





Asus AAEON ARES-WHI0 User Manual



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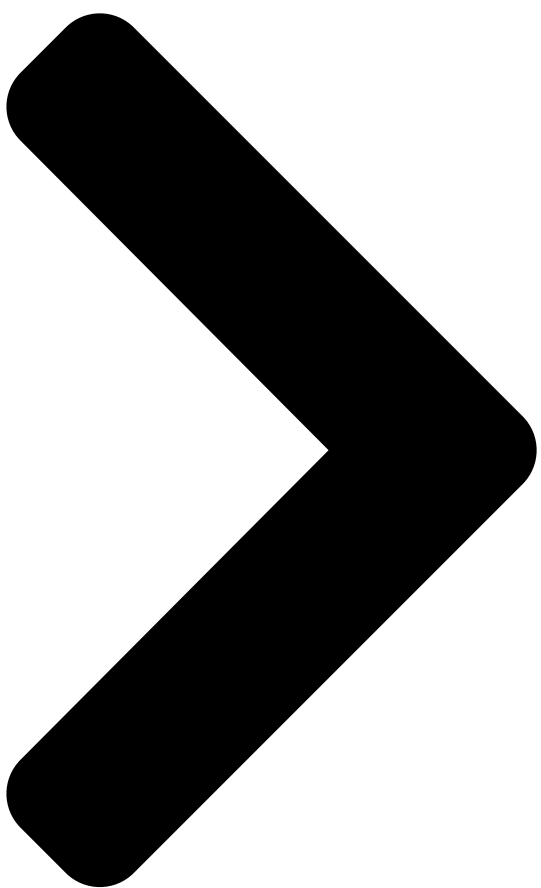
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# ARES-WH10

## Server Board

User's Manual

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Last Updated: March 10, 2022

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Asus asmb2 server management board (62 pages)

### [Server Board ASUS ASMB3-SOL User Manual](#)

Server management board (62 pages)

### [Server Board Asus ASMB3-SOL User Manual](#)

Server management board (70 pages)

### [Server Board Asus ASMB-LE User Manual](#)

Server management board (52 pages)

### [Server Board Asus ASMB4-iKVM User Manual](#)

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### [Server Board Asus ASMB7-iKVM User Manual](#)

Server management board (98 pages)

### [Server Board Asus ASMB9-iKVM User Manual](#)

Server management board (70 pages)

## Summary of Contents for Asus AAEON ARES-WHI0

[Page 1](#) ARES-WHI0 Server Board User's Manual 2 Last Updated: March 10, 2022...

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[Page 3](#) Acknowledgement All other products' name or trademarks are properties of their respective owners. Microsoft Windows is a registered trademark of Microsoft Corp. □ Intel, Pentium, Celeron, and Xeon are registered trademarks of Intel Corporation □ Core, Atom are trademarks of Intel Corporation □...

[Page 4](#) Packing List Before setting up your product, please make sure the following items have been shipped: Item Quantity ARES-WHI0 server board □ CPU carrier □ I/O Cable □ I/O Shield □ If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

[Page 5](#) About this Document This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product. Users may refer to the AAEON.com for the latest version of this document.

[Page 6](#) Safety Precautions Please read the following safety instructions carefully. It is advised that you keep this manual for future references All cautions and warnings on the device should be noted. Make sure the power source matches the power rating of the device. Position the power cord so that people cannot step on it.

[Page 7](#) If any of the following situations arises, please the contact our service personnel: Damaged power cord or plug Liquid intrusion to the device iii. Exposure to moisture Device is not working as expected or in a manner as described in this manual The device is dropped or damaged Any obvious signs of damage displayed on the device...

[Page 8](#) FCC Statement This device complies with Part 15 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 9](#) China RoHS Requirements (CN) AAEON Main Board/ Daughter Board/ Backplane (Pb) (Hg) (Cd) (Cr(VI)) (PBB) (PBDE) ...

[Page 10](#) China RoHS Requirement (EN) Poisonous or Hazardous Substances or Elements in Products AAEON Main Board/ Daughter Board/ Backplane Poisonous or Hazardous Substances or Elements Hexavalent Polybrominated Polybrominated Component Lead Mercury Cadmium Chromium Biphenyls Diphenyl Ethers (Pb) (Hg) (Cd) (Cr(VI)) (PBB) (PBDE) PCB &...

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Connectors .....7 List of Jumpers .....8 2.3.1 RTC Reset (CMOS1) ..... 8  
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## [Page 14: Chapter 1 - Product Specifications](#)

Chapter 1 Chapter 1 - Product Specifications...

## [Page 15: Specifications](#)

Specifications System Form Factor ATX Sever Board Whitely Platform Processor Single Intel® Xeon® ICE LAKE-SP Processors System Memory 6 x DDR4 2666 MHz RDIMM Slot Chipset Intel® C621A Ethernet Intel® i210 Gigabit Ethernet x 2 RS-232 x 1 BIOS AMI BIOS Serial ATA SATA II port x 8, support RAID 0, 1, 5,10 Audio and VGA...

[Page 16](#) Display Chipset Intel C621A Graphic Engine Resolution Connector Serial Port RS-232 x 1 K/B and Mouse USB 3.0 x 6 Environmental Operating Temperature 0° C ~ 60° C (32° F ~ 140° F) Storage Temperature -4° F ~ 140° F (-20° C ~ 60° C) Operating Humidity 10%~80% relative humidity, non-condensing Storage Humidity...

## [Page 17: Chapter 2 - Hardware Information](#)

Chapter 2 Chapter 2 - Hardware Information...

## [Page 18: Dimensions](#)

Dimensions Component Side Chapter 2 - Hardware Information...

## [Page 19](#) Solder Side Chapter 2 - Hardware Information...

## [Page 20: Jumpers And Connectors](#)

Jumpers and Connectors Note: For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12V Specification 2.0 (or later version) and provides a minimum power of 500W. We recommend that you use a PSU with a higher power output when ...

## [Page 21: List Of Jumpers](#)

List of Jumpers Please refer to the table below for all of the board's jumpers that you can configure for your application Label Function CMOS1 RTC Reset Auto Power Button ME Recover

2.3.1 RTC Reset (CMOS1) Normal Clear CMOS 2.3.2 Auto PWRBTN Selection (JP1) 1 2 3 1 2 3 Normal...

## [Page 22: List Of Connectors](#)

List of Connectors Please refer to the table below for all of the board's connectors that you can configure for your application Label Function DIO1 Digital I/O USB2.0 Port Front Panel Pin Header CPU\_FAN1/2 CPU\_FAN1 SYS\_FAN3~5 CPU\_FAN2 M.2 Key-M 2280 SATA1 ~ SATA8 SATA Port Connector ATX1...

## [Page 23: Digital I/O: 2.0Mm Pin Header 2X5P \(Dio1\)](#)

2.4.1 Digital I/O: 2.0mm Pin Header 2x5P (DIO1) Signal Signal Type DIO0 Input / Output DIO1 Input / Output DIO2 Input / Output DIO3 Input / Output DIO4 Input / Output DIO5 Input / Output DIO6 Input / Output DIO7 Input / Output +3.3V 2.4.2 USB2.0: 2.0mm Box Header 2x10P (CN5)

## [Page 24: Front Panel Pin Header \(Fp1\)](#)

Signal Signal Type USBP\_1P DIFF USBP\_2P DIFF USBP\_2N DIFF +5V\_USB 2.4.3 Front Panel Pin Header (FP1) Signal Signal Type Power On Button(+) Input Reset Switch (+) Input Power On Button(-) Reset Switch (-) HDD LED (+) Output Power LED(+) POWER HDD LED (-) Output Power LED(-)

## [Page 25: Case Open \(Cn9\)](#)

2.4.4 Case Open (CN9) Signal Signal Type CASEOPEN# Input Chapter 2 – Hardware Information...

## [Page 26: Chapter 3 - Ami Bios Setup](#)

Chapter 3 Chapter 3 - AMI BIOS Setup...

## [Page 27: System Test And Initialization](#)

System Test and Initialization The board uses certain routines to perform testing and initialization. If an error, fatal or non-fatal, is encountered, a few short beeps or an error message will be outputted. The board can usually continue the boot up sequence with non-fatal errors. The system configuration verification routines check the current system configuration against the values stored in the CMOS memory.

## [Page 28: Ami Bios Setup](#)

AMI BIOS Setup The AMI BIOS ROM has a pre-installed Setup program that allows users to modify basic system configurations, which is stored in the battery-backed CMOS RAM and BIOS NVRAM so that the information is retained when the power is turned off. To enter BIOS Setup, press <Del>...

## [Page 29: Setup Submenu: Main](#)

Setup submenu: Main Chapter 3 – AMI BIOS Setup...

## [Page 30: Setup Submenu: Advanced](#)

Setup submenu: Advanced Chapter 3 – AMI BIOS Setup...

## [Page 31: Advanced: Trusted Computing](#)

3.4.1 Advanced: Trusted Computing Options summary: Security Deice Enable Optimal Default, Failsafe Default Support Disable Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available. SHA-1 PCR Bank Disabled Enabled Optimal Default, Failsafe Default...

[Page 32](#) Pending operation None Optimal Default, Failsafe Default TPM Clear Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device. Platform Hierarchy Enabled Optimal Default, Failsafe Default Disabled Enable or Disable Platform Hierarchy Storage Hierarchy Enabled Optimal Default, Failsafe Default...

[Page 33](#) TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM 2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not found, TPM 1.2

devices will be enumerated. Chapter 3 – AMI BIOS Setup...

### [Page 34: Advanced: Hardware Monitor](#)

3.4.2 Advanced: Hardware Monitor Options summary: CPU FAN / CPU Disabled FAN 2 / SYS FAN 3 Enabled Optimal Default, Failsafe Default Control For En/Disable CPU FAN / CPU FAN 2 / SYS FAN 3 Smart Control Enabled: FAN is running in accordance with user settings Disabled: FAN is always running with full speed FAN Control Mode Manual Mode Automatic Mode...

[Page 35](#) PWM Duty Optimal Default, Failsafe Default Manual Mode: PWM Duty value Range:[0 - 255] Spin PWM Optimal Default, Failsafe Default The PWM Duty of FAN Spin Range:[0 - 255] Off Control Optimal Default, Failsafe Default Temperature Temperature Limit Value of Fan Off Note: Some fans have the minimum speed even if the PWM value is 0 Start Control Optimal Default, Failsafe Default...

### [Page 36: Advanced: Sio Configuration](#)

3.4.3 Advanced: SIO Configuration Options summary: Serial Port View and Set Basic properties of the SIO Logical device. Like IO Base, IRQ Range, DMA Channel and Device Mode. Chapter 3 – AMI BIOS Setup...

### [Page 37: Sio Configuration: Serial Port Configuration](#)

3.4.3.1 SIO Configuration: Serial Port Configuration Options summary: Use This Device Enabled Optimal Default, Failsafe Default Disabled Enable or Disable this Logical Device. Possible Use Automatic Settings Optimal Default, Failsafe Default IO=3F8h; IRQ=4; IO=2F8h; IRQ=3; Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.

### [Page 38: Advanced: Pci Subsystem Settings](#)

3.4.4 Advanced: PCI Subsystem Settings Options summary: Above 4G Decoding Disabled Enabled Optimal Default, Failsafe Default Enables or Disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding). Chapter 3 – AMI BIOS Setup...

### [Page 39: Advanced: Serial Port Console Configuration](#)

3.4.5 Advanced: Serial Port Console Configuration Options summary: Console Enabled Optimal Default, Failsafe Default Redirection Disabled Console Redirection Enable or Disable. Console Redirection Settings The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

### [Page 40: Serial Port Console Configuration: Com0 Console Redirection](#)

3.4.5.1 Serial Port Console Configuration: COM0 Console Redirection Settings Options summary: Terminal Type VT100 VT100+ Optimal Default, Failsafe Default VT-UTF8 ANSI Emulation : ANSI : Extended ASCII char set. VT100 : ASCII char set. VT100+ : Extends VT100 to support color, function keys, etc. VT-UTF8 : Uses UTF8 encoding to map Unicode.

[Page 41](#) 19200 38400 57600 115200 Optimal Default, Failsafe Default Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds. Data bit Optimal Default, Failsafe Default Data Bits Parity None Optimal Default, Failsafe Default Even Mark...

[Page 42](#) Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

### [Page 43: Serial Port Console Configuration: Legacy Console Redirection](#)

3.4.5.2 Serial Port Console Configuration: Legacy Console Redirection Settings Options summary: Redirection COM COM0 Optimal Default, Failsafe Default Port Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages Resolution 80x24 Optimal Default, Failsafe Default 80x25 On Legacy OS, the Number of Rows and Columns supported redirection Redirect After POST Always Enable Optimal Default, Failsafe Default...



[Page 44](#) When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable. Chapter 3 – AMI BIOS Setup...

### [Page 45: Serial Port Console Configuration: Console Redirection Ems](#)

3.4.5.3 Serial Port Console Configuration: Console Redirection EMS Settings Options summary: Terminal Type EMS VT100 VT100+ VT-UTF8 Optimal Default, Failsafe Default ANSI VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.

[Page 46](#) 115200 Optimal Default, Failsafe Default Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds. Flow Control EMS None Optimal Default, Failsafe Default Hardware RTS/CTS Software Xon/Xoff Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop'...

### [Page 47: Advanced: Nvme Configuration](#)

3.4.6 Advanced: NVMe Configuration Chapter 3 – AMI BIOS Setup...

### [Page 48: Advanced: Power Management](#)

3.4.7 Advanced: Power Management Options summary: Power Mode ATX Type Optimal Default, Failsafe Default AT Type Select power supply mode. Restore AC Power Last State Optimal Default, Failsafe Default Loss Always On Always Off Select power state when power is re-applied after a power failure. RTC wake system Disabled Optimal Default, Failsafe Default...

[Page 49](#) Fixed Time : System will wake on the hr :: min :: sec specified Bypass: BIOS will not control RTC wake function during system shutdown Chapter 3 – AMI BIOS Setup...

### [Page 50: Advanced: Digital Io Port Configuration](#)

3.4.8 Advanced: Digital IO Port Configuration Options summary: DIO Port1~4 Output Optimal Default, Failsafe Default Input Set DIO as Input or Output DIO Port1~4 High Optimal Default, Failsafe Default Output Level Set output level when DIO pin is output DIO Port5~8 Output Input Optimal Default, Failsafe Default...

[Page 51](#) Set output level when DIO pin is output Chapter 3 – AMI BIOS Setup...

### [Page 52: Advanced: Case Open Configuration](#)

3.4.9 Advanced: Case Open Configuration Options summary: Case Open Disabled Optimal Default, Failsafe Default Warning Enabled Clear Case Open detecting function Chapter 3 – AMI BIOS Setup...

### [Page 53: Setup Submenu: Platform Configuration](#)

Setup submenu: Platform Configuration Chapter 3 – AMI BIOS Setup...

### [Page 54: Platform Configuration: Pch Configuration](#)

3.5.1 Platform Configuration: PCH Configuration Chapter 3 – AMI BIOS Setup...

### [Page 55: Pch Configuration: Pch Sata Configuration](#)

3.5.1.1 PCH Configuration: PCH SATA Configuration Options summary: SATA Controller Disabled Enabled Optimal Default, Failsafe Default Enable or Disable SATA Controller Configure SATA as AHCI Optimal Default, Failsafe Default RAID Identify the SATA port is connected to Solid State Drive or Hard Disk Drive Chapter 3 –...

### [Page 56: Pch Configuration: Pch Ssata Configuration](#)

3.5.1.2 PCH Configuration: PCH sSATA Configuration Options summary: sSATA Controller Disabled Enabled Optimal Default, Failsafe Default Enable or Disable SATA Controller Chapter 3 – AMI BIOS Setup...

## [Page 57: Platform Configuration: Server Me Configuration](#)

3.5.2 Platform Configuration: Server ME Configuration Options summary: HMRFP0\_ENABLE Disable Optimal Default, Failsafe Default Message Enable Enable/Disable sending HMRFP0\_ENABLE Message to ME Chapter 3 – AMI BIOS Setup...

## [Page 58: Setup Submenu: Socket Configuration](#)

Setup submenu: Socket Configuration Chapter 3 – AMI BIOS Setup...

## [Page 59: Socket Configuration: Processor Configuration](#)

3.6.1 Socket Configuration: Processor Configuration Options summary: Hyper-Threading Disable [ALL] Enable Optimal Default, Failsafe Default Enables Hyper Threading (Software Method to Enable/Disable Logical Processor threads. Chapter 3 – AMI BIOS Setup...

## [Page 60: Socket Configuration: Memory Configuration](#)

3.6.2 Socket Configuration: Memory Configuration Chapter 3 – AMI BIOS Setup...

## [Page 61: Memory Configuration: Memory Topology](#)

3.6.2.1 Memory Configuration: Memory Topology Chapter 3 – AMI BIOS Setup...

## [Page 62: Socket Configuration: Iio Configuration](#)

3.6.3 Socket Configuration: IIO Configuration Chapter 3 – AMI BIOS Setup...

## [Page 63: Socket Configuration: Intel® Vt For Directed I/O \(Vt-D\)](#)

3.6.4 Socket Configuration: Intel® VT for Directed I/O (VT-d) Options summary: Intel® VT for Enable Optimal Default, Failsafe Default Directed I/O Disable Enables Hyper Threading (Software Method to Enable/Disable Logical Processor threads. X2APIC Opt Out Enable Disable Optimal Default, Failsafe Default Enable/Disable X2APIC\_OPT\_OUT bit Chapter 3 –...

## [Page 64: Socket Configuration: Advanced Power Management Configuration](#)

3.6.5 Socket Configuration: Advanced Power Management Configuration Chapter 3 – AMI BIOS Setup...

## [Page 65: Advanced Power Management Configuration: Cpu C State](#)

3.6.5.1 Advanced Power Management Configuration: CPU C State Control Options summary: Enable Monitor Disable MWAIT Enable Optimal Default, Failsafe Default Allows Monitor and MWAIT instructions. Chapter 3 – AMI BIOS Setup...

## [Page 66: Setup Submenu: Security](#)

Setup submenu: Security Change User/Administrator Password If an Administrator Password is set, it will be required during boot up, or when the user enters the Setup utility. Please Note that a User Password does not provide access to many of the features in the Setup utility. Select the password you wish to set, press Enter to open a dialog box to enter your password (you can enter no more than six letters or numbers).

[Page 67](#) Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection. Chapter 3 – AMI BIOS Setup...

## [Page 68: Security: Secure Boot](#)

3.7.1 Security: Secure Boot Options summary: Secure Boot Disabled Optimal Default, Failsafe Default Enabled Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PLK) is enrolled and the System is in User mode. The mode change requires platform reset Secure Boot Mode Standard Custom Optimal Default, Failsafe Default...

[Page 69](#) Reset To Setup Delete all Secure Boot key databases from NVRAM Mode Chapter 3 – AMI BIOS Setup...

## [Page 70: Secure Boot: Key Management](#)

3.7.1.1 Secure Boot: Key Management Options summary: Factory Key Disabled Optimal Default, Failsafe Default Provision Enabled Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode Restore Factory Force System to User Mode. Install factory default Secure Boot key Keys databases.

[Page 71](#) Enroll Efi Image Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db) Remove 'UEFI CA' Device Guard ready system must not list 'Microsoft UEFI CA' from DB Certificate in Authorized Signature database (db) Restore DB defaults Restore DB variable to factory defaults Secure Boot Variables...

## [Page 72: Setup Submenu: Boot](#)

Setup submenu: Boot Options summary: Quiet Boot Disabled Enabled Optimal Default, Failsafe Default Enable or Disable Quiet Boot option. Network Stack Disabled Optimal Default, Failsafe Default Enabled Enable/Disable UEFI Network Stack. CSM Support Disabled Optimal Default, Failsafe Default Enabled Enable/Disable CSM Support. FIXED BOOT ORDER Priorities Sets the system boot order Chapter 3 –...

## [Page 73: Setup Submenu: Save & Exit](#)

Setup submenu: Save & Exit Options summary: Save Changes and Reset Reset the system after saving the changes. Discard Changes and Exit Exit system setup without saving any changes. Restore Defaults Restore/Load Default values for all the setup options. Chapter 3 – AMI BIOS Setup...

## [Page 74](#) Chapter 4 Chapter 4 – Driver Installation...

[Page 75](#) Driver Download/Installation Drivers for the ARES-WHI0 can be downloaded from the product page on the AAEON website by following this link: <https://www.aaeon.com/en/p/intel-ice-lake-xeon-server-board-ares-ghi0> Download the driver(s) you need, extract them to their respective folders and follow the steps below to install them. Step 1 –...

[Page 76](#) Step 4 – Install Audio Driver Open the Audio Driver V8978 folder Run the Setup.exe file in the folder Follow the instructions Drivers will be installed automatically Chapter 4 – Driver Installation...

This manual is also suitable for:

Ares-ghi0-a10-00