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You can read the recommendations in the user guide, the technical guide or the installation guide for GIGABYTE GA-H97-GAMING 3. You'll find the answers to all your questions on the GIGABYTE GA-H97-GAMING 3 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-H97-GAMING 3
User guide GIGABYTE GA-H97-GAMING 3
Operating instructions GIGABYTE GA-H97-GAMING 3
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GA-H97-Gaming 3

User's Manual
Rev. 1001
12M E-H97GMS-1001R



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Manual abstract:

© All rights reserved. © © © © © 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. Example: Table of Contents Box Contents.

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..... 79 -5- Box Contents 55 55 55 55 55 GA-H97-Gaming 3 motherboard Motherboard driver disk User's Manual 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) HDMI-to-DVI adapter (Part No. 12CT2-HDMI01-1*R) -6- GA-H97-Gaming 3 Motherboard Layout KB_MS_USB ATX_12V_2X4 DVI VGA CPU_FAN CPU_OPT LGA1150 ATX DP_HDMI_SPDIF R_USB30 Qualcomm® Atheros Killer E2201 LAN SYS_FAN1 USB30_LAN AUDIO PCIEX1_1 M.2 DDR3_4 DDR3_2 DDR3_3 PCIEX16 SATA3 5 4 SYS_FAN3 SATA_EXPRESS GA-H97-Gaming 3 PCI1 iTE® Super I/O PCI2 Intel® H97 PCIEX4 CODEC PCIEX1_2 PCIe to PCI Bridge BAT B_BIOS M_BIOS PCI3 CLR_CMOS 1 0 SATA3 3 2 F_AUDIO SPDIF_O COMA TPM F_USB3 F_USB2 F_PANEL F_USB1 SYS_FAN2 -7- DDR3_1 F_USB30 GA-H97-Gaming 3 Motherboard Block Diagram 1 PCI Express x16 DVI-D PCIe CLK (100 MHz) HDMI DisplayPort LGA1150 CPU CPU CLK+/- (100 MHz) DDR3 1600/1333MHz Dual Channel Memory PCI Express Bus x16 LAN RJ45 DMI 2.0 FDI D-Sub Dual BIOS or PCIe CLK (100 MHz) PCI Express Bus Switch Intel® GbE LAN x1 x1 Intel H97 ® M.2 SATA Express 2 SATA 6Gb/s Switch or 4 SATA 6Gb/s 6 USB 3.

0/2.0 8 USB 2.0/1.1 x1 x1 or x4 PCIe to PCI Bridge PCI Bus 2 PCI Express x1 1 PCI Express x4 CODEC LPC Bus iTE® Super I/O COM PS/2 KB/Mouse 3 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 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. Installation Precautions -9- Hardware Installation 1-2 Product Specifications CPU □□ Support for Intel® Core™ i7 processors/Intel® Core™ i5 processors/ Intel® Core™ i3 processors/Intel® Pentium® processors/Intel® Celeron® processors in the LGA1150 package (Go to GIGABYTE's website for the latest CPU support list.) □□ L3 cache varies with CPU □□ Intel® H97 Express Chipset □□ 4 x DDR3 DIMM sockets supporting up to 32 GB of system memory * □ 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.

Chipset Memory □□ □□ □□ □□ Onboard Graphics Dual channel memory architecture Support for DDR3 1600/1333 MHz memory modules Support for non-ECC memory modules Support for Extreme Memory Profile (XMP) memory modules (□ Go to GIGABYTE's website for the latest supported memory speeds and memory modules.) □□ Integrated Graphics Processor: - 1 x D-Sub port, supporting a maximum resolution of 1920x1200@60Hz - 1 x DVI-D port, supporting a maximum resolution of 1920x1200@60Hz - - * □ he DVI-D port does not support D-Sub connection by adapter.



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1 x HDMI port, supporting a maximum resolution of 4096x2160@24Hz or 2560x1600@60Hz * Support for HDMI 1.4a version. 1 x DisplayPort, supporting a maximum resolution of 4096x2160@24Hz or 3840x2160@60Hz * Support for DisplayPort 1.2 version. Audio Support for up to 3 displays at the same time - Maximum shared memory of 1 GB Realtek® ALC1150 codec Support for Sound Blaster X-Fi MB3 High Definition Audio 2/4/5.1/7.1-channel Support for SPDIF Out LAN Qualcomm® Atheros Killer E2201 LAN chip (10/100/1000 Mbit) Expansion Slots 1 x PCI Express x16 slot, running at x16 (PCIEX16) (The PCIEX16 slot conforms to PCI Express 3.0 standard.) 1 x PCI Express x16 slot, running at x4 (PCIEX4) * or optimum performance, if only one PCI Express graphics card is to be installed, be sure to install it in the PCIEX16 slot. * The PCIEX4 slot shares bandwidth with the PCI Express x1 slots. The PCI Express x1 slots will become unavailable when a PCIe x4 expansion card is installed. * When installing a x8 or above card in the PCIEX4 slot, make sure to set PCIe Slot Configuration (PCH) in BIOS Setup to x4. (Refer to Chapter 2, "BIOS Setup," "Peripherals," for more information.)

2 x PCI Express x1 slots (The PCIEX4 and the PCI Express x1 slots conform to PCI Express 2.0 standard.) 3 x PCI slots Hardware Installation - 10 - Multi-Graphics Support for 2-Way AMD CrossFire™ technology Technology Storage Interface Chipset: - 1 x M.2 PCIe connector 1 - 1 x SATA Express connector 1 - 1 x SATA 6Gb/s connectors 6 (M.2, SATA Express, and SATA3 4/5 connectors can only be used one at a time. The SATA3 4/5 connectors will become unavailable when an M.2 SSD is installed.) - Support for RAID 0, RAID 1, RAID 5, and RAID 10 USB Chipset: - 1 x USB 3.0/2.0 ports (4 ports on the back panel, 2 ports available through 6 the internal USB header) - 1 x USB 2.0/1.1 ports (2 ports on the back panel, 6 ports available through 8 the internal USB headers) Internal 1 x 24-pin ATX main power connector Connectors 1 x 8-pin ATX 12V power connector 1 x M.2 PCIe connector 1 x SATA Express 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. • To protect the socket contacts, do not remove the protective plastic cover unless the CPU is inserted into the CPU socket.

Save the cover properly and replace it if the CPU is removed. Step 1: Gently press the CPU socket lever handle down and away from the socket with your finger. Then completely lift the CPU socket lever and the metal load plate/plastic cover will be lifted as well. Step 2: Hold the CPU with your thumb and index fingers. Align the CPU pin one marking (triangle) with the pin one corner of the CPU socket (or you may align the CPU notches with the socket alignment keys) and gently insert the CPU into position.

Step 3: Once the CPU is properly inserted, carefully replace the load plate. When replacing the load plate, make sure the front end of the load plate is under the shoulder screw. Then press the CPU socket lever. The protective plastic cover may pop off from the load plate during the process of engaging the lever. Remove the cover. (Save the cover properly and always replace it when the CPU is not installed.) Step 4: Finally, secure the lever under its retention tab to complete the installation of the CPU. NOTE: Hold the CPU socket lever by the handle, not the lever base portion. 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 Intel® boxed cooler as the example cooler.)

Male Push Pin The Top of Female Push Pin Direction of the Arrow Sign on the Male Push Pin Female Push Pin Step 1: Apply an even and thin layer of thermal grease on the surface of the installed CPU. Step 2: Before installing the cooler, note the direction of the arrow sign on the male push pin. (Turning the push pin along the direction of arrow is to remove the cooler, on the contrary, is to install.) Step 3: Place the cooler atop the CPU, aligning the four push pins through the pin holes on the motherboard. Push down on the push pins diagonally. Step 4: You should hear a "click" when pushing down each push pin. Check that the Male and Female push pins are joined closely. (Refer to your CPU cooler installation manual for instructions on installing the cooler.) Step 5: After the installation, check the back of the motherboard. If the push pin is inserted as the picture above shows, the installation is complete.

Step 6: 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: Two Modules Four Modules DDR3_4 -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. When enabling Dual Channel mode with two or four memory modules, it is recommended that memory of the same capacity, brand, speed, and chips be used and installed in the same colored DDR3 sockets. 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.



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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.

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 D-Sub Port Use this port to connect a PS/2 mouse or keyboard. The D-Sub port supports a 15-pin D-Sub connector and supports a maximum resolution of 1920x1200@60Hz (the actual resolutions supported depend on the monitor being used).

Connect a monitor that supports D-Sub connection to this port. DVI-D Port (Note) The DVI-D port conforms to the DVI-D specification and supports a maximum resolution of 1920x1200@60Hz (the actual resolutions supported depend on the monitor being used). Connect a monitor that supports DVI-D connection to this port. Optical S/PDIF Out Connector HDMI Port 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 HDMI port is HDCP compliant and supports Dolby True HD and DTS HD Master Audio formats. It also supports up to 192KHz/24bit 8-channel LPCM audio output. You can use this port to connect your HDMI-supported monitor. The maximum supported resolution is 4096x2160@24Hz or 2560x1600@60Hz, but the actual resolutions supported are dependent on the monitor being used. After installing the HDMI device, make sure to set the default sound playback device to HDMI.

(The item name may differ depending on your operating system. The screenshot below is from Windows 8.1.) In Windows 8.1, select Apps>Control Panel>Hardware and Sound>Sound>Playback, set Intel(R) Display Audio to the default playback device. (Note) The DVI-D port does not support D-Sub connection by adapter. - 19 Hardware Installation DisplayPort DisplayPort delivers high quality digital imaging and audio, supporting bi-directional audio transmission. DisplayPort can support both DPCP and HDCP content protection mechanisms. You can use this port to connect your DisplayPort-supported monitor. The maximum supported resolution is 4096x2160@24Hz or 3840x2160@60Hz, but the actual resolutions supported are dependent on the monitor being used.

After installing the DisplayPort device, make sure the default device for sound playback is the DisplayPort device. (The item name may differ from operating system. Refer to the HDMI settings information on the previous page for the configuration dialog box.) Triple-Display Configurations for the Onboard Graphics: Triple-display configurations are supported after you install motherboard drivers in OS. Only dual-display configurations are supported during the BIOS Setup or POST process. USB 3.0/2.0 Port RJ-45 LAN Port Connection/ Speed LED 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 line in jack. Use this audio jack for line in devices such as an optical drive, walkman, etc. Line Out Jack (Green) The line out jack. This jack supports audio amplifying function. For better sound quality, it is recommended that you connect your headphone/speaker to this jack (actual effects may vary by the device being used). 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. Mic In Jack (Pink) The 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. •• When removing the cable connected to a back panel connector, first remove the cable from your device and then remove it from the motherboard.



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•• 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.
Hardware Installation - 20 - 1-7 Internal Connectors 1 5 3 2 8 12 4 7 6 16 4 7 10 11 14 15 13 9 17 13 4 1) 2) 3) 4) 5) 6) 7) 8) 9) ATX_12V_2X4 ATX
CPU_FAN SYS_FAN1/2/3 CPU_OPT SATA_EXPRESS SATA3 0/1/2/3/4/5 M.

2 F_PANEL 10) 11) 12) 13) 14) 15) 16) 17) F_AUDIO SPDIF_O F_USB30 F_USB1/F_USB2/F_USB3 COMA TPM BAT CLR_CMOS 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_2X4/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_2X4: 8 4 5 ATX_12V_2X4 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 Pin No. 3.3V 13 3.3V 14 GND 15 +5V 16 GND 17 +5V 18 GND 19 Power Good 20 5VSB (stand by +5V) 21 +12V 22 +12V (Only for 2x12-pin 23 ATX) 3.3V (Only for 2x12-pin 24 ATX) 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) CPU_FAN/SYS_FAN1/SYS_FAN2/SYS_FAN3 (Fan Headers) All fan headers on this motherboard are 4-pin.

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: 1 CPU_FAN Pin No. 1 2 3 4 Definition GND +12V Sense Speed Control 1 SYS_FAN1 SYS_FAN1/2/3: 1 SYS_FAN2 1 SYS_FAN3 Pin No. 1 2 3 4 Definition GND +12V / Speed Control Sense VCC 5) CPU_OPT (Water Cooling CPU Fan Header) The fan header is 4-pin and possesses 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). 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. 1 Pin No. 1 2 3 4 Definition GND +12V / Speed Control Sense VCC •• 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. - 23 Hardware Installation 6) SATA_EXPRESS (SATA Express Connector) The SATA Express connector supports a single SATA Express device. S 3 B SS S U S _ S _ S F DEBUG PORT DEBUG PORT DEBUG PORT DEBUG PORT 7) SATA3 0/1/2/3/4/5 (SATA 6Gb/s Connectors) S _ The SATA connectors conform to SATA 6Gb/s standard and are compatible with SATA 3Gb/s and SATA 1.5Gb/s standard. Each SATA connector supports a single SATA device.

The Intel® Chipset supports RAID 0, RAID 1, RAID 5, and RAID 10. Refer to Chapter 3, "Configuring SATA Hard Drive(s)," for instructions on configuring a RAID array. SATA3 1 0 3 2 1 1 S 7 7 _ SATA3 5 4 7 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. •• To enable hot-plugging for the SATA ports, refer to Chapter 2, "BIOS Setup," "Peripherals\SATA Configuration," for more information. •• M.

2, SATA Express, and SATA3 4/5 connectors can only be used one at a time. The SATA3 4/5 connectors will become unavailable when an M.2 SSD is installed. Hardware Installation - 24 - _ B B S _ B 8) M.2 (M.2 Connector) You can insert an M.2 SSD into this connector. S B _ B _ S S _ _ B _ U _ B Follow the steps below to correctly install an M.2 SSD in the M.2 connector.

F_USB3 F Step 1: Use a screw driver to unfasten the screw and nut from the motherboard. Locate the proper mounting hole for the M.2 SSD to be installed and then screw the nut first. Step 2: Slide the M.2 SSD into the connector at an oblique angle.

Step 3: Press the M.2 SSD down and then secure it with the screw. Step 4: The installation is completed, as shown in the picture above. •• On the motherboard there are three length adjustment holes for the M.2 SSD.

Select the proper hole for the M.2 SSD to be installed and refasten the screw and nut. •• M.2, SATA Express, and SATA3 4/5 connectors can only be used one at a time. The SATA3 4/5 connectors will become unavailable when an M.2 SSD is installed. - 25 Hardware Installation 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. Power LED Power Switch Speaker PLED+ PLEDPW+ PW- SPEAK+ 2 1 HD+ HDRESRES+ CICI+ PWR_LED+ PWR_LEDPWR_LED Power LED Chassis Intrusion Header SPEAK20 19 Hard Drive Reset Activity LED Switch •• PLED/PWR_LED (Power LED, Yellow/Purple): System Status LED S0 On S3/S4/S5 Off Connects to the power status indicator on the chassis front panel. The LED is on when the system is operating.



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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. 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.

Hardware Installation - 26 - 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 2 F_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 2 GND 3 MIC Power 4 NC 5 Line Out (R) 6 NC 7 NC 8 No Pin 9 Line Out (L) 10 NC 9 F_U 10 1 F_2 B_B SS ••The front panel audio header supports HD audio by default. _S ••Audio signals will be present on both of the front and back panel audio connections simultaneously. Some chassis provide a front panel audio module that has separated connectors on each wire 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 1 1 _B S This header supports digital S/PDIF Out and connects a S/PDIF digital audio cable (provided by expansion 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 S 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. 1 2 3 1 2 3 1 2 3 1 S 3 B SS S U S _ S F - 27 - 1 2 3 11) SPDIF_O (SPDIF Out Header) S_B _ B _ S _ _ B Pin No. 1 2 _ _ 3 Definition SPDIFO GND _ U _ B F _ USB3 F Hardware Installation 12) F_USB30 (USB 3.0/2.0 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. F_USB30 20 1 11 10 Pin No. 1 2 3 4 5 6 7 8 9 10 Definition VBUS SSRX1SSRX1+ GND SSTX1SSTX1+ GND DID1+ NC Pin No.

11 12 13 14 15 16 17 18 19 20 Definition D2+ D2GND SSTX2+ SSTX2GND SSRX2+ SSRX2VBUS No Pin F_U 13) F_USB1/F_USB2/F_USB3 (USB 2.0/1.1 Headers) B SS B_ 1 2 3 1 2 3 Hardware Installation 1 UG T The headers conform to USB 2.0/1.1 specification.

Each USB header can provide two USB ports via an optional USB bracket. For purchasing the optional USB bracket, please contact the local dealer. 1 1 S 1 2 3 1 2 3 1 9 10 1 2 Pin No. 1 2 3 4 5 6 7 8 9 10 Definition Power (5V) Power (5V) USB DXUSB DYUSB DX+ USB DY+ GND GND No Pin NC F _ _ S ••Do not plug the IEEE 1394 bracket (2x5-pin) cable into the USB 2.0/1.1 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. F_S B _ B _ B - 28 - 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 NDSRNRTSNCNTSNRI- F_U No Pin 9 10 1 2 F_USB30 B_ 15) TPM (Trusted Platform Module Header) You may connect a TPM (Trusted Platform Module) to this header. 19 1 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 S 3 Definition LAD0 GND NC ID SB3V SERIRQ GND NC NC SUSCLK S B SS S - 29 - S _ Hardware Installation S F 16) 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.

17) 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.



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••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). Hardware Installation - 30 - 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. •• 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.) - 31 - 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 - 32 - 2-2 The Main Menu A. Startup Guide (Default) The Startup Guide screen simplifies conventional complicated BIOS setup menus and presents only the most frequently used options in the easy-to-use interface.

It helps first-time users to perform basic system setups more quickly and easily. B. ST Mode (Smart Tweak Mode) Differing from traditional UEFI interface, the ST Mode provides a fancy and user-friendly BIOS environment where users can easily point and click through various settings and make adjustments for optimum performance. In ST Mode, you can use your mouse to move through the option menus for quick configuration or press <F2> to switch to the traditional BIOS Setup screen. •• 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. - 33 BIOS Setup C. Classic Setup Classic Setup is the conventional BIOS Setup interface where you can press the arrow keys on your keyboard 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: E6) Setup Menus Switch to ST Mode Enter Q-Flash Select Default Language Help Function Keys Configuration Items Current Settings Classic Setup Function Keys <f><g> <h><i> <Enter> <+>/<Page Up> <->/<Page Down> <F2> <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 Switch to ST Mode or Startup Guide screen. 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 BIOS Setup - 34 - BIOS Setup Menu □□ M.I.T. □□ System Information 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. Use this menu to configure the device boot order and advanced features available on the CPU. □□ BIOS Features □□ Peripherals □□ Power Management 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. □□ 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. - 35 - BIOS Setup 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. BIOS Setup - 36 - ``M.I.T. Current Status This screen provides information on CPU/memory frequencies/parameters. ``Advanced Frequency Settings && Processor Graphics Clock Allows you to set the onboard graphics clock.



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The adjustable range is from 400 MHz to 4000 MHz. (Default: Auto) && CPU Upgrade (Note) && CPU Clock Ratio Allows you to set the CPU frequency. Options may vary depending on the CPU being used. (Default: Auto) && CPU Frequency 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. (Note) This item is present only when you install a CPU that supports this feature. For more information about Intel® CPUs' unique features, please visit Intel's website. - 37 BIOS Setup ``Advanced CPU Core Settings && CPU Clock Ratio, CPU Frequency && K OC (Note) The settings above are synchronous to those under the same items on the Advanced Frequency Settings menu. Allows for increased performance by using certain CPUs.

(Default: Auto) Allows you to set the CPU PLL. Auto lets the BIOS automatically configure this setting. (Default: Auto) Allows you to set the Filter PLL. Auto lets the BIOS automatically configure this setting. (Default: Auto) Allows you to set the CPU Uncore ratio. The adjustable range is dependent on the CPU being used. Displays the current CPU Uncore frequency. && CPU PLL Selection && Filter PLL Level && Uncore Ratio && Uncore Frequency && Intel(R) Turbo Boost Technology (Note) && Turbo Ratio (1-Core Active~4-Core Active) (Note) Allows you to determine whether to enable the Intel CPU Turbo Boost technology. Auto lets the BIOS automatically configure this setting. (Default: Auto) Allows you to set the CPU Turbo ratios for different number of active cores.

Auto sets the CPU Turbo ratios according to the CPU specifications. (Default: Auto) Allows you to set a power limit for CPU Turbo mode. When the CPU power consumption exceeds the specified power limit, the CPU will automatically reduce the core frequency in order to reduce the power. Auto sets the power limit according to the CPU specifications. (Default: Auto) && Turbo Power Limit (Watts) (Note) This item is present only when you install a CPU that supports this feature.

For more information about Intel® CPUs' unique features, please visit Intel's website. - 38 - BIOS Setup && Core Current Limit (Amps) Allows you to set a current limit for CPU Turbo mode. When the CPU current exceeds the specified current limit, the CPU will automatically reduce the core frequency in order to reduce the current. Auto sets the power limit according to the CPU specifications. (Default: Auto) Allows you to select the number of CPU cores to enable in an Intel® multi-core CPU (the number of CPU cores may vary by CPU).

Auto lets the BIOS automatically configure this setting. (Default: Auto) Allows you to determine whether to enable multi-threading technology when using an Intel® CPU that supports this function. This feature only works for operating systems that support multi-processor mode. Auto lets the BIOS automatically configure this setting. (Default: Auto) Enables or disables Intel® CPU Enhanced Halt (C1E) function, a CPU power-saving function in system halt state.

When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. Auto lets the BIOS automatically configure this setting. (Default: Auto) Allows you to determine whether to let the CPU enter C3 mode in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. The C3 state is a more enhanced power-saving state than C1.

Auto lets the BIOS automatically configure this setting. (Default: Auto) Allows you to determine whether to let the CPU enter C6/C7 mode in system halt state. When enabled, the CPU core frequency and voltage will be reduced during system halt state to decrease power consumption. The C6/C7 state is a more enhanced power-saving state than C3. Auto lets the BIOS automatically configure this setting. (Default: Auto) Enables or disables Intel® Thermal Monitor function, a CPU overheating protection function. When enabled, the CPU core frequency and voltage will be reduced when the CPU is overheated. Auto lets the BIOS automatically configure this setting. (Default: Auto) Enables or disables Enhanced Intel® Speed Step Technology (EIST). Depending on CPU loading, Intel EIST technology can dynamically and effectively lower the CPU voltage and core frequency to decrease average power consumption and heat production.

Auto lets the BIOS automatically configure this setting. (Default: Auto) && No. of CPU Cores Enabled (Note 1) && Hyper-Threading Technology (Note 1) && CPU Enhanced Halt (C1E) (Note 1) && C3 State Support (Note 1) && C6/C7 State Support (Note 1) && CPU Thermal Monitor (Note 1) && CPU EIST Function (Note 1) && 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. (Note 1) This item is present only when you install a CPU that supports this feature.

For more information about Intel® CPUs' unique features, please visit Intel's website. (Note 2) This item is present only when you install a CPU and a memory module that support this feature. - 39 BIOS Setup && System Memory Multiplier && Memory Frequency (MHz) Allows you to set the system memory multiplier. Auto sets memory multiplier according to memory SPD data. (Default: Auto) The first memory frequency value is the normal operating frequency of the memory being used; the second is the memory frequency that is automatically adjusted according to the System Memory Multiplier settings. ``Advanced Memory Settings && Extreme Memory Profile (X.M.P.) (Note), System Memory Multiplier, Memory Frequency(MHz) && Memory Boot Mode The settings above are synchronous to those under the same items on the Advanced Frequency Settings menu. Provides memory detection and training methods.

Auto Lets the BIOS automatically configure this setting. (Default) Enable Fast Boot kip memory detection and training in some specific criteria for faster memory S boot. Disable Fast Boot Detect and train memory at every single boot. Provides three different memory performance enhancement settings: Normal (basic performance), Enhanced Stability, and Enhanced Performance. (Default: Normal) Manual and Advanced Manual allows the Channel Interleaving, Rank Interleaving, and memory timing settings below to be configurable. Options are: Auto (default), Manual, Advanced Manual. When using a non-XMP memory module or Extreme Memory Profile (X.M.P.) is set to Disabled, the value is displayed according to your memory specification.



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When Extreme Memory Profile (X.M.P.) is set to Profile1 or Profile2, the value is displayed according to the SPD data on the XMP memory. This item is present only when you install a CPU and a memory module that support this feature.

- 40 - && Memory Enhancement Settings && Memory Timing Mode && Profile DDR Voltage (Note) BIOS Setup && 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) Channel A/B Memory Sub Timings ``This sub-menu provides memory timing settings for each channel of memory. This sub-menu provides memory timing settings for each channel of memory. The respective timing setting screens are configurable only when Memory Timing Mode is set to Manual or Advanced Manual. 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. - 41 - BIOS Setup ``Advanced Voltage Settings This sub-menu allows you to set CPU, chipset and memory voltages. BIOS Setup - 42 - ``PC Health Status && Reset Case Open Status && Case Open 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". 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. - 43 - BIOS Setup && CPU Vcore/CPU VRIN/DRAM Voltage/+3.3V/+5V/+12V/CPU VAXG && CPU/System Temperature Displays the current system voltages. && CPU/CPU OPT/System Fan Speed Displays current CPU/system temperature. Displays current CPU/CPU_OPT/system fan (SYS_FAN1~3) speeds. && CPU/System Temperature Warning && CPU/CPU OPT/System Fan Fail Warning Sets the warning threshold for CPU/system temperature. When temperature exceeds the threshold, BIOS will emit warning sound. Options are: Disabled (default), 60oC/140oF, 70oC/158oF, 80oC/176oF, 90oC/194oF. && CPU Fan Speed Control (CPU_FAN Connector) 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) @@ Normal A llows the fan to run at different speeds according to the CPU temperature. @@ (Default) Silent Allows the fan to run at slow speeds. @@ Full Speed 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. @@ Normal A llows the fan to run at different speeds according to the CPU temperature.

@@ (Default) Silent Allows the fan to run at slow speeds. @@ Full Speed Allows the fan to run at full speeds. Allows you to control the fan speed. @@ Options are: 0.75 PWM value /oC ~ 2.50 PWM value /oC. @@@@ (Default) Silent Allows the fan to run at slow speeds. @@ Full Speed Allows the fan to run at full speeds. Allows you to control the fan speed. @@ Options are: 0.

75 PWM value /oC ~ 2.50 PWM value /oC. && Fan Speed Percentage && CPU OPT Fan Speed Control (CPU_OPT Connector) && Fan Speed Percentage && 1st System Fan Speed Control (SYS_FAN1 Connector) && Fan Speed Percentage BIOS Setup - 44 - && 2nd System Fan Speed Control (SYS_FAN2 Connector) @@@@ (Default) Silent Allows the fan to run at slow speeds. @@ Full Speed Allows the fan to run at full speeds. Allows you to control the fan speed. @@ Options are: 0.75 PWM value /oC ~ 2.50 PWM value /oC. @@@@ (Default) Silent Allows the fan to run at slow speeds. @@ Full Speed Allows the fan to run at full speeds.

Allows you to control the fan speed. @@@@ Auto lets the BIOS automatically configure this setting. (Default: Auto) Allows you to configure the DMI link speed. Auto Lets the BIOS automatically configure this setting. Enabled Sets the DMI link speed to Gen 2.

(Default) Disabled Sets the DMI link speed to Gen 1. @@@@ The date format is week (read-only), month, date, and year. @@ Sets the system time. The time format is hour, minute, and second. For example, 1 p.

m. is 13:0:0. @@@@ (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 - 47 - BIOS Setup 2-5 BIOS Features && Boot Option Priorities && Bootup NumLock State Specifies the overall boot order from the available devices. 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. Enables or disables Numlock feature on the numeric keypad of the keyboard after the POST. (Default: Enabled) - 48 - BIOS Setup && Security Option && Full Screen LOGO Show 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 A password is required for booting the system and for entering the BIOS Setup 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) && Fast Boot && VGA Support Enables or disables Fast Boot to shorten the OS boot process. Ultra Fast provides the fastest bootup speed. (Default: Disabled) Allows you to select which type of operating system to boot. Auto Enables legacy option ROM only. EFI Driver Enables EFI option ROM.



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(Default) This item is configurable only when Fast Boot is set to Enabled or Ultra Fast. Disabled All USB devices are disabled before the OS boot process completes. Full Initial All USB devices are functional in the operating system and during the POST. Partial Initial Part of the USB devices are disabled before the OS boot process completes. (Default) This item is configurable only when Fast Boot is set to Enabled.

This item is disabled when Fast Boot is set to Ultra Fast. Disabled All PS/2 devices are disabled before the OS boot process completes. Enabled All PS/2 devices are functional in the operating system and during the POST. (Default) This item is configurable only when Fast Boot is set to Enabled. This item is disabled when Fast Boot is set to Ultra Fast.

Disabled Disables booting from the network. (Default) Enabled Enables booting from the network. This item is configurable only when Fast Boot is set to Enabled or Ultra Fast. Normal Boot Enables normal bootup upon the return of the AC power. (Default) Fast Boot Keeps the Fast Boot settings upon the return of the AC power. This item is configurable only when Fast Boot is set to Enabled or Ultra Fast. Allows you to determine whether to limit CPUID maximum value. Set this item to Disabled for Windows XP operating system; set this item to Enabled for legacy operating system such as Windows NT4.0. (Default: Disabled) Enables or disables Intel® Execute Disable Bit function.

This function may enhance protection for the computer, reducing exposure to viruses and malicious buffer overflow attacks when working with its supporting software and system. (Default: Enabled) This item is present only when you install a CPU that supports this feature. For more information about Intel® CPUs' unique features, please visit Intel's website. - 49 BIOS Setup && USB Support && PS2 Devices Support && NetWork Stack Driver Support && Next Boot After AC Power Loss && Limit CPUID Maximum (Note) && Execute Disable Bit (Note) (Note) && Intel Virtualization Technology (Note) && Intel TXT(LT) Support (Note) Enables or disables Intel® Virtualization Technology. Virtualization enhanced by Intel® 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) Enables or disables Intel® Trusted Execution Technology (Intel® TXT). Intel® Trusted Execution Technology provides a hardware-based security foundation. (Default: Disabled) Enables or disables Intel® Virtualization Technology for Directed I/O. (Default: Enabled) && VT-d (Note) && Windows 8 Features && CSM Support Allows you to select the operating system to be installed.

(Default: Other OS) && Boot Mode Selection 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 Windows 8 Features 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. && LAN PXE Boot Option ROM && Storage Boot Option Control && Other PCI Device ROM Priority Allows you to select whether to enable the UEFI or legacy option ROM for the storage device controller. Disabled Disables option ROM. UEFI Only Enables UEFI option ROM only. Legacy Only Enables legacy option ROM only. (Default) 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. 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) This item is configurable only when CSM Support is set to Always. 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: Disabled) && Network stack (Note) This item is present only when you install a CPU that supports this feature. For more information about Intel® CPUs' unique features, please visit Intel's website. - 50 - BIOS Setup && Ipv4 PXE Support && Ipv6 PXE Support 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. && Administrator Password && User 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. 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. - 51 - BIOS Setup 2-6 Peripherals && Initial Display Output Specifies the first initiation of the monitor display from the installed PCI graphics card, PCI Express graphics card or the onboard graphics. IGFX Sets the onboard graphics as the first display. PCIe 1 Slot Sets the graphics card on the PCIEX16 slot as the first display. (Default) PCIe 2 Slot Sets the graphics card on the PCIEX4 slot as the first display.



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