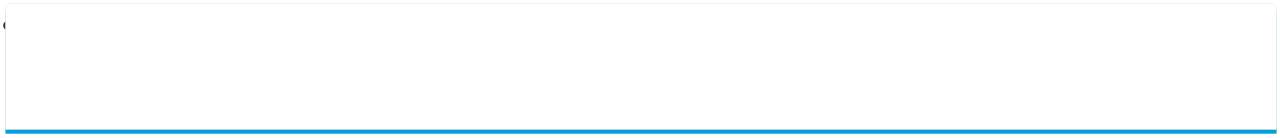

HDMI
DIO
CANBUS
RS-232/485
DC-IN 24V

Asus Aaeon BOXER-8254AI User Manual

Compact fanless embedded aiaedge box pc with nvidia jetson xavier nx

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

18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42

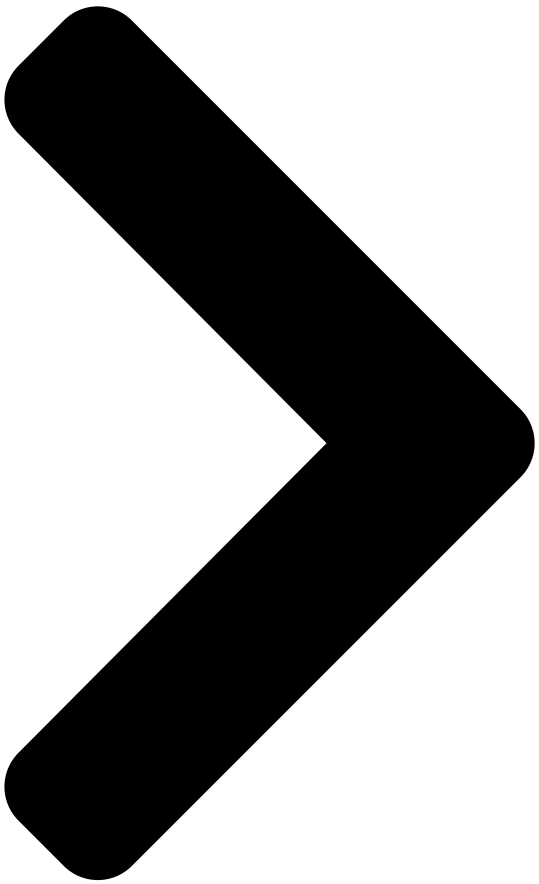


-

Table of Contents

-

Bookmarks



BOXER-8254AI

Compact Fanless Embedded AI@Edge Box PC with NVIDIA® Jetson Xavier™ NX

nd

User's Manual 2

Ed

Last Updated: March 24, 2022

Table of Contents

Next Page

Related Manuals for Asus Aaeon BOXER-8254AI

Industrial PC Asus AAEON BOXER-6615 User Manual

Fanless embedded box pc (101 pages)

Industrial PC Asus Aaeon BOXER-8331AI User Manual

Embedded ai vision system (108 pages)

Industrial PC Asus AAEON BOXER-6642-CML User Manual

Fanless embedded box pc (112 pages)

Industrial PC Asus Aaeon BOXER-6641-A1-1110 User Manual

Fanless embedded box pc (134 pages)

Industrial PC Asus AAEON BOXER-8221AI-B Installation & User Manual

Nvidia jetson nano platform (6 pages)

Industrial PC Asus AAEON BOXER-6840-CFL User Manual

Fanless embedded box pc (145 pages)

Industrial PC Asus AAEON BOXER-8623AI User Manual

Aiaedge compact fanless embedded ai system with nvidia jetson orin nano (50 pages)

Industrial PC Asus AAEON BOXER-8653AI User Manual

Aiaedge compact fanless embedded ai system with nvidia jetson orin nx (49 pages)

Industrial PC Asus AAEON BOXER-6406U-ADN User Manual

Fanless embedded box pc (103 pages)

Industrial PC Asus Aaeon BOXER-6639M User Manual

Fanless embedded box pc (104 pages)

Industrial PC Asus AAEON PICO-EHL1 User Manual

Pico-itx single board computer (105 pages)

Industrial PC Asus EBE-4U User Manual

Industrial computer barebone (59 pages)

Industrial PC Asus Aaeon GENESYS-APL7 User Manual

Compact embedded system (85 pages)

Industrial PC Asus AAEON PICO-APL4-SEMI Quick Installation Manual

(3 pages)

Industrial PC Asus EBE-4U User Manual

Industrial computer barebone (69 pages)

Summary of Contents for Asus Aaeon BOXER-8254AI

Page 1 BOXER-8254AI Compact Fanless Embedded AI@Edge Box PC with NVIDIA® Jetson Xavier™ NX User's Manual 2 Last Updated: March 24, 2022...

Page 2 Copyright Notice This document is copyrighted, 2022. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice. No part of this manual may be reproduced, copied, translated, or transmitted in any form or by any means without the prior written permission of the original manufacturer.

Page 3 Acknowledgements All other products' name or trademarks are properties of their respective owners. NVIDIA®, the NVIDIA logo, Jetson™ and Jetson Xavier™ NX are trademarks

of • the NVIDIA Corporation ITE is a trademark of Integrated Technology Express, Inc. • IBM and VGA are trademarks of International Business Machines Corporation. •...

Page 4 Packing List Before setting up your product, please make sure the following items have been shipped: Item Quantity BOXER-8254AI • Power Connector • Wallmount Bracket • Screw Package • 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 product page at 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. All cables and adapters supplied by AAEON are certified and in accordance with the material safety laws and regulations of the country of sale.

Page 7 As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers. If any of the following situations arises, please the contact our service personnel: Damaged power cord or plug Liquid intrusion to the device iii.

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 System QO4-381 Rev.A0 □□□□□□□□□ □□□□ □ □ □ □□□ □□□□ □□□□ □(PBDE) (Pb) (Hg) (Cd) (Cr(VI)) (PBB) □□□□□ × ○ ○ ○ ○ ○ □ □□□□□ □□□□ × ○ ○ ○ ○ ○ □□□□□□ □□ ○...

Page 10 China RoHS Requirement (EN) Hazardous and Toxic Materials List AAEON System QO4-381 Rev.A0 Hazardous or Toxic Materials or Elements Component Name PCB and Components Wires & Connectors for Ext.Connections Chassis CPU & RAM HDD Drive LCD Module Optical Drive Touch Control Module Battery This form is prepared in compliance with the provisions of SJ/T 11364.

Page 11: Table Of Contents

Table of Contents Chapter 1 - Product Specifications.....1 Specifications .....2 Product Notice .....4 Chapter 2 – Hardware Information .....5 Dimensions ..... 6 Jumpers and connectors.....8 List of Jumpers .....10 2.3.1 Setting Jumpers .....10 2.3.2 AT/ATX Mode Select (CN3 Pins 7-8) .....

Page 12 2.4.16 Internal COM RS232 Header (CN47) .....22 2.4.17 RS-232/485 Select (SW1) .....22 Hardware Assembly .....23 2.5.1 2.5" SATA Drive Installation .....23 2.5.2 Module Access & Installation ..... 25 2.5.3 Wallmount Kit Installation .....26 Chapter 3 – OS Flash Guide .....27 Before Installation .....

Page 13: Chapter 1 - Product Specifications

Chapter 1 Chapter 1 - Product Specifications...

Page 14: Specifications

Specifications System AI Accelerator NVIDIA® Jetson Xavier™ NX 6 Core ARM® Carmel® V8.2 64-bit CPU 6MB L2 + 4MB L3 System Memory 8GB LPDDR4x Storage Device 16GB eMMC microSD Card expansion Full-size minicard slot x1 for mSATA (share with LTE slot) 2.5"...

Page 15 System Reset button x 1 Antenna Opening x 4 Expansion Full-Size Mini Card slot x 1 (PCIe/USB/mSATA; default PCIe) M.2 E-Key 2230 x 1 for Wi-Fi SIM socket x 1 SATA port x 1 (for 2.5" drive) RS-232 header x 1 USB2.0 header x 1 Indicator Power LED x 1...

Page 16: Product Notice

Environmental Anti-Shock 50G peak acceleration (11m/sec. duration, eMMC, microSD, SATA, or SSD) Certification CE / FCC class A Product Notice Micro-USB: Micro-USB port is ideally for flashing OS image only. USB ports: USB ports do not support USB DVD ROM because of file system. USB 3.2 Gen 2: USB3.2 Gen 1 is the current name for 10Gbps specification, formerly USB 3.1 Gen 2.

Page 17: Chapter 2 - Hardware Information

Chapter 2 Chapter 2 – Hardware Information...

Page 18: Dimensions

Dimensions Chapter 2 – Hardware Information...

Page 19 Chapter 2 – Hardware Information...

Page 20: Jumpers And Connectors

Jumpers and connectors Chapter 2 – Hardware Information...

Page 21 Chapter 2 – Hardware Information...

Page 22: List Of Jumpers

List of Jumpers The board has a number of jumpers that allow you to configure your system to suit your application. The table below shows the function of each of the board's jumpers Label Function AT/ATX Selection (Front Panel Connector Pins 7-8) CN13 Mini Card mSATA/PCIe Selection 2.3.1...

Page 23: At/Atx Mode Select (Cn3 Pins 7-8)

2.3.2 AT/ATX Mode Select (CN3 Pins 7-8) The AT/ATX Mode Select functions by connecting pins 7 and 8 of CN3. To prevent damage to the system, do not connect pins 7 and 8 to any other pin. Open – AT Mode Closed –...

Page 24: List Of Connectors

List of Connectors The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each of the board's connectors Label Function NVIDIA Xavier NX Module Connector RTC Battery Connector Front Panel Connector Recovery micro-USB Connector...

Page 25: Rtc Battery Connector (Cn2)

2.4.1 RTC Battery Connector (CN2) Signal Signal 2.4.2 Front Panel Connector (CN3) Signal Signal Button_PWR_ON FORCE_RECOVERY PMIC_SYS_RST LATCH_SET_BUT LATCH_SET 3.3V Note: Pins 7-8 are used for setting AT/ATX Mode. See Ch 2.3.2 for details. Chapter 2 – Hardware Information...

Page 26: Recovery Micro Usb Connector (Cn4)

2.4.3 Recovery Micro USB Connector (CN4) Signal Signal USB1- USB1+ 2.4.4 HDMI Connector (CN5) Signal Signal HDMI_DATA2_P HDMI_DATA2_N HDMI_DATA1_P HDMI_DATA1_N HDMI_DATA0_P HDMI_DATA0_N HDMI_CLK_P HDMI_CLK_N HDMI_SCL HDMI_SDA Chapter 2 – Hardware Information...

Page 27: Rs232/Rs485 Db-9 Connector (Cn6)

Signal Signal HDMI_PWR HDMI_HDP 2.4.5 RS232/RS485 DB-9 Connector (CN6) RS-232 RS-485 485- 485+ Note: RS-232/485 Mode can be set by SW1. See Ch2.4.17 for details and settings. Chapter 2 – Hardware Information...

Page 28: Canbus Connector (Cn7)

2.4.6 CANBus Connector (CN7) Signal Signal CAN0_L CAN_H 2.4.7 UART Debug Header (CN8) Signal Signal 3.3V UART0_TXD_HDR UART0_RXD_HDR ID_I2C_SCL ID_I2C_SDA Chapter 2 – Hardware Information...

Page 29: Microsd Card Socket (Cn10)

2.4.8 microSD Card Socket (CN10) Pin (Card) Pin (Connector) Function DAT2 CD/DAT3 DAT0 DAT1 Chapter 2 – Hardware Information...

Page 30: E-Key 2230 (Cn11)

2.4.9 M.2 E-Key 2230 (CN11) Chapter 2 – Hardware Information...

Page 31: Sim Card Socket (Cn12)

2.4.10 SIM Card Socket (CN12) Pin Name Signal Type UIM_PWR UIM_RST UIM_CLK UIM_VPP UIM_DATA 2.4.11 USB3.2 Gen2/ USB2.0 Dual Port Connector (CN15) Signal Signal USB3.2 USB2.0 VBUS_1 VBUS_2 (A)D- (B)D- (A)D+ (B)D+ (A)SSRX- (A)SSRX+ Chapter 2 – Hardware Information...

Page 32: Sata Connector (Cn19)

Signal Signal USB3.2 USB2.0 (A)SSTX- (A)SSTX+ 2.4.12 SATA Connector (CN19) Pin Name Signal Type SATA_TX+ DIFF SATA_TX- DIFF SATA_RX- DIFF SATA_RX+ DIFF Chapter 2 – Hardware Information...

Page 33: Dc Power In Connector (Cn20)

2.4.13 DC Power In Connector (CN20) Signal Signal PWR IN 2.4.14 6-Bit GPIO (CN24) Signal Signal 19P_SPI0_MOSI_LS_205 21_SPI0_MISO_LS (GPIO492) (GPIO493) 13P_SPI1_SCK_LS (GPIO480) 22P_SPI1_MISO_LS (GPIO481) 37P_SPI1_MOSI_LS (GPIO482) 18P_SPI1_CS0_LS (GPIO483) +V3.3S 2.4.15 8-Bit GPIO Header (CN37) Signal Signal +V3.3S GPIO14 (GPIO345) 16P_SPI1_CS1_LS (GPIO484) 15P_GPIO12_LS (GPIO268) 209P_UART1_CTS_LS 32P_GPIO07_LS (GPIO424)

Page 34: Internal Com Rs232 Header (Cn47)

2.4.16 Internal COM RS232 Header (CN47) Signal Signal 3.3V RXC_2 TXC_2 2.4.17 RS-232/485 Select (SW1) Mode 1T/1R RS-232 1T/1R RS-485 Enable RS-422/RS-485 bias and termination resistors Disable RS-422/RS-485 bias and termination resistors 250kbps RS-232 RS-485/RS-422 RS-232 to 3Mbps RS-485/RS-422 to 20Mbps Note: SW1 controls the RS-232/485 mode for CN6.

Page 35: Hardware Assembly

Hardware Assembly This section details the hardware assembly steps for the BOXER-8254AI. Please read this section thoroughly before beginning installation and ensure you have all necessary components ready. A Phillips head screwdriver is required. 2.5.1 2.5” SATA Drive Installation Step 1: Access the bottom panel by removing the eight (8) screws securing it to the chassis, as shown.

Page 36 Step 2: Place the 2.5” Drive onto the drive carrier and secure with four screws. Then, fasten the carrier to the bottom panel as shown. Note the direction of the connectors! Step 3: Attach the SATA and SATA Power cables to the 2.5” drive and to the corresponding connectors on the board.

Page 37: Module Access & Installation

2.5.2 Module Access & Installation The Xavier NX module is located under the top heat sink. To access, remove the eight (8) screws securing the heatsink to the chassis, then lift the heatsink off. The module will be located as shown. Chapter 2 –...

Page 38: Wallmount Kit Installation

2.5.3 Wallmount Kit Installation To install the wallmount kit, simply line up the brackets as shown and secure with four (4) screws (two for each bracket). Chapter 2 – Hardware Information...

Page 39: Chapter 3 - Os Flash Guide

Chapter 3 Chapter 3 – OS Flash Guide...

Page 40: Before Installation

Before Installation Before starting the process make sure your BOXER-8254AI system is turned

off and the power in is disconnected. You will need a host PC running Ubuntu 16.04 or 18.04, and make sure the NVIDIA Jetson Xavier NX module is installed onto the BOXER-8254AI carrier board/ system.

Page 41: Connecting To Pc/Force Recovery Mode

Connecting to PC/Force Recovery Mode On Host Computer, open Linux terminal and enter the following command to extract compressed OS image files (file name may vary): $ tar -zxvf ACLinux_4.9_NJ451X.NV05.BOXER-8254AI.2.tar.gz Next, perform the following steps to force the system to start in USB Recovery Mode: Connect the Micro-USB plug on the USB cable to the Recovery Port on the BOXER-8254AI and the other end to an available USB port on the host PC.

Page 42: Flash Image To Board

Flash Image to Board Use the following steps to flash the OS to the BOXER-8254AI. Open terminal on Ubuntu host PC, then access the bootloader folder you extracted in the previous section. Enter the following command in terminal to flash the image: $ sudo ./flashall.sh Wait as the image is installed.