



Asus TUF GAMING H470-PRO Manual

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(28 pages)

Summary of Contents for Asus TUF GAMING H470-PRO

[Page 1](#) TUF GAMING H470-PRO...

[Page 2](#) Product warranty or service will not be extended if: (1) the product is repaired, modified or altered, unless such repair, modification or alteration is authorized in writing by ASUS; or (2) the serial number of the product is defaced or missing.

[Page 3: Table Of Contents](#)

Contents Safety information iv About this guidev TUF GAMING H470-PRO specifications summaryvi Connectors with shared bandwidth ix Package contentsx Installation tools and componentsxi Chapter 1:

[Page 4: Safety Information](#)

Safety information Electrical safety • To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system. • When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

[Page 5: About This Guide](#)

Refer to the following sources for additional information and for product and software updates. ASUS website The ASUS website (www.asus.com) provides updated information on ASUS hardware and software products. Optional documentation Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer.

[Page 6: Tuf Gaming H470-Pro Specifications Summary](#)

Core™ i9/i7 CPUs support ® 2933/2800/2666/2400/2133 natively, others will run at the maximum transfer rate of DDR4 2666 MHz. ** Refer to www.asus.com for the Memory QVL (Qualified Vendors Lists). 1 x DisplayPort 1.4** 1 x HDMI 1.4b Graphics * Graphics specifications may vary between CPU types.

[Page 7](#) TUF GAMING H470-PRO specifications summary Realtek ALC S1200A 7.1-Channel High Definition Audio CODEC* - Supports: Jack detection, Multi-streaming, Front Panel Jack-retasking - Supports up to 24-Bit/192kHz playback Audio Features: - Rear optical S/PDIF out port Audio - Premium Japanese audio capacitors...

[Page 8](#) 10 - 64 bit Operating System ® ATX Form Factor Form Factor 12 inch x 9.6 inch (30.5 cm x 24.4 cm) Specifications are subject to change without notice. Please refer to the ASUS website for the latest specifications. viii...

[Page 9: Connectors With Shared Bandwidth](#)

Connectors with shared bandwidth RGB_HEADER2 CPU_OPT KBMS EATX12V_USB910 DIGI+ CPU_FAN 1442K HDMI U32G2_C2 U32G2_1 LGA1200 LAN_U32G1_78 BOOT DRAM Intel ® AUDIO CHA_FAN1 AIO_PUMP I219-V PCIEX1_1 2280 2260 2242 PCIE SATA IRST M.2_1(SOCKET3) PCIEX16_1 BATTERY Intel ® H470 PCIEX1_2 Super PCIEX16_2 PCIEX1_3 22110...

[Page 10: Package Contents](#)

Package contents Check your motherboard package for the following items. Motherboard 1 x TUF GAMING H470-PRO motherboard Cables 2 x SATA 6Gb/s cables 1 x I/O Shield 1 x M.2 Rubber Package Miscellaneous 1 x M.2 Screw Package 1 x TUF GAMING sticker...

[Page 11: Installation Tools And Components](#)

Installation tools and components Phillips (cross) screwdriver PC chassis Power supply unit Intel LGA 1200 CPU Intel LGA 1200 compatible CPU Fan ® ® DDR4 DIMM SATA hard disk drive SATA optical disc drive (optional) Graphics card (optional) M.2 SSD module (optional) 1 Bag of screws The tools and components in the table above are not included in the motherboard package.

[Page 13: Chapter 1: Product Introduction](#)

Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, or components. TUF GAMING H470-PRO...

[Page 14: Motherboard Layout](#)

Motherboard layout RGB_HEADER2 CPU_OPT KBMS EATX12V_USB910 DIGI+ CPU_FAN 1442K HDMI U32G2_C2 U32G2_1 LGA1200 LAN_U32G1_78 BOOT DRAM Intel ® AUDIO I219-V CHA_FAN1 AIO_PUMP PCIEX1_1 2280 2260 2242 PCIE SATA IRST M.2_1(SOCKET3) PCIEX16_1 BATTERY Intel ® H470 PCIEX1_2 Super PCIEX16_2 PCIEX1_3 22110 2280 2260...

[Page 15](#) 10. AURA Addressable Gen2 header 1-14 11. AURA RGB headers 1-15 12. Clear CMOS header 1-16 13. COM Port header 1-17 14. Front Panel Audio header 1-17 15. System

Panel header 1-18 16. Thunderbolt header 1-19 17. Q-LEDs 1-19 TUF GAMING H470-PRO...

[Page 16](#) Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. ASUS will shoulder the cost of repair only if the damage is shipment/ transit-related.

[Page 17](#) (Double Data Rate 4) memory modules. A DDR4 memory module is notched differently from a DDR, DDR2, or DDR3 module. DO NOT install a DDR, DDR2, or DDR3 memory module to the DDR4 slot. Recommended memory configurations TUF GAMING H470-PRO...

[Page 18](#) (D/C) from the same vendor. Check with the vendor to get the correct memory modules. • Visit the ASUS website for the latest QVL. Chapter 1: Product Introduction...

[Page 19](#) We recommend that you provide sufficient power when running CrossFireX™ mode. • Ensure to connect the 8-pin power plug when running CrossFireX™ mode. • Connect a chassis fan to the chassis fan connectors when using multiple graphics cards for better thermal environment. TUF GAMING H470-PRO...

[Page 20](#) Fan and Pump headers The Fan and Pump headers allow you to connect fans or pumps to cool the system. CPU_FAN CPU_OPT CHA_FAN1 AIO_PUMP CHA_FAN2 CHA_FAN3 • DO NOT forget to connect the fan cables to the fan headers. Insufficient air flow inside the system may damage the motherboard components.

[Page 21](#) The system may become unstable or may not boot up if the power is inadequate. • If you want to use two or more high-end PCI Express x16 cards, use a PSU with 1000W power or above to ensure the system stability. TUF GAMING H470-PRO...

[Page 22](#) M.2 slots The M.2 slots allow you to install M.2 devices such as M.2 SSD modules. M.2_1(SOCKET3) M.2_2(SOCKET3) • M.2_1 slot (Key M), type 2242/2260/2280 (supports SATA & PCIe 3.0 x4 modes). • M.2_2 slot (Key M), type 2242/2260/2280/22110 (supports PCIe 3.0 x4 mode). •...

[Page 23](#) When a device in SATA mode is installed on the M.2_1 slot, SATA6G_1 port cannot be used. • Before creating a RAID set, refer to the RAID Configuration Guide. You can download the RAID Configuration Guide from the ASUS website. TUF GAMING H470-PRO 1-11...

[Page 24](#) USB 3.2 Gen 1 headers The USB 3.2 Gen 1 headers allow you to connect USB 3.2 Gen 1 modules for additional USB 3.2 Gen 1 ports. The USB 3.2 Gen 1 headers provide data transfer speeds of up to 5 Gb/s. U32G1_34 U32G1_56 PIN 1...

[Page 25](#) 480 Mbps connection speed. USB4 PIN 1 USB1112 PIN 1 DO NOT connect a 1394 cable to the USB connectors. Doing so will damage the motherboard! The USB 2.0 module is purchased separately. TUF GAMING H470-PRO 1-13...

[Page 26](#) Aura Addressable Gen2 header The Addressable Gen2 header allows you to connect individually addressable RGB WS2812B LED strips or WS2812B based LED strips. ADD_GEN2 Ground Data PIN 1 The Addressable Gen2 header supports WS2812B addressable RGB LED strips (5V/ Data/Ground), with a maximum power rating of 3A (5V), and the addressable header on this board can handle a combined maximum of 500 LEDs.

[Page 27](#) RGB LED strip is connected in the correct orientation, and the 12V connector is aligned with the 12V header on the motherboard. • The LED strip will only light up when the system is powered on. • The LED strip is purchased separately. TUF GAMING H470-PRO 1-15...

[Page 28](#) Clear CMOS header This header allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

[Page 29](#) HD Audio. Connect one end of the front panel audio I/O module cable to this header. We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability. TUF GAMING H470-PRO 1-17...

[Page 30](#) System Panel header The System Panel header supports several chassis-mounted functions. PLED PWRSW SPEAKER CHASSIS PANEL PIN 1 HDD_LED RESET PLED • System Power LED header (PLED) The 2-pin header allows you to connect the System Power LED. The System Power LED lights up when the system is connected to a power source, or when you turn on the system power, and blinks when the system is in sleep mode.

[Page 31](#) BOOT (YELLOW GREEN) VGA (WHITE) DRAM (YELLOW) CPU (RED) The Q-LEDs provide the most probable cause of an error code as a starting point for troubleshooting. The actual cause may vary from case to case. TUF GAMING H470-PRO 1-19...

[Page 32](#) Chapter 1: Product Introduction 1-20...

[Page 33: Building Your Pc System](#)

NOT install a CPU designed for LGA1155, LGA1156, and LGA1151 sockets on the LGA1200 socket. • ASUS will not cover damages resulting from incorrect CPU installation/removal, incorrect CPU orientation/placement, or other damages resulting from negligence by the user. TUF GAMING H470-PRO...

[Page 34](#) Chapter 2: Basic Installation...

[Page 35: Cooling System Installation](#)

2.1.2 Cooling system installation Apply Thermal Interface Material to the CPU cooling system and CPU before you install the cooling system, if necessary. To install a CPU heatsink and fan assembly TUF GAMING H470-PRO...

[Page 36](#) To install an AIO cooler If you wish to install an AIO cooler, we recommend installing the AIO cooler after installing the motherboard into the chassis. AIO_PUMP CPU_FAN CPU_OPT Chapter 2: Basic Installation...

[Page 37: Dimm Installation](#)

2.1.3 DIMM installation To remove a DIMM TUF GAMING H470-PRO...

[Page 38: Installation](#)

2.1.4 M.2 installation • This M.2 rubber pad is optional for when installing a single sided M.2 storage device. Ensure to install the bundled M.2 rubber pad before installing your single sided M.2 storage device. • DO NOT install the bundled M.2 rubber pads when installing a double-sided M.2 storage device.

[Page 39: Motherboard Installation](#)

2.1.5 Motherboard installation Install the ASUS I/O Shield to the chassis rear I/O panel. Some sharp edges and points might cause physical injury. We recommend you put on cut or puncture resistant gloves before motherboard and I/O shield installation. Place the motherboard into the chassis, ensuring that its rear I/O ports are aligned to the chassis'...

[Page 40](#) Place nine (9) screws into the holes indicated by circles to secure the motherboard to the chassis. DO NOT over tighten the screws! Doing so can damage the motherboard. Chapter 2: Basic Installation...

[Page 41: Atx Power Connection](#)

2.1.6 ATX power connection Ensure to connect the 8-pin power plug. TUF GAMING H470-PRO...

[Page 42: Sata Device Connection](#)

2.1.7 SATA device connection Chapter 2: Basic Installation 2-10...

[Page 43: Front I/O Connector](#)

2.1.8 Front I/O connector To install the front panel connector To install USB 3.2 Gen 1 connector USB 3.1 Gen 1 To install USB 2.0 connector To install front panel audio connector AAFP USB 2.0 TUF GAMING H470-PRO 2-11...

[Page 44: Expansion Card Installation](#)

2.1.9 Expansion card installation To install PCIe x16 cards To install PCIe x1 cards Chapter 2: Basic Installation 2-12...

[Page 45](#) The ThunderboltEX 3-TR card can support quick charging up to 100W. • The TypeC_1 port can support up to 20V devices, and the TypeC_2 port can support up to 9V devices when the 6-pin PCIe power connector is connected. • The Thunderbolt card is sold separately. TUF GAMING H470-PRO 2-13...

[Page 46: Motherboard Rear And Audio Connections](#)

Motherboard rear and audio connections 2.2.1 Rear I/O connection Rear panel connectors PS/2 mouse/keyboard combo port DisplayPort USB 3.2 Gen 2 Type-A port Ethernet (RJ-45) port* USB 2.0 ports 910 HDMI™ port USB Type-C ® USB 3.2 Gen 1 Type-A ports 78 Optical S/PDIF OUT port audio jacks** * and ** : Refer to the tables on the next page for LAN port LEDs, and audio port definitions.

[Page 47: Audio I/O Connections](#)

Mic In Mic In Mic In Orange – – Center/Sub Center/Sub woofer woofer Black – Rear Speaker Out Rear Speaker Out Rear Speaker Out 2.2.2 Audio I/O connections Audio I/O ports Connect to Headphone and Mic TUF GAMING H470-PRO 2-15...

[Page 48](#) Connect to Stereo Speakers Connect to 2-channel Speakers Connect to 4-channel Speakers Chapter 2: Basic Installation 2-16...

[Page 49](#) Connect to 5.1-channel Speakers Connect to 7.1-channel Speakers TUF GAMING H470-PRO 2-17...

[Page 50: Starting Up For The First Time](#)

Starting up for the first time After making all the connections, replace the system case cover. Ensure that all switches are off. Connect the power cord to the power connector at the back of the system chassis. Connect the power cord to a power outlet that is equipped with a surge protector. Turn on the devices in the following order: Monitor External SCSI devices (starting with the last device on the chain)

[Page 51: Chapter 3: Bios And Raid Support](#)

Knowing BIOS The new ASUS UEFI BIOS is a Unified Extensible Interface that complies with UEFI architecture, offering a user-friendly interface that goes beyond the traditional keyboard- only BIOS controls to enable a more flexible and convenient mouse input. You can easily navigate the new UEFI BIOS with the same smoothness as your operating system.

[Page 52: Bios Setup Program](#)

BIOS setup program Use the BIOS Setup to update the BIOS or configure its parameters. The BIOS screen includes navigation keys and brief onscreen help to guide you in using the BIOS Setup program. Entering BIOS at startup To enter BIOS Setup at startup, press <Delete> or <F2> during the Power-On Self Test (POST).

[Page 53: Asus Ez Flash 3](#)

ASUS EZ Flash 3 The ASUS EZ Flash 3 feature allows you to update the BIOS without using an OS-based utility. Ensure to load the BIOS default settings to ensure system compatibility and stability. Select the Load Optimized Defaults item under the Exit menu or press hotkey <F5>.

[Page 54: Asus Crashfree Bios 3](#)

The BIOS file in the motherboard support DVD may be older than the BIOS file published on the ASUS official website. If you want to use the newer BIOS file, download the file at <https://www.asus.com/support/> and save it to a USB flash drive.

[Page 55: Raid Configurations](#)

For more information on configuring your RAID sets, please refer to the RAID Configuration Guide which you can find at <https://www.asus.com/support/>, or by scanning the QR code. RAID definitions RAID 0 (Data striping) optimizes two identical hard disk drives to read and write data

in parallel, interleaved stacks.

[Page 56](#) Chapter 3: BIOS Setup...

[Page 57: Appendix](#)

Appendix Notices FCC Compliance Information Responsible Party: Asus Computer International
Address: 48720 Kato Rd., Fremont, CA 94538, USA Phone / Fax No: (510)739-3777 /
(510)608-4555 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.

[Page 58](#) Compliance Statement of Innovation, Science and Economic Development Canada
(ISED) This device complies with Innovation, Science and Economic Development Canada
licence exempt RSS standard(s). Operation is subject to the following two conditions: (1) this
device may not cause interference, and (2) this device must accept any interference, including
interference that may cause undesired operation of the device.

[Page 59](#) ASUS products sold in Vietnam, on or after September 23, 2011, meet the
requirements of the Vietnam Circular 30/2011/TT-BCT. Các sản phẩm ASUS bán tại Việt Nam,
vào ngày 23 tháng 9 năm 2011 trở về sau, đều phải đáp ứng các yêu cầu của Thông tư
30/2011/TT-BCT của Việt Nam.

[Page 60](#) ASUS Recycling/Takeback Services ASUS recycling and takeback programs come
from our commitment to the highest standards for protecting our environment. We believe in
providing solutions for you to be able to responsibly recycle our products, batteries, other
components as well as the packaging materials.

[Page 61](#) доступний на: www.asus.com/support Cijeli tekst EU izjave o sukladnosti dostupan
je na: www.asus.com/support Türkçe AsusTek Computer Inc., bu aygıtın temel gereksinimlerle
ve ilişkili Čeština Společnost ASUSTeK Computer Inc. tímto prohlašuje, že Yönergelerin diğer
ilgili koşullarıyla uyumlu olduğunu beyan eder.

[Page 62: Asus Contact Information](#)

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contact [https://www.asus.com/support/Product/ContactUs/ Services/questionform/?lang=de-de](https://www.asus.com/support/Product/ContactUs/Services/questionform/?lang=de-de)
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