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You can read the recommendations in the user guide, the technical guide or the installation guide for GIGABYTE GA-B85-HD3. You'll find the answers to all your questions on the GIGABYTE GA-B85-HD3 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-B85-HD3
User guide GIGABYTE GA-B85-HD3
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GA-B85-HD3

User's Manual
Rev. 2001
12ME-885HD3-2001R



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Manual abstract:

© 2013 Oct. 17, 2013 Copyright © 2013 GIGA-BYTE 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-B85-HD3 Motherboard Layout..

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..... 36 -3- GA-B85-HD3 Motherboard Layout KB_MS_USB ATX_12V_2X4 VGA DVI CPU_FAN LGA1150 HDMI ATX_R_USB30 USB_LAN SYS_FAN2 DDR3_3 PCIEX16 PCIEX1_1 CODEC PCIEX1_2 PCIEX4 PCI1 PCIe to PCI Bridge Intel® B85 SATA3 1 0 3 2 SATA2 5 4 M_BIOS iTE Super I/O ® PCI2 SPDIF_IN B_BIOS CLR_CMOS F_AUDIO COMA SPDIF_O F_PANEL LPT F_USB2 F_USB1 Box Contents 55 GA-B85-HD3 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- SYS_FAN3 GA-B85-HD3 DDR3_2 DDR3_1 Realtek GbE LAN ® SYS_FAN1 BAT DDR3_4 F_USB30 AUDIO GA-B85-HD3 Motherboard Block Diagram 1 PCI Express x16 DVI-D PCIe CLK (100 MHz) HDMI CPU CLK+/- (100 MHz) LGA1150 CPU DDR3 1600/1333 MHz Dual Channel Memory PCI Express Bus x16 LAN RJ45 DMI 2.0 FDI D-Sub Dual BIOS 2 SATA 3Gb/s Intel® B85 4 SATA 6Gb/s 4 USB 3.0/2.0 8 USB 2.0/1.1 LPC Bus LPT COM PS/2 KB/Mouse S/PDIF In S/PDIF Out PCIe CLK (100 MHz) PCI Express Bus x1 x1 x4 Realtek® GbE LAN x1 x1 PCIe to PCI Bridge 2 PCI Express x1 PCI Bus 1 PCI Express x4 iTE® Super I/O CODEC 2 PCI PCI CLK (33 MHz) For detailed product information/limitation(s), refer to "1-2 Product Specifications." -5- Rear Speaker Out Center/Subwoofer Speaker Out Side Speaker Out MIC Line Out Line In 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® B85 Express Chipset □□ 4 x 1.5V 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: - 1 x D-Sub port, supporting a maximum resolution of 1920x1200 - 1 x DVI-D port, supporting a maximum resolution of 1920x1200 - □ x HDMI port, supporting a maximum resolution of 4096x2160 1 * □ DVI-D port does not support D-Sub connection by adapter. The * □ Support for HDMI 1.4a version. Audio □□ □□ □□ □□ □□ - □ Maximum shared memory of 1 GB Realtek® ALC892 codec High Definition Audio 2/4/5.1/7.1-channel Support for S/PDIF In Support for S/PDIF Out LAN □□ Realtek® GbE LAN chip (10/100/1000 Mbit) Expansion Slots □□ 1 x PCI Express x16 slot, running at x16 (The PCI Express x16 slot conforms to PCI Express 3.0 standard.) Multi-Graphics □□ Support for AMD CrossFire™ technology Technology Storage Interface □□ Chipset: - 4 x SATA 6Gb/s connectors (SATA3 0~SATA3 3) - 2 x SATA 3Gb/s connectors (SATA2 4~SATA2 5) □□ 1 x PCI Express x16 slot, running at x4 (PCIEX4) □□ 2 x PCI Express x1 slots (The PCIEX4 and PCIEX1 slots conform to PCI Express 2.



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0 standard.) □□ 2 x PCI slots * □ optimum performance, if only one PCI Express graphics card is to be installed, For be sure to install it in the PCIEX16 slot.

-7- USB Internal Connectors Back Panel Connectors □□ Chipset: - □ x USB 3.0/2.0 ports (2 ports on the back panel, 2 ports available through 4 the internal USB header) - □ x USB 2.0/1.1 ports (4 ports on the back panel, 4 ports available through 8 the internal USB headers) □□ 1 x 24-pin ATX main power connector □□ 1 x 8-pin ATX 12V power connector □□ 4 x SATA 6Gb/s connectors □□ 2 x SATA 3Gb/s connectors □□ 1 x CPU fan header □□ 3 x system fan headers □□ 1 x front panel header □□ 1 x front panel audio header □□ 1 x S/PDIF Out header □□ 1 x S/PDIF In header □□ 1 x USB 3.0/2.0 header □□ 2 x USB 2.0/1.1 headers □□ 1 x serial port header □□ 1 x parallel port header □□ 1 x Clear CMOS jumper □□ 1 x PS/2 keyboard/mouse port □□ 1 x D-Sub port □□ 1 x DVI-D port □□ 1 x HDMI port □□ 2 x USB 3.0/2.0.

0 ports □□ 4 x USB 2.0/1.1 ports □□ 1 x RJ-45 port □□ □□ 6 x audio jacks (Center/Subwoofer Speaker Out, Rear Speaker Out, Side Speaker Out, Line In, Line Out, Mic In) □□ iTE® I/O Controller Chip □□ □□ □□ □□ □□ System voltage detection CPU/System temperature detection CPU/System fan speed detection CPU/System overheating warning CPU/System fan fail warning CPU/System fan speed control I/O Controller Hardware Monitor * □ Whether the fan speed control function is supported will depend on the cooler you install. BIOS □□ □□ □□ □□ Unique Features □□ □□ 2 x 64 Mbit flash Use of licensed AMI EFI BIOS Support for DualBIOS™ PnP 1.0a, DMI 2.0, SM BIOS 2.6, ACPI 2.0a Support for Q-Flash Support for Xpress Install -8- Unique Features □□ Support for APP Center Bundled Software Operating System Form Factor □□ □□ □□ □□ □□ - @BIOS - EasyTune - EZ Setup - USB Blocker - Fast Boot - Smart TimeLock - Smart Recovery 2 Support for ON/OFF Charge Norton Internet Security (OEM version) Intel® Rapid Start Technology Intel® Smart Connect Technology Intel® Small Business Advantage Support for Windows 8.1/8/7 * □ Available applications in APP Center may differ by motherboard model. Supported functions of each application may also differ depending on motherboard specifications.

* □ you plan to install Windows 8.1, please download the latest drivers from If GIGABYTE's website. □□ ATX Form Factor; 30.5cm x 19cm * □ GIGABYTE reserves the right to make any changes to the product specifications and product-related information without prior notice. * □ Please visit the Support & Downloads\Utility page on GIGABYTE's website to check the supported operating system(s) for the software listed in the "Unique Features" and "Bundled Software" columns. 1-3 Installing the CPU Read the following guidelines before you begin to install the CPU: •• Make sure that the motherboard supports the CPU. (Go to GIGABYTE's website for the latest CPU support list.) •• Always turn off the computer and unplug the power cord from the power outlets supports a maximum resolution of 1920x1200 (the actual resolutions supported depend on the monitor being used). Connect a monitor that supports DVI-D connection to this port. HDMI Port 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, but the actual resolutions supported are dependent on the monitor being used. TrATX_12V_2X4: 8 4 5 1 ATX_12V_2X4 Pin No. 1 2 3 4 ATX: Definition Pin No.

GND (Only for 2x4-pin 12V) 5 GND (Only for 2x4-pin 12V) 6 GND 7 GND 8 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 +12V (Only for 2x4-pin 12V) +12V (Only for 2x4-pin 12V) +12V +12V 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) 12 24 Pin No. 1 2 3 4 5 6 7 8 9 10 11 12 1 ATX 13 3/4 CPU_FAN/SYS_FAN1/2/3 (Fan Headers) The motherboard has a 4-pin CPU fan header (CPU_FAN), two 4-pin (SYS_FAN1~SYS_FAN2) and a 3-pin (SYS_FAN3) system fan headers. 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: SYS_FAN1/2: 1 CPU_FAN Pin No. 1 2 3 4 Definition GND +12V Sense Speed Control 1 SYS_FAN1/2 Pin No. 1 2 3 4 Definition GND +12V/Speed Control Sense VCC - 14 - SYS_FAN3 1 SYS_FAN3 Pin No. Definition 1 GND DEBUG 2 +12V PORT 3 N/A DEBUG PORT DEBUG PORT DEBUG PORT •• 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. 5) SATA3 0/1/2/3 (SATA 6Gb/s Connectors) SATA3 1 0 3 2 1 1 7 7 PORT 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. DEBUG DEBUG PORT Pin No. 1 2 3 4 Definition GND TXP TXN GND Pin No. 5 6 7 Definition RXN RXP GND 6) SATA2 4/5 (SATA 3Gb/s Connectors) The SATA connectors conform to SATA 3Gb/s standard and are compatible with SATA 1.5Gb/s standard.

Each SATA connector supports a single SATA device. SATA2 5 4 1 7 Pin No. 1 2 3 4 Definition GND TXP TXN GND Pin No. 5 6 7 Definition RXN RXP GND 7) 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).



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Used batteries must be handled in accordance with local environmental regulations.

••••• - 15 - 8) 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. Speaker Power LED Power Switch PLED+ PLEDPW+ PW- SPEAK+ 2 1 HD+ HDRESRES+ CICI+ PWR_LED+ PWR_LED PWR_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. 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.

If a problem is detected, the BIOS may issue beeps in different patterns to indicate the problem. •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.

- 16 - 9) 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 F_ U 10 2 S S 2 3 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 1 10) SPDIF_IN (S/PDIF In Header) 1 2 3 1 2 3 _ This header supports digital S/PDIF In and can connect to an audio device that supports digital audio out via S an optional S/PDIF In cable. For purchasing the optional S/PDIF In cable, please contact the local dealer. Pin No. 1 2 3 Definition Power SPDIFI GND S B_ B B S_ B 1 2 3 1 2 3 1 S 11) SPDIF_O (S/PDIF Out Header) B SS S 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 S_ 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 Bconnect 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. _ U Pin No. 1 Definition SPDIFO GND _ B 1 2 - 17 - 12) CLR_CMOS (Clear CMOS Jumper) Use this jumper to clear the BIOS configuration and reset the CMOS values to factory defaults. To clear the CMOS values, use a metal object like a screwdriver to touch the two pins for a few seconds. Open: Normal Short: Clear CMOS Values •Always turn off your computer and unplug the power cord from the power outlet before clearing the CMOS values.

•After system restart, go to BIOS Setup to load factory defaults (select Load Optimized Defaults) or manually configure the BIOS settings (refer to Chapter 2, "BIOS Setup," for BIOS configurations). 13) F_USB30 (USB 3.0/2.0 Header) F_USB30 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.

20 1 11 10 Pin No. 1 2 3 4 5 6 7 Definition VBUS SSRX1SSRX1+ GND SSTX1SSTX1+ GND Pin No. 8 9 10 11 12 13 14 Definition D1D1+ NC D2+ D2GND SSTX2+ Pin No. 15 16 17 18 19 20 Definition SSTX2GND SSRX2+ SSRX2VBUS No Pin F_ U B_ 14) F_USB1/F_USB2 (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. For purchasing the optional USB bracket, please contact the local dealer.

Pin No. 1 2 3 4 5 Definition Power (5V) Power (5V) USB DXUSB DYUSB DX+ Pin No. 6 7 8 9 10 Definition USB DY+ GND GND No Pin NC 9 10 1 2 B SS 1 1 •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. F_ - 18 - 15) 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 Definition NDCDNSIN NSOUT NDTRGND Pin No. 6 7 8 9 10 Definition NDSRNRTSNCTSNRINo Pin 9 10 1 2 16) 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 STBAFDPD0 ERRPD1 INITPD2 SLINPD3 Pin No.



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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 ACKGND BUSY GND
PE No Pin SLCT GND 25 1 26 2 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.) - 19 - 2-1 Startup Screen The following startup Logo screen will appear when
the computer boots. (Sample BIOS Version: E3) Function Keys On the main menu of the BIOS Setup program, press arrow keys to move among the items and
press <Enter> to accept or enter a sub-menu.

Or you can use your mouse to select the item you want. •• 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 and Vcore. 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.) - 20 - ``
M.I.T.

Current Status This screen provides information on CPU/memory frequencies/parameters. ``Advanced Frequency Settings && Performance Upgrade (Note)
&& Processor Graphics Clock Provides you with five different overclocking configurations. Options are: 20% Upgrade, 40% Upgrade, 60% Upgrade, 80%
Upgrade, 100% Upgrade. (Default: Auto) 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 Features && CPU Clock Ratio, CPU Frequency && CPU PLL Selection
The settings above are synchronous to those under the same items on the Advanced Frequency Settings menu. 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. && Filter PLL Level && Uncore Ratio && Uncore Frequency && Intel(R) Turbo Boost Technology (Note) && Turbo Ratio (1-Core
Active~4-Core Active) (Note) && Turbo Power Limit (Watts) 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) && Core Current
Limit (Amps) (Note) This item is present only when you install a CPU that supports this feature. @@ - 21 - && No.

of CPU Cores Enabled (Note 1) && Hyper-Threading Technology (Note 1) 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.

@@@Auto lets the BIOS automatically configure this setting. @@@@The C3 state is a more enhanced power-saving state than C1. Auto lets the BIOS
automatically configure this setting. @@@@The C6/C7 state is a more enhanced power-saving state than C3. Auto lets the BIOS automatically configure
this setting. @@@@Auto lets the BIOS automatically configure this setting. @@@@Auto lets the BIOS automatically configure this setting. @ @ 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.



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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. && Memory Frequency (MHz) (Note 1) This item is present only when you install a CPU that supports this feature. @@@@ Provides memory detection and training methods. Auto Lets BIOS automatically configure this setting. (Default) Normal Standard detection and training. @@@@ Options are: Auto (default), Manual, Advanced Manual. @@@@ Enables or disables memory channel interleaving. @@Auto lets the BIOS automatically configure this setting. (Default: Auto) Enables or disables memory rank interleaving. @@Auto lets the BIOS automatically configure this setting. @@@@ When temperature exceeds the threshold, BIOS will emit warning sound. @@Check the fan condition or fan connection when this occurs. (Default: Disabled) Allows you to determine whether to enable the fan speed control function and adjust the fan speed. 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. Manual Allows you to control the fan speed under the Fan Speed Percentage item. 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. Allows you to determine whether to enable the fan speed control function and adjust the fan speed. Normal Allows the fan to run at different speeds according to the system temperature. You can adjust the fan speed with EasyTune based on your system requirements. (Default) Silent Allows the fan to run at slow speeds. Manual Allows you to control the fan speed under the Fan Speed Percentage item. Full Speed Allows the fan to run at full speeds. Allows you to control the fan speed. This item is configurable only when 1st System Fan Speed Control is set to Manual. Options are: 0.75 PWM value /oC ~ 2.50 PWM value /oC. Allows you to determine whether to enable the fan speed control function and adjust the fan speed. Normal Allows the fan to run at different speeds according to the system temperature. (Default) Silent Allows the fan to run at slow speeds. Manual Allows you to control the fan speed under the Fan Speed Percentage item. Full Speed Allows the fan to run at full speeds. Allows you to control the fan speed. This item is configurable only when 2nd/3rd System Fan Speed Control is set to Manual. Options are: 0.75 PWM value /oC ~ 2.50 PWM value /oC. && Fan Speed Percentage && 1st System Fan Speed Control (SYS_FAN1 Connector) && Fan Speed Percentage && 2nd/3rd System Fan Speed Control && Fan Speed Percentage - 24 - Miscellaneous Settings && PCIe Slot Configuration && 3DMark01 Boost Allows you to set the operation mode of the PCI Express slots to Gen 1, Gen 2, or Gen 3. Actual operation mode is subject to the hardware specification of each slot. For example, the PCI Express x1 slots can support up to Gen 2 mode only. Auto lets the BIOS automatically configure this setting. (Default: Auto) Allows you to determine whether to enhance some legacy benchmark performance. (Default: Disabled) 2-3 System Information This section provides information on your motherboard model and BIOS version. You can also select the default language used by the BIOS and manually set the system time. && System Language && System Date Selects the default language used by the BIOS. && System Time Sets the system date. The date format is week (read-only), month, date, and year. Use <Enter> to switch between the Month, Date, and Year fields and use the <Page Up> or <Page Down> key to set the desired value. Sets the system time. The time format is hour, minute, and second. For example, 1 p.m. is 13:0:0. @@@@ This item is present only if at least one device for this type is installed. Enables or disables Numlock feature on the numeric keypad of the keyboard after the POST. (Default: Enabled) Specifies whether a password is required every time the system boots, or only when you enter BIOS Setup. After configuring this item, set the password(s) under the Administrator Password/User Password item. Setup password is only required for entering the BIOS Setup program. A System 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) && Bootup NumLock State && Security Option && Full Screen LOGO Show - 26 - && 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. 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.



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(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) 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) 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) && USB Support && PS2 Devices Support && 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) && VT-d (Note) (Note) This item is present only when you install a CPU that supports this feature.

@@- 27 - && 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 or Windows 8 WHQL.

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) 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. 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. - 28 - 2-5 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. 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. 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 routs 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. 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.

Manual Allows you to determine whether to rout the USB 3.0 ports to the xHCI or EHCI controller before booting to OS, and also provides you with options to manually rout each USB 3.



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0/2.0 port to xHCI or EHCI. - 29 - && XHCI Mode && Audio Controller && Intel Processor Graphics Enables or disables the onboard audio function. (Default: Auto) 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 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. 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. && USB Storage Devices && OnBoard LAN Controller ``SATA

Configuration && Integrated SATA Controller Enables or disables the integrated SATA controllers.

(Default: Enabled) && SATA Mode Selection ``Serial ATA Port 0/1/2/3/4/5 && Port 0/1/2/3/4/5 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. AHCI Configures the SATA controller 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) && Hot plug Enables or disables each SATA port.

(Default: Enabled) Enables or disable the hot plug capability for each SATA port. (Default: Disabled) && External SATA Enables or disables support for external SATA devices. (Default: Disabled) - 30 - ``Super IO Configuration && Serial Port A This section provides information on the super I/O chip and allows you to configure the serial port and parallel port. Enables or disables the onboard serial port. (Default: Enabled) Enables or disables the onboard parallel port.

(Default: Enabled) && Parallel Port && Device Mode This item is configurable only when Parallel Port is set to Enabled. Selects an operating mode for the onboard parallel (LPT) port. (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) 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. - 31 - && Soft-Off by PWR-BTTN && RC6(Render Standby) 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: Disabled) 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. 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. 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.

&& AC BACK && Power On By Keyboard && Power On Password && Power On By Mouse && ErP - 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. @@Select No or press <Esc> to return to the BIOS Setup Main Menu. @@@@Allows you to select a device to boot immediately. Press <Enter> on the device you select and select Yes to confirm.



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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. @@@@ Click on the message "Tap to choose what happens with this disc" on the top-right corner of the screen and select "Run Run.exe." (Or go to My Computer, double-click the optical drive and execute the Run.

exe program.) "Xpress Install" will automatically scan your system and then list all of the drivers that are recommended to install. You can click the Xpress Install button and "Xpress Install" will install all of the selected drivers. Or click the arrow icon to individually install the drivers you need. - 34 - Regulatory Statements Regulatory Notices This document must not be copied without our written permission, and the contents there of must not be imparted to a third party nor be used for any unauthorized purpose.

Contravention will be prosecuted. We believe that the information contained herein was accurate in all respects at the time of printing. GIGABYTE cannot, however, assume any responsibility for errors or omissions in this text. Also note that the information in this document is subject to change without notice and should not be construed as a commitment by GIGABYTE. Our Commitment to Preserving the Environment In addition to high-efficiency performance, all GIGABYTE motherboards fulfill European Union regulations for RoHS (Restriction of Certain Hazardous Substances in Electrical and Electronic Equipment) and WEEE (Waste Electrical and Electronic Equipment) environmental directives, as well as most major worldwide safety requirements. To prevent releases of harmful substances into the environment and to maximize the use of our natural resources, GIGABYTE provides the following information on how you can responsibly recycle or reuse most of the materials in your "end of life" product. Restriction of Hazardous Substances (RoHS) Directive Statement GIGABYTE products have not intended to add and safe from hazardous substances (Cd, Pb, Hg, Cr+6, PBDE and PBB). The parts and components have been carefully selected to meet RoHS requirement. Moreover, we at GIGABYTE are continuing our efforts to develop products that do not use internationally banned toxic chemicals. Waste Electrical & Electronic Equipment (WEEE) Directive Statement GIGABYTE will fulfill the national laws as interpreted from the 2002/96/EC WEEE (Waste Electrical and Electronic Equipment) directive.

The WEEE Directive specifies the treatment, collection, recycling and disposal of electric and electronic devices and their components. Under the Directive, used equipment must be marked, collected separately, and disposed of properly. WEEE Symbol Statement The symbol shown below is on the product or on its packaging, which indicates that this product must not be disposed of with other waste. Instead, the device should be taken to the waste collection centers for activation of the treatment, collection, recycling and disposal procedure. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local government office, your household waste disposal service or where you purchased the product for details of environmentally safe recycling. □□ When your electrical or electronic equipment is no longer useful to you, "take it back" to your local or regional waste collection administration for recycling. □□ If you need further assistance in recycling, reusing in your "end of life" product, you may contact us at the Customer Care number listed in your product's user's manual and we will be glad to help you with your effort. Finally, we suggest that you practice other environmentally friendly actions by understanding and using the energy-saving features of this product (where applicable), recycling the inner and outer packaging (including shipping containers) this product was delivered in, and by disposing of or recycling used batteries properly. With your help, we can reduce the amount of natural resources needed to produce electrical and electronic equipment, minimize the use of landfills for the disposal of "end of life" products, and generally improve our quality of life by ensuring that potentially hazardous substances are not released into the environment and are disposed of properly.

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