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You can read the recommendations in the user guide, the technical guide or the installation guide for GIGABYTE GA-970A-UD3P. You'll find the answers to all your questions on the GIGABYTE GA-970A-UD3P in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual GIGABYTE GA-970A-UD3P
User guide GIGABYTE GA-970A-UD3P
Operating instructions GIGABYTE GA-970A-UD3P
Instructions for use GIGABYTE GA-970A-UD3P
Instruction manual GIGABYTE GA-970A-UD3P

GA-970A-UD3P

User's Manual
Rev. 1001
IME-970A3P-1001R



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Manual abstract:

@@All rights reserved. @@@@ For detailed product information, carefully read the User's Manual. For product-related information, check on our website at: <http://www.gigabyte.com> Identifying Your Motherboard Revision The revision number on your motherboard looks like this: "REV: X.X." For example, "REV: 1.0" means the revision of the motherboard is 1.0. Check your motherboard revision before updating motherboard BIOS, drivers, or when looking for technical information.

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..... 87 -5- Box Contents 55 55 55 55 55 55 GA-970A-UD3P motherboard Motherboard driver disk User's Manual Quick Installation Guide Four SATA cables I/O Shield □ box contents above are for reference only and the actual items shall depend on the product package you The obtain.

The box contents are subject to change without notice. Optional Items □□ 2-port USB 2.0 bracket (Part No. 12CR1-1UB030-6*R) □□ eSATA bracket (Part No. 12CF1-3SATPW-4*R) □□ 3.5" Front Panel with 2 USB 3.0/2.0 ports (Part No. 12CR1-FPX582-2*R) □□ COM port cable (Part No. 12CF1-1CM001-3*R) -6- GA-970A-UD3P Motherboard Layout KB_MS_USB OPTICAL R_USB2 ATX_12V Socket AM3+ PWR_FAN CPU_FAN R_USB1 R_USB30 ATX USB_LAN AUDIO SYS_FAN1 CLR_CMOS F_PANEL DDR3_4 DDR3_2 DDR3_3 Realtek © GbE LAN PCIEX16 PCIEX1_2 CODEC PCIEX1_3 VIA® VL805 BAT PCIEX4 GA-970A-UD3P AMD SB950 SYS_FAN2 B_BIOS M_BIOS 0 3 SATA3 1 4 2 5 iTE® Super I/O PCI1 PCI2 F_AUDIO SPDIF_O TPM COMA F_USB30 F_USB3 F_USB2 F_USB1 (Note) Due to a hardware limitation, the PCIEX1_1 slot can only accommodate a shorter PCI Express x1 expansion card.

For a longer expansion card, use other expansion slots. -7- DDR3_1 PCIEX1_1 (Note) AMD 970 GA-970A-UD3P Motherboard Block Diagram CPU CLK+/- (200 MHz) 1 PCI Express x16 AM3+/AM3 CPU DDR3 2000 (O.C.)/1866/1600/ 1333/1066 MHz Dual Channel Memory Hyper Transport Bus 3 PCI Express x1 PCIe CLK (100 MHz) LAN RJ45 4 USB 3.0/2.

0 VIA® VL805 PCI Express Bus x16 x1 x1 x1 AMD 970 Realtek® GbE LAN x1 x1 PCIe CLK (100 MHz) PCI Express Bus PCI Express Bus 6 SATA 6Gb/s x4 PCIe CLK (100 MHz) AMD SB950 1 PCI Express x4 14 USB 2.0/1.1 Dual BIOS LPC iTE® Bus Super I/O CODEC COM PS/2 KB/Mouse PCI Bus 2 PCI PCI CLK (33 MHz) For detailed product information/limitation(s), refer to "1-2 Product Specifications." -8- Rear Speaker Out Center/Subwoofer Speaker Out Side Speaker Out MIC Line Out Line In S/PDIF Out Chapter 1 Hardware Installation 1-1 Installation Precautions The motherboard contains numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Prior to installation, carefully read the user's manual and follow these procedures: • Prior to installation, make sure the chassis is suitable for the motherboard.

• Prior to installation, do not remove or break motherboard S/N (Serial Number) sticker or warranty sticker provided by your dealer. These stickers are required for warranty validation. • Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components. • When connecting hardware components to the internal connectors on the motherboard, make sure they are connected tightly and securely. • When handling the motherboard, avoid touching any metal leads or connectors. • It is best to wear an electrostatic discharge (ESD) wrist strap when handling electronic components such as a motherboard, CPU or memory. If you do not have an ESD wrist strap, keep your hands dry and first touch a metal object to eliminate static electricity. • Prior to installing the motherboard, please have it on top of an antistatic pad or within an electrostatic shielding container. • Before unplugging the power supply cable from the motherboard, make sure the power supply has been turned off. • Before turning on the power, make sure the power supply voltage has been set according to the local voltage standard.

• Before using the product, please verify that all cables and power connectors of your hardware components are connected. • To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components. • Make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing. • Do not place the computer system on an uneven surface. • Do not place the computer system in a high-temperature environment. • Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user. • If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician. -9- Hardware Installation 1-2 Product Specifications CPU □□ AM3+ Socket: - AMD AM3+ FX processor - AMD AM3 Phenom™ II processor/ AMD Athlon™ II processor (Go to GIGABYTE's website for the latest CPU support list.) 4800 MT/s North Bridge: AMD 970 South Bridge: AMD SB950 4 x 1.5V DDR3 DIMM sockets supporting up to 32 GB of system memory Hyper Transport □□ Bus □□ Chipset □□ Memory □□ □□ Dual channel memory architecture □□ Support for DDR3 2000(O).



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C.)/1866/1600/1333/1066 MHz memory modules Audio □□ □□ □□ □□ * □ ue to a Windows 32-bit operating system limitation, when more than 4 GB of physical D memory is installed, the actual memory size displayed will be less than the size of the physical memory installed. (□ Go to GIGABYTE's website for the latest supported memory speeds and memory modules.) VIA® VT2021 codec High Definition Audio 2/4/5.1/7.

1-channel Support for S/PDIF Out * □ o support a DDR the frequency beyond the standard specifications, please do so according to your hardware specifications including the CPU, graphics card, memory, hard drive, etc. 1-3-1 Installing the CPU A. Locate the pin one (denoted by a small triangle) of the CPU socket and the CPU. A Small Triangle Marking Denotes Pin One of the Socket AM3+ Socket A Small Triangle Marking Denotes CPU Pin One AM3+/AM3 CPU - 13 - Hardware Installation B. Follow the steps below to correctly install the CPU into the motherboard CPU socket.

•• Before installing the CPU, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the CPU. •• Do not force the CPU into the CPU socket. The CPU cannot fit in if oriented incorrectly. Adjust the CPU orientation if this occurs. Step 1: Completely lift up the CPU socket locking lever. CPU Socket Locking Lever Step 2: Align the CPU pin one (small triangle marking) with the triangle mark on the CPU socket and gently insert the CPU into the socket. Make sure that the CPU pins fit perfectly into their holes. Once the CPU is positioned into its socket, place one finger down on the middle of the CPU, lowering the locking lever and latching it into the fully locked position. Hardware Installation - 14 - 1-3-2 Installing the CPU Cooler Follow the steps below to correctly install the CPU cooler on the motherboard. (The following procedure uses the GIGABYTE cooler as the example.

) Step 1: Apply an even and thin layer of thermal grease on the surface of the installed CPU. Step 2: Hook the CPU cooler clip to the mounting lug on one side of the retention frame. On the other side, push straight down on the CPU cooler clip to hook it to the mounting lug on the retention frame. Step 3: Turn the cam handle from the left side to the right side (as the picture above shows) to lock into place. (Refer to your CPU cooler installation manual for instructions on installing the cooler.) Step 4: Finally, attach the power connector of the CPU cooler to the CPU fan header (CPU_FAN) on the motherboard. Use extreme care when removing the CPU cooler because the thermal grease/tape between the CPU cooler and CPU may adhere to the CPU. Inadequately removing the CPU cooler may damage the CPU. - 15 Hardware Installation 1-4 Installing the Memory Read the following guidelines before you begin to install the memory: •• Make sure that the motherboard supports the memory. It is recommended that memory of the same capacity, brand, speed, and chips be used.

(Go to GIGABYTE's website for the latest supported memory speeds and memory modules.) •• Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage. •• Memory modules have a foolproof design. A memory module can be installed in only one direction. If you are unable to insert the memory, switch the direction.

1-4-1 Dual Channel Memory Configuration This motherboard provides four DDR3 memory sockets and supports Dual Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory. Enabling Dual Channel memory mode will double the original memory bandwidth. The four DDR3 memory sockets are divided into two channels and each channel has two memory sockets as following: Channel A: DDR3_2, DDR3_4 Channel B: DDR3_1, DDR3_3 Dual Channel Memory Configurations Table: DDR3_4 Two Modules Four Modules -DS/SS DS/SS DDR3_2 DS/SS -DS/SS DDR3_3 -DS/SS DS/SS DDR3_1 DS/SS -DS/SS (SS=Single-Sided, DS=Double-Sided, "- "=No Memory) Due to CPU limitations, read the following guidelines before installing the memory in Dual Channel mode. 1.

Dual Channel mode cannot be enabled if only one DDR3 memory module is installed. 2. □ hen enabling Dual Channel mode with two or four memory modules, it is recommended that memory W of the same capacity, brand, speed, and chips be used and installed in the same colored DDR3 sockets for optimum performance. For optimum performance, when enabling Dual Channel mode with two memory modules, we recommend that you install them in the DDR3_1 and DDR3_2 sockets. Hardware Installation DDR3_4 DDR3_2 DDR3_3 DDR3_1 - 16 - 1-4-2 Installing a Memory Before installing a memory module, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the memory module. DDR3 and DDR2 DIMMs are not compatible to each other or DDR DIMMs. Be sure to install DDR3 DIMMs on this motherboard. Notch DDR3 DIMM A DDR3 memory module has a notch, so it can only fit in one direction. Follow the steps below to correctly install your memory modules in the memory sockets. Step 1: Note the orientation of the memory module.

Spread the retaining clips at both ends of the memory socket. Place the memory module on the socket. As indicated in the picture on the left, place your fingers on the top edge of the memory, push down on the memory and insert it vertically into the memory socket. Step 2: The clips at both ends of the socket will snap into place when the memory module is securely inserted. - 17 - Hardware Installation 1-5 Installing an Expansion Card Read the following guidelines before you begin to install an expansion card: •• Make sure the motherboard supports the expansion card. Carefully read the manual that came with your expansion card. •• Always turn off the computer and unplug the power cord from the power outlet before installing an expansion card to prevent hardware damage. PCI Express x1 Slot PCI Express x16 Slot PCI Slot Follow the steps below to correctly install your expansion card in the expansion slot. 1. Locate an expansion slot that supports your card.

Remove the metal slot cover from the chassis back panel. 2. Align the card with the slot, and press down on the card until it is fully seated in the slot. 3. Make sure the metal contacts on the card are completely inserted into the slot.

4. Secure the card's metal bracket to the chassis back panel with a screw. 5. After installing all expansion cards, replace the chassis cover(s). 6. Turn on your computer. If necessary, go to BIOS Setup to make any required BIOS changes for your expansion card(s). 7. Install the driver provided with the expansion card in your operating system. Example: Installing and Removing a PCI Express Graphics Card: •• Installing a Graphics Card: Gently push down on the top edge of the card until it is fully inserted into the PCI Express slot.



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Make sure the card is securely seated in the slot and does not rock. •• Removing the Card: Gently push back on the lever on the slot and then lift the card straight out from the slot. Hardware Installation - 18 - 1-6 Back Panel Connectors USB 2.0/1.1 Port The USB port supports the USB 2.

0/1.1 specification. Use this port for USB devices such as a USB keyboard/mouse, USB printer, USB flash drive and etc. PS/2 Keyboard/Mouse Port Use this port to connect a PS/2 mouse or keyboard. Optical S/PDIF Out Connector USB 3.0/2.0 Port RJ-45 LAN Port Connection/ Speed LED This connector provides digital audio out to an external audio system that supports digital optical audio. Before using this feature, ensure that your audio system provides an optical digital audio in connector. The USB 3.0 port supports the USB 3.

0 specification and is compatible to the USB 2.0/1.1 specification. Use this port for USB devices such as a USB keyboard/mouse, USB printer, USB flash drive and etc. The Gigabit Ethernet LAN port provides Internet connection at up to 1 Gbps data rate.

The following describes the states of the LAN port LEDs. Activity LED Connection/Speed LED: State Orange Green Off Description 1 Gbps data rate 100 Mbps data rate 10 Mbps data rate Activity LED: State Blinking Off Description Data transmission or receiving is occurring No data transmission or receiving is occurring LAN Port Center/Subwoofer Speaker Out Jack (Orange) Rear Speaker Out Jack (Black) Side Speaker Out Jack (Gray) Line In Jack (Blue) Use this audio jack to connect center/subwoofer speakers in a 5.1/7.1-channel audio configuration. This jack can be used to connect front speakers in a 4/5.1/7.1-channel audio configuration. Use this audio jack to connect side speakers in a 7.1-channel audio configuration. The default line in jack. Use this audio jack for line in devices such as an optical drive, walkman, etc. Line Out Jack (Green) The default line out jack. Use this audio jack for a headphone or 2-channel speaker. This jack can be used to connect front speakers in a 4/5.1/7.

1-channel audio configuration. •• When removing the cable connected to a back panel connector, first remove the cable from your device and then remove it from the motherboard. •• When removing the cable, pull it straight out from the connector. Do not rock it side to side to prevent an electrical short inside the cable connector. - 19 Hardware Installation Mic In Jack (Pink) The default Mic in jack. Microphones must be connected to this jack. The audio jacks can be reconfigured to perform different functions via the audio software (supported functions for each jack may vary based on hardware specification). Only microphones still MUST be connected to the default Mic in jack. Refer to the instructions on setting up a 2/4/5.1/7.

1-channel audio configuration in Chapter 6, "Configuring 2/4/5.1/7.1-Channel Audio." Hardware Installation - 20 - 1-7 Internal Connectors 1 3 5 2 4 9 6 8 4 12 7 10 11 15 14 13 1) 2) 3) 4) 5) 6) 7) 8) ATX_12V ATX CPU_FAN SYS_FAN1/SYS_FAN2 PWR_FAN CLR_CMOS SATA3 0/1/2/3/4/5 BAT 9) 10) 11) 12) 13) 14) 15) F_PANEL F_AUDIO SPDIF_O F_USB30 F_USB1/F_USB2/F_USB3 COMA TPM Read the following guidelines before connecting external devices: •• First make sure your devices are compliant with the connectors you wish to connect. •• Before installing the devices, be sure to turn off the devices and your computer.

Unplug the power cord from the power outlet to prevent damage to the devices. •• After installing the device and before turning on the computer, make sure the device cable has been securely attached to the connector on the motherboard. - 21 Hardware Installation 1/2) ATX_12V/ATX (2x4 12V Power Connector and 2x12 Main Power Connector) With the use of the power connector, the power supply can supply enough stable power to all the components on the motherboard. Before connecting the power connector, first make sure the power supply is turned off and all devices are properly installed. The power connector possesses a foolproof design.

Connect the power supply cable to the power connector in the correct orientation. The 12V power connector mainly supplies power to the CPU. If the 12V power connector is not connected, the computer will not start. To meet expansion requirements, it is recommended that a power supply that can withstand high power consumption be used (500W or greater). If a power supply is used that does not provide the required power, the result can lead to an unstable or unbootable system. ATX_12V: 8 4 5 ATX_12V 1 Pin No. 1 2 3 4 5 6 7 8 Definition GND (Only for 2x4-pin 12V) GND (Only for 2x4-pin 12V) GND GND +12V (Only for 2x4-pin 12V) +12V (Only for 2x4-pin 12V) +12V +12V ATX: 12 24 Pin No. 1 2 3 4 5 6 7 8 9 10 11 12 1 ATX 13 Definition 3.3V 3.3V GND +5V GND +5V GND Power Good 5VSB (stand by +5V) +12V +12V (Only for 2x12-pin ATX) 3.

3V (Only for 2x12-pin ATX) Pin No. 13 14 15 16 17 18 19 20 21 22 23 24 Definition 3.3V -12V GND PS_ON (soft On/Off) GND GND GND -5V +5V +5V +5V (Only for 2x12-pin ATX) GND (Only for 2x12-pin ATX) Hardware Installation - 22 - 3/4/5) CPU_FAN/SYS_FAN1/SYS_FAN2/PWR_FAN (Fan Headers) The motherboard has a 4-pin CPU fan header (CPU_FAN), a 4-pin (SYS_FAN1) and a 3-pin (SYS_FAN2) system fan headers, and a 3-pin power fan header (PWR_FAN). Most fan headers possess a foolproof insertion design. When connecting a fan cable, be sure to connect it in the correct orientation (the black connector wire is the ground wire). The speed control function requires the use of a fan with fan speed control design. For optimum heat dissipation, it is recommended that a system fan be installed inside the chassis. CPU_FAN: Pin No. 1 2 3 4 Pin No. 1 2 3 4 Pin No.

1 2 3 Definition GND +12V / Speed Control Sense Speed Control Definition GND +12V / Speed Control Sense Reserve Definition GND +12V Sense 1 CPU_FAN SYS_FAN1: 1 SYS_FAN1 SYS_FAN2/PWR_FAN: 1 SYS_FAN2/PWR_FAN •• Be sure to connect fan cables to the fan headers to prevent your CPU and system from overheating. Overheating may result in damage to the CPU or the system may hang. •• These fan headers are not configuration jumper blocks. Do not place a jumper cap on the headers. 6) CLR_CMOS (Clear CMOS Jumper) Use this jumper to clear the BIOS configuration and reset the CMOS values to factory defaults.

To clear the CMOS values, use a metal object like a screwdriver to touch the two pins for a few seconds. Open: Normal Short: Clear CMOS Values •• Always turn off your computer and unplug the power cord from the power outlet before clearing the CMOS values. •• After system restart, go to BIOS Setup to load factory defaults (select Load Optimized Defaults) or manually configure the BIOS settings (refer to Chapter 2, "BIOS Setup," for BIOS configurations). - 23 Hardware Installation DEBUG PORT DEBUG PORT DEBUG PORT DEBUG PORT DEBUG PORT DEBUG PORT SATA3 0/1/2/3/4/5 (SATA 6Gb/s Connectors) The SATA connectors conform to SATA 6Gb/s standard and are compatible with SATA 3Gb/s and SATA 1.



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5Gb/s standard.

Each SATA connector supports a single SATA device. The AMD SB950 controller supports RAID 0, RAID 1, RAID 5, RAID 10, and JBOD. Refer to Chapter 3, "Configuring SATA Hard Drive(s)," for instructions on configuring a RAID array. 0 3 1 4 2 5 7 7 7 SATA3 1 1 1 Pin No. 1 2 3 4 5 6 7 Definition GND TXP TXN GND RXN RXP GND •• A RAID 0 or RAID 1 configuration requires at least two hard drives. If more than two hard drives are to be used, the total number of hard drives must be an even number. •• A RAID 5 configuration requires at least three hard drives. (The total number of hard drives does not have to be an even number.) •• A RAID 10 configuration requires four hard drives. 8) BAT (Battery) The battery provides power to keep the values (such as BIOS configurations, date, and time information) in the CMOS when the computer is turned off.

Replace the battery when the battery voltage drops to a low level, or the CMOS values may not be accurate or may be lost. You may clear the CMOS values by removing the battery: 1. Turn off your computer and unplug the power cord. 2. Gently remove the battery from the battery holder and wait for one minute. (Or use a metal object like a screwdriver to touch the positive and negative terminals of the battery holder, making them short for 5 seconds.) 3. Replace the battery. 4. Plug in the power cord and restart your computer.

•• Always turn off your computer and unplug the power cord before replacing the battery. •• Replace the battery with an equivalent one. Danger of explosion if the battery is replaced with an incorrect model. •• Contact the place of purchase or local dealer if you are not able to replace the battery by yourself or uncertain about the battery model. •• When installing the battery, note the orientation of the positive side (+) and the negative side (-) of the battery (the positive side should face up).

•• Used batteries must be handled in accordance with local environmental regulations. Hardware Installation - 24 - 9) F_PANEL (Front Panel Header) Connect the power switch, reset switch, speaker, chassis intrusion switch/sensor and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables. 20 19 SPEAK Speaker SPEAK+ Power Switch Power LED PWR_LED PWR_LED PWR_LED+ CI+ CIRE+ RESHDHD+ 2 1 Power LED Chassis Intrusion Header Reset Switch Hard Drive Activity LED PW+ PLED PLED+ PW- •• PLED/PWR_LED (Power LED, Yellow/Purple): Connects to the power status indicator on the chassis front panel. The LED is on when the system is operating.

The LED is off when the system is in S3/S4 sleep state or powered off (S5). PW (Power Switch, Red): Connects to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch (refer to Chapter 2, "BIOS Setup," "Power Management," for more information). SPEAK (Speaker, Orange): Connects to the speaker on the chassis front panel. The system reports system startup status by issuing a beep code. One single short beep will be heard if no problem is detected at system startup. HD (Hard Drive Activity LED, Blue): Connects to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data. RES (Reset Switch, Green): Connects to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

CI (Chassis Intrusion Header, Gray): Connects to the chassis intrusion switch/sensor on the chassis that can detect if the chassis cover has been removed. This function requires a chassis with a chassis intrusion switch/sensor. System Status LED S0 On S3/S4/S5 Off •• •• •• •• 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. - 25 Hardware Installation 10) F_AUDIO (Front Panel Audio Header) The front panel audio header supports Intel High Definition audio (HD) and AC'97 audio. You may connect your chassis front panel audio module to this header. Make sure the wire assignments of the module connector match the pin assignments of the motherboard header. Incorrect connection between the module connector and the motherboard header will make the device unable to work or even damage it. For HD Front Panel Audio: Pin No.

Definition 1 MIC2_L F_PANEL(NH) 2 GND 3 MIC2_R 4 -ACZ_DET 5 LINE2_R 6 GND 7 FAUDIO_JD 8 No Pin 9 LINE2_L 10 GND For AC'97 Front Panel Audio: Pin No. Definition 1 MIC F_PANEL 2 GND (H61M-D2) 3 MIC Power 4 NC 5 Line Out (R) 6 NC 7 NC 8 No Pin 9 Line Out (L) 10 NC 9 F_AUDIO(H) 10 1 2 •• The front panel audio header supports HD audio by default. If your chassis provides an AC'97 front panel audio module, refer to the instructions on how to activate AC'97 functionality via the M_SATA audio software in Chapter 6, "Configuring 2/4/5.1/7.1-Channel Audio.

" •• Audio signals will be present on both of the front and back panel audio connections simultaneously. If you want to mute the back panel audio (only supported when using an HD front panel audio module), refer to Chapter 6, "Configuring 2/4/5.1/7.1-Channel Audio." Voltage measurement module (X58A-OC) •• Some chassis provide a front panel audio module that has separated connectors on each wire PWM Switch (X58A-OC) instead of a single plug. For information about connecting the front panel audio module that has different wire assignments, please contact the chassis manufacturer. 1 1 DB_PORT BIOS Switcher (X58A-OC) DIP 1 2 3 11) SPDIF_O (S/PDIF Out Header) DIP 1 2 3 This header supports digital S/PDIF Out and connects a S/PDIF digital audio cable (provided by expansion PCIe power connector (SATA)(X58A-OC) cards) for digital audio output from your motherboard to certain expansion cards like graphics cards and sound cards. For example, some graphics cards may require you to use a S/PDIF digital audio cable for digital audio output from your motherboard to your graphics card if you wish to connect an HDMI display to the graphics card and have digital audio output from the HDMI display at the same time. For information about connecting the S/PDIF digital audio cable, carefully read the manual for your expansion card. Pin No. 1 2 Definition SPDIFO GND 1 BIOS Switcher (SW4) Voltage measurement points (G1.Sniper 3) Hardware Installation - 26 - 1 2 3 DIP 1 1 ACPI_CPT (GA-IVB) 1 2 3 SMB_CPT (GA-IVB) DIP CLR_CMOS CI DIS_ME GP15_CPT (GA-IVB) XDP_CPU XDP_PCH (GA-IVB) 12) F_USB30 (USB 3.



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0/2.0 Header) The header conforms to USB 3.0/2.

0 specification and can provide two USB ports. For purchasing the optional 3.5" front panel that provides two USB 3.0/2.0 ports, please contact the local dealer. 1 F_USB30 20 11 10 F_AUDIO(H) Pin No. 1 2 3 4 5 6 7 8 9 10 TPM w/housing Definition VBUS SSRX1SSRX1+ GND SSTX1SSTX1+ GND D1D1+ NC Pin No. 11 12 13 14 15 16 17 18 19 20 Definition D2+ D2GND SSTX2+ SSTX2GND SSRX2+ SSRX2VBUS No Pin DB_PORT BIO Voltage measurement module(X58A-OC) P 13) F_USB1/F_USB2/F_USB3 (USB Headers) G The headers conform to USB 2.0/1.1 specification.

Each USB header can provide two USB ports via an PCIe power connector (SATA)(X58A-OC) optional USB bracket. For purchasing the optional USB bracket, please contact the local dealer. Pin No. Definition 1 Power (5V) 1 2 Power (5V) 2 3 USB DX4 USB DY5 USB DX+ 6 USB DY+ 7 GND Voltage measurement points(G1.Sniper 3) 8 GND 9 No Pin 10 NC 9 10 BIOS Switcher (SW4) • Do not plug the IEEE 1394 bracket (2x5-pin) cable into the USB header.

• Prior to installing the USB bracket, be sure to turn off your computer and unplug the power cord from the power outlet to prevent damage to the USB bracket. - 27 - Hardware Installation 14) COMA (Serial Port Header) The COM header can provide one serial port via an optional COM port cable. For purchasing the optional COM port cable, please contact the local dealer. Pin No. 1 2 3 4 5 6 7 8 9 10 Definition NDCDNSIN NSOUT NDTRGND NDSRNRTSF_AUDIO(H) NCTSNRINo Pin 9 10 1 2 F_USB30 DB_PORT BIOS S 1 15) TPM (Trusted Platform Module Header) You may connect a TPM (Trusted Platform Module) to this header.

TPM w/housing 19 1 Voltage measurement module(X58A-OC) PWM 20 2 Pin No. 1 2 3 4 5 6 7 8 9 10 Definition LCLK GND LFRAME No Pin LRESET NC LAD3 LAD2 VCC3 LAD1 Pin No. 11 12 13 14 15 16 17 18 19 20 Definition LAD0 PCIe power connector (SATA)(X58A-OC) GND NC ID SB3V SERIRQ GND NC NC SUSCLK BIOS Switcher (SW4) Voltage measurement points(G1.Sniper 3) Hardware Installation - 28 - 1 1 Chapter 2 BIOS Setup BIOS (Basic Input and Output System) records hardware parameters of the system in the CMOS on the motherboard. Its major functions include conducting the Power-On Self-Test (POST) during system startup, saving system parameters and loading operating system, etc. BIOS includes a BIOS Setup program that allows the user to modify basic system configuration settings or to activate certain system features. When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS to keep the configuration values in the CMOS. To access the BIOS Setup program, press the <Delete> key during the POST when the power is turned on. To upgrade the BIOS, use either the GIGABYTE Q-Flash or @BIOS utility. • Q-Flash allows the user to quickly and easily upgrade or back up BIOS without entering the operating system.

• @BIOS is a Windows-based utility that searches and downloads the latest version of BIOS from the Internet and updates the BIOS. For instructions on using the Q-Flash and @BIOS utilities, refer to Chapter 5, "BIOS Update Utilities." • Because BIOS flashing is potentially risky, if you do not encounter problems using the current version of BIOS, it is recommended that you not flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction. • It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values. (Refer to the "Load Optimized Defaults" section in this chapter or introductions of the battery/clear CMOS jumper in Chapter 1 for how to clear the CMOS values.) - 29 - BIOS Setup 2-1 Startup Screen The following startup Logo screen will appear when the computer boots.

Function Keys Function Keys: : BIOS SETUP\Q-FLASH Press the <Delete> key to enter BIOS Setup or to access the Q-Flash utility in BIOS Setup. <F9>: SYSTEM INFORMATION Press the <F9> key to display your system information. <F12>: BOOT MENU Boot Menu allows you to set the first boot device without entering BIOS Setup. In Boot Menu, use the up arrow key <h> or the down arrow key <i> to select the first boot device, then press <Enter> to accept. The system will boot from the device immediately.

Note: The setting in Boot Menu is effective for one time only. After system restart, the device boot order will still be based on BIOS Setup settings. <END>: Q-FLASH Press the <End> key to access the Q-Flash utility directly without having to enter BIOS Setup first. BIOS Setup - 30 - 2-2 The Main Menu On the main menu of the BIOS Setup program, press arrow keys to move among the items and press <Enter> to accept or enter a sub-menu. Or you can use your mouse to select the item you want.

(Sample BIOS Version: D4c) Setup Menus Enter Q-Flash Help Function Keys Configuration Items Current Settings BIOS Setup Program Function Keys <f><g> <h><i> <Enter> <+>/<Page Up> <->/<Page Down> <F5> <F7> <F8> <F9> <F10> <F12> <Esc> Move the selection bar to select a setup menu Move the selection bar to select an configuration item on a menu Execute command or enter a menu Increase the numeric value or make changes Decrease the numeric value or make changes Restore the previous BIOS settings for the current submenus Load the Optimized BIOS default settings for the current submenus Access the Q-Flash utility Display system information Save all the changes and exit the BIOS Setup program Capture the current screen as an image and save it to your USB drive Main Menu: Exit the BIOS Setup program Submenus: Exit current submenu - 31 - BIOS Setup BIOS Setup Menus □□ M.I.T. Use this menu to configure the clock, frequency, and voltages of your CPU and memory, etc. Or check the system/CPU temperatures, voltages, and fan speeds. Use this menu to configure the default language used by the BIOS and system time and date. This menu also displays information on the devices connected to the SATA ports. Use this menu to configure the device boot order, advanced features available on the CPU, and the primary display adapter. Use this menu to configure all peripheral devices, such as SATA, USB, integrated audio, and integrated LAN, etc. Use this menu to configure all the power-saving functions.

□□ System □□ BIOS Features □□ Peripherals □□ Power Management □□ Save & Exit Save all the changes made in the BIOS Setup program to the CMOS and exit BIOS Setup. You can save the current BIOS settings to a profile or load optimized defaults for optimal-performance system operations.



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•• When the system is not stable as usual, select the Load Optimized Defaults item to set your system to its defaults. •• The BIOS Setup menus described in this chapter are for reference only and may differ by BIOS version. BIOS Setup - 32 - 2-3 M.I.T. Whether the system will work stably with the overclock/overvoltage settings you made is dependent on your overall system configurations. Incorrectly doing overclock/overvoltage may result in damage to CPU, chipset, or memory and reduce the useful life of these components. This page is for advanced users only and we recommend you not to alter the default settings to prevent system instability or other unexpected results.

(Inadequately altering the settings may result in system's failure to boot. If this occurs, clear the CMOS values and reset the board to default values.) This section provides information on the BIOS version, CPU base clock, CPU frequency, memory frequency, total memory size, CPU temperature, Vcore, and memory voltage. - 33 - BIOS Setup `M.I.

T. Current Status This screen provides information on CPU/memory frequencies/parameters. `Advanced Frequency Settings & BCLK Clock Control Allows you to manually set the CPU base clock in 1 MHz increments. (Default: Auto) Important: It is highly recommended that the CPU frequency be set in accordance with the CPU specifications. Allows you to alter the North Bridge controller frequency for the installed CPU.

The adjustable range is dependent on the CPU being installed. Allows you to manually set the frequency for the HT Link between the CPU and chipset. The adjustable range is from 200 MHz to 3200 MHz. (Default: Auto) & CPU NorthBridge Frequency & HT Link Frequency & CPU Clock Ratio Allows you to alter the clock ratio for the installed CPU. The adjustable range is dependent on the CPU being installed. Displays the current operating CPU frequency. & CPU Frequency BIOS Setup - 34 - `Advanced CPU Core Features & CPU Clock Ratio, CPU Frequency The settings above are synchronous to those under the same items on the Advanced Frequency Settings menu. Allows you to determine whether to enable the Core Performance Boost (CPB) technology, a CPU performance-boost technology. (Default: Auto) Allows you alter the ratio for the CPB. The adjustable range is dependent on the CPU being installed.

(Default: Auto) Allows you to determine whether unlock hidden CPU cores. (Default: Disabled) L Lets the AMD Cool'n'Quiet driver dynamically adjust the CPU clock and VID to reduce heat output from your computer and its power consumption. (Default) Disables this function. & Core Performance Boost (Note) & CPB Ratio (Note) & CPU Unlock (Note) & Cool & Quiet Enabled Disabled & CIE Support Allows you to determine whether to let the CPU enter CI mode in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. (Default: Enabled) Virtualization enhanced by Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple virtual systems. (Default: Enabled) & SVM (Note)

This item is present only when you install a CPU that supports this feature. - 35 BIOS Setup & CPU core Control (Note 1) Allows you to determine whether to manually enable/disable CPU cores. Automatic mode allows the BIOS to enable all CPU cores (number of cores available depends on the CPU being used).

(Default: Automatic mode) & Extreme Memory Profile (X.M.P.) (Note 2) Allows the BIOS to read the SPD data on XMP memory module(s) to enhance memory performance when enabled. Disabled Disables this function.

(Default) Profile1 Uses Profile 1 settings. Profile2 (Note 2) Uses Profile 2 settings. Allows you to set the system memory multiplier. Auto sets memory multiplier according to memory SPD data. (Default: Auto) This value is automatically adjusted according to the BCLK Clock Control and System Memory Multiplier settings.

& System Memory Multiplier & Memory Frequency (MHz) (Note 1) This item is present only when you install a CPU that supports this feature. (Note 2) This item is present only when you install a memory module that supports this feature. BIOS Setup - 36 - `Advanced Memory Settings & Extreme Memory Profile (X.M.P.) (Note), System Memory Multiplier, Memory Frequency(MHz) The settings above are synchronous to those under the same items on the Advanced Frequency Settings menu. & DRAM Timing Selectable & Profile DDR Voltage Quick and Expert allows the memory timing settings below to be configurable. Options are: Auto (default), Quick, Expert. When using a non-XMP memory module or Extreme Memory Profile (X.M.

P.) is set to Disabled, this item will display as 1.50V. When Extreme Memory Profile (X.M.P.) is set to Profile1 or Profile2, this item will display the value based on the SPD data on the XMP memory. The value displayed here is dependent on the CPU being used. & Profile VTT Voltage & Channel Interleaving & Rank Interleaving Enables or disables memory channel interleaving. Enabled allows the system to simultaneously access different channels of the memory to increase memory performance and stability.

Auto lets the BIOS automatically configure this setting. (Default: Auto) Enables or disables memory rank interleaving. Enabled allows the system to simultaneously access different ranks of the memory to increase memory performance and stability. Auto lets the BIOS automatically configure this setting. (Default: Auto) (Note) This item is present only when you install a memory module that supports this feature.

- 37 BIOS Setup `Channel A/B Timing Settings This sub-menu provides memory timing settings for each channel of memory. The respective timing setting screens are configurable only when DRAM Timing Selectable is set to Quick or Expert. Note: Your system may become unstable or fail to boot after you make changes on the memory timings. If this occurs, please reset the board to default values by loading optimized defaults or clearing the CMOS values. ` Advanced Voltage Settings This sub-menu allows you to set CPU, chipset and memory voltages.

BIOS Setup - 38 - `PC Health Status & Reset Case Open Status Disabled Keeps or clears the record of previous chassis intrusion status. (Default) Enabled Clears the record of previous chassis intrusion status and the Case Open field will show "No" at next boot. Displays the detection status of the chassis intrusion detection device attached to the motherboard CI header. If the system chassis cover is removed, this field will show "Yes", otherwise it will show "No".



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To clear the chassis intrusion status record, set **Reset Case Open Status** to **Enabled**, save the settings to the CMOS, and then restart your system. - **39 BIOS Setup** && **Case Open** && **CPU Vcore/Dram Voltage/+3.3V/+5V/+12V** Displays the current system voltages. && **CPU/System Temperature** Displays current CPU/system temperature. Displays current CPU/system/power fan speed. && **CPU/System/Power Fan Speed** && **CPU Warning Temperature** Sets the warning threshold for CPU temperature.

When CPU temperature exceeds the threshold, BIOS will emit warning sound. Options are: **Disabled** (default), **60oC/140oF**, **70oC/158oF**, **80oC/176oF**, **90oC/194oF**. && **CPU/System/Power Fan Fail Warning** Allows the system to emit warning sound if the fan is not connected or fails. Check the fan condition or fan connection when this occurs. (Default: **Disabled**) **Auto** Lets the BIOS automatically detect the type of CPU fan installed and sets the optimal CPU fan control mode. (Default) **Voltage** Sets Voltage mode for a 3-pin CPU fan. **PWM** Sets PWM mode for a 4-pin CPU fan. Allows you to determine whether to enable the fan speed control function and adjust the fan speed. **Normal** llows the fan to run at different speeds according to the CPU temperature. You can adjust **A** the fan speed with **EasyTune** based on your system requirements.

(Default) **Silent** Allows the fan to run at slow speeds. **Manual** Allows you to control the fan speed under the **Slope PWM** item. **Disabled** Allows the fan to run at full speeds. Allows you to control the fan speed. This item is configurable only when **CPU Fan Speed Control** is set to **Manual**. Options are: **0.75 PWM value /oC ~ 2.50 PWM value /oC**. Allows you to determine whether to enable the fan speed control function and adjust the fan speed. **Normal** llows the fan to run at different speeds according to the system temperature.

You can adjust **A** the fan speed with **EasyTune** based on your system requirements. (Default) **Silent** Allows the fan to run at slow speeds. **Manual** Allows you to control the fan speed under the **Slope PWM** item. **Disabled** Allows the fan to run at full speeds. && **CPU Fan Control mode** && **CPU Fan Speed Control** && **Slope PWM** && **1st System Fan Speed Control (SYS_FAN1 Connector)** && **Slope PWM** Allows you to control the fan speed. This item is configurable only when **1st System Fan Speed Control** is set to **Manual**. Options are: **0.75 PWM value /oC ~ 2.50 PWM value /oC**. BIOS Setup - 40 - 2-4 System This section provides information on your motherboard model and BIOS version.

You can also select the default language used by the BIOS and manually set the system time. && **System Language** && **System Date** Selects the default language used by the BIOS. && **System Time** Sets the system date. The date format is week (read-only), month, date, and year. Use <Enter> to switch between the Month, Date, and Year fields and use the <Page Up> or <Page Down> key to set the desired value. Sets the system time. The time format is hour, minute, and second. For example, 1 p.m. is 13:0:0.

Use <Enter> to switch between the Hour, Minute, and Second fields and use the <Page Up> or <Page Down> key to set the desired value. Displays the current access level depending on the type of password protection used. (If no password is set, the default will display as Administrator.) The Administrator level allows you to make changes to all BIOS settings; the User level only allows you to make changes to certain BIOS settings but not all. && **Access Level**

ATA Port Information This section provides information on the device connected to each SATA port controlled by AMD Chipset.

- **41 - BIOS Setup 2-5 BIOS Features** && **Boot Option Priorities** Specifies the overall boot order from the available devices. For example, you can set hard drive as the first priority (Boot Option #1) and DVD ROM drive as the second priority (Boot Option #2). The list only displays the device with the highest priority for a specific type. For example, only hard drive defined as the first priority on the **Hard Drive BBS Priorities** submenu will be presented here.

Removable storage devices that support GPT format will be prefixed with "UEFI:" string on the boot device list.

To boot from an operating system that supports GPT partitioning, select the device prefixed with "UEFI:" string. Or if you want to install an operating system that supports GPT partitioning such as Windows 7 64-bit, select the optical drive that contains the Windows 7 64-bit installation disk and is prefixed with "UEFI:" string. - **42 - BIOS Setup** && **Hard Drive/CD/DVD ROM Drive/Floppy Drive/Network Device BBS Priorities** Specifies the boot order for a specific device type, such as hard drives, optical drives, floppy disk drives, and devices that support Boot from LAN function, etc. Press <Enter> on this item to enter the submenu that presents the devices of the same type that are connected. This item is present only if at least one device for this type is installed. Enables or

disables Numlock feature on the numeric keypad of the keyboard after the POST. (Default: **Enabled**) Specifies whether a password is required every time the system boots, or only when you enter BIOS Setup. After configuring this item, set the password(s) under the **Administrator Password/User Password** item. **Setup** password is only required for entering the BIOS Setup program. **A** **System** password is required for booting the system and for entering the

BIOS Setup **A** program.

(Default) Allows you to determine whether to display the GIGABYTE Logo at system startup. **Disabled** skips the GIGABYTE Logo when the system starts up.

(Default: **Enabled**) Allows you to select the operating system to be installed. (Default: **Other OS**) && **Bootup NumLock State** && **Security Option** && **Full Screen LOGO Show** && **OS Type** && **CSM Support** Enables or disables UEFI CSM (Compatibility Support Module) to support a legacy PC boot process.

Always Enables UEFI CSM. (Default) **Never** Disables UEFI CSM and supports UEFI BIOS boot process only. This item is configurable only when OS Type is set to Windows 8. Allows you to select which type of operating system to boot. **UEFI and Legacy** Allows booting from operating systems that support legacy option ROM or UEFI option ROM. (Default) **Legacy Only** Allows booting from operating systems that only support legacy Option ROM.

UEFI Only Allows booting from operating systems that only support UEFI Option ROM. This item is configurable only when CSM Support is set to Always. Allows you to select whether to enable the legacy option ROM for the LAN controller. (Default: **Disabled**) This item is configurable only when CSM Support is set to Always. && **Boot Mode Selection** && **LAN PXE Boot Option ROM** && **Storage Boot Option Control** Allows you to select whether to enable the UEFI or legacy option ROM for the storage device controller.



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Disabled Disables option ROM. Legacy Only Enables legacy option ROM only. (Default) UEFI Only Enables UEFI option ROM only. Legacy First Enables legacy option ROM first. UEFI First Enables UEFI option ROM first.

This item is configurable only when CSM Support is set to Always. - 43 - BIOS Setup & Other PCI Device ROM Priority Allows you to select whether to enable the UEFI or Legacy option ROM for the PCI device controller other than the LAN, storage device, and graphics controllers. Legacy OpROM Enables legacy option ROM only. UEFI OpROM Enables UEFI option ROM only. (Default) Disables or enables booting from the network to install a GPT format OS, such as installing the OS from the Windows Deployment Services server. (Default: Disable) Enables or disables IPv4 PXE Support. This item is configurable only when Network stack is enabled. Enables or disables IPv6 PXE Support. This item is configurable only when Network stack is enabled. & Network stack & IPv4 PXE Support & IPv6 PXE Support & Administrator Password Allows you to configure an administrator password.

Press <Enter> on this item, type the password, and then press <Enter>. You will be requested to confirm the password. Type the password again and press <Enter>. You must enter the administrator password (or user password) at system startup and when entering BIOS Setup. Differing from the user password, the administrator password allows you to make changes to all BIOS settings. Allows you to configure a user password. Press <Enter> on this item, type the password, and then press <Enter>. You will be requested to confirm the password. Type the password again and press <Enter>. You must enter the administrator password (or user password) at system startup and when entering BIOS Setup.

However, the user password only allows you to make changes to certain BIOS settings but not all. & User Password To cancel the password, press <Enter> on the password item and when requested for the password, enter the correct one first. When prompted for a new password, press <Enter> without entering any password. Press <Enter> again when prompted to confirm. BIOS Setup - 44 - 2-6 Peripherals & OnChip SATA Controller Enables or disables the integrated SATA controllers.

(Default: Enabled) & OnChip SATA Type Enables or disables RAID for the SATA controllers integrated in the Chipset or configures the SATA controllers to AHCI mode. Native IDE Configures the SATA controller to IDE mode. RAID Enables RAID for the SATA controller. AHCI C Configures the SATA controllers to AHCI mode. Advanced Host Controller Interface (AHCI) is an interface specification that allows the storage driver to enable advanced Serial ATA features such as Native Command Queuing and hot plug.

(Default) This option is configurable only when OnChip SATA Type is set to RAID or AHCI. Configures the operating mode of the integrated SATA3 4~SATA3 5 connectors. As SATA Type The mode depends on the OnChip SATA Type settings. @@@@ Enables or disables the integrated USB controller. @@@@ Allows USB keyboard/mouse to be used in MS-DOS. @@@@ This item appears only when a USB storage device is installed. Enables or disables AMD IOMMU support. @@ Set this item to Enable when a TPM device is installed. @@ (Default: Disabled) Enables or disables each SATA port. @@ Enables or disables the onboard serial port.

@@@@@@@ If the power button is pressed for less than 4 seconds, the system will enter suspend mode. Determines the state of the system after the return of power from an AC power loss. Memory The system returns to its last known awake state upon the return of the AC power. Always On The system is turned on upon the return of the AC power. Always Off T The system stays off upon the return of the AC power. (Default) & HPET Support & Soft-Off by PWR-BTTN & AC BACK (Note) Supported on Windows 8/7 operating system only. - 48 - BIOS Setup & Power On By Keyboard Allows the system to be turned on by a PS/2 keyboard wake-up event. Note: To use this function, you need an ATX power supply providing at least 1A on the +5VSB lead. Disabled Disables this function. (Default) Password Set a password with 1~5 characters to turn on the system.

Keyboard 98 Press POWER button on the Windows 98 keyboard to turn on the system. Any key Press any key to turn on the system. Set the password when Power On By Keyboard is set to Password. Press <Enter> on this item and set a password with up to 5 characters and then press <Enter> to accept. To turn on the system, enter the password and press <Enter>.

Note: To cancel the password, press <Enter> on this item. When prompted for the password, press <Enter> again without entering the password to clear the password settings. Allows the system to be turned on by a PS/2 mouse wake-up event. Note: To use this function, you need an ATX power supply providing at least 1A on the +5VSB lead. Disabled Disables this function.

(Default) Move Move the mouse to turn on the system. Double Click Double click on left button on the mouse to turn on the system. Determines whether to let the system consume least power in S5 (shutdown) state. (Default: Disabled) Note: When this item is set to Enabled, the following functions will become unavailable: PME event wake up, power on by mouse, power on by keyboard, and wake on LAN. & Power On Password & Power On By Mouse & ErP - 49 - BIOS Setup 2-8 Save & Exit & Save & Exit Setup Press <Enter> on this item and select Yes. This saves the changes to the CMOS and exits the BIOS Setup program. Select No or press <Esc> to return to the BIOS Setup Main Menu. Press <Enter> on this item and select Yes. This exits the BIOS Setup without saving the changes made in BIOS Setup to the CMOS. Select No or press <Esc> to return to the BIOS Setup Main Menu.

Press <Enter> on this item and select Yes to load the optimal BIOS default settings. The BIOS defaults settings help the system to operate in optimum state. Always load the Optimized defaults after updating the BIOS or after clearing the CMOS values. Allows you to select a device to boot immediately. Press <Enter> on the device you select and select Yes to confirm. Your system will restart automatically and boot from that device. This function allows you to save the current BIOS settings to a profile. You can create up to 8 profiles and save as Setup Profile 1~ Setup Profile 8. Press <Enter> to complete. Or you can select Select File in HDD/USB/FDD to save the profile to your storage device.

If your system becomes unstable and you have loaded the BIOS default settings, you can use this function to load the BIOS settings from a profile created before, without the hassles of reconfiguring the BIOS settings.



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First select the profile you wish to load and then press <Enter> to complete. You can select Select File in HDD/USB/FDD to input the profile previously created from your storage device or load the profile automatically created by the BIOS, such as reverting the BIOS settings to the last settings that worked properly (last known good record). && Exit Without Saving && Load Optimized Defaults && Boot Override && Save Profiles && Load Profiles BIOS Setup - 50 - Chapter 3 Configuring SATA Hard Drive(s) RAID Levels RAID 0 Minimum ≥ 2 Number of Hard Drives Array Capacity Number of hard drives * Size of the smallest drive Fault Tolerance No A. B.

C. D. RAID 1 2 Size of the smallest drive Yes RAID 5 ≥ 3 (Number of hard drives - 1) * Size of the smallest drive Yes RAID 10 ≥ 4 (Number of hard drives/2) * Size of the smallest drive Yes To configure SATA hard drive(s), follow the steps below: Install SATA hard drive(s) in your computer. Configure SATA controller mode in BIOS Setup. Configure a RAID array in RAID BIOS (Note 1) Install the SATA RAID/AHCI driver and operating system (Note 2) Before you begin • At least two SATA hard drives (to ensure optimal performance, it is recommended that you use two hard drives with identical model and capacity).

If you do not want to create RAID, you may prepare only one hard drive. • Windows 8/7/XP setup disk. • Motherboard driver disk. • A USB flash drive • A USB floppy disk drive (needed during Windows XP installation) • An empty formatted floppy disk (needed during Windows XP installation) 3-1 Configuring SATA Controllers A. Installing SATA hard drive(s) in your computer Attach one end of the SATA signal cable to the rear of the SATA hard drive and the other end to available SATA port on the motherboard. Then connect the power connector from your power supply to the hard drive. (Note 1) Skip this step if you do not want to create RAID array on the SATA controller. (Note 2) Required when the SATA controller is set to AHCI or RAID mode. - 51 Configuring SATA Hard Drive(s) B. Configuring SATA controller mode in BIOS Setup Make sure to configure the SATA controller mode correctly in system BIOS Setup.

Step 1: Turn on your computer and press <Delete> to enter BIOS Setup during the POST (Power-On Self-Test). Ensure OnChip SATA Channel is enabled under Peripherals. To enable RAID for the SATA3 0/1/2/3 connectors, set OnChip SATA Type to RAID. To enable RAID for the SATA3 4/SATA3 5 connectors, set OnChip SATA Type to RAID and set OnChip SATA Port4/5 Type to As SATA Type. Figure 1 Step 2: If you want to configure UEFI RAID, follow the steps in "C-1." To enter the legacy RAID ROM, save the settings and exit BIOS Setup. Refer to "C-2" for more information. The BIOS Setup menus described in this section may differ from the exact settings for your motherboard. The actual BIOS Setup menu options you will see shall depend on the motherboard you have and the BIOS version. Configuring SATA Hard Drive(s) - 52 - C-1.

UEFI RAID Configuration This mode supports Windows 8 64-bit installation only. Step 1: In BIOS Setup, go to BIOS Features and set OS Type to Windows 8 and CSM Support to Never. (Figure 2) Save the changes and exit BIOS Setup. Figure 2 Step 2: Restart your computer and press <F12> to enter the boot device configuration menu. Use the up or down arrow key to select UEFI: Built-in EFI Shell.

Press <Enter> to access the screen as shown in Figure 3. Follow the steps below and enter the commands to access the RAID setup utility. 1. Enter drvfcfg at Shell and press <Enter>: Shell> drvfcfg 2. When Drv [XX] Ctrl [XX] Lang [eng] appears, enter the following commands at Shell again: Shell> drvfcfg -s XX XX (XXs are the values shown in the brackets after Drv and Ctrl above, which may vary by hard drives.

) Then press <Enter> to enter the RAID setup utility. EFI Shell version 2.31 [4.653] Current running mode 1.1.2 Device mapping table fs0 : Removable HardDisk Alias hd12d0b blk0 PciRoot (0x0)/Pci (0x10, 0x0)/USB (0x3, 0x0)/HD (1.MBR,0x016777a6, 0x3f, 0x1e1fc0) fs1 : Removable CDRom Alias cd14c0b blk1 PciRoot (0x0)/Pci (0x11, 0x0)/Scsi (0x2, 0x0)/CDROM (0x1,0x6e, 0X1A0263)

.. Press ESC in 1 seconds to skip startup.nsh, any other key to continue. Shell> drvfcfg Configurable Components Drv [59] Ctrl [CF] Lang [eng] Shell> drvfcfg -s 59 cf Figure 3 - 53 Configuring SATA Hard Drive(s) Step 3: The Main Menu is the first screen when you enter the BIOS RAID Setup utility. Use the up or down arrow key to select Logical Drive Main Menu and press <Enter>. RAID Utility (C) 2012 Advanced Micro Devices, Inc. [Rev. 1.0.

0.45] + Main Menu + Driver Information Menu + Physical Device Main Menu + Logical Drive Main Menu To View Or Configure The Logical Drive hi=Move Highlight <Enter>=Select Option F10=Exit Utility Esc=Previous Page Figure 4 Step 4: To create an array, press <Enter> on Logical Drive Create Menu. RAID Utility (C) 2012 Advanced Micro Devices, Inc. [Rev. 1.

0.0.45] + Logical Drive Main Menu + Logical Drive List Menu + Logical Drive Create Menu + Logical Drive Delete Menu To Create The Logical Drive hi=Move Highlight <Enter>=Select Option F10=Exit Utility Esc=Previous Page Figure 5 Configuring SATA Hard Drive(s) - 54 - Step 5: Usable hard drives are listed on the Logical Drive Create Menu. Use the up or down arrow key to select the hard drive to be included in the array and press the <Space> key.

The selected hard drives will be marked with [X].

Then move to Basic Setting and press <Enter>. RAID Utility (C) 2012 Advanced Micro Devices, Inc. [Rev. 1.0.0.45] + Logical Drive Create Menu + Usable Physical Drive List - Hitachi HDT721032SLA360 - Hitachi HDT721032SLA360 + Basic Setting Usable Physical Disk On (Port : 4, TargetId : 1) \ 500.10 GB \ 500.10 GB [X] [X] hi=Move Highlight <Space>=Toggle Checkbox F10=Exit Utility Esc=Previous Page Figure 6 Step 6: Use the up or down arrow key to move to and configure each required item in sequence. After completing, press <Enter> on Start To Create (Figure 7).

When the message "Are You Sure To Create Logical Drive?" appears, press <Enter> to begin creating the RAID array or <Esc> to cancel. RAID Utility (C) 2012 Advanced Micro Devices, Inc. [Rev. 1.0.0.45] + Logical Drive Create Menu - Raid Mode - Stripe Block (KB) - Setcor Size (Bytes) - Initialization - Gigabyte Boundary - Read Policy - Write Policy - Ld Name + Ld Size Setting - Ld Max Size - Ld Size (GB) + Start To Create hi=Move Highlight <Enter>=Select Option F10=Exit Utility Esc=Previous Page : : : : : : <RAID 0> <64> <512> <Fast> <Enable> <Read Ahead> <Write Back> GBT 1000.21 GB [0] Figure 7 When completed, a message which says "Successful To Create Logical Drive" will appear.



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