Asus AAEON COM-SKHB6 User Manual

1
2
3
4
5
6
7
8
9
10
Table Of Contents
11
12
13
14
15
16
17

68
69
70
71
72
73
74
75
76

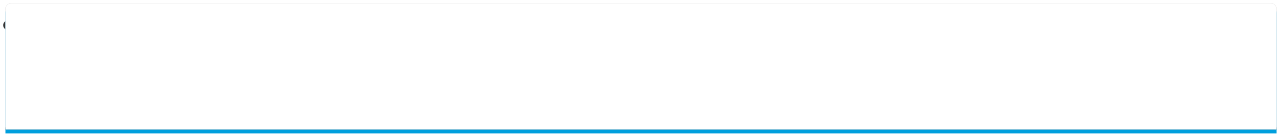

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Table of Contents

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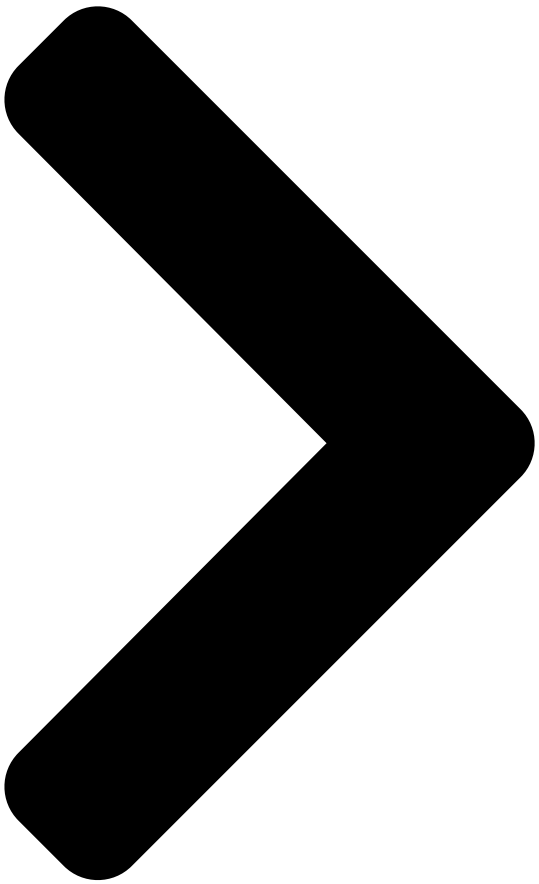

COM-SKHB6

COM Express Module

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User's Manual 4

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Last Updated: August 8, 2022

Table of Contents

Next Page

1
2
3
4
5

Related Manuals for Asus AAEON COM-SKHB6

Control Unit Asus Aaeon COM-SKUC6 User Manual

Com express module (99 pages)

Control Unit Asus AAEON COM-SKUC6 User Manual

Com express module (100 pages)

Control Unit Asus AAEON COM-WHUC6 User Manual

Com express module (110 pages)

Control Unit Asus AAEON COM-BYTC2 User Manual

Com express module (91 pages)

Control Unit Asus AAEON COM-BT-A30 User Manual

Com express module (98 pages)

Control Unit Asus AAEON COM-TGHB6 User Manual

(88 pages)

Control Unit Asus AAEON COM-TGUC6 User Manual

Com express module (103 pages)

Control Unit Asus AAEON COM-ADNC6 User Manual

Com express module (89 pages)

Control Unit Asus Aaeon NanoCOM-APL User Manual

Com express module (77 pages)

Control Unit Asus ThunderboltEX 3-TR User Manual

(14 pages)

Control Unit Asus TPM-SPI Quick Start Manual

14-1 pin (4 pages)

Control Unit Asus AAEON MXM-ACMA User Manual

(26 pages)

Control Unit Asus AAEON MIPICSI Camera RVP Converter Kit User Manual

Up expansion module (47 pages)

Control Unit Asus Aaeon NanoCOM-TGU User Manual

Com express module (95 pages)

Control Unit Asus AAEON ASDM-L-CFS User Manual

Smart display module (82 pages)

Control Unit Asus Aaeon NIM-S26B Quick Installation Manual

Network interface module (23 pages)

Summary of Contents for Asus AAEON COM-SKHB6

Page 1 COM-SKHB6 COM Express Module User’s Manual 4 Last Updated: August 8, 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 COM-SKHB6 • If any of these items are missing or damaged, please contact your distributor or sales representative immediately. Preface...

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 &...

Page 11: Table Of Contents

Table of Contents Chapter 1 - Product Specifications.....1 Specifications .....2 Function Block Diagram .....4 Chapter 2 – Hardware Information .....5 Dimensions, Jumpers and Connectors ..... 6 List of Jumpers .....8 2.2.1 AT/ATX Switch (SW1) ..... 8 List of Connectors .....

Page 12 Setup Submenu: Chipset .....38 3.5.1 System Agent (SA) Configuration .....39 3.5.1.1 Graphics Configuration ..... 40 3.5.1.2 LVDS Panel Configuration .....41 3.5.2 PCH-IO Configuration .....43 3.5.3 Firmware Update Configuration .....44 3.5.4 PCIE Type Switch Selection .....45 Setup Submenu: Security .....

Page 13: Chapter 1 - Product Specifications

Chapter 1 Chapter 1 - Product Specifications...

Page 14: Specifications

Specifications System Form Factor COM Express Basic Size, Type 6 6th/7th Generation Intel® Xeon®/Core™-H Series Processor CPU Frequency Up to i7-6820EQ 3.50 GHz Up to E3-1505M v6 4.00 GHz Chipset Intel® Chipset QM170 / CM238 Memory Type SODIMM DDR4 2133 x 2, ECC supported by Max.

Page 15 Display Graphic Controller Intel® HD Graphics P630/530 (by SKU), 18/24-bit Dual channel LVDS :1920 x 1080 @ 60Hz Video Output 3 Simultaneous Displays: Single/Dual Channel LVDS (18/24bit) (Shared with eDP), VGA x 1 (Shared with DDI3), DDI1, DDI2 Ethernet Intel® I219LM Gigabit Ethernet x 1 Audio High Definition Audio Interface USB Port...

Page 16: Function Block Diagram

Function Block Diagram Chapter 1 – Product Specifications...

Page 17: Chapter 2 - Hardware Information

Chapter 2 Chapter 2 – Hardware Information...

Page 18: Dimensions, Jumpers And Connectors

Dimensions, Jumpers and Connectors Component Side Component Side Chapter 2 – Hardware Information...

Page 19 Solder Side Solder Side With Heat spreader Chapter 2 – Hardware Information...

Page 20: 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 Auto power button and clear CMOS selection 2.2.1 AT/ATX Switch (SW1) Enable auto power button Disable auto power button Clear CMOS Normal (default) Chapter 2 –...

Page 21: List Of Connectors

List of Connectors Please refer to the table below for all of the board's jumpers that you can configure for your application Label Function Express ROW C/D Connector BIOS SPI Flash Programming Connector EC SPI Flash Programming Connector Express ROW A/B Connector RTC Battery Connector DIMM1 SO-DIMMCOM...

Page 22: Com Express Row C/D Connector (Cn1)

2.3.1 COM Express Row C/D Connector (CN1) Row C Row D Signal Signal GND (FIXED) GND (FIXED) GND (FIXED) GND (FIXED) USB_SSRX0- USB_SSTX0- USB_SSRX0+ USB_SSTX0+ GND (FIXED) GND (FIXED) USB_SSRX1- USB_SSTX1- USB_SSRX1+ USB_SSTX1+ GND (FIXED) GND (FIXED) USB_SSRX2- USB_SSTX2- USB_SSRX2+ USB_SSTX2+ GND (FIXED) GND (FIXED)

Page 23 Signal Signal DDI1_PAIR4+(NC) RSVD DDI1_PAIR4-(NC) DDI1_PAIR0+ RSVD DDI1_PAIR0- RSVD RSVD DDI1_PAIR5+(NC) DDI1_PAIR1+ DDI1_PAIR5-(NC) DDI1_PAIR1- GND (FIXED) GND (FIXED) DDI2_CTRLCLK_AUX+ DDI1_PAIR2+ DDI2_CTRLDATA_AUX- DDI1_PAIR2- DDI2_DDC_AUX_SEL DDI1_DDC_AUX_SEL RSVD RSVD DDI3_CTRLCLK_AUX+ DDI1_PAIR3+ DDI3_CTRLDATA_AUX- DDI1_PAIR3- DDI3_DDC_AUX_SEL RSVD DDI3_PAIR0+ DDI2_PAIR0+ DDI3_PAIR0- DDI2_PAIR0- GND (FIXED) GND (FIXED) DDI3_PAIR1+ DDI2_PAIR1+ DDI3_PAIR1-...

Page 24 Signal Signal PEG_RX0- PEG_TX0- TYPE0#(NC) PEG_LAN_RV# PEG_RX1+ PEG_TX1+ PEG_RX1- PEG_TX1- TYPE1#(NC) TYPE2#(GND) PEG_RX2+ PEG_TX2+ PEG_RX2- PEG_TX2- GND (FIXED) GND (FIXED) PEG_RX3+ PEG_TX3+ PEG_RX3- PEG_TX3- RSVD RSVD RSVD RSVD PEG_RX4+ PEG_TX4+ PEG_RX4- PEG_TX4- RSVD GND (FIXED) PEG_RX5+ PEG_TX5+ PEG_RX5- PEG_TX5- GND (FIXED) GND (FIXED) PEG_RX6+ PEG_TX6+...

Page 25 Signal Signal PEG_RX9+ PEG_TX9+ PEG_RX9- PEG_TX9- RSVD RSVD GND (FIXED) GND (FIXED) PEG_RX10+ PEG_TX10+ PEG_RX10- PEG_TX10- GND (FIXED) GND (FIXED) PEG_RX11+ PEG_TX11+ PEG_RX11- PEG_TX11- GND (FIXED) GND (FIXED) PEG_RX12+ PEG_TX12+ PEG_RX12- PEG_TX12- PEG_RX13+ PEG_TX13+ PEG_RX13- PEG_TX13- GND (FIXED) GND (FIXED) RSVD RSVD PEG_RX14+...

Page 26: Com Express Row A/B Connector (Cn4)

Signal Signal C108 VCC_12V D108 VCC_12V C109 VCC_12V D109 VCC_12V C110 GND (FIXED) D110 GND (FIXED) 2.3.2 COM Express Row A/B Connector (CN4) Row A Row B Signal Signal GND (FIXED) GND (FIXED) GBE0_MDI3- GBE0_ACT# GBE0_MDI3+ LPC_FRAME# GBE0_LINK100# LPC_AD0 GBE0_LINK1000# LPC_AD1 GBE0_MDI2- LPC_AD2...

Page 27 Signal Signal SATA0_RX- SATA1_RX- GND (FIXED) GND (FIXED) SATA2_TX+ SATA3_TX+ SATA2_TX- SATA3_TX- SUS_S5# PWR_OK SATA2_RX+ SATA3_RX+ SATA2_RX- SATA3_RX- BATLOW# ATA_ACT# HDA_SDIN2(NC) HDA _SYNC HDA _SDIN1 HDA _RST# HDA _SDIN0 GND (FIXED) GND (FIXED) HDA _BITCLK SPKR HDA _SDOUT I2C_CK BIOS_DIS0# I2C_DAT THRMTRIP# THRM#...

Page 28 Signal Signal EXCD0_PERST# EXCD1_CPPE# EXCD0_CPPE# SYS_RESET# LPC_SERIRQ CB_RESET# GND (FIXED) GND (FIXED) PCIE_TX5+ PCIE_RX5+ PCIE_TX5- PCIE_RX5- GPI0 GPO1 PCIE_TX4+ PCIE_RX4+ PCIE_TX4- PCIE_RX4- GPO2 PCIE_TX3+ PCIE_RX3+ PCIE_TX3- PCIE_RX3- GND (FIXED) GND (FIXED) PCIE_TX2+ PCIE_RX2+ PCIE_TX2- PCIE_RX2- GPI1 GPO3 PCIE_TX1+ PCIE_RX1+ PCIE_TX1- PCIE_RX1- WAKE0# GPI2...

Page 29 Signal Signal LVDS_A2- LVDS_B2- LVDS_VDD_EN LVDS_B3+ LVDS_A3+ LVDS_B3- LVDS_A3- LVDS_BKLT_EN GND (FIXED) GND (FIXED) LVDS_A_CK+ LVDS_B_CK+ LVDS_A_CK- LVDS_B_CK- LVDS_I2C_CK LVDS_BKLT_CTRL LVDS_I2C_DAT VCC_5V_SBY GPI3 VCC_5V_SBY RSVD VCC_5V_SBY RSVD VCC_5V_SBY PCIE0_CK_REF+ BISO_DIS1# PCIE0_CK_REF- VGA_RED GND (FIXED) GND (FIXED) SPI _POWER VGA_GRN SPI_MISO VGA_BLU GPO0 VGA_HSYNC...

Page 30 Signal Signal A104 VCC_12V B104 VCC_12V A105 VCC_12V B105 VCC_12V A106 VCC_12V B106 VCC_12V A107 VCC_12V B107 VCC_12V A108 VCC_12V B108 VCC_12V A109 VCC_12V B109 VCC_12V A110 GND (FIXED) B110 GND (FIXED) Chapter 2 – Hardware Information...

Page 31: Chapter 3 - Ami Bios Setup

Chapter 3 Chapter 3 - AMI BIOS Setup...

Page 32: 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 33: 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 34: Setup Submenu: Main

Setup Submenu: Main Press Delete to enter Setup Chapter 3 – AMI BIOS Setup...

Page 35: Setup Submenu: Advanced

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

Page 36: Cpu Configuration

3.4.1 CPU Configuration Options Summary: Disabled Hyper-Threading Enabled Optimal Default, Failsafe Default Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology). Intel (VMX) Disabled Virtualization Enabled Optimal Default, Failsafe Default Technology When enabled, a VMM can utilize the additional hardware capabilities provided by Vander pool Technology.

Page 37: Trusted Computing

3.4.2 Trusted Computing Options Summary: Disabled Security Device Support Enabled Optimal Default, Failsafe Default Enable/Disable BIOS support for security device. Disabled SHA-1 PCR Bank Enabled Optimal Default, Failsafe Default Enable/Disable SHA-1 PCR Bank. Disabled SHA256 PCR Bank Enabled Optimal Default, Failsafe Default Enable/Disable SHA256 PCR Bank.

Page 38 Disabled Storage Hierarchy Enabled Optimal Default, Failsafe Default Enable/Disable Storage Hierarchy. Disabled Endorsement Hierarchy Enabled Optimal Default, Failsafe Default En/Disable Endorsement Hierarchy. TCG_1_2 TPM2.0 UEFI Spec Version TCG_2 Optimal Default Select the TCG2 Select Version Support. Physical Presence Spec Version Optimal Default Select to Tell O.S.

Page 39: Sata Configuration

3.4.3 SATA Configuration Options Summary: Enabled Optimal Default, Failsafe Default SATA Controller(s) Disabled Enable/Disable SATA device. Default Optimal Default, Failsafe Default Gen1 SATA Controller Speed Gen2 Gen3 Indicates the maximum speed the SATA controller can support. SATA Mode AHCI Optimal Default, Selection Intel RST Premium Determines how SATA controller(s) operate.

Page 40: Sio Configuration

Disabled Optimal Default, Failsafe Default Hot Plug Enabled Designates this port as Hot Pluggable 3.4.4 SIO Configuration Chapter 3 – AMI BIOS Setup...

Page 41: Serial Port X Configuration

3.4.4.1 Serial Port X Configuration Chapter 3 – AMI BIOS Setup...

Page 42: On-Module H/W Monitor

3.4.5 On-Module H/W Monitor Chapter 3 – AMI BIOS Setup...

Page 43: Cpu Smart Fan Mode Configuration

3.4.5.1 CPU Smart Fan Mode Configuration Chapter 3 – AMI BIOS Setup...

Page 44 Chapter 3 – AMI BIOS Setup...

Page 45 Chapter 3 – AMI BIOS Setup...

Page 46: Usb Configuration

3.4.6 USB Configuration Options Summary: Enabled Optimal Default, Failsafe Default Legacy USB Disabled Support Auto Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS. AUTO option disables legacy support if no USB devices are connected. Auto Optimal Default, Failsafe Default Floppy...

Page 47: Digital Io Port Configuration

3.4.7 Digital IO Port Configuration Options Summary: Input DIO PORT Output Set DIO as In/Out. Output Level High Set Output level. Chapter 3 – AMI BIOS Setup...

Page 48: Power Management

3.4.8 Power Management Options Summary: ATX Type Optimal Default, Failsafe Default Power Mode AT Type Select power supply mode. Power On Restore AC Power Power Off Optimal Default, Failsafe Default Loss Last State Set Power Loss state. RTC wake system with Fixed Time Set System wake on alarm event.

Page 49: On-Module Configuration

3.4.9 On-Module Configuration Options Summary: Disabled Optimal Default, Failsafe Default Battery Management One Battery Enable to support battery in ACPI OS by I2C_CK, I2C_DAT. EC-SMB-HC Disabled Support Enabled SMBus Host Controller Interface via Embedded Controller. Chapter 3 – AMI BIOS Setup...

Page 50: Setup Submenu: Chipset

Setup Submenu: Chipset Chapter 3 – AMI BIOS Setup...

Page 51: System Agent (Sa) Configuration

3.5.1 System Agent (SA) Configuration Options Summary: Auto Optimal Default, Failsafe Default PEG Port Gen GEN1 Speed GEN2 GEN3 Configure PEG 0:1:0 Max Speed. Chapter 3 – AMI BIOS Setup...

Page 52: Graphics Configuration

3.5.1.1 Graphics Configuration Options Summary: Auto Optimal Default, Failsafe Default IGFX Primary Display PCIE Select which of IGFX/PEG/PCI Graphics device should be primary display. VBIOS Default Optimal Default, Failsafe Default DDI1/DP Primary IGFX Boot DDI2/DP Display

DDI3/VGA LVDS/eDP Select the Video device which will be activated during POST. Chapter 3 –...

Page 53: Lvds Panel Configuration

3.5.1.2 LVDS Panel Configuration Options Summary: No LVDS Active LFP Enabled Default Enable/Disable LVDS. 640x480@60Hz 800x480@60Hz 800x600@60Hz 1024x600@60Hz 1024x768@60Hz Default 1280x768@60Hz LCD Panel Type 1280x800@60Hz 1280x1024@60Hz 1366x768@60Hz 1440x900@60Hz 1600x1200@60Hz 1920x1080@60Hz Chapter 3 – AMI BIOS Setup...

Page 54

1920x1200@60Hz Select LCD panel used by internal graphics device by selecting the appropriate setup item. 18-Bit Default 24-Bit Color Depth 36-Bit 48-Bit Select panel type. Normal Default Backlight Type Inverted Select backlight control signal type. Backlight Level 0-100% Default 80 Select backlight control level.

Page 55: Pch-Io Configuration

3.5.2 PCH-IO Configuration Options Summary: Disabled HD Audio Enabled Default Enable/Disable HDA. PCH LAN Enabled Default Controller Disabled Enable/Disable onboard NIC Chapter 3 – AMI BIOS Setup...

Page 56: Firmware Update Configuration

3.5.3 Firmware Update Configuration Options Summary: Disabled Default Me FW Image Re-Flash Enabled Enable/Disable ME FW Image Re-Flash function. Chapter 3 – AMI BIOS Setup...

Page 57: Pcie Type Switch Selection

3.5.4 PCIE Type Switch Selection Options Summary: PCIE Port0~3 are four x1 PCIe Controller1 PCIE Port0~3 are one x2 Configuration and two x1 Select PCIE Port0~3 are two x2 PCIE Port0~3 is one x4 Default PCIE Port0~3 Selection. Disabled PCI Express Root Port 0/1/2/3 Enabled Default...

Page 58: Setup Submenu: Security

PCIE Port4~7 are four x1 Default PCIE Port4~7 are one x2 PCIe Controller2 and two x1 Configuration Select PCIE Port4~7 are two x2 PCIE Port4~7 is one x4 PCIE Port0~3 Selection. PCI Express Root Disabled Port 4/5/6/7 Enabled Default Control the PCI Express Root Port. Auto Default Gen1...

Page 59

Change User/Administrator Password You can set a User Password once an Administrator Password is set. The password 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 60: Secure Boot

3.6.1 Secure Boot Options Summary: Attempt Secure Disabled Default Boot Enabled Secure Boot activated when Platform Key (PK) enrolled, System mode is User/Deployed, and CSM function is disabled. Standard Secure Boot Mode Custom Default Secure Boot mode selector. Chapter 3 – AMI BIOS Setup...

Page 61: Key Management

3.6.1.1 Key Management Chapter 3 – AMI BIOS Setup...

Page 62: Setup Submenu: Boot

Setup Submenu: Boot Options Summary: Quiet Boot Disabled Enabled Default Enable/Disable showing boot logo. Do not launch Default Launch PXE ROM UEFI Legacy Controls the execution of UEFI and Legacy PXE OpROM. LEGACY Boot mode select UEFI DUAL Default Select boot mode LEGACY/UEFI. Boot Option #1 UEFI Hard Disk Default...

Page 63: Setup Submenu: Save & Exit

Boot Option #5 Hard Disk Default Boot Option #6 CD/DVD Default Boot Option #7 USB Device Default Boot Option #8 Network Default Sets the system boot order for FIXED BOOT ORDER Priorities. Setup Submenu: Save & Exit Chapter 3 – AMI BIOS Setup...

Page 64: Chapter 4 - Drivers Installation

Chapter 4 Chapter 4 – Drivers Installation...

Page 65: Driver Download/Installation

Driver Download/Installation Drivers for the COM-SKHB6 can be downloaded from the product page on the AAEON website by following this link: https://www.aaeon.com/en/p/com-express-modules-com-skhb6 Download the driver(s) you need and follow the steps below to install them. Step 1 – Install Chipset Driver Open the Step1 - Chipset folder followed by SetupChipset.exe Follow the instructions Drivers will be installed automatically...

Page 66 Step 4 – Install Audio Driver Open the STEP4 - Audio folder followed by 0002-Win7_Win8_Win81_R276.exe Follow the instructions Drivers will be installed automatically Step 5 – Install USB 3.0 Driver Open the STEP5 – USB3.0 folder and select your OS Open the.exe file in the folder Follow the instructions Drivers will be installed automatically...

Page 67: Appendix A - I/O Information

Appendix A Appendix A - I/O Information...

Page 68: I/O Address Map

I/O Address Map Appendix A - I/O Information...

Page 69 Appendix A - I/O Information...

Page 70 Appendix A - I/O Information...

Page 71: Memory Address Map

A.2 Memory Address Map Appendix A - I/O Information...

Page 72 Appendix A - I/O Information...

Page 73: Irq Mapping Chart

A.3 IRQ Mapping Chart Appendix A - I/O Information...

Page 74 Appendix A - I/O Information...

Page 75: Appendix B -Notes For Users

Appendix B Appendix B –Notes for Users...

Page 76: Notes For Users

Notes for Users Please observe the following items to ensure optimal performance: For applications in 2K/4K resolution, Intel recommends using 2 x DDR4 2133 SODIMM of the size capacity to ensure smooth playback. Always use a new SSD with the latest firmware for optimal performance. With the EHCI controller no longer available on the 6 Gen Intel ®...