USER GUIDE

KBox E-430-AML/ADN

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KBOX E-430-AML/ADN - USER GUIDE

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Revision History

Revision	Brief Description of Changes	Date of Issue	Author/ Editor
1.0	Initial Issue	2025-Apr-24	YS
1.1	Update COM1 & COM2 pin definition	2025-May-28	YS
2.0	Add Amston Lake CPUs	2025-Aug-07	YS

Terms and Conditions

Kontron warrants products in accordance with defined regional warranty periods. For more information about warranty compliance and conformity, and the warranty period in your region, visit https://www.kontron.com/terms-and-conditions.

Kontron sells products worldwide and declares regional General Terms & Conditions of Sale, and Purchase Order Terms & Conditions. Visit https://www.kontron.com/terms-and-conditions.

For contact information, refer to the corporate offices contact information on the last page of this user guide or visit our website CONTACT US.

Customer Support

Find Kontron contacts by visiting: https://www.kontron.com/support-and-services.

Customer Service

As a trusted technology innovator and global solutions provider, Kontron extends its embedded market strengths into a services portfolio allowing companies to break the barriers of traditional product lifecycles. Proven product expertise coupled with collaborative and highly-experienced support enables Kontron to provide exceptional peace of mind to build and maintain successful products.

For more details on Kontron's service offerings such as: enhanced repair services, extended warranty, Kontron training academy, and more visit https://www.kontron.com/support-and-services.

Customer Comments

If you have any difficulties using this user guide, discover an error, or just want to provide some feedback, contact Kontron support. Detail any errors you find. We will correct the errors or problems as soon as possible and post the revised user guide on our website.

Symbols

The following symbols may be used in this user guide

⚠DANGER	DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠WARNING	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
NOTICE	NOTICE indicates a property damage message.
⚠CAUTION	CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
	Electric Shock! This symbol and title warn of hazards due to electrical shocks (> 60 V) when touching products or parts of products. Failure to observe the precautions indicated and/or prescribed by the law may endanger your life/health and/or result in damage to your material.
	ESD Sensitive Device! This symbol and title inform that the electronic boards and their components are sensitive to static electricity. Care must therefore be taken during all handling operations and inspections of this product in order to ensure product integrity at all times.
	HOT Surface! Do NOT touch! Allow to cool before servicing.
	Laser! This symbol informs of the risk of exposure to laser beam and light emitting devices (LEDs) from an electrical device. Eye protection per manufacturer notice shall review before servicing.
	This symbol indicates general information about the product and the user guide. This symbol also indicates detail information about the specific product configuration.
	This symbol precedes helpful hints and tips for daily use.

For Your Safety

Your new Kontron product was developed and tested carefully to provide all features necessary to ensure its compliance with electrical safety requirements. It was also designed for a long fault-free life. However, the life expectancy of your product can be drastically reduced by improper treatment during unpacking and installation. Therefore, in the interest of your own safety and of the correct operation of your new Kontron product, you are requested to conform with the following guidelines.

High Voltage Safety Instructions

As a precaution and in case of danger, the power connector must be easily accessible. The power connector is the product's main disconnect device.

⚠CAUTION

Warning

All operations on this product must be carried out by sufficiently skilled personnel only.

⚠CAUTION

Electric Shock!

Before installing a non hot-swappable Kontron product into a system always ensure that your mains power is switched off. This also applies to the installation of piggybacks. Serious electrical shock hazards can exist during all installation, repair, and maintenance operations on this product. Therefore, always unplug the power cable and any other cables which provide external voltages before performing any work on this product.

Earth ground connection to vehicle's chassis or a central grounding point shall remain connected. The earth ground cable shall be the last cable to be disconnected or the first cable to be connected when performing installation or removal procedures on this product.

Special Handling and Unpacking Instruction

NOTICE

ESD Sensitive Device!

Electronic boards and their components are sensitive to static electricity. Therefore, care must be taken during all handling operations and inspections of this product, in order to ensure product integrity at all times.

Do not handle this product out of its protective enclosure while it is not used for operational purposes unless it is otherwise protected.

Whenever possible, unpack or pack this product only at EOS/ESD safe work stations. Where a safe work station is not guaranteed, it is important for the user to be electrically discharged before touching the product with his/her hands or tools. This is most easily done by touching a metal part of your system housing.

It is particularly important to observe standard anti-static precautions when changing piggybacks, ROM devices, jumper settings etc. If the product contains batteries for RTC or memory backup, ensure that the product is not placed on conductive surfaces, including anti-static plastics or sponges. They can cause short circuits and damage the batteries or conductive circuits on the product.

Lithium Battery Precautions

If your product is equipped with a lithium battery, take the following precautions when replacing the battery.

⚠CAUTION

Danger of explosion if the battery is replaced incorrectly.

- Replace only with same or equivalent battery type recommended by the manufacturer.
- Dispose of used batteries according to the manufacturer's instructions.

General Instructions on Usage

In order to maintain Kontron's product warranty, this product must not be altered or modified in any way. Changes or modifications to the product, that are not explicitly approved by Kontron and described in this user guide or received from Kontron Support as a special handling instruction, will void your warranty.

This product should only be installed in or connected to systems that fulfill all necessary technical and specific environmental requirements. This also applies to the operational temperature range of the specific board version that must not be exceeded. If batteries are present, their temperature restrictions must be taken into account.

In performing all necessary installation and application operations, only follow the instructions supplied by the present user guide.

Keep all the original packaging material for future storage or warranty shipments. If it is necessary to store or ship the product then re-pack it in the same manner as it was delivered.

Special care is necessary when handling or unpacking the product. See Special Handling and Unpacking Instruction.

Quality and Environmental Management

Kontron aims to deliver reliable high-end products designed and built for quality, and aims to complying with environmental laws, regulations, and other environmentally oriented requirements. For more information regarding Kontron's quality and environmental responsibilities, visit https://www.kontron.com/about-kontron/corporate-responsibility/quality-management.

Disposal and Recycling

Kontron's products are manufactured to satisfy environmental protection requirements where possible. Many of the components used are capable of being recycled. Final disposal of this product after its service life must be accomplished in accordance with applicable country, state, or local laws or regulations.

WEEE Compliance

The Waste Electrical and Electronic Equipment (WEEE) Directive aims to:

- Reduce waste arising from electrical and electronic equipment (EEE)
- Make producers of EEE responsible for the environmental impact of their products, especially when the product become waste
- Encourage separate collection and subsequent treatment, reuse, recovery, recycling and sound environmental disposal of EEE
- Improve the environmental performance of all those involved during the lifecycle of EEE

Environmental protection is a high priority with Kontron.

Kontron follows the WEEE directive

You are encouraged to return our products for proper disposal.

Table of Contents

Symbols **6**
For Your Safety **7**
High Voltage Safety Instructions 7
Special Handling and Unpacking Instruction 7
Lithium Battery Precautions 8
General Instructions on Usage **8**
Quality and Environmental Management **8**
Disposal and Recycling 8
WEEE Compliance 8
Table of Contents **9**
List of Tables **11**
List of Figures **11**
1/ General Safety Instructions for IT Equipment **14**
1.1. Electrostatic Discharge (ESD) 16
1.1.1. Grounding Methods 16
1.2. Lithium Battery Replacement 16
2/ Electromagnetic Compatibility **18**
2.1. Electromagnetic Compatibility (EU) 18
2.2. FCC Statement (USA) 18
2.3. EMC Compliance (Canada) 18
3/ Shipment and Unpacking **19**
3.1. Unpacking 19
3.2. Scope of Delivery 19
3.2.1. Standard 19
3.2.2. Optional Parts 19
4/ System Overview **20**
4.1. System Expansion Capabilities 21
4.1.1. System Expansion via SATA Interface 21
4.1.2. System Expansion via M.2 Card Interface 21
4.1.3. System Expansion via SIM Card Wafer 21
4.2. Front I/O Panel 22
4.2.1. DC-In (3-pin Terminal Block Socket Connector) 23
4.2.2. Power Button 23
4.2.3. Power LED & Standby LED 23
4.2.4. Storage LED 23
4.2.5. 2.5 GbE LAN 23
4.2.6. DisplayPort 24
4.2.7. DisplayPort over USB 3.2 Gen 2 / Gen 1 Type C 24
4.2.8. USB 3.2 Gen 2 24
4.2.9. USB 2.0 24
4.2.10. RS232/422/485 24
4.2.11. DIO 24
4.2.12. Antenna Port 25
4.2.13. Protective Earth Stud Bolt 25
4.3. Internal View 26
4.3.1. DDR5 SO-DIMM Memory Socket 28

4.3.2. SATA Data / Power Connector 28
4.3.3. M.2 Key B Socket 28
4.3.4. M.2 Key E Socket 28
4.3.5. M.2 Key M Socket 28
4.3.6. SIM Card Wafer 28
5/ Accessing Internal Components 29
5.1. Opening and Closing the Chassis 30
5.1.1. Installing A SO-DIMM Memory Module 31
5.1.2. Installing A HDD / SSD 32
5.1.3. Installing A M.2 Key B SSD / Expansion Card and / or A M.2 Key E Expansion Card 33
5.1.4. Installing A M.2 Key M SSD 33
5.1.5. Installing A SIM Card 34
5.1.6. Installing Antenna(s) 34
6/ Thermal Considerations 36
6.1. Available Processors 36
6.2. Convection Cooling 36
6.3. System Clearance 36
6.4. Maximum Temperatures 36
6.5. Third Party Components 36
7/ Installation Instructions 38
7.1. System Mounting 39
7.1.1. DIN Rail Mounting 39
7.1.2. Vertical Wall Mounting 42
7.1.3. Horizontal Wall Mounting 44
7.1.4. VESA Mounting 46
7.2. DC Power Connection 49
7.2.1. Cabling 49
8/ Start Up 51
8.1. Connecting to DC Power Supply 51
8.2. Operating System and Hardware Component Drivers 53
9/ Maintenance and Cleaning 54
10/ Technical Specifications 55
10.1. Mechanical Specifications 56
10.1.1. Mechanical Drawing 56
10.2. Environmental Conditions 57
10.3. Standards and Certifications 57
11/ Standard Interfaces – Pin Assignments 58
11.1. DC Power Input 58
11.2. 2.5 Gigabit Ethernet Connector 58
11.3. DisplayPort Connector 59
11.4. DisplayPort over USB 3.2 Gen 2 / Gen 1 Type C Connector 60
11.5. USB 3.2 Gen 2 Connector 60
11.6. USB 2.0 Connector 61
11.7. COM 1 & COM 2 RS232/422/485 Serial Port 61
11.8. COM 3 & COM 4 RS232/422/485 Serial Port 61
11.9. Digital I/O Port 62
12/ BIOS 63
12.1. Starting the uEFI BIOS 63
12.2. Starting the uEFI BIOS 64

12.2.1. Main Setup Menu 64
12.2.2. Advanced Setup Menu 68
12.2.3. Chipset Setup Menu 98
12.2.4. Security Setup Menu 116
12.2.5. Boot Setup Menu 121
12.2.6. Save & Exit Setup Menu 123
Appendix A: List of Acronyms 124
About Kontron 125

List of Tables

Table 1: Power LED & Standby LED Status 23
Table 2: Technical Specifications 55
Table 3: Mechanical Specifications 56
Table 4: Environmental Conditions 57
Table 5: Standards and Certifications 57
Table 6: DC Power Input (see Figure 1, pos. 1) 58
Table 7: 2.5 Gigabit Ethernet Connector (see Figure 1, pos. 6) 58
Table 8: DisplayPort Connector (see Figure 1, pos. 7) 59
Table 9: DisplayPort over USB 3.2 Gen 2 / Gen 1 Type C Connector (see Figure 1, pos. 8) 60
Table 10: USB 3.2 Gen 2 Connector (see Figure 1, pos. 9) 60
Table 11: USB 2.0 Connector (see Figure 1, pos. 10) 61
Table 12: COM 1 & COM 2 RS232/422/485 Serial Port (see Figure 1, pos. 11 & 12) 61
Table 13: COM 3 & COM 4 RS232/422/485 Serial Port (see Figure 1, pos. 13 & 14) 61
Table 14: Digital I/O Port (see Figure 1, pos. 15) 62
Table 15: Hotkeys Table 63
Table 16: Main Setup Menu Sub-Screens and Functions 64
Table 17: List of Acronyms 124

List of Figures

Figure 1: Front I/O Panel 22
Figure 2: 2.5 Gigabit Ethernet LED Status 24
Figure 3: Internal View (without cover) 26
Figure 4: Internal View (bottom side of the baseboard) 27
Figure 5: Internal View (back side of the access cover) 27
Figure 6: Unscrewing Access Cover 30
Figure 7: Unscrewing Baseboard 31
Figure 8: Installing SO-DIMM Memory Module 32
Figure 9: Sliding 2.5" HDD / SSD into Bracket 32
Figure 10: Securing 2.5" HDD / SSD To Bracket 32
Figure 11: Installing M.2 SSD / Expansion Card 33
Figure 12: Removing Rubber Cap 34
Figure 13: Securing RP-SMA Jack 34
Figure 14: Connecting I-PEX End 34
Figure 15: Connecting I-PEX End 35
Figure 16: Optional DIN Rail Mounting Kit 39
Figure 17: Securing Adapter Plate 40
Figure 18: Securing DIN Rail Clamp 41
Figure 19: Clamping KBox E-430-AML/ADN onto DIN Rail 41
Figure 20: Optional Vertical Wall Mount Plate 42
Figure 21: Keyhole Pattern of Vertical Wall Mount Plate 42
Figure 22: Unscrew Rear Panel 43
Figure 23: Securing Vertical Wall Mount Plate 43

Figure 24: Securing KBox E-430-AML/ADN onto Mounting Surface Vertically 43
Figure 25: Optional Horizontal Wall Mounting Kit 44
Figure 26: Keyhole Pattern of Horizontal Wall Mount Brackets 44
Figure 27: Removing Screws 45
Figure 28: Securing Horizontal Wall Mount Brackets 45
Figure 29: Securing KBox E-430-AML/ADN onto Mounting Surface Horizontally 46
Figure 30: Optional VESA Mounting Kit 46
Figure 31: Hole Pattern of Base Mounting Kit 47
Figure 32: Securing Base Mounting Bracket 47
Figure 33: Securing Hooked Mounting Bracket onto KBox E-430-AML/ADN 48
Figure 34: Securing KBox E-430-AML/ADN onto Mounting Surface 48
Figure 35: Terminal Block Plug Connector 49
Figure 36: Mechanical Drawing 56
Figure 37: BIOS Main Menu Screen System Data and Time 65
Figure 38: BIOS Main Menu Screen – Platform Information 67
Figure 39: BIOS Advanced Menu 69
Figure 40: BIOS Advanced Menu - Display Configuration 70
Figure 41: BIOS Advanced Menu - Trusted Computing 71
Figure 42: BIOS Advanced Menu – ACPI Settings 73
Figure 43: BIOS Advanced Menu – Miscellaneous 74
Figure 44: BIOS Advanced Menu – Miscellaneous – Preset DIO in BIOS 74
Figure 45: BIOS Advanced Menu – Miscellaneous – Control KSC firmware 75
Figure 46: BIOS Advanced Menu – Miscellaneous – Control KSC firmware – KSC OTP area control 76
Figure 47: BIOS Advanced Menu – Miscellaneous – Update KSC firmware 76
Figure 48: BIOS Advanced Menu – Miscellaneous – Generic eSPI Decode Ranges 77
Figure 49: BIOS Advanced Menu – Miscellaneous – Watchdog 78
Figure 50: BIOS Advanced Menu – H/W Monitor 79
Figure 51: BIOS Advanced Menu – S5 RTC Wake Settings 80
Figure 52: BIOS Advanced Menu – Serial Port Console Redirection 81
Figure 53: BIOS Advanced Menu – Serial Port Console Redirection – COM0/1/2/3 Console Redirection Settings 81
Figure 54: BIOS Advanced Menu – Serial Port Console Redirection – Legacy Console Redirection Settings 83
Figure 55: BIOS Advanced Menu – Serial Port Console Redirection – Console Redirection EMS Settings 83
Figure 56: BIOS Advanced Menu – AMI Graphic Output Protocol Policy 85
Figure 57: BIOS Advanced Menu – SIO Configuration 86
Figure 58: BIOS Advanced Menu – SIO Configuration – [*Active*] Serial Port 0 86
Figure 59: BIOS Advanced Menu – SIO Configuration – [*Active*] Serial Port 1 86
Figure 60: BIOS Advanced Menu – SIO Configuration – [*Active*] Serial Port 2 87
Figure 61: BIOS Advanced Menu – SIO Configuration – [*Active*] Serial Port 3 88
Figure 62: BIOS Advanced Menu – USB Configuration 89
Figure 63: BIOS Advanced Menu – Network Stack Configuration 91
Figure 64: BIOS Advanced Menu – NVMe Configuration 92
Figure 65: BIOS Advanced Menu – F81435 Configurations 93
Figure 66: BIOS Advanced Menu – Tls Auth Configuration 94
Figure 67: BIOS Advanced Menu – Tls Auth Configuration – Server CA Configuration 94
Figure 68: BIOS Advanced Menu – Tls Auth Configuration – Server CA Configuration – Enroll Cert 94
Figure 69: BIOS Advanced Menu – RAM Disk Configuration 96
Figure 70: BIOS Advanced Menu – RAM Disk Configuration – Create raw 96
Figure 71: BIOS Advanced Menu – Intel® Ethernet Controller I226-V – C0:EA:C3:D1:D0:CA/CB 97
Figure 72: BIOS Chipset Setup Menu 98
Figure 73: BIOS Chipset Setup Menu – System Agent (SA) Configuration 99
Figure 74: BIOS Chipset Setup Menu – System Agent (SA) Configuration – Graphics Configuration 99
Figure 75: BIOS Chipset Setup Menu – System Agent (SA) Configuration – Graphics Configuration – External Gfx Card Primary Display Configuration 101
Figure 76: BIOS Chipset Setup Menu – System Agent (SA) Configuration – Graphics Configuration – LCD Control 101
Figure 77: BIOS Chipset Setup Menu – System Agent (SA) Configuration – Graphics Configuration – Intel® Ultrabook Event Support 102

Figure 78: BIOS Chipset Setup Menu – PCH-IO Configuration 104
Figure 79: BIOS Chipset Setup Menu – PCH-IO Configuration – PCI Express Configuration 104
Figure 80: BIOS Chipset Setup Menu – PCH-IO Configuration – PCI Express Configuration – PCIe EQ settings 105
Figure 81: BIOS Chipset Setup Menu – PCH-IO Configuration – PCI Express Configuration – PCI Express Root Port 3 / 4 / 7 / 9 / 10 107
Figure 82: BIOS Chipset Setup Menu – PCH-IO Configuration – PCI Express Configuration – PCIE clocks 110
Figure 83: BIOS Chipset Setup Menu – PCH-IO Configuration – SATA Configuration 111
Figure 84: BIOS Chipset Setup Menu – PCH-IO Configuration – USB Configuration 113
Figure 85: BIOS Security Setup Menu 116
Figure 86: BIOS Security Setup Menu – Secure Boot 117
Figure 87: BIOS Security Setup Menu – Secure Boot – Key Management 118
Figure 88: BIOS Boot Setup Menu 121
Figure 89: BIOS Save & Exit Setup Menu 123

1/ General Safety Instructions for IT Equipment

⚠WARNING

Please read this chapter carefully and take careful note of the instructions, which have been compiled for your safety and to ensure to apply in accordance with intended regulations. If the following general safety instructions are not observed, it could lead to injuries to the operator and/or damage of the product; in cases of nonobservance of the instructions Kontron is exempt from accident liability, this also applies during the warranty period.

The product has been built and tested according to the basic safety requirements for low voltage (LVD) applications and has left the manufacturer in safety-related, flawless condition. To maintain this condition and also to ensure safe operation, the operator must not only observe the correct operating conditions for the product but also the following general safety instructions:

- The product must be used as specified in the product documentation, in which the instructions for safety for the product and for the operator are described. These contain guidelines for setting up, installation and assembly, maintenance, transport or storage.
- The on-site electrical installation must meet the requirements of the country's specific local regulations.
- If a power cable comes with the product, only this cable should be used. Do not use an extension cable to connect the product.
- To guarantee that sufficient air circulation is available to cool the product, please ensure that the ventilation openings are not covered or blocked. If an air filter is provided, this should be cleaned regularly. Do not place the system close to heat sources or damp places. Make sure the system is well ventilated.
- Only devices or parts which fulfill the requirements of SELV circuits (Safety Extra Low Voltage) as stipulated by IEC 60950-1 may be connected to the available interfaces.
- Before opening the device, make sure that the device is disconnected from the mains.
- Switching off the device by its power button does not disconnect it from the mains. Complete disconnection is only possible if the power cable is removed from the wall plug or from the device. Ensure that there is free and easy access to enable disconnection.
- The device may only be opened for the insertion or removal of add-on cards (depending on the configuration of the system). This may only be carried out by qualified operators.
- If extensions are being carried out, the following must be observed:
  - All effective legal regulations and all technical data are adhered to.
  - The power consumption of any add-on card does not exceed the specified limitations.
  - The current consumption of the system does not exceed the value stated on the product label.
- Only original accessories that have been approved by Kontron can be used.
- Please note: safe operation is no longer possible when any of the following applies:
  - The device has visible damages.
  - The device is no longer functioning.

  In this case the device must be switched off and it must be ensured that the device can no longer be operated.

Additional safety instructions for DC power supply circuits

- To guarantee safe operation of devices with DC power supply voltages larger than 60 volts DC or a power consumption larger than 240 VA, please observe that:
  - the device is set up, installed and operated in a room or enclosure marked with "RESTRICTED ACCESS", if there are no safety messages on product as safety signs and labels on the device itself.
  - no cables or parts without insulation in electrical circuits with dangerous voltage or power should be touched directly or indirectly
  - a reliable protective earthing connection is provided
  - a suitable, easily accessible disconnecting device is used in the application (e.g. overcurrent protective device), if the device itself is not disconnectable
  - a disconnect device, if provided in or as part of the equipment, shall disconnect both poles simultaneously
  - interconnecting power circuits of different devices cause no electrical hazards
- A sufficient dimensioning of the power cable wires must be selected – according to the maximum electrical specifications on the product label – as stipulated by EN60950-1 or VDE0100 or EN60204 or UL508 regulations.
- The devices do not generally fulfill the requirements for "centralized DC power systems" (UL 60950-1, Annex NAB; D2) and therefore may not be connected to such devices!

1.1. Electrostatic Discharge (ESD)

A sudden discharge of electrostatic electricity can destroy static-sensitive devices or micro-circuitry.

Therefore proper packaging and grounding techniques are necessary precautions to prevent damage. Always take the following precautions:

1. Transport boards in ESD-safe containers such as boxes or bags.
2. Keep electrostatic sensitive parts in their containers until they arrive at the ESD-safe workplace.
3. Always be properly grounded when touching a sensitive board, component, or assembly.
4. Store electrostatic-sensitive boards in protective packaging or on antistatic mats.

1.1.1. Grounding Methods

By adhering to the guidelines below, electrostatic damage to the device can be avoided:

1. Cover workstations with approved antistatic material. Always wear a wrist strap connected to workplace. Always use properly grounded tools and equipment.
2. Use antistatic mats, heel straps, or air ionizers for more protection.
3. Always handle electrostatically sensitive components by their edge or by their casing.
4. Avoid contact with pins, leads, or circuitry.
5. Turn off power and input signals before inserting and removing connectors or connecting test equipment.
6. Keep work area free of non-conductive materials such as ordinary plastic assembly aids and Styrofoam.
7. Use only field service tools which are conductive, such as cutters, screwdrivers, and vacuum cleaners.
8. Always place drives and boards PCB-assembly-side down on the foam.

1.2. Lithium Battery Replacement

If replacing the lithium battery, follow the replacement precautions stated below.

⚠WARNING

Do not ingest battery, Chemical Burn Hazard

This product contains a coin / button cell battery. If the coin / button cell battery is swallowed, it can cause severe internal burns in just 2 hours and can lead to death.

Keep new and used batteries away from children.

If the battery compartment does not close securely, stop using the product and keep it away from children.

If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.

Replacement of a battery with an incorrect type, that can result in an explosion. Replace only with the same or equivalent type recommended by the manufacturer. The lithium battery type must be UL recognized.

Disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery, that can result in an explosion.

Leaving a battery in an extremely high temperature surrounding environment that can result in an explosion or the leakage of flammable liquid or gas

A battery subjected to extremely low air pressure that may result in an explosion or the leakage of flammable liquid or gas

Do not dispose of lithium batteries in general trash collection. Dispose of the battery according to the local regulations dealing with the disposal of these special materials, (e.g. to the collecting points for dispose of batteries).

2/ Electromagnetic Compatibility

For detailed information refer to section 10.3 "CE Directives and Standards".

2.1. Electromagnetic Compatibility (EU)

This product has been designed for low level of radiated emission for residential, commercial and light industrial environments and high immunity level for industrial environmental. This product complies with the European Council Directive on the approximation of the laws of the member states relating to electromagnetic compatibility (EMC Directive 2014/30/EU) and Radio Equipment Directive (RED Directive 2014/53/EU).

⚠WARNING **This is a class B product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.**

2.2. FCC Statement (USA)

The following statement applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the accompanying documentation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Kontron is not responsible for any radio television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Kontron. The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

The use of shielded I/O cables is required when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC and ICES rules.

2.3. EMC Compliance (Canada)

The method of compliance is self-declaration to Canadian standard ICES-003:

(English): This Class B digital apparatus complies with the Canadian ICES-003.

(French): Cet appareil numérique de la class B est conforme à la norme NMB-003 du Canada.

3/ Shipment and Unpacking

Please check that your package is complete, and contains the items below (according to the ordered unit configuration). If you discover damaged or missing items, please contact your dealer.

3.1. Unpacking

Proceed as follows to unpack the unit:

1. Remove packaging.
2. Do not discard the original packaging. Keep it for future relocation.
3. Check the delivery for completeness by comparing it with your order.
4. Please keep the associated paperwork. It contains important information for handling the unit.
5. Check the contents for visible shipping damage.
6. If you notice any shipping damage or inconsistencies between the contents and your order, please contact Kontron for help and information.

3.2. Scope of Delivery

3.2.1. Standard

- 1x KBox E-430-AML/ADN (corresponding to the ordered system configuration)
- 1x power terminal block plug connector (attached on the system in case of not ordering power adapter)
- 1x Quick installation guide
- 1x Driver CD

3.2.2. Optional Parts

- 1x Power adapter (power terminal block plug connector attached)
- 1x Power cord (plug type depending on country)
- Memory module (It may be pre-installed in the system depending on ordered configuration.)
- 2.5" HDD / SSD (It may be pre-installed in the system depending on ordered configuration.)
- M.2 Key B expansion card or SSD (It may be pre-installed in the system depending on ordered configuration.)
- M.2 Key E expansion card (It may be pre-installed in the system depending on ordered configuration.)
- M.2 Key M SSD (It may be pre-installed in the system depending on ordered configuration.)
- Antenna(s)
- DIN rail mount kit
- VESA mount kit
- Vertical wall mount plate
- Horizontal wall mount kit

4/ System Overview

The KBox E-430-AML/ADN is a fanless system enclosed within a robust compact aluminum chassis with cooling fins, offering the superior qualities for operation in harsh environments.

It can be optionally factory-equipped with an M.2 Key B WWAN and /or M.2 Key E WLAN / Bluetooth card for two antennas. Users may choose the implementation of a 2.5" SATA HDD / SSD or of a M.2 Key B / Key M SSD card as storage media.

The following interfaces are available with the KBox E-430-AML/ADN:

Standard Front Panel:

- 2x 2.5 GbE LAN
- 2x DisplayPort
- 1x DisplayPort over USB 3.2 Gen 2 / Gen 1 Type C
- 2x USB 3.2 Gen 2 (Type A)
- 1x USB 2.0
- 4x RS232/422/485
- 1x 8-bit DIO
- 1x 3-pin DC-in Terminal Block Socket Connector
- 1x Power Button
- 1x Power LED
- 1x Standby LED
- 1x Storage LED
- 2x Antenna Port
- 1x Protective Earth Stud Bolt

Standard Baseboard and System Expansion Capabilities:

- 1x DDR5 SO-DIMM memory socket (DIMM1)
- 1x 7-pin SATA data connector (CN10) + 1x 4-pin SATA power wafer (CN8) for 2.5" SATA HDD / SSD
- 1x M.2 Key B socket (type 22x42 / 30x42 / 30x52 / 22x80, M2B1) for SSD / WWAN expansion
- 1x M.2 Key E socket (type 22x30, M2E1) for WLAN / Bluetooth expansion
- 1x M.2 Key M socket (type 22x80, M2M1) for SSD
- 1x SIM Card Wafer (CN3) with connection to M.2 Key B socket (M2B1)

The device is designed to be operated in:

- Vertical / horizontal position: mounted inside a control cabinet (with a DIN rail mounting kit) or
- Vertical position: mounted inside a control cabinet (with a vertical wall mount plate) or
- Horizontal position: mounted on the back of the monitor or inside a control cabinet / custom enclosure / machine (with two horizontal wall mount brackets) or
- Vertical / horizontal position: mounted on the back of the monitor or inside a control cabinet / custom enclosure / machine with (with a VESA mounting kit) or
- Horizontal position: placed as a desktop unit (equipped with the supplied rubber feet).

NOTICE

When powering on the KBox E-430-AML/ADN, make sure that the cooling fins of the chassis are not obstructed (covered) by any objects.

To provide sufficient heat dissipation by the cooling of the device, do not cover the cooling fins of the KBox E-430-AML/ADN. Do not place any objects on the device. When installing the system, please keep clearance for air circulation.

4.1. System Expansion Capabilities

4.1.1. System Expansion via SATA Interface

The baseboard comes with an onboard SATA 3.0 interface connector and a corresponding power connector. Users can expand the KBox E-430-AML/ADN with a 2.5" SATA HDD / SSD drive.

4.1.2. System Expansion via M.2 Card Interface

The baseboard comes with three onboard M.2 interface connectors with Key B Type 2242 / 3042 / 3052 / 2280, Key E Type 2230 and Key M Type 2280 support respectively. The Key B connector is intended to be used to install a M.2 WWAN expansion card or a M.2 SSD card drive, the Key E connector to install a M.2 WLAN / Bluetooth / combo expansion card, and the Key M connector to install a M.2 SSD card drive.

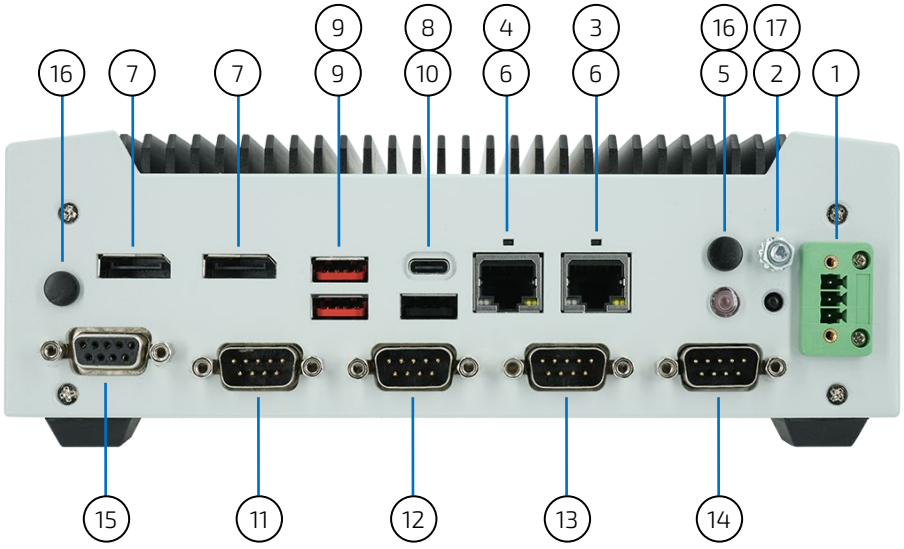
4.1.3. System Expansion via SIM Card Wafer

The baseboard comes with an onboard wafer connector to expand a SIM card holder module for accommodating a SIM card in case of no SIM card holder mounted on the M.2 WWAN expansion card.

In order to use the SIM card reader functionality, a corresponding M.2 WWAN expansion card must be installed to the M.2 Key B socket of your KBox E-430-AML/ADN.

4.2. Front I/O Panel

Figure 1: Front I/O Panel



1 DC-In (see Chapter 4.2.1)
2 Power Button (See Chapter 4.2.2)
3 Power LED (see Chapter 4.2.3)
4 Standby LED (see Chapter 4.2.3)
5 Storage LED (see Chapter 4.2.4)
6 2.5 GbE (see Chapter 4.2.5)
7 DisplayPort (see Chapter 4.2.6)
8 DisplayPort over USB 3.2 Gen 2 / Gen 1 Type C (see Chapter 4.2.7)
9 USB 3.2 Gen 2 (see Chapter 4.2.8)
10 USB 2.0 (see Chapter 4.2.9)
11 COM 1 - RS232/422/485 (see Chapter 4.2.10)
12 COM 2 - RS232/422/485 (see Chapter 4.2.10)
13 COM 3 - RS232/422/485 (see Chapter 4.2.10)
14 COM 4 - RS232/422/485 (see Chapter 4.2.10)
15 8-bit DIO (see Chapter 4.2.11)
16 Antenna Port (see Chapter 4.2.12)
17 Protective Earth Stud Bolt (see Chapter 4.2.13)

4.2.1. DC-In (3-pin Terminal Block Socket Connector)

For DC connection, users should prepare the connecting wires using the supplied terminal block plug connector (female) to plug into this socket connector (male) for power input from a DC power source, or use the optional power adapter to converts AC power to DC for use with this socket connector.

In case you order a power adapter from Kontron, the supplied terminal block plug connector is attached to the power adapter by default. Otherwise, it is attached to the system in this socket connector.

⚠WARNING **Adapter's power cord shall be connected to a socket-outlet with earthing connection.**

4.2.2. Power Button

Use the tip end of a pen to press this button to turn the system on or to put the system in sleep or soft-off mode. When pressing this button for more than four seconds, the system turns from ON to OFF.

⚠WARNING **Even when the system is turned off via the power button there is still a standby voltage on the baseboard. The unit is only completely disconnected from the DC mains, when the power is removed.**

4.2.3. Power LED & Standby LED

System modes can be identified through the power LED and standby LED. Refer to the below table for more details.

Prerequisite: The system must be attached by means of the power cord to an appropriate main power supply (DC).

Table 1: Power LED & Standby LED Status

LED Status		Description
Power LED	Standby LED	
Green LED On	Yellow LED On	S0 (Full On)
Green LED Blink	Yellow LED On	S3 (Suspend-To-RAM)
LED Off	Yellow LED On	S4 (Suspend-To-Disk) or S5 (Soft Off)
LED Off	LED Off	EUP Mode or G3 (Mechanical Off)

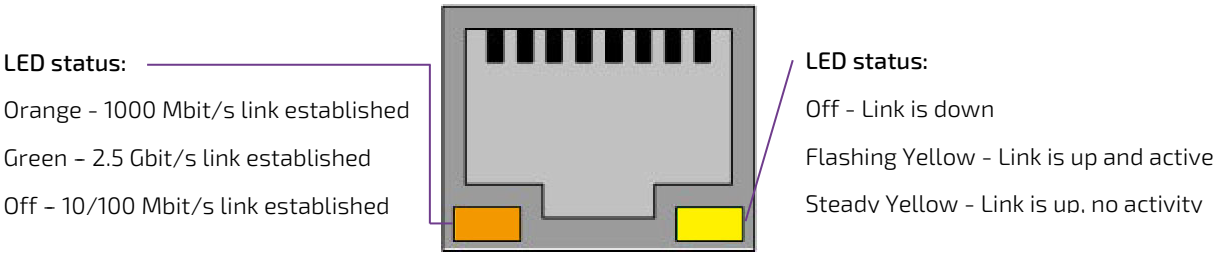
4.2.4. Storage LED

The Storage LED blinks red when the data is being written into or read from the M.2 Key M SSD drive.

4.2.5. 2.5 GbE LAN

The KBox E-430-AML/ADN provides two 2.5 GbE LAN ports on the front I/O panel. These connectors are 2.5 Gigabit Ethernet 10/100/1000/2500 Mbit/s, IEEE 1588 capable interfaces. The connectors are standard 8-pin RJ45 type connectors with status LEDs:

Figure 2: 2.5 Gigabit Ethernet LED Status



4.2.6. DisplayPort

An external (digital) display can be connected to this DisplayPort connector.

4.2.7. DisplayPort over USB 3.2 Gen 2 / Gen 1 Type C

The KBox E-430-AML/ADN provides a DisplayPort over USB 3.2 Type C connector on the front I/O panel. The conenctor supports USB DisplayPort Alternate mode for transmitting video signals, USB 3.2 Gen 2 (KBox E-430-ADN) / USB 3.2 Gen 1 (KBox E-430-AML) for high-speed data transfer and power delivery of up to 15 W (5 V at 3 A) for charging a connected device.

4.2.8. USB 3.2 Gen 2

The KBox E-430-AML/ADN provides two USB 3.2 Gen 2 interfaces on the front I/O panel. These connectors are backward compatible with USB 3.2 Gen 1 / USB 2.0 and allow connection of USB-compatible devices to the system.

4.2.9. USB 2.0

The KBox E-430-AML/ADN provides an USB 2.0 connector on the front I/O panel. The connector allows connection of an USB-compatible device to the system.

4.2.10. RS232/422/485

COM 1, COM 2, COM 3 and COM 4 are provided as a 9-pin D-SUB connector and allow the connection of a serial peripheral. They are designed to support RS232/422/485 serial communication which can be configured via BIOS setup.

Each COM port supports single communication mode on RS485 with only half-duplex configuration.

The COM 1 and COM 2 ports support RS232 without hardware flow control.

4.2.11. DIO

The KBox E-430-AML/ADN provides an 8-bit DIO port. This interface is used to connect digital signals for input and output purposes.

4.2.12. Antenna Port

The KBox E-430-AML/ADN reserves two covered cutouts for the Reverse (RP) SMA connectors of the WLAN antennas (M.2 Key E WLAN card with one or two antennas is an option) and / or WWAN antenna (M.2 Key B WWAN card with one or two antennas is an option).

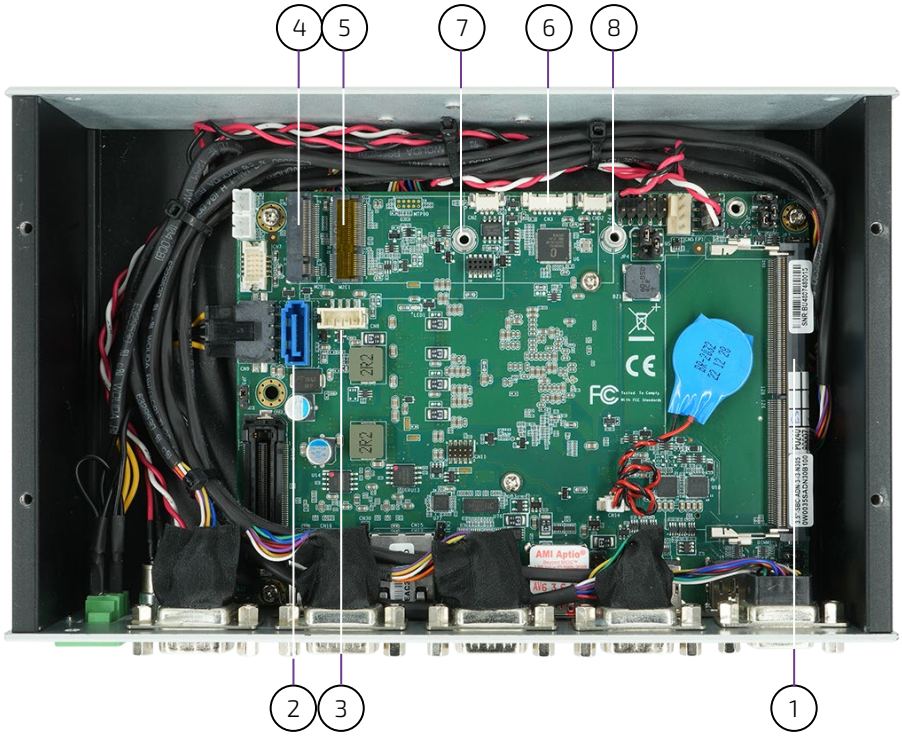
4.2.13. Protective Earth Stud Bolt

The protective earth stud bolt on the front I/O panel connects to the chassis GND.

When installing cables to the product the first cable connection must be to the the protective earth stud bolt and when disconnecting the last cable to be disconnected must be from the protective earth stud bolt.

4.3. Internal View

Figure 3: Internal View (without cover)



1 DDR5 SO-DIMM Memory Socket (DIMM1, see Chapter 4.3.1)

2 SATA Data Connector (CN10, see Chapter 4.3.2)

3 SATA Power Output Wafer (CN8, see Chapter 4.3.2)

4 M.2 Key B Socket (M2B1, see Chapter 4.3.3)

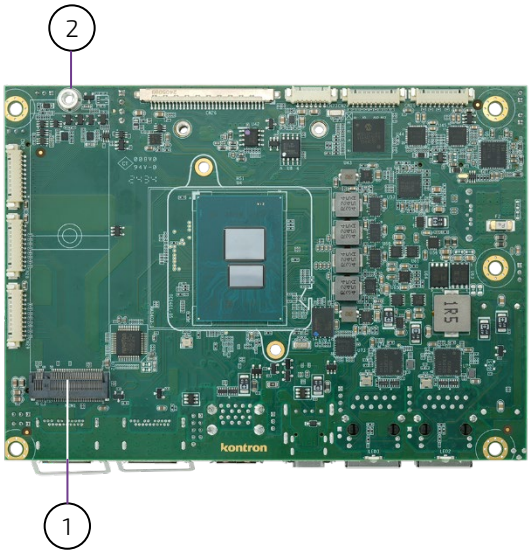
5 M.2 Key E Socket (M2E1, see Chapter 4.3.4)

6 SIM Card Wafer (CN3, see Chapter 4.3.6)

7 M.2 fixing bolt for Key B Type 22x42 / 30x42 (/30x52)& Key E Type 22x30

8 M.2 fixing bolt for Key B Type 22x80 (/30x52)

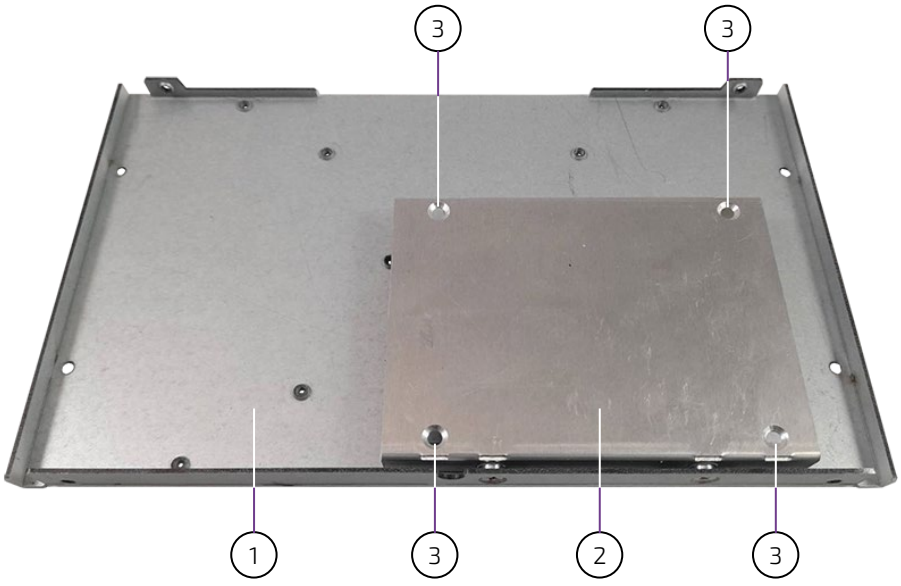
Figure 4: Internal View (bottom side of the baseboard)



1 M.2 Key M Socket (M2M1, see Chapter 4.3.5)

2 M.2 Fixing Bolt for Key M Type 22x80

Figure 5: Internal View (back side of the access cover)



1 Access Cover

2 2.5" HDD / SSD Bracket (see Chapter 4.3.2)

3 Screw Hole for Securing 2.5" HDD / SSD

4.3.1. DDR5 SO-DIMM Memory Socket

The KBox E-430-AML/ADN provides a 262-pin DDR5 SO-DIMM socket (Figure 3, pos. 1) to install a memory RAM.

4.3.2. SATA Data / Power Connector

The KBox E-430-AML/ADN provides a SATA data connector (Figure 3, pos. 2) along with a SATA power output wafer (Figure 3, pos. 3) to install a 2.5" SATA HDD / SSD. An additional bracket (Figure 5, pos. 2) is provided to hold and fix the hard disk.

4.3.3. M.2 Key B Socket

The KBox E-430-AML/ADN reserves a M.2 Key B socket (Figure 3, pos. 4) with the support of PCIe x1, USB 2.0 and UIM interfaces, allowing the expansion with a Type 22x42 / 30x42 / 22x80 M.2 WWAN module or M.2 SSD drive. Installation of a Type 30x52 module is possible with an appropriate adapter bracket. Kontron offers a matching adpater bracket optionally based on individual requests.

4.3.4. M.2 Key E Socket

The KBox E-430-AML/ADN reserves a M.2 Key E socket (Figure 3, pos. 5) with the support of PCIe x1, USB 2.0, UART, PCM and / or CNVi (only KBox E-430-ADN) signals, allowing the expansion with a Type 22x30 M.2 WLAN, Bluetooth or combo module.

4.3.5. M.2 Key M Socket

The KBox E-430-AML/ADN reserves a M.2 Key M socket (Figure 4, pos. 1) with the support of SATA 3.0 interface, allowing the expansion with a Type 22x80 M.2 SSD drive.

4.3.6. SIM Card Wafer

The baseboard of the KBox E-430-AML/ADN is equipped with a SIM card wafer (Figure 3, pos. 6) to expand a SIM card holder within the system for accommodating a SIM card for WWAN service access in case of no SIM card holder mounted on the M.2 WWAN expansion card. It is connected to UIM signals on the M.2 Key B socket.

To avoid damage to the SIM card, insert the SIM card before you turn the power on and remove the SIM card after you turn the power off.

5/ Accessing Internal Components

This section contains important information that you must read before accessing the internal components. You must follow these procedures properly when installing, removing or handling any board.

It is recommended to expand your system with applicable expansion card(s) before it is installed into an equipment, machine or cabinet. Please consider following instruction when you install (or remove) an expansion card.

Before installing / removing an add-on card, please pay attention to the following information:

⚠CAUTION

Please observe the "General Safety Instructions for IT-Equipment" provided with the system (refer to the chapter 1/) and the installation instructions in this manual.

Only personnel with appropriate qualifications, trainings and authorization are permitted to install and work with the device.

The installation / removal of HHD / SSD and / or expansion cards may only be performed by a qualified person, according to the description in this manual.

Before removing the cover of the device, make sure that the device is turned off and disconnected from the power supply.

Before you upgrade the device with add-on cards, pay attention to the power specifications in chapter 10/ "Technical Specifications" and make sure that the power consumption of the add-on cards does not exceed 5 W per card.

Please follow the safety instructions for components that are sensitive to electrostatic discharge (ESD). Failure to observe this warning notice may result in damage to the device or the latter's components.

Please pay attention to the manufacturer's instructions before installing / removing an add-on card.

5.1. Opening and Closing the Chassis

The KBox E-430-AML/ADN is factory configured to meet customer requirements. Kontron does not recommend opening the system as this may cause damage to internal components.

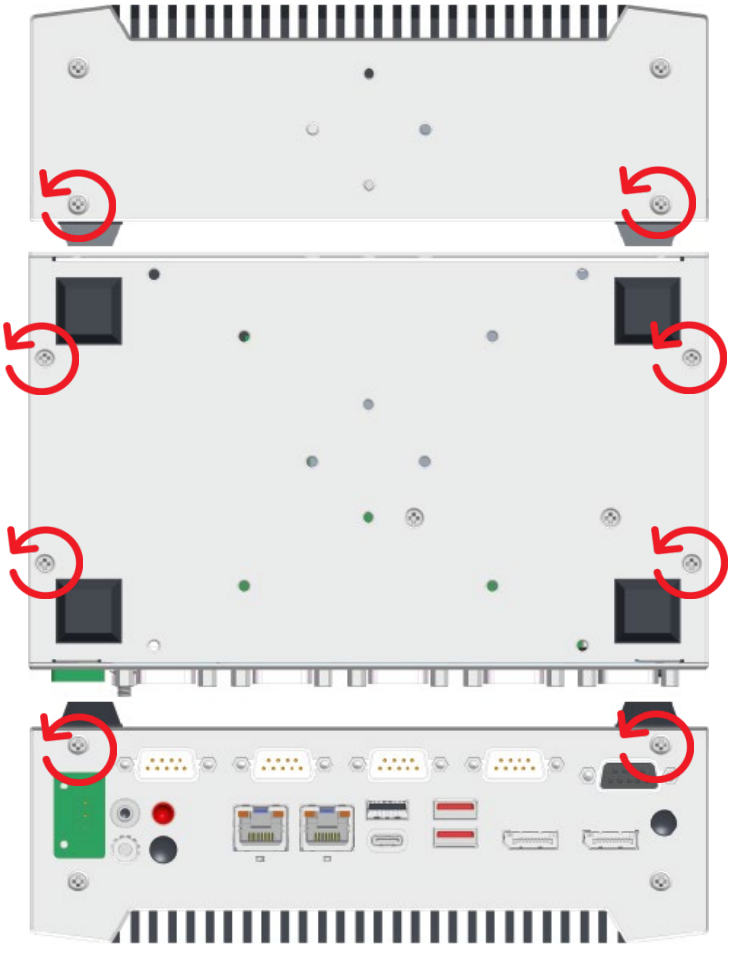
⚠CAUTION

Before opening the KBox E-430-AML/ADN, the system must be switched off and disconnected from the main power supply. Also, disconnect all peripheral devices from the KBox E-430-AML/ADN. Before you begin, ensure that you have a clean, flat and ESD-safe surface to work on.

For opening and closing the KBox E-430-AML/ADN, please perform the following steps:

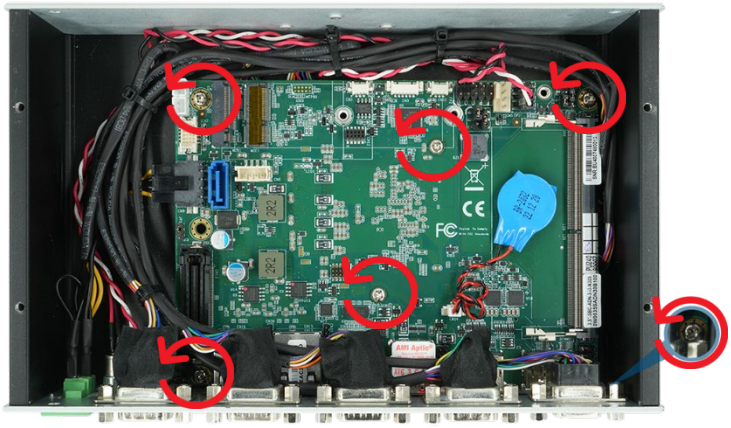
1. Close all applications. Shut down the system properly and disconnect the connection to the main power source. Disconnect all peripherals.
2. The KBox E-430-AML/ADN should lay on a flat, clean surface with the access cover facing upwards.
3. Loosen and remove the Phillips screws (two located on the front I/O panel, two on the rear I/O panel and the other four on the bottom), that secure the access cover to the chassis. Retain the screws for later use.

Figure 6: Unscrewing Access Cover



4. Lift the access cover up.
5. Now you have access to the internal DDR5 SO-DIMM socket, SATA connector, M.2 Key B socket, M.2 Key E socket and SIM card wafer respectively in order to remove or install hardware components.
6. To access the opposite side of the baseboard, loosen and remove the Phillips screws (six screws) that secure the baseboard to the chassis. Retain the screws for later use.

Figure 7: Unscrewing Baseboard



7. Lift the baseboard up and turn it over so that the bottom side is facing up.
8. Now you have access to the internal M.2 Key M socket in order to remove or install a M.2 SSD.
9. For re-fixing the baseboard replace it carefully to the chassis and screw it on with retained screws. Tighten the retained screws when the baseboard is firmly in place.
10. For closing replace carefully the access cover to the system and screw it on with the retained screws. Tighten the retained screws when the cover is firmly in place.

NOTICE

When used as intended, the KBox E-430-AML/ADN is to operate only in closed condition.

Only when the access cover is properly fixed with the screws and the front side with WLAN and / or WWAN antenna(s) are properly installed and secured with the screws, it is ensured that the user does not have access to the internal parts of the KBox E-430-AML/ADN.

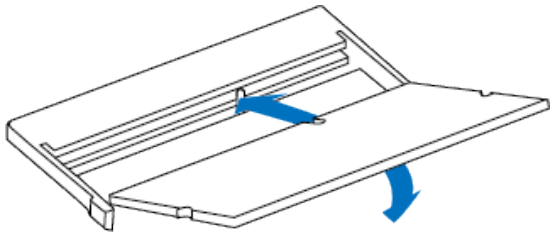
5.1.1. Installing A SO-DIMM Memory Module

To install a memory module please proceed according to the steps described:

1. Open the device as described in the subsection 5.1 "Opening and Closing the Chassis" (step 1 – 5).
2. Locate the SO-DIMM memory socket (DIMM1) (Figure 3, pos. 1).
3. Align the notch on the SO-DIMM memory module with the notch in the SO-DIMM memory socket.
4. Insert the SO-DIMM memory module into the corresponding socket at a 30-degree angle.
5. Rotate the SO-DIMM memory module down until it snaps into place and the levers close.

Visually check that each lever latch is fully closed and correctly engaged with the notch on the memory module edge.

Figure 8: Installing SO-DIMM Memory Module



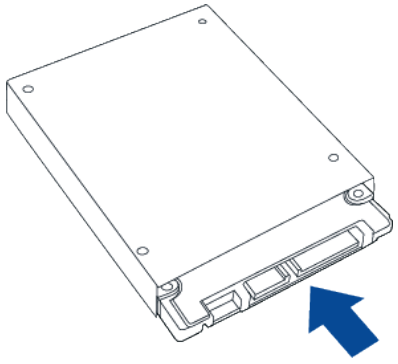
6. In order to close the device, proceed step 10 described in the subsection 5.1 "Opening and Closing the Chassis".

5.1.2. Installing A HDD / SSD

To install a 2.5" HDD / SSD please proceed according to the steps described:

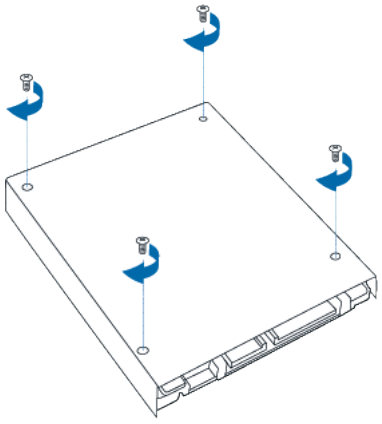
1. Open the device as described in the subsection 5.1 "Opening and Closing the Chassis" (step 1 - 5).
2. Slide the 2.5" HDD / SSD into the 2.5" HDD / SSD bracket (Figure 5, pos. 2) attached on the internal side of the access cover (Figure 5, pos. 1).

Figure 9: Sliding 2.5" HDD / SSD into Bracket



3. Align the screw holes of the bracket (Figure 5, pos. 3) with those of the HDD / SSD. Secure the HDD / SSD to the bracket with the M3 screws.

Figure 10: Securing 2.5" HDD / SSD To Bracket



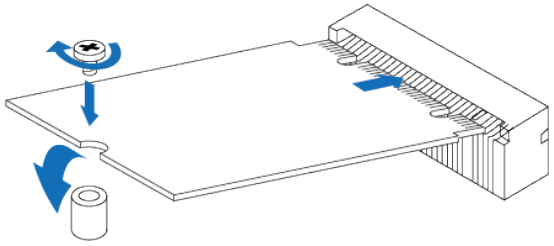
4. Connect the SATA cable to the HDD / SSD.
5. Plug the SATA data cable into SATA data connector (CN10) (Figure 3, pos. 2) and the SATA power cable into SATA power output wafer (CN8) (Figure 3, pos. 3).
6. In order to close the device, proceed step 10 described in the subsection 5.1 "Opening and Closing the Chassis".

5.1.3. Installing A M.2 Key B SSD / Expansion Card and / or A M.2 Key E Expansion Card

To install a M.2 Key B SSD / expansion card and / or a M.2 Key E expansion card please proceed according to the steps described:

1. Open the device as described in the subsection 5.1 "Opening and Closing the Chassis" (step 1 - 5).
2. Locate the M.2 Key B socket (M2B1) (Figure 3, pos. 4) and / or M.2 Key E socket (M2E1) (Figure 3, pos. 5) which you intend to use for installation as well as the corresponding fixing bolt(s) (Figure 3, pos. 7 and / or 8 depending on the type of M.2 SSD / expansion card installed into the M.2 Key B socket; Figure 3, pos. 7 for securing the expansion card into the M.2 Key E socket). Depending on the ordered KBox E-430-AML/AND configuration, Kontron may supply fixing bolt extension(s) and adapter bracket to facilitate the installation of different types of M.2 Key B SSD / expansion card.
3. Align the notch on the M.2 SSD / expansion card with the notch in the M.2 socket (M2B1 / M2E1). Insert the M.2 SSD / expansion card into the corresponding socket (Figure 3, pos. 4 / pos. 5) and rotate it down with the fixing hole of the M.2 SSD / expansion card over the corresponding fixing bolt (Figure 3, pos. 7 / pos. 8).
4. Press the M.2 SSD / expansion card down on the side with the fixing hole and secure it with the available fastening screw as well as fixing bolt extension and / or adapter bracket if necessary.

Figure 11: Installing M.2 SSD / Expansion Card



5. Repeat step 3 and step 4 in case of installing two cards in the M.2 Key B and M.2 Key E sockets respectively. Install the M.2 Key E expansion card first and then stack the M.2 Key B SSD / expansion card on it.
6. In order to close the device, proceed step 10 described in the subsection 5.1 "Opening and Closing the Chassis".

5.1.4. Installing A M.2 Key M SSD

To install an M.2 Key M SSD please proceed according to the steps described:

1. Open the device as described in the subsection 5.1 "Opening and Closing the Chassis" (step 1 - 8).
2. Locate the M.2 Key M socket (M2M1) (Figure 4, pos. 1) and the corresponding fixing bolt (Figure 4, pos. 2).
3. Align the notch on the M.2 SSD with the notch in the M.2 socket. Insert the M.2 SSD into the corresponding socket and rotate it down with the fixing hole of the M.2 SSD over the fixing bolt.
4. Press the M.2 SSD down on the side with the fixing hole and secure it with the available fastening screw.
5. In order to close the device, proceed step 9 & 10 described in the subsection 5.1 "Opening and Closing the Chassis".

5.1.5. Installing A SIM Card

To install a SIM card please proceed according to the steps described:

1. Open the device as described in the subsection 5.1 "Opening and Closing the Chassis" (step 1 - 5).
2. Locate the SIM card wafer (CN3) (Figure 3, pos. 6).
3. Plug the cable connected from SIM card holder module into the SIM card wafer.
4. Secure or place the module in an appropriate location within the chassis.
5. The installation of a SIM card depends on the SIM card holder type. Follow the instructions supplied by the manufacturer to install the SIM card.
6. In order to close the device, proceed step 10 described in the subsection 5.1 "Opening and Closing the Chassis".

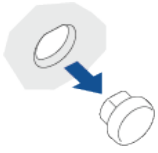
In case of a SIM card holder mounted on the M.2 WWAN expansion card, proceed step 1 - 4 & 6 described in the subsection 5.1.3 "Installing A M.2 Key B SSD / Expansion Card and / or A M.2 Key E Expansion Card" and follow the instructions supplied by the manufacturer to install the SIM card.

5.1.6. Installing Antenna(s)

To install antenna(s) please proceed according to the steps described:

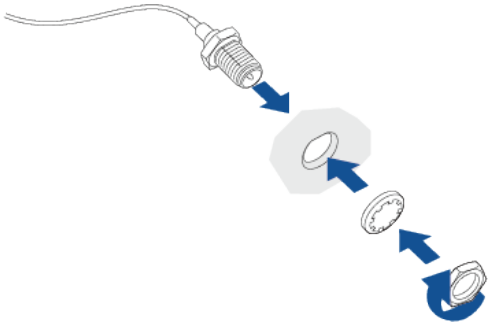
1. Open the device as described in the subsection 5.1 "Opening and Closing the Chassis" (step 1 - 5).
2. Locate the antenna hole (Figure 1, pos. 16).
3. Remove the rubber cap from the antenna hole.

Figure 12: Removing Rubber Cap



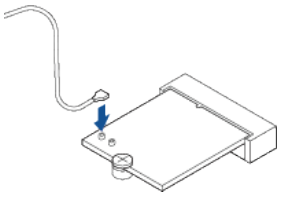
4. Insert the RP-SMA jack of antenna cable into the antenna hole from the inside of the chassis outwards. Ensure that the flat edge of the RP-SMA jack is properly aligned with the flat edge of the hole.
5. Insert the bundled O-ring over the RP-SMA jack.
6. Secure the RP-SMA jack with the bundled hex screw.

Figure 13: Securing RP-SMA Jack



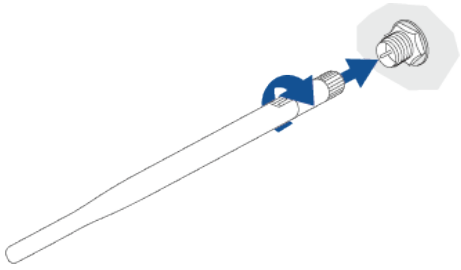
7. Connect the I-PEX end of the antenna cable to the M.2 Key B or Key E expansion card.

Figure 14: Connecting I-PEX End



8. Repeat Step 2 – 7 to install the second antenna cable in case two antennas are required and / or two wireless connections are required.
9. In order to close the device, proceed step 10 described in the subsection 5.1 "Opening and Closing the Chassis".
10. Screw the external antenna onto its corresponding RP-SMA jack on the front I/O panel.

Figure 15: Connecting I-PEX End



11. Repeat step 10 to install the second external antenna if any.
12. Position the antenna(s) for optimal signal reception.

6/ Thermal Considerations

6.1. Available Processors

Please refer to the chapter 10/ "Technical Specifications".

The list of processors may be extended over the product lifetime.

6.2. Convection Cooling

The applied cooling method provides adequate cooling of the device during operation and performs a one-way thermal transfer to the chassis. Three sides of the KBox E-430-AML/ADN consist of a compact aluminum U-shaped chassis are with cooling fins. The cooling fins provide heat dissipation during operation.

To provide sufficient heat dissipation for the cooling of the KBox E-430-AML/ADN, never cover the cooling fins of the chassis. Do not place any objects on the device.

6.3. System Clearance

To provide a maximum of airflow through and around the box, proper distances to surrounding parts must be observed.

6.4. Maximum Temperatures

The maximum system ambient temperature depends mostly on the power consumption of the processor and the chipset.

For the temperature evaluation a specialised tool from Intel® was used to set the processor to a defined workload. Depending on the power consumption one or more cores were set to 75% workload. This includes the graphics core. The tool also handles the usage of the "Turbo Mode" of certain processor types.

The processor utilization depends highly on the software used. Software using multicore feature will run on several cores whereas standard software will only utilize one core. In this case the processor will use the "Turbo Mode" to increase the clock for the core with the highest workload, as long as the temperature is within limits.

6.5. Third Party Components

When the KBox E-430-AML/ADN is extended and configured with third party components like M.2 expansion card(s) and hard drives (HDD or SSD), it has to be taken into account that the air temperature inside the system is higher than the ambient temperature. An approximately internal temperature rise is given for assistance.

7/ Installation Instructions

The KBox E-430-AML/ADN system is designed for operating:

- within a control cabinet / custom enclosure / machine by use of a DIN rail mounting kit
- within a control cabinet / custom enclosure / machine by use of a wall mount plate
- within a control cabinet/ custom enclosure / machine or onto a wall / the back of a monitor by use of a pair of wall mount brackets
- within a control cabinet/ custom enclosure / machine or onto a wall / the back of a monitor by use of a VESA mounting kit
- as a desktop unit by use of rubber feet

Expansion card installation should be performed before installing the KBox E-430-AML/ADN into control cabinet / custom enclosure / machine, or onto wall / monitor.

NOTICE

Whenever possible, unpack or pack this product only at EOS/ESD safe work stations. Where a safe work station is not guaranteed, it is important for the user to be electrically discharged before touching the product with his/her hands or tools. This is most easily done by touching a metal part of the system chassis.

Do not handle this product out of its protective enclosure while it is not used for operational purposes unless it is otherwise protected.

Prior any installation work, ensure that there are no live wires on the installation site.

Do not handle the device if there is any damage visible.

Do not operate the KBox E-430-AML/ADN with foreign objects inside the chassis.

Further do not insert any retrieval device into the device while it is connected to power.

Kontron rejects all liability for any and all damages resulting from operation of the unit with foreign objects inside the chassis.

The KBox E-430-AML/ADN has to be installed and operated only by trained and qualified personnel.

Only personnel with appropriate qualifications, trainings and authorization are permitted to install and work with the Kontron KBox E-430-AML/ADN.

This device shall only be installed in or connected to systems that fulfill all necessary technical and specific environmental requirements.

The unit must be placed such that there is sufficient space in front of it for connecting the cables to the I/O interface connectors and for operating the power button.

Leave sufficient free space around the unit to prevent the device from possibly overheating!

Refer also to section 10.1.2 “Mechanical Specifications”.

The KBox E-430-AML/ADN must be firmly attached to a clean flat and solid mounting surface. Use proper fastening materials suitable for the mounting surface. Ensure that the mounting surface type and the used mounting solution safely support the load of the KBox E-430-AML/ADN and the attached components.

Please follow the local/national regulations for grounding.

The voltage feeds must not be overloaded. Adjust the cabling and the overcurrent protection to correspond with the electrical figures indicated on the type label.

The type label is located next to the access cover of the system.

It is recommended that the last cable attached to the system should be the power cable! Refer to the section 7.2 “DC Power Connection” and chapter 8/ “Starting Up”.

7.1. System Mounting

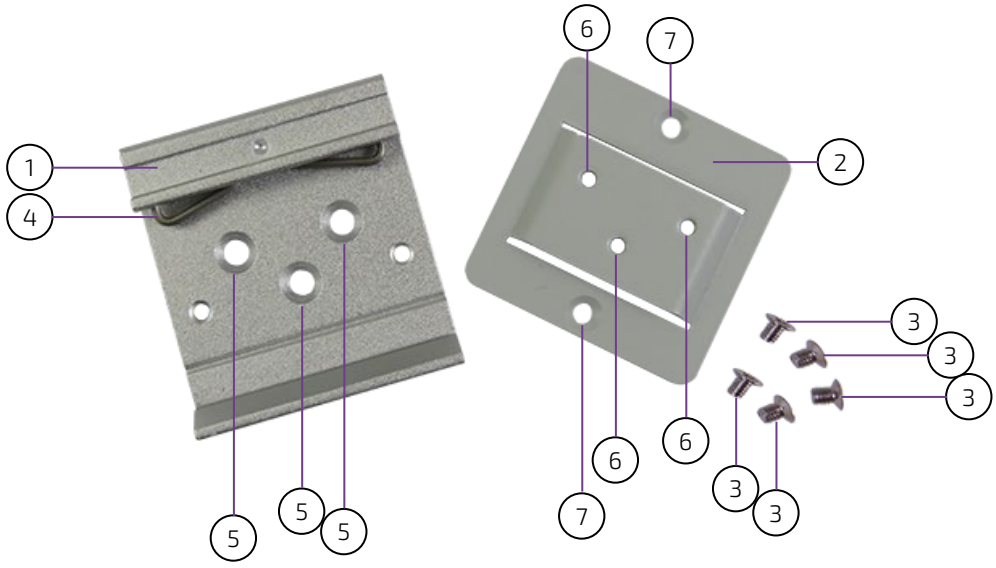
In order to adapt the KBox E-430-AML/ADN for mounting, Kontron offers different mounting solutions such as:

- KBox E-430-AML/ADN configuration with a DIN rail mounting kit for vertical / horizontal installation into a control cabinet / custom enclosure / machine
- KBox E-430-AML/ADN configuration with a vertical wall mount plate for vertical installation into a control cabinet / custom enclosure / machine
- KBox E-430-AML/ADN configuration with a horizontal wall mounting kit for horizontal installation into a control cabinet / custom enclosure / machine or onto a wall / the back of a monitor
- KBox E-430-AML/ADN configuration with a VESA mounting kit for vertical / horizontal installation into a control cabinet / custom enclosure / machine / or onto a wall / the back of a monitor
- KBox E-430-AML/ADN configuration with four rubber feet as a desktop unit

7.1.1. DIN Rail Mounting

Depending on the ordered KBox E-430-AML/ADN configuration, your system may be supplied with a DIN rail mounting kit (Figure 15).

Figure 16: Optional DIN Rail Mounting Kit



1 DIN Rail Clamp

2 Adapter Plate

3 M3 x 4 mm Screw

4 DIN Rail Spring

5 Screw Hole on DIN rail clamp for securing DIN rail clamp to adapter plate

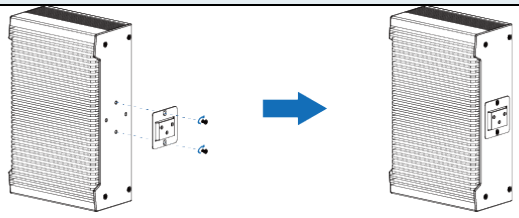
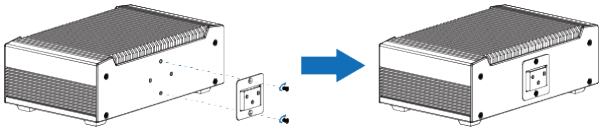
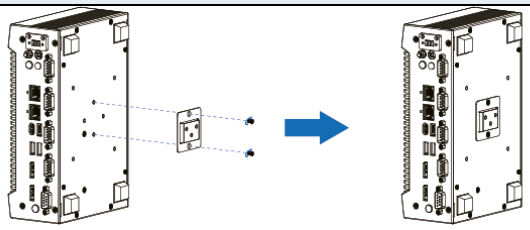
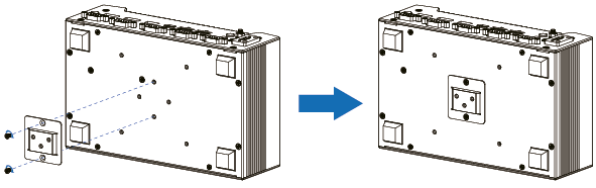
6 Screw Hole on adapter plate for securing DIN rail clamp to adapter plate

7 Screw Hole for securing adapter plate to KBox E-430-AML/ADN

To mount the KBox E-430-AML/ADN please proceed according to the steps described:

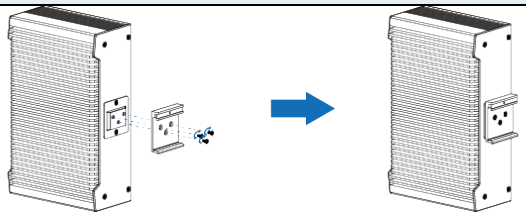
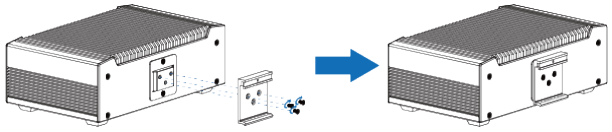
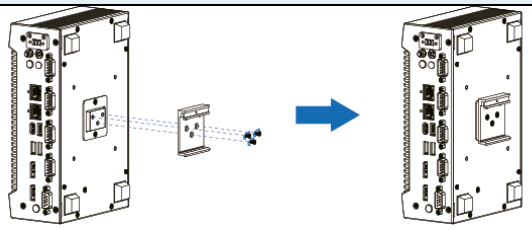
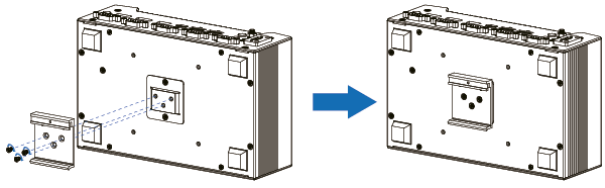
1. Secure the adapter plate on the rear or bottom side of the chassis in a horizontal or vertical direction with the supplied screws (M3 x 4 mm) depending on usage requirements, application scenarios and / or surrounding conditions.

Figure 17: Securing Adapter Plate

From rear side in vertical direction	From rear side in horizontal direction
	
The top side with cooling fins can be placed to the opposite direction depending on requirements / scenarios / conditions.	It is not recommended placing the top side with cooling fins downward.
From bottom side in vertical direction	**From bottom side in horizontal direction**
	
The front I/O panel can be placed to the opposite direction depending on requirements / scenarios / conditions.	The front I/O panel can be placed downward depending on requirements / scenarios / conditions.

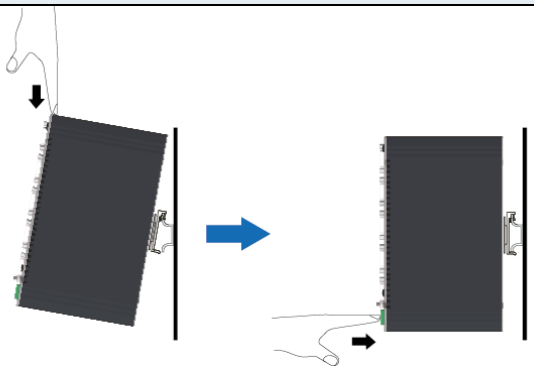
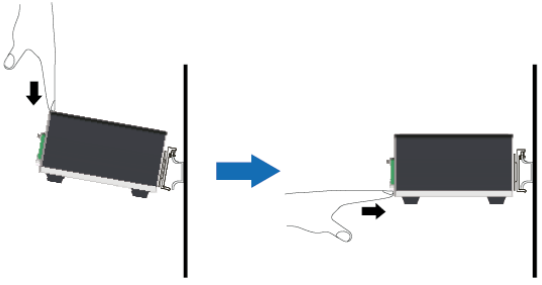
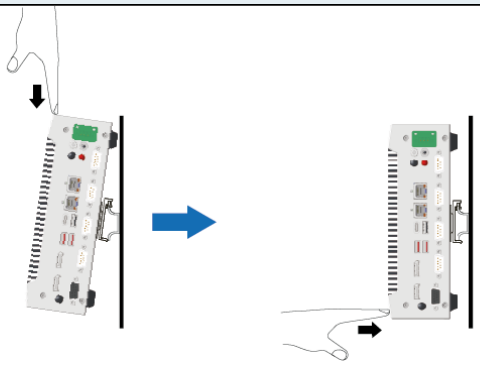
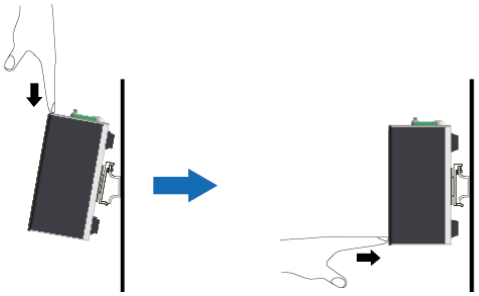
2. Secure the DIN rail clamp on the adapter plate with the supplied screws (M3 x 4 mm).

Figure 18: Securing DIN Rail Clamp

From rear side in vertical direction	From rear side in horizontal direction
	
From bottom side in vertical direction	**From bottom side in horizontal direction**
	

3. Make sure that DIN rail mounting clamp is in the upright position.
4. Clip the top of the DIN rail clamp into the DIN rail and push the bottom of the DIN rail clamp firmly until it clamps onto the bottom of the DIN rail.

Figure 19: Clamping KBox E-430-AML/ADN onto DIN Rail

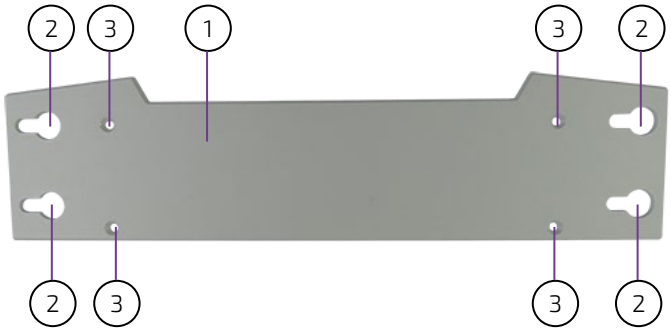
From rear side in vertical direction	From rear side in horizontal direction
	
From bottom side in vertical direction	**From bottom side in horizontal direction**
	

For a sufficient air circulation around the device, we recommend keep a proper clearance and not mount / operate any other devices within the clearance around the KBox E-430-AML/ADN.

7.1.2. Vertical Wall Mounting

Depending on the ordered KBox E-430-AML/ADN configuration, your system may be supplied with a vertical wall mount plate (Figure 20).

Figure 20: Optional Vertical Wall Mount Plate



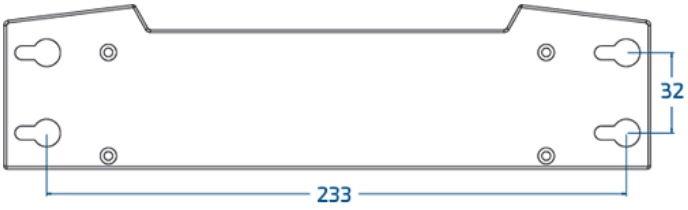
1 Vertical Wall Mount Plate

2 Keyhole Slot for Hanging the KBox E-430-AML/ADN with a Screw

3 Screw Hole for Securing the Vertical Wall Mount Plate to the Chassis of the KBox E-430-AML/ADN

To mount the KBox E-430-AML/ADN with the supplied vertical wall mount plate, the control cabinet / custom enclosure / machine / monitor / wall must have the screw pattern shown as Figure 21 for mounting.

Figure 21: Keyhole Pattern of Vertical Wall Mount Plate

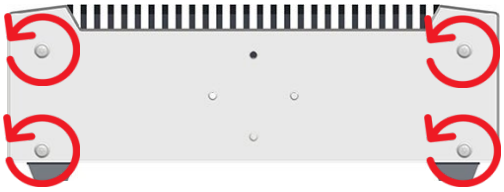


unit: mm

To mount the KBox E-430-AML/ADN please proceed according to the steps described:

1. Loosen and remove the four Phillips screws that secure the rear panel to the chassis. Retain the screws for later use.

Figure 22: Unscrew Rear Panel



2. Lift the rear panel up. Place carefully the vertical wall mount plate onto the chassis to replace the original rear panel and screw it on with the retained screws. Tighten the retained screws when the plate is firmly in place.

Figure 23: Securing Vertical Wall Mount Plate

The plate can be turned over to the reverse side and then secured onto the chassis depending on usage requirements, application scenarios and / or surrounding conditions.

3. Prepare the mounting surface with sufficient screws (four screws) and if necessary anchors corresponding to the mounting surface type if no compliant screw holes are available. (The recommended screw size is M5.)
4. Secure the screws to the mounting surface per the keyhole pattern (Figure 21). Do not secure the screws completely. Leave approximately 2 mm of clearance between the back of the screw head and the mounting surface.
5. Place the KBox E-430-AML/ADN onto the mounting surface by placing the wide portion of each keyhole slot over the corresponding screw on the mounting surface.
6. Slide the KBox E-430-AML/ADN down so that the screw heads are in the narrow portion of the keyhole slots.
7. Tighten the screws to secure the KBox E-430-AML/ADN in place.

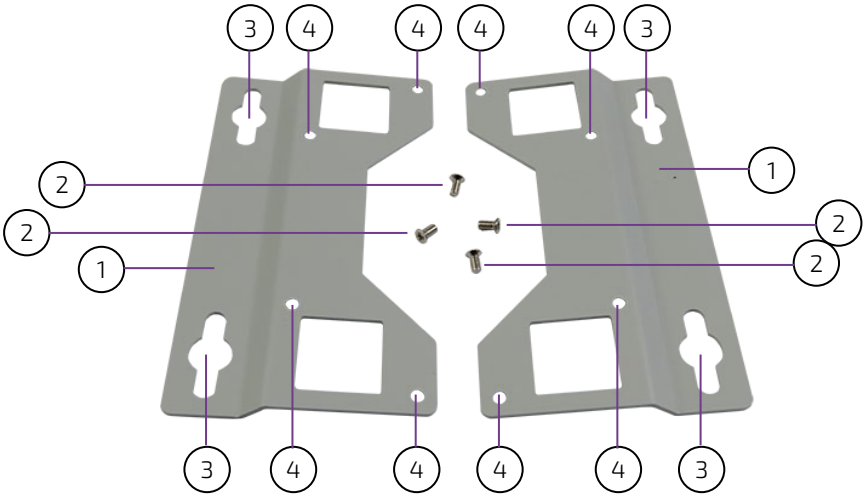
Figure 24: Securing KBox E-430-AML/ADN onto Mounting Surface Vertically

The top side with cooling fins will face to the opposite direction in case the plate is installed from the reverse side in Figure 24.

7.1.3. Horizontal Wall Mounting

Depending on the ordered KBox E-430-AML/ADN configuration, your system may be supplied with a horizontal wall mounting kit (Figure 25). The kit consists of a pair of horizontal wall mount brackets (Figure 25, pos. 1) and four M3 x 5 mm screws (Figure 25, pos. 2).

Figure 25: Optional Horizontal Wall Mounting Kit



1 Horizontal Wall Mount Bracket

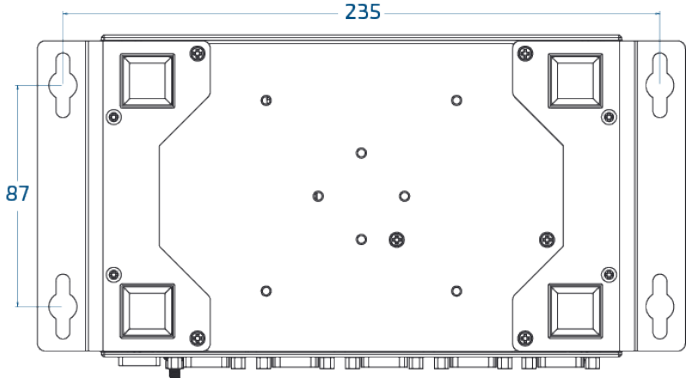
2 M3 x 5 mm Screw

3 Keyhole Slot for Hanging the KBox E-430-AML/ADN with a Screw

4 Screw Hole for Securing the Horizontal Wall Mount Bracket to the Chassis of the KBox E-430-AML/ADN

To mount the KBox E-430-AML/ADN with the supplied horizontal wall mount brackets, the control cabinet / custom enclosure / machine / monitor / wall must have the screw pattern shown as Figure 26 for mounting.

Figure 26: Keyhole Pattern of Horizontal Wall Mount Brackets

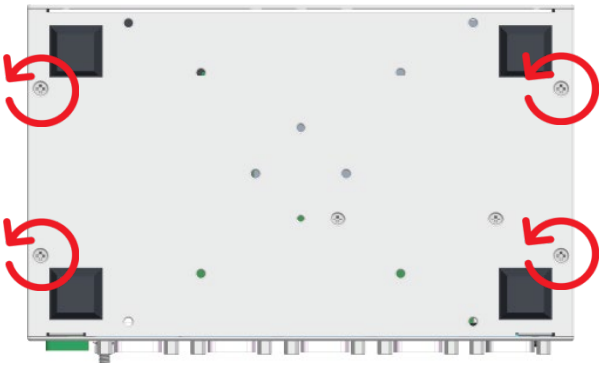


unit: mm

To mount the KBox E-430-AML/ADN please proceed according to the steps described:

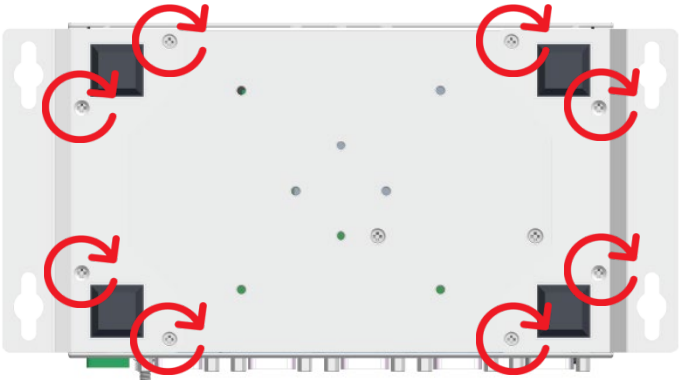
1. Loosen and remove the four screws that secure the access cover to the chassis. Retain the screws for later use.

Figure 27: Removing Screws



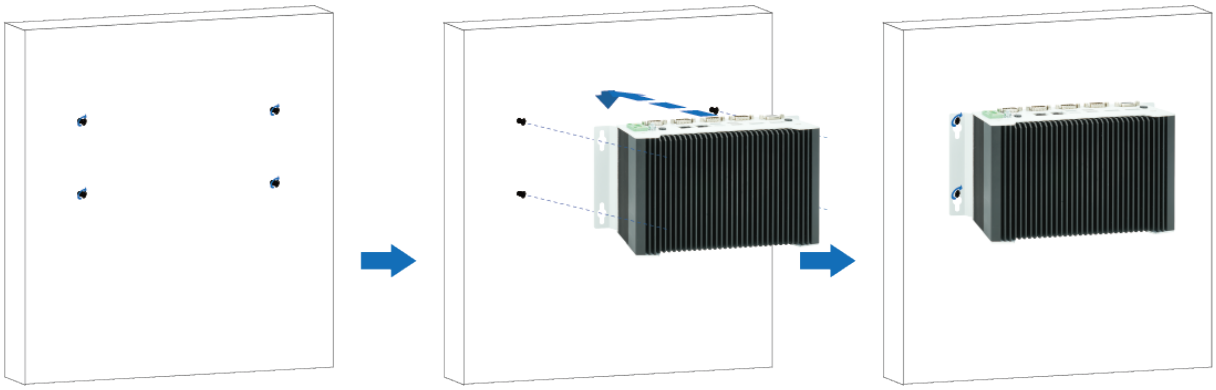
2. Place carefully the two horizontal wall mount brackets onto the bottom side of the KBox E-430-AML/ADN and screw them on with the four retained screws and the four supplied screws. Tighten the screws when the brackets are firmly in place.

Figure 28: Securing Horizontal Wall Mount Brackets



3. Prepare the mounting surface with sufficient screws (four screws) and if necessary anchors corresponding to the mounting surface type if no compliant screw holes are available. (The recommended screw size is M5.)
4. Secure the screws to the mounting surface per the keyhole pattern (Figure 26). Do not secure the screws completely. Leave approximately 2 mm of clearance between the back of the screw head and the mounting surface.
5. Place the KBox E-430-AML/ADN onto the mounting surface by placing the wide portion of each keyhole slot over the corresponding screw on the mounting surface.
6. Slide the KBox E-430-AML/ADN down so that each screw head is in a narrow portion of each keyhole slot.
7. Tighten the screws to secure the KBox E-430-AML/ADN in place.

Figure 29: Securing KBox E-430-AML/ADN onto Mounting Surface Horizontally

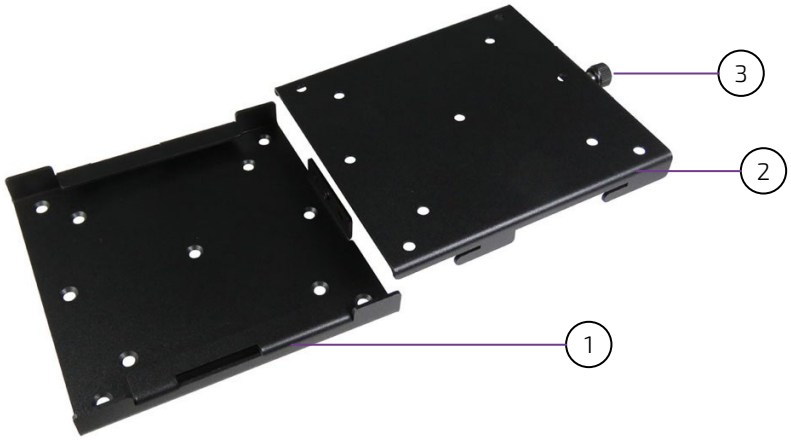


The front I/O panel can be placed downward depending on usage requirements, application scenarios and / or surrounding conditions.

7.1.4. VESA Mounting

Depending on the ordered KBox E-430-AML/ADN configuration, your system may be supplied with a VESA mounting kit (Figure 30). The kit consists of two parts: a base bracket (Figure 30, pos. 1) to be fixed permanently on the mounting surface and another hooked bracket (Figure 30, pos. 2) to hold the KBox E-430-AML/ADN with a hand-screw knob (Figure 30, pos. 3) to secure two brackets together.

Figure 30: Optional VESA Mounting Kit



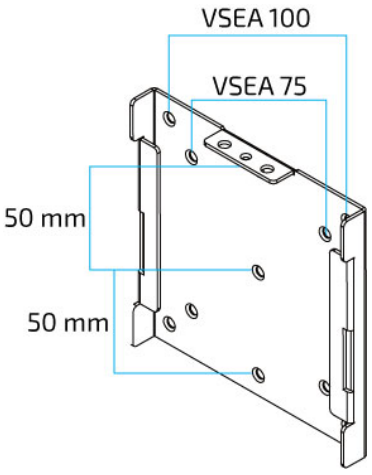
1 Base mounting bracket

2 Hooked mounting bracket

3 Hand-screw knob for securing together base mounting bracket and hooked mounting bracket

The base mounting bracket complies with VESA 75 and VESA 100 patterns (Figure 31). To fasten the bracket, the control cabinet / custom enclosure / machine / monitor / wall must have VESA 75, VESA 100 or other screw pattern shown as Figure 31 for mounting.

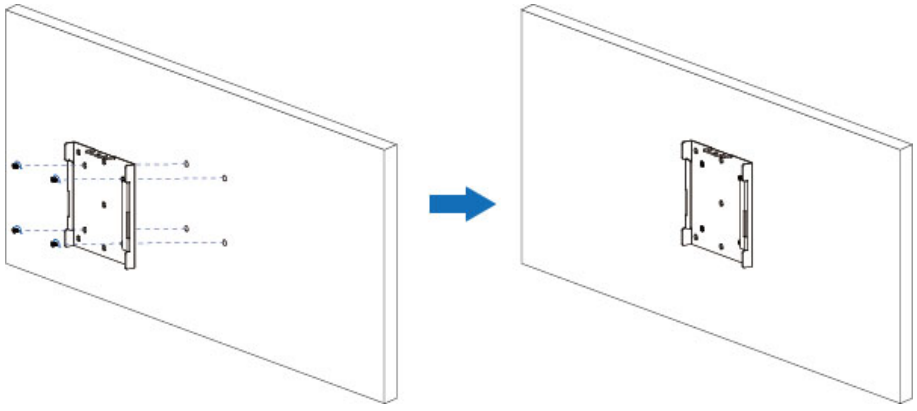
Figure 31: Hole Pattern of Base Mounting Kit



To mount the KBox E-430-AML/ADN please proceed according to the steps described:

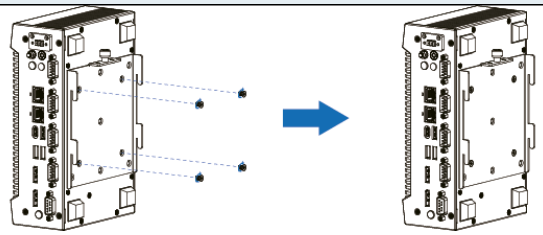
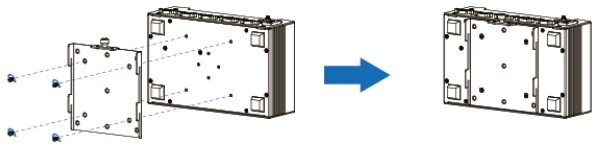
1. Prepare the mounting surface with sufficient screws (four screws for VESA mount) and if necessary anchors corresponding to the mounting surface type if no VESA-compliant screw holes are available. (The recommended screw size is M4 x 6 ~ 10 mm but it still depends on the available screw holes of the mounting surface and never be larger than M4 if any.)
2. Secure the base mounting bracket to the mounting surface with screws (Figure 32).

Figure 32: Securing Base Mounting Bracket



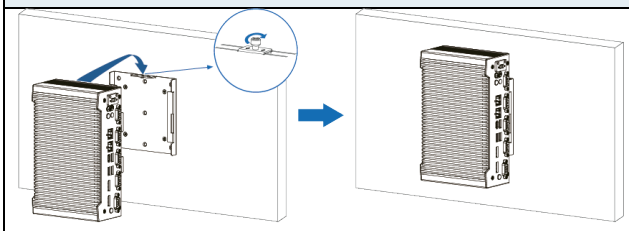
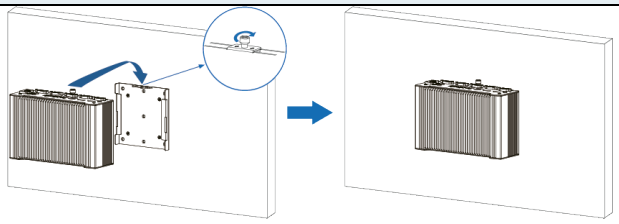
3. Secure the hooked mounting bracket onto the bottom side of the KBox E-430-AML/ADN (Figure 33) with M3 screws (6 mm long) via the VESA 75 mounting holes. The orientation depends on usage requirements, application scenarios and / or surrounding conditions.

Figure 33: Securing Hooked Mounting Bracket onto KBox E-430-AML/ADN

In vertical direction	In horizontal direction
	
The front I/O panel can be placed to the opposite direction depending on requirements / scenarios / conditions.	The front I/O panel can be placed downward depending on requirements / scenarios / conditions.

4. Place the KBox E-430-AML/ADN onto the mounting surface by sliding the hooked mounting bracket into the based mounting bracket (Figure 34).
5. Secure the hand-screw knob located on the hooked mounting bracket to fix two brackets (Figure 34).

Figure 34: Securing KBox E-430-AML/ADN onto Mounting Surface

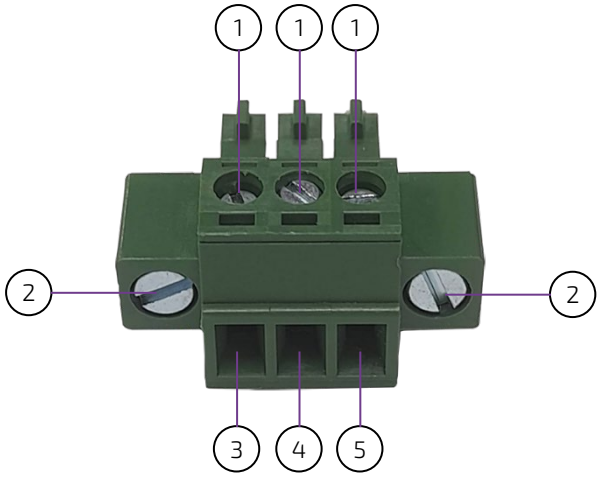
In vertical direction	In horizontal direction
	

7.2. DC Power Connection

The KBox E-430-AML/ADN is connected by a 3-pin terminal block socket connector (Figure 1, pos. 1) via a DC power supply wiring to a DC power source.

The KBox E-430-AML/ADN is delivered with a 3-pin terminal block plug connector (Figure 35). For DC connection, prepare the connecting wires using the supplied terminal block plug connector. DC power voltage should be within the range between 9 V and 36 V.

Figure 35: Terminal Block Plug Connector



1 Slotted pan head screw for securing the wire

2 Slotted pan head screw for securing the terminal block plug connector to the socket connector

3 Location for inserting the positive (+) input wire

4 Location for inserting the functional earth wire

5 Location for inserting the negative (-) input wire

In case of ordering a power adapter (AC to DC 24 V) as well as a power cord from Kontron, the 3-pin terminal block plug connector (Figure 35) should be well attached to the power adapter. For DC power connection, users can use the power cord and power adapter to carry AC power from AC power source and then convert it into DC 24 V.

In case the supplied power adapter and terminal block plug connector are separated from each other per your ordered configuration, the white wire of the adapter carries the positive (+) end while the black one carries the negative (-) end.

7.2.1. Cabling

For the pin assignment of terminal block socket connector refer to the subsection 11.1 "DC Power Input".

1. Cut the required length three isolated wires (1mm2) AWG 18 and strip each end 5 ~ 7 mm.
2. Twist the striped wire-ends and provide them with ferrules.
3. Loosen the three slotted pan head screws of the terminal block plug connector far enough so that you can insert the end of the prepared wires.

4. Insert the wires into the corresponding clamp of the terminal block plug connector. Make sure that you have the right polarity of the connection [refer to Figure 35 or subsection 11.1 "DC Power Input"].
5. Fasten the screws to secure the wires into the clamps of the terminal block plug connector.

8/ Start Up

The KBox E-430-AML/ADN must be only operated with a nominal voltage within the range between 9 V DC and 36 V DC of type SELV. For details refer to the chapter 10/ “Technical Specifications”.

8.1. Connecting to DC Power Supply

The DC-In terminal block socket connector (Figure 1, pos. 1) is located on the front side of the KBox E-430-AML/ADN. The KBox E-430-AML/ADN will be connected to a DC main power supply via the supplied terminal block plug connector (Figure 35) and corresponding power wires (prepared as described in the subsection 7.2.1 "Cabling"), or to a AC-to-DC power adapter via the attached terminal block plug connector (Figure 35) as well as corresponding power cable to couple together the adapter and the AC power outlet.

Before using your system, become familiar with the system components and check that everything is connected properly. Following a proper cabling procedure will prevent a false power-on condition, which could result in unit operational failure.

When you install/disconnect the unit, the functional earth connection must always be made first and disconnected last.

Also, it is recommended that the last connections attached to the system should be the power wires!

NOTICE

The KBox E-430-AML/ADN must be connected DC main power supply complying with the SELV (Safety Extra Low Voltage) requirements of EN 60950-1 standard. It must be observed that wiring and short-circuit/overcurrent protection is performed according to the applicable standards, regulations and respect to the electrical specification of the KBox E-430-AML/ADN.

Even when the system is turned off via the power button (Figure 1, pos. 2) parts of the system are still energized.

The disconnecting device (fuse/circuit backer) rating must be in accordance with the wire cross-section and the rated current of the KBox E-430-AML/ADN.

The wires used for power connections must be clearly marked (+/-) to ensure that they will be proper connected to the DC IN connector of the KBox E-430-AML/ADN and to the main power source, corresponding to signals marked; refer to Figure 35 and Subsection 11.1.

The cables must have some form of support so as to minimize the strain on the unit's connectors.

To connect the KBox E-430-AML/ADN to a corresponding power supply, please perform the following steps:

For connection to DC main power supply:

1. Ensure that the DC power source is switched off via a disconnecting device (circuit breaker), in order to ensure that no power is flowing from the external DC power source during the connection procedure.
2. Connect the protective earth stud bolt (Figure 1, pos. 17) to an appropriate common earth connection.

3. Connect the terminal block plug connector prepared as described in the subsection 7.2.1 "Cabling" to the DC-In terminal block socket connector (Figure 1, pos. 1) of the KBox E-430-AML/ADN. The DC input connector is located on the front side.
4. Connect the other ends of the DC power wires to the connections of the DC main power supply. Pay attention to the polarity of the connections.
5. Switch on the disconnecting device (circuit breaker) in order to apply voltage to the terminals of the power wires.
6. Press the power button (Figure 1, pos. 2) on the front panel to turn on the system.

For connection to the supplied AC-to-DC power adapter in case of ordering the power adapter from Kontron:

1. Connect the protective earth stud bolt (Figure 1, pos. 17) to an appropriate common earth connection.
2. Connect the power adapter cable with terminal block plug connector to the terminal block socket connector (DC IN, Figure 1, pos. 1) of the KBox E-430-AML/ADN.
3. Connect the power cable to the power adapter.
4. Connect the power cable to a power outlet.
5. Press the power button (Figure 1, pos. 2) on the front panel to turn on the system.

8.2. Operating System and Hardware Component Drivers

Your system can be supplied optionally with a pre-installed operating system.

If you have ordered your KBox E-430-AML/ADN with a pre-installed operating system, all drivers are installed in accordance with the system configuration ordered (optional hardware components). Your system is fully operational when you switch it on for the first time.

If you have ordered the KBox E-430-AML/ADN without a pre-installed operating system, you will need to install the operating system and the appropriate drivers for the system configuration you have ordered (optional hardware components) yourself.

You can download the relevant drivers for the installed hardware from our web site at www.kontron.com by selecting the product.

Pay attention to the manufacturer specifications of the operating system and the integrated hardware components.

9/ Maintenance and Cleaning

Equipment from Kontron requires only minimum servicing and maintenance for proper operation.

- For light soiling, clean the KBox E-430-AML/ADN with a dry cloth. Carefully remove dust from the surface of the chassis using a clean, soft brush.
- Stubborn dirt should be removed using a mild detergent and a soft cloth.

Do not use steel wool, metallic threads or solvents like abrasives, alcohol, acetone or benzene for cleaning the KBox E-430-AML/ADN.

10/ Technical Specifications

Table 2: Technical Specifications

	KBox E-430-AML	KBox E-430-ADN
System		
Processor	Intel® Atom® x7000RE Series Processors	Intel® Core™ i3 N-Series Processors Intel® N-Series Processors
Memory	1x DDR5 SO-DIMM	
Video		
Display Interface	3x DP (2x Full-size, 1x DP USB-C)	
Network Connection		
Ethernet	2x 2.5 GbE LAN (RJ45, Intel® I226-IT, with TSN support)	2x 2.5 GbE LAN (RJ45, Intel® I226-V, without TSN support)
Peripheral Connection		
USB	2x USB 3.2 Gen 2 Type A 1x USB 3.2 Gen 1 Type C (w/ DP & PD 5 V / 3 A) 1x USB 2.0 Type A	2x USB 3.2 Gen 2 Type A 1x USB 3.2 Gen 2 Type C (w/ DP & PD 5 V / 3 A) 1x USB 2.0 Type A
Serial Port	4x RS232/422/485 (DB9, 2x Tx/Rx only in RS232)	
DIO	1x 8-bit DIO (DB9 Female, 4x DI + 4x DO)	
Storage & Expansion		
Storage & Expansion	1x 2.5" SATA 3.0 HDD / SSD support 1x M.2 Key B (Type 2242 / 3042 / 3052 / 2280, with PCIe x1 / USB 2.0 / UIM) 1x M.2 Key E (Type 2230, with PCIe x1 / USB 2.0) 1x M.2 Key M (Type 2280, with SATA 3.0 (default) / PCIe x1 (optional)) 1x SIM Card Holder (optional, by header)	1x 2.5" SATA 3.0 HDD / SSD support 1x M.2 Key B (Type 2242 / 3042 / 3052 / 2280, with PCIe x1 / USB 2.0 / UIM) 1x M.2 Key E (Type 2230, with PCIe x1 / USB 2.0 / CNVi) 1x M.2 Key M (Type 2280, with SATA 3.0 (default) / PCIe x1 (optional)) 1x SIM Card Holder (optional, by header)
Power		
Input Voltage	DC 9 V ~ 36 V	
Connector	3-pin Terminal Block	
Firmware		
BIOS	AMI uEFI BIOS w/ 256 Mb SPI Flash	
Watchdog	Programmable WDT to generate system reset event	
H/W Monitor	Voltages Temperatures	
Real Time Clock	Processor integrated RTC	
Security	TPM 2.0 support (Infineon SLB 9672)	
System Control & Monitoring		
Button, Switch &	1x Power Button	

Indicator	1x Power LED 1x Standby LED 1x Storage LED
Cooling	
Cooling Method	Passive
Software	
OS Support	Windows 11, Windows 10, Linux

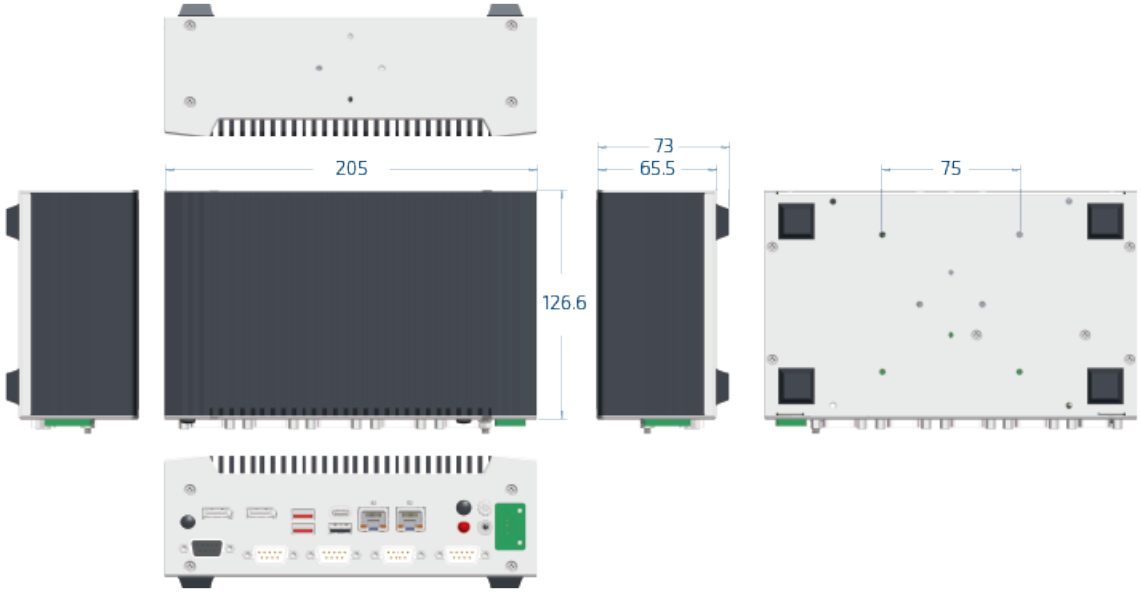
10.1. Mechanical Specifications

Table 3: Mechanical Specifications

Construction	Aluminum Metal Chassis
Dimensions (W x D x H)	205 mm x 126.6 mm x 65.5 mm / 8.07" x 4.98" x 2.58"
Weight	2,000 g / 4.41 lb
Mounting	Vertical / Horizontal DIN Rail Mount Vertical / Horizontal Wall Mount Vertical / Horizontal VESA Mount (75 mm x 75 mm) Desktop

10.1.1. Mechanical Drawing

Figure 36: Mechanical Drawing



(unit: mm)

10.2. Environmental Conditions

Table 4: Environmental Conditions

	KBox E-430-AML	KBox E-430-ADN
Operating Temperature	-40 °C ~ 65 °C / -40 °F ~ 149 °F (Extended)	0 °C ~ 50 °C / 32 °F ~ 122 °F (Standard)
Storage Temperature	-55 °C ~ 85 °C / -67 °F ~ 185 °F (Extended)	-20 °C ~ 80 °C / -4 °F ~ 176 °F (Standard)
Humidity	0 % ~ 95 %	

10.3. Standards and Certifications

Table 5: Standards and Certifications

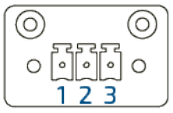
CE Class B UKCA	EN 55032: 2015 + A11: 2020, Class B BS EN 55032: 2015 + A11: 2020 CISPR 32: 2015 + COR1: 2016 EN 55032: 2015 + A1: 2020, Class B BS EN 55032: 2015 + A1: 2020 CISPR 32: 2015 + A1: 2019 EN 61000-3-2: 2014 EN IEC 61000-3-2: 2019 + A1: 2021 EN 61000-3-3: 2013 + A2: 2021 BS EN 61000-3-2:2014 BS EN IEC 61000-3-2: 2019 + A1: 2021 BS EN 61000-3-3: 2013 + A2: 2021 EN 55035: 2017 + A11: 2020 BS EN 55035: 2017 + A11: 2020 IEC 61000-4-2: 2008 IEC 61000-4-3: 2020 IEC 61000-4-4: 2012 IEC 61000-4-5: 2014 + A1: 2017 IEC 61000-4-6: 2023 IEC 61000-4-8: 2009 IEC 61000-4-11: 2020 + COR2: 2022 EN IEC 61000-6-2: 2019 EN IEC 61000-6-4: 2019
FCC Class B ICES Class B	FCC CFR Title 47 Part 15 Subpart B, Class B ICES-003 Issue 7: 2020 Class B ANSI C63.4: 2014 ANSI C63.4a: 2017

11/ Standard Interfaces – Pin Assignments

Low-active signals are indicated by a minus sign.

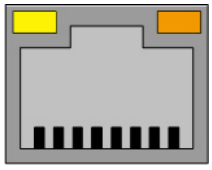
11.1. DC Power Input

Table 6: DC Power Input (see Figure 1, pos. 1)

Pin	Signal Name	3-pin Terminal Block Socket Connector
1	VCC (DC 9 V ~ 36 V)	
2	Functional Earth	
3	GND (DC 0 V)	

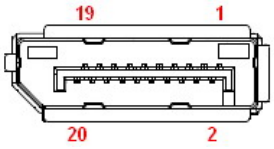
11.2. 2.5 Gigabit Ethernet Connector

Table 7: 2.5 Gigabit Ethernet Connector (see Figure 1, pos. 6)

Pin	Signal Name	RJ45
1	TX1+	
2	TX1-	
3	TX2+	
4	TX3+	
5	TX3-	
6	TX2-	
7	TX4+	
8	TX4-	

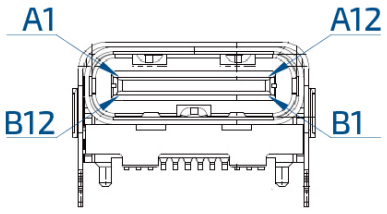
11.3. DisplayPort Connector

Table 8: DisplayPort Connector (see Figure 1, pos. 7)

Pin	Signal Name	DisplayPort Connector
1	ML_Lane0p	
2	GND	
3	ML_Lane0n	
4	ML_Lane1p	
5	GND	
6	ML_Lane1n	
7	ML_Lane2p	
8	GND	
9	ML_Lane2n	
10	ML_Lane3p	
11	GND	
12	ML_Lane3n	
13	Config1	
14	Config2	
15	AUX_CHp	
16	GND	
17	AUX_CHn	
18	Hot_Plug	
19	GND	
20	DP_PWR	

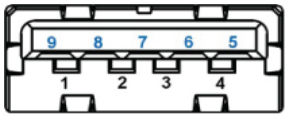
11.4. DisplayPort over USB 3.2 Gen 2 / Gen 1 Type C Connector

Table 9: DisplayPort over USB 3.2 Gen 2 / Gen 1 Type C Connector (see Figure 1, pos. 8)

Pin	Signal Name	USB Type C Connector
A1	GND	
A2	CON_TX1P_C	
A3	CON_TX1N_C	
A4	+5V_VBUS	
A5	CC1	
A6	USB2_P	
A7	USB2_N	
A8	SBU1	
A9	+5V_VBUS	
A10	CON_RX2N_C	
A11	CON_RX2P_C	
A12	GND	
B1	GND	
B2	CON_TX2P_C	
B3	CON_TX2N_C	
B4	+5V_VBUS	
B5	CC2	
B6	USB2_P	
B7	USB2_N	
B8	SUB2	
B9	+5V_VBUS	
B10	CON_RX1N_C	
B11	CON_RX1P_C	
B12	GND	

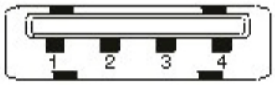
11.5. USB 3.2 Gen 2 Connector

Table 10: USB 3.2 Gen 2 Connector (see Figure 1, pos. 9)

USB 2.0 Contact Pin		USB 3.2 Gen 2 Contact Pin		9-pin USB Connector Type A Version 3.2 Gen 2 / 2.0
Pin	Signal Name	Pin	Signal Name	
1	+USB_VCC	5	USB_RX-	
2	USB_D-	6	USB_RX+	
3	USB_D+	7	GND	
4	GND	8	USB_TX-	
		9	USB_TX+	

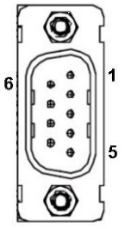
11.6. USB 2.0 Connector

Table 11: USB 2.0 Connector (see Figure 1, pos. 10)

Pin	Signal Name	4-pin USB Connector Type A Version 2.0
1	+USB_VCC	
2	USB_D-	
3	USB_D+	
4	GND	

11.7. COM 1 & COM 2 RS232/422/485 Serial Port

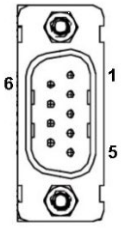
Table 12: COM 1 & COM 2 RS232/422/485 Serial Port (see Figure 1, pos. 11 & 12)

Pin	RS232	RS422	RS485	9-pin D-SUB Male Connector
1	N/A	TX-	DATA-	
2	RXD	TX+	DATA+	
3	TXD	RX+	N/A	
4	N/A	RX-	N/A	
5	GND	GND	GND	
6	N/A	N/A	N/A	
7	N/A	N/A	N/A	
8	N/A	N/A	N/A	
9	N/A*	N/A*	N/A*	

* Kontron's default setting. Users can alternatively connect it to Pin 10 in the wafer for +5V signal.

11.8. COM 3 & COM 4 RS232/422/485 Serial Port

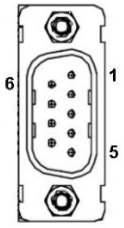
Table 13: COM 3 & COM 4 RS232/422/485 Serial Port (see Figure 1, pos. 13 & 14)

Pin	RS232	RS422	RS485	9-pin D-SUB Male Connector
1	DCD	TX-	DATA-	
2	RXD	TX+	DATA+	
3	TXD	RX+	N/A	
4	DTR	RX-	N/A	
5	GND	GND	GND	
6	DSR	N/A	N/A	
7	RTS	N/A	N/A	
8	CTS	N/A	N/A	
9	RI*	N/A*	N/A*	

* Kontron's default setting. Users can alternatively connect it to Pin 10 in the wafer for +5V signal.

11.9. Digital I/O Port

Table 14: Digital I/O Port (see Figure 1, pos. 15)

Pin	Signal Name	9-pin D-SUB Female Connector
1	DIO_0	
2	DIO_1	
3	DIO_2	
4	DIO_3	
5	DIO_4	
6	DIO_5	
7	DIO_6	
8	DIO_7	
9	+5V	

12/ BIOS

12.1. Starting the uEFI BIOS

The KBox E-430-AML/ADN is provided with a Kontron-customized, pre-installed and configured version of AMI Aptio® V uEFI BIOS. AMI BIOS firmware is based on the Unified Extensible Firmware Interface (UEFI) specification and the Intel® Platform Innovation Framework for EFI. This uEFI BIOS provides a variety of new and enhanced functions specifically tailored to the hardware features of the KBox E-430-AML/ADN.

The uEFI BIOS comes with a setup program that provides quick and easy access to the individual function settings for control or modification of the uEFI BIOS configuration. The setup program allows the accessing of various menus that provide functions or access to sub-menus with more specific functions of their own.

To start the uEFI BIOS setup program, follow the steps below:

1. Power on the board.
2. Wait until the first characters appear on the screen (POST messages or splash screen).
3. Press the <DEL> key.
4. If the uEFI BIOS is password-protected, a request for password will appear. Enter either the User Password or the Supervisor Password (see Security menu), press <ENTER>, and proceed with step 5.
5. A setup menu will appear.

The KBox E-430-AML/ADN uEFI BIOS setup program uses a hot key-based navigation system. A hot key legend bar is located on the bottom of the setup screens.

The following table provides information concerning the usage of these hot keys.

Table 15: Hotkeys Table

Signal	Description
<F1>	The <F1> key invokes the General Help window.
<->	The <Minus> key selects the next lower value within a field.
<+>	The <Plus> key selects the next higher value within a field.
<F2>	The <F2> key loads the previous values.
<F3>	The <F3> key loads the standard default values.
<F4>	The <F4> key saves the current settings and exit the uEFI BIOS setup.
<→> or <←>	The <Left/Right> arrows select major setup menus on the menu bar. For example: Main, Advanced, Security, etc.
<↑> or <↓>	The <Up/Down> arrows select fields in the current menu. For example: A setup function or a sub-screen.
<ESC>	The <ESC> key exits a major setup menu and enter the Exit setup menu. Pressing the <ESC> key in a sub-menu displays the next higher menu level.
<ENTER>	The <ENTER> key executes a command or select a submenu.

12.2. Starting the uEFI BIOS

The Setup utility features shows six menus in the selection bar at the top of the screen:

- Main
- Advanced
- Chipset
- Security
- Boot
- Save & Exit

The Setup menus are selected via the left and right arrow keys. The currently active menu and the currently active uEFI BIOS Setup item are highlighted in white. Each Setup menu provides two main frames. The left frame displays all available functions. Functions that can be configured are displayed in blue. Functions displayed in gray provide information about the status or the operational configuration. The right frame displays an Item Specific Help window providing an explanation of the respective function.

12.2.1. Main Setup Menu

Upon entering the uEFI BIOS Setup program, the Main Setup menu is displayed. This screen lists the Main Setup menu sub-screens and provides basic system information. Additionally functions for setting the system time and date are offered.

Table 16: Main Setup Menu Sub-Screens and Functions

Function	Description
Product Information	Read only field. Displays information about the product name
BIOS Information	Read only field. Displays information about the system BIOS
FSP Information	Read only field. Displays information about the FSP
Processor Information	Read only field. Displays information about the processor
Memory Information	Read only field. Displays information about the memory
PCH Information	Read only field. Displays information about the PCH
ME Information	Read only field. Displays information about Intel® Management Engine (ME) firmware
System Language	Read only field. [English] only
Platform Information	Sub-screen to the product and KSC information.
System Date	Set System Date
System Time	Set System Time

Figure 37: BIOS Main Menu Screen System Data and Time

Aptio Setup – AMI					
Main	Advanced	Chipset	Security	Boot	Save & Exit
Product Information					
Product Name		KBox E-430-ADN			
BIOS Information					
BIOS Vendor		American Megatrends			
Core Version		5.27			
Compliancy		UEFI 2.8; PI 1.7			
Kontron BIOS Version		KE430ADN.001 (x64)			
Access Level		Administrator			
FSP Information					
FSP Version		0C.02.89.40			
RC Version		0C.E0.89.40			
Build Date					
FSP Mode		Dispatch Mode			
Processor Information					
Name		Alder Lake ULX			
Type		Intel® Core™ i3-N305			
Speed		1800 MHz			
ID		0xB06E0			
Stepping		A0			
Package		Not Implemented Yet			
Number of Efficient-cores		8 Core(s) / 8 Thread(s)			
Microcode Revision		17			
GT Info		0x46D0			
IGFX GOP Version		21.0.1063			
Memory RC Version		0.0.4.74			
Total Memory		8192 MB			
Memory Frequency		4800 MHz			
PCH Information					
Name		PCH-N			
PCH SKU		N Premium SKU			
Stepping		A0			
Chipset Init Base Revision		4			
Chipset Init OEM Revision		0			
Package		Not Implemented Yet			
TXT Capability of Platform / PCH		Unsupported			
Production Type		Production			

Aptio Setup – AMI					
Main	Advanced	Chipset	Security	Boot	Save & Exit
Dual Output Fast Read support		Supported			
Read ID / Status Clock Freq		50 MHz			
Write and Erase Clock Freq		50 MHz			
Fast Read Clock Freq		50 MHz			
Fast Read support		Supported			
Number of Components		1 Component			
SPI Component 0 Density		32 MB			
eSPI Flash Sharing Mode		G3			
EC PECI Mode		Legacy PECI mode			
ME FW Version		16.50.12.1453		→ ←: Select Screen	
ME Firmware SKU		Consumer SKU		↑ ↓: Select Item	
PMC FW Version		160.50.0.1010		Enter: Select	
				+/-: Change Opt.	
System Language		[English]		F1: General Help	
> Platform Information				F2: Previous Values	
				F3: Optimized Defaults	
System Date		[Tue 04/24/2025]		F4: Save & Exit	
System Time		[11:07:33]		ESC: Exit	
Version 2.22.1293 Copyright (C) 2025 AMI					

Feature	Option	Description
System Language	[English]	Read only item.
System Date	[dd/mm/yyyy]	Set the Date. Use Tab to switch between Data elements. Default Ranges: Year: 1998 – 9999 Months: 1 – 12 Days: Dependent on month Range of Years may vary.
System Time	[hh:mm:ss]	Set the Time. Use Tab to switch between Time elements.

Figure 38: BIOS Main Menu Screen – Platform Information

Aptio Setup – AMI		
Main		
Product Information		
Product Name	KBox E-430-ADN	
Serial #	Default string	
UUID	00020003-0004-0005-0006-000700080009	
KSC Information		
Controller	KSC Main Controller	
Operating Mode	Normal	
Board Name	3.5-SBC-ADN	
Platform ID	0020	→ ←: Select Screen
KSC SW Spec. Version	1.19	↑ ↓: Select Item
BIOS Protocol Version	2.3.1	Enter: Select
BIOS SW Spec. Version	1.18	+/-: Change Opt.
Core Firmware Version	1.3.0 Beta 1	F1: General Help
Board Firmware Version	0.0.0 Development 0	F2: Previous Values
SCM Info	49-6B-62-33	F3: Optimized Defaults
		F4: Save & Exit
Boot Counter	N/A	ESC: Exit
Version 2.22.1293 Copyright (C) 2025 AMI		

12.2.2. Advanced Setup Menu

The Advanced setup menu provides sub-screens and functions for advanced configurations. The following sub-screen functions are included in the menu:

- cTDP, IBECC, Compliance Test, Audio, Power Mode & ME FW Image Re-Flash Configuration
- Display Configuration
- Trusted Computing
- ACPI Settings
- Miscellaneous
- H/W Monitor
- S5 RTC Wake Settings
- Serial Port Console Redirection
- AMI Graphic Output Protocol Policy
- SIO Configuration
- USB Configuration
- Network Stack Configuration
- NVMe Configuration
- F81435 Configurations
- Tls Auth Configuration
- RAM Disk Configuration
- Intel® Ethernet Controller I226-V – C0:EA:C3:D1:D0:CA
- Intel® Ethernet Controller I226-V – C0:EA:C3:D1:D0:CB

NOTICE

Setting items on this screen to incorrect values may cause the system to malfunction.

Figure 39: BIOS Advanced Menu

Aptio Setup – AMI					
Main	Advanced	Chipset	Security	Boot	Save & Exit
Configurable TDP Mode			[15W]		
In-Band ECC Support			[Disabled]		
Compliance Test Mode			[Disabled]		
HD Audio			[Enabled]		
Power Mode Selection			[AT Mode]		
ME FW Image Re-Flash			[Disabled]		
> Display Configuration					
> Trusted Computing					
> ACPI Settings					
> Miscellaneous					
> H/W Monitor					
> S5 RTC Wake Settings					
> Serial Port Console Redirection					
> AMI Graphic Output Protocol Policy					
> SIO Configuration					
> USB Configuration				→ ←: Select Screen	
> Network Stack Configuration				↑ ↓: Select Item	
> NVMe Configuration				Enter: Select	
> F81435 Configurations				+/-: Change Opt.	
				F1: General Help	
> Tls Auth Configuration				F2: Previous Values	
> RAM Disk Configuration				F3: Optimized Defaults	
> Intel® Ethernet Controller I226-V – C0:EA:C3:D1:D0:CA				F4: Save & Exit	
> Intel® Ethernet Controller I226-V – C0:EA:C3:D1:D0:CB				ESC: Exit	
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Feature	Option	Description
Configurable TDP Mode	[15W], [9W]	Configurable Processor Base Power (cTDP) Mode as 15W (Nominal) / 9W (Level 1) / Deactivate TDP selection. Deactivate option will set MSR to Nominal and MMIO to Zero. This option is only available for CPU i3 SKUs.
In-Band ECC Support	[Disabled], [Enabled]	Enable / Disable In-Band ECC. Will be enabled if memory has symmetric configuration
Compliance Test Mode	[Disabled], [Enabled]	Enable when using Compliance Load Board
HD Audio	[Disabled], [Enabled]	Control Detection of the HD-Audio device. [Disabled] = HDA will be unconditionally disabled. [Enabled] = HDA will be unconditionally enabled.
Power Mode Selection	[AT mode]	Read only item.
ME FW Image Re-Flash	[Disabled], [Enabled]	Enable / Disable ME FW Image Re-Flash function.

Figure 40: BIOS Advanced Menu - Display Configuration

Aptio Setup – AMI		
Advanced		
Display Configuration		
Primary Display	[IGFX]	→←: Select Screen
Internal Graphics	[Enabled]	↑ ↓: Select Item
Aperture Size	[256MB]	Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
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Feature	Option	Description
Primary Display	[Auto], [IGFX], [PEG Slot], [PCH PCI]	Select which of IGFX / PEG / PCI Graphics device should be Primary Display or select HG for Hybrid Gfx.
Internal Graphics	[Enabled]	Read only item
Aperture Size	[128MB], [256MB], [512MB], [1024MB]	Select the Aperture Size. Note: Above 4GB MMIO BIOS assignment is automatically enabled when selecting > 2048MB aperture. To use this feature, please disable CSM Support.

Figure 41: BIOS Advanced Menu - Trusted Computing

Aptio Setup – AMI		
Advanced		
TPM 2.0 Device Found		
Firmware Version:	16.13	
Vendor:	IFX	
Security Device Support	[Enabled]	
Active PCR banks*	SHA256	
Available PCR banks*	SHA256, SHA384	
SHA256 PCR Bank*	[Enabled]	
SHA384 PCR Bank*	[Disabled]	→←: Select Screen
		↑ ↓: Select Item
Pending operation*	[None]	Enter: Select
Platform Hierarchy*	[Enabled]	+/-: Change Opt.
Storage Hierarchy*	[Enabled]	F1: General Help
Endorsement Hierarchy*	[Enabled]	F2: Previous Values
Physical Presence Spec Version*	[1.3]	F3: Optimized Defaults
TPM 2.0 Interface Type*	[TIS]	F4: Save & Exit
Device Select*	[Auto]	ESC: Exit
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* These items appear only when enabling Security Device Support.

Feature	Option	Description
Security Device Support	[Disabled], [Enabled]	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.
SHA256 PCR Bank	[Disabled], [Enabled]	Enable or Disable SHA256 PCR Bank
SHA384 PCR Bank	[Disabled], [Enabled]	Enable or Disable SHA384 PCR Bank
Pending operation	[None], [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	[Disabled], [Enabled]	Enable or Disable Platform Hierarchy
Storage Hierarchy	[Disabled], [Enabled]	Enable or Disable Storage Hierarchy
Endorsement Hierarchy	[Disabled], [Enabled]	Enable or Disable Endorsement Hierarchy
Physical Presence Spec Version	[1.2], [1.3]	Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.
TPM 2.0 Interface Type	[TIS]	Read only item

Feature	Option	Description
Device Select	[TPM 1.2], [TPM 2.0], [Auto]	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 default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.

Figure 42: BIOS Advanced Menu – ACPI Settings

Aptio Setup – AMI		
Advanced		
ACPI Settings		
Enable ACPI Auto Configuration	[Disabled]	→ ←: Select Screen ↑ ↓: Select Item
Enable Hibernation*	[Enabled]	Enter: Select
ACPI Sleep State*	[S3 (Suspend to RAM)]	+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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* These items appear only when disabling Enable ACPI Auto Configuration.

Feature	Option	Description
Enable ACPI Auto Configuration	[Disabled], [Enabled]	Enables or Disables BIOS ACPI Auto Configuration.
Enable Hibernation	[Disabled], [Enabled]	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.
ACPI Sleep State	[Suspend Disabled], [S3 (Suspend to RAM)]	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

Figure 43: BIOS Advanced Menu – Miscellaneous

Aptio Setup – AMI		
Advanced		
Miscellaneous Configuration		
> Preset DIO in BIOS		
> Control KSC firmware		
> Update KSC firmware		
> Generic eSPI Decode Ranges		
> Watchdog		
Reset Button Behavior	[Chipset Reset]	
I2C Speed	[100 KHz]	→←: Select Screen
Onboard I2C Mode	[Multimaster]	↑ ↓: Select Item
Manufacturing mode	[Disabled]	Enter: Select
BIOS Test Mode	[Disabled]	+/-: Change Opt.
Last system reset through	[Unknown Source]	F1: General Help
Create GSPI ACPI dev	[Disabled]	F2: Previous Values
PCIe Wake	[Disabled]	F3: Optimized Defaults
		F4: Save & Exit
Onboard EEPROM Write Protect	[WP Enabled]	ESC: Exit
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Feature	Option	Description
Reset Button Behavior	[Chipset Reset], [Power Cycle]	Select Reset Button Behavior: Chipset Reset & Power Cycle.
I2C Speed	[100 KHz], [400 KHz], [1 MHz]	Select I2C Bus Speed in KHz. For a default system 100 KHz should be an appropriate value.
Onboard I2C Mode	[Multimaster], [Busclear]	MultiMaster / BusClear
Manufacturing mode	[Disabled]	Read only item
BIOS Test Mode	[Disabled]	Read only item
Last system reset through	[Unknown Source]	Read only item
Create GSPI ACPI dev	[Disabled], [Kontron Linux BSP], [Win10 RhProxy style]	If set to 'Kontron Linux BSP' then a generic GSPI device will be created in ACPI space to be used by Kontron Linux BSP. 'Win10 RhProxy style' supports this driver type under Win10.
PCIe Wake	[Disabled], [Enabled]	Set to enable or disable PCIe wake. This would affect features such as Wake 0/1 and Wake from Lan (WOL).
Onboard EEPROM Write Protect	[WP Disabled], [WP Enabled]	Set WP enable or disable the Onboard EEPROM Write Protect

Figure 44: BIOS Advanced Menu – Miscellaneous – Preset DIO in BIOS

Aptio Setup – AMI		
Advanced		
Allows to preset GPIOs during BIOS startup.		
GPIO OS usable	[GPIO 0 – GPIO 7]	
Control DIO in BIOS	[Disabled]	
DIO #0*	[Skip]	
Output level*(1)	[Low]	
DIO #1*	[Skip]	
Output level*(1)	[Low]	
DIO #2*	[Skip]	
Output level*(1)	[Low]	
DIO #3*	[Skip]	
Output level*(1)	[Low]	→←: Select Screen
DIO #4*	[Skip]	↑ ↓: Select Item
Output level*(1)	[Low]	Enter: Select
DIO #5*	[Skip]	+/-: Change Opt.
Output level*(1)	[Low]	F1: General Help
DIO #6*	[Skip]	F2: Previous Values
Output level*(1)	[Low]	F3: Optimized Defaults
DIO #7*	[Skip]	F4: Save & Exit
Output level*(1)	[Low]	ESC: Exit
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* These items appear only when enabling Control DIO in BIOS.

(1) This item appears only when selecting Output for DIO #0/1/2/3/4/5/6/7 respectively.

Feature	Option	Description
GPIO OS usable	[All available GPIO], [GPIO 0 – GPIO 7]	Set the GPIO OS usable
Control DIO in BIOS	[Disabled], [Enabled]	Enables or disables DIO GPIO control in BIOS. If set to 'disabled' then the GPIOs are not touched by BIOS.
DIO #0..7	[Input], [Output], [Skip]	Determine the type of the DIO configuration. If this is set to 'Skip' then this GPIO will be left untouched.
Output level	[Low], [High]	Set the level of a DIO pin

Figure 45: BIOS Advanced Menu – Miscellaneous – Control KSC firmware

Aptio Setup – AMI	
Advanced	
Allows to control KSC firmware related settings.	

Aptio Setup – AMI		
Advanced		
Lock FW update access	[Enabled]	→ ←: Select Screen ↑ ↓: Select Item
> KSC OTP area control		Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Feature	Option	Description
Lock FW update access	[Disabled], [Enabled]	Locks access to KSC firmware area during runtime.

Figure 46: BIOS Advanced Menu – Miscellaneous – Control KSC firmware – KSC OTP area control

Aptio Setup – AMI		
Advanced		
Allows to control KSC OTP area related settings.		
KSC OTP access lock	[Enabled]	→ ←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Feature	Option	Description
KSC OTP access lock	[Enabled]	Read only item

Figure 47: BIOS Advanced Menu – Miscellaneous – Update KSC firmware

Aptio Setup – AMI		
Advanced		
Allows to update KSC firmware from BIOS.		
Auto update KSC FW	[Disabled]	→ ←: Select Screen

Aptio Setup – AMI	
Advanced	
	↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Feature	Option	Description
Auto update KSC FW	[Disabled], [Enabled]	Updates KSC firmware to BIOS internal version (best known config) on next system start. To update FW set item to 'Enabled' and exit the setup using 'Save changes and exit'.

Figure 48: BIOS Advanced Menu – Miscellaneous – Generic eSPI Decode Ranges

Aptio Setup – AMI		
Advanced		
Generic eSPI Decode Ranges		
Generic LPC via eSPI Decode 1	[Disabled]	→ ←: Select Screen
Base Address*	100	↑ ↓: Select Item
Length*	8	Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
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* These items appear only when enabling Generic LPC via eSPI Decode 1.

Feature	Option	Description
Generic LPC via eSPI Decode 1	[Disabled], [Enabled]	Enable generic LPC via eSPI decode range.
Base Address	Value input	Base address of the generic decode range. Valid between 0100h – FFF0h. Must be 8-byte aligned. Please note that it also has to be length-aligned.
Length	Value input	Length of the generic decode range in hexadecimal notation. Valid between 0008h – 0100h. Must be multiple of 8h.

Figure 49: BIOS Advanced Menu – Miscellaneous – Watchdog

Aptio Setup – AMI		
Advanced		
Watchdog Configuration.		
Auto-reload	[Disabled]	
Global Lock	[Disabled]	
WDT Strobe	[Disabled]	
Stage 1 Mode	[Disabled]	
Assert WDT Signal (1)	[Disabled]	
Stage 1 Timeout (2)	[1m]	→←: Select Screen
		↑ ↓: Select Item
Stage 2 Mode (3)	[Delay]	Enter: Select
Assert WDT Signal (1)	[Disabled]	+/-: Change Opt.
Stage 2 Timeout (2)	[1m]	F1: General Help
		F2: Previous Values
Stage 3 Mode (3)	[Delay]	F3: Optimized Defaults
Assert WDT Signal (1)	[Disabled]	F4: Save & Exit
Stage 3 Timeout (2)	[1m]	ESC: Exit
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(1) This item appears only when selecting Reset or Delay for Stage 1/2/3 Mode.

(2) This item appears only when selecting Reset, Delay or WDT Signal only for Stage 1/2/3 Mode.

(3) This item appears only when selecting Delay or WDT Signal only for Stange N-1 Mode.

Feature	Option	Description
Auto-reload	[Disabled], [Enabled]	Enable automatic reload of watchdog timers on timeout.
Global Lock	[Disabled], [Enabled]	If set to enabled, all Watchdog registers (except WD_KICK) become read only until the board is reset.
WDT Strobe	[Disabled], [Enabled]	Enable / disable WDT Strobe input.
Stage 1/2/3 Mode	[Disabled], [Reset], [Delay], [WDT Signal only]	Select Action for this Watchdog stage
Assert WDT Signal	[Disabled], [Enabled]	Enable / disable assertion of WDT signal to baseboard on stage timeout.
Stage 1/2/3 Timeout	[1m], [3m], [10m], [30m]	Select Timeout value for this Watchdog stage

Figure 50: BIOS Advanced Menu – H/W Monitor

Aptio Setup – AMI		
Advanced		
KSC based H/W Monitor		
Temperature sensors:		
#1: CPU Temp	: + 52.4 C	
#2: PCH Temp	: + 49.0 C	→←: Select Screen
#3: BOARD1 Temp	: + 53.8 C	↑ ↓: Select Item
		Enter: Select
Voltage sensors:		+/-: Change Opt.
#1: V_IN	: 24.0 V	F1: General Help
#2: 12V_S0	: 12.2 V	F2: Previous Values
#3: 5V_S0	: 5.1 V	F3: Optimized Defaults
#4: 3V3_S0	: 3.4 V	F4: Save & Exit
#5: 3V_BAT	: 3.0 V	ESC: Exit
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Read only sub-screen

Figure 51: BIOS Advanced Menu – S5 RTC Wake Settings

Aptio Setup – AMI		
Advanced		
Wake system from S5	[Disabled]	
Wake up hour [1]	0	
Wake up minute [1]	0	→←: Select Screen
Wake up second [1]	0	↑ ↓: Select Item
Wake up minute increase [2]	1	Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
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[1] These items appear only when selecting Fixed Time for Wake system from S5.

[2] This item appears only when selecting Dynamic Time for Wake system from S5.

Feature	Option	Description
Wake system from S5	[Disabled], [Fixed Time], [Dynamic Time]	Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr::min::sec specified. Select Dynamic Time, system will wake on the current time + Increase minute(s).
Wake up hour	Value input	Select 0 – 23 For example, enter 3 for 3 am and 15 for 3 pm.
Wake up minute	Value input	Select 0 – 59 for Minute
Wake up second	Value input	Select 0 – 59 for Second
Wake up minute increase	Value input	1 - 5

Figure 52: BIOS Advanced Menu – Serial Port Console Redirection

Aptio Setup – AMI		
Advanced		
COM0		
Console Redirection	[Disabled]	
> Console Redirection Settings*		
COM1		
Console Redirection	[Disabled]	
> Console Redirection Settings*		
COM2		
Console Redirection	[Disabled]	
> Console Redirection Settings*		
COM3		
Console Redirection	[Disabled]	
> Console Redirection Settings*		→ ←: Select Screen
		↑ ↓: Select Item
Legacy Console Redirection		Enter: Select
> Legacy Console Redirection Settings		+/-: Change Opt.
		F1: General Help
Serial Port for Out-of-Band Management / Windows Emergency		F2: Previous Values
Management Services (EMS)		F3: Optimized Defaults
Console Redirection EMS	[Disabled]	F4: Save & Exit
> Console Redirection Settings*		ESC: Exit
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* These items activate only when enabling Console Redirection (EMS).

Feature	Option	Description
Console Redirection (EMS)	[Disabled], [Enabled]	Console Redirection Enable or Disable.

Figure 53: BIOS Advanced Menu – Serial Port Console Redirection – COM0/1/2/3 Console Redirection Settings

Aptio Setup – AMI		
Advanced		
COM0/1/2/3		
Console Redirection Settings		
Terminal Type	[ANSI]	
Bits per second	[115200]	→ ←: Select Screen
Data Bits	[8]	↑ ↓: Select Item

Aptio Setup – AMI		
Advanced		
Parity	[None]	Enter: Select
Stop Bits	[1]	+/-: Change Opt.
Flow Control	[None]	F1: General Help
VT-UTF8 Combo Key Support	[Enabled]	F2: Previous Values
Recorder Mode	[Disabled]	F3: Optimized Defaults
Resolution 100x31	[Disabled]	F4: Save & Exit
Putty KeyPad	[VT100]	ESC: Exit
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Feature	Option	Description
Terminal Type	[VT100], [VT100Plus], [VT-UTF8], [ANSI]	Emulation: [ANSI]: Extended ASCII char set. [VT100]: ASCII char set. [VT100Plus]: Extends VT100 to support color, function keys, etc. [VT-UTF8]: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Bits per second	[9600], [19200], [38400], [57600], [115200]	Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Data Bits	[7], [8]	Data Bits
Parity	[None], [Even], [Odd], [Mark], [Space]	A parity bit can be sent with the data bits to detect some transmission errors. [Even]: parity bit is 0 if the num of 1's in the data bits is even. [Odd]: parity bit is 0 if num of 1's in the data bits is odd. [Mark]: parity bit is always 1. [Space]: Parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.
Stop Bits	[1], [2]	Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
Flow Control	[None], [Hardware RTS/CTS]	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.
VT-UTF8 Combo Key Support	[Disabled], [Enabled]	Enable VT-UTF8 Combination Key Support for ANSI / VT100 terminals
Recorder Mode	[Disabled], [Enabled]	With this mode enabled only text will be sent. This is to capture Terminal data.
Resolution 100x31	[Disabled], [Enabled]	Enables or disables extended terminal resolution

Feature	Option	Description
Putty KeyPad	[VT100], [LINUX], [XTERMR6], [SCO], [ESCN], [VT400]	Select FunctionKey and KeyPad on Putty.

Figure 54: BIOS Advanced Menu – Serial Port Console Redirection – Legacy Console Redirection Settings

Aptio Setup – AMI		
Advanced		
Legacy Console Redirection Settings		
Redirection COM Port	[COM2]	→←: Select Screen
Resolution	[80x24]	↑ ↓: Select Item
Redirect After POST	[Always Enable]	Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
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Feature	Option	Description
Redirection COM Port	[COM2], [COM3], [COM0], [COM1]	Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages
Resolution	[80x24], [80x25]	On Legacy OS, the number of Rows and Columns supported redirection
Redirect After POST	[Always Enable], [BootLoader]	When Bootloader is selected, then Lagacy 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.

Figure 55: BIOS Advanced Menu – Serial Port Console Redirection – Console Redirection EMS Settings

Aptio Setup – AMI		
Advanced		
Out-of-Band Mgmt Port	[COM2]	
Terminal Type EMS	[VT-UTF8]	
Bits per second EMS	[115200]	→←: Select Screen
Flow Control EMS	[None]	↑ ↓: Select Item

Aptio Setup – AMI		
Advanced		
Data Bits EMS	8	Enter: Select
Parity EMS	None	+/-: Change Opt.
Stop Bits EMS	1	F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
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Feature	Option	Description
Out-of-Band Mgmt Port	[COM2], [COM3], [COM0], [COM1]	Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.
Terminal Type EMS	[VT100], [VT100Plus], [VT-UTF8], [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.
Bits per second EMS	[9600], [19200], [57600], [115200]	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], [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' 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.

Figure 56: BIOS Advanced Menu – AMI Graphic Output Protocol Policy

Aptio Setup – AMI		
Advanced		
Intel® Graphics Controller Intel® GOP Driver [21.0.1063]		
Output Select	[DP3 [ACTIVE]]	→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Feature	Option	Description
Output Select	[DP3 [ACTIVE]]	Read only item

Figure 57: BIOS Advanced Menu – SIO Configuration

Aptio Setup – AMI	
Advanced	
AMI SIO Driver Version: A5.19.00	
Super IO Chip Logical Devices(s) Configuration > [*Active*] Serial Port 0 > [*Active*] Serial Port 1 > [*Active*] Serial Port 2 > [*Active*] Serial Port 3 WARNING: Logical Devices state on the left side of the control, reflects the current Logical Device state. Changes made during Setup Session will be shown after you restart the system.	→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Figure 58: BIOS Advanced Menu – SIO Configuration – [*Active*] Serial Port 0

Aptio Setup – AMI		
Advanced		
Serial Port 0 Configuration		
Use This Device	[Enabled]	→←: Select Screen ↑ ↓: Select Item
Logical Device Settings:* Current: IO=3F8h; IRQ=4;*		Enter: Select +/-: Change Opt. F1: General Help
Possible:*	[Use Automatic Settings]	F2: Previous Values F3: Optimized Defaults
WARNING: Disabling SIO Logical Devices may have unwanted side effects. PROCEED WITH CAUTION.		F4: Save & Exit ESC: Exit
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* These items appear only when enabling Use This Device.

Feature	Option	Description
Use This Device	[Disabled], [Enabled]	Enable or Disable this Logical Device.
Possible:	[Use Automatic Settings], [IO=3F8h; IRQ=4;], [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.

Figure 59: BIOS Advanced Menu – SIO Configuration – [*Active*] Serial Port 1

Aptio Setup – AMI		
Advanced		
Serial Port 1 Configuration		
Use This Device	[Enabled]	→ ←: Select Screen ↑ ↓: Select Item
Logical Device Settings:* Current: IO=2F8h; IRQ=3;*		Enter: Select +/-: Change Opt. F1: General Help
Possible:*	[Use Automatic Settings]	F2: Previous Values F3: Optimized Defaults
WARNING: Disabling SIO Logical Devices may have unwanted side effects. PROCEED WITH CAUTION.		F4: Save & Exit ESC: Exit
Version 2.22.1293 Copyright (C) 2025 AMI		

* These items appear only when enabling Use This Device.

Feature	Option	Description
Use This Device	[Disabled], [Enabled]	Enable or Disable this Logical Device.
Possible:	[Use Automatic Settings], [IO=2F8h; IRQ=3;], [IO=2F8h; IRQ=3;], [IO=3F8h; IRQ=4;]	Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.

Figure 60: BIOS Advanced Menu – SIO Configuration – [*Active*] Serial Port 2

Aptio Setup – AMI		
Advanced		
Serial Port 2 Configuration		
Use This Device	[Enabled]	→ ←: Select Screen ↑ ↓: Select Item
Logical Device Settings:* Current: IO=220h; IRQ=7;*		Enter: Select +/-: Change Opt. F1: General Help
Possible:*	[Use Automatic Settings]	F2: Previous Values F3: Optimized Defaults
WARNING: Disabling SIO Logical Devices may have unwanted side effects. PROCEED WITH CAUTION.		F4: Save & Exit ESC: Exit
Version 2.22.1293 Copyright (C) 2025 AMI		

* These items appear only when enabling Use This Device.

Feature	Option	Description
Use This Device	[Disabled],	Enable or Disable this Logical Device.

Feature	Option	Description
	[Enabled]	
Possible:	[Use Automatic Settings], [IO=220h; IRQ=7; DMA;], [IO=220h; IRQ=5,6,7,10,11,12; DMA;]	Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.

Figure 61: BIOS Advanced Menu – SIO Configuration – [*Active*] Serial Port 3

Aptio Setup – AMI		
Advanced		
Serial Port 3 Configuration		
Use This Device	[Enabled]	→ ←: Select Screen ↑ ↓: Select Item
Logical Device Settings:* Current: IO=230h; IRQ=10;*		Enter: Select +/-: Change Opt. F1: General Help
Possible:*	[Use Automatic Settings]	F2: Previous Values F3: Optimized Defaults
WARNING: Disabling SIO Logical Devices may have unwanted side effects. PROCEED WITH CAUTION.		F4: Save & Exit ESC: Exit
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* These items appear only when enabling Use This Device.

Feature	Option	Description
Use This Device	[Disabled], [Enabled]	Enable or Disable this Logical Device.
Possible:	[Use Automatic Settings], [IO=230h; IRQ=10; DMA;], [IO=230h; IRQ=5,6,7,10,11,12; DMA;]	Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.

Figure 62: BIOS Advanced Menu – USB Configuration

Aptio Setup – AMI		
Advanced		
USB Configuration		
USB Module Version	32	
USB Controllers: 2 XHCIs USB Devices: 1 Keyboard		
Legacy USB Support	[Enabled]	→←: Select Screen
XHCI Hand-off	[Enabled]	↑ ↓: Select Item
USB Mass Storage Driver Support	[Enabled]	Enter: Select
		+/-: Change Opt.
USB hardware delays and time-outs:		F1: General Help
USB transfer time-out	[20 sec]	F2: Previous Values
Device reset time-out	[20 sec]	F3: Optimized Defaults
Device power-up delay	[Auto]	F4: Save & Exit
Device power-up delay in seconds*	5	ESC: Exit
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* This item appears only when selecting Manual for Device power-up delay in seconds.

Feature	Option	Description
Legacy USB Support	[Enabled], [Disabled], [Auto]	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
XHCI Hand-off	[Enabled], [Disabled]	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
USB Mass Storage Driver Support	[Disabled], [Enabled]	Enable / Disable USB Mass Storage Driver Support.
USB transfer time-out	[1 sec], [5 sec], [10 sec], [20 sec]	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	[10 sec], [20 sec], [30 sec], [40 sec]	USB mass storage device Start Unit command time-out.
Device power-up delay	[Auto], [Manual]	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub

Feature	Option	Description
		descriptor.
Device power-up delay in seconds	Value input	Delay range is 1..40 seconds, in one second increments

Figure 63: BIOS Advanced Menu – Network Stack Configuration

Aptio Setup – AMI		
Advanced		
Network Stack	[Disabled]	
IPv4 PXE Support*	[Disabled]	
IPv4 HTTP Support*	[Disabled]	→←: Select Screen
IPv6 PXE Support*	[Disabled]	↑ ↓: Select Item
IPv6 HTTP Support*	[Disabled]	Enter: Select
PXE boot wait time*	0	+/-: Change Opt.
Media detect count*	1	F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
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* Thess items appear only when enabling Network Stack.

Feature	Option	Description
Network Stack	[Disabled], [Enabled]	Enable / Disable UEFI Network Stack
IPv4 PXE Support	[Disabled], [Enabled]	Enable / Disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.
IPv4 HTTP Support	[Disabled], [Enabled]	Enable / Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.
IPv6 PXE Support	[Disabled], [Enabled]	Enable / Disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.
IPv6 HTTP Support	[Disabled], [Enabled]	Enable / Disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.
PXE boot wait time	Value input	Wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.
Media detect count	Value input	Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

Figure 64: BIOS Advanced Menu – NVMe Configuration

Aptio Setup – AMI	
Advanced	
NVMe Configuration No NVME Device Found	→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Figure 65: BIOS Advanced Menu – F81435 Configurations

Aptio Setup – AMI		
Advanced		
F81435 Configurations		
COM1 Mode Selection	[RS-232]	
COM1 Transceiver	[Normal mode]	
COM1 Internal Terminator Switch Control	[Terminator switch is disabled]	
COM1 External Terminator Switch Control	[Terminator switch is disabled]	
COM2 Mode Selection	[RS-232]	
COM2 Transceiver	[Normal mode]	
COM2 Internal Terminator Switch Control	[Terminator switch is disabled]	
COM2 External Terminator Switch Control	[Terminator switch is disabled]	
COM3 Mode Selection	[RS-232]	→←: Select Screen
COM3 Transceiver	[Normal mode]	↑ ↓: Select Item
COM3 Internal Terminator Switch Control	[Terminator switch is disabled]	Enter: Select
COM3 External Terminator Switch Control	[Terminator switch is disabled]	+/-: Change Opt.
		F1: General Help
COM4 Mode Selection	[RS-232]	F2: Previous Values
COM4 Transceiver	[Normal mode]	F3: Optimized Defaults
COM4 Internal Terminator Switch Control	[Terminator switch is disabled]	F4: Save & Exit
COM4 External Terminator Switch Control	[Terminator switch is disabled]	ESC: Exit
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Feature	Option	Description
COM1/2/3/4 Mode Selection	[RS-422 Signal Master], [RS-232], [RS-485 with Auto Flow Control], [RS-422 Multi Master]	Mode selection for COM1/2/3/4
COM1/2/3/4 Transceiver	[Shutdown mode], [Normal mode]	Shutdown the Transceiver of COM1/2/3/4
COM1/2/3/4 Internal Terminator Switch Control	[Terminator switch is disabled], [Terminator switch is enabled]	Internal Terminator switch control for RS-422/RS-485 of COM1/2/3/4
COM1/2/3/4 External Terminator Switch Control	[Terminator switch is disabled], [Terminator switch is enabled]	External Terminator switch control for RS-422/RS-485 of COM1/2/3/4

Figure 66: BIOS Advanced Menu – Tls Auth Configuration

Aptio Setup – AMI	
Advanced	
> Server CA Configuration	
> Client Cert Configuration*	→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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* Read only item

Figure 67: BIOS Advanced Menu – Tls Auth Configuration – Server CA Configuration

Aptio Setup – AMI	
Advanced	
> Enroll Cert	
> Delete Cert	→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Figure 68: BIOS Advanced Menu – Tls Auth Configuration – Server CA Configuration – Enroll Cert

Aptio Setup – AMI	
Advanced	
> Enroll Cert Using File	
Cert GUID	→←: Select Screen ↑ ↓: Select Item
> Commit Changes and Exit	Enter: Select

Aptio Setup – AMI	
Advanced	
> Discard Changes and Exit	+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Feature	Option	Description
Cert GUID	ID input	Input digit character in 11111111-2222-3333-4444-1234567890ab format.

Figure 69: BIOS Advanced Menu – RAM Disk Configuration

Aptio Setup – AMI		
Advanced		
Disk Memory Type:	[Boot Service Data]	
> Create raw		→←: Select Screen
> Create from file		↑ ↓: Select Item
		Enter: Select
Created RAM disk list:		+/-: Change Opt.
RAM Disk 0: [0x6ECCA018, 0x6ECCB017]*	[Disabled]	F1: General Help
		F2: Previous Values
Remove selected RAM disk(s).		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
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* This item is available only when creating a RAM disk.

Feature	Option	Description
Disk Memory Type	[Boot Service Data], [Reserved]	Specifies type of memory to use from available memory pool in system to create a disk.
RAM Disk 0	[Disabled], [Enabled]	Select for remove

Figure 70: BIOS Advanced Menu – RAM Disk Configuration – Create raw

Aptio Setup – AMI		
Advanced		
Size (Hex):	1	
Create & Exit		→←: Select Screen
Discard & Exit		↑ ↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
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Feature	Option	Description
Size (Hex)	Value input	The valid RAM disk size should be multiples of the RAM disk block size.

Figure 71: BIOS Advanced Menu – Intel® Ethernet Controller I226-V – C0:EA:C3:D1:D0:CA/CB

Aptio Setup – AMI		
Advanced		
UEFI Driver	Intel® 2.5G Ethernet Controller 0.10.06	
Device Name	Intel® Ethernet Controller I226-V	
		→←: Select Screen
Link Status	[Disconnected]	↑ ↓: Select Item
		Enter: Select
MAC Address	C0:EA:C3:D1:D0:CA/CB	+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
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Read only sub-screen

12.2.3. Chipset Setup Menu

The Chipset setup menu provides functions and a sub-screen for chipset configurations. The following sub-screen functions are included in the menu:

- System Agent (SA) Configuration
- PCH-IO Configuration

Figure 72: BIOS Chipset Setup Menu

Aptio Setup – AMI					
Main	**Advanced**	**Chipset**	**Security**	**Boot**	**Save & Exit**
> System Agent (SA) Configuration > PCH-IO Configuration					
				→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
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Figure 73: BIOS Chipset Setup Menu – System Agent (SA) Configuration

Aptio Setup – AMI		
Chipset		
System Agent (SA) Configuration		
VT-d	Supported	→ ←: Select Screen
		↑ ↓: Select Item
> Graphics Configuration		Enter: Select
		+/-: Change Opt.
VT-d	[Enabled]	F1: General Help
Above 4GB MMIO BIOS assignment	[Enabled]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
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Feature	Option	Description
VT-d	[Enabled], [Disabled]	VT-d capability
Above 4GB MMIO BIOS assignment	[Enabled], [Disabled]	Enable / Disable above 4GB MemoryMappedIO BIOS assignment. This is enabled automatically when Aperture Size is set to 2048MB.

Figure 74: BIOS Chipset Setup Menu – System Agent (SA) Configuration – Graphics Configuration

Aptio Setup – AMI		
Chipset		
Graphics Configuration		
Graphics Turbo IMON Current	31	
Skip Scaning of External Gfx Card	[Disabled]	
> External Gfx Card Primary Display Configuration		
GTT Size	[8MB]	
PSMI SUPPORT	[Disabled]	
PSMI Region Size (1)	[32MB]	
Intel Graphics Pei Display Peim	[Disabled]	
VDD Enable	[Enabled]	
Configure GT for use	[Enabled]	→ ←: Select Screen
RC1p Support (2)	[Disabled]	↑ ↓: Select Item
PAVP Enable	[Enabled]	Enter: Select
Cdynmax Clamping Enable	[Disabled]	+/-: Change Opt.
Cd Clock Frequency	[Max CdClock freq based on Reference Clk]	F1: General Help

Aptio Setup – AMI		
Chipset		
Enable Display Audio Link in Pre-OS	[Disabled]	F2: Previous Values
IUER Button Enable	[Disabled]	F3: Optimized Defaults
> LCD Control		F4: Save & Exit
> Intel® Ultrabook Event Support		ESC: Exit
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(1) This item appears only when enabling PSMI SUPPORT.

(2) This item appears only when enabling Configure GT for use.

Feature	Option	Description
Graphics Turbo IMON Current	Value input	Graphics turbo IMON current values supported (14 - 31)
Skip Scaning of External Gfx Card	[Disabled], [Enabled]	If Enable, it will not scan for External Gfx Card on PEG and PCH PCIE Ports
GTT Size	[2MB], [4MB], [8MB]	Select the GTT Size
PSMI SUPPORT	[Disabled], [Enabled]	PSMI Enable / Disable
PSMI Region Size	[32MB], [288MB], [544MB], [800MB], [1024MB]	Select the PSMI Region Size: Range from 32MB to 1024MB
Intel Graphics Pei Display Peim	[Enabled], [Disabled]	Enable / Disable Pei (Early) Display
VDD Enable	[Disabled], [Enabled]	Enable / Disable forcing of VDD in the BIOS
Configure GT for use	[Enabled], [Disabled]	Enable / Disable GT configuration in BIOS
RC1p Support	[Enabled], [Disabled]	Enable / Disable RC1p support. If RC1p is enabled, send a RC1p frequency request to PMA based other conditions being met
PAVP Enable	[Enabled], [Disabled]	Enable / Disable PAVP
Cdynmax Clamping Enable	[Enabled], [Disabled]	Enable / Disable Cdynmax Clamping
Cd Clock Frequency	[192 Mhz], [307.2 Mhz], [556.8 Mhz], [652.8 Mhz], [Max CdClock freq based on Reference Clk]	Select the highest Cd Clock frequency supported by the platform
Enable Display Audio Link in Pre-OS	[Disabled], [Enabled]	[Enabled]: Display Audio Link will be enabled in Pre-OS. [Disabled]: Display Audio Link will be disabled in Pre-OS.

Feature	Option	Description
IUER Button Enable	[Disabled], [Enabled]	Enable / Disable IUER Button Functionality

Figure 75: BIOS Chipset Setup Menu – System Agent (SA) Configuration – Graphics Configuration – External Gfx Card Primary Display Configuration

Aptio Setup – AMI	
Chipset	
External Gfx Card Primary Display Configuration	
	→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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Figure 76: BIOS Chipset Setup Menu – System Agent (SA) Configuration – Graphics Configuration – LCD Control

Aptio Setup – AMI		
Chipset		
LCD Control		
LCD Panel Type	[VBIOS Default]	→←: Select Screen
Panel Scaling	[Auto]	↑ ↓: Select Item
Backlight Control	[PWM Normal]	Enter: Select
Active LFP	[eDP Port-A]	+/-: Change Opt.
Panel Color Depth	[18 Bit]	F1: General Help
Backlight Brightness	255	F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
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Feature	Option	Description
LCD Panel Type	[VBIOS Default], [640x480 LVDS], [800x600 LVDS], [1024x768 LVDS], [1280x1024 LVDS],	Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.

Feature	Option	Description
	[1400x1050 LVDS1], [1400x1050 LVDS2], [1600x1200 LVDS], [1280x768 LVDS], [1680x1050 LVDS], [1920x1200 LVDS], [1600x900 LVDS], [1280x800 LVDS], [1280x600 LVDS], [2048x1536 LVDS], [1366x768 LVDS]	
Panel Scaling	[Auto], [Off], [Force Scaling]	Select the LCD panel scaling option used by the Internal Graphics Device.
Backlight Control	[PWM Inverted], [PWM Normal]	Back Light Control Setting
Active LFP	[No eDP], [eDP Port-A]	Select the Active LFP Configuration. [No LVDS]: VBIOS does not enable LVDS. [Int-LVDS]: VBIOS enables LVDS driver by Integrated encoder. [SDVO LVDS]: VBIOS enables LVDS driver by SDVO encoder. [eDP Port-A]: LFP Driven by Int-DisplayPort encoder from Port-A. [eDP Port-D]: LFP Driven by Int-DisplayPort encoder from Port-D (through PCH).
Panel Color Depth	[18 Bit], [24 Bit]	Select the LFP Panel Color Depth
Backlight Brightness	Value input	Set VBIOS Brightness. Range: 0 – 255.

Figure 77: BIOS Chipset Setup Menu – System Agent (SA) Configuration – Graphics Configuration – Intel® Ultrabook Event Support

Aptio Setup – AMI		
Chipset		
Intel® Ultrabook Event Support		
IUER Slate Enable	[Disabled]	→←: Select Screen
Slate Mode boot value (1)	[Laptop Mode]	↑ ↓: Select Item
Slate Mode on S3 and S4 resume (1)	[No change]	Enter: Select
IUER Dock Enable	[Disabled]	+/-: Change Opt.
Dock Mode boot value (2)	[Undocked]	F1: General Help
Dock Mode upon S3 and S4 resume (2)	[No change]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
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(1) These items appear only when enabling IUER Slate Enable.

(2) These items appear only when enabling IUER Dock Enable.

Feature	Option	Description
IUER Slate Enable	[Disabled], [Enabled]	Enable / Disable IUER Slate Functionality
Slate Mode boot value	[Slate Mode], [Laptop Mode]	Choose Slate or Laptop as boot mode.
Slate Mode on S3 and S4 resume	[No change], [Toggle]	Keep it the same as Sx entry or toggle it.
IUER Dock Enable	[Disabled], [Enabled]	Enable / Disable IUER Dock Functionality
Dock Mode boot value	[Undocked], [Docked]	Choose Docked or Undocked as boot mode.
Dock Mode upon S3 and S4 resume	[No change], [Toggle]	Keep it the same as Sx entry or toggle it.

Figure 78: BIOS Chipset Setup Menu – PCH-IO Configuration

Aptio Setup – AMI		
Chipset		
PCH-IO Configuration		
> PCI Express Configuration		
> SATA Configuration		→←: Select Screen
> USB Configuration		↑ ↓: Select Item
		Enter: Select
> TSN GBE Configuration#		+/-: Change Opt.
		F1: General Help
PCH LAN Controller	No GbE Region	F2: Previous Values
Port 80h Redirection	[LPC Bus]	F3: Optimized Defaults
Enhance Port 80h LPC Decoding*	[Enabled]	F4: Save & Exit
Compatible Revision ID	[Disabled]	ESC: Exit
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* This item activates only when selecting LPC Bus for Port 80h Redirection.

This sub-menu is not accessible.

Feature	Option	Description
Port 80h Redirection	[LPC Bus], [PCIE Bus]	Control where the Port 80h cycles are sent.
Enhance Port 80h LPC Decoding	[Disabled], [Enabled]	Support the word / dword decoding of port 80h behind LPC
Compatible Revision ID	[Disabled]	Read only item

Figure 79: BIOS Chipset Setup Menu – PCH-IO Configuration – PCI Express Configuration

Aptio Setup – AMI		
Chipset		
PCI Express Configuration		
DMI Link ASPM Control	[Auto]	
Port8xh Decode	[Disabled]	
Port8xh Decode Port#*	0	
PCIe function swap	[Enabled]	
PCH PCIE Clock Gating	[Disabled]	
PCH PCIE Power Gating	[Disabled]	
> PCIe EQ settings		
PCI Express Root Port 1	Lane configured as USB / SATA / UFS	
PCI Express Root Port 2	Lane configured as USB / SATA / UFS	
> PCI Express Root Port 3		

Aptio Setup – AMI		
Chipset		
> PCI Express Root Port 4		
PCI Express Root Port 5	Not present in this SKU	
PCI Express Root Port 6	Not present in this SKU	→←: Select Screen
> PCI Express Root Port 7		↑ ↓: Select Item
PCI Express Root Port 8	Not present in this SKU	Enter: Select
> PCI Express Root Port 9		+/-: Change Opt.
> PCI Express Root Port 10		F1: General Help
PCI Express Root Port 11	Lane configured as USB / SATA / UFS	F2: Previous Values
PCI Express Root Port 12	Lane configured as USB / SATA / UFS	F3: Optimized Defaults
		F4: Save & Exit
> PCIE clocks		ESC: Exit
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* This item appears only when enabling Port8xh Decode.

Feature	Option	Description
DMI Link ASPM Control	[Disabled], [L0s], [L1], [L0sL1], [Auto]	The control of Active State Power Management of the DMI Link.
Port8xh Decode	[Disabled], [Enabled]	PCI Express Port8xh Decode Enable / Disable.
Port8xh Decode Port#	Value input	Select PCI Express Port8xh Decode Root Port. User to ensure port availability
PCIe function swap	[Disabled], [Enabled]	When Disabled, prevents PCIE rootport function swap. If any function other than 0th is enabled, 0th will become visible.
PCH PCIE Clock Gating	[Disabled], [Enabled]	PCH PCI Express Clock Gating Enable / Disable for all port
PCH PCIE Power Gating	[Disabled], [Enabled]	PCH PCI Express Power Gating Enable / Disable for all port

Figure 80: BIOS Chipset Setup Menu – PCH-IO Configuration – PCI Express Configuration – PCIe EQ settings

Aptio Setup – AMI		
Chipset		
PCIe EQ override	[Disabled]	
PCIe EQ method*	[PCIe hardware EQ]	
PCIe EQ mode*	[Use presets during EQ]	
EQ PH1 downstream port transmitter present*	0	
EQ PH1 upstream port transmitter present*	0	
Enable EQ phase 2 local transmitter override*	[Disabled]	
Number of presents or coefficients used during phase 3*	0	

Aptio Setup – AMI		
Chipset		
Preset 0*(1)	0	
Preset 1*(1)	0	
Preset 2*(1)	0	
Preset 3*(1)	0	
Preset 4*(1)	0	
Preset 5*(1)	0	
Preset 6*(1)	0	
Preset 7*(1)	0	
Preset 8*(1)	0	
Preset 9*(1)	0	
Preset 10*(1)	0	
Pre-cursor coefficient 0*(2)	0	
Post-cursor coefficient 0*(2)	0	
Pre-cursor coefficient 1*(2)	0	
Post-cursor coefficient 1*(2)	0	
Pre-cursor coefficient 2*(2)	0	
Post-cursor coefficient 2*(2)	0	
Pre-cursor coefficient 3*(2)	0	
Post-cursor coefficient 3*(2)	0	
Pre-cursor coefficient 4*(2)	0	
Post-cursor coefficient 4*(2)	0	
Pre-cursor coefficient 5*(2)	0	
Post-cursor coefficient 5*(2)	0	→←: Select Screen
Pre-cursor coefficient 6*(2)	0	↑ ↓: Select Item
Post-cursor coefficient 6*(2)	0	Enter: Select
Pre-cursor coefficient 7*(2)	0	+/-: Change Opt.
Post-cursor coefficient 7*(2)	0	F1: General Help
Pre-cursor coefficient 8*(2)	0	F2: Previous Values
Post-cursor coefficient 8*(2)	0	F3: Optimized Defaults
Pre-cursor coefficient 9*(2)	0	F4: Save & Exit
Post-cursor coefficient 9*(2)	0	ESC: Exit
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* These items appear only when enabling PCIe EQ override.

(1) These items appear only when selecting Use presets during EQ for PCIe EQ mode.

(2) These items appear only when selecting Use coefficients during EQ for PCIe EQ mode.

Feature	Option	Description
PCIe EQ override	[Disabled], [Enabled]	Choose your own PCIe EQ settings, only for users who have a thorough understanding of equalization process
PCIe EQ method	[PCIe hardware EQ], [PCIe fixed EQ]	Choose PCIe EQ method
PCIe EQ mode	[Use presets during	Choose EQ mode.

Feature	Option	Description
	EQ], [Use coefficients during EQ]	Preset mode – root port will use presets during EQ process, Coefficient mode – root port will use coefficients during EQ process
EQ PH1 downstream port transmitter preset	Value input	Choose the value of the preset that will be used during phase 1 of the equalization
EQ PH1 upstream port transmitter preset	Value input	Choose the value of the preset that will be used during phase 1 of the equalization
Enable EQ phase 2 local transmitter override	[Disabled], [Enabled]	EQ Phase 2 local transmitter override can be used to debug issues with PCI devices equalization.
Number of presets or coefficients used during phase 3	Value input	Select how many presets or coefficients will be used during phase 3 of EQ. Please not that you have to set all of the list entries to valid values. The interpretation of this field depends on PCIe EQ mode
Preset 0..10	Value input	Choose the target preset value
Pre-cursor coefficient 0..9	Value input	Choose the target pre-cursor coefficient value
Post-cursor coefficient 0..9	Value input	Choose the target post-cursor coefficient value

Figure 81: BIOS Chipset Setup Menu – PCH-IO Configuration – PCI Express Configuration – PCI Express Root Port 3 / 4 / 7 / 9 / 10

Aptio Setup – AMI		
Chipset		
PCI Express Root Port 3 / 4 / 7 / 9 / 10	[Enabled]	
Connection Type*	[Slot]	
ASPM*	[Auto]	
L1 Substates*	[L1.1 & L1.2]	
L1 Low*	[Enabled]	
ACS*	[Enabled]	
PTM*	[Enabled]	
DPC*	[Disabled]	
EDPC*	[Enabled]	
URR*	[Disabled]	
FER*	[Disabled]	
NFER*	[Disabled]	
CER*	[Disabled]	
SEFE*	[Disabled]	
SENFE*	[Disabled]	
SECE*	[Disabled]	
PME SCI*	[Enabled]	
Hot Plug*	[Disabled]	
Advanced Error Reporting*	[Enabled]	
PCIe Speed*	[Auto]	

Aptio Setup – AMI		
Chipset		
Transmitter Half Swing*	[Disabled]	
Detect Timeout*	0	
Extra Bus Reserved*	0	
Reserved Memory*	10	
Reserved I/O*	4	
PCH PCIe LTR Configuration*		
LTR*	[Enabled]	
Snoop Latency Override*#	[Auto]	→←: Select Screen
Snoop Latency Value*#(1)	60	↑ ↓: Select Item
Snoop Latency Multiplier*#(1)	[1024 ns]	Enter: Select
Non Snoop Latency Override*#	[Auto]	+/-: Change Opt.
Non Snoop Latency Value*#(2)	60	F1: General Help
Non Snoop Latency Multiplier*#(2)	[1024 ns]	F2: Previous Values
		F3: Optimized Defaults
LTR Lock*	[Disabled]	F4: Save & Exit
Peer Memory Write Enable*	[Disabled]	ESC: Exit
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* These items appear only when enabling PCI Express Root Port 3 / 4 / 7 / 9 / 10.

These items appear only when enabling LTR.

(1) These items appear only when selecting Manual for Snoop Latency Override.

(2) These items appear only when selecting Manual for Mon Snoop Latency Override.

Feature	Option	Description
PCI Express Root Port 3 / 4 / 7 / 9 / 10	[Disabled], [Enabled]	Control the PCI Express Root Port.
Connection Type	[Bulit-in], [Slot]	[Built-in]: a built-in device is connected to this rootport. SlotImplemented bit will be clear. [Slot]: this rootport connects to user-accessible slot. SlotImplemented bit will be set.
ASPM	[Disabled], [L1], [Auto]	Set the ASPM Level: Force L0s – Force all links to L0s State AUTO – BIOS auto configure DISABLE – Disables ASPM
L1 Substates	[Disabled], [L1.1], [L1.1 & L1.2]	PCI Express L1 Substates settings.
L1 Low	[Disabled], [Enabled]	PCI Express L1 Low Substate Enable / Disable.
ACS	[Disabled], [Enabled]	Enable / Disable Access Control Services Extended Capability
PTM	[Disabled], [Enabled]	Enable / Disable Precision Time Measurement

Feature	Option	Description
DPC	[Disabled], [Enabled]	Enable / Disable Downstream Port Containment
EDPC	[Disabled], [Enabled]	Enable / Disable Rootport extensions for Downstream Port Containment
URR	[Disabled], [Enabled]	PCI Express Unsupported Request Reporting Enable / Disable.
FER	[Disabled], [Enabled]	PCI Express Device Fatal Error Reporting Enable / Disable.
NFER	[Disabled], [Enabled]	PCI Express Device Non-Fatal Error Reporting Enable / Disable.
CER	[Disabled], [Enabled]	PCI Express Device Correctable Error Reporting Enable / Disable.
SEFE	[Disabled], [Enabled]	Root PCI Express System Error on Fatal Error Enable / Disable.
SENFE	[Disabled], [Enabled]	Root PCI Express System Error on Non-Fatal Error Enable / Disable.
SECE	[Disabled], [Enabled]	Root PCI Express System Error on Correctable Error Enable / Disable.
PME SCI	[Disabled], [Enabled]	PCI Express PME SCI Enable / Disable.
Hot Plug	[Disabled], [Enabled]	PCI Express Hot Plug Enable / Disable.
Advanced Error Reporting	[Disabled], [Enabled]	Advanced Error Reporting Enable / Disable.
PCIe Speed	[Auto], [Gen1], [Gen2], [Gen3]	Configure PCIe Speed
Transmitter Half Swing	[Disabled], [Enabled]	Transmitter Half Swing Enable / Disable.
Detect Timeout	Value input	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.
Extra Bus Reserved	Value input	Extra Bus Reserved (0-7) for bridges behind this Root Bridge.
Reserved Memory	Value input	Reserved Memory for this Root Bridge (1-20) MB
Reserved I/O	Value input	Reserved I/O (4K/8K/12K/16K/20K) Range for this Root Bridge.
LTR	[Disabled], [Enabled]	PCH PCIE Latency Reporting Enable / Disable
Snoop Latency Override	[Disabled], [Manual], [Auto]	Snoop Latency Override for PCH PCIE. [Disabled]: Disable override. [Manual]: Manually enter override values. [Auto] (default): Maintain default BIOS flow.
Snoop Latency Value	Value input	LTR Snoop Latency value of PCH PCIE
Snoop Latency Multiplier	[1 ns], [32 ns], [1024 ns],	LTR Snoop Latency Multiplier of PCH PCIE

Feature	Option	Description
	[32768 ns], [1048576 ns], [33554432 ns]	
Non Snoop Latency Override	[Disabled], [Manual], [Auto]	Non Snoop Latency Override for PCH PCIE. [Disabled]: Disable override. [Manual]: Manually enter override values. [Auto] (default): Maintain default BIOS flow.
Non Snoop Latency Value	Value input	LTR Non Snoop Latency value of PCH PCIE
Non Snoop Latency Multiplier	[1 ns], [32 ns], [1024 ns], [32768 ns], [1048576 ns], [33554432 ns]	LTR Non Snoop Latency Multiplier of PCH PCIE
LTR Lock	[Disabled], [Enabled]	PCIE LTR Configuration Lock
Peer Memory Write Enable	[Disabled], [Enabled]	Peer Memory Write Enable / Disable

Figure 82: BIOS Chipset Setup Menu – PCH-IO Configuration – PCI Express Configuration – PCIE clocks

Aptio Setup – AMI		
Chipset		
Clock0 assignment	[Platform-POR]	
ClkReq for Clock0	[Platform-POR]	
Clock1 assignment	[Platform-POR]	
ClkReq for Clock1	[Platform-POR]	
Clock2 assignment	[Platform-POR]	
ClkReq for Clock2	[Platform-POR]	
Clock3 assignment	[Platform-POR]	
ClkReq for Clock3	[Platform-POR]	
Clock4 assignment	[Platform-POR]	
ClkReq for Clock4	[Platform-POR]	
Clock5 assignment	[Platform-POR]	
ClkReq for Clock5	[Platform-POR]	→ ←: Select Screen
Clock6 assignment	[Platform-POR]	↑ ↓: Select Item
ClkReq for Clock6	[Platform-POR]	Enter: Select
Clock7 assignment	[Platform-POR]	+/-: Change Opt.
ClkReq for Clock7	[Platform-POR]	F1: General Help
Clock8 assignment	[Platform-POR]	F2: Previous Values
ClkReq for Clock8	[Platform-POR]	F3: Optimized Defaults
Clock9 assignment	[Platform-POR]	F4: Save & Exit
ClkReq for Clock9	[Platform-POR]	ESC: Exit
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Feature	Option	Description
Clock0..9 assignment	[Platform-POR], [Enabled], [Disabled]	[Platform-POR]: clock is assigned to PCIe port or LAN according to board layout. [Enabled]: keep clock enabled even if unused. [Disabled]: Disable clock.
ClkReq for Clock0..9	[Platform-POR], [Disabled]	[Platform-POR]: CLKREQ signal is assigned to CLKSRC according to board layout. [Disabled]: CLKREQ will not be used.

Figure 83: BIOS Chipset Setup Menu – PCH-IO Configuration – SATA Configuration

Aptio Setup – AMI	
Chipset	
SATA Configuration	
SATA Controller(s)	[Enabled]
SATA Mode Selection*	[AHCI]
SATA Test Mode*	[Disabled]
Aggressive LPM Support*(1)	[Enabled]
Serial ATA Port 0*	TS256GMTS960T (256.0GB)
Software Preserve*	SUPPORTED
Port 0*	[Enabled]
Hot Plug*	[Disabled]
Configured as eSATA*(3)	Hot Plug supported
External*	[Disabled]
Mechanical Presence Switch*(2)	[Disabled]
Spin Up Device*	[Disabled]
SATA Device Type*	[Hard Disk Drive]
Topology*	[Unknown]
SATA Port 0 DevSlp*	[Disabled]
DITO Configuration*	[Disabled]
DITO Value*(4)	625
DM Value*(4)	15
Serial ATA Port 1*	TS256GSSD460K (256.0GB)
Software Preserve*	SUPPORTED
Port 1*	[Enabled]
Hot Plug*	[Disabled]
Configured as eSATA*(3)	Hot Plug supported
External*	[Disabled]
Mechanical Presence Switch*(2)	[Disabled]
Spin Up Device*	[Disabled]
SATA Device Type*	[Hard Disk Drive]
Topology*	[Unknown]

Aptio Setup – AMI		
Chipset		
SATA Port 1 DevSlp*	[Disabled]	
DITO Configuration*	[Disabled]	
DITO Value*(4)	625	
DM Value*(4)	15	
Serial ATA Port 2*	Empty	
Software Preserve*	Unknown	
Port 2*	[Enabled]	
Hot Plug*	[Disabled]	
Configured as eSATA*(3)	Hot Plug supported	
External*	[Disabled]	→←: Select Screen
Mechanical Presence Switch*(2)	[Disabled]	↑ ↓: Select Item
Spin Up Device*	[Disabled]	Enter: Select
SATA Device Type*	[Hard Disk Drive]	+/-: Change Opt.
Topology*	[Unknown]	F1: General Help
SATA Port 2 DevSlp*	[Disabled]	F2: Previous Values
DITO Configuration*	[Disabled]	F3: Optimized Defaults
DITO Value*(4)	625	F4: Save & Exit
DM Value*(4)	15	ESC: Exit
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* These items appear only when enabling SATA Controller(s).

(1) This item appears only when disabling SATA Test Mode.

(2) This item appears only when enabling Hot Plug.

(3) This item appears only when disabling External.

(4) These items activate only when enabling DITO Configuration.

Feature	Option	Description
SATA Controller(s)	[Enabled], [Disabled]	Enable / Disable SATA Device.
SATA Mode Selection	[AHCI]	Read only item
SATA Test Mode	[Enabled], [Disabled]	Test Mode Enable / Disable (Loop Back).
Aggressive LPM Support	[Disabled], [Enabled]	Enable PCH to aggressively enter link power state.
Port 0..2	[Disabled], [Enabled]	Enable or Disable SATA Port
Hot Plug	[Disabled], [Enabled]	Designates this port as Hot Pluggable.
External	[Disabled], [Enabled]	Marks this port as external.
Mechanical Presence Switch	[Disabled], [Enabled]	Controls reporting if this port has an Mechanical Presence Switch. Note: Requires hardware support.

Feature	Option	Description
Spin Up Device	[Disabled], [Enabled]	If enabled for any of ports Staggerred Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.
SATA Device Type	[Hard Disk Drive], [Solid State Drive]	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive
Topology	[Unknown], [ISATA], [Direct Connect], [Flex], [M2]	Identify the SATA Topology if it is Default or ISATA or Flex or DirectConnect or M2
SATA Port 0..2 DevSlp	[Disabled], [Enabled]	Enable / Disable SATA Port 0..2 DevSlp. For DevSlp to work, both hard drive and SATA port need to support DevSlp function, otherwise an unexpected behavior might happen. Please check board design before enabling it.
DITO Configuration	[Disabled], [Enabled]	Enable / Disable DITO Configuration
DITO Value	Value input	DITO Value
DM Value	Value input	DM Value

Figure 84: BIOS Chipset Setup Menu – PCH-IO Configuration – USB Configuration

Aptio Setup – AMI		
Chipset		
USB Configuration		
xDCI Support	[Disabled]	
USB2 PHY Sus Well Power Gating	[Enabled]	
USB PDO Programming	[Enabled]	
USB Overcurrent	[Enabled]	
USB Overcurrent Lock	[Enabled]	
USB Audio Offload	[Enabled]	
Enable HSII on xHCI	[Enabled]	
USB3.1 Portx Speed Selection	0	
USB Port Disable Override	[Disabled]	
USB SW Device Mode Port #0*	[Disabled]	
USB SW Device Mode Port #1*	[Disabled]	
USB SW Device Mode Port #2*	[Disabled]	
USB SW Device Mode Port #3*	[Disabled]	
USB SW Device Mode Port #4*	[Disabled]	
USB SW Device Mode Port #5*	[Disabled]	
USB SW Device Mode Port #6*	[Disabled]	
USB SW Device Mode Port #7*	[Disabled]	

Aptio Setup – AMI		
Chipset		
USB SW Device Mode Port #8*	[Disabled]	
USB SW Device Mode Port #9*	[Disabled]	
USB SS Physical Connector #0*	[Enabled]	
USB SS Physical Connector #1*	[Enabled]	
USB SS Physical Connector #2*	[Enabled]	
USB SS Physical Connector #3*	[Enabled]	
USB HS Physical Connector #0*	[Enabled]	
USB HS Physical Connector #1*	[Enabled]	→←: Select Screen
USB HS Physical Connector #2*	[Enabled]	↑ ↓: Select Item
USB HS Physical Connector #3*	[Enabled]	Enter: Select
USB HS Physical Connector #4*	[Enabled]	+/-: Change Opt.
USB HS Physical Connector #5*	[Enabled]	F1: General Help
USB HS Physical Connector #6*	[Enabled]	F2: Previous Values
USB HS Physical Connector #7*	[Enabled]	F3: Optimized Defaults
USB HS Physical Connector #8*	[Disabled]	F4: Save & Exit
USB HS Physical Connector #9*	[Enabled]	ESC: Exit
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* These items appear only when selecting Select Per-Pin for USB Port Disable Override.

Feature	Option	Description
xDCI	[Disabled], [Enabled]	Enable / Disable xDCI (USB OTG Device).
USB2 PHY Sus Well Power Gating	[Disabled], [Enabled]	Select 'Enabled' to enable SUS Well PG for USB2 PHY. This option has no effect on PCH-H.
USB PDO Programming	[Disabled], [Enabled]	Select 'Enabled' if Port Disable Override functionality is used.
USB Overcurrent	[Disabled], [Enabled]	Select 'Disabled' for pin-based debug. If pin-based debug is enabled but USB overcurrent is not disabled, USB DbC does not work.
USB Overcurrent Lock	[Disabled], [Enabled]	Select 'Disabled' if Overcurrent functionality is used. Enabling this will make xHCI controller consume the Overcurrent mapping data
USB Audio Offload	[Disabled], [Enabled]	Enable / Disable USB Audio Offload functionality
Enable HSII on xHCI	[Disabled], [Enabled]	Enable / Disable HSII feature. It may lead to increased power consumption.
USB3.1 Portx Speed Selection	Value input	Port Selection value in decimal for Gen1; Default – Gen2; Bit 0 corresponds to Port 0 and so on.
USB Port Disable Override	[Disabled], [Select Per-Pin]	Selectively Enable / Disable the corresponding USB port from reporting a Device Connection to the controller.
USB SW Device Mode Port #0..9	[Disabled], [Enabled]	Enable Connector Event for device subscription.
USB SS Physical Connector #0..3	[Disabled], [Enabled]	Enable / Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not

Feature	Option	Description
		be detected by BIOS or OS.
USB HS Physical Connector #0..9	[Disabled], [Enabled]	Enable / Disable this USB Physical Connector (physical port). Once disabled, any USB devices plug into the connector will not be detected by BIOS or OS.

12.2.4. Security Setup Menu

The Security setup menu provides information about the passwords and functions for specifying the security settings. The passwords are case-sensitive. The KBox E-430-AML/ADN provides no factory-set passwords.

NOTICE

If there is already a password installed, the system asks for this first. To clear a password, simply enter nothing and acknowledge by pressing <ENTER>. To set a password, enter it twice and acknowledge by pressing <ENTER>.

Figure 85: BIOS Security Setup Menu

Aptio Setup – AMI					
Main	Advanced	Chipset	Security	Boot	Save & Exit
Password Description If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights The password length must be in the following range:					
Minimum Length		3		→ ←: Select Screen	
Maximum length		20		↑ ↓: Select Item	
				Enter: Select	
Administrator Password				+/-: Change Opt.	
User Password				F1: General Help	
				F2: Previous Values	
> Secure Boot				F3: Optimized Defaults	
				F4: Save & Exit	
				ESC: Exit	
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Feature	Description
Administrator Password	Set administrator password
User Password	Set user password

If only the administrator's password is set, then only access to setup is limited. The password is only entered when entering setup.

If only the user's password is set, then the password is a power on password and must be entered to boot or enter setup. Within the setup menu the user has administrator rights.

Password length requirements are maximum 20 characters and minimum 3 characters.

Figure 86: BIOS Security Setup Menu – Secure Boot

Aptio Setup – AMI		
Security		
System Mode	Setup	
Secure Boot	[Enabled]	→←: Select Screen
	Not Active	↑ ↓: Select Item
		Enter: Select
Secure Boot Mode	[Standard]	+/-: Change Opt.
> Restore Factory Keys*		F1: General Help
> Reset To Setup Mode*		F2: Previous Values
		F3: Optimized Defaults
> Key Management*		F4: Save & Exit
		ESC: Exit
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*These items are selectable only when selecting Custom for Secure Boot Mode.

Feature	Option	Description
Secure Boot	[Disabled], [Enabled]	Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset.
Secure Boot Mode	[Standard], [Custom]	Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.
Restore Factory Keys	[Yes], [No]	Force System to User Mode. Install factory default Secure Boot key databases.
Reset To Setup Mode	[Yes], [No]	Delete all Secure Boot key databases from NVRAM

Figure 87: BIOS Security Setup Menu – Secure Boot – Key Management

Aptio Setup – AMI				
Security				
Vendor Keys		Valid		
Factory Key Provision		[Disabled]		
> Restore Factory Keys				
> Reset To Setup Mode				
> Enroll Efi Image				
> Export Secure Boot variables				→ ←: Select Screen
				↑ ↓: Select Item
Secure Boot variable	Size	Keys	Key Source	Enter: Select
> Platform Key (PK)	0	0	No Keys	+/-: Change Opt.
> Key Exchange Keys (KEK)	0	0	No Keys	F1: General Help
> Authorized Signatures (db)	0	0	No Keys	F2: Previous Values
> Forbidden Signatures (dbx)	0	0	No Keys	F3: Optimized Defaults
> Authorized TimeStamps (dbt)	0	0	No Keys	F4: Save & Exit
> OsRecovery Signatures (dbr)	0	0	No Keys	ESC: Exit
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Feature	Option	Description
Factory Key Provision	[Disabled], [Enabled]	Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.
Reset Factory Keys	[Yes], [No]	Force System to User Mode. Install factory default Secure Boot key databases.
Reset to Setup Mode	[Yes], [No]	Delete all Secure Boot key databases from NVRAM.
Enroll Efi Image	Select a File system	Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).
Export Secure Boot variables	Select a File system	Save NVRAM content of Secure Boot variables to a file
Platform Key (PK)	[Details], [Export], [Update], [Delete]	Enroll Factory Defaults or load certificates from a file: 1. Public Key Certificate: (a) EFI_SIGNATURE_LIST (b) EFI_CERT_X509 (DER) (c) EFI_CERT_RSA2048 (bin) (d) EFI_CERT_SHAXXX 2. Authenticated UEFI Variable 3. EFI PE / COFF Image (SHA256) Key Source: Factory, Modified, Mixed
Key Exchange Keys (KEK)	[Details], [Export], [Update], [Append], [Delete]	
Authorized Signatures (db)	[Details], [Export], [Update], [Append],	

Feature	Option	Description
	[Delete]	
Forbidden Signatures (dbx)	[Details], [Export], [Update], [Append], [Delete]	
Authorized TimeStamps (dbt)	[Update], [Append]	
OsRecovery Signatures (dbr)	[Update], [Append]	

12.2.4.1. Remember the password

It is highly recommended to keep a record of all passwords in a safe place. Forgotten passwords results in being locked out of the system.

If the system cannot be booted because the User Password or the Supervisor Password are not known, contact Kontron Support for further assistance.

HDD security passwords cannot be cleared using the above method.

12.2.5. Boot Setup Menu

The boot setup menu lists the boot device priority order, that is generated dynamically.

Figure 88: BIOS Boot Setup Menu

Aptio Setup – AMI					
Main	Advanced	Chipset	Security	Boot	Save & Exit
Boot Configuration					
Setup Prompt Timeout		1			
Bootup NumLock State		[On]			
Quiet Boot		[Disabled]			
Boot Option Priorities [1]					
Boot Option #1 [1]		[Windows Boot Maager]			
Fast Boot		[Disabled]		→ ←: Select Screen	
SATA Support [2]		[Last Boot SATA Devices Only]		↑ ↓: Select Item	
NVMe Support [2]		[Enabled]		Enter: Select	
UFS Support [2]		[Enabled]		+/-: Change Opt.	
VGA Support [2]		[EFI Driver]		F1: General Help	
USB Support [2]		[Full Initial]		F2: Previous Values	
PS2 Devices Support [2]		[Enabled]		F3: Optimized Defaults	
Network Stack Driver Support [2]		[Disabled]		F4: Save & Exit	
Redirection Support [2]		[Disabled]		ESC: Exit	
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[1] These items appear only when disabling Fixed Boot Order Mode.

[2] These items appear only when enabling Fast Boot.

Feature	Option	Description
Setup Prompt Timeout	Value Input	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	[On], [Off]	Select the keyboard NumLock state [On]: The keys on the keypad will act as numeric keys. [Off]: The keys on the keypad will act as cursor keys.
Quiet Boot	[Disabled], [Enabled]	Enables or disables Quiet Boot option
Boot Option #1	[Windows Boot Manager], [Disabled]	Sets the system boot order
Fast Boot	[Disabled], [Enabled]	Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.
SATA Support	[Last Boot SATA Devices Only], [All SATA Devices]	If Last Boot SATA Devices Only, Only last boot SATA devices will be available in Post. If All SATA Devices, all SATA devices will be available in OS and Post.
NVMe Support	[Disabled],	If Disabled, NVMe device will be skipped.

Feature	Option	Description
	[Enabled]	
UFS Support	[Disabled], [Enabled]	If Disabled, UFS device will be skipped.
VGA Support	[Auto], [EFI Driver]	If Auto, only install Legacy OpRom with Legacy OS and logo would NOT be shown during post. Efi driver will still be installed with EFI OS.
USB Support	[Disabled], [Full Initial], [Partial Initial]	If Disabled, all USB devices will NOT be available until after OS boot. If Partial Initial, USB Mass Storage and specific USB port / device will NOT be available before OS boot. If Enabled, all USB devices will be available in OS and Post.
PS2 Devices Support	[Disabled], [Enabled]	If Disabled, PS2 devices will be skipped.
Network Stack Driver Support	[Disabled], [Enabled]	If Disabled, Network Stack Driver will be skipped.
Redirection Support	[Disabled], [Enabled]	If disable, Redirection function will be disabled.

12.2.6. Save & Exit Setup Menu

The exit setup menu provides functions for handling changes made to the UEFI BIOS settings and the exiting of the setup program.

Figure 89: BIOS Save & Exit Setup Menu

Aptio Setup – AMI					
Main	Advanced	Chipset	Security	Boot	Save & Exit
Save Options					
Save Changes and Exit					
Discard Changes and Exit					
Save Changes and Reset					
Discard Changes and Reset					
Save Changes					
Discard Changes				→ ←: Select Screen	
				↑ ↓: Select Item	
Default Options				Enter: Select	
Restore Defaults				+/-: Change Opt.	
Save as User Defaults				F1: General Help	
Restore User Defaults				F2: Previous Values	
				F3: Optimized Defaults	
Boot Override				F4: Save & Exit	
Windows Boot Manager				ESC: Exit	
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Feature	Description
Save Changes and Exit	Exit system setup after saving the changes.
Discard Changes and Exit	Exit system setup without saving any changes.
Save Changes and Reset	Reset the system after saving the changes.
Discard Changes and Reset	Reset system setup without saving any changes.
Save Changes	Save Changes done so far to any of the setup options.
Discard Changes	Discard Changes done so far to any of the setup options.
Restore Defaults	Restore / Load Default values for all the setup options.
Save as User Defaults	Save the changes done so far as User Defaults.
Restore User Defaults	Restore the User Defaults to all the setup options.
Windows Boot Manager	This group of functions includes a list of tokens, each of them corresponding to one device within the boot order. Select a drive to immediately boot that device regardless of the current boot order. If booting to EFI Shell this way, an exit from the shell returns to Setup.

Appendix A: List of Acronyms

The following table does not contain the complete acronyms used in signal names, signal type definitions or similar. A description of the signals is included in the I/O Connector and Internal connector chapters within this user guide.

Table 17: List of Acronyms

2D	Two-Dimensional
3D	Three-Dimensional
AT	Advanced Technology
ATX	Advanced Technology eXtended
BGA	Ball Grid Array
BIOS	Basic Input / Output System
BSP	Board Support Package
CMOS	Complementary Metal Oxide Semiconductor
CPU	Central Processing Unit
DC	Direct Current
DDC	Display Data Channel
DIO	Digital Input / Output
DP	DisplayPort
ECC	Error-Correcting Code
EEE	Electrical and Electronic Equipment
EOS	Electrical OverStress
ESD	ElectroStatic Discharge
GbE	Gigabit Ethernet
HDD	Hard Disk Drive
HDMI	High Definition Multimedia Interface
LAN	Local Area Network
LED	Light Emitting Device
LVDS	Low-Voltage Differential Signaling
ME F/W	Management Engine Firmware
mPCIe	mini Peripheral Component Interconnect express
NGFF	Next Generation Form Factor
PC-AT	Personal Computer - Advanced Technology
PCB	Printed Circuit Board
PSU	Power Supply Unit
PVC	PolyViny Chloride
PWM	Pulse Width Modulation
RAM	Random Access Memory
ROM	Read-Only Memory
RTC	Real-Time Clock
SATA	Serial Advanced Technology Attachment
SD	Secure Digital memory card
SDP	Serial Download Protocol
SELV	Safety Extra-Low Voltage
SIM	Subscriber Identity Module
SMBus	System Management Bus
SoC	System on Chip
SO-DIMM	Small Outline Dual In-line Memory Module
SPD	Serial Presence Detect
SPI	Serial Peripheral Interface
TDP	Thermal Design Power
TPM	Trusted Platform Module
UEFI	Unified Extensible Firmware Interface
USB	Universal Serial Bus
UTP	Update Transfer Protocol
VGA	Video Graphics Array
WDT	WatchDog Timer
WEEE	Waste Electrical and Electronic Equipment

About Kontron

Kontron is a global leader in IoT / Embedded Computing Technology (ECT) and offers individual solutions in the areas of Internet of Things (IoT) and Industry 4.0 through a combined portfolio of hardware, software and services. With its standard and customized products based on highly reliable state-of-the-art technologies, Kontron provides secure and innovative applications for a wide variety of industries. As a result, customers benefit from accelerated time-to-market, lower total cost of ownership, extended product lifecycles and the best fully integrated applications.

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