EPU
Low EMI
DIGI+ VRM
DDR4 Support
32Gb/s M.2 X4
Gb Lan
PCIe 3.0
ASUS
Z170-K
LAN GUARD
USB 3.1 Boost
Ai Suite 3
HDMI Interface
EZ Flash 3
Ai Charger
CrossFireX Ready
SATA 6Gb/s
GPU Boost
DirectX 12 Support
Fan Xpert 3
SATA RAID
SATA Express

Asus Z170-K User Manual

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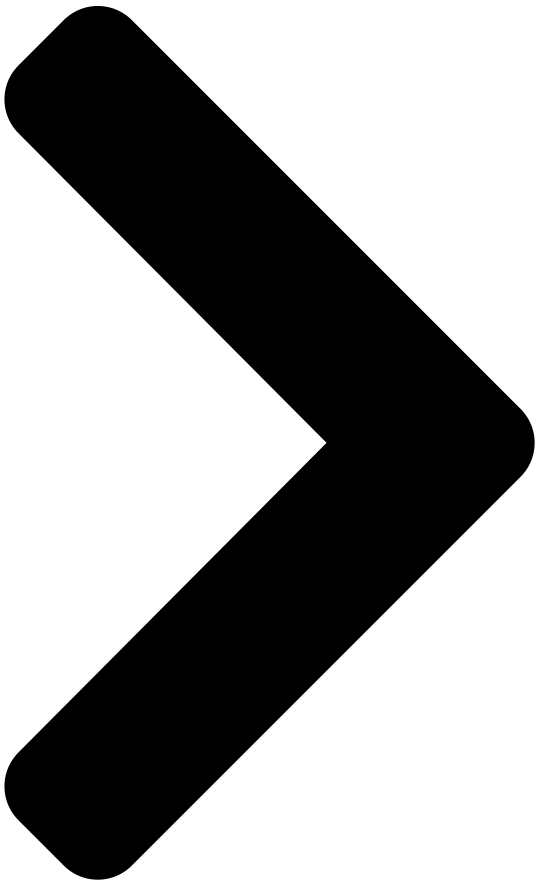
See also: Technical Manual



Z170-K

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Related Manuals for Asus Z170-K

Motherboard Asus B150-A Technical Manual

Pin definition (18 pages)

Motherboard Asus Z170-K Quick Start Manual

(11 pages)

Motherboard Asus Z170-P Manual

(86 pages)

Motherboard Asus Z170 PRO GAMING User Manual

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Motherboard Asus Z170 PRO GAMING Manual

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Motherboard Asus Z170-A User Manual

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Motherboard Asus Z170M-E D3 User Manual

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Motherboard Asus Z170-E Manual

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Motherboard Asus Z170-DELUXE Series User Manual

(186 pages)

Motherboard Asus Z170-PRO Manual

(170 pages)

Summary of Contents for Asus Z170-K

Page 1 Z170-K...

Page 2 Product warranty or service will not be extended if: (1) the product is repaired, modified or altered, unless such repair, modification of 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 guide .....iv Package contents

.....vi Z170-K specifications summary .....vi Chapter 1 Product introduction Before you proceed .....1-1 Motherboard overview .....1-1 Central Processing Unit (CPU) ..... 1-3 System memory .....1-7 Expansion slots .....

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: Conventions Used In This Guide

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

Page 6: Package Contents

Supports Intel Extreme Memory Profile (XMP) * Refer to www.asus.com for the latest Memory QVL (Qualified Vendors List). 1 x PCI Express 3.0/2.0 x16 slot (at x16 mode) 1 x PCI Express 3.0/2.0 x16 slot (max. at x4 mode, compatible with PCIe x1 and...

Page 7 - 6 x USB 2.0/1.1 ports (4 ports @mid-board; 2 ports @back panel) ASUS 5X PROTECTION II - ASUS LANGuard - Protects against LAN surges, lightning strikes and static-electricity discharges - ASUS Overvoltage Protection - World-class circuit-protecting power design...

Page 8 4.0 systems ASUS Exclusive Features - ASUS AI Charger+ - ASUS AI Suite 3 - ASUS Disk Unlocker featuring 3TB + HDD support EZ DIY Push Notice - Monitor your PC status with smart devices in real time UEFI BIOS EZ Mode - Featuring friendly graphics user interface - ASUS O.C.

Page 9 Features SFS (Stepless Frequency Selection) - BCLK/PCIE frequency tuning from 40MHz up to 170MHz at 0.1MHz increment Overclocking Protection - ASUS C.P.R.(CPU Parameter Recall) 1 x PS/2 keyboard port (purple) 1 x PS/2 mouse port (green) 1 x HDMI port...

Page 10 Specifications 128 Mb Flash ROM, UEFI AMI BIOS, PnP, DMI3.0, WfM2.0, SM BIOS 3.0, ACPI 5.0, Multi-language BIOS, ASUS EZ Flash 3, CrashFree BIOS 3, F11 EZ Tuning BIOS features Wizard, F6 Qfan Control, F3 My Favorites, Quick Note, Last Modified log, F12...

Page 11: Chapter 1 Product Introduction

Placement direction When installing the motherboard, place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image. 1.2.2 Screw holes Place six screws into the holes indicated by circles to secure the motherboard to the chassis. Do not overtighten the screws! Doing so can damage the motherboard. ASUS Z170-K...

Page 12: Motherboard Layout

Place this side towards the rear of the chassis Z170-K 1.2.3 Motherboard layout 22.4cm(8.8in) CHA_FAN1 KBMS CPU_FAN DIGI +VRM EATX12V HDMI 1442K LGA1151 USB_C1 USB3.1_ USB3_78 LAN_USB910 AUDIO CHA_FAN2 PCIEX1_1 PCIEX16_1 8111H Z170-K BATTERY 1083 Intel ® Z170 PCIEX1_2 Super...

Page 13: Central Processing Unit (Cpu)

Z170 Serial ATA 6.0 Gb/s connector (7-pin SATA6G_3~6) 1-19 ® 10. System panel connector (20-5 pin PANEL) 1-22 11. Clear RTC RAM (2-pin CLRTC) 1-12 12. USB 2.0 connectors (10-1 pin USB1112, USB1314) 1-15 13. Serial port connectors (10-1 pin COM) 1-15 14. Digital audio connector (4-1 pin SPDIF_OUT) 1-16 15. Front panel audio connector (10-1 pin AAFP) 1-18 Central Processing Unit (CPU) This motherboard comes with a surface mount LGA1151 socket designed for the 6th Generation Intel Core™ i7 / Core™ i5 / Core™ i3, Pentium and Celeron processors. ® ® ® Z170-K Z170-K CPU socket LGA1151 ASUS Z170-K...

Page 14: Installing The Cpu

Unplug all power cables before installing the CPU. • Ensure that you install the correct CPU designed for the LGA1151 socket only. DO NOT install a CPU designed for LGA1150, LGA1155 and LGA1156 sockets on the LGA1151 socket. • Upon purchase of the motherboard, ensure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. • Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA1151 socket. • The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap. 1.3.1 Installing the CPU Chapter 1: Product introduction...

Page 15: Cpu Heatsink And Fan Assembly Installation

1.3.2 CPU heatsink and fan assembly installation Apply the Thermal Interface Material to the CPU heatsink and CPU before you install the heatsink and fan if necessary. ASUS Z170-K...

Page 16

To install the CPU heatsink and fan assembly To uninstall the CPU heatsink and fan assembly Chapter 1: Product introduction...

Page 17: System Memory

System memory 1.4.1 Overview This motherboard comes with four Double Data Rate 4 (DDR4) Dual Inline Memory Module (DIMM) sockets. A DDR4 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. According to Intel CPU spec, DIMM voltage below 1.35 V is recommended to protect the ® CPU. Z170-K Z170-K 288-pin DDR4 DIMM sockets 1.4.2 Memory configurations You may install 2 GB, 4 GB, 8 GB and 16 GB unbuffered non-ECC DDR4 DIMMs into the DIMM sockets. You can refer to the recommended memory population below. Recommended memory configurations ASUS Z170-K...

Page 18

® I nstall a 64-bit Windows OS if you want to install 4GB or more on the ® motherboard. F or more details, refer to the Microsoft support site at http://support.microsoft. ® com/kb/929605/en-us. • The default memory operation frequency is dependent on its Serial Presence Detect (SPD), which is the standard way of accessing information from a memory module. Under the default state, some memory modules for overclocking may operate at a lower frequency than the vendor-marked value. To operate at the vendor-marked or at a higher frequency, refer to section 2.5 Ai Tweaker menu for manual memory frequency adjustment. • Always install the DIMMS with the same CAS Latency. For an optimum compatibility, we recommend that you install memory modules of the same version or data code (D/C) from the same vendor. Check with the vendor to get the correct memory modules. • For system stability, use a more efficient memory cooling system to support a full memory load (4 DIMMs) or overclocking condition. Visit the ASUS website at www.asus.com for the latest QVL. Chapter 1: Product introduction...

Page 19

1.4.3 Installing a DIMM To remove a DIMM ASUS Z170-K...

Page 20: Expansion Slots

Expansion slots In the future, you may need to install expansion cards. The following sub-sections describe the slots and the expansion cards that they support. Unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components. 1.5.1 Installing an expansion card To install an expansion card: Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card. Remove the system unit cover (if your motherboard is already installed in a chassis).

Page 21: Irq Assignments For This Motherboard

– Realtek 8111H LAN – – – shared – – – – HD Audio shared – – – – – – – SATA Controller shared – – – – – – – XHCI Controller shared – – – – – – – ASUS Z170-K 1-11...

Page 22: Clear Rtc Ram

Headers Clear RTC RAM (2-pin CLRTC) 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. CLRTC Z170-K PIN 1

Z170-K Clear RTC RAM To erase the RTC RAM: Turn OFF the computer and unplug the power cord. Use a metal object such as a screwdriver to short the two pins. Plug the power cord and turn on the computer. Hold down the <Del> key during the boot process and enter BIOS setup to re- enter data. • If the steps above do not help, remove the onboard battery and short the two pins again to clear the CMOS RTC RAM data. After clearing the CMOS, reinstall the battery.

Page 23: Connectors

GREEN 1Gbps connection (Blinking) LAN port Orange Ready to (Blinking then wake up from steady) S5 mode Line In port (light blue). This port connects to the tape, CD, DVD player, or other audio sources. Line Out port (lime). This port connects to a headphone or a speaker. In the 4.1, 5.1 and 7.1-channel configurations, the function of this port becomes Front Speaker Out. Microphone port (pink). This port connects to a microphone. Refer to the audio configuration table for the function of the audio ports in 2.1, 4.1, 5.1, or 7.1-channel configuration. ASUS Z170-K 1-13...

Page 24 Audio 2.1, 4.1, 5.1, or 7.1-channel configuration Headset Port 4.1-channel 5.1-channel 7.1-channel 2.1-channel Light Blue (Rear panel) Line In Rear Speaker Out Rear Speaker Out Rear Speaker Out Lime (Rear panel) Line Out Front Speaker Out Front Speaker Out Front Speaker Out Pink (Rear panel) Mic In Mic In Bass/Center Bass/Center Lime (Front panel) Side Speaker Out To configure a 7.1-channel audio output: Use a chassis with HD audio module in the front panel to support a 7.1-channel audio output. USB 2.0 ports. These 4-pin Universal Serial Bus (USB) ports are for USB 2.0/1.1 devices.

Page 25: Internal Connectors

1.7.2 Internal connectors Serial port connector (10-1 pin COM) This connector is for a serial (COM) port. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis. PIN 1 Z170-K Z170-K Serial port (COM) connector The COM module is purchased separately. USB 2.0 connectors (10-1 pin USB1112, USB1314) These connectors are for USB 2.0 ports. Connect the USB module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specifications and supports up to 480Mbps connection speed. USB1112 USB1314 Z170-K PIN 1 PIN 1 Z170-K USB2.0 connectors Never connect a 1394 cable to the USB connectors. Doing so will damage the...

Page 26 IntA_P1_SSTX+ IntA_P2_SSTX+ IntA_P1_D- IntA_P2_D- IntA_P1_D+ IntA_P2_D+ USB3_34 PIN 1 Z170-K Z170-K USB3.0 Front panel connectors The USB 3.0 module is purchased separately. Digital audio connector (4-1 pin SPDIF_OUT) This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port. Connect the S/PDIF Out module cable to this connector, then install the module to a slot opening at the back of the system chassis. Z170-K PIN 1 SPDIF_OUT Z170-K Digital audio connector The S/PDIF module is purchased separately.

Page 27 Power OK -5 Volts PIN 1 +5 Volts +5 Volts PSON# +3 Volts -12 Volts Z170-K +3 Volts +3 Volts PIN 1 Z170-K ATX power connectors • For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12 V Specification 2.0 (or later version) and provides a minimum power of 350 W. • DO NOT forget to connect the 4-pin/8-pin ATX +12V power plug. Otherwise, the system will not boot up. • We recommend that you use a PSU with higher power output when configuring a system with more power-consuming devices or when you intend to install additional devices. The system may become unstable or may not boot up if the power is inadequate.

Page 28 Front panel audio connector (10-1 pin AAFP) This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC`97 audio standard. Connect one end of the front panel audio I/O module cable to this connector. AAFP PIN 1 Z170-K HD-audio-compliant Legacy AC'97 pin definition compliant definition Z170-K Front panel audio connector • 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. • If you want to connect a high-definition front panel audio module to this connector, set the Front Panel Type item in the BIOS setup to [HD]. If you want to connect an AC'97 front panel audio module to this connector, set the item to [AC97]. By default, this connector is set to [HD]. See section 2.6.7 Onboard Devices Configuration for details. M.2 socket 3 This socket allows you to install an M.2 (NGFF) SSD module.

Page 29 W hen a device in SATA mode is installed on the M.2 socket, SATA Express supports one PCIe mode device or one SATA mode device (installed on SATA_2 port only). In this setup, the system sets a higher priority for M.2 Socket than the SATA Express slots. The M.2 (NGFF) SSD module is purchased separately Intel Z170 Serial ATA 6.0Gb/s connectors (7-pin

SATA6G_3~6) ® These connectors connect to Serial ATA 6.0 Gb/s hard disk drives via Serial ATA 6.0 Gb/s signal cables. SATA6G_4 SATA6G_3 SATA6G_6 SATA6G_5 Z170-K Z170-K Intel SATA 6.0Gb/s connectors ® When using hot-plug and NCQ, set the SATA Mode Selection item in the BIOS to [AHCI]. See section 2.6.5 SATA Configuration for details. ASUS Z170-K 1-19...

Page 30 Intel Z170 SATAEXPRESS connectors ® These connectors connect to SATAEXPRESS hard disk drives via SATAEXPRESS signal cables. SATA6G_1 SATA6G_2 Z170-K Z170-K Intel SATAEXPRESS ® • The SATA Express connector can support one SATA Express device or two SATA devices. • M.2 Socket and SATA Express slots support PCIe and SATA devices in PCIe or SATA mode. - W hen a device in PCIe mode is installed on the M.2 socket, SATA Express supports devices in both PCIe or SATA modes. W hen a device in SATA mode is installed on the M.2 socket, SATA Express supports one PCIe mode device or one SATA mode device (installed on SATA_2 port only). In this setup, the system sets a higher priority for M.2 Socket than the SATA Express slots. 1-20 Chapter 1: Product introduction...

Page 31 CPU and chassis fan connectors (4-pin CPU_FAN, 4-pin CHA_FAN 1/2) Connect the fan cables to the fan connectors on the motherboard, ensuring that the black wire of each cable matches the ground pin of the connector CPU_FAN CHA_FAN1 CHA_FAN2 Z170-K CHA FAN PWR CHA FAN IN Z170-K Fan connectors Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan connectors! The CPU_FAN connector supports a CPU fan of maximum 1A (12 W) fan power. ASUS Z170-K 1-21...

Page 32: System Panel Connector

System panel connector This connector supports several chassis-mounted functions. PANEL +PWR_LED- SPEAKER PWR_SW PIN 1 Z170-K +HDD_LED- RESET +PWR_LED- * Requires an ATX power supply Z170-K System panel connector • System power LED (4-pin +PWR_LED-) This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode. • Hard disk drive activity LED (2-pin +HDD_LED-) This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The HDD LED lights up or flashes when data is read from or written to the HDD. • System warning speaker (4-pin SPEAKER) This 4-pin connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.

Page 33: Standby Power Led

Onboard LED Standby Power LED (SB_PWR) The motherboard comes with a standby power LED that lights up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard LED. Z170-K SB_PWR Standby Power Powered Off Z170-K Standby power LED ASUS Z170-K 1-23...

Page 34: Software Support

Motherboard settings and hardware options vary. Refer to your OS documentation for detailed information. 1.9.2 Support DVD information The Support DVD that comes with the motherboard package contains the drivers, software applications, and utilities that you can install to avail all motherboard features. The contents of the Support DVD are subject to change at any time without notice. Visit the ASUS website at www.asus.com for updates. To run the Support DVD Place the Support DVD into the optical drive. If Autorun is enabled in your computer, the DVD automatically displays the lists of the unique features of your ASUS motherboard. Click the Driver, Utilities, Manual, or Special tabs to display their respective menus. The following screen is for reference only. Click to install Select an item/ subitem that you Click a tab to...

Page 35: Chapter 2 Bios Information

Save a copy of the original motherboard BIOS file to a USB flash disk in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update utility. (BIOS version template: Z170-K 0305 version) 2.1.1...

Page 36: Asus Ez Flash

2.1.2 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. See section 2.10 Exit Menu for details.

Page 37: Asus Crashfree Bios 3 Utility

2.1.3 ASUS CrashFree BIOS 3 utility The ASUS CrashFree BIOS 3 is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can restore a corrupted BIOS file using the motherboard support DVD or a USB flash drive that contains the updated BIOS file.

Page 38

ENTER to select boot device ESC to boot using defaults P2: ST3808110AS (76319MB) aigo miniking (250MB) UEFI: (FAT) ASUS DRW-2014L1T(4458MB) P1: ASUS DRW-2014L1T(4458MB) UEFI: (FAT) aigo miniking (250MB) Enter Setup When the booting message appears, press <Enter> within five (5) seconds to enter FreeDOS prompt.

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DO NOT shut down or reset the system while updating the BIOS to prevent system boot failaure. Ensure to load the BIOS default settings to ensure system compatibility and stability. Select the Load Optimized Defaults item under the Exit BIOS menu. See section 2.10 Exit Menu for details. ASUS Z170-K...

Page 40: Bios Setup Program

The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen. • Visit the ASUS website at www.asus.com to download the latest BIOS file for this motherboard. •...

Page 41

Click the button to manually Saves the changes tune the fans and resets the Selects the boot Loads optimized system device priority default settings The boot device options vary depending on the devices you installed to the system. ASUS Z170-K...

Page 42: Advanced Mode

2.2.2 Advanced Mode The Advanced Mode provides advanced options for experienced end-users to configure the BIOS settings. The figure below shows an example of the Advanced Mode. Refer to the following sections for the detailed configurations. To access the EZ Mode, click EzMode(F7) or press <F7>. EZ Tuning MyFavorite Q-Fan control...

Page 43: Menu Bar

This button above the menu bar allows you to view and tweak the overclocking* settings of your system. It also allows you to change the motherboard’s SATA mode from AHCI to RAID mode. Refer to section 2.2.4 EZ Tuning Wizard for more information. ASUS Z170-K...

Page 44: Hot Keys

Quick Note (F9) This button above the menu bar allows you to key in notes of the activities that you have done in BIOS. • The Quick Note function does not support the following keyboard functions: delete, cut, copy and paste. •...

Page 45: Qfan Control

Click to activate Click to activate DC to be configured PWM Mode Mode Select a profile to apply Click to apply to your fans the fan setting Click to undo Click to the changes go back to main menu ASUS Z170-K 2-11...

Page 46: Configuring Fans Manually

Configuring fans manually Select Manual from the list of profiles to manually configure your fans’ operating speed. Click to manually Speed points configure your fans To configure your fans: Select the fan that you want to configure and to view its current status. Click and drag the speed points to adjust the fans’...

Page 47: Ez Tuning Wizard

Select the CPU fan type (Box cooler, Tower cooler, or Water cooler) that you installed then click Next. If you are not sure of the CPU fan type, click I’m not sure. The system automatically detects the CPU fan type. Click Next then click Yes to confirm auto-tuning. ASUS Z170-K 2-13...

Page 48: Creating Raid

Creating RAID To create RAID: Press <F11> on your keyboard or click from the BIOS screen to open EZ Tuning Wizard screen. Click RAID then click Next. • Ensure that your HDDs have no

existing RAID volumes. • Ensure to connect your HDDs to Intel SATA connectors.

Page 49: My Favorites

My Favorites MyFavorites is your personal space where you can easily save and access your favorite BIOS items. ASUS Z170-K 2-15...

Page 50

Adding items to My Favorites To add BIOS items: Press <F3> on your keyboard or click from the BIOS screen to open Setup Tree Map screen. On the Setup Tree Map screen, select the BIOS items that you want to save in MyFavorites screen.

Page 51: Main Menu

RAM to clear the BIOS password. See section 1.6 Hesders for information on how to erase the RTC RAM. • The Administrator or User Password items on top of the screen show the default Not Installed. After you set a password, these items show Installed. ASUS Z170-K 2-17...

Page 52: Administrator Password

Administrator Password If you have set an administrator password, we recommend that you enter the administrator password for accessing the system. To set an administrator password: Select the Administrator Password item and press <Enter>. From the Create New Password box, key in a password, then press <Enter>. Confirm the password when prompted.

Page 53: Ai Tweaker Menu

Select any of these preset overclocking configuration options: [Auto] Loads the optimal settings for the system automatically. [Manual] Allows you to assign the BCLK (base clock) frequency manually. The following items appear only when you set the Ai Overclocking Tuner to [Manual]. ASUS Z170-K 2-19...

Page 54

2.5.2 ASUS MultiCore Enhancement [Auto] [Auto] This item allows you to maximize the oveclocking performance optimized by ASUS core ratio settings. [Disabled] This item allows you to set to default core ratio settings. 2.5.3 CPU Core Ratio [Sync All Cores] This item allows you to set the CPU core ratio limit per core or synchronize automatically to all cores.

Page 55: Bclk/Dram Frequency

2.5.8 EPU Power Saving Mode [Disabled] ASUS EPU (Energy Processing Unit) sets the CPU in its minimum power consumption settings. Enable this item to set lower CPU VCCIN and Vcore voltages and achieve the best energy saving condition. Configuration options: [Disabled] [Enabled] 2.5.9...

Page 56: Dram Timing Control

2.5.10 DRAM Timing Control The subitems in this menu allow you to set the DRAM timing control features. Use the <+> and <-> keys to adjust the value. To restore the default setting, type [auto] using the keyboard and press the <Enter> key. Changing the values in this menu may cause the system to become unstable! If this happens, revert to the default settings.

Page 57

Fixed VCCGT Switching Frequency (KHz) [250] This item allows you to set a higher frequency for a quicker transient response speed. Use the <+> and <-> keys to adjust the value. The values range from 300KHz to 600KHz with a 50KHz interval. ASUS Z170-K 2-23...

Page 58

CPU Graphics Duty Control [T.Probe] The GT power duty control adjusts the current and thermal conditions of every component’s phase. [T. Probe] Select to maintain the VRM thermal balance. [Extreme] Select to maintain the current VRM balance. CPU Graphics Phase Control [Auto] This item allows you to set the power phase control of GT.

Page 59

[Adaptive Mode] is available for some specific CPU types. CPU Core Voltage Override [Auto] Allows you to set the CPU Core Voltage override. Use the <+> or <-> keys to adjust the value. The values range from 0.001V to 0.635V with a 0.001V interval. ASUS Z170-K 2-25...

Page 60

The following items appear only when you set the CPU Core Voltage to [Offset Mode] or [Adaptive Mode]. CPU Core Voltage Sign [+] To offset the voltage by a positive value. [–] To offset the voltage by a negative value. CPU Core Voltage Offset Use the <+>...

Page 61: Advanced Menu

The Advanced menu items allow you to change the settings for the CPU and other system devices. Be cautious when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction. ASUS Z170-K 2-27...

Page 62: Cpu Configuration

2.6.1 CPU Configuration The items in this menu show the CPU-related information that the BIOS automatically detects. The items shown in submenu may be different due to the CPU you installed. Hyper-threading [Enabled] The Intel Hyper-Threading Technology allows a hyper-threading processor to appear as two logical processors to the operating system, allowing the operating system to schedule two threads or processes simultaneously.

Page 63: Platform Misc Configuration

The following item appears only when you set the PCI Express Native Power Management to [Enabled]. Native ASPM [Disabled] [Enabled] Windows Vista OS controls the ASPM (active state power ® management) support for devices. [Disabled] BIOS controls the ASPM support for the device. ASUS Z170-K 2-29...

Page 64: Graphics Configuration

ASPM to take effect. Configuration options: [Disabled] [L0s] [L1] [L0sL1] PEG ASPM [Disabled] This item allows you to select the ASPM state for energy-saving conditions, or use the ASUS optimized energy saving profile. Configuration options: [Disabled] [Auto] [ASPM L0s] [L1] [L0sL1] 2.6.3...

Page 65: Memory Configuration

The following items appear only when you set the SATA Mode Selection to [RAID]. CR#1 RST Pcie Storage Remapping [Disabled] This item allows you to enable or disable the RST Pcie Storage Remapping feature. Configuration options: [Auto] [Disabled] [Enabled] ASUS Z170-K 2-31...

Page 66: Software Feature Mask Configuration

Alternate ID [Disabled] This item allows you to enable or disable the report for the alternate device ID. Configuration options: [Auto] [Disabled] [Enabled] Software Feature Mask Configuration Allows you to configure the SWFM (Software Feature Mask) settings. RAID 0 / RAID 1 / RAID 10 / RAID 5 [Enabled] Allows you to enable or disable the RAID 0 /RAID 1/ RAID 10/ RAID 5 feature.

Page 67: Usb Configuration

The subitems in this menu allow you to set the USB Port Disable Override features. USB3_1~8 [Enabled] Allows you to enable or disable the USB3.0 ports individually. Configuration options: [Disabled] [Enabled] USB9~14 [Enabled] Allows you to enable or disable the USB2.0 ports individually. Configuration options: [Disabled] [Enabled] ASUS Z170-K 2-33...

Page 68: Onboard Devices Configuration

2.6.7 Onboard Devices Configuration HD Audio Controller [Enabled] [Enabled] Enables the HD Audio Device. [Disabled] Disables the HD Audio Device. The following two items appear only when you set the HD Audio Controller item to [Enabled]. Front Panel Type [HD Audio] Allows you to set the front panel audio connector (AAFP) mode to legacy AC’97 or high-definition audio depending on the audio standard that the front panel audio module supports.

Page 69: Apm

The following two items appear only when you set the previous item to [Enabled]. Ipv4 / Ipv6 PXE Support [Enabled] This item allows you to enable or disable the Ipv4/Ipv6 PXE wake event. Configuration options: [Disabled] [Enabled] ASUS Z170-K 2-35...

Page 70: Monitor Menu

2.6.10 Intel(R) Rapid Storage Technology Create RAID Volume The sub-items in this menu allows you to configure RAID volumes. Name [Volume1] Selects a RAID volume. Configuration options: [Volume1] [Volume2] ~ [Volume4] RAID Level [RAID0(Stripe)] Selects a RAID level. Configuration options: [RAID0(Stripe)] [RAID1(Mirror)] [RAID5] [RAID10] Select Disks Selects a

disk to create RAID volume.

Page 71 Sets to [Silent] to minimize the fan speed for quiet CPU fan operation. [Turbo] Sets to [Turbo] to achieve maximum CPU fan speed. [Manual] Sets to [Manual] to assign detailed fan speed control parameters. The following four items appear only when you set CPU Fan Profile to [Manual]. ASUS Z170-K 2-37...

Page 72 CPU Upper Temperature [70] Use the <+> and <-> keys to adjust the upper limit of the CPU temperature. The values range from 25ºC to 75ºC. CPU Fan Max. Duty Cycle(%) [100] Use the <+> and <-> keys to adjust the maximum CPU fan duty cycle. The values range from 20% to 100%.

Page 73 Use the <+> or <-> keys to adjust the minimum chassis fan duty cycle. The values range from 60% to 100%. When the CPU temperature is under the lower limit, the chassis fan operates at the minimum duty cycle. ASUS Z170-K 2-39...

Page 74: Boot Menu

Boot menu The Boot menu items allow you to change the system boot options. Scroll down to display the other BIOS items. 2.8.1 Fast Boot [Enabled] [Enabled] Select to accelerate the boot speed. [Disabled] Select to go back to normal boot speed. The following item appears only when you set Fast Boot to [Enabled].

Page 75 The following four items appear when you set Launch CSM to [Enabled]. Boot Device Control [UEFI and Legacy OPROM] Allows you to select the type of devices that you want to boot up. Configuration options: [UEFI and Legacy OPROM] [Legacy OPROM only] [UEFI only] ASUS Z170-K 2-41...

Page 76: Secure Boot

Boot from Network Devices [Legacy only] Allows you to select the type of network devices that you want to launch. Configuration options: [Ignore] [Legacy only] [UEFI driver first] Boot from Storage Devices [Legacy Only] Allows you to select the type of storage devices that you want to launch. Configuration options: [Ignore] [Legacy only] [UEFI driver first] Boot from PCI-E Expansion Devices [Legacy Only] Allows you to select the type of PCI-E expansion devices that you want to launch.

Page 77 Configuration options: [Yes] [No] Append Key Allows you to load the additional dbx from a storage device so that more db's images cannot be loaded. The dbx file must be formatted as a UEFI variable structure with time-based authenticated variable. ASUS Z170-K 2-43...

Page 78: Tool Menu

OS in Safe Mode, press <F8 > after POST (Windows 8 not supported). • To select the boot device during system startup, press <F8> when ASUS Logo appears. 2.8.11 Boot Override These items displays the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.

Page 79: Asus Overclocking Profile

2.9.1 ASUS EZ Flash 3 Utility Allows you to run ASUS EZ Flash 3. Press [Enter] to launch the ASUS EZ Flash 3 screen. For more details, see section 2.1.2 ASUS EZ Flash 3. 2.9.2 Setup Animator [Enabled] Enables or disables the Setup animator. Configuration options: [Disabled] [Enabled] 2.9.3...

Page 80: Exit Menu

2.10 Exit menu The Exit menu items allow you to load the optimal default values for the BIOS items, and save or discard your changes to the BIOS items. Load Optimized Defaults This option allows you to load the default values for each of the parameters on the Setup menus.

Page 81: Appendices

Cet appareil est conforme aux normes CNR exemptes de licence d'Industrie Canada. Le fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas provoquer d'interférences et (2) cet appareil doit accepter toute interférence, y compris celles

susceptibles de provoquer un fonctionnement non souhaité de l’appareil. ASUS Z170-K...

Page 82: Canadian Department Of Communications Statement

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.

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CE. das Diretivas da CE. Para mais detalhes, consulte a Declaração de Компания ASUS заявляет, что это устройство соответствует основным Conformidade CE. требованиям и другим соответствующим условиям европейских Română Prin prezenta, AsusTek Inc. declară faptul că acest dispozitiv директив.

Page 84: Asus Contact Information

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ASUS Z170-K...

This manual is also suitable for:

Z170-p

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