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You can read the recommendations in the user guide, the technical guide or the installation guide for GIGABYTE GA-Z97P-D3. You'll find the answers to all your questions on the GIGABYTE GA-Z97P-D3 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-Z97P-D3**  
**User guide GIGABYTE GA-Z97P-D3**  
**Operating instructions GIGABYTE GA-Z97P-D3**  
**Instructions for use GIGABYTE GA-Z97P-D3**  
**Instruction manual GIGABYTE GA-Z97P-D3**

## GA-Z97P-D3

User's Manual  
Rev. 1001  
12ME-Z97PDS-1001R



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**Manual abstract:**

© 2014 GIGABYTE TECHNOLOGY CO., LTD. All rights reserved. In order to assist in the use of this product, 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. Example: Table of Contents GA-Z97P-D3 Motherboard Layout..

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..... 40 -3- GA-Z97P-D3 Motherboard Layout KB\_MS COMA ATX\_12V\_2X4 CPU\_FAN HDMI R\_USB R\_USB30 LGA1150 ATX AUDIO Realtek® GbE LAN BAT DDR3\_4 DDR3\_2 DDR3\_3 PCIEX16 PCIEX1\_1 F\_USB30 DDR3\_1 SYS\_FAN3 B\_BIOS M\_BIOS Intel® Z97 PCIe to PCI Bridge CLR\_CMOS F\_USB3 F\_PANEL F\_USB2 F\_USB1 SATA3 5 3 1 4 2 0 USB\_LAN SYS\_FAN1 SYS\_FAN2 GA-Z97P-D3 CODEC PCIEX1\_2 PCIEX4 PCI1 PCI2 iTE® Super I/O F\_AUDIO SPDIF\_O COMB LPT Box Contents 55 GA-Z97P-D3 motherboard 55 Motherboard driver disk 55 User's Manual 55 Two SATA cables 55 I/O Shield The box contents above are for reference only and the actual items shall depend on the product package you obtain.

The box contents are subject to change without notice. -4- GA-Z97P-D3 Motherboard Block Diagram 1 PCI Express x16 CPU CLK+/- (100 MHz) LGA1150 CPU HDMI DDR3 1600/1333 MHz Dual Channel Memory PCIe CLK (100 MHz) x16 PCI Express Bus 1 PCI Express x4 LAN RJ45 Realtek® GbE LAN PCI Express Bus x1 x4 x1 x1 PCIe to PCI Bridge DMI 2.0 FDI Dual BIOS 6 SATA 6Gb/s Intel® Z97 4 USB 3.0/2.0 10 USB 2.

0/1.1 2 PCI Express x1 LPC Bus CODEC LPT iTE® Super I/O COM PS/2 KB/Mouse MIC (Center/Subwoofer Speaker Out) Line Out (Front Speaker Out) Line In (Rear Speaker Out) -5S/SPDIF Out PCI CLK (33 MHz) 2 PCI For detailed product information/limitation(s), refer to "1-2 Product Specifications." 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. -6- 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® Z97 Express Chipset □□ 4 x DDR3 DIMM sockets supporting up to 32 GB of system memory \* □□ Due to a Windows 32-bit operating system limitation, when more than 4 GB of physical 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: - □ x HDMI port, supporting a maximum resolution of 4096x2160@24Hz or 1 2560x1600@60Hz Audio □□ □□ □□ - Maximum shared memory of 1 GB Realtek® ALC887 codec High Definition Audio 2/4/5.

1/7.1-channel \* Support for HDMI 1.4a version. □□ Support for S/PDIF Out LAN \* □ configure 7.1-channel audio, you have to use an HD front panel audio module To and enable the multi-channel audio feature through the audio driver.

□□ Realtek® GbE LAN chip (10/100/1000 Mbit) \* □ optimum performance, if only one PCI Express graphics card is to be installed, For be sure to install it in the PCIEX16 slot. Expansion Slots □□ 1 x PCI Express x16 slot, running at x16 (PCIEX16) Multi-Graphics □□ Technology Storage Interface □□ USB □□ □□ □□ □□ (The PCIEX16 slot conforms to PCI Express 3.0 standard.) 1 x PCI Express x16 slot, running at x4 (PCIEX4) 2 x PCI Express x1 slots (The PCIEX4 and PCI Express x1 slots conform to PCI Express 2.



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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. 1 CPU\_FAN: SYS\_FAN1/SYS\_FAN2: SYS\_FAN3: CPU\_FAN 1 Pin No. 1 2 3 4 Definition GND +12V Sense Speed Control Pin No. 1 2 3 4 Definition GND 1 +12V/Speed Control SYS\_FAN3 Sense VCC Pin No. 1 2 3 Definition GND +12V N/A SYS\_FAN1/2 •• 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. - 13 - DEBUG PORT DEBUG PORT DEBUG PORT DEBUG PORT DEBUG PORT DEBUG PORT 5) 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 1.5Gb/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 5 4 1 1 1 7 7 7 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.

6) F\_PANEL (Front Panel Header) Connect the power switch, reset switch, speaker, 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. Speaker Power LED Power Switch •• PLED/PWR (Power LED, Yellow/Purple): System Status LED S0 On S3/S4/S5 Off 20 19 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). PLED+ PLEDPW+ PW- SPEAK+ 2 1 HD+ HDRESRES+ CICI+ PWR\_LED+ PWR\_LED PW- LED- SPEAK- Hard Drive Activity LED Reset Switch Power LED Chassis Intrusion Header •• 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. - 14 - 7) 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 GND F\_ 2 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 F\_ 3 MIC Power 4 NC 5 Line Out (R) 6 NC 7 NC 8 No Pin 9 Line Out (L) 10 NC 9 1 \_U 10 2 S S 2 3 U\_B\_ B SS •• The front panel audio header supports HD audio by default. •• 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, \_S please contact the chassis manufacturer. 1 1 1 8) SPDIF\_O (S/PDIF Out Header) 1 2 3 S B This header supports digital S/PDIF Out and connects a S/PDIF digital audio cable (provided by expansion S 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. S\_B\_ For information about connecting the S/PDIF digital audio cable, carefully read the manual for your expansion B card. 1 2 3 1 2 3 1 2 3 \_B S\_ B F\_USB30 1 F\_ U Pin No. 1 2 Definition SPDIF0 GND F\_ \_ S\_ \_ USB ports. B F\_ 9) F\_USB30 (USB 3.0/2.0 Header) The header conforms to USB 3.0/2.0 specification and can provide two For purchasing the optional 3.5" front panel that provides two USB 3.

0/2.0 ports, please contact the local dealer. 20 1 U B SS S S F Prior to installing the USB front panel, be sure to turn off your computer and unplug the power cord from the power outlet to prevent damage to the USB front panel. S - 15 - 1 2 3 1 2 3 S 1 2 3 1 11 10 Pin No. 1 2 3 B\_ 4 5 6 7 Definition VBUS \_ \_ 3 SSRX1SSRX1+ GND SSTX1SSTX1+ GND Pin No.

8 9 10 B 11 12 13 14 Definition D1D1+ NC SS D2+ D2GND SSTX2+ 1 Pin No. \_ U \_ 15 B 16 17 18 F\_USB3 19 F 20 \_S Definition SSTX2GND SSRX2+ SSRX2VBUS No Pin 1 1 1 2 3 S 10) F\_USB1/2/3 (USB 2.0/1.1 Headers) The headers conform to USB 2.0/1.1 specification. Each USB header can provide two USB ports via an optional USB bracket.



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For purchasing the optional USB bracket, please contact the local dealer. Pin No. 1 2 3 4 5 Definition Power (5V) Power (5V) USB DX USB DY USB DX+ Pin No. 6 7 8 9 10 Definition USB DY+ GND GND No Pin NC 9 10 1 2 •• 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. 11) COMB (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 Definition NDC DNS IN NS OUT ND TR GND Pin No. 6 7 8 9 10 Definition NDS RN RTS NCTS NR INo Pin 9 10 1 2 12) LPT (Parallel Port Header) The LPT header can provide one parallel port via an optional LPT port cable. For purchasing the optional LPT port cable, please contact the local dealer. Pin No. 1 2 3 4 5 6 7 8 9 Definition STBA FDP0 ERR PD1 INIT PD2 SLIN PD3 Pin No. 10 11 12 13 14 15 16 17 18 Definition GND PD4 GND PD5 GND PD6 GND PD7 GND Pin No. 19 20 21 22 23 24 25 26 Definition ACK GND BUSY GND PE No Pin SLCT GND 25 1 26 2 - 16 - 13) 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. 14) CLR\_CMOS (Clear CMOS Jumper) Use this jumper to clear the BIOS configurations 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). 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.) - 17 - 2-1 Startup Screen The following startup Logo screen will appear when the computer boots. (Sample BIOS Version: F1h) Function Keys There are three different BIOS modes as follows and you can use the <F2> key to switch between these modes. The Startup Guide screen (default) 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. 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. 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. •• 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. 2-2 M.I.T. This section provides information on the BIOS version, CPU base clock, CPU frequency, memory frequency, total memory size, CPU temperature, Vcore, and memory voltage. - 18 - 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.

) ``M.I.T. Current Status This screen provides information on CPU/memory frequencies/parameters. && Performance Upgrade (Note) && CPU Base Clock Provides you with five different overclocking configurations.



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Options are: 20% Upgrade, 40% Upgrade, 60% Upgrade, 80% Upgrade, 100% Upgrade. (Default: Auto) Allows you to manually set the CPU base clock in 0.01 MHz increments. (Default: Auto) Important: It is highly recommended that the CPU frequency be set in accordance with the CPU specifications. Allows you to manually set the host clock frequency (which controls CPU, PCIe, and memory frequencies) in 0.

01 MHz increments. This item is configurable only when CPU Base Clock is set to Manual. Allows you to configure the Processor Base Clock by multiplying the Host/PCIe Clock Frequency by several preset host clock multipliers. This item is configurable only when CPU Base Clock is set to Manual. Enables or disables CPU/PCIe Spread Spectrum.

(Default: Auto) && Host/PCIe Clock Frequency (Note) && Processor Base Clock (Gear Ratio) (Note) && Spread Spectrum Control (Note) && Host Clock Value && Processor Graphics Clock This value is determined by multiplying the Host/PCIe Clock Frequency value by the Processor Base Clock (Gear Ratio) value. Allows you to set the onboard graphics clock. The adjustable range is from 400 MHz to 4000 MHz. (Default: Auto) Allows you to set the CPU frequency. Options may vary depending on the CPU being used.

(Default: Auto) && CPU Upgrade (Note) && CPU Clock Ratio && 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. ``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) (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. - 19 - && CPU PLL Selection && Filter PLL Level && Uncore Ratio 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. && 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) 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) && Turbo Power Limit (Watts) && Core Current Limit (Amps) && No. of CPU Cores Enabled (Note) && Hyper-Threading Technology (Note) && CPU Enhanced Halt (C1E) (Note) && C3 State Support (Note) && C6/C7 State Support (Note) (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. - 20 - && CPU Thermal Monitor (Note 1) && CPU EIST Function (Note 1) 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) 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) 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. && Extreme Memory Profile (X.M.P.) (Note 2) && System Memory Multiplier && Memory Frequency (MHz) ``Advanced Memory Settings && Extreme Memory Profile (X.

M.P.) (Note 2), System Memory Multiplier, Memory Frequency(MHz) && Memory Overclocking Profiles (Note 2) The settings above are synchronous to those under the same items on the Advanced Frequency Settings menu.



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Allows you to set the memory frequency. Options may vary depending on the memory being used. (Default: Disabled) Provides memory detection and training methods. Auto  Lets the BIOS automatically configure this setting. (Default) Enable Fast Boot  Skip memory detection and training in some specific criteria for faster memory boot. Disable Fast Boot Detect and train memory at every single boot.  && Memory Boot Mode && Memory Enhancement Settings  Provides three different memory performance enhancement settings: Normal (basic performance), Enhanced Stability, and Enhanced Performance.

(Default: Normal) (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 memory module that supports this feature. - 21 - && Memory Timing Mode && Profile DDR Voltage 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. 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. 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 Interleaving && Rank Interleaving ``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. ``Advanced Voltage Settings ``PC Health Status && Reset Case Open Status This sub-menu allows you to set CPU, chipset and memory voltages. && 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.

Displays the current system voltages. && CPU Vcore/CPU VRIN/DRAM Voltage/+3.3V/+5V/+12V/CPU VAXG && CPU/System Temperature && CPU/System Fan Speed Displays current CPU/system temperature. Displays current CPU/system fan speeds. && CPU/System Temperature Warning && CPU/System Fan Fail Warning Sets the warning threshold for CPU/system temperature. When CPU/system temperature exceeds the threshold, BIOS will emit warning sound. Options are: Disabled (default), 60oC/140oF, 70oC/158oF, 80oC/176oF, 90oC/194oF. 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) - 22 - && CPU Fan Speed Control (CPU\_FAN Connector) && Fan Speed Percentage @ @ Normal  Allows the fan to run at different speeds according to the CPU temperature.

You can adjust the fan speed with EasyTune based on your system requirements. (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. @ @ @ @ @ (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. @ @ @ @ @ 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) 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) && Security Option && Full Screen LOGO Show && 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. (Default) This item is configurable only when Fast Boot is set to Enabled or Ultra Fast. - 25 - && USB Support && PS2 Devices Support Disabled  All USB devices are disabled before the OS boot process completes.



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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) 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) && NetWork Stack Driver Support && Next Boot After AC Power Loss && Limit CPUID Maximum (Note) && Execute Disable Bit (Note) && Intel Virtualization Technology (Note) && Intel TXT(LT) Support (Note) && Dynamic Storage Accelerator 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® Dynamic Storage Accelerator. When enabled, the hard drive I/O performance will be adjusted according to hard drive load.

(Default: Disabled) Enables or disables Intel® Virtualization Technology for Directed I/O. (Default: Enabled) && VT-d (Note) && Windows 8 Features Allows you to select the operating system to be installed. (Default: Other OS) (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. - 26 - && CSM Support && 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. 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. 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) 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 && 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. - 27 - 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. 2-5 Peripherals && Initial Display Output && XHCI Mode 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.

PCI  Sets the graphics card on the PCI slot as the first display. Allows you to determine the operating mode for the xHCI controller in OS. Smart Auto This mode is available only when the BIOS supports the xHCI controller in the pre-boot  environment.



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This mode is similar to Auto, but it adds the capability to route the ports to xHCI or EHCI according to setting used in previous boots (for non-G3 boot) in the pre-boot environment. This allows the use of USB 3.

0 devices prior to OS boot. xHCI controller enabling and rerouting should follow the steps in Auto, when previous boot routes ports to EHCI. Note: This is the recommended mode when BIOS has xHCI preboot support. (Default)  Auto  BIOS routes the sharable ports to EHCI controller. Then it uses ACPI protocols to provide an option to enable the xHCI controller and reroute the sharable ports.

Note: This is the recommended mode when BIOS does NOT have xHCI pre-boot support.  Enabled  All shared ports are eventually routed to the xHCI controller during the BIOS boot process.  If BIOS does not have pre-boot support for the xHCI controller, it should initially route the sharable ports to the EHCI controller and then prior to OS boot it should route the ports to xHCI controller. Note: OS has to provide support for the xHCI controller in this mode. If the OS does not provide support, all sharable ports won't work. - 28 - && Audio Controller  Disabled  USB 3.0 ports are routed to the EHCI controller and the xHCI controller is turned  The off. All USB 3.0 devices function as High Speed devices regardless of xHCI software support/availability. Enables or disables the onboard audio function.

(Default: Enabled) If you wish to install a 3rd party add-in audio card instead of using the onboard audio, set this item to Disabled. Enables or disables the onboard graphics function. (Default: Enabled) Allows you to set the onboard graphics memory size. Options are: 32M~1024M. (Default: 64M) && Intel Processor Graphics && Intel Processor Graphics Memory Allocation && DVMT Total Memory Size Allows you to allocate the DVMT memory size of the onboard graphics. Options are: 128M, 256M, MAX. (Default: MAX) Enables or disables Intel® Rapid Start Technology. (Default: Disabled) Allows USB keyboard/mouse to be used in MS-DOS. (Default: Enabled) && Intel(R) Rapid Start Technology && Legacy USB Support && XHCI Hand-off && EHCI Hand-off Determines whether to enable XHCI Hand-off feature for an operating system without XHCI Hand-off support. (Default: Enabled) Determines whether to enable EHCI Hand-off feature for an operating system without EHCI Hand-off support.

(Default: Disabled) Displays a list of connected USB mass storage devices. This item appears only when a USB storage device is installed. Set to Enabled to ensure proper device functionality when chaining two KVM switches. (Default: Disabled) && USB Storage Devices && Two Layer KVM Switch && OnBoard LAN Controller Enables or disables the onboard LAN function. (Default: Enabled) If you wish to install a 3rd party add-in network card instead of using the onboard LAN, set this item to Disabled.

``SATA Configuration && Integrated SATA Controller && SATA Mode Selection Enables or disables the integrated SATA controllers. (Default: Enabled) Enables or disables RAID for the SATA controllers integrated in the Chipset or configures the SATA controllers to AHCI mode.  IDE  Configures the SATA controller to IDE mode.  RAID  Enables RAID for the SATA controller.  AHCI  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) - 29 - ``Serial ATA Port 0/1/2/3/4/5 && Port 0/1/2/3/4/5 && Hot plug Enables or disables each SATA port.

(Default: Enabled) Enables or disable the hot plug capability for each SATA port. (Default: Disabled) Enables or disables support for external SATA devices. (Default: Disabled) && External SATA ``Super IO Configuration  This section provides information on the super I/O chip and allows you to configure the serial port and parallel port. && Serial Port A (Serial Port on the Back Panel) && Serial Port B (Onboard COMB Connector) && Parallel Port Enables or disables the onboard serial port. (Default: Enabled) Enables or disables the onboard serial port. (Default: Enabled) Enables or disables the onboard parallel port. (Default: Enabled) && Device Mode  This item is configurable only when Parallel Port is set to Enabled. Selects an operating mode for the onboard parallel (LPT) port.

Options are: Standard Parallel Port Mode (Default), EPP Mode (Enhanced Parallel Port), ECP Mode (Extended Capabilities Port), EPP Mode & ECP Mode. ``Intel(R) Smart Connect Technology && ISCT Support Enables or disables Intel® Smart Connect Technology. (Default: Disabled) This sub-menu provides information on LAN configuration. ``Realtek PCIe GBE Family Controller - 30 - 2-6 Power Management && Power Loading && Resume by Alarm Enables or disables dummy load. When the power supply is at low load, a self-protection will activate causing it to shutdown or fail. If this occurs, please set to Enabled. Auto lets the BIOS automatically configure this setting. (Default: Auto) Determines whether to power on the system at a desired time. (Default: Disabled) If enabled, set the date and time as following:  Wake up day: Turn on the system at a specific time on each day or on a specific day in a month.  Wake up hour/minute/second: Set the time at which the system will be powered on automatically.

Note: When using this function, avoid inadequate shutdown from the operating system or removal of the AC power, or the settings may not be effective. Configures the way to turn off the computer in MS-DOS mode using the power button.  Instant-Off  Press the power button and then the system will be turned off instantly. (Default)  Delay 4 Sec.  Press and hold the power button for 4 seconds to turn off the system.

If the power  button is pressed for less than 4 seconds, the system will enter suspend mode. Allows you to determine whether to let the onboard graphics enter standby mode to decrease power consumption. (Default: Enabled) Determines the state of the system after the return of power from an AC power loss.

Always Off  system stays off upon the return of the AC power. (Default)  The  Always On  The system is turned on upon the return of the AC power.

Memory  The system returns to its last known awake state upon the return of the AC power. && Soft-Off by PWR-BTTN && RC6(Render Standby) && AC BACK - 31 - && Power On By Keyboard && Power On Password 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)  Any Key  Press any key to turn on the system.



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Keyboard 98  Press POWER button on the Windows 98 keyboard to turn on the system. Password  Set a password with 1~5 characters 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. Enables or disables the Active State Power Management function (ASPM).

(Default: Disabled) && Power On By Mouse && ErP && Platform Power Management && PEG ASPM && PCIe ASPM Allows you to configure the ASPM mode for the device connected to the CPU PEG bus. Auto lets the BIOS automatically configure this setting. This item is configurable only when Platform Power Management is set to Enabled. (Default: Auto) Allows you to configure the ASPM mode for the device connected to Chipset's PCI Express bus. Auto lets the BIOS automatically configure this setting.

This item is configurable only when Platform Power Management is set to Enabled. (Default: Auto) Allows you to configure the ASPM mode for the CPU side of the DMI link. Auto lets the BIOS automatically configure this setting. This item is configurable only when Platform Power Management is set to Enabled. (Default: L0sL1) Allows you to configure the ASPM mode for both CPU side and Chipset side of the DMI link.

Auto lets the BIOS automatically configure this setting. This item is configurable only when Platform Power Management is set to Enabled. (Default: Enabled) && CPU DMI Link ASPM Control && PCH DMI Link ASPM Control - 32 - 2-7 Save & Exit && Save & Exit Setup && Exit Without Saving 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 default 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. 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). && Load Optimized Defaults && Boot Override && Save Profiles && Load Profiles - 33 - Chapter 3 Appendix 3-1 Configuring SATA Hard Drive(s) 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 setup disk. •• Motherboard driver disk.

•• A USB thumb drive Configuring the Onboard SATA Controller 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. B. Configuring SATA controller mode in BIOS Setup Make sure to configure the SATA controller mode correctly in system BIOS Setup. For the BIOS Setup menus, refer to Chapter 2, "BIOS Setup," "Integrated Peripherals." Steps: 1. Turn on your computer and press <Delete> to enter BIOS Setup during the POST (Power-On Self-Test). Go to Peripherals\SATA Configuration, make sure Integrated SATA Controller is enabled. To create RAID, set SATA Mode Selection to RAID. If you do not want to create RAID, set this item to IDE or AHCI. 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. C-1. UEFI RAID Configuration Only Windows 8.1/8 64-bit supports UEFI RAID configuration. Step: 1. After you set the SATA controller to RAID mode, go to BIOS Features and set Windows 8 Features to Windows 8 and CSM Support to Never. Save the changes and exit BIOS Setup. 2. After the system reboot, enter BIOS Setup again.

Then enter the Peripherals\Intel(R) Rapid Storage Technology sub-menu. 3. On the Intel(R) Rapid Storage Technology menu, press <Enter> on Create RAID Volume to enter the Create RAID Volume screen. Enter a volume name with 1~16 letters (letters cannot be special characters) under the Name item and press <Enter>. Then, select a RAID level.

RAID levels supported include RAID 0, RAID 1, RAID 10, and RAID 5 (the selections available depend on the number of the hard drives being installed). Next, use the down arrow key to move to Select Disks. 4. Under Select Disks item, select the hard drives to be included in the RAID array. Press the <Space> key on the hard drives to be selected (selected hard drives are marked with "X").



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