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You can read the recommendations in the user guide, the technical guide or the installation guide for ASROCK 970 EXTREME3 R2.0. You'll find the answers to all your questions on the ASROCK 970 EXTREME3 R2.0 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual ASROCK 970 EXTREME3 R2.0
User guide ASROCK 970 EXTREME3 R2.0
Operating instructions ASROCK 970 EXTREME3 R2.0
Instructions for use ASROCK 970 EXTREME3 R2.0
Instruction manual ASROCK 970 EXTREME3 R2.0

ASRock

970DE3/U3S3

User Manual

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1



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Manual abstract:

In no event shall ASRock, its directors, officers, employees, or agents be liable for any indirect, special, incidental, or consequential damages (including damages for loss of profits, loss of business, loss of data, interruption of business and the like), even if ASRock has been advised of the possibility of such damages arising from any defect or error in the manual or product. This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. CALIFORNIA, USA ONLY The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. @@@@Perchlorate Material-special handling may apply, see www. @@@@In case any modifications of this manual occur, the updated version will be available on ASRock website without further notice. You may find the latest VGA cards and CPU support lists on ASRock website as well. Com If you require technical support related to this motherboard, please visit our website for specific information about the model you are using. To get better performance in Windows® 7 / 7 64-bit / Vista™ / Vista™ 64 bit, it is recommended to set the BIOS option in Storage Configuration to AHCI mode. For the BIOS setup, please refer to the "User Manual" in our support CD for details.

1 cm - All Solid Capacitor design - Support for Socket AM3+ processors - Support for Socket AM3 processors: AMD Phenom™ II X6 / X4 / X3 / X2 (except 920 / 940) / Athlon II X4 / X3 / X2 / Sempron processors - Supports 8-Core CPU - Digi Power Design - Supports CPU up to 140W - Supports AMD OverDrive™ with ACC feature (Advanced Clock Calibration) - Supports AMD's Cool & Quiet™ Technology - FSB 2600 MHz (5.0Gb/s connectors - 1 x ATA133 IDE connector (supports 2 x IDE devices) - 1 x Floppy connector - 1 x IR header - 1 x HDMI_SPDIF header - 1 x Power LED header - CPU/Chassis/Power FAN connector - 24 pin ATX power connector - 8 pin 12V power connector - CD in header - Front panel audio connector - 3 x USB 2.0, 3V, Vcore - Microsoft® Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP Media Center / XP 64-bit compliant - FCC, CE, WHQL - ErP/EuP Ready (ErP/EuP ready power supply is required) (see CAUTION 16) * For detailed product information, please visit our website: <http://www.asrock.com>. Com WARNING Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using the third-party overclocking tools.

Overclocking may affect your system stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking. Please read "Untied Overclocking Technology" on page 31 for details. this motherboard supports Dual Channel Memory Technology.

Before you implement Dual Channel Memory Technology, make sure to read the installation guide of memory modules on page 16 for proper installation. Whether 1866/1600MHz memory speed is supported depends on the AM3/AM3+ CPU you adopt. If you want to adopt DDR3 1866/1600 memory module on this motherboard, please refer to the memory support list on our website for the compatible memory modules. Com Due to the operating system limitation, the actual memory size may be less than 4GB for the reservation for system usage under Windows® 7 / Vista™ / XP. For Windows® 64-bit OS with 64-bit CPU, there is no such limitation. It is a user-friendly ASRock overclocking tool which allows you to surveil your system by hardware monitor function and overclock your hardware devices to get the best system performance under Windows® environment. Please visit our website for the operation procedures of ASRock OC Tuner. Com Featuring an advanced proprietary hardware and software design, Intelligent Energy Saver is a revolutionary technology that delivers unparalleled power savings. The voltage regulator can reduce the number of output phases to improve efficiency when the CPU cores are idle. In other words, it is able to provide exceptional power saving and improve power efficiency without sacrificing computing performance.

To use Intelligent Energy Saver function, please enable Cool & Quiet option in the BIOS setup in advance. Please visit our website for the operation procedures of Intelligent Energy Saver. This convenient BIOS update tool allows you to update system BIOS without entering operating systems first like MS-DOS or Windows®. With this utility, you can press <F6> key during the POST or press <F2> key to BIOS setup menu to access ASRock Instant Flash. Just launch this tool and save the new BIOS file to your USB flash drive, floppy disk or hard drive, then you can update your BIOS only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. 9 The software name itself "OC DNA" literally tells you what it is capable of. OC DNA, an exclusive utility developed by ASRock, provides a convenient way for the user to record the OC settings and share with others. It helps you to save your overclocking record under the operating system and simplifies the complicated recording process of overclocking settings. With OC DNA, you can save your OC settings as a profile and share with your friends! Your friends then can load the OC profile to their own system to get the same OC settings as yours! Please be noticed that the OC profile can only be shared and worked on the same motherboard.

9. If you desire a faster, less restricted way of charging your Apple devices, such as iPhone/iPod/iPad Touch, ASRock has prepared a wonderful solution for you - ASRock APP Charger. Simply installing the APP Charger driver, it makes your iPhone charged much quickly from your computer and up to 40% faster than before. ASRock APP Charger allows you to quickly charge many Apple devices simultaneously and even supports continuous charging when your PC enters into Standby mode (S1), Suspend to RAM (S3), hibernation mode (S4) or power off (S5). With APP Charger driver installed, you can easily enjoy the marvelous charging experience than ever.

ASRock SmartView, a new function of internet browser, is the smart start page for IE that combines your most visited web sites, your history, your Facebook friends and your real-time newsfeed into an enhanced view for a more personal Internet experience.



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ASRock motherboards are exclusively equipped with the ASRock SmartView utility that helps you keep in touch with friends on-the-go. To use ASRock SmartView feature, please make sure your OS version is Windows® 7 / 64 bit / Vista™ / Vista™ 64 bit, and your browser version is IE8. The performance may depend on the property of the device. 12.

ASRock XFast LAN provides a faster internet access, which includes below benefits. LAN Application Prioritization: You can configure your application priority ideally and/or add new programs. Lower Latency in Game: After setting online game priority higher, it can lower the latency in game. traffic Shaping: You can watch Youtube HD video and download files simultaneously. Real-Time Analysis of Your Data: With the status window, you can easily recognize which data streams you are currently transferring. 13. ASRock XFast RAM fully utilizes the memory space that cannot be used under Windows® OS 32-bit CPU. ASRock XFast RAM shortens the loading time of previously visited websites, making web surfing faster than ever. And it also boosts the speed of Adobe Photoshop 5 times faster. Another advantage of ASRock XFast RAM is that it reduces the frequency of accessing your SSDs or HDDs in order to extend their lifespan.

Although this motherboard offers stepless control, it is not recommended to perform over-clocking. Frequencies other than the recommended CPU bus frequencies may cause the instability of the system or damage the CPU. 15. While CPU overheat is detected, the system will automatically shutdown. Before you resume the system, please check if the CPU fan on the motherboard functions properly and unplug the power cord, then plug it back again. To improve heat dissipation, remember to spray thermal grease between the CPU and the heatsink when you install the PC system. 16. EuP, stands for Energy Using Product, was a provision regulated by European Union to define the power consumption for the completed system. According to EuP, the total AC power of the completed system shall be under 1.00W in off mode condition.

To meet EuP standard, an EuP ready motherboard and an EuP ready power supply are required. According to Intel's suggestion, the EuP ready power supply must meet the standard of 5v standby power efficiency is higher than 50% under 100 mA current consumption. For EuP ready power supply selection, we recommend you checking with the power supply manufacturer for more details. 0 Ports (USB23) Serial Port: COM1 PS/2 Keyboard Port (Purple) * There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.

LAN Port LED Indications Activity/Link LED Status Description Status SPEED LED Description ACT/LINK SPEED LED LED Off No Link Blinking Data Activity On Link Off Orange Green 10Mbps connection 100Mbps connection 1Gbps connection LAN Port ** To enable Multi-Streaming function, you need to connect a front panel audio cable to the front panel audio header. Please refer to below steps for the software setting of Multi-Streaming. For Windows® XP: After restarting your computer, you will find a Mixer tool on your system. please select a Mixer ToolBox, click Enable playback multi-streaming, and click OK. Choose CH or CH4 and then you are allowed to select Realtek HDA Primary output to use Rear Speaker and Front Speaker, or select Realtek HDA Audio 2nd output to use front panel audio.

Then reboot your system. For Windows® 7 / Vista™: After restarting your computer, please double-click Realtek HD Audio Manager on the system tray. set Speaker Configuration to Quadraphonic or Stereo. Click Device advanced settings, choose Make front and rear output devices playbacks two different audio streams simultaneously, and allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and DIMM may be damaged. If you adopt DDR3 1866/1600 memory modules on this motherboard, it is recommended to install them on DDR3_A2 and DDR3_B2 slots. 16 Installing a DIMM Please make sure to disconnect power supply before adding or removing DIMMs or the system components. Align a DIMM on the slot such that the notch on the DIMM matches the break on the slot. The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation. step 3.

Firmly insert the DIMM into the slot until the retaining clips at both ends fully snap back in place and the DIMM is properly seated. 17 2. 4 Expansion Slots (PCI and PCI Express Slots) Please refer to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

PWRBTN (Power Switch): Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch. RESET (Reset Switch): Connect 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. PLED (System Power LED): Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating.

The LED keeps blinking when the system is in S1 sleep state. The LED is off when the system is in S3/S4 sleep state or powered off (S5). HDLED (Hard Drive Activity LED): Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data. 22 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. 26) SPEAKER DUMMY +5V DUMMY 1 Please connect the chassis speaker to this header. 25) 1 PLED+ PLED+ Please connect the chassis power LED to this header to indicate system power status.

The LED is on when the system is operating.

The LED keeps blinking in S1 state. The LED is off in S3/S4 state or S5 state (power off). Please connect the fan cables to the fan connectors and match the black wire to the ground pin. 3) FAN_SPEED_CONTROL CPU_FAN_SPEED +12V GND Please connect the CPU fan cable to the connector and match the black wire to the ground pin. 1 2 3 4 Though this motherboard provides 4-Pin CPU fan (Quiet Fan) support, the 3-Pin CPU fan still can work successfully even without the fan speed control function. If you plan to connect the 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3.



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2 Main Screen When you enter the BIOS SETUP UTILITY, the Main screen will appear and display the system overview.

System Time [Hour:Minute:Second] Use this item to specify the system time. System Date [Day Month/Date/Year] Use this item to specify the system date. 33
3. 3 OC Tweaker Screen In the OC Tweaker screen, you can set up overclocking features. 5500 V [Auto] Overclocking may cause damage to your CPU and motherboard. It should be done at your own risk and expense. EZ Overclocking Load Optimized CPU OC Setting You can use this option to load optimized CPU overclocking setting. Please note that overclocing may cause damage to your CPU and motherboard. It should be done at your own risk and expense.

Spread Spectrum This item should always be [Auto] for better system stability.

The confi-uration options depend on the CPU core you adopt. the default value is [All Cores]. AMD Turbo Core Technology This item appears only when the processor you adopt supports this feature. North Bridge Maximum Frequency It will display North Bridge Maximum Frequency for reference. If it is set to [Manual], you may adjust the value of Processor Frequency and Processor Voltage.

However, it is recommended to keep the default value for system stability. 5500 V [Manual] Overclocking may cause damage to your CPU and motherboard. It should be done at your own risk and expense. CPU Frequency Multiplier For safety and system stability, it is not recommended to adjust the value of this item. CPU Voltage It allows you to adjust the value of CPU voltage.

However, for safety and system stability, it is not recommended to adjust the value of this item. NB Frequency Multiplier For safety and system stability, it is not recommended to adjust the value of this item. CPU NB Voltage It allows you to adjust the value of CPU NB voltage. However, for safety and system stability, it is not recommended to adjust the value of this item. Memory Coni-uration Memory Clock This item can be set by the code using [Auto]. You can set one of the standard values as listed: [400MHz DDR3_800], [533MHz DDR3_1066], [667MHz DDR3_1333] and [800MHz DDR3_1600]. DRAM

Frequency If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assigns appropriate frequency automatically. Power Down Enable Use this item to enable or disable DDR power down mode. Bank Interleaving Interleaving allows memory accesses to be spread out over banks on the same node, or accross nodes, decreasing access contention. Command Rate Use this item to change Command Rate Auto/Manual setting.

Would you like to save current setting user defaults? In this option, you are allowed to load and save three user defaults according to your own requirements.

37 3. 4 Advanced Screen In this section, you may set the confi-urations for the following items: CPU Coni-uration, Chipset Coni-uration, ACPI Coni-uration, Storage Coni-uration, PCPPnP Coni-uration, Floppy Coni-uration, Super IO Coni-uration and USB Coni-uration. Main BIOS SETUP UTILITY Boot OC Tweaker Advanced H/W Monitor Security Exit Advanced Settings WARNING : Setting wrong values in below sections may cause system to malfunction. Setting wrong values in this section may cause the system to malfunction. instant Flash Instant Flash is a BIOS i-Flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update system BIOS without entering operating systems i-Prst like MS-DOS or Windows®. Just launch this tool and save the new BIOS i-File to your USB i-Flash drive, i-Poppy disk or hard drive, then you can update your BIOS only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB i-Flash drive or hard drive must use FAT32/16/12 i-File system. If you execute Instant Flash utility, the utility will show the BIOS i-Files and their respective information.

Select the proper UEFI i-File to update your BIOS, and reboot your system after BIOS update process completes. If you install Windows® 7 / Vista™ and want to enable this function, please set this item to [Enabled]. Please note that enabling this function may reduce CPU voltage and memory frequency, and lead to system stability or compatibility issue with some memory modules or power supplies. Please set this item to [Disable] if above issue occurs. Secure Virtual Machine When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by AMD-V.

The C1 state is supported through the native processor instructions HLT and MWAIT and requires no hardware support from the chipset. In the C1 power state, the processor maintains the context of the system caches. CPU Thermal Throttle Use this item to enable CPU internal thermal control mechanism to keep the CPU from overheated. If you select [Auto], the onboard HD Audio will be disabled when PCI Sound Card is plugged. Front Panel Select [Auto] or [Disabled] for the onboard HD Audio Front Panel.

Onboard Lan This allows you to enable or disable the onboard Lan feature. Primary Graphics Adapter This item will switch the PCI Bus scanning order while searching for video card. It allows you to select the type of Primary VGA in case of multiple video controllers. The default value of this feature is [PCI]. Suspend to RAM Use this item to select whether to auto-detect or disable the Suspend-toRAM feature. Select [Auto] will enable this feature if the OS supports it. Check Ready Bit Use this item to enable or disable the feature Check Ready Bit. Away Mode Support Use this item to enable or disable Away Mode support under Windows® XP Media Center OS. the default value is [Disabled]. Restore on AC/Power Loss This allows you to set the power state after an unexpected AC/power loss.

If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers. Ring-In Power On Use this item to enable or disable Ring-In signals to turn on the system from the power-soft-off mode. PCI Devices Power On Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode. PS/2 Keyboard Power On Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode. RTC Alarm Power On Use this item to enable or disable RTC (Real Time Clock) to power on the system. Please set this option to [Enabled] if you plan to use this motherboard to submit Windows® Vista™ certifi-cation.

Use this item to enable or disable the Onboard SATA Controller feature. The default value of this option is [AHCI]. confi-uration options: [AHCI], [IDE] and [RAID].

If you set this item to RAID mode, it is suggested to install SATA ODD driver on SATAII_5 (PORT 4) and SATAII_6 (PORT 5) ports.



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If you want to build RAID on SATAII_5 (PORT 4) and SATAII_6 (PORT 5 ports, please disable this item. The default value of this option is [AHCI]. Setting wrong values in this section may cause the system to malfunction. pCI Latency Timer The default value is 32.

It is recommended to keep the default value unless the installed PCI expansion cards? specifications require other settings. PCI IDE BusMaster Use this item to enable or disable the PCI IDE BusMaster feature. 6 Floppy Configuration In this section, you may configure the type of your floppy drive. BIOS SETUP UTILITY Advanced Floppy Configuration Floppy A [1. 44 MB 31 2"] Select the type of floppy drive connected to the system.

Serial Port Use this item to enable or disable the onboard serial port. Serial Port Address Use this item to set the address for the onboard serial port. Configuration options: [3F8h / IRQ4] and [3E8h / IRQ4]. Infrared Port Use this item to enable or disable the onboard infrared port. Infrared Port Address Use this item to set the address for the onboard infrared port. USB Controller Use this item to enable or disable the use of USB controller. uSB 2. 0 Support Use this option to enable or disable support for USB 2. @@@@[Auto] - Enables legacy support if USB devices are connected. @@@@[BIOS Setup Only] - USB devices are allowed to use only under BIOS setup and Windows / Linux OS.

uSB 3. 0 Controller Use this item to enable or disable the use of USB 3. 0 controller. USB Keyboard/Remote Power On Use this item to enable or disable the system to wake from S5 using USB Keyboard/Remote. USB Mouse Power On Use this item to enable or disable the system to wake from S5 using USB Mouse.

47 3. 5 Hardware Health Event Monitoring Screen In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage. CPU Fan Setting This allows you to set the CPU fan speed. Chassis Fan 1 Setting This allows you to set the chassis fan 1 speed. @@@@ @@@@ 49 3.

7 Security Screen In this section, you may set or change the supervisor/user password for the system. For the user password, you may also clear it. 8 Exit Screen Main OC Tweaker BIOS SETUP UTILITY Advanced H/W Monitor Boot Security Exit Exit system setup after saving the changes. F10 key can be used for this operation. Save Changes and Exit When you select this option, it will pop-out the following message, Save changes and exit setup? Select [OK] to save the changes and exit the BIOS SETUP UTILITY.

Discard Changes and Exit When you select this option, it will pop-out the following message, Discard changes and exit setup? Select [OK] to exit the BIOS SETUP UTILITY without saving any changes. Discard Changes When you select this option, it will pop-out the following message, Discard changes? Select [OK] to discard all changes. Load BIOS Defaults Load BIOS default values for all the setup questions. F9 key can be used for this operation. Load Performance Setup Default This performance setup default may not be compatible with all system configurations.

if system boot failure occurs after loading , please resume optimal default settings. F5 key can be used for this operation. Load Power Saving Setup Default Load power saving setup default. F6 key can be used for this operation. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer to your OS documentation for more information. 4. 2 Support CD Information The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard features. 1 Running The Support CD To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if AUTORUN is enabled in your computer.

If the Main Menu did not appear automatically, locate and double click on the file ASSETUP. EXE from the BIN folder in the Support CD to display the menus. 2 Drivers Menu The Drivers Menu shows the available devices drivers if the system detects the installed devices. Please install the necessary drivers to activate the devices. 3 Utilities Menu The Utilities Menu shows the applications software that the motherboard supports. Click on a specific item then follow the installation wizard to install it. 4 Contact Information If you need to contact ASRock or want to know more about ASRock, welcome to visit ASRock's website at <http://www.asrock.com>; or you may contact your dealer for further information. .



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