- Supports HDMI Technology with max. resolution up to 1920x1200 (1080P)
- Supports Dual-link DVI

with max. resolution up to 2560x1600 @ 75Hz - Supports D-Sub with max. resolution up to 2048x1536 @ 85Hz - Supports HDCP function with DVI and HDMI ports - Supports Full HD 1080p Blu-ray (BD) / HD-DVD playback with DVI and HDMI ports - 7.1 CH HD Audio (Realtek ALC888 Audio Codec) - PCIE x1 Gigabit LAN 10/100/1000 Mb/s - Realtek RTL8111DL - Supports Wake-On-LAN I/O Panel - 1 x PS/2 Keyboard Port - 1 x VGA/D-Sub Port - 1 x VGA/DVI-D Port - 1 x HDMI Port Platform CPU Chipset Memory Expansion Slot Graphics Audio LAN Rear Panel I/O 6 Connector BIOS Feature Support CD Unique Feature - 1 x Optical SPDIF Out Port - 4 x Ready-to-Use USB 2.0 Ports - 1 x eSATAII Port - 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED) - HD Audio Jack: Rear Speaker/Central/Bass/Line in/ Front Speaker/Microphone (see CAUTION 5) - 5 x Serial ATAII 3.

0Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 5, RAID 10 and JBOD), NCQ, AHCI and "Hot Plug" functions (see CAUTION 6) - 1 x ATA133 IDE connector (supports 2 x IDE devices) - 1 x Floppy connector - 1 x IR header - 1 x COM port header - 1 x Print port header - CPU/Chassis/Power FAN connector - 24 pin ATX power connector - 4 pin 12V power connector - CD in header - Front panel audio connector - 3 x USB 2.0 headers (support 6 USB 2.0 ports) - 8Mb AMI BIOS - AMI Legal BIOS - Supports "Plug and Play" - ACPI 1.1 Compliance Wake Up Events - SMBIOS 2.3.1 Support - VCCM, NB 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 OC Tuner (see CAUTION 7) - Intelligent Energy Saver (see CAUTION 8) - Instant Boot - ASRock Instant Flash (see CAUTION 9) - ASRock OC DNA (see CAUTION 10) - ASRock AIWI (see CAUTION 11) - ASRock APP Charger (see CAUTION 12) - Hybrid Booster: - CPU Frequency Stepless Control (see CAUTION 13) - ASRock U-COP (see CAUTION 14) - Boot Failure Guard (B.

F.G.) 7 Hardware Monitor OS Certifications - CPU Temperature Sensing - Chassis Temperature Sensing - CPU/Chassis/Power Fan Tachometer - CPU Quiet Fan - Voltage Monitoring: +12V, +5V, +3.3V, Vcore - Microsoft® Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit / XP / XP Media Center / XP 64-bit compliant - FCC, CE, WHQL - ErP/EuP Ready (ErP/EuP ready power supply is required) (see CAUTION 15) * 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 thirdparty overclocking tools. Overclocking may affect your system stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking. CAUTION! 1. 2. This motherboard supports Untied Overclocking Technology. Please read "Untied Overclocking Technology" on page 36 for details. This motherboard supports Dual Channel Memory Technology.

Before you implement Dual Channel Memory Technology, montinuously provide you the most up-do-date supported games! ASRock website: http://www.asrock.com/Feature/Aiwi/index.asp 9 12. If you desire a faster, less restricted way of charging your Apple devices, such as iPhone/iPod/iPad Touch, ASRock has prepared a wonderful solution for you - ASRock APP Charger. Simply installing the APP Charger driver, it makes your iPhone charged 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 than ever. ASRock website: http://www.asrock.

com/Feature/AppCharger/index.asp 13. 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. 14. 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. 15. 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.

10 1.3 Motherboard Layout 1 2 3 4 21.8cm (8.6-in) USB 2.0 T: USB2 B: USB3 1 PS2_USB_PW1 5 6 7 CPU_FAN1 ATXPWR1 Dual Channel FSB800 DDR2 (64 bit, 184-pin module) FSB800 DDR1 (64 bit, 184-pin module) DDR3 (64 bit, 184-pin module) DDR4 (64 bit, 184-pin module) RoHS DDR400 IDE1 USB 2.

0 T: USB0 B: USB1 Top: RJ-45 Gigabit LAN 939A790GMH AMD 790GX Chipset CLRCMOS1 1 24.4cm (9.6-in) PS2 Keyboard Hybrid CrossFire DVI_CON1 Top: CTR BASS ATX12V1 8 VGA1 HDMI1 eSATAII_1 Bottom: SPDIF_01 Bottom: MIC IN SOCKET 939 9 Center: REAR SPK Center: FRONT Top: LINE IN 34 33 32 LAN PCIE1 PWR_FAN1 10 11 12 13 14 15 1 1 USB8_9 USB6_7 USB4_5 Super I/O PCIE2 PCI Express 2.0 EuP Ready PCI1 CMOS BATTERY 31 30 AUDIO CODEC IR1 1 AMD SB750 Chipset 1 CHA_FAN1 16 HD_AUDIO1 1 29 CD1 PCI2 COM1 LPT1 8Mb BIOS PANEL 1 PLED PWRBTN SPEAKER1 1 FLOPPY1 1 1 HDLED RESET 1 SATAII_1 SATAII_2 (PORT 0) (PORT 1) SATAII_3 SATAII_4 SATAII_5 (PORT 2) (PORT 3) (PORT 4) 28 27 26 25 24 23 22 21 20 19 18 17 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 PS2_USB_PW1 Jumper ATX 12V Power Connector (ATX12V1) CPU Heatsink Retention Module 939-Pin CPU Socket CPU Fan Connector (CPU_FAN1) 2 x 184-pin DDR DIMM Slots (Dual Channel A: DDR1, DDR2; Blue) 2 x 184-pin DDR DIMM Slots (Dual Channel B: DDR3, DDR4; Black) ATX Power Connector (ATXPWR1) Primary IDE Connector (IDE1, Blue) USB 2.0 Header (USB8_9, Blue) USB 2.0 Header (USB6_7, Blue) USB 2.0 Header (USB4_5, Blue) Power Fan Connector (PWR_FAN1) Clear CMOS Jumper (CLRCMOS1) Southbridge Controller Chassis Fan Connector (CHA_FAN1) Fifth SATAII Connector (SATAII_5 (PORT 4)) Fourth SATAII Connector (SATAII_4 (PORT 3)) 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 Third SATAII Connector (SATAII_3 (PORT 2)) Secondary SATAII Connector (SATAII_2 (PORT 1)) Primary SATAII Connector (SATAII_1 (PORT 0)) Chassis Speaker Header (SPEAKER 1, White) System Panel Header (PANEL1, White) SPI Flash Memory (8Mb) Print Port Header (LPT1, White) Floppy Connector (FLOPPY1) Serial Port Connector (COM1) Internal Audio Connector: CD1 (Black) Front Panel Audio Header (HD_AUDIO1, White) Infrared Module Header (IR1) Northbridge Controller PCI Express 2.0 x16 Slot (PCIE2; Blue) PCI Express 2.0 x1 Slot (PCIE1; White) Northbridge Controller 11 1.4 I/O Panel 1 2 3 4 5 6 7 8 14 13 12 11 10 9 1 2 *3 4 5 6 ** 7 USB 2.

0 Ports (USB23) VGA/D-Sub Port LAN RJ-45 Port Central / Bass (Orange) Rear Speaker (Black) Line In (Light Blue) Front Speaker (Lime) 8 9 10 11 *** 12 13 14 Microphone (Pink) Optical SPDIF Out Port USB 2.0 Ports (USB01) eSATAII Port HDMI Port VGA/DVI-D Port 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 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 2 4 6 8 (No. 7) V V V V (No. 5) -V V V Central / Bass (No. 4) --V V Line In (No. 6) ---V *** To support AC3 audio format with HDMI Audio under VistaTM, please install the XP HDMI audio driver.

The driver is located under the path: ..\Drivers\NB Audio\REALTEK\XP64_XP(R1.68) And note for LPCM support up to stereo 2 channels only. 12 2.

Installation 939A790GMH is a Micro ATX form factor (9.6-in x 8.6-in, 24.4 cm x 21.8 cm) 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. 13 2.1 Step 1. Step 2. Step 3. CPU Installation Unlock the socket by lifting the lever up to a 90 angle.

Position the CPU directly above the socket such that the CPU corner with the golden triangle matches the socket corner with a small triangle. Carefully insert the CPU into the socket until it fits in place. The CPU fits only in one correct orientation. 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: Match The CPU Golden Triangle To The Socket Corner Small Triangle STEP 4: Push Down And Lock The Socket Lever 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 11, No. 5). For proper installation, please kindly refer to the instruction manuals of the CPU fan and the heatsink. 14 2.3 Installation of Memory Modules (DIMM) 939A790GMH motherboard provides four 184-pin DDR (Double Data Rate) 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) DDR DIMM pair in the slots of the same color. In other words, you have to install identical DDR DIMM pair in Dual Channel A (DDR1 and DDR2; Blue slots; see p.11 No.6) or identical DDR DIMM pair in Dual Channel B (DDR3 and DDR4; Black slots; see p.

11 No.7), so that Dual Channel Memory Technology can be activated. This motherboard also allows you to install four DDR DIMMs for dual channel configuration, and please install identical DDR DIMMs in all four slots. You may refer to the Dual Channel Memory Configuration Table below. Dual Channel Memory Configurations DDR1 (Blue Slot) Populated Populated DDR2 (Blue Slot) Populated Populated DDR3 (Black Slot) Populated Populated DDR4 (Black Slot) Populated Populated (1) (2) (3)* * For the configuration (3), please install identical DDR 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 2. (DDR1 and DDR2), or in the set of black slots (DDR3 and DDR4). If only one memory module or three memory modules are installed in the DDR DIMM slots on this motherboard, it is unable to activate the Dual Channel Memory Technology.

3. If a pair of memory modules is NOT installed in the same Dual Channel, for example, installing a pair of memory modules in DDR1 and DDR3, it is unable to activate the Dual Channel Memory Technology . 15 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. 16 2.4 Expansion Slots (PCI and PCI Express Slots) There are 2 PCI slots and 2 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 (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 cards with 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 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. Step 2. Step 3. Step 4. 17 2.5 Dual Monitor and Surround Display Features Dual Monitor Feature This motherboard supports dual monitor feature. With the internal VGA output support (DVI-D, D-Sub and HDMI), you can easily enjoy the benefits of dual monitor feature without installing any add-on VGA card to this motherboard. This motherboard also provides independent display controllers for DVI-D, D-Sub or HDMI to support dual VGA output so that DVI-D, D-sub or HDMI can drive same or different display contents.

To enable dual monitor feature, please follow the below steps: 1. Connect DVI-D monitor cable to VGA/DVI-D port on the I/O panel, connect D-Sub monitor cable to VGA/D-Sub port on the I/O panel, or connect HDMI monitor cable to HDMI port on the I/O panel. VGA/D-Sub port VGA/DVI-D port HDMI port DVI-D and HDMI monitors cannot display at the same time. You can only choose the combination for dual monitor output support: DVI-D + D-Sub or HDMI + D-Sub. 2.

If you have installed onboard VGA driver from our support CD to your system already, you can freely enjoy the benefits of multi monitor function after your system boots. If you haven't installed onboard VGA driver yet, please install onboard VGA driver from our support CD to your system and restart your computer.

Then you can start to use multi monitor function on this motherboard. When you playback HDCP-protected video from Blu-ray (BD) or HD-DVD disc, the content will be displayed only in one of the three monitors instead of all monitors. 18 Surround Display Feature This motherboard supports surround display upgrade.

With the internal VGA output support (DVI-D, D-Sub and HDMI) and external add-on PCI Express VGA card, you can easily enjoy the benefits of surround display feature. Please refer to the following steps to set up a surround display environment: 1. Install the ATITM PCI Express VGA cards on PCIE2 slot. Please refer to page 17 for proper expansion card installation procedures for details. 2. Connect DVI-D monitor cable to VGA/DVI-D port on the I/O panel, connect D-Sub monitor cable to VGA/D-Sub port on the I/O panel, or connect HDMI monitor cable to HDMI port on the I/O panel. Then connect other monitor cables to the corresponding connectors of the add-on PCI Express VGA cards on PCIE2 slot. DVI-D and HDMI monitors cannot display at the same time. You can only choose the combination: DVI-D + D-Sub or HDMI + D-Sub. 3.

Boot your system. Press <F2> to enter BIOS setup. Enter "Share Memory" option to adjust the memory capability to [32MB], [64MB], [128MB] [256MB] or [512MB] to enable the function of VGA/D-sub. Please make sure that the value you select is less than the total capability of the system memory. If you do not adjust the BIOS setup, the default value of "Share Memory", [Auto], will disable VGA/D-Sub function when the add-on VGA card is inserted to this motherboard. 4. Install the onboard VGA driver and the add-on PCI Express VGA card driver to your system. If you have installed the drivers already, there is no need to install them again. 5. Set up a multi-monitor display.

For Windows® XP / XP 64-bit OS: Right click the desktop, choose "Properties", and select the "Settings" tab so that you can adjust the parameters of the multi-monitor according to the steps below. A. Click the "Identify" button to display a large number on each monitor. B. Right-click the display icon in the Display Properties dialog that you wish to be your primary monitor, and then select "Primary".

When you use multiple monitors with your card, one monitor will always be Primary, and all additional monitors will be designated as Secondary. C. Select the display icon identified by the number 2. D. Click "Extend my Windows desktop onto this monitor".

E. Right-click the display icon and select "Attached", if necessary. F. Set the "Screen Resolution" and "Color Quality" as appropriate for the second monitor. Click "Apply" or "OK" to apply these new values. 19 G. Repeat steps C through E for the diaplay icon identified by the number one, two, three and four. For Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS: Right click the desktop, choose "Personalize", and select the "Display Settings" tab so that you can adjust the parameters of the multi-monitor according to the steps below. A. Click the number "2" icon.

B. Click the items "This is my main monitor" and "Extend the desktop onto this monitor". C. Click "OK" to save your change. D. Repeat steps A through C for the display icon identified by the number three and four. 6. Use Surround Display. Click and drag the display icons to positions representing the physical setup of your monitors that you would like to use. The placement of display icons determines how you move items from one monitor to another.

HDCP Function HDCP function is supported on this motherboard. To use HDCP function with this motherboard, you need to adopt the monitor that supports HDCP function as well. Therefore, you can enjoy the superior display quality with high-definition HDCP encryption contents. Please refer to below instruction for more details about HDCP function. What is HDCP? HDCP stands for High-Bandwidth Digital Content Protection, a specification developed by Intel® for protecting digital entertainment content that uses the DVI interface.

HDCP is a copy protection scheme to eliminate the possibility of intercepting digital data midstream between the video source, or transmitter - such as a computer, DVD player or set-top box - and the digital display, or receiver - such as a monitor, television or projector. In other words, HDCP specification is designed to protect the integrity of content as it is being transmitted. Products compatible with the HDCP scheme such as DVD players, satellite and cable HDTV set-top-boxes, as well as few entertainment PCs requires a secure connection to a compliant display. Due to the increase in manufacturers employing HDCP in their equipment, it is highly recommended that the HDTV or LCD monitor you purchase is compatible. 20 2.

*6 CrossFireX ATI TM Hybrid CrossF ireX TM Operation Guide This motherboard supports ATITM Hybrid CrossFireXTM feature. ATITM Hybrid CrossFireXTM brings multi-GPU performance capabilities by enabling an AMD 790GX integrated graphics processor and a discrete graphics processor to operate simultaneously with combined output to a single display for blisteringlyfast frame rates. Currently, ATITM Hybrid CrossFireXTM Technology is only supported with Windows® VistaTM / 7 OS, and is not available with Windows® XP OS. In the future, ATITM Hybrid CrossFireXTM may be supported with Windows® XP OS. Please visit our website for updated information. What does an ATI TM Hybrid CrossFireX TM system include? An ATITM Hybrid CrossFireXTM system includes an ATITM RadeonTM 2400 or ATITM RadeonTM 3450 series graphics processor and a motherboard based on an AMD 790GX integrated chipset, all operating in a Windows® VistaTM / 7 environment. Please refer to below PCI Express graphics card support list for ATITM Hybrid CrossFireXTM. For the future update of more compatible PCI Express graphics cards, please visit our website for further information. Vendor Chipset ATI RADEON X2400PRO RADEON HD2400XT * RADEON HD3450 Model MSI RX2400 PRO-TD256EH POWERCOLOR HD2400 XT 256MB DDR3 POWERCOLOR AX3450 256MD2-S Driver Catalyst 8.7 Catalyst 8.*

*7 Catalyst 8.7 * Currently, RADEON HD2400XT series graphics cards are only supported with AMD Phenom CPU. Please visit our website for the future driver update and the latest information. Enjoy the benefit of ATI TM Hybrid CrossF ireX TM ATI CrossFireX Step 1. Step 2. Step 3. Install one compatible PCI Express graphics card to PCIE2 slot (blue). For the proper installation procedures, please refer to section "Expansion Slots". Connect the monitor cable to the correspondent connector on the PCI Express graphics card on PCIE2 slot. Boot your system.*

Press <F2> to enter BIOS setup. Enter "Advanced" screen, and enter "Chipset Settings". Then set the option "Surround View" to [Enabled].

Boot into OS. Please remove the ATITM driver if you have any VGA driver installed in your system.

Install the onboard VGA driver from our support CD to your system for both the onboard VGA and the discrete graphics card. Restart your computer. Then you will find "ATI Catalyst Control Center" on your Windows® taskbar. Step 4. Step 5.

Step 6. ATI Catalyst Control Center 21 Step 7. Double-click "ATI Catalyst Control Center". Click "View", click "CrossFireTM", and then select the option "Enable CrossFireTM". View CrossFireTM Enable CrossFireTM Step 8. Click "Yes" to continue. Step 9. Click "OK" to save your change. Step 10. Reboot your system.

Then you can freely enjoy the benefit of HybridTM CrossFireXTM feature. * Hybrid CrossFireX TM appearing here is a registered trademark of ATI TM Technologies Inc., and is used only for identification or explanation and to the owners' benefit, without intent to infringe. * For further information of ATITM Hybrid CrossFireXTM technology, please check AMD website for up dates and details. 22 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 PS2_USB_PW1 (see p.

11, No. 1) Setting 1_2 2_3 Short pin2, pin3 to enable +5VSB (standby) for PS/2 or +5V +5VSB USB wake up events. Note: To select +5VSB, it requires 2 Amp and higher standby current provided by power supply. Clear CMOS Jumper (CLRCMOS1) (see p.11, No.

14) 1_2 2_3 Default Clear CMOS Note: CLRCMOS1 allows you to clear the data in CMOS. The data in CMOS includes system setup information such as system password, date, time, and system setup parameters. 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 CLRCMOS1 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. 23 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! • Floppy Connector (33-pin FLOPPY1) (see p.11 No. 26) Pin1 FLOPPY1 the red-striped side to Pin1 Note: Make sure the red-striped side of the cable is plugged into Pin1 side of the connector. Primary IDE connector (Blue) (39-pin IDE1, see p.11 No. 9) PIN1 IDE1 connect the blue end to the motherboard connect the black end to the IDE devices 80-conductor ATA 66/100/133 cable Note: Please refer to the instruction of your IDE device vendor for the details.

Serial ATAII Connectors SATAII_1 (PORT 0) SATAII_2 (PORT 1) SATAII_3 (PORT 2) SATAII_4 (PORT 3) see p.11, No. 21) (SATAII_2 (PORT 1): see p.11, No. 20) (SATAII_3 (PORT 2): see p.11, No. 19) (SATAII_4 (PORT 3): see p.11, No. 18) (SATAII_5 (PORT 4): see p.11, No.

17) Serial ATA (SATA) Data Cable (Optional) SATAII_5 (PORT 4) (SATAII_1 (PORT 0): These five Serial ATAII (SATAII) connectors support SATAII or SATA hard disk for internal storage devices. The current SATAII interface allows up to 3.0 Gb/s data transfer rate. Either end of the SATA data cable can be connected to the SATA / SATAII hard disk or the SATAII connector on this motherboard. 24 USB 2.

0 Headers (9-pin USB8_9) (see p.11 No. 10) 1 USB_PWR P-9 P+9 GND DUMMY GND P+8 P-8 USB_PWR Besides four 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 USB6_7) (see p.11 No. @@@@@@@@@@@@@@@@@@@2. @@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. Enter BIOS Setup Utility. Enter Advanced Settings, and then select Chipset Configuration. Set the Front Panel Control option from [Auto] to [Enabled]. F. Enter Windows system.

@@@@@@G. To activate the front mic. @@@@@@@@@@@@@@@@5) GND +12V CPU_FAN_SPEED FAN_SPEED_CONTROL 1 2 3 4 Please connect the CPU fan cable to this 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 ATX Power Connector (24-pin ATXPWR1) (see p.11 No. 8) 12 24 Please connect an ATX power supply to this connector. 1 13 24 Though this motherboard provides 24-pin ATX power connector, it can still work if you adopt a traditional 20-pin ATX power supply. To use the 20-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 13.

20-Pin ATX Power Supply Installation 12 1 13 24 ATX 12V Power Connector (4-pin ATX12V1) (see p.11 No. 2) Please connect an ATX 12V power supply to this connector. Serial port Header (9-pin COM1) (see p.11 No.27) 1 RRXD1 DDTR#1 DDSR#1 CCTS#1 This COM1 header supports a serial port module. RRI#1 RRTS#1 GND TTXD1 DDCD#1 27 2.9 SAT SATAII Hard Disk Setup Guide Before installing SATAII hard disk to your computer, please carefully read below SATAII hard disk setup guide. Some default setting of SATAII hard disks may not be at SATAII mode, which operate with the best performance. In order to enable SATAII function, please follow the below instruction with different vendors to correctly adjust your SATAII hard disk to SATAII mode in advance; otherwise, your SATAII hard disk may fail to run at SATAII mode.

Western Digital 7 8 5 6 3 4 1 2 If pin 5 and pin 6 are shorted, SATA 1.5Gb/s will be enabled. On the other hand, if you want to enable SATAII 3.0Gb/s, please remove the jumpers from pin 5 and pin 6. SAMSUNG 7 8 5 6 3 4 1 2 If pin 3 and pin 4 are shorted, SATA 1.5Gb/s will be enabled. On the other hand, if you want to enable SATAII 3.0Gb/s, please remove the jumpers from pin 3 and pin 4. HITACHI Please use the Feature Tool, a DOS-bootable tool, for changing various ATA features. Please visit HITACHI's website for details: http://www. hitachigst.com/hdd/support/download.htm The above examples are just for your reference. For different SATAII hard disk products of different vendors, the jumper pin setting methods may not be the same. Please visit the vendors' website for the updates.

28 AT (SAT AT (SAT 2.10 Serial ATA (SATA) / Serial ATAII (SATAII) Hard Disks Installation This motherboard adopts AMD SB750 south bridge chipset that supports Serial ATA (SATA) / Serial ATAII (SATAII) hard disks and RAID (RAID 0, RAID 1, RAID 5, RAID 10 and JBOD) functions.

You may install SATA / SATAII hard disks on this motherboard for internal storage devices. This section will guide you to install the SATA / SATAII hard disks. STEP 1: Install the SATA / SATAII hard disks into the drive bays of your chassis.

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. If you plan to use RAID 0 or RAID 1 function, you need to install at least 2 SATA / SATAII hard disks. If you plan to use RAID 5 function, you need to install at least 3 SATA / SATAII hard disks. If you plan to use RAID 10 function, you need to install at least 4 SATA / SATAII hard disks. Functions SAT SAT 2.11 Hot Plug and Hot Swap Functions for SATA / SATAII HDDs This motherboard supports Hot Plug and Hot Swap functions for SATA / SATAII Devices in RAID / AHCI mode. AMD SB750 south bridge chipset provides hardware support for Advanced Host controller Interface (AHCI), a new programming interface for SATA host controllers developed thru a joint industry effort. AHCI also provides usability enhancements such as Hot Plug.

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. 29 SAT SAT Feature 2.12 SATA / SATAII HDD Hot Plug F eature and Operation Guide This motherboard supports Hot Plug feature for SATA / SATAII HDD in RAID / AHCI mode. Please read below operation guide of SATA / SATAII HDD Hot Plug feature carefully. Before you process the SATA / SATAII 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 HDD 1x4-pin conventional power connector (White) connect to power supply Caution 1. Without SATA 15-pin power connector interface, the SATA / SATAII Hot Plug cannot be processed. 2. Even some SATA / SATAII 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 HDD Hot Plug. * The SATA / SATAII Hot Plug feature might not be supported by the chipset because of its limitation, the SATA / SATAII 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 HDD can support Hot Plug function from your dealer or HDD user manual. The SATA / SATAII HDD, which cannot support Hot Plug function, will be damaged under the Hot Plug operation. 3. Please make sure the SATA / SATAII driver is installed into system properly. The latest SATA / SATAII 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.

30 How to Hot Plug a SATA / SATAII 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 HDD damage and data loss. Step 1 Please connect SATA power cable 1x4-pin end (White) to the power supply 1x4-pin cable. Step 2 Connect SATA data cable to the motherboard's SATAII connector. SATA power cable 1x4-pin power connector (White) Step 3 Connect SATA 15-pin power cable connector (Black) end to SATA / SATAII HDD. Step 4 Connect SATA data cable to the SATA / SATAII HDD. How to Hot Unplug a SATA / SATAII 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 HDD damage and data loss. Step 1 Unplug SATA data cable from SATA / SATAII HDD side. Step 2 Unplug SATA 15-pin power cable connector (Black) from SATA / SATAII HDD side. 31 2.13 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. 2.14 Installing Windows ® 7 / 7 64-bit / Vista TM / Vista TM 64-bit / XP / XP 64-bit With RAID Functions If you want to install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit / XP / XP 64-bit on a RAID disk composed of 2 or more SATA / SATAII HDDs with RAID functions, please follow below procedures according to the OS you install.

2.14.1 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 SATA / SATAII HDDs with RAID functions, please follow below steps. STEP 1: Set up BIOS. A.

Enter BIOS SETUP UTILITY Advanced screen Storage Configuration. B. Set the "SATA Operation Mode" option to [RAID]. STEP 2: Make a SATA / SATAII Driver Diskette. 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 CDROM 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 blank formatted diskette into floppy drive A: press any key to start 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 SATA / SATAII drivers into the floppy diskette. 32 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. 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 SATA / SATAII 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.
(Select "AMD AHCI Compatible RAID Controllerx86 platform" for Windows® XP, or "AMD AHCI Compatible RAID Controller-x64 platform" for Windows® XP 64-bit.) NOTE. If you install Windows® XP / XP 64-bit on IDE HDDs and want to manage (create, convert, delete, or rebuild) RAID functions on SATA / SATAII HDDs, you still need to set up "SATA Operation Mode" to [RAID] first. Then, please set the RAID configuration by using the Windows RAID installation guide in the following path in the Support CD: ..

\ RAID Installation Guide 2.14.2 Installing Windows ® 7 / 7 64-bit / Vista TM / Vista TM 64-bit With RAID Functions If you want to install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit on a RAID disk composed of 2 or more SATA / SATAII HDDs with RAID functions, please follow below steps. STEP 1: Set up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen Storage Configuration. B. Set the "SATA Operation Mode" option to [RAID]. 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: Install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS on your system. 33 NOTE1. If you install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit on IDE HDDs and want to manage (create, convert, delete, or rebuild) RAID functions on SATA / SATAII HDDs, you still need to set up "SATA Operation Mode" to [RAID] in BIOS first. Then, please set the RAID configuration by using the Windows RAID installation guide in the following path in the Support CD: .. \ RAID Installation Guide NOTE2. Currently, if you install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit on IDE HDDs and there are no SATA / SATAII device used, please set up "SATA Operation Mode" to [IDE] in BIOS. 2.

15 Installing Windows ® 7 / 7 64-bit / Vista TM / Vista TM 64-bit / XP / XP 64-bit Without RAID Functions If you want to install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit / XP / XP 64-bit OS on your SATA / SATAII HDDs without RAID functions, please follow below procedures according to the OS you install. 2.15.1 Installing Windows ® XP / XP 64-bit Without RAID Functions If you want to install Windows® XP / XP 64-bit on your SATA / SATAII HDDs without RAID functions, please follow below steps. Using SATA / SATAII HDDs with NCQ and Hot Plug functions (AHCI mode) STEP 1: Set Up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen Storage Configuration. B. Set the "SATA Operation Mode" option to [AHCI]. STEP 4: 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 SATA / SATAII 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. (Select "AMD AHCI Compatible RAID Controller-x86 platform" for Windows® XP, or "AMD AHCI Compatible RAID Controller-x64 platform" for Windows® XP 64-bit.) 34 Using SATA / SATAII HDDs without NCQ and Hot Plug functions (IDE mode) STEP 1: Set up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen Storage Configuration. B.

Set the "SATA Operation Mode" option to [IDE]. STEP 2: Install Windows® XP / XP 64-bit OS on your system. 2.15.2 Installing Windows ® 7 / 7 64-bit / Vista TM / Vista TM 64-bit Without RAID Functions If you want to install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit on your SATA / SATAII HDDs without RAID functions, please follow below steps. Using SATA / SATAII HDDs with NCQ and Hot Plug functions (AHCI mode) STEP 1: Set Up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen Storage Configuration. B. Set the "SATA Operation Mode" option to [AHCI].

STEP 2: Install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS on your system. Using SATA / SATAII HDDs without NCQ and Hot Plug functions (IDE mode) STEP 1: Set up BIOS. A. Enter BIOS SETUP UTILITY Advanced screen Storage Configuration. B.

Set the "SATA Operation Mode" option to [IDE]. STEP 2: Install Windows® 7 / 7 64-bit / VistaTM / VistaTM 64-bit OS on your system. 35 Technology 2.16 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 BIOS setup to set the selection from [Auto] to [CPU, PCIE, Async.

]. 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. 36 3. BIOS SETUP UTILITY 3.1 Introduction This section explains how to use the BIOS SETUP UTILITY to configure your system. The SPI Memory on the motherboard stores the BIOS SETUP UTILITY. You may run the BIOS SETUP UTILITY when you start up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the BIOS SETUP UTILITY, otherwise, POST will continue with its test routines. If you wish to enter the BIOS 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 BIOS software is constantly being updated, the following BIOS setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen. 3.1.1 BIOS Menu Bar The top of the Main OC Tweaker Advanced H/W Monitor Boot screen has a menu bar with the following selections: To set up the system time/date information To set up overclocking features To set up the advanced BIOS features To display current hardware status 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 BIOS 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. 37 3.1.2 Navigation Keys Please check the following table for the function description of each navigation key.

Navigation Key(s) / / + / <Enter> <F1> <F9> <F10> <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 To bring up the selected screen To display the General Help Screen To load optimal default values for all the settings To save changes and exit the BIOS SETUP UTILITY To jump to the Exit Screen or exit the current screen 3.2 Main Screen When you enter the BIOS SETUP UTILITY, the Main screen will appear and display the system overview.

BIOS SETUP UTILITY Advanced H/W Monitor Main OC Tweaker Boot Security Exit System Overview System Time System Date BIOS Version Processor Type [17:00:09] [Fri 07/23/2010] Use [Enter], [TAB] or [SHIFT-TAB] to select a field. Use [+] or [-] to configure system Time. : 939A790GMH P1.00 : Dual Core AMD Opteron (tm) Processor 180 (64bit) Processor Speed : 2400MHz Microcode Update : 20F32/4D : 256KB L1 Cache Size : 2048KB L2 Cache Size Total Memory DDR1 DDR2 DDR3 DDR4 : 256MB with 128MB shared memory Single-Channel Memory Mode : 256MB/166MHz (DDR333) : None : None : None +Tab F1 F9 F10 ESC Select Screen Select Item Change Field Select Field General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2005, American Megatrends, Inc.

System Time [Hour:Minute:Second] Use this item to specify the system time. System Date [Day Month/Date/Year] Use this item to specify the system date. 38 Tweak weaker 3.3 OC Tweak er Screen In the OC Tweaker screen, you can set up overclocking features. BIOS SETUP UTILITY Advanced H/W Monitor Boot Main OC Tweaker CPU Configuration Security Exit Overclock Mode CPU Frequency (MHz) PCIE Frequency (MHz) Spread Spectrum Processor Maximum Multiplier Processor Maximum Voltage Multiplier/Voltage Change HT Bus Speed HT Bus Width CPU Thermal Throttle [Auto] [200] [100] [Auto] x12 2400 MHZ 1.

400 V [Auto] [Auto] [Auto] [Auto] Overclocking may cause damage to your CPU and motherboard. It should be done at your own risk and expense. Memory Configuration Memory Clock DRAM Voltage [Auto] [Auto] Enter F1 F9 F10 ESC Select Screen Select Item Go to Sub Screen General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2005, American Megatrends, Inc. CPU Configuration Overclock Mode Use this to select Overclock Mode. The default value is [Auto]. Configuration options: [Auto], [CPU, PCIE, Sync.], [CPU, PCIE, Async.] and [Optimized]. CPU Frequency (MHz) Use this option to adjust CPU frequency.

PCIE Frequency (MHz) Use this option to adjust PCIE frequency. Spread Spectrum This item should always be [Auto] for better system stability. Processor Maximum Multiplier It will display Processor Maximum Multiplier for reference. Processor Maximum Voltage It will display Processor Maximum Voltage for reference. Multiplier/Voltage Change This item is set to [Auto] by default. If it is set to [Manual], you may adjust the value of Processor Multiplier and Processor Voltage. However, it is recommended to keep the default value for system stability. 39 Main OC Tweaker CPU Configuration BIOS SETUP UTILITY Advanced H/W Monitor Boot Security Exit Overclock Mode CPU Frequency (MHz) PCIE Frequency (MHz) Spread Spectrum Processor Maximum Multiplier Processor Maximum Voltage Multiplier/Voltage Change Processor Multiplier Processor Voltage HT Bus Speed HT Bus Width CPU Thermal Throttle [Auto] [200] [100] [Auto] x12 2400 MHZ 1.400 V [Manual] [x12 2400 MHz] [1.350 V] [Auto] [Auto] [Auto] Overclocking may cause damage to your CPU and motherboard.

It should be done at your own risk and expense. Memory Configuration Enter F1 F9 F10 ESC Select Screen Select Item Go to Sub Screen General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2005, American Megatrends, Inc. Processor Multiplier This item will show when "Multiplier/Voltage Change" is set to [Manual]; otherwise, it will be hidden. The range of the value depends on the CPU you adopt on this motherboard.

However, for system stability, it is not recommended to adjust the value of this item. Processor Voltage This item will show when "Multiplier/Voltage Change" is set to [Manual]; otherwise, it will be hidden. The range of the value depends on the CPU you adopt on this motherboard. However, for safety and system stability, it is not recommended to adjust the value of this item. HT Bus Speed This feature allows you selecting Hyper-Transport bus speed. Configuration options: [Auto], [200 MHz], [400 MHz], [600 MHz], [800 MHz] and [1000 MHz]. HT Bus Width This feature allows you selecting Hyper-Transport bus width. Configuration options: [Auto], [8 Bit] and [16 Bit]. CPU Thermal Throttle Use this item to enable CPU internal thermal control mechanism to keep the CPU from overheated. Configuration options: [Disabled], [Auto], [12.5%], [25%], [37.5%], [50%], [62.5%], [75%] and [87.5%]. The default value is [Auto].

Memory Configuration Memory Clock This item can be set by the code using [Auto]. You can set one of the standard values as listed: [133MHz (DDR266)], [166MHz (DDR333)] and [200MHz (DDR400)]. 40 DRAM Voltage Use this to select DRAM voltage. Configuration options: [Auto], [2.60V] to [2.95V]. The default value is [Auto]. Memory Timing BIOS SETUP UTILITY OC Tweaker Memory Timing CAS Latency TRAS TRP TRCD TRRD TRC MA Timing Burst Length Bank Interleaving [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [4 Beats] [Auto] +F1 F9 F10 ESC Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2003, American Megatrends, Inc. CAS Latency Use this item to adjust the means of memory accessing.

Configuration options: [Auto], [2T], [2.5T] and [3T]. The default value is [Auto]. TRAS Use this to adjust TRAS values. Configuration options: [Auto], [5T] to [15T].

The default value is [Auto]. TRP Use this to adjust TRP values. Configuration options: [Auto], [2T] to [6T]. The default value is [Auto]. TRCD Use this to adjust TRCD values.

Configuration options: [Auto], [2T] to [6T]. The default value is [Auto]. TRRD Use this to adjust TRRD values. Configuration options: [Auto], [2T] to [4T]. The default value is [Auto]. TRC Use this to adjust TRC values. Configuration options: [Auto], [7T] to [22T]. The default value is [Auto]. MA Timing Use this to adjust values for MA timing. Configuration options: [Auto], [2T], [1T].

The default value is [Auto]. Burst Length Burst length can be set to 8, 4 or 2 beats. 64 Bit Dq must use the 4 beats. 41 Bank Interleaving Interleaving allows memory accesses to be spread out over banks on the same node, or accross nodes, decreasing access contention. Chipset Settings Onboard GPU Clock Override This allows you to enable or disable the Onboard GPU Clock Override feature. Onboard GPU Clock This option only appears when you enable "Onboard GPU Clock Override". The default value is [700]. mGPU Voltage Use this to select mGPU voltage. Configuration options: [Auto], [1.10V] to [1.45V]. The default value is [Auto].

Would you like to save current setting user defaults? In this option, you are allowed to load and save three user defaults according to your own requirements. 42 3.4 Advanced Screen In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, ACPI Configuration, Storage Configuration, PCIPnP Configuration, Floppy Configuration, SuperIO Configuration, and USB Configuration.

Main BIOS SETUP UTILITY Boot OC Tweaker Advanced H/W Monitor Security Exit Advanced Settings WARNING : Setting wrong values in below sections may cause system to malfunction. CPU Configuration Chipset Configuration ACPI Configuration Storage Configuration PCIPnP Configuration Floppy Configuration SuperIO Configuration USB Configuration BIOS Update Utility ASRock Instant Flash Options for CPU Enter F1 F9 F10 ESC Select Screen Select Item Go to Sub Screen General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2005, American Megatrends, Inc. Setting wrong values in this section may cause the system to malfunction. ASRock Instant Flash ASRock Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update system BIOS without entering operating systems first like MS-DOS or Windows®. 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. If you execute ASRock Instant Flash utility, the utility will show the BIOS files and their respective information. Select the proper BIOS file to update your BIOS, and reboot your system after BIOS update process completes. 43 3.4.1 CPU Configuration BIOS SETUP UTILITY Advanced CPU Configuration Boot Failure Guard Cool' n' Quiet Memory Hole [Enabled] [Auto] [Disabled] Enable or disable the feature of Boot Failure Guard. +F1 F9 F10 ESC Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2003, American Megatrends, Inc.

Boot Failure Guard Enable or disable the feature of Boot Failure Guard. Cool 'n' Quiet Use this item to enable or disable AMD's Cool 'n' QuietTM technology. The default value is [Auto]. Configuration options: [Auto], [Enabled] and [Disabled]. If you install Windows ® 7 / VistaTM and want to enable this function, please set this item to [Enabled]. Please note that enabling this function may reduce CPU voltage and memory frequency, and lead to system stability or compatibility issue with some memory modules or power supplies. Please set this item to [Disable] if above issue occurs. Memory Hole Use this to enable or disable memory hole. The default value is [Disabled]. 44 3.

4.2 Chipset Configuration BIOS SETUP UTILITY Advanced Chipset Settings Onboard HD Audio Front Panel CD-In OnBoard Lan Primary Graphics Adapter Internal Graphics Mode Share Memory Onboard HDMI HD Audio Surround View [Auto] [Auto] [Enabled] [Enabled] [PCI] [UMA] [Auto] [Disabled] [Disabled] Auto/Enable/Disable Onboard HD Audio. +F1 F9 F10 ESC Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2003, American Megatrends, Inc. 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. CD-In Use this item to enable or disable CD-In of OnBoard HD Audio. If you plan to use this motherboard to submit Windows® 7 / VistaTM logo test, please disable this option. OnBoard Lan This allows you to enable or disable the onboard Lan feature.

Primary Graphics Adapter This item will switch the PCI Bus scanning order while searching for video card. It allows you to select the type of Primary VGA in case of multiple video controllers. The default value of this feature is [PCI]. Configuration options: [PCI], [Onboard] and [PCI Express]. Internal Graphics Mode This allows you to adjust internal graphics mode. The default value is [UMA]. Configuration options: [UMA] and [Disabled]. Share Memory This allows you to set share memory feature. The default value is [Auto]. Configuration options: [Auto], [32MB], [64MB] and [128MB].

45 Onboard HDMI HD Audio This allows you to enable or disable the onboard HDMI HD Audio in AMD 790GX. Surround View This allows you to enable or disable the Surround View feature or Hybrid CrossFireXTM feature. 3.4.3 ACPI Configuration BIOS SETUP UTILITY Advanced ACPI Settings Suspend To RAM Away Mode Support Restore on AC / Power Loss Ring-In Power On PCI Devices Power On PS / 2 Keyboard Power On RTC Alarm Power On ACPI HPET Table [Disabled] [Disabled] [Power Off] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] Select auto-detect or disable the STR feature. +F1 F9 F10 ESC Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit v02.54 (C) Copyright 1985-2003, American Megatrends, Inc. Suspend to RAM Use this item to select whether to auto-detect or disable the Suspend-toRAM feature. Select [Auto] will enable this feature if the OS supports it. Check Ready Bit Use this item to enable or disable the feature Check Ready Bit.

Away Mode Support Use this item to enable or disable Away Mode support under Windows® XP Media Center OS. The default value is [Disabled]. 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.

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. PCI Devices Power On Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode. 46 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. RTC Alarm Power On Use this item to enable or disable RTC (Real Time Clock) to power on the system. ACPI HPET Table Use this item to enable or disable ACPI HPET Table.

The default value is [Disabled]. Please set this option to [Enabled] if you plan to use this motherboard to submit Windows® VistaTM certification. 47 3.4.4 Storage Configuration BIOS SETUP UTILITY Advanced Storage Configuration Onboard SATA Controller SATA Operation Mode IDE1 Master IDE1 Slave SATAII_1 SATAII_2 SATAII_3 SATAII_4 SATAII_5 eSATAII_1 [Enabled] [IDE] [Hard Disk] [Not Detected] [Not Detected] [Not Detected] [Not Detected] [Not Detected] [Not Detected] [Not Detected] Configure onboard serial ATA controller. +F1 F9 F10 ESC Select Screen Select Item Change Option General Help Load Defaults Save and Exit Exit v02.