KISS 2U V4 ADL

User Guide Rev. 1.3

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KISS 2U V4 ADL – User Guide

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Intended Use

This device and associated software are not designed, manufactured or intended for use or resale for the operation of nuclear facilities, the navigation, control or communication systems for aircraft or other transportation, air traffic control, life support or life sustaining applications, weapons systems, or any other application in a hazardous environment, or requiring fail-safe performance, or in which the failure of products could lead directly to death, personal injury, or severe physical or environmental damage (collectively, "high risk applications").

You understand and agree that your use of Kontron devices as a component in High Risk Applications is entirely at your risk. To minimize the risks associated with your products and applications, you should provide adequate design and operating safeguards. You are solely responsible for compliance with all legal, regulatory, safety, and security related requirements concerning your products. You are responsible to ensure that your systems (and any Kontron hardware or software components incorporated in your systems) meet all applicable requirements. Unless otherwise stated in the product documentation, the Kontron device is not provided with error-tolerance capabilities and cannot therefore be deemed as being engineered, manufactured or setup to be compliant for implementation or for resale as device in High Risk Applications. All application and safety related information in this document (including application descriptions, suggested safety measures, suggested Kontron products, and other materials) is provided for reference only.

NOTICE	You find the most recent version of the "General Safety Instructions" online in the download area of this product.

NOTICE	This product is not intended for use or suited for storage or operation in corrosive environments, in particular under exposure to sulfur and chlorine and their compounds. For information on how to harden electronics and mechanics against these stress conditions, contact Kontron Support.

Revision History

Revision	Brief Description of Changes	Date of Issue	Author
1.0	Initial version	2023-Aug-11	CW
1.1	Removed Ubuntu	2023-Sept-15	CW
1.2	Changed the Product label	2024-Jan-25	CW
1.3	Added SAP number in Table 2, Vibration in Table 15 and Ch. 16 Disposal. Updated Ch. 7.8 Installing Slide Rail and new Kontron logo. Updated system fan and added redundant PSU in Ch.13 Maintenance and Prevention.	2024-Jul-22	CW

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 www.kontron.com/terms-and-conditions.
Kontron sells products worldwide and declares regional General Terms & Conditions of Sale, and Purchase Order Terms & Conditions. Visit 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 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 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 **ATTENTION** indique une situation dangereuse qui, si elle n'est pas évitée, peut entraîner des blessures mineures ou modérées.
	**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.
	**Caution: HOT Surface!** Do NOT touch! Allow to cool before servicing. **Attention : Surface CHAUDE !** Ne pas toucher ! Laissez refroidir avant de procéder à l'entretien.
	**Caution: Laser!** This symbol inform 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.

⚠CAUTION

Handling and operation of the product is permitted only for trained personnel within a work place that is access controlled. Follow the "General Safety Instructions" supplied with the product.

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 lithium battery.

⚠CAUTION	Risk of Explosion if the lithium Battery is replaced by an incorrect Type. Dispose of used lithium batteries According to the instructions. Risque d'explosion si la pile au lithium est remplacée par une pile de type incorrect. Éliminez les piles au lithium usagées conformément aux 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 www.kontron.com/about-kontron/corporate-responsibility/quality-management.

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1/Introduction

This user guide focuses on describing the special features of the KISS 2U V4 ADL scalable 2U rackmount system also know as product within this user guide. This user guide includes detailed information and guidelines how to set up, install, operate and maintain the product properly. New operators are recommended to study the instructions and any warning notices within this user guide before handling or switching on the product.

The KISS 2U V4 ADL is a scalable 2U industrial rackmount system designed for high performance, reliability in a 19" industrial rack cabinet, or flexibly installed in harsh industrial environments. Based on Kontron's industrial series of ATX motherboards, with Intel® 12th/13th Generation Core™ i9, i7, i5 und i3 processors the product supports multiple expansion capabilities and external interfaces. Two product variants (low profile and riser card) support different PCIe/PCI expansion card sizes and combinations.

Figure 1: KISS 2U V4 ADL

General KISS 2U V4 ADL features are:

- ATX motherboard
  - Intel® Core-i ™ i9, i7, i5 und i3 series, 12th and 13th Generation processors
  - Intel® R680E chipset
- System memory
  - Up to 128 GB max. with 4x DDR5-4800 MHz SODIMM
- Storage
  - 2x M.2 2280 SSD Module
  - 1x 2.5"SSD drive (internal)
- Drive bay options
  - 2x 3.5" drive bays (per drive bay one 3.5" or two 2.5" drives)
  - 1x DVD R/W slim (option)
  - RAID support
- Expansion slots options
  - Low profile: 6x PCIe slots + 1x PCI slot (low profile) or
  - Riser card: 2x PCIe slots (full-height, full-length)
- Rear interfaces
  - 4x USB 3.2 Gen 1 (Type A), 2x USB 3.2 Gen 2 (Type A), 1x USB 3.2 Gen 2 (Type C)
  - 4x DP 1.4 @ 4K
  - 1x 1 Gb Ethernet, 2x 2.5 Gb Ethernet
  - 1x COM RS 232 serial port
  - 1x audio (Line-in, Line-out, Mic)
- Front interfaces:
  - 2x USB 3.2 Gen 1
- Active cooling

- Power Supply
  - 100 VAC to 240 VAC, 400 W PSU
  - 100 VAC to 240 VAC, 550 W redundant PSU (option)

To ensure you have the latest version of this user guide, visit Kontron at Products | Kontron Embedded Computers 2U.

2/General Safety Instructions

Please read this passage 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 non-observance of the instructions Kontron Europe 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 to also 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 a filter mat is provided, this should be cleaned regularly. Do not place the product close to heat sources or damp places. Make sure the product is well ventilated.
- Only connect the product to an external power supply providing the voltage type (AC or DC) and the input power (max. current) specified on the Kontron Product Label and meeting the requirements of the Limited Power Source (LPS) and Power Source (PS2) of UL/IEC 62368-1 .
- Only products or parts that meet the requirements for Power Source (PS1) of UL/IEC 62368-1 may be connected to the product's available interfaces (I/O).
- Before opening the product, make sure that the product is disconnected from the mains.
- Switching off the product 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 product. Ensure that there is free and easy access to enable disconnection.
- The product may only be opened for the insertion or removal of add-on cards (depending on the configuration of the product). 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 product does not exceed the value stated on the product label
- Only original accessories that have been approved by Kontron Europe can be used.
- Please note: safe operation is no longer possible when any of the following applies:
  - the product has visible damages or
  - the product is no longer functioning
    In this case the product must be switched off and it must be ensured that the product can no longer be operated.
- Handling and operation of the product is permitted only for trained personnel within a work place that is access controlled.
- CAUTION: Risk of explosion if the battery is replaced incorrectly (short-circuited, reverse-poled, wrong battery type). Dispose of used batteries according to the manufacturer's instructions.
- This product is not suitable for use in locations where children are likely to be present

Additional Safety Instructions for DC Power Supply Circuits

- To guarantee safe operation, please observe that:
  - the external DC power supply must meet the criteria for LPS and PS2 (UL/IEC 62368-1)
  - 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 product itself is not disconnectable
- a disconnect device, if provided in or as part of the product, shall disconnect both poles simultaneously
- interconnecting power circuits of different products 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 EN62368-1 or VDE0100 or EN60204 or UL61010-1 regulations.

2.1. Instructions générales de sécurité

Veuillez lire attentivement ce passage et prendre bonne note des instructions, qui ont été compilées pour votre sécurité et pour assurer une application conforme aux réglementations prévues. Le non-respect des consignes de sécurité générales suivantes peut entraîner des blessures pour l'utilisateur et/ou des dommages pour le produit. En cas de non-respect des consignes, Kontron Europe est exonéré de la responsabilité en cas d'accident, ceci s'applique également pendant la période de garantie.
Le produit a été construit et testé conformément aux exigences de sécurité de base pour les applications basse tension (DBT) et a quitté le fabricant dans un état impeccable en matière de sécurité. Pour maintenir cet état et pour garantir également un fonctionnement sûr, l'opérateur doit non seulement respecter les conditions d'utilisation correctes du produit, mais aussi les consignes de sécurité générales suivantes :

- Le produit doit être utilisé conformément à la documentation du produit, dans laquelle sont décrites les instructions de sécurité pour le produit et pour l'opérateur. Celles-ci contiennent des directives pour la mise en place, l'installation et le montage, la maintenance, le transport ou le stockage.
- L'installation électrique sur place doit répondre aux exigences des réglementations locales spécifiques du pays.
- Si un câble d'alimentation est fourni avec le produit, seul ce câble doit être utilisé. N'utilisez pas de rallonge pour connecter le produit.
- Afin de garantir une circulation d'air suffisante pour refroidir le produit, veuillez vous assurer que les ouvertures de ventilation ne sont pas couvertes ou obstruées. Si un élément filtrant est fourni, celui-ci doit être nettoyé régulièrement. Ne placez pas le produit à proximité de sources de chaleur ou d'endroits humides. Veillez à ce que le produit soit bien ventilé.
- Ne connectez le produit qu'à une alimentation externe fournissant le type de tension (AC ou DC) et la puissance d'entrée (courant max.) spécifiés sur le Label Produit Kontron et répondant aux exigences de la source d'alimentation limitée (LPS) et de la source d'alimentation (PS2) de la norme UL/IEC 62368-1 .
- Seuls les produits ou les pièces qui répondent aux exigences de la source d'alimentation (PS1) de la norme UL/IEC 62368-1 peuvent être connectés aux interfaces (E/S) disponibles du produit.
- Avant d'ouvrir le produit, assurez-vous qu'il est bien débranché du secteur.
- Le fait d'éteindre le produit par son bouton de mise en marche ne le déconnecte pas du secteur. Une déconnexion complète n'est possible que si le câble d'alimentation est retiré de la prise murale ou du produit. Veillez à ce que l'accès soit libre et facile pour permettre la déconnexion.
- Le produit ne peut être ouvert que pour l'insertion ou le retrait de cartes supplémentaires (selon la configuration du produit). Cette opération ne peut être effectuée que par des opérateurs qualifiés.
- Si des extensions sont effectuées, les points suivants doivent être respectés :
  - toutes les réglementations légales en vigueur et toutes les données techniques sont respectées
  - la consommation électrique d'une carte supplémentaire ne dépasse pas les limites spécifiées
  - la consommation actuelle du produit ne dépasse pas la valeur indiquée sur l'étiquette du produit.
- Seuls les accessoires d'origine approuvés par Kontron Europe peuvent être utilisés.
- Veuillez noter que la sécurité des opérations n'est plus possible lorsque l'une des conditions suivantes s'applique.
  - le produit présente des dommages visibles ou
  - le produit ne fonctionne plus. Dans ce cas, le produit doit être éteint et il faut s'assurer que le produit ne puisse plus être utilisé.
- La manipulation et le fonctionnement du produit ne sont autorisés que pour le personnel formé dans un lieu de travail dont l'accès est contrôlé.

- ATTENTION: Risque d'explosion si la batterie est remplacée de manière incorrecte (court-circuit, inversion de polarité, mauvais type de batterie). Éliminez les piles usagées conformément aux instructions du fabricant.
- Ce produit n'est pas adapté à une utilisation dans des endroits où des enfants sont susceptibles d'être présents

Instructions de sécurité supplémentaires pour les circuits d'alimentation en courant continu

- Pour garantir un fonctionnement sûr, veuillez observer ce qui suit:
  - l'alimentation électrique externe en courant continu doit répondre aux critères des LPS et PS2 (UL/IEC 62368-1)
  - aucun câble ou pièce non isolée dans les circuits électriques ayant une tension ou une puissance dangereuse ne doit être touché directement ou indirectement
  - une connexion fiable à la terre de protection est fournie
  - un dispositif de déconnexion approprié et facilement accessible est utilisé dans l'application (par exemple, un dispositif de protection contre les surintensités), si le produit lui-même n'est pas en mesure d'être déconnecté.
  - un dispositif de déconnexion, s'il est prévu dans le produit ou s'il en fait partie, doit déconnecter les deux pôles simultanément
  - l'interconnexion des circuits électriques de différents produits ne présente aucun risque électrique
- Un dimensionnement suffisant des fils du câble d'alimentation doit être choisi - en fonction des spécifications électriques maximales figurant sur l'étiquette du produit - comme stipulé par les réglementations EN62368-1 ou VDE0100 ou EN60204 ou UL61010-1.

2.2. Electrostatic Discharge (ESD)

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

Proper packaging and grounding techniques are necessary precautions to prevent damage. Always observe the following precautions:

1. Transport ESD sensitive parts in ESD safe containers such as boxes or bags, until they arrive at an ESD safe workplace.
2. Always be properly grounded when touching sensitive components, or assembly.
3. Store ESD sensitive components in protective packaging or on antistatic mats.

2.3. Grounding Methods

To avoid electrostatic damage, observe the following grounding guidelines:

1. Cover workstations with approved antistatic material/mat. Always wear a wrist strap connected to workplace or heel straps.
2. Use properly grounded tools and equipment such as field service tools that are conductive.
3. Always handle ESD sensitive components by their edge or by their casing.
4. Avoid contact with pins, leads, or circuitry.
5. Switch 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.

2.4. Instructions for the Lithium Battery

When replacing the motherboard's lithium battery observe the instructions described in Chapter 13.5: Replacing the Lithium Battery.

⚠CAUTION

Danger of Explosion if the lithium battery is incorrectly placed!

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

VORSICHT- Explosionsgefahr bei unsachgemäßem Austausch der Batterie!

- Ersatz nur durch denselben oder einen vom Hersteller empfohlenen gleichwertigen Typ
- Entsorgung gebrauchter Batterien nach Angaben des Herstellers

ATTENTION- Risque d'explosion avec l'échange inadéquat de la batterie!

- Remplacement seulement par le même ou un type équivalent recommandé par le producteur
- L'évacuation des batteries usagées conformément à des indications du fabricant

PRECAUCION- Peligro de explosión si la batería se sustituye incorrectamente!

- Sustituya solamente por el mismo o tipo equivalente recomendado por el fabricante
- Disponga las baterías usadas según las instrucciones del fabricante

ADVARSEL- Lithiumbatteri -- Eksplosionsfare ved fejlagtig håndtering!

- Udskiftning må kun ske med batteri af samme fabrikat og type
- Levér det brugte batteri tilbage til leverandøren

ADVARSEL- Eksplosjonsfare ved feilaktig skifte av batteri!

- Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten
- Brukte batterier kasseres i henhold til fabrikantens instruksjoner

VARNING- Explosionsfara vid felaktigt batteribyte!

- nvänd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren
- assera använt batteri enligt fabrikantens instruktion

VAROITUS- Paristo voi räjähtää, jos se on virheellisesti asennettu!

- Vaihda paristo ainoastaan lalteval- mistajan suosittelemaan tyyppiln
- Hävitä käytetty paristo valmistajan ohjeiden mukaisesti

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

2.5. Operation of Laser Source Devices

The optional DVD drive contains light-emitting diodes (LEDs) (classified in accordance with IEC 60825-1:2007: LASER CLASS 1) and therefore must not be opened. If the enclosure of such a drive is opened, invisible laser radiation is emitted. Do not allow yourself to be exposed to this radiation.

The laser system meets the Code of Federal Regulations (CFR), Title 21, 1040 -Performance standards for light-emitting products.

Laser!

Risk of exposure to laser beam and light emitting devices (LEDs) from DVD

- Do not open DVD drive due to invisible laser radiation
- Check manufacture instructions eye protection maybe required

3/Shipment and Unpacking

3.1. Packaging

All parts are delivered together in a product specific cardboard package designed to provide adequate protection to absorb shock. Kontron recommends keeping the packaging to store or transport the KISS 2U V4 ADL.

3.2. Unpacking

To unpack the product, perform the following:

1. Remove packaging.
2. Do not discard the original packaging. Keep the original packaging for future transportation or storage.
3. Check the delivery for completeness by comparing the delivery with the original order.
4. Keep the associated paperwork. It contains important information for handling the product.
5. Check the product for visible shipping damage.

If you notice any shipping damage or inconsistencies between the contents and the original order, contact your dealer.

3.3. Scope of Delivery

Check that the delivery is complete, and contains the items listed in Table 1: . If damaged or missing items are discovered, contact the dealer.

Table 1: Scope of Delievy

Part	Qty	Part Description
KISS 2U V4 ADL	1	System configuration as ordered: KISS 2U V4 ADL low profile or KISS 2U V4 ADL riser card
Power Cable	1	AC power cable with EU rating, other cable ratings are optional
Rubber feet	4	Four rubber feet
Safety instructions	1	General Safety Instructions

3.4. Accessories and Spare Parts

The parts and accessories that can be purchased for the product are described in Table 2: Accessories and Spares Parts.

Table 2: Accessories and Spares Parts

Part Number	Part Description
9-5000-1116	Slide Rails and Mounting Kit KISS1U/2U/4U
1068-7355	Fan Unit KISS 2U V4
1068-7354	Air Filter Door Kit KISS 2U V4
1073-9211	Filter Pad KISS 2U V4
1069-2848	Front Flap Assembly Kit KISS 2U V4
0-0064-2173	Power Cable EU (included in delivery)
0-0064-4173	Power Cable UK (option)
0-0064-4317	Power Cable US (option)

3.5. Product Identification Type Label

The type label includes the electrical specification data for the ordered variant

Figure 2: Type Label Examples

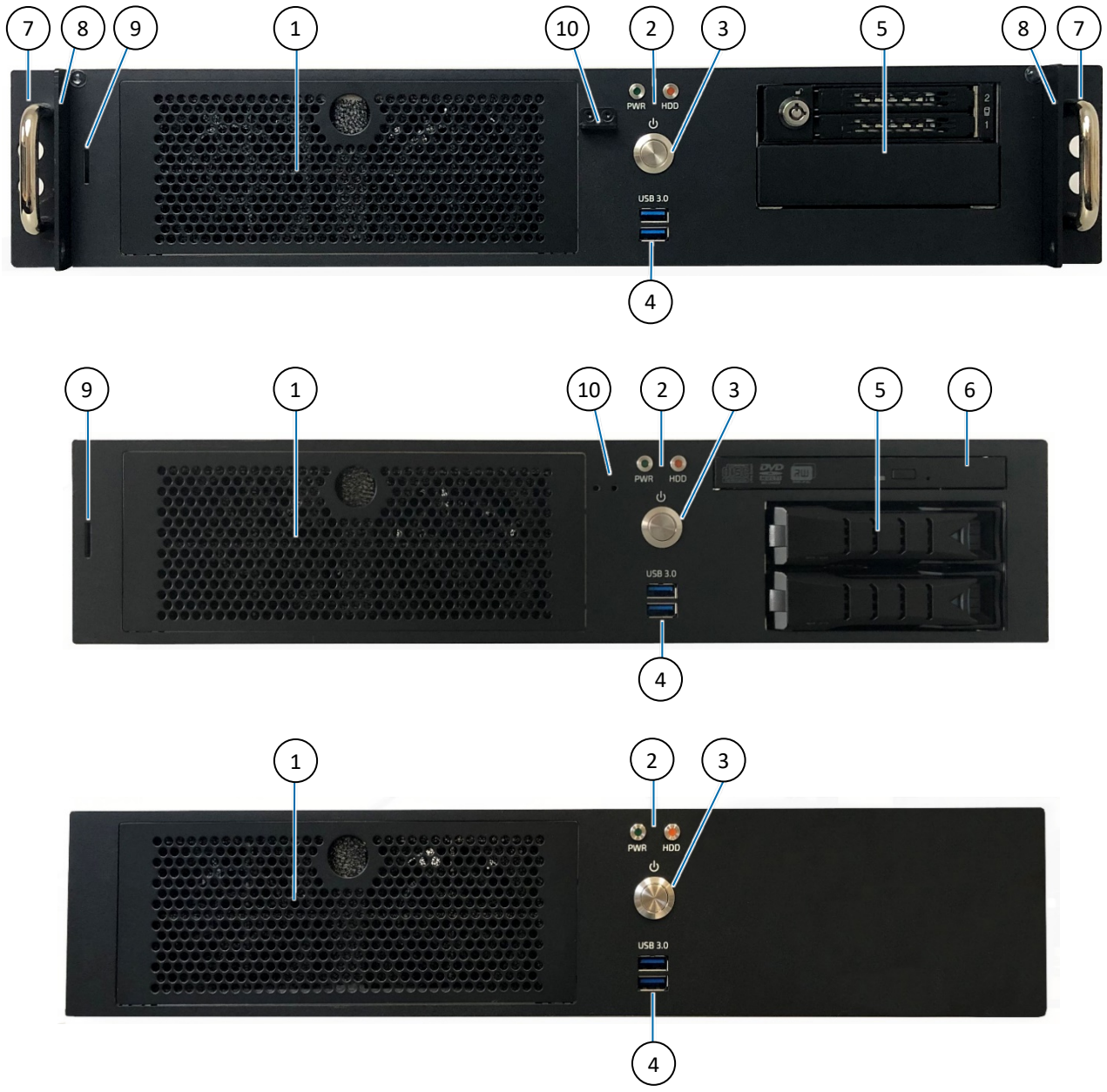
1. Model name
2. P/N: Specific product number
3. S/N: Specific serial number
4. Power rating (Single 400 W or redundant 550 W) PSU
5. Compliance symbols
6. Disposal symbols

4/Product Features

4.1. Front Panel

The front panel features a power button, power LED, HDD LED, magnetic filter pad door and supports different front panel internal or external drive bay options. To mount the product in a 19” rack mounting, optional 19” rack handles are available, see Table 2: Accessories and Spares Parts.

Figure 3: Front Panel

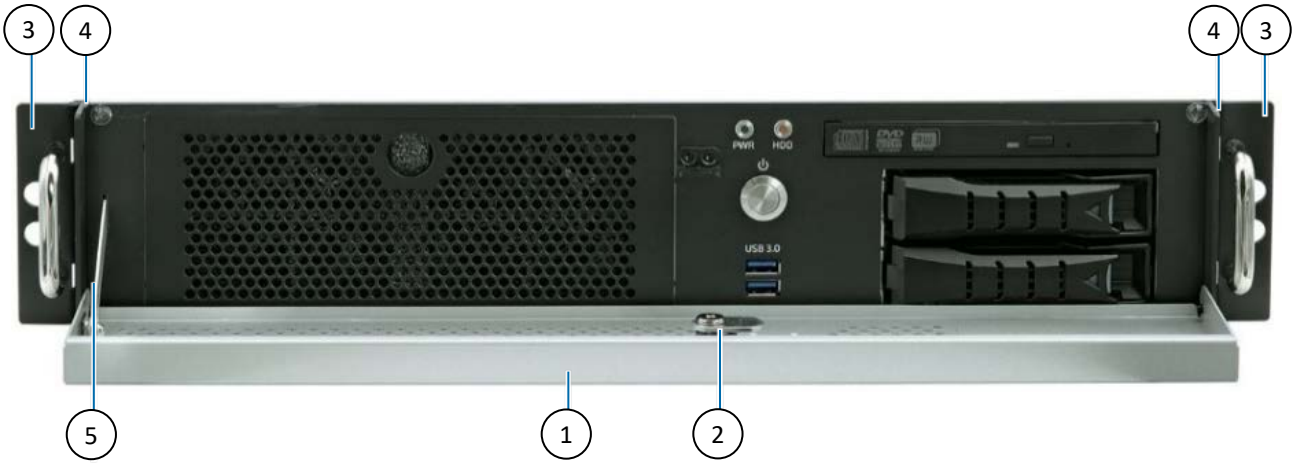


1. Magnetic filter pad door
2. LED Indicators (Power and HDD)
3. Power Button
4. 2x USB 3.2 Gen 1
5. Drive bays
6. 1x DVD R/W slim (option)
7. 2x Handle brackets
8. Front flap side panel
9. Front flap arm slit
10. Front flap lock (with mounting or openings)

4.1.1. Front Flap

To protect against unauthorized access, an optional front flap with front flap side panels is available, see Table 2: Accessories and Spares Parts.

Figure 4: Front Flap



1. Front flap
2. Front lap lock
3. 2x Handle brackets
4. Front flap side panel
5. Front flap arm slit

When locked the front flap can only be opened with a key and the drives, power button and fans are not accessible. To installed or removed the front flap, see Chapter 7.6: Installing and Removing the Front Flap.

Front flap key must be kept safe and not be accessible to unauthorized persons.

If USB devices are connected to the USB ports on the front side, the front flap cannot be closed and locked.

4.1.2. Drive Bays

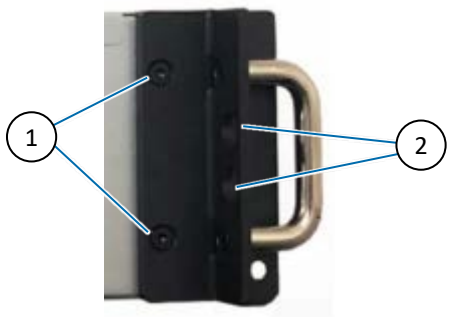
The two drives bays support front access or internal drives depending on the front panel. Each drive bay supports one 3.5” HDD or up to two 2.5” SSDs. RAID support is available using two front accessible 2.5” SSD drives configured as a RAID array.

Additionally, a front accessible slim line DVD (Read/Write) is available as an option; see Figure 3, Pos. 6.

4.1.3. Handle Brackets

When using the handle brackets always attach both handle brackets to the product firmly, using the two screws provided (Figure 5, pos. 1). When mounting the product in a 19” rack always secure the product using both handle brackets and screws suitable for the mount environment (Figure 5, pos. 2).

Figure 5: Handle Brackets



1. Two handle bracket screws
2. Two mounting openings

⚠CAUTION

Verify Secure Mounting

To ensure a secure installation in a 19” rack cabinet use two fixation methods; handle brackets (both left and right side) and a second fixation of either slide rails or L-brackets.

4.1.4. Fans Assembly

The two internal system fans are located behind a magnetic filter pad door. The two system fans are temperature controlled via temperature sensors, to provide adequate airflow for optimal active cooling.

For information on how to clean the filter pad, see Chapter 13.3: Cleaning the Filter Pad, or to change the fans, see Chapter 13.4: Replacing the System Fans.

⚠CAUTION

Operation is permitted only with a functional fan assembly!
Replace a defective fan assemble only with an original fan assembly.

⚠CAUTION

Fan Assembly Replaceable during Operation

Replace fan only by qualified specialist or suitably instructed persons aware of the associated dangers. Keep hands and fingers away from rotating fan parts. Before removing the fan assembly, wait until the fans have totally stopped.

The fan assembly simplify the installation and removal of the two system fans, and is hot-swappable, enabling the replacement of the fans even during operation.

4.1.5. Power Button

The power button is located on the front panel, behind the front flap and is used to switch on or switch off the product. Pressing the power button for longer than four seconds initiates a forced system shutdown before the switching off the product. The power button illuminates blue to indicate the product is switched on.

Figure 6: Power Button

⚠WARNING	**AC Power cable and power connectors must always remain easily accessible**. The product is only completely disconnected from the mains power supply when the power cable is disconnected, from the mains power socket(s) or the product's input power socket(s). If the end environment restricts access to the power cable, disconnection must be guaranteed using a separate cut-off fixture.
⚠WARNING	The power button does not disconnect from the mains power supply. When switched off using the power button, there is still a standby voltage of 5 VSB on the motherboard.
NOTICE	Performing a forced shutdown can lead to loss of data or other undesirable effects!

4.1.6. Power LED and HDD LED

The Power LED and HDD LED indicators are located on the front panel, behind the front flap.

Figure 7: LED indicators

1. Power LED
2. HDD LED

Table 3: Power LED and HDD LED

LED	Color	Description
Power LED (PWR)	Green	Illuminates green when the product is switched on by pressing the power button.
HDD LED	Orange	Illuminates orange during hard disk activity

4.1.7. USB Ports

The two USB 3.0 ports are (USB 3.2 Gen 1) and located on the front panel, behind the front flap.

Figure 8: USB 3.2 Gen 1 Port

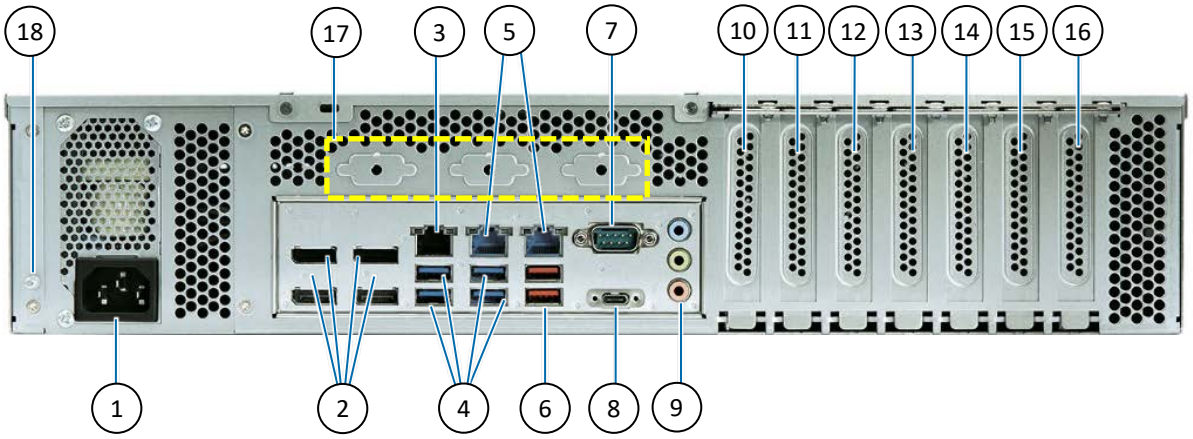
If USB devices are connected to the USB ports on the front side, the front flap cannot be closed and locked.

4.2. Rear Panel

The rear panel features the PSU, air exhaust ventilation openings, external interfaces, and expansion card slots. The different rear panels low profile and riser card support different PCIe/PCI expansion cards sizes and quantities.

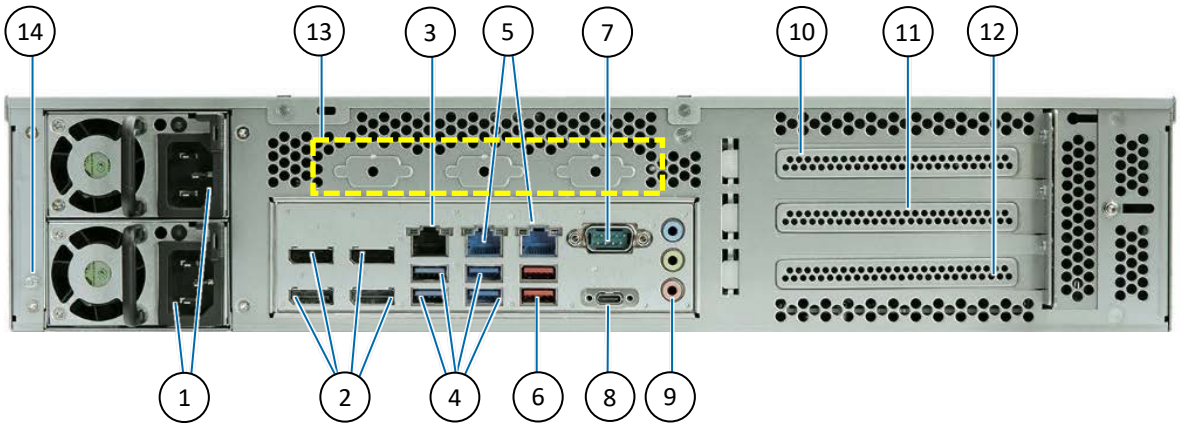
The PCIe expansion card slot allocation depends on the overall system configuration.

Figure 9: Rear Panel (low profile)



1. Input power socket
2. 4x DP 1.4 @ 4K
3. 1x 1.0 GbE
4. 4x USB 3.2 Gen 1
5. 2x 2.5 GbE
6. 2x USB 3.2 Gen 2
7. 1x COM (RS232)
8. 1x USB-C 3.2 Gen 2
9. 1x Audio
10. Slot 1: PCIex16, Gen 5, 16 lanes
11. Slot 2: PCIe x1, Gen 3 (open slot)
12. Slot 3: PCIe x16, Gen 4, 4 lanes
13. Slot 4: PCIe x8, Gen 4, 4 lanes
14. Slot 5: PCIe x8, Gen 4, 4 lanes (open slot)
15. Slot 6: PCIe x1, Gen 3 (open slot)
16. Slot 7: PCI 32 bit
17. 3x Breakouts (shown in yellow box)
18. Potential equalization stud

Figure 10: Rear Panel (riser card)



1. Input power sockets (with redudant power supply)
2. 4x DP 1.4 @ 4K
3. 1x 1.0 GbE
4. 4x USB 3.2 Gen 1
5. 2x 2.5 GbE
6. 2x USB 3.2 Gen 2
7. 1x Serial port (RS232)
8. 1x USB-C 3.2 Gen 2
9. 1x Audio
10. Slot 1: PCIE (full-height, full-length)
11. Slot 2: PCIE (full-height, full-length)
12. Slot 3: free slot for non PCIe I/Os.
13. 3x breakouts (shown in yellow box)
14. Potential equalization stud

4.2.1. Display Port (DP)

The four Display Ports are DP V1.4a @4K. All DisplayPort outputs are equivalent and compatible with DP++ and support a resolution of 4096x2160 @ 60Hz. The display resolution may vary depends on the number of simultaneous displays.

Table 4: Display Resolution

Commen Screen Resolution (max.)	Number of Simultaneous Displays
8k @ 60 Hz HDR 5k @ 120 Hz HDR	1
8k @ 60 Hz SSR 5k @ 60 Hz HDR	2
4k @ 60 Hz HDR	4

If the multi-monitor output is enabled, the screen output is shown on two displays simultaneous (clone view). Depending on the DP used, only two displays are selected if more than two monitors are connected. The lowest numerical “Priority” wins, as shown in Table 5: Display Order Priority.

Table 5: Display Order Priority

Priority	1	2	3	4	5	6
Primary Display	DP1	DP1	DP1	DP2	DP2	DP3
Secondary Display	DP2	DP3	DP4	DP3	DP4	DP4

Connection to either a VGA, DVI or HDMI video source is possible using either a passive or active adapter. The type of adapter depends on the signal type and if the connection is to a single device or multiple devices.

DP adapters:

- DP to HDMI (passive/active)
- DP to DVI (passive/active)
- DP to VGA (active)

4.2.2. USB 3.2

All USB 3.2 connectors provide separate signal lines for USB 3.2 and USB 2.0.

4.2.3. LAN

The 1.0 GbE LAN port features:

- i219LM LAN controller
- IEEE 802.3 specification for 1000BASE-T, 100BASE-TX, 10BASE-T
- iAMT features
- Wake on LAN
- Link Status change and Magic Packets™, PXE support
- BIOS MAC address display
- Teaming support

The two 2.5 GbE LAN ports feature:

- i225LM LAN controller
- IEEE 802.3 specification for 2500BASE-T, 1000BASE-T, 100BASE-Tx, 10BASE-TE
- TSN support
- Wake on LAN
- Link Status change and Magic Packets™
- PXE support
- BIOS MAC address display
- Teaming support

The 2.5 GbE LAN “Activity LED” remain active even if the LAN controller is disabled in the BIOS Setup.

Linux Shutdown Issue

If 2.5 GbE LAN ports are enabled, a shutdown or suspend may result in a CAT Error, related to the PTM function of the internal i225 Ethernet controller. For workaround information, contact Kontron Support.

4.2.4. Serial Ports (COM)

The serial port provides full RS232 support. Three additional RS232 serial ports can be routed from the motherboard to the rear panel to populate the available breakouts, see Figure 9, pos. 17 and Figure 10, pos. 13.

For technical data, refer to the motherboard’s user guide K3851-R ATX.

4.2.5. Audio

The Audio ports support Line-in, Microphone and Headphone output.

For technical data, refer to the motherboard's user guide K3851-R ATX.

4.2.6. Power Supply Unit

The Power Supply Unit (PSU) is located on the rear panel and supplies the required internal voltages using standard certified cabling. For the PSU power specification, see Table 14: Electrical Specification.

WARNING

Energy hazards -240 VA present in the chassis

To switch off the product properly and ensure no energized internal parts, switch off the product using the power button on the front panel and disconnecting the product's power cable from the input power socket(s) or the mains power supply socket(s).

WARNING

Easy Access to Power Cable and Power Connectors

The power cable must always remain easily accessible. If the operating environment restricts power cable access, disconnection must be guaranteed using a separate cut-off fixture.

WARNING

Operate closed

Operate only with a closed and secured cover, to ensure that operators do not have access to energized internal parts.

WARNING

Only use the AC power cable delivered with product and sufficiently rated for the implemented power supply.

WARNING

Ensure that the mains power supply socket is grounded and the power cable is in perfect condition with no visible damage

NOTICE

The rated mains voltage range must agree with the voltage specified on the type label.

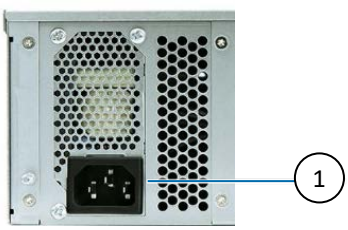
NOTICE

Do not disconnect the power from the system while the system is switched on!

Performing a forced shut down can lead to loss of data or other undesirable effects!

The default PSU is a single 400 W PSU, with the option for a redundant 550 W PSU for high availability applications. Both PSUs support a nominal input voltage of 100 VAC to 240 VAC.

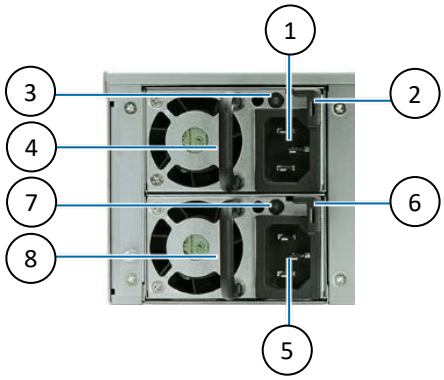
Figure 11: Single PSU (400 W)



1 Input power socket

The redundant PSU contains two separate PSUs each capable of powering the product alone and each supplied using a dedicated power cable connection to the mains power supply. To ensure the power cables are not accidently removed from the input power sockets, the power plug socket's clip holds the power connector firmly in place.

Figure 12: PSU, 550 W (redundant)



1. Input power socket (1)
2. Power plug socket clip (1)
3. Indication LED (1)
4. Removal and insertion handle (1)
5. Input power socket (2)
6. Power plug socket clip (2)
7. Indication LED (2)
8. Removal and insertion handle (2)

If a PSU fails, the faulty PSU unit shuts down and the PSU's indication LED changes color from green (active) to Amber (faulty), to indicate which PSU unit is faulty. The functional PSU unit takes over the full operation, until the faulty PSU unit is replaced, see Chapter 13.8: Replacing a Faulty Redundant PSU Unit.

Table 6: Redundant PSU LED Description

PSU LED	Power Supply Description
Green	PSU output ON and OK
OFF	No AC power to all PSU
Green (Flashing)	AC present/only standby output on
Amber	Main AC power cable unplugged or AC power lost; with a second power supply in parallel still with AC input power.
Amber (Flashing)	Power supply warning events where the power supply continues to operate, such as: high temperature, high power, high current, slow fan.
Amber	Power supply critical event causing a shutdown; failure, such as: OCP, OVP, UVP

4.2.7. Potential Equalization Stud

The potential equalization stud is located on the rear side. The potential equalization stud is not a ground connection. When connected the potential equalization stud ensures that all connected systems share a common potential.

The potential equalization stud is not a ground connection. The potential equalization stud ensures that all connected systems share a common potential.

4.2.8. PCIE/PCI Expansion Card Slots

The low profile and the riser card variants support different PCIe/PCI expansion options:

- Low profile
  - Six low profile PCIe expansion cards slots
  - One low profile PCI expansion card slot
- Riser card
  - Two full-height, full-length PCIe expansion card slots
    - Dual 1x PCIe x16/16
    - Dual 2x PCIe x8/16

The slot allocation is described in Table 9: PCIe/PCI Expansion Cards Slot Allocation.

For PCIe/PCI slot functionality and location information, refer to the motherboard's user guide, K3851-R ATX.

4.3. Side

The sides feature a fastening mechanism to hold the cover in place using a push button with metal catch and corresponding indents and hooks to secure the sides of the cover.

Figure 13: Left Side

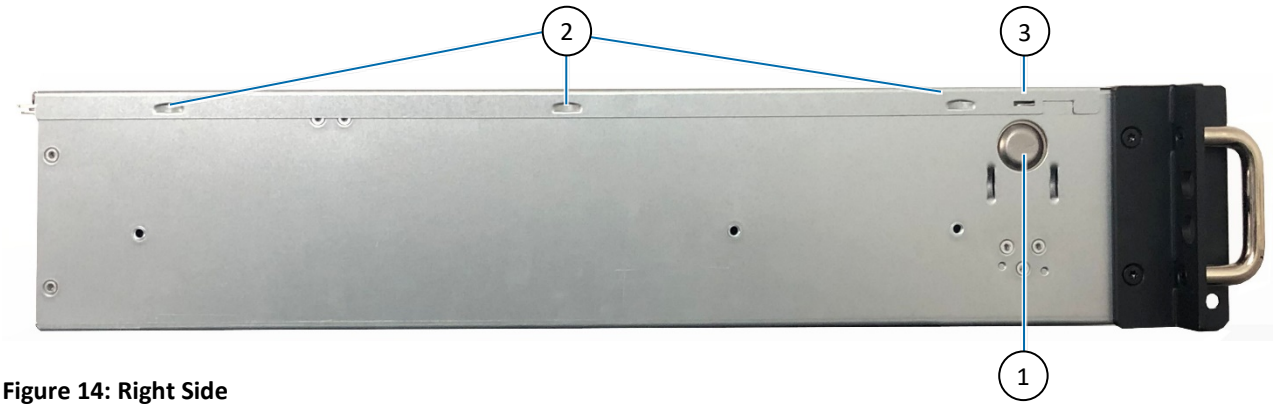
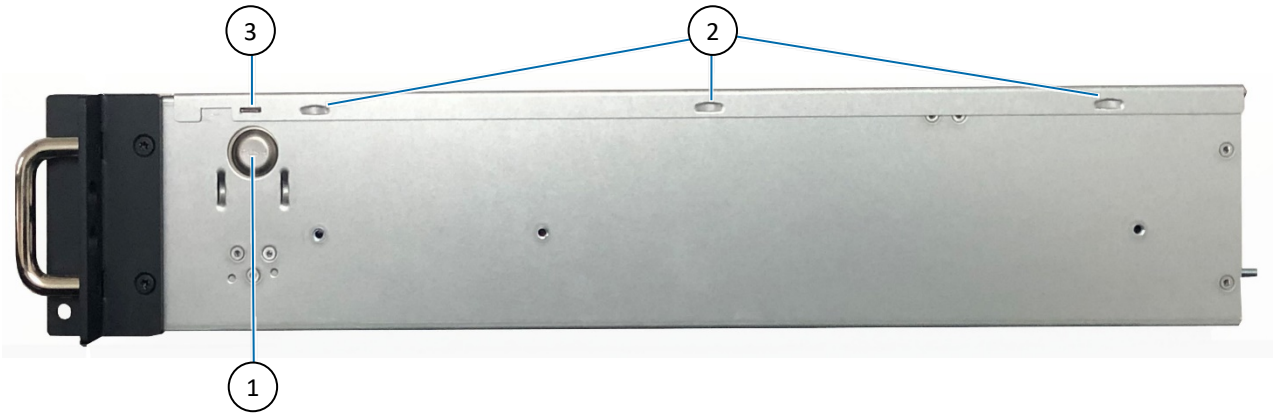


Figure 14: Right Side



1. Push button
2. 3x indents for the internal hooks
3. Metal catch (left side and right side)

4.4. Cover

The cover is secures to ensure that operators do not have access to energized internal parts. To open the top cover, see Chapter 7.2: Opening and Closing the Cover.

WARNING

Energy hazards-present inside the chassis!

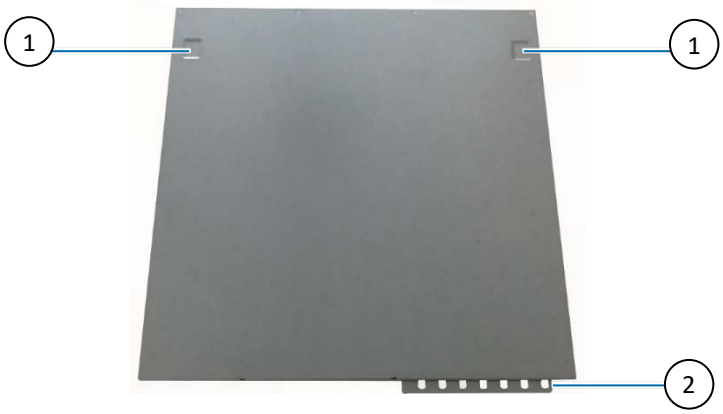
Before removing the top cover, switch off the product properly by using the power button on the front side and disconnecting the power cable(s) from the mains power supply(s).

WARNING

Intended used is closed

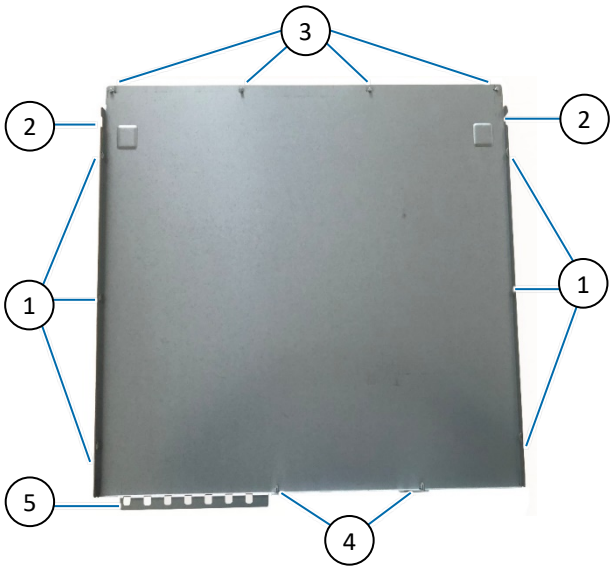
Use only with a closed and secured cover, to ensure that operators do not have access to energized internal parts.

Figure 15: Cover Top Side (low profile)



1. 2x Indented thumb holes
2. Expansion card plate (low profile)

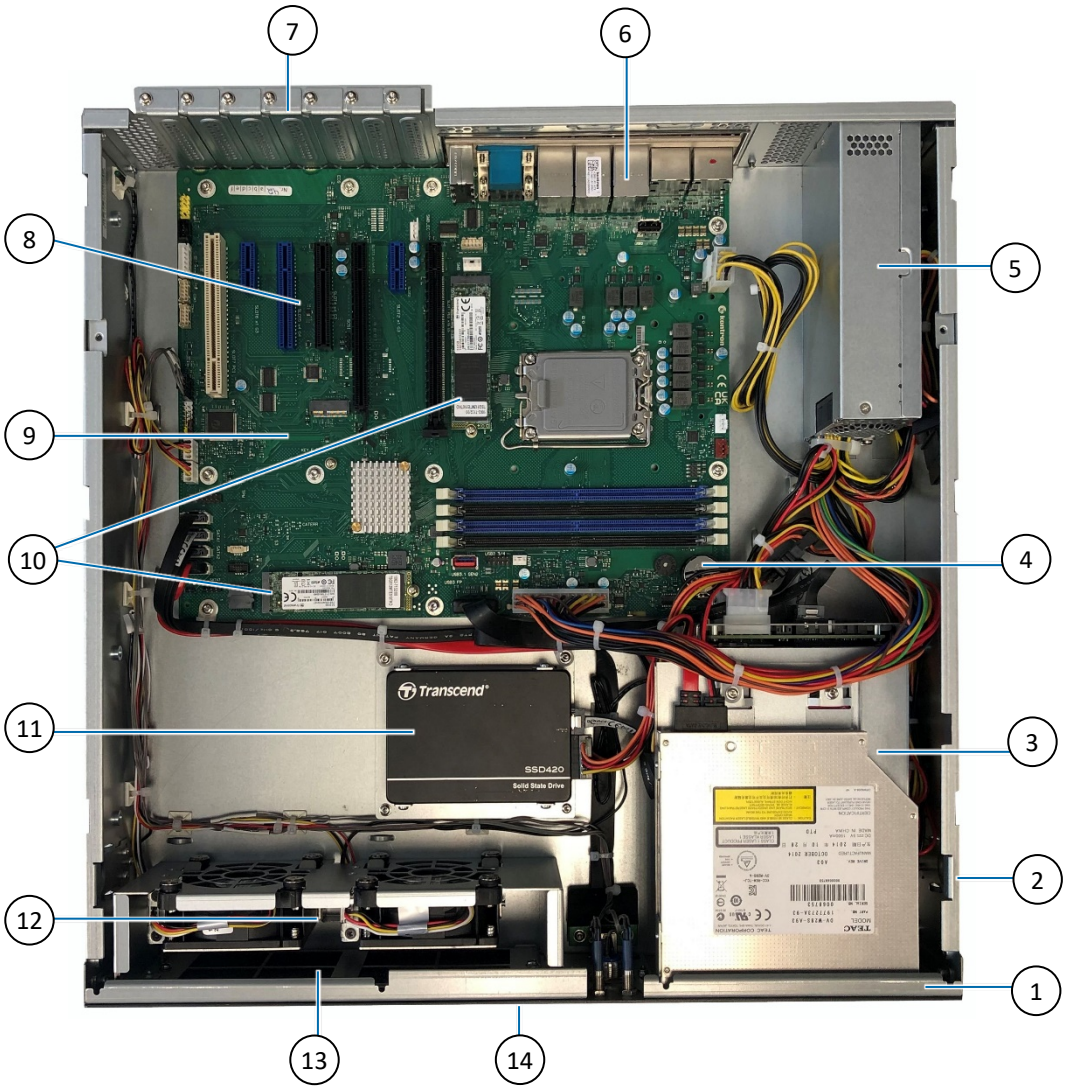
Figure 16: Cover Underside (low profile)



1. 3x Hooks
2. 2x Lock hole for metal catch
3. 4x Front side pins
4. 2x studs
5. Expansion card plate

4.5. System Configuration

Figure 17: Example of KISS 2U V4 ADL Configuration



1. Cover retaining plate on front side
2. Side fastening mechanism
3. Drives bays stacked in a drive cage (shown here with CD drive on top)
4. Lithium battery CR2032
5. Power Supply Unit (PSU) (default 400W)
6. Interface connectors (available externally)
7. Fastening screws for slot brackets or expansion card slot brackets
8. Six PCIe slots+ one PCI slot
9. Motherboard
10. 2x M.2 SSD modules
11. Internal 2.5” SSD drive
12. Fan assembly with two fans
13. Filter pad
14. Front Panel

5/System Expansion

This chapter contains important information on how to expand the KISS 2U V4 ADL with storage and expansion cards.

5.1. Before Expanding

Before expanding the product with storage and expansion cards, consider the maximum power consumption allowed by the power supply.

Due to the limited lifespan of expansion devices, Kontron recommends checking the condition of any installed expansion devices regularly and to pay attention to the manufacturer's lifespan specifications.

5.2. Mass Storage (internal)

The internal mass storage supports two M.2 2280 SSD modules supporting NVME RAID and one 2.5" SSD drive with the following reference densities.

Table 7: Mass Storage (internal)

Mass Storage Device	Quantity	Interface	Density
M.2 2280 Key M SSD Module	2	NVME	Up to 4 TByte NVME RAID Support
2.5" SSD Drive	1	SATA III 6Gb/s	256 GByte, 512 GByte, 1 TByte, 2 TByte

The two M.2 2280 SSDs support NVME RAID support.

5.3. Drive Bays (front panel or internal)

The two drive bays (front access or internal) each supports one 3.5" HDD or up to two 2.5" SSD drives with the following reference densities. RAID support is available using two front accessible 2.5" SSD drives configured as a RAID array.

Table 8: Drive Bays

Access	Front Access				Internal		
Type	Removable drive				Fixed drive		
Size	2.5"			3.5"	2.5"		3.5"
SSD/HDD	SSD			HDD	SSD		HDD
#Drives	1x	2x	2x	1x	1x	2x	1x
RAID			√				
Density	256 GB 512 GB 1 TB 2 TB			2 TB 4 TB 6 TB 12 TB	256 GB 512 GB 1 TB 2 TB		2 TB 4 TB 6 TB 12 TB

5.4. Expansion Cards

The expansion card combinations depend on the product variant (low profile or riser card).

Table 9: PCIe/PCI Expansion Cards Slot Allocation

Product Variants	Expansion Card Type	Slot #	Slot Type	Description
Low profile	PCIe	1	PCIex16, Gen 5, 16 lanes	75 W Max. Load Default slot Graphic
		2	PCIe x1, Gen 3 (open slot)	10 W Max. Load
		3	PCIe x16, Gen 4, 4 lanes	75 W Max. Load
		4	PCIe x8, Gen 3, 4 lanes	25 W Max. Load
		5	PCIe x8, Gen 4, 4 lanes (open slot)	25 W Max. Load
		6	PCIe x1 Gen 3 (open slot)	10 W Max. Load
	PCI	7	PCI 32 bit (33 MHz, Rev. 2.3)	10 W Max. Load

Product Variants	Expansion Card Type	Slot #	Slot Type
Riser card	PCIe	1	PCIe x16 or x16 (full-height, full-length)
	PCIe	2	PCIe x16 or x8 (full-height, full-length)

For PCIe/PCI slot functionality and location information, refer to the motherboard's user guide, K3851-R ATX.

Before expanding the product with additional PCIe/PCI cards, observe that the specified maximum power consumption supported by the PSU is not exceeded.

5.5. Reference PCIe Expansion Cards

The Kontron reference low profile PCIe expansion cards supports the following functions:

Table 10: Reference KISS 2U V4 ADL PCIe Expansion Cards

Reference Card	Description
LAN Dual 1.0 GbE Copper Port	Speed: 10/100/1000 Mbps Bus type: PCIe* V2.1 (5 GT/S) Bus width: x4-lane PCIe (operable in x4, x8 and x16 slots) Ethernet controller: Intel® I350 Connector: 2x RJ45 Power consumption: 6 W
LAN Dual 10 GbE Copper Port	Speed: 10GBE/1GBE /100Mbps Bus type: PCIe V3.0 (8.0 GT/S) Bus width: x4-lane PCIe (operable in x8 and x16 slots) Ethernet controller: X550AT Connector: 2x RJ45 Power consumption: 5 W LEDS: › Link (Green/Orange); Activity (Green flashing) › Link rate(Green 10 GBE; Orange 1 GbE/100Mbps)

Reference Card	Description
LAN Quad 1 GbE Copper Port	Speed: 10/100/1000 Mbps Bus type: PCIe V2.1 (5 GT/S) Bus width: x4-lane PCIe (operable in x8 and x16 slots) Ethernet controller: Intel® I350 Connector: 4x RJ45 Power consumption: 5.04 W LEDS: › Link (Green/Orange); Activity (Green flashing) › Link rate (Green 10/100Mbps; Orange 1000 Mbps)
Graphics Card Quad DP	4x DP1.4 Connector: 4x miniDP with latching mechanism Interface: PCIe 3.0 x16 Form factor: Single slot Power consumption: 40 W Max. simultaneous displays: › 4x 3840x2160@120Hz › 4x 5120x2880@60Hz › 2x 7680x4320@60Hz

Others PCIe/PCI expansion card options are available on request. For more information, contact Kontron Support.

6/Thermal Management

This chapter contains important information on how manage KISS 2U V4 ADL thermal considerations.

6.1. Active Cooling

Two system fans within a fan assembly force air to flow through the ventilation holes from the front to the back of the chassis. The processor and expansion cards have integrated cooling solutions or are equipped with corresponding cooling devices. The fan assembly's filter pad protects against contaminates such as dust and dirt entering the product and will overtime become clogged by contaminates. When clogged, the filter pad restricts the amount of air entering the product thus causing excessive heating. Kontron recommends cleaning the filter pad as often as necessary, see Chapter 13.3: Cleaning the Filter Pad.

⚠CAUTION	Clean the filter pad when clogged by contaminates to ensure adequate ventilation. The required regularity depends on the level of contaminates within the operating environment.

⚠CAUTION	Operation is permitted only with functional system fans! Replace a defective fan only with a Kontron fan spare part.

	The two system fans, are hot-swappable, enabling the replacement of the fans even during operation.

6.2. Temperature Sensor

The temperature conditions of the product depend on the environmental temperature and the load. Two internal temperature sensors detect the temperature and control the speed of the system fans accordingly.

6.3. Minimum Thermal Clearance

To provide maximum airflow observe a minimum clearance at the front and rear sides of the product to the surrounding environment must be observed. To guarantee that sufficient air flows from the front to the back of the chassis, ensure that ventilation openings are not covered or blocked by surrounding parts.
Before installing the product take into account, any thermal considerations, such as minimum clearance, airflow obstructions and the correct mount orientation.

⚠CAUTION	**Ensure Sufficient Airflow.** Ensure that the 19" industrial rack cabinet is well ventilated and does not prevent the product from drawing in air at the front and exhausting air at the rear.

⚠CAUTION	Leave a sufficient clearance to ensure maximum airflow and prevent overheating!

⚠CAUTION	Do not place the product close to heat sources or damp places.

	There are no ventilation restrictions above and below the product, enabling installation directly on top of or below another system.

6.4. Third Party Components

When expanded with third party components, such as PCIe/PCI expansion cards, M.2 modules, DIMMs and drives (HDD, SSD, DVD), take into consideration that there is an increase in air temperature inside the chassis and the air temperature in the chassis is higher than the ambient air temperature around the product.

7/Assembly

This chapter contains important information on the mechanical assembly and working safely with internal components. Follow these instructions when handling KISS 2U V4 ADL internal components and observe the corresponding safety instruction included in Chapter 2/ General Safety Instructions.

7.1. Before Assembling the Product

Before installing external accessories read the instruction within the user guide and always use the screws provided with the mechanical part.
Before installing/removing internal components ensure the product is switched off properly using the power button and disconnect the power cable from the mains power supply. Consult the documentation provided by the external components manufacturer and instructions within this Chapter.

WARNING

Energy hazards present inside the chassis!
Before removing the top cover, switch off the product properly using the power button and disconnecting the power cable(s) from the mains power supply(s).

WARNING

Ensure the cover is secure and the metal catches (right side & left side) are in the lock hole before switching on the product.

WARNING

Activities requiring internal access of the product must be performed by trained personnel aware of the associated dangers!

ESD Sensitive Device!
Follow the safety instructions for components that are sensitive to electrostatic discharge (ESD). Failure to observe this warning notice can result in damage to the components.

7.2. Opening and Closing the Cover

To open the cover no tools are required.

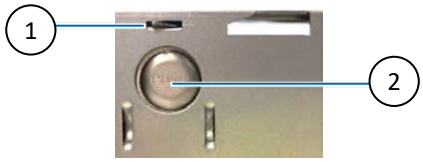
WARNING

Intended used is closed
Use only with a closed and secured cover, to ensure that operators do not have access to energized internal parts.

The cover is secured using the following:

- One metal catch on the left side and right side
- Four pins on the cover's front side that slot into holes on the front plate
- Three hooks on the inside of the cover that slot into indents on the sides of the chassis
- Two studs on the rear panel

Figure 18: Push Button (left and right side)



1. Metal catch
2. Push button

To open the cover, perform the following:

1. Place both thumbs in the indented thumb-holes on the cover (Figure 15, pos. 1) and index fingers on the push button on the left and right sides of the chassis (Figure 18, pos. 2).
2. Press the push button to release the metal catch (Figure 18, pos. 1) while putting pressure on both indented thumb-holes to move the cover (approximately 10 mm to 15 mm) towards the rear side of the chassis.
3. Lift the cover horizontally to release the cover.
4. To close the cover, performed in the reverse order.

When sliding the cover back onto the chassis, it may be required to lift the middle of the cover to enable the cover's four pins to slide onto the corresponding front plate holes.

7.3. Installing and Removing PCIe/PCI Expansion Cards (low profile variant)

ESD Sensitive Device!

Follow the safety instructions for components that are sensitive to electrostatic discharge (ESD). Failure to observe this warning notice can result in damage to the components

Consult the documentation provided by the PCIe/PCI expansion card's manufacturer for instructions before installing/removing the expansion card.

Insert a blank slot bracket into an empty expansion card slot and secure with screw.

Figure 19: Installing Low Profile Expansion Cards

1. 7x Slot bracket screws
2. 7x Slot bracket latches

To install a low profile expansion card, perform the following:

1. Switch off and disconnect the product from the mains power supply.
2. Remove the cover as described in Chapter 7.2: Opening and Closing the Cover.
3. Remove the required blank slot bracket's screw (Figure 19, pos. 1) and lift the slot bracket out of the latch (Figure 19, pos. 2). Retain the blank slot bracket with screw for later use.
4. Insert the expansion card carefully into the corresponding motherboard connector and position the expansion card's brackets into the latch (Figure 19, pos. 2) on the rear side of the chassis.
5. Secure the expansion card with screw (Figure 19, pos. 1).
6. Close and secure the cover as described in Chapter 7.2: Opening and Closing the Cover.
7. To remove an expansion card, perform the previous steps in the reverse order.

7.4. Installing and Removing PCIe Expansion Cards (riser card variant)

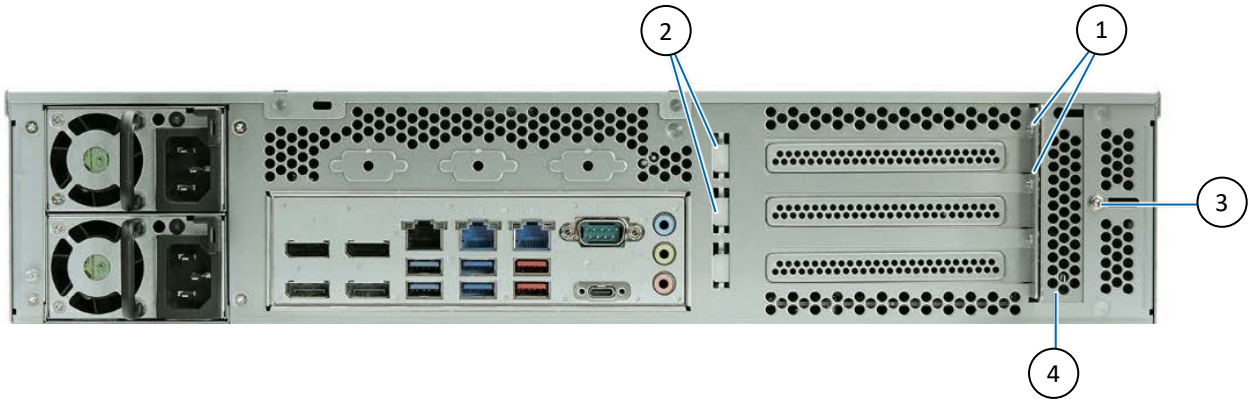
ESD Sensitive Device!

Follow the safety instructions for components that are sensitive to electrostatic discharge (ESD). Failure to observe this warning notice can result in damage to the components

Store the removed expansion card with the retained slot bracket screw.

Insert a blank slot bracket into an empty expansion card slot and secure with screw.

Figure 20: Installing Riser Card Expansion Cards



1. Riser card Slot bracket screws
2. Riser card Slot bracket latches
3. Sliding screw
4. Small rear side panel

To install an expansion card in the riser card, perform the following:

1. Switch off and disconnect the product from the mains power supply.
2. Remove the cover as described in Chapter 7.2: Opening and Closing the Cover.
3. Loosed the rear panel sliding screw (Figure 20, pos. 3) and move the small rear side panel (Figure 20, pos. 4) to the right side.
4. Remove the blank slot bracket screw (Figure 20, pos. 1) and lift the slot bracket out of the latch (Figure 20, pos. 2). Retain the blank slot bracket with screw for later use.
5. Insert the expansion card carefully into the corresponding riser card connector and position the expansion card's bracket into the latch (Figure 20, pos. 2).on the rear side of the chassis.
6. Secure the expansion card with screw (Figure 20, pos.1).
7. Slide the small rear side panel (Figure 20, pos. 4) to the original position and tighten the sliding screw (Figure 20, pos. 3) to secure the panel.
8. Close and secure the cover as described in Chapter 7.2: Opening and Closing the Cover.
9. To remove an expansion card, perform the previous steps in the reverse order.

7.5. Installing and Removing the Handle Brackets

To install or remove the handle brackets, proceed as follows:

1. Fasten the handle brackets to the left and right sides of the product securely, using the two screws provided.
2. To remove the handle brackets loosen the two screws that securely fasten the handle brackets to the left and right sides of the product. Retain the two screws with the handle brackets for later use.

Assemble the handle bracket on the side of the chassis or on the front flap side-plate. If front flap side-plates and the handle brackets are both installed they are fasten to the side of the chassis using the same screw.

7.6. Installing and Removing the Front Flap

To install or remove the front flap, proceed as follows:

1. Fasten the front flap side plates loosely with the two screws provided to the left and right sides of the product.
2. Positioning the front flap in the allocated opening on the front flap side plates and guiding the front flat arm into the corresponding slit on the front panel.
3. When the front flap is in position, fasten the two screws to secure the front flap side plates.
4. To remove the front flap perform the previous steps in the reverse order.

Assemble the front flap side-plate on the side of the chassis or between the chassis and the handle bracket. If the front flap side-plates and the handle brackets are both installed they are fasten to the side of the chassis using the same screw.

7.7. Installing the Rubber Feet

To install the supplied four rubber feet:

1. Switch off the product and disconnect it from the mains power supply. Disconnect all peripherals.
2. Ensure that all components are securely installed and that the cover is closed and secured.
3. Turn the product upside down, with the bottom side facing upwards.
4. Remove the protective film from the four self-adhesive rubber feet and attach each self-adhesive rubber foot to the four corners of the product's bottom side.
5. Return the product to the upright position with the cover facing upwards.

Always Install all four rubber feet.

Rubber feet are not required when installing the product in a 19" Industrial rack cabinet.

7.8. Installing Slide Rails

Kontron offers compatible 19" Slide Rails and Rack Slide Rails Kit for the KISS 2U V4 ADL. For more information, see Table 2: Accessories and Spares Parts.

⚠CAUTION

To support the products weight, two separate fixation methods must be used:

- Front handle brackets (left side, right side)
- Slide rails or L brackets or a 19" Industrial rack rear side fixation

Verify Secure Mounting

⚠CAUTION Mount using the slides rails on both the left and right sides and ensure the front handle brackets are fastened to the left and right sides of the 19” Industrial rack cabinet.

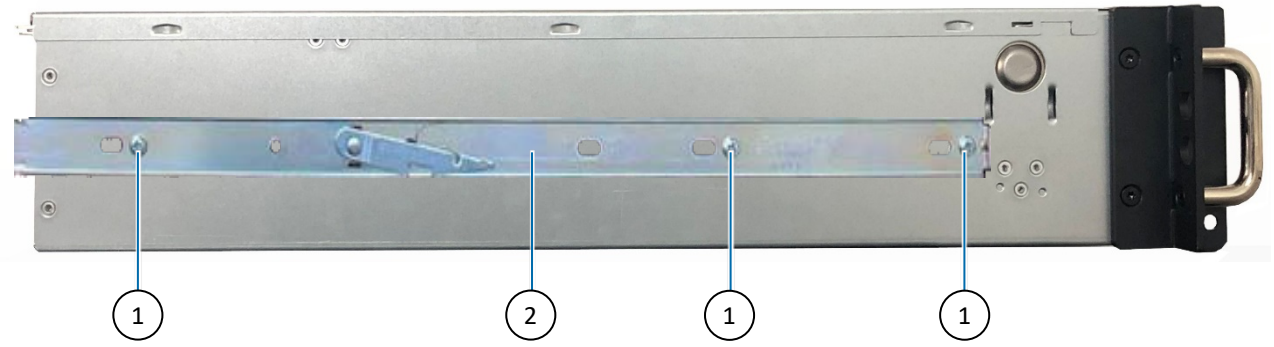
⚠CAUTION Use only the specified screws to attach the telescope slide rails to the product.

The left and right slide rails have the same design.

Figure 21: Slide Rail

1. Outer Slide rail part
2. Lock lever
3. Inner slide rail part

Figure 22: Attached Inner Slide Rail



1. 3x Screws
2. Inner slide rail part

To install the telescopic slide rails, perform the following:

1. Remove the inner part of the telescopic slide rail by releasing the locking lever (Figure 21, pos.2) and pulling out the inner part of the slide rail.
2. Attach the removed inner part of the telescopic slide rail to the left and right sides of the product using the supplied three screws (M4x6) screws (Figure 22, pos. 1).
3. To mount the product in a 19” Industrial rack cabinet (four-post rack), see Chapter 8.2: Mounting in a 19” Industrial Rack Cabinet.

To release the locking levers after attaching the inner slide rails to the product, push the left and the right locking lever in opposite directions.

8/Mounting

This chapter contains important information on how to mount the KISS 2U V4 ADL in a 19” Industrial rack and in customer specific environments.

8.1. Before Mounting

Before mounting the product, read the instructions in this chapter and observe the information in Chapter 2/: General Safety Instructions. Due to possible access restrictions, install all expansion cards and connect all peripherals before mounting the product.

⚠WARNING	The product must be installed only by trained personnel aware of the associated dangers.
⚠WARNING	**Ensure sufficient air circulation** Ensure the product is well ventilated and that nothing obstructs the product from taking in air at the front and exhausting air at the rear
⚠WARNING	Do not place the product close to heat sources or damp places.
⚠CAUTION	Due to the products weight, mounting the product alone may result in damage to the product or personal injury.
⚠CAUTION	Before connecting any I/O cables. Ensure that the product is switched off and the power cable is disconnected connected from the power connector or mains power.
⚠CAUTION	Mounting options for operated are horizontally and vertically.
⚠CAUTION	When connecting cables, following proper cabling procedures: › Grounding pin is connected first and disconnected last › Connect all I/O cables › Power connection is the last connection
	The product is designed for horizontal operation. Vertical operation is possible.
	Due to possible access restrictions, before installing the product install all expansion cards and connect required peripherals to the corresponding system port.

8.2. Mounting in a 19” Industrial Rack Cabinet

The product is designed for horizontal installation in a 19” industrial rack cabinet with the top cover facing upwards. There are no ventilation holes on the product’s top and bottom sides making the product idea for mounting directly on top of or below another other systems in the 19” industrial rack cabinet.

Ensure the 19” industrial rack cabinet is well ventilated and does not prevent the product from drawing in air at the front and exhausting air at the rear.

⚠CAUTION	To support the product's weight, two separate fixation methods must be used: › Front handle brackets (right side and left side) › Slide rails or L brackets or a 19" rack rear side fixation

⚠CAUTION	**Ensure Sufficient Airflow** Ensure that the 19" industrial rack cabinet is well ventilated and does not prevent the product from drawing in air at the front and exhausting air at the rear.

⚠CAUTION	Mount only in a stable 19" industrial rack and use proper installation procedures: › Mount systems from the bottom up › Place heavy systems lower down › Bolt the cabinet to the floor or anchor the cabinet to the wall

⚠CAUTION	**Verify Secure Mounting** In a 19" rack cabinet use two fixation methods: handle brackets (both left and right side) and a second fixation of either slide rails or L-brackets.

⚠CAUTION	Installing the product alone can result in product damage or personal injury.

	Due to possible access restrictions, before installing the product install all expansion cards and connect required peripherals to the corresponding system ports.

To install in a 19" industrial rack, proceed as follows

1. Switch off using the power button and disconnect the product properly from the mains power supply.
2. Install the inner slide rails to the product, see Chapter 7.8: Installing Slide Rails.
3. Attach the Rack Mount Brackets (from Kontron's slide Rail kit) to the left and right front and rear posts of the 19" industrial rack cabinet using the supplied four plates and 4 screws M6x10. Ensure that the mounting brackets are mounted in the same vertical position on all 4 posts in the 19" Industrial rack cabinet.
4. Attach the outer parts of the slide rails to the left and right posts of the 19" industrial cabinet using the rack mounting brackets. Mount the outer part of the slide rail using two countersunk head screws (M4x10) first at the front and then using two countersunk head screws (M4x10), at the rear of the 19" industrial cabinet.
5. Install the two handle brackets if not already assembled, see Chapter 7.5: Installing and Removing the Handle Brackets.
6. Insert the product's inner slide rails onto the mounted outer slide rails until the inner slide rail stops and a clicking sound is audible. During insertion, the locking lever must be unlocked! To unlock the locking lever push it up on the left side and push it downwards on the right side.
7. Secure the handle bracket to the front side posts of the 19" industrial rack cabinet with four cage nuts and screws (not included in the delivery). Due to the product's weight, always use four screws to provide full support.
8. Verify that the product is securely mounted.

8.3. Mounting on a Desktop

Before installing the product in a desktop environment, install the delivered rubber feet, to avoid scratching the installation surface. Additionally, observe the general instructions and any safety warnings within this chapter.

Voltage feeds must not be overloaded

⚠WARNING

Adjust the cabling and the external overcharge protection to correspond with the electrical data indicated on the type label located on right side of the chassis.

Ensure sufficient air circulation

⚠WARNING

Ensure that nothing obstructs the product from taking in air at the front and exhausting air at the rear.

To install in a desktop environment, proceed as follows:

1. Add the rubber feet as described in Chapter 7.7: Installing the Rubber Feet.
2. If required, remove the handle brackets as described in Chapter 7.5: Installing and Removing the Handle Brackets.
3. If required remove the front flap and two side panel plates as described in Chapter 7.6: Installing and Removing the Front Flap.

9/Starting Up

This chapter contains important information on how to connect to a power supply and start the KISS 2U V4 ADL.

9.1. Before Starting

Before starting up observe the instructions within this chapter and refer to Chapter 2/ General Safety Instructions.

⚠WARNING	**Energy hazards -240 VA present in the chassis** To switch off the product properly and ensure no energized internal parts, switch off the product using the power button on the front panel and disconnecting the product's power cable from the input power socket(s) or the mains power supply socket(s).
⚠WARNING	**Easy Access to Power Cable and Power Connectors** The power cable must always remain easily accessible. If the operating environment restricts power cable access, disconnection must be guaranteed using a separate cut-off fixture..
⚠WARNING	**Operate closed** Operate only with a closed and secured cover, to ensure that operators do not have access to energized internal parts.
⚠WARNING	Only use the AC power cable delivered with product and sufficiently rated for the implemented power supply.
⚠WARNING	Ensure that the mains power supply socket is grounded and the power cable is in perfect condition with no visible damage.
NOTICE	The rated mains voltage range must agree with the voltage specified on the type label.
NOTICE	Do not disconnect the power while the product is in operation. Performing a forced shut down can lead to loss of data or other undesirable effects!

9.2. Connecting the Power Supply

The input power socket is located on the rear panel.

Figure 23: Input Power Socket

1. Input power socket

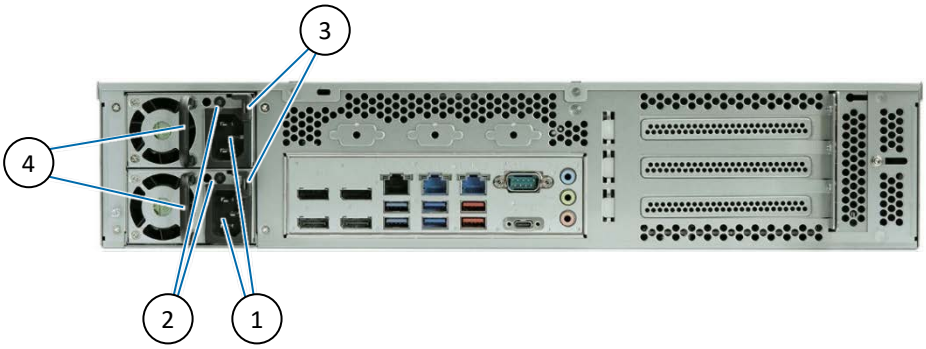
To connect the power, perform the following:

1. Connect the ends of the supplied AC power cable to the mains power supply socket (Figure 23, pos. 1) and the mains power supply socket using the electrical plug for the region.

9.3. Connecting to the Redundant Power Supply (option)

The redundant 550 W power supply contains two separate power supplies where each power supply is capable of powering the product alone. Each power supply connects, using a dedicated power cable, to the mains power supply. To ensure the power cables are not accidently removed from the input power sockets, cable clips hold the power connector firmly in place.
If a power supply fails, the faulty power supply shuts down and the functioning power supply takes over full operation, until the faulty power supply is replaced, see Chapter 13.8: Replacing a Faulty Redundant PSU Unit.

Figure 24: Redundant Power Sockets



1. Two input power sockets
2. Two indiation LED
3. Two input socket clip
4. Two removal and insertion handles

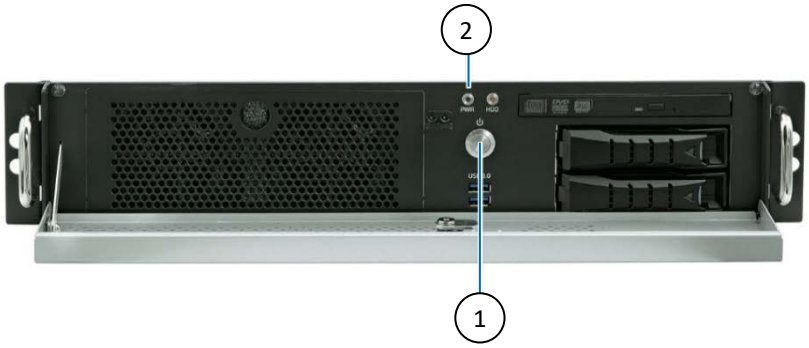
To connect to the redundant 550 W power supply, perform the following:

1. Connect both AC power cables (with the correct electrical plug for your region) to the mains power supply socket and input power socket (Figure 24, pos. 1).
2. Secure the AC power cables to the input power socket using the input socket clip (Figure 24, Pos. 3).

9.4. Switching On

To switch on the product, press the power button (Figure 25, pos. 1) and the power LED illuminates green to verify the product is active.

Figure 25: Power Button



1. Power button
2. Power LED

9.5. Operating System and Hardware Component Drivers

The product is fully operational when switched on for the first time with pre-installed Operating System (OS) Windows 10 IoT x64 or Linux and with all required drivers. Drivers are available from Kontron's Customer Section.

If ordered without pre-installed OS, before starting the product install the OS and the appropriate drivers for the system configuration. Consider the manufacturer's specifications for the OS and the integrated hardware components.

To download the relevant drivers for the installed hardware, visit Kontron's Customer Section.

Pay attention to the installed hardware component manufacturer's OS specification.

10/ BIOS

The KISS 2U V4 ADL uses the uEFI BIOS supported by the motherboard. This chapter informs operators how to start the BIOS, use the BIOS setup to configure, and perform a BIOS update.

uEFI only! No legacy support and no Master Boot Record (MBR) installation.

Only use the Kontron provided tools!

10.1. Starting the BIOS

To start the uEFI BIOS setup program, perform the following:

1. Power-up the product.
2. Wait until the first characters appear during the Power On Self-Test (POST) messages or splash screen.
3. Press the <DEL> or <F2> keys during the POST.
4. If the BIOS is password protected, enter the User Password or Supervisor Password, and press <RETURN> to start the BIOS.
5. The BIOS displays the Main setup menu.

If the <DEL> or <F2> key is not pressed the POST continues with the test routines.

10.2. BIOS Setup Menus

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 BIOS configuration. The setup program allows for access to various menus that provide functions or access to sub-menus with further specific functions. At the top of the displayed BIOS screen is the menu bar to the setup menus:

- Main
- Advanced
- H/W Monitor
- Security
- Boot
- Exit

To navigate between the setup menus use the BIOS navigation keys described in Chapter 10.3: BIOS Navigation

Observe that setting wrong values within the Advanced setup menu may cause the product to operate incorrectly.

10.3. BIOS Navigation

The uEFI BIOS uses a hot key navigation system. The hot key legend bar is located at the bottom of the BIOS setup screen and displays a list of keys used to move the cursor and select functions.

Table 11: Navigation Hot Keys in the Legend Bar

Key	Description
<F1>	Displays the 'General Help' window
<->	Selects the next lower value within a field
<+>	Selects the next higher value within a field
<F2>	Loads previous values
<F3>	Loads optimized defaults
<F4>	Saves and Exits
<→> or <←>	Moves cursor left or right to select the setup menu
<↑> or <↓>	Moves cursor up or down to select setup function or sub-screen
<ESC>	Exits a setup menu, enters the Exit setup menu or in a sub-menu enters the higher level menu
<RETURN>	Executes a command or selects a submenu

10.4. BIOS Update

To ensure compatibility with new OS, hardware, software or to integrate new BIOS functions, Kontron recommends regular BIOS updates. Additionally, if a problem cannot be solved using a new driver, Kontron recommends updating the BIOS.

10.5. Updating the BIOS

Before updating the BIOS, Kontron recommends making a backup of the current BIOS setting.

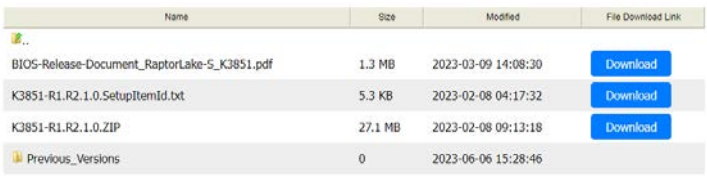
After a BIOS update, additional modifications must be made manually.

After a BIOS update If the product fails to boot, the updated BIOS maybe damaged.

The latest BIOS updates and BIOS release information for the product is available by accessing the Motherboard FTP server on Kontron's Customer Section Website by selecting **Motherboards & SBC > ATX > K3851-R ATX > Link to the FTP Server.**

The FTP server provides operators with downloads of the latest BIOS version and general BIOS information. Operators can choose the preferred method to update the BIOS and follow the instructions provided.

Figure 26: BIOS FTP Server



For the latest BIOS updates and BIOS release information, visit Kontron's Customer Section Website and select: Motherboards & SBC > ATX > K3851-R ATX > Link to the FTP Server.

10.6. Recover BIOS

	All BIOS settings and some data is lost during the BIOS recovery process!
	IMPORTANT: Do not interrupt power or press any key during update!
	If you experience any problems after a BIOS flash, try if “Load Optimized Default Values” (F3) in BIOS Setup solves the problem.

To recover BIOS perform the following:

1. Copy the complete content of BIOS ZIP package (K3851-R1.ROM file) to a FAT32 formatted USB drive/stick.
2. Connect the USB stick to the product. Disconnect all other drives
3. Change the recovery jumper to “Recovery position, orange” (Figure 29, pos. 2).
4. After switching on the product, the BIOS bootloader automatically initiates recovery and restores the BIOS contents from the ROM file.
5. System enters a “BIOS setup”-like user interface. Confirm “Proceed with flash update” message.
6. Wait until “Updating main firmware” indicates the success of the recovery procedure.
7. Set the recovery jumper back to the default position (Figure 29, pos. 1).
8. Press any key to reset and check if the BIOS is working properly.
9. Reconnect all drives and switch on the product.
10. Reconfigure the BIOS with your requirements.

11/ Product Specification

This chapter described the technical specifications of the KISS 2U V4 ADL.

11.1. Block Diagram

Figure 27: Block Diagram KISS 2U V4 ADL (low profile)

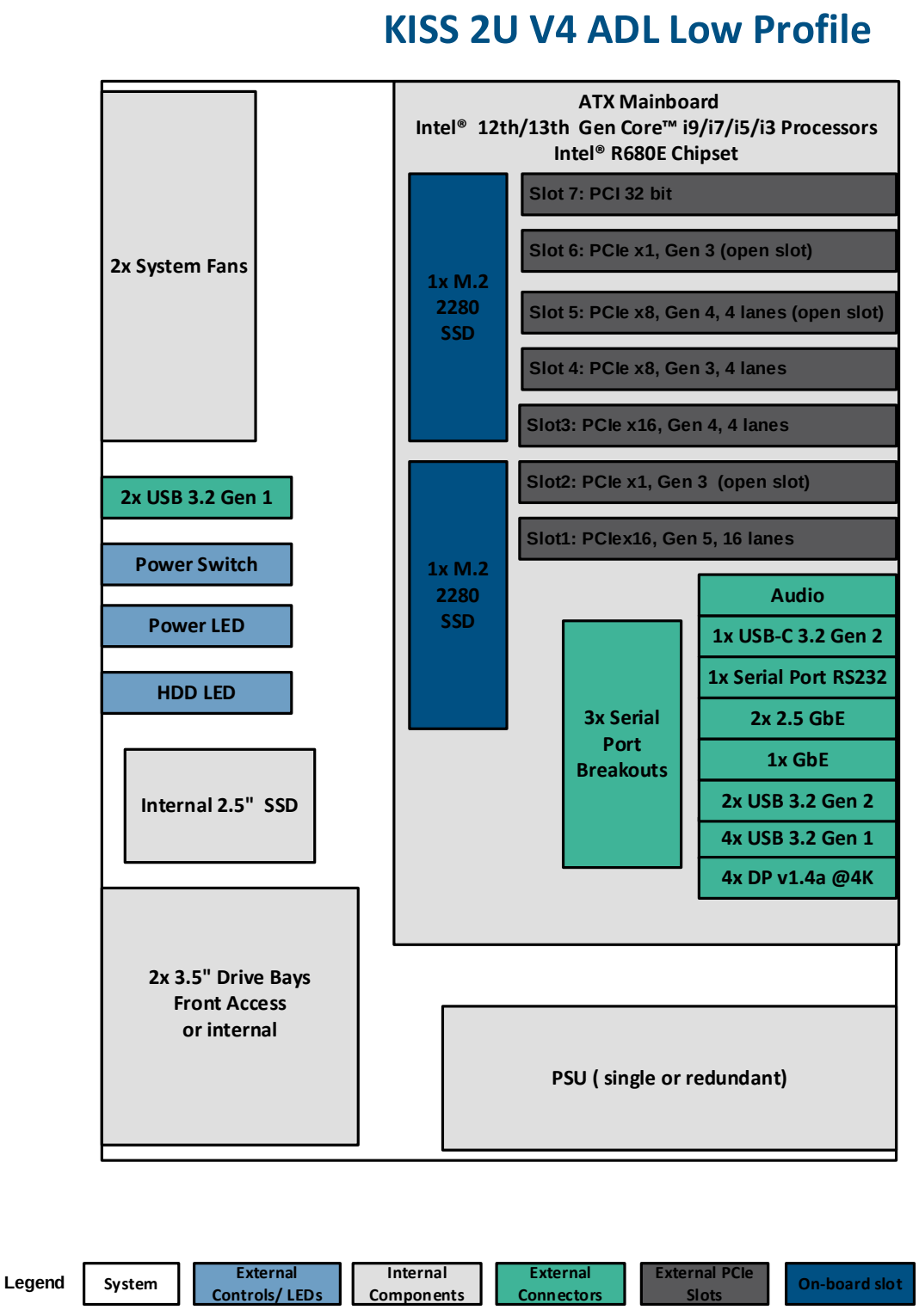
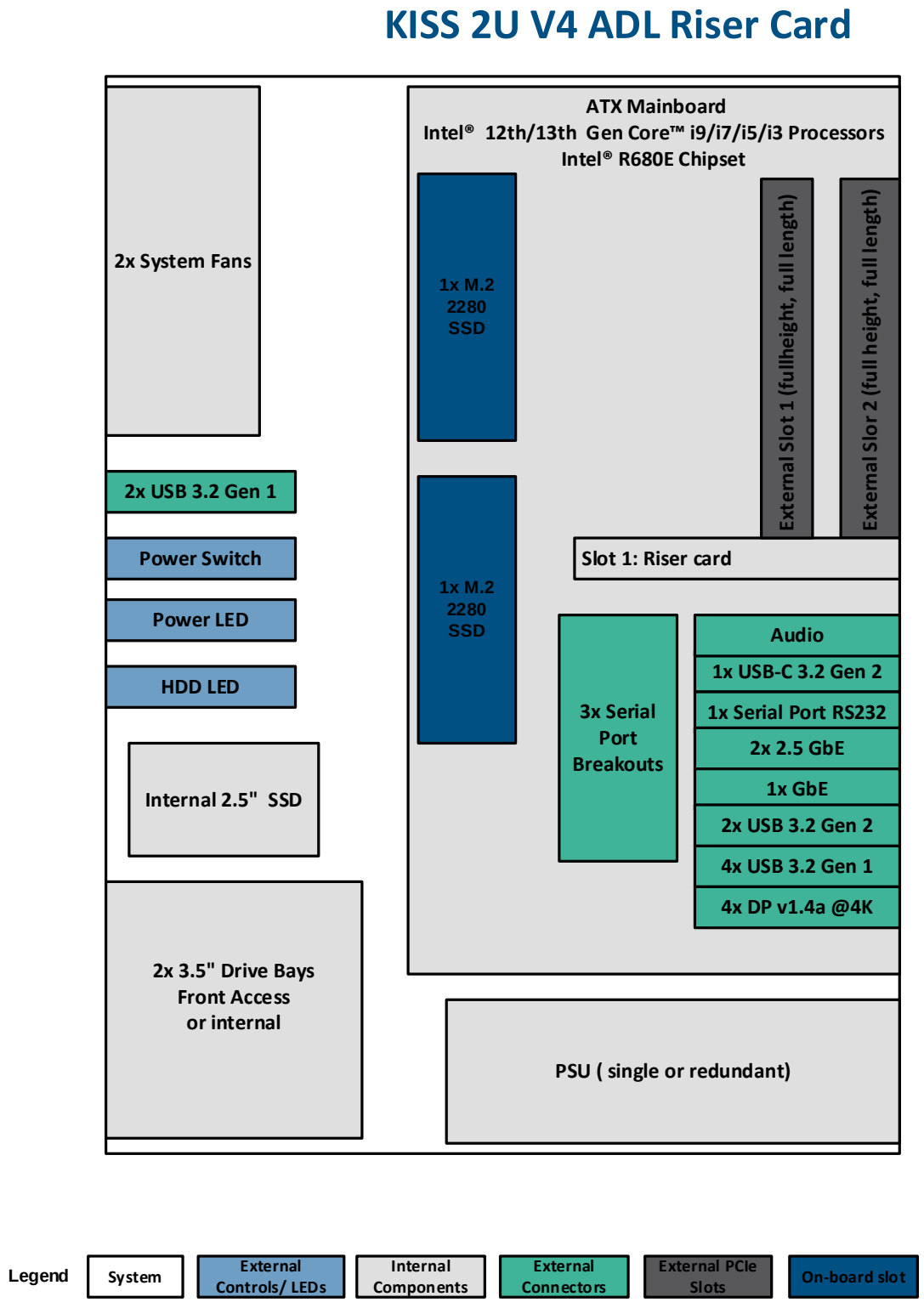


Figure 28: Block Diagram KISS 2U V4 ADL (riser card)



11.2. Hardware Specification

Table 12: Hardware Specification

Product	KISS 2U V4 ADL (low profile)			KISS 2U V4 ADL (riser card)	
Motherboard					
Type	K3851-R ATX				
Processor	Intel® 12th/13th Gen Core™ i9, i7, i5 und i3 Processors				
	Processor	**Cores**	**Base Frequency**	**Turbo Frequency**	**Base Power**
	i9-12900E	16	2.30 GHz	5.00 GHz max.	65 W
	i7-12700E	12	2.10 GHz	4.80 GHz max.	65 W
	i5-12500E	6	2.90 GHz	4.50 GHz max.	65 W
	i3-12100E	4	3.20 GHz	4.20 GHz max.	60 W
	i9-13900E	24	1.8 GHz	5.2 GHz max.	65 W
	i7-13700E	16	1.9 GHz	5.1 GHz max.	65 W
	i5-13500E	14	2.4 GHz	4.6 GHz max.	65 W
	i3-13100E	4	3.3 GHz	4.4 GHz max.	65 W
Chipset	Intel® R680E				
Memory	4x DIMM DDR5-4800, dual channel 128 GByte (max.) Unbuffered, ECC support				
Graphics	Intel® UHD Graphics 770 (i9, i7 und i5) Intel® UHD Graphics 730 (i3)				
M.2 Modules	2x 2280 Key M SSD Interface: NVMe				
Security	TPM V2.0 (Intel® integrated)				
RTC	Onboard RTC				
Front I/O					
USB	2x USB 3.2 Gen 1				
Drives					
Front Accessible	2x 3.5” drive bays › 1x 3.5” or › up to 2x 2.5” per drive bay with RAID Support 1x DVD R/W slim (option)				
Internal	1x 2.5” SSD Drive				
Rear I/O					
USB	4x USB 3.2 Gen 1 2x USB 3.2 Gen 2 1x USB-C 3.2 Gen 2				
LAN	1x 1 GbE (i219LM, with 10/100/1000 Mb/s, iAMT features) 2x 2.5 GbE (i225LM, with 10/100/1000/25000 Mb/s)				
Display	4x DP V1.4a @4K				
Audio	Line in Line out Microphone (stereo)				
Serial Port	1x RS232 3x RS232 (option)				

Product	KISS 2U V4 ADL (low profile)	KISS 2U V4 ADL (riser card)
Fan		
System Fan	2x System fans (removable and replaceable)	
Internal Fans	1xPSU (integrated in PSU) 1xCPU (heatsink with fan)	
Expansion Cards		
PCIe /PCI cards	Slot 1: 1x PCIe x16, Gen 5, 16 lanes Slot 2: 1x PCIe x1, Gen 3 (open) Slot 3: 1x PCIe x16, Gen 4, 4 lane Slot 4: 1x PCIe x8, Gen 4, 4 lanes Slot 5: 1x PCIe x8, Gen 3, 4 lanes (open) Slot 6: 1x PCIe x1, Gen 3 (open) Slot 7: 1x PCI 32 bit	2xPCIe x8 slots (full-height, full-length)

11.3. Software Specification

Table 13: Software Specification

Software	Description
BIOS	AMI Aptio 5.x UEFI BIOS
Operating System	Windows 10 64 bit LTSC Linux
Drivers	Necessary drivers provided by the 3rd party device supplier

UEFI only! No legacy support and no Master Boot Record (MBR) installation.

11.4. Power Specification

Before connecting the product to power, ensure that the power connection meets the required electrical specification for the product. The product's electrical specification is specified on the type label, see Figure 2: Type Label Examples.

Table 14: Electrical Specification

	PSU 400 W (default)	PSU 550 W (option)
Type	Industrial switching AC/DC PSU	Industrial switching redundant AC/DC PSU
Output Power	400 W	550 W
Input Voltage	240 V to 100 V (50 Hz to 60 Hz)	240 V to 100 V (50Hz to 60 Hz)
Input Current	3 A max. @ 240 V 6 A max. @ 100 V	4 A max. @ 240 V 8 A max. 100 V
Inrush Current		35 A max. @ 264 VAC
Ground (GND)	Signal ground connected to internal chassis ground	

WARNING

Energy hazards -240 VA present in the chassis

To switch off the product properly and ensure no energized internal parts, switch off the product using the power button on the front panel and disconnecting the product's power cable from the input power socket(s) or the mains power supply socket(s).

WARNING

Only use the AC power cable delivered with product and sufficiently rated for the implemented power supply.

WARNING

Easy Access to Power Cable and Power Connectors

The power cable must always remain easily accessible. If the end environment restricts access to power cable, disconnection must be guaranteed using a separate cut-off fixture.

WARNING

Operate closed

Operate only when the cover is closed and secured, to ensured that operators do not have access to energized internal parts.

WARNING

Ensure that the mains power supply socket is grounded and the power cable is in perfect condition with no visible damage.

NOTICE

The rated mains voltage range must agree with the voltage specified on the type label.

NOTICE

Do not disconnect the power from the product while the product is switched on!

Performing a forced shut down may lead to loss of data or other undesirable effects! Switch off using the power button to perform an orderly shutdown without data loss.

11.5. Environmental Specification

Table 15: Environmental Specification

Temperature		Description
Temperature	Operating	0°C to +50 °C (0°F to 122°F)
	Non-operating	-20°C to +70°C (-4°F to 158°F)
Relative Humidity	Operating	10-93 % @ 40° C, non-condensing
	Non-operating	
Altitude	Operating	5,000 m max. (16 400 ft.)
Shock according to EN 60068-2-27	Operating	15 g, 11 ms, Half sine , 3 axes
	Non-operating	30 g, 11 ms, Half sine, 3 axes
Vibration according to EN 60068-2-6	Operating	10–150 Hz, 1.0 g, Sinus, 3 axes
	Non-operating	10– 50 Hz, 2 g, Sinus, 3 axes
MTBF		50,000 h @ 30°C (min. configuration)

11.6. Mechanical Specification

Table 16: Mechanical Specification

Dimension	KISS 2U V4 (with handle brackets & front flap)	KISS 2U V4 (without handle brackets & front flap)
Form Factor	2U, 19” rack mount	
Dimension (H x W x D)	88 mm x 480 mm x 465 mm (2U x 19” x 18.31”)	88 mm x 430 mm x 445 mm (2U x 17” x 17.52”)
Material	Hot-dip zinc coated cold-rolled steel sheet	
Weight	8 kg approx. (17.64 Ibs approx.)	
Color	RAL 7035 except rear side	

For detailed mechanical dimensions, visit Kontron’s Customer Section.

11.7. Compliance

The KISS 2U V4 ADL plans to comply with the relevant requirements and the approximation of the laws relating to the CE Mark and the standards that are constitutional parts of the declaration.

Table 17: CE Compliance

Europe – CE Mark (Conformité Européenne)	
Directives	**2014/30/EU** Directive relating to electromagnetic compatibility **2014/35/EU** Directive relating to the making available on the market of electrical equipment designed for use within certain voltage limits **2011/65/EU** Directive relating to the restriction of the use of certain hazardous substances in electrical and electronic equipment
EMC	**EN 55032** Electromagnetic compatibility of multimedia equipment- Emission Requirements **EN 61000-3-2** Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase) **EN 61000-3-3** Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection **EN 55035** Information technology equipment- Immunity characteristics
Safety	**EN 62368-1** Audio/video, information and communication technology equipment - Part 1: Safety requirements

The KISS 2U V4-ADL plans to comply with the following country specific certifications:

Table 18: International Compliance

USA/CANADA-NRTL MARL	
Safety	**UL 62368-1 and CAN/CSA-C22.2 No. 62368-1** Audio/video, information and communication technology equipment - Part 1: Safety requirements

UKCA (UK Conformity Assessed)	
EMC	**BS EN 55032** Electromagnetic compatibility of multimedia equipment- Emission Requirements **BS EN 61000-3-2** Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase) **BS EN 61000-3-3** Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection **BS EN 55024** Information technology equipment- Immunity characteristics
Safety	**BS EN 62368-1** Audio/video, information and communication technology equipment - Part 1: Safety requirements

CB scheme (For International Certifications)	
Safety	**IEC 62368-1** Audio/video, information and communication technology equipment - Part 1: Safety requirements

If the product is modified, the prerequisites for specific approvals may no longer apply.

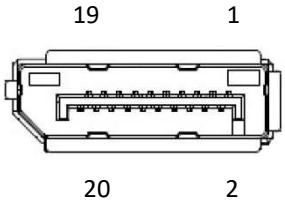
Kontron is not responsible for any radio television interference caused by unauthorized modifications of the delivered product or the substitution or attachment of connecting cables and equipment other than those specified by Kontron. The correction of interference caused by unauthorized modification, substitution or attachment is the operator's responsibility.

For additional information, visit Kontron's Customer Section.

12/ Standard Interfaces- Pin Assignment

12.1. DP Port Pin Assignment

Table 19: DP V1.4a Pin Assignment

Pin	Signal Name	Pin	Signal Name	DPP (V1.4) Connector
1	Link0+	2	GND	
3	Link0-	4	Link1+	
5	GND	6	Link1-	
7	Link2+	8	GND	
9	Link2-	10	Link3+	
11	GND	12	Link3-	
13	DVI dongle detect	14	CEC (for HDMI)	
15	AUX+	16	GND	
17	AUX-	18	Hotplug detect	
19	GND (Return)	20	+3.3 V [1]	

[1] Fuse protected

All DP output ports are equivalent and support DP++.

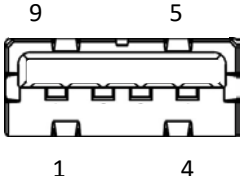
Display Port adapters:

- DP to HDMI (passive / active)
- DP to DVI (passive / active)
- DP to VGA (active)

12.2. USB 3.2 Gen 2/1 Pin Assignment

USB 3.2 Gen 2 and USB 3.2 Gen 1 ports are backwards compatible with USB 2.0

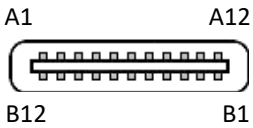
Table 20: USB 3.2 Gen 2 Pin Assignment

Pin	Signal Name	Pin	Signal Name	USB 3.2 Gen 2 Type A Connector
1	VCC (+5V)[1]	5	USB3_RX-	
2	USB2_D-	6	USB3_RX+	
3	USB2_D+	7	GND	
4	GND	8	USB3_TX-	
		9	USB3_TX+	

[1] fuse protected with a 2 A common fuse, with a max. current of 900 mA per port

12.3. USB-C 3.2 Gen 2 Port Pin Assignment

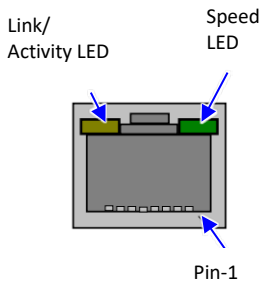
Table 21: USB 3.2 Gen 2 Type C Pin Assignment

Pin-A	Signal Name	Pin-B	Signal Name	USB 3.2 Gen 2-C Type Connector
1	GND	12	GND	
2	USB3_TX1+	11	USB3_RX+	
3	USB3_TX1-	10	USB3_RX1-	
4	VCC	9	VCC	
5	CC1[1]	8	SBU2[2]	
6	USB2_Data1+	7	USB2_Data2-	
7	USB2_Data1-	6	USB2_Data2+	
8	SBU1[2]	5	CC2[1]	
9	VBUS Power	4	VBUS Power	
10	USB3_RX2-	3	USB3_TX2-	
11	USB3_RX2+	2	USB3_TX2+	
12	GND	1	GND	

[1] Configuration channel
[2] Sideband use

12.4. 2.5 GbE/1.0 GbE Pin Assignment

Table 22: LAN (RJ45) Connector Pin Assignment

Pin	Signal Name (10/100/1000/2500 Mbps)	Signal Name (10/1000 Mbps)	RJ45 (female) Connector
1	MX1+	TX+	
2	MX1-	TX-	
3	MX2+	RX+	
4	MX3+		
5	MX3-		
6	MX2-	RX-	
7	MX4+		
8	MX4-		

Link/Activity LED		Speed LED	
LED Status	Description	LED Status	Description
Green	Link	Off	100 Mb or 10 Mb
Green (blinking)	Activity	Yellow	1.0 GbE
		Green	2.5 GbE

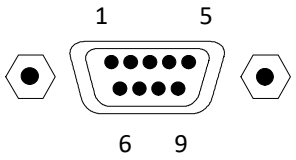
The 2.5 GbE LAN “Activity LED” remain active even if the LAN controller is disabled in the BIOS Setup.

LAN Cabling

- 1000Base-T CAT 5E/6 or higher up to 100m
- 100Base-T CAT 5/5E/6 or higher up to 100m
- 10Base-T CAT 3/4/5/5E/6 or higher up to 100m

12.5. COM Port Pin Assignment

Table 23: RS232 Connector Pin Assignment

Pin	RS232	D89 Connector
1	DCD	
2	RxD	
3	TxD	
4	DTR	
5	GND	
6	DSR	
7	RTS	
8	CTS	
9	RI	

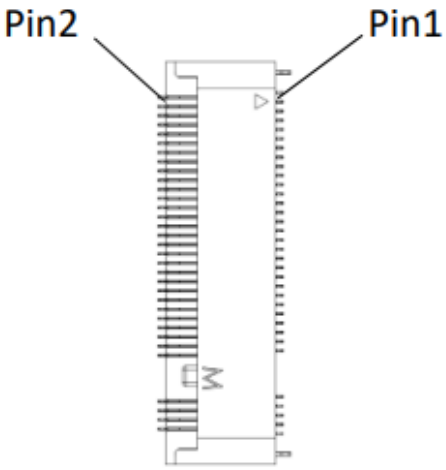
12.6. Audio Jack Connector Pin Assignment (Line-in, Line-out, Mic-in)

Table 24: Audio Jack Pin Assignment

Jack	Position	Signal Name	Description
Blue	Top	Line-in	Line input
Green	Middle	Line-out	Headphone output
Pink	Bottom	Mic-in	Microphone input

12.7. M.2 Key M (NVME SSD) Socket Pin Assignment

Table 25: M.2 Key M Socket Pin Assignment

Pin	Signal Name	Pin	Signal Name	M.2 Key M
1	GND	2	+3.3V	
3	GND	4	+3.3V	
5	PCIe RX 3-	6	NC	
7	PCIe RX 3+	8	NC	
9	GND	10	LED SSD	
11	PCIe TX 3-	12	+3.3V	
13	PCIe TX 3+	14	+3.3V	
15	GND	16	+3.3V	
17	PCIe RX 2-	18	+3.3V	
19	PCIe RX 2+	20	NC	
21	GND	22	NC	
23	PCIe TX 2-	24	NC	
25	PCIe TX 2+	26	NC	
27	GND	28	NC	
29	PCIe RX 1-	30	NC	
31	PCIe RX 1+	32	NC	
33	GND	34	NC	
35	PCIe TX 1-	36	NC	
37	PCIe TX 1+	38	NC	
39	GND	40	NC	
41	PCIe RX 0-	42	NC	
43	PCIe RX 0+	44	NC	
45	GND	46	NC	
47	PCIe TX 0-	48	NC	
49	PCIe TX 0+	50	PERST#	
51	GND	52	CLKREQ#	
53	REFCLK-	54	(reserved)	
55	REFCLK+	56	NC	
57	GND	58	NC	
59-65	Key M (no pin)	60-66	Key M (no pin)	
67	NC	68	NC	
69	NC	70	+3.3V	
71	GND	72	+3.3V	
73	GND	74	+3.3	
75	GND			

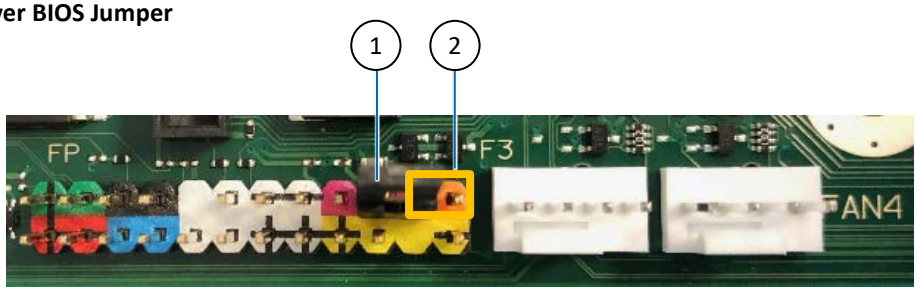
Supports PCIe x4 (Gen4) for NVME SSD modules. Mechanical support for 2230, 2242, and 2280 modules. SATA mode is not supported!

12.8. Jumpers

12.8.1. Recover BIOS Jumper

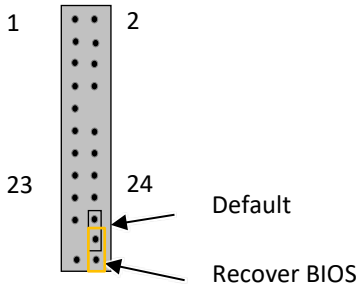
The recover BIOS Jumper is located on the motherboard's front panel header. To recover the BIOS, move the recover BIOS jumper from the default position (Figure 29, pos. 1) to the recover BIOS position (Figure 29, pos. 2) on the front panel header.

Figure 29: Recover BIOS Jumper



1. Default jumper setting
2. Recover position (orange)

Table 26: Recover BIOS Jumper

Pins	State	24-pin Front Panel Header
20-22	Default	
22-24	Recover BIOS	

For further motherboard information, visit Kontron's K3851-R ATX motherboard website.

13/ Maintenance and Prevention

Maintenance or repair may only be carried out by Kontron authorized qualified personnel. The KISS 2U V4-ADL only require minimal maintenance and care to keep them operating correctly. Clean the air filter pad regularly (as often as necessary), the time-period will depend on the level of contaminates with in the operating environment.

13.1. Before Maintaining the Product

The product requires only minimal maintenance and care to maintain correct operation. Before maintaining the product, switch off the product properly.

Energy hazards -240 VA present in the chassis

⚠WARNING

To switch off the product properly and ensure no energized internal parts, switch off the product using the power button on the front panel and disconnecting the product's power cable(s) from the input power socket(s) or the mains power supply socket(s).

13.2. Cleaning the Product

To clean the product wipe the product with a soft dry cloth and if required to remove persistent dirt use a soft, slightly damp cloth (only use a mild detergent).

NOTICE

Do not use steel wool, metallic threads or solvents like abrasives, alcohol, acetone or benzene when cleaning the product.

13.3. Cleaning the Filter Pad

The filter pad is soiled by pollution within the operating environment. To replace the filter pad no tools are required. The magnetic filter pad door on the front side of the fan assembly hold the filter pad in position. Clean the filter pad when clogged with dust or dirt to prevent excessive heating of the product and ensure adequate ventilation. The cleaning frequency, depends on the level of contaminates within the operating environment. The filter pad can be changed during operation.

⚠CAUTION

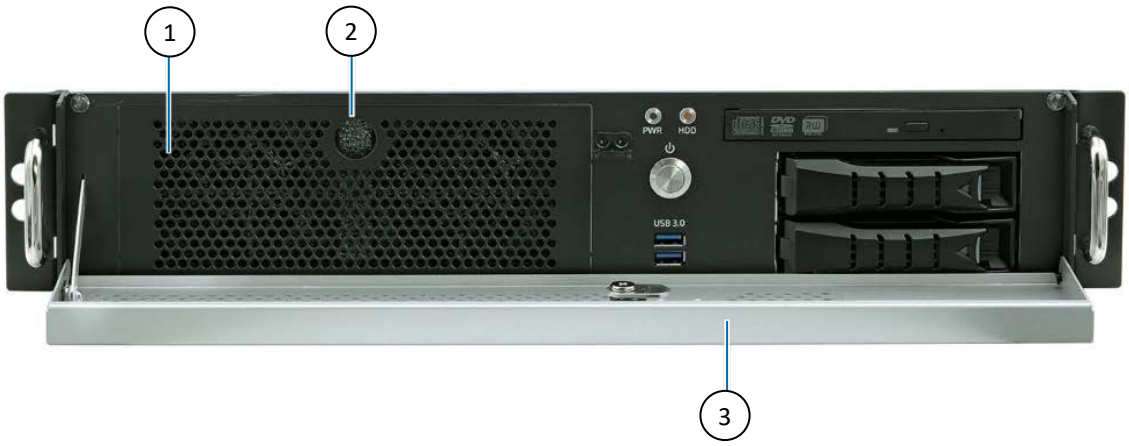
Clean the air filter pad regularly (as often as necessary), time-period will depend on the level of contaminates with in the operating environment.

⚠CAUTION

Operation is permitted only with a functional fan assembly!
Replace a defective fan assemble only with an original fan assembly.

The magnetic filter pad door can be fasten to the front side of the fan assembly either before or after the fan assembly is installed in the chassis.

Figure 30: Removing the Filter Pad



1. Magnetic filter pad door with filter pad behind
2. Filter pad door's opening
3. Front flap

To remove and clean or replace the filter pad, perform the following:

1. Open the front flap (Figure 30, pos. 3)
2. Release the magnetic filter pad door from the main chassis by placing a finger in the door's opening (Figure 30, pos. 2) and pulling the door away from the main chassis.
3. Remove the filter pad from the magnetic filter pad door.
4. Clean the filter pad by performing the following instructions:
   - Rinse the filter pad in water (up to approx. 40°C/104°F; with a mild commercial detergent).
   - Alternatively, beat the filter pad, suction clean the filter pad, or blast the filter pad with warm compressed air.
   - If clogged with grease and dust, rinse the filter pad in warm water with a degreaser.
   - Do not clean the filter pad with a piercing jet of water.
   - Do not wring out the filter pad allow the filter pad to air dry.
5. Dry the filter pad, before inserting the filter pad into the magnetic filter pad door.
6. Insert the cleaned filter pad into the magnetic filter pad door.
7. Position the magnetic filter pad door on the main chassis, the door is magnetic and required no assembly.

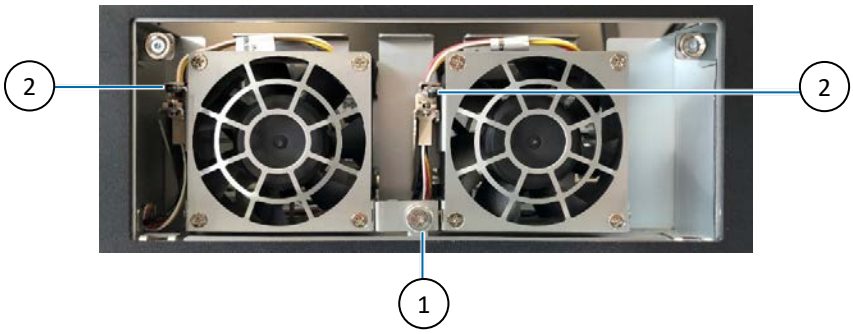
13.4. Replacing the System Fans

⚠CAUTION	Operation is permitted only with functional fans! Replace a faulty system fan unit only with an original Kontron spare part, see Table 2: Accessories and Spares Parts.
⚠CAUTION	Replace fan only by qualified specialist or a suitably instructed persons aware of the associated dangers. Before removing the fan assembly, wait until the fans have totally stopped. Keep hands and fingers away from rotating fan parts.
	The two system fans are hot-swappable, enabling the replacement during operation.

The two system fans units are replaced separately.

No tools are required to replace the system fans.

Figure 31: Removing a System Fan



1. Fan bracket knurled screw
2. 2x Fan connectors

To replace the factory installed system fan(s), perform the following:

1. Release the magnetic filter pad door from the main chassis by placing a finger in the door's opening (Figure 30, pos. 2) and pulling the door away from the main chassis.
2. Loosen the knurled screw on the fan bracket (Figure 31, pos. 1).
3. Remove the faulty system fan unit by releasing the system fan unit from the fan connector (Figure 31, pos. 2).
4. Replace the system fan unit with a Kontron spare part by connecting the system fan unit to the fan connector (Figure 31, pos. 2).
5. Replace the fan bracket and tighten the knurled screw (Figure 31, pos. 1).
6. Reinstall the filter pad door on the main chassis, the filter pad door is magnetic and snaps into place.

13.5. Replacing the Lithium Battery

Energy hazards -240 VA present in the chassis

⚠WARNING

To switch off the product properly and ensure no energized internal parts, switch off the product using the power button on the front panel and disconnecting the product's power cable(s) from the input power socket(s) or the mains power supply socket(s).

⚠CAUTION

CAUTION: Risk of Explosion if the lithium battery is replaced by an incorrect type. Dispose of used lithium batteries according to the Instructions.

ATTENTION: Risque d'explosion si la pile au lithium est remplacée par une pile de type incorrect. Éliminez les piles au lithium usagées conformément aux instructions.

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

Replaced the lithium battery only with the same type of battery or with a type of battery recommended by Kontron.
To replace the factory installed lithium battery (CR2032) on the motherboard, perform the following:

1. Switch off and disconnect the product properly from the mains power supply.
2. Open the cover see Chapter 7.2: Opening and Closing the Cover.
3. Remove the lithium battery (Figure 17, pos. 4) from the battery holder by pushing the ejector spring outwards.
4. Place the new lithium battery in the battery holder while paying attention to the polarity.
5. Close the cover see Chapter 7.2: Opening and Closing the Cover.

13.6. Replacing the Internal 2.5” SSD Drive

Energy hazards -240 VA present in the chassis

WARNING

To switch off the product properly and ensure no energized internal parts, switch off the product using the power button on the front panel and disconnecting the product’s power cable(s) from the input power socket(s) or the mains power supply socket(s).

After installing or removing a SSD drive, memory partitioning maybe different and require repartitioning.

To replace or exchange the factory installed internal 2.5” SSD drive, perform the following:

1. Switch off and disconnect the product properly from the mains power supply.
2. Open the cover, see Chapter 7.2: Opening and Closing the Cover.
3. Locate the 2.5” SSD drive within the chassis (Figure 17, pos. 11).
4. Disconnect the SATA data and SATA power cables from the 2.5” SSD drive.
5. Remove the four screws securing the 2.5” SSD drive to the metal bracket. Retain the four screws for later use.
6. Position the new 2.5” SSD in the metal bracket and secure with the four screws retained in step 5.
7. Attach the SATA data and SATA power cables to the 2.5” SSD drive.
8. Close the cover see Chapter 7.2: Opening and Closing the Cover.

13.7. Replacing a M.2 SSD Module

Energy hazards -240 VA present in the chassis

WARNING

To switch off the product properly and ensure no energized internal parts, switch off the product using the power button on the front panel and disconnecting the product’s power cable(s) from the input power socket(s) or the mains power supply socket(s).

Do not use force when fastening the M.2 screw

NOTICE

Recommended torque for the M.2 screw is 0.2 Nm, and 0.3 Nm for the nut.

Max. torque must not be exceeded, otherwise the motherboard (solder nuts) may be damaged.

After installing or removing a SSD drive, memory partitioning maybe different and require repartitioning.

To replace or exchange a factory installed M.2 SSD module, perform the following:

1. Switch off and disconnect the product properly from the mains power supply.
2. Open the cover, see Chapter 7.2: Opening and Closing the Cover.
3. Locate the corresponding M.2 SSD module (Figure 17, pos. 10).
4. Release the screw fastening the M.2 SSD module to the motherboard. Retain the screw for later use.
5. Removed the M.2 SSD module by carefully holding the module's sides while pulling the module out of the socket.
6. Insert a new M.2 SSD module by carefully holding the module's sides while pushing the module into the socket at an angle (approx. 30°).
7. Fasten the M.2 SSD module by pushing down on the module's free end until the module's screw hole aligns with the motherboard and secure with the screw removed in step 4. The recommended torque for the M.2 screw is 0.2 Nm, and 0.3 Nm for the nut. The maximum torque must not be exceeded; otherwise, the motherboard (solder nuts) may be damaged.
8. Close and secure the cover, see Chapter 7.2: Opening and Closing the Cover.

13.8. Replacing a Faulty Redundant PSU Unit

If one of the PSUs fails, the faulty PSU shuts down and the indication LED changes color from green (active) to red (faulty). The functional PSU takes over the full operation of the product until the faulty PSU is replaced.

AC Power cable

⚠WARNING

Only use the AC power cable(s) delivered with product and sufficiently rated for the implemented power supply.

The redundant PSU enables hot swap of faulty PSU units.

To replace a faulty redundant PSU unit, perform the following:

1. Locate the faulty PSU unit (Figure 24, pos. 2) with the illuminated indication LED and consider the fault, see Table 6: Redundant PSU LED Description.
2. Remove the faulty PSU unit's power cable from the socket (Figure 24, pos. 1) by pushing the cable holder clip (Figure 24, pos. 3) slightly to the side and pulling out the power connector.
3. Remove the faulty PSU unit by pulling out using the unit's handle (Figure 24, pos. 4).
4. Insert the replacement PSU unit using the unit's handle (Figure 24, pos. 4).
5. Insert the power cable remove in step 2 into the new PSU unit's socket (Figure 24, pos. 1) until the cable holder clip (Figure 24, pos. 3) clicks to indicate that the cable is firmly in place.
6. Check that the indication LED lights (Figure 24, pos. 2) indicates active operation and not a fault.

14/ Technical Support

For technical support contact our Support Department:

- E-mail: support@kontron.com
- Phone: +49-821-4086-888

Make sure you have the following information available when you call:

- Product ID Number (PN),
- Serial Number (SN)

The serial number can be found on the Type Label, located on the product's rear side.

Be ready to explain the nature of your problem to the service technician.

14.1. Returning Defective Merchandise

All equipment returned to Kontron must have a Return of Material Authorization (RMA) number assigned exclusively by Kontron. Kontron cannot be held responsible for any loss or damage caused to the equipment received without an RMA number. The buyer accepts responsibility for all freight charges for the return of goods to Kontron's designated facility. Kontron will pay the return freight charges back to the buyer's location in the event that the equipment is repaired or replaced within the stipulated warranty period.

Follow these steps before returning any product to Kontron.

1. Visit the RMA Information website: http://www.kontron.com/support-and-services/support/rma-information.
2. Download the RMA Request sheet for Kontron Europe GmbH and fill out the form. Take care to include a short detailed description of the observed problem or failure and to include the product identification Information (Name of product, Product number and Serial number). If a delivery includes more than one product, fill out the above information in the RMA Request form for each product.
3. Send the completed RMA-Request form to the fax or email address given below at Kontron Europe GmbH. Kontron will provide an RMA-Number.
4. Kontron Europe GmbH
   RMA Support
   Phone: +49 (0) 821 4086-0
   Fax: +49 (0) 821 4086 111
   Email: service@kontron.com
5. The goods for repair must be packed properly for shipping, considering shock and ESD protection.

Goods returned to Kontron Europe GmbH in non-proper packaging will be considered as customer caused faults and cannot be accepted as warranty repairs.

6. Include the RMA-Number with the shipping paperwork and send the product to the delivery address provided in the RMA form or received from Kontron RMA Support.

15/ Warranty

Due to their limited service life, parts that by their nature are subject to a particularly high degree of wear (wearing parts) are excluded from the warranty beyond that provided by law. This applies to the CMOS battery, for example. Kontron defines product warranty in accordance with regional warranty definitions. Claims are at Kontron's discretion and limited to the defect being of a material nature.

To find out more about the warranty conditions and the defined warranty period for your region, following the steps below:

1. Visit Kontron's Term and Conditions webpage: http://www.kontron.com/terms-and-conditions
2. Click on your region's General Terms and Conditions of Sale.

15.1. Limitation/Exemption from Warranty Obligation

In general, Kontron shall not be required to honor the warranty, even during the warranty period, and shall be exempted from the statutory accident liability obligations in the event of damage caused to the product due to failure to observe the following:

- General safety within this user guide
- Warning labels on the product and warning symbols within this user guide
- Information and hints within this user guide

Additionally, alterations or modifications to the product that are not explicitly approved by Kontron, described in this user guide, or received from Kontron Support as a special handling instruction will void your warranty.

Due to their limited service life, parts that by their nature are subject to a particularly high degree of wear (wearing parts) are excluded from the warranty beyond that provided by law.

16/ Disposal

16.1. 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.

16.1.1. 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

16.2. Data Sanitization of non-Volatile Storage Devices

When a non-volatile storage device is simply erased, data can be recovered using forensic tools. Data sanitization permanently deletes or destroys data so that no data remains on the storage device and ensures that data cannot be recovered even when using advanced forensic tools.

When erasing a storage device for reuse or when decommissioning a Kontron product, the user is responsible for ensuring that all non-volatile storage devices that are part of the product have been sanitized. This ensures that all sensitive data stored on the storage device cannot be recovered by a third party.

Appendix: List of Acronyms

ATX	Advanced Technology eXtended
BIOS	Basic Input Output System
COM	Communication port
CPU	Central Processing Unit
DC	Direct Current
DDR	Double Data Rate
DIMM	Dual Inline Memory Module
DP	Display port
DVD	Digital Video Device
DVI	Digital Video Interface
ECC	Error Checking and Correction
EMC	Electromagnetic Compatibility
ESD	ElectroStatic Dischange
GbE	Giga bit Ethernet
HD/HDD	Hard Disk /Drive
IOT	Internet of Things
LAN	Local Area Network
LED	Light-Emitting Diode
LVD	Low Voltage Directive
M-ATX	Micro Advanced Technology eXtended
OCP	Over Current protection
OS	Operating System
OVP	Over Volatge Protection
PCI	Peripheral Component Interconnect
PCIe	PCI-Express
PICMG®	PCI Industrial Computer Manufacturers Group
PSU	Power Supply Unit
PXE	Pre eXecution Environment
RAM	Random Access memory
REACH	Registration, Evaluation, Authorization and restriction of Chemicals
RMA	Return of Material Authorization
RTC	Real Time Clock
SBC	Single Board Computer

SSH	Secure Shell
TCG	Trusted Computer Group
TFTP	Trivial File Transfer Protocol
TPM	Trusted Platform Module
UDIMM	Unregisterd DIMM
UEFI	Unified Extensible Firmware Interface
USB	Universal Serial Bus
UVP	Under Voltage Protection
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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The Power of IoT