KISS 1U V4 ADL

User Guide Rev. 1.0

Doc. ID 1073-6888

kontron
The Power of IoT

This page has been intentionally left blank

KISS 1U V4 ADL – User Guide

Disclaimer

Kontron would like to point out that the information contained in this user guide may be subject to alteration, particularly as a result of the constant upgrading of Kontron products. This document does not entail any guarantee on the part of Kontron with respect to technical processes described in the user guide or any product characteristics set out in the user guide. Kontron assumes no responsibility or liability for the use of the described product(s), conveys no license or title under any patent, copyright or mask work rights to these products and makes no representations or warranties that these products are free from patent, copyright or mask work right infringement unless otherwise specified. Applications that are described in this user guide are for illustration purposes only. Kontron makes no representation or warranty that such application will be suitable for the specified use without further testing or modification. Kontron expressly informs the user that this user guide only contains a general description of processes and instructions which may not be applicable in every individual case. In cases of doubt, please contact Kontron.

Kontron Europe GmbH
Gutenbergstraße 2
85737 Ismaning
Germany
www.kontron.com

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	2024-Jul-23	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.

Table of Contents

List of Tables

List of Figures

1/Introduction

This user guide focuses on describing the special features of the KISS 1U V4 ADL made by Kontron and referred to as product within this user guide. The KISS 1U V4 ADL expands the Kontron KISS computer line. Kontron recommends operators to study the instructions within this user guide before switching on the power.
The KISS 1U V4 ADL is a scalable 1U rackmount system designed for high performance, reliability and total flexibility, in a compact design with a low noise level for installation within a 19" industrial rack or on a desktop. Based on Kontron's mini-ITX motherboard designed and manufactured in Germany that supports Intel's® 12th /13th Generation Core™ i3-i9 processors. The motherboard is equipped with the Intel® Q670E chipset and offers two DIMM sockets for high-performance DDR5 memory with up to 64 GBytes. Fast NVMe SSDs and an internal 2.5-inch SDD drive are used as storage. In addition, the product offers an easily accessible drive bay, allowing for up to two 2.5-inch SSD (supporting RAID) or one 3.5-inch HDD drive.
The product supports multiple external interfaces with ten USB ports, two GbE ports for up to 2.5 GbE, and four Display Ports (DP) enabling the connection of up to four monitors. System expansion can be achieved using a full-height, full-length PCIe card.
The flexible customer-specific hardware system configuration and the robust construction with excellent mechanical stability offers the superior qualities of a computer designed for operation in harsh industrial environment.

Figure 1: KISS 1U V4 ADL

General KISS 1U V4 ADL features are:

- mini-ITX motherboard K3833-Q
  - Intel® Core ™ i3/i5/i7/i9 series, 12th/13th Generation processors
  - Intel® Q670E Express chipset
- System Memory
  - Up to 64 GB memory with 2x DDR5 SODIMM
- Storage
  - 1x M.2 2242 SSD module
  - 1x 2.5" SDD drive (internal)
- Drive Bay
  - 1x 3.5" HDD or up to 2x 2.5" SSD (RAID supported)
- Expansion Slot
  - 1x PCIe x16 slot for full-height, full-length PCIe cards
- Rear Interfaces
  - 3x USB 3.2 Gen 2, 1x USB-C 3.2 Gen 2, 2x USB 3.2 Gen 1, 2x USB 2.0
  - 4x DP V1.4a
  - 1x 1 Gb Ethernet, 1x 2.5 Gb Ethernet
  - 1x COM RS 232 serial port
  - 1x Audio (line-in and line-out)
- Front Interfaces
  - 2x USB 3.2 Gen 1
- Active Cooling
- Power Supply
  - 100 VAC to 240 VAC, 400 W PSU

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 lithium battery is replaced incorrectly (short-circuited, reverse-poled, wrong lithium battery type). Dispose of used lithium 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 functional earth 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 disconnect able
- 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.

For the General Safety Instruction in German or French, visit Kontron's product web page> Downloads> Manuals> General Safety Instructions.

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 en cas de remplacement incorrect de la pile au lithium (court-circuit, inversion de polarité, mauvais type de pile au lithium). Éliminez les piles au lithium 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 à la terre fonctionnelle fiable 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 or micro-circuitry. Therefore, proper packaging and grounding techniques are necessary precautions to prevent damage.
Always take the following precautions:

ESD Sensitive Device!
Keep electrostatic sensitive parts in their containers until they arrive at the ESD-safe workplace. Always be properly grounded when touching a sensitive board, component, or assembly.

For more Information, see Chapter 2/: General Safety Instructions and Chapter 2.3: Grounding Methods.

2.3. Grounding Methods

The following measures help to avoid electrostatic damages to the device:

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

2.4. Instructions for Lithium Battery

The product is equipped with a lithium battery, there is a risk of explosion if the lithium battery is replaced incorrectly (short-circuited, reverse-poled, wrong lithium battery type).

Dispose of used batteries according to the manufacturer's instructions. For more information, see Chapter 13.5: Replacing the Lithium Battery.

⚠CAUTION	Risk of Explosion if the lithium battery is replaced by an incorrect type. Dispose of used 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

	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).

3/Shipment and Unpacking

3.1. Packaging

The KISS 1U V4 ADL is packaged together with all parts, in a product specific cardboard package designed to provide adequate protection and absorb shock.

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 shipping damage or inconsistencies between the contents and the original order, contact your dealer.

3.3. Scope of Delivery

This scope of delivery describes the parts included in your delivery. Check that the delivery is complete, and contains the items listed. If damaged or missing items are discovered, contact your dealer.

Table 1: Scope of Delivery

Part	Quantity	Part Description
KISS 1U V4 ADL	1	KISS 1U V4 ADL factory configuration as ordered
Power Cable	1	AC power cable with EU rating, other cable ratings are optional
Rubber feet	4	Self-adhesive rubber feet
Safety Instructions	1	General Safety Instructions

3.4. Accessories and Spare Parts

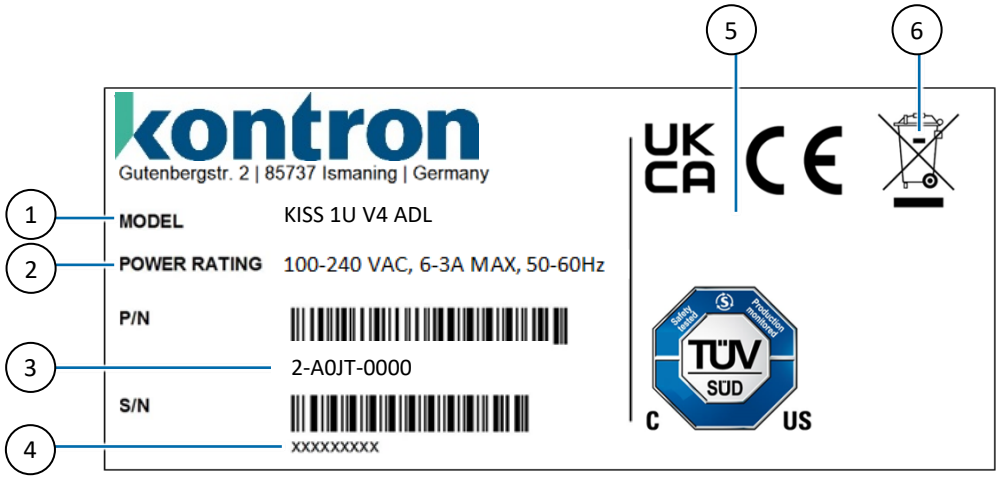
Table 2: Accessories and Spare Parts

Part Number	Description
9-5000-1116	Slide Rails and Mounting Kit KISS 1U/2U/4U
1073-8635	Fan Assembly KISS 1U V4
1073-8636	Filter Pad KISS 1U V4
1073-6876	Front Flap Assembly Kit KISS 1U V4
0-0064-2173	Power Cable EU
0-0064-4173	Power Cable UK
0-0064-4317	Power Cable US

3.5. Product Identification Type Label

The type label includes important information such as the electrical specification data for the ordered configuration.

Figure 2: Type Label (example)



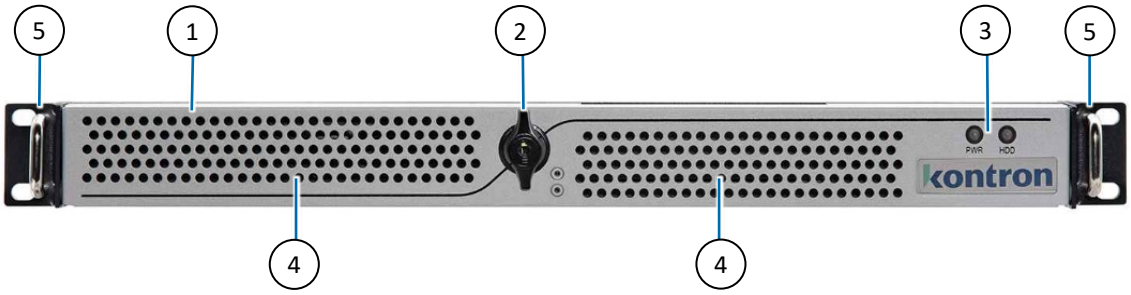
1. Product Family
2. Electrical Specification
3. Part Number + bar code
4. Serial Number + bar code
5. Compliance
6. Disposal

4/Product Features

4.1. Front Features

The front panel features two removable handle brackets for installation in a 19” industrial rack and an optional front flap with key lock, and power and HDD activity LEDs.

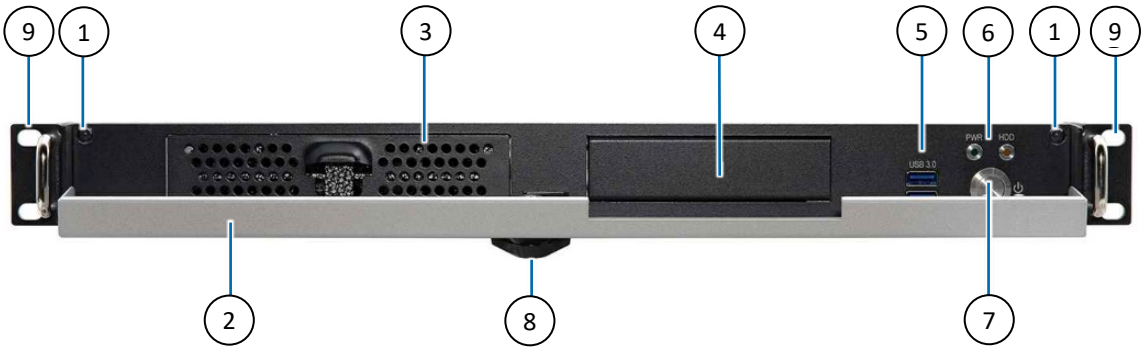
Figure 3: Front Panel with Front Flap Closed



1. Front flap
2. Key lock for front flap
3. Power LED and HDD activity LEDs
4. Ventilation openings (air intake)
5. 2x Handel brackets

The power button, power LED, HDD activity LED, two USB 3.2 Gen 1 ports, filter pad door and integrated removable drives are located on the front panel behind the front flap.

Figure 4: Front Panel with Front Flap Open



1. 2x Buffers (for front flap)
2. Front flap
3. Filter pad door with ventilation openings (air intake)
4. Drive bay
5. 2x USB 3.2 Gen 1 ports
6. Power LED and HDD activity LEDs
7. Power Button
8. Locking mechanism front flap
9. 2x Handle Brackets

4.1.1. Front Flap (option)

The optional front flap (Figure 4, pos. 2) is installed on the front panel. The front flap's lock mechanism protects against unauthorized use. When locked the front flap cannot be opened without a key, and items on the front panel are not accessible. To install or remove the front flap, see Chapter 7.5: Installing or Removing the Front Flap.

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

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

4.1.2. Drive Bay

The drive bay (Figure 4, pos. 4) is located on the front panel. The drive bay supports one 3.5" HDD drive or up to two 2.5" SSD drives (supporting RAID) as removable drives accessible on the front panel or internally installed with no front panel access.

For RAID support the two 2.5" SSDs must be removable drives accessible on the front panel.

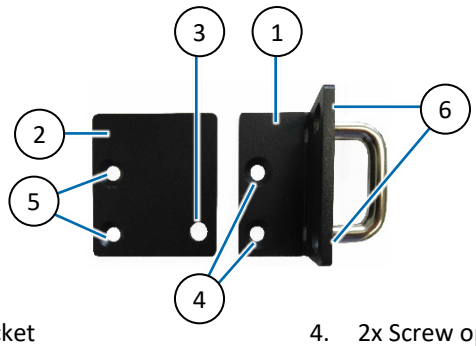
For drive System extension information, see Chapter 5/: System Extension.

4.1.3. Handle Brackets

The two handle brackets (Figure 5, pos. 1) are factory installed on the product front left and right sides, to secure the product to the front posts of a 19" industrial rack cabinet.

If the front flap is installed on the front panel, the two front flap plates (Figure 5, pos. 2) are installed between the handle bracket and the side of the product using the handle bracket's original screws.

Figure 5: Handle Brackets and Front Flap Side Plate



1. Handle bracket
2. Front flap plate
3. Front flap hinge opening
4. 2x Screw opening handle bracket
5. 2x Screw opening front flap plate
6. 2x 19" industrial rack cabinet opening

⚠CAUTION

Verify Secure Mounting

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

If the front flap is installed, the front flap plates are installed with the handle brackets using the two handle bracket's screws, see Chapter 7.5: Installing or Removing the Front Flap.

4.1.4. System Fan Assembly

The system fan assembly includes two system fans 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. Operation is permitted only with a functional fan assembly! Only replace a defective system fan assembly with an original Kontron system fan assembly, see Table 2: Accessories and Spare Parts. The system fan assembly is not replaceable during operation.

For information on how to replace the system fan assembly, see Chapter 13.4: Replacing the System Fan Assembly.

⚠CAUTION

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

4.1.5. Filter Pad Door

The filter pad door protects the two internal system fans against dust and dirt. Kontron recommends cleaning the installed filter pad as often as necessary. How often the filter pad requires cleaning depends on the level of pollution within the operating environment and is to be defined by the operator.

The filter pad may be cleaned or replaced during operation. For information on how to clean or replace the filter pad, see Chapter 13.3: Cleaning the Filter Pad. For order information for the replacement filter, see Table 2: Accessories and Spare Parts.

Figure 6: Filter Pad Door (front and rear side)

For information on how to clean and/or replace the filter pad, see Chapter 13.3: Cleaning the Filter Pad

NOTICE

Clean the filter pad regularly to ensure sufficient airflow through the product and avoid excessive heating of the product.

4.1.6. Power Button

The power button is located on the front panel, behind the front flap (Figure 4, pos. 7). Press the power button to switch on or to switch off the product.

Pressing the power button for longer than four seconds initiates a forced system shutdown before the power to the product is switched off.

⚠WARNING

Disconnect Power

Switching off the product using the power button on the front panel does not disconnect the product from the mains power supply and there is still a standby voltage of 5 VSB on the motherboard. The product is only completely switched off by switching off the power using the power button and disconnecting the power cable from the mains power supply or input power socket.

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

NOTICE

Forces Shutdown

Switch off using the power button to perform an orderly shutdown without data loss.

Do not disconnect the power from the product while the product is switched on! Performing a forced shutdown can lead to loss of data or other undesirable effects!

4.1.7. Power LED and HDD Activity LED

The Power LED and HDD activity LED are located on front panel (Figure 4, pos. 6) and the front flap (Figure 3, pos. 3).

Table 3: Power LED and HDD Activity LED Description

LED	Description
Power LED (green)	Power LED illuminates (green) when the product is switched on by pressing the power button. **Prerequisite**: Connection to an appropriate power source.
HDD LED (orange)	HDD LED lights up during hard disk activity.

4.1.8. USB Ports

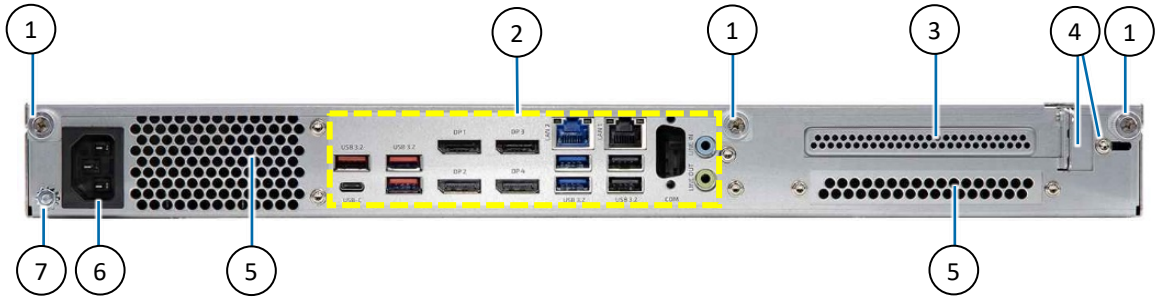
The two USB 3.2 Gen 1 ports are located on the front panel, behind the front flap (Figure 4, pos. 5).

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

4.2. Rear Panel

The rear panel includes the external interfaces, one PCIe x16 expansion card slot for full-height, full-length) PCIe cards, input power socket, potential equalization stud and three knurled screws to secure the cover.

Figure 7: Rear Side

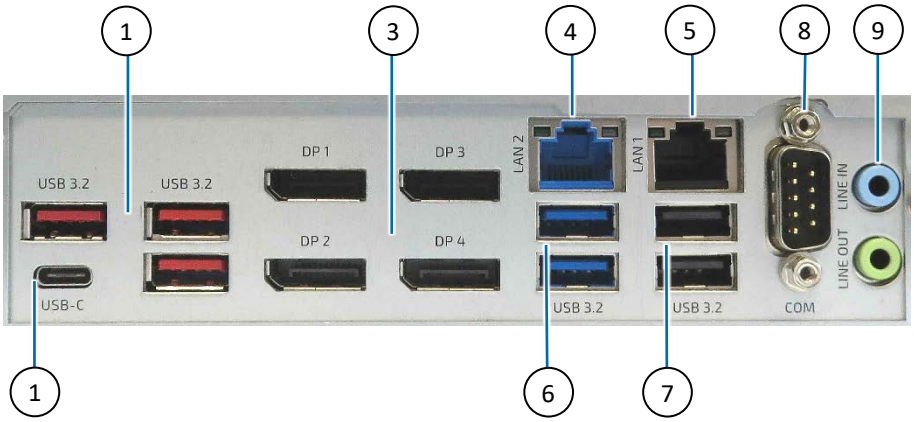


1. 3x Knurled screws
2. External interfaces (shown in yellow)
3. 1x PCIe x16 slot
4. Slide bracket with fixing screws
5. Ventilation openings (air exhaust)
6. Input power socket
7. Potential equalization stud

4.2.1. Interfaces on the Rear Side

The external interfaces available for peripherals are:

Figure 8: External Interfaces



1. 3x USB 3.2 Gen 2
2. 1x USB-C 3.2 Gen 2
3. 4x Display Port
4. 1x 2.5 GbE Ethernet
5. 1x 1 GbE Ethernet
6. 2x USB 3.2 Gen 1
7. 2x USB 2.0
8. 1x COM port (RS232)
9. 1x Audio (Line-in and-out)

4.2.2. PCIE Expansion Slots

The PCIe expansion slot (Figure 7, pos. 3) supports one PCIe x16 (full-height, full-length) card.

When installing PCIe cards users must adhere to the manufactures requirements.

Kontron is not responsible for problems occurring after the installation of PCIe expansion card(s) that have not been factory installed and configured by Kontron.

Before extending the product with a PCIe expansion card, consider the maximum power consumption allowed for by the product's PSU.

For more information on available reference PCIe cards, see Table 6: Reference PCIE Expansion Cards
Others PCIe expansion card options are available on request. For more information, contact Kontron Support.

4.2.3. Input Power

The input power socket is located on the rear panel (Figure 7, pos. 6) and supports a nominal input voltage range of 100 VAC to 240 VAC and 400 W. When powering on the product, make sure that the air intake and exhaust ventilation openings are not obstructed by objects.

WARNING

Disconnect Power

Switching off the product using the power button on the front panel does not disconnect the product from the mains power supply. The product is only completely switched off by switching off the power using the power button and disconnecting the power cable from the mains power supply or input power socket.

If the end environment restricts access to power cable, 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

Forces Shutdown

Switch off using the power button to perform an orderly shutdown without data loss.

Do not disconnect the power from the product while the product is switched on! Performing a forced shutdown can lead to loss of data or other undesirable effects!

4.2.4. Potential Equalization Stud

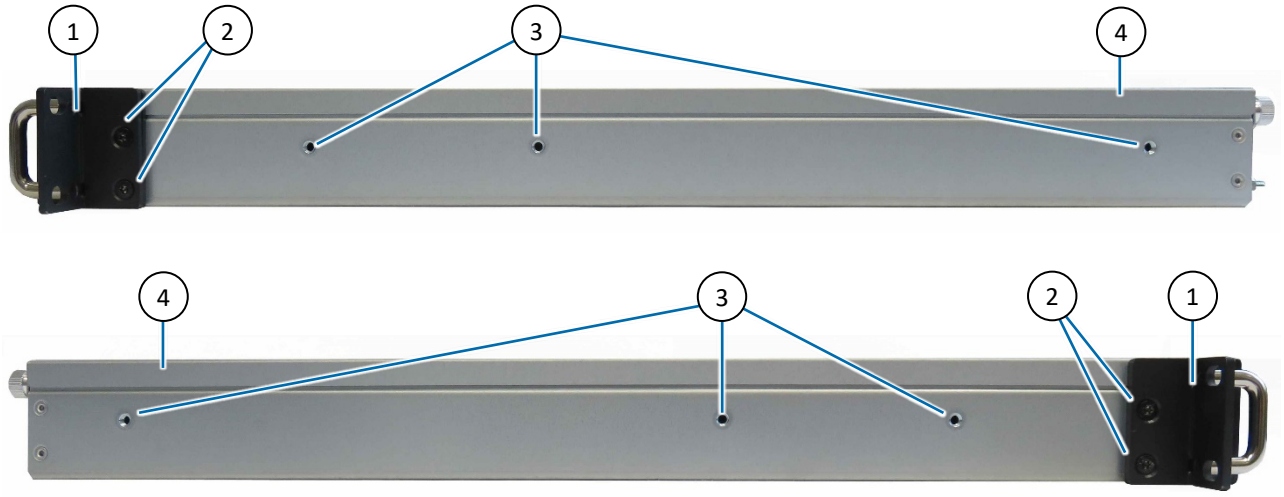
The potential equalization stud is located on the rear panel (Figure 7, pos.7). The potential equalization stud is not a ground connection. When connected the potential equalization stud ensures that all connected systems share a common potential.

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

4.3. Sides (Left and Right)

The left and right sides both include three M4 threaded screw holes for the installation of a telescopic slide rail to mount the product in a 19" industrial rack cabinet. The left and right sides both include a factory installed handle bracket to secure the product to the front posts of a 19” industrial rack cabinets.

Figure 9: Sides (left and right)



1. 1x Handle Brackets
2. 2x Handle bracket screws
3. 3x M4 threaded holes
4. Cover

Telescopic slide rails are available as an accessory, see Table 2: Accessories and Spare Parts.

4.4. Cover

The cover fixes to the product's main chassis using three fixing brackets on the front side of the cover and three knurled screws on the cover's rear side. When closing the cover, the cover's front side fixing brackets insert into the corresponding retaining brackets on the product's main chassis and secures using the three knurled screws on the rear side.

WARNING

Energy hazards-240 VA present inside the chassis!

Before removing the top cover. Switch off the product properly by using the power switch on the front Panel and disconnecting the power cable from the mains power supply.

WARNING

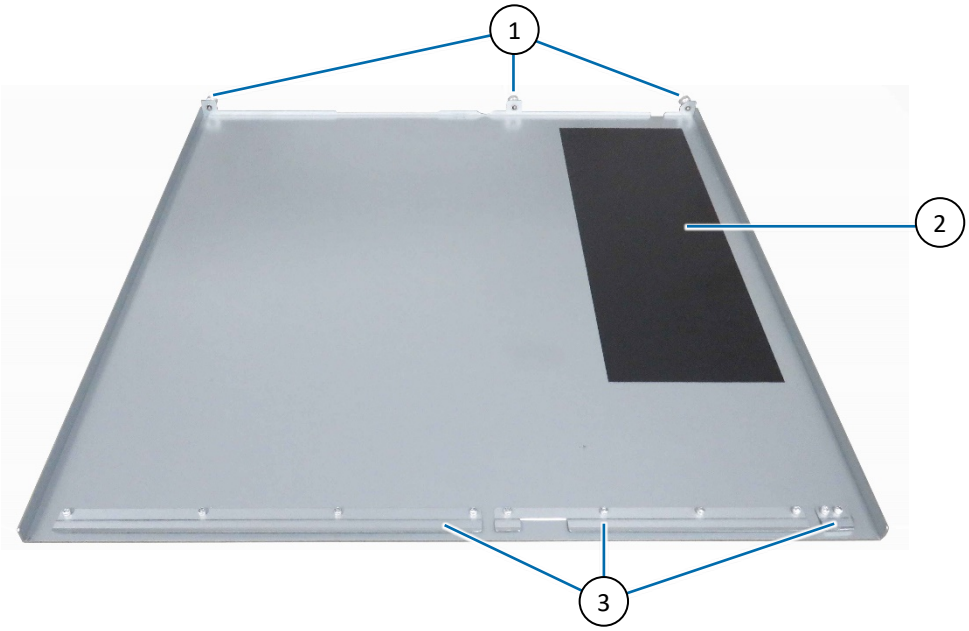
Intended used is closed and locked

Only operate with a closed cover to ensure that the operators do not have access to the internal parts, loaded with hazardous energy.

Close the cover properly by:

- Inserting the cover into the retaining brackets on the front side
- Securing the cover using three rear side knurled screws.

Figure 10: Cover Underside

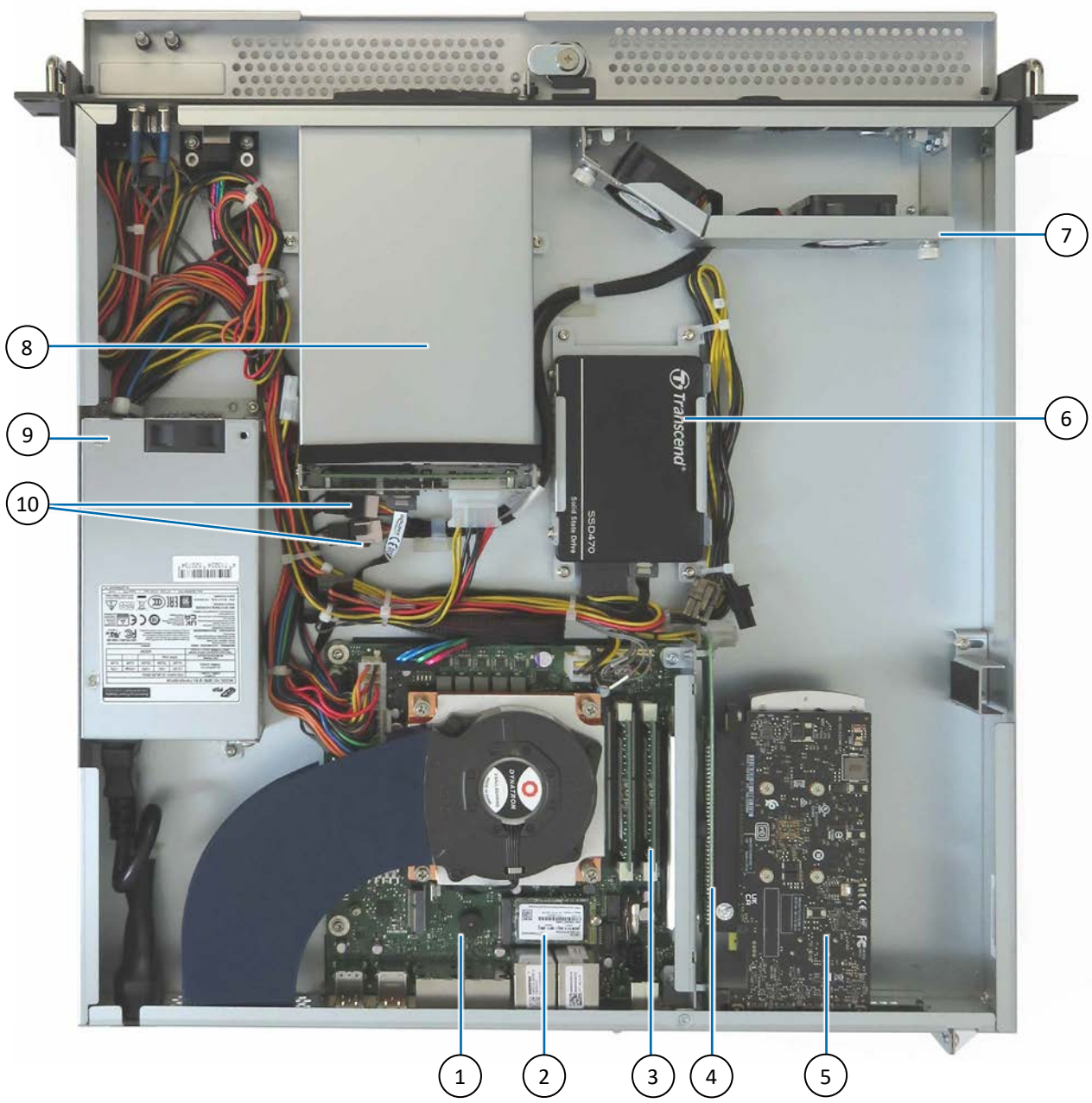


1. 3x Knurled screws
2. Insulation foil
3. 3x Front fixing brackets

4.5. System Configuration

The internal system configuration includes the following items that the operator may be required to access mini-ITX motherboard with on-board SODIMMs and M.2 2242 SSD, fan assembly with two system fans, internal 2.5” SSD drive, PCIE x16 slot for PCIe expansion cards (full-height, full-length) and internal drive bay internal 3.5” or 2.5” drives.

Figure 11: KISS 1U V4 ADL System Configuration



1. Motherboard
2. M.2 2242 Key M socket with M.2 SSD
3. System memory (SODIMM)
4. 1x PCIe x16 expansion card slot
5. 1x PCIe expansion card
6. Internal 2.5” SSD
7. Fan assembly with two system fans
8. 1x Drive bay (removable or internal drives)
9. 1x Power supply
10. Fan assembly cable connectors

5/System Extension

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.

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

5.1. Mass Storage (options)

The motherboard includes an on-board M.2 2242 Key M slot for a M.2 SSD module and an optional internal 2.5" SSD drive offers additional storage. RAID support is not available for the internal M.2 memory module and internal 2.5" SSD drive.

RAID support is not available for the internal M.2 SSD module and internal 2.5" SSD drive.

Table 4: Mass Storage Device (internal)

Mass Storage Device (internal)	Quantity	Interface	Description
M.2 2242 Key M SSD	1	NVME PCIE Gen 3 x4	Up to 1 TByte
2.5" SSD	1	SATA III / SATA-600	Up to 4 TByte

The one 3.5" HDD or up to two 2.5" SSDs (supporting RAID) are installed as removable drives accessible in the drive bay slot on the front panel or internally installed with the drive bay slot closed and no front panel access. The drive bay is an option and if not ordered the drive bay is not included in the configuration. To put an unused drive bay into operation or to change a the drive bay configuration, see Table 2: Accessories and Spare Parts, for more information on the drive bay accessories.

Table 5: Mass Storage Devices (Drive Bay)

Front Panel	Drive Type	Quantity	Interface	Decsritption
Slot open	2.5" SSD Removable	1	SATA-III	2-5" SSD drive up to 4 TByte
		2	SATA-III	2.5" SSD drives up to 2x 4 Tbyte
	2.5" SSD Removable RAID	2	SATA-III	2.5" drives up to 2x 4 TByte
	3.5" HDD Removable	1	SATA-III	3.5" HDD up to 12 TByte
Slot closed	1x 2.5" SSD Fixed	1	SATA-III	2.5" SSD drive up to 4 TByte
		2	SATA-III	2.5" SSD drives up to 2x 4 TByte
	1x 3.5" HDD Fixed	1	SATA-III	3.5" HDD up to 12 TByte

For RAID support, the two 2.5" SSDs must be removable drives accessible on the front panel.

After installing or removing a storage device, memory partitioning maybe different and require repartitioning.

5.2. Reference Expansion Cards

Before expanding the product with a PCIe expansion card users must consider the product's maximum allowed power consumption and take cooling into consideration.

The PCIe expansion slot supports one PCIe x16 (full-height, full-length) card. Kontron installs and configures the product with an ordered reference PCIe expansion card, including all appropriate drivers. Kontron is not responsible for problems occurring after the installation of a PCIe expansion card that has not been factory installation and configured by Kontron.

For more information on the reference PCIe cards available, see Table 6: Reference PCIE Expansion Cards
Others PCIe expansion card options are available on request. For more information, contact Kontron Support.

When installing PCIe cards users must adhere to the manufactures requirements.

Kontron is not responsible for problems occurring after the installation of PCIe expansion card(s) that have not been factory installed and configured by Kontron.

Before extending the product with a PCIe expansion card, consider the maximum power consumption allowed by the PSU.

Table 6: Reference PCIE Expansion Cards

Reference Card	Description
Dual LAN 1 GbE Single Slot	Device: LREC9712HT Speed: 10/100/1000 Mbps Bus type: PCIe* V2.1 (5 GT/S) Bus width: 4-lane PCIe (operable in x4, x8 and x16 slots) Ethernet controller: Intel® I350 Connector: 2x RJ45 Power consumption: 6 W
Dual LAN 10 GbE Single Slot	Device: LREC9812BT Speed: 10GbE/1GbE /100MbE Bus type: PCIe V3.0 (8.0 GT/S) (2.0 and 1.1 compatible) Bus width: 4-lane PCIe (operable in x8 and x16 slots) Ethernet controller: X550AT Connector: 2x RJ45 Power consumption: 13 W Prerequisite Installation is not permitted without a factory installed Kontron System Fan Assembly.
Graphics Card 4x mini DP Single Slot	Power consumption: 50 W Max. simultaneous displays: › 4x 3840x2160@120Hz › 4x 5120x2880@60Hz › 2x 7680x4320@60Hz

6/Thermal Consideration

6.1. Active Cooling

The KISS 1U V4 ADL is forced air-cooled using a fan assembly with two internal system fans that force air to flow from the front to the back of the product. The processor and extension cards have integrated cooling solutions or are equipped with the corresponding cooling devices.

6.2. Filter Pad

The filter pad inserts into the filter pad door on the front panel and may be changed during operation. The filter pad collects dirt and will become soiled over time. Clean the filter pad regularly to ensure that sufficient air flows through the product. If heavily soiled the filter pad can cause excessive heating of the product.

Kontron recommends cleaning the filter pad as often as necessary. How often the filter pad requires cleaning depends on the level of pollution within the operating environment and is to be defined by the operator.

For information on how to clean or replace the filter pad, see Chapter 13.3: Cleaning the Filter Pad.

⚠CAUTION	Clean the filter pad regularly to ensure sufficient airflow through the product and avoid excessive heating of the product.

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

	The filter pad may be changed during operation.

6.3. Temperature Sensor

The temperature conditions of the product depend on the environmental temperature and the system load. Temperature sensors on the motherboard detect the conditions and control the two system fans accordingly.

6.4. Minimum System Clearance

To guarantee that sufficient air flows from the front to the back of the product, ensure that the ventilation openings are not covered, blocked or obstructed by surrounding parts.

Before installing the product, take into account clearance, airflow, obstructions and ventilation.

⚠CAUTION	**Ensure sufficient Air Flow** Ensure that the 19” industrial rack cabinet is well ventilated and does not prevent the product from sucking in air at the front and exhausting air at the rear.

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

⚠CAUTION	**Hot and Damp** 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.

6.5. Third Party Components

If configured with third party components such as a PCIe expansion card, M.2 module, SODIMMs and hard drive(s) (3.5” HDD, or 2.5” SSD), there is an internal temperature rise. Thus, the air temperature inside the product 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 1U 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 use the screws provided with the mechanical part.

Before removing the cover to gain access to internal components ensure that product is switched off properly using the power button and disconnect the power cable from the mains power supply or the input power socket. Consult the documentation provided by the external components manufacturer and the instructions within this Chapter.

No special tools are required to open the product.

⚠WARNING	**Energy hazards present inside the chassis!** Before removing the top cover. Switch off the product properly using the power button and disconnect the power cable from the mains power supply or input power socket

⚠WARNING	**Recommended intended used is closed** Only operate with a closed cover to ensure that the operators do not have access to the internal parts, loaded with hazardous energy. Close the cover properly by: • Inserting the cover into the retaining brackets on the front side • Securing the cover using three rear side knurled screws.

⚠WARNING	**Internal Access** 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	**Energy hazards present inside chassis!** Before removing the top cover. Switch off the product properly using the power button and disconnect the power cable from the mains power supply or input power socket

⚠WARNING	**Internal Access** Activities requiring internal access of the product must be performed by trained personnel aware of the associated dangers.

To access internal components, open the cover. To open the cover, proceed as follows:

1. Switch off properly using the power button and disconnect the power cable from the mains power supply or the input power socket.
2. Loosen the three knurled screw (on the rear panel) that secure the cover.

Figure 12: Rear Panel Knurled Screws

3. Pull the cover out slightly to release the cover's fixing brackets from the retaining brackets on the front side.

Figure 13: Pull and Release the Cover

4. Lift the cover up (on the rear edge) and remove the cover.

Figure 14: Removing the Cover

5. To close and secure the cover, proceed in the reverse order (step 4 to step 2).

7.3. Installing and Removing a PCIe Expansion Card

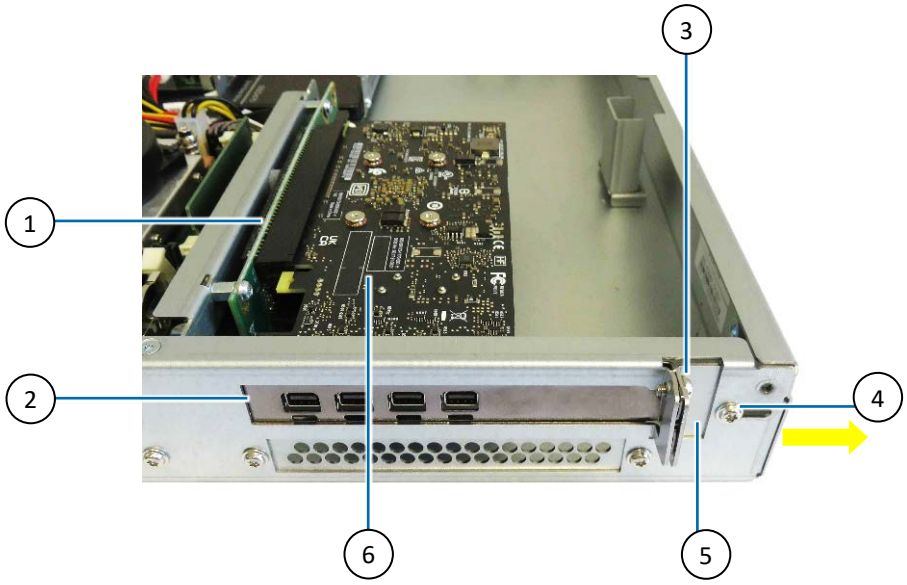
	**ESD Sensitive Device!** Follow the safety instructions for components that are sensitive to electrostatic discharge (ESD). Failure to observe this warning notice can result in damage to the components
	Consult the documentation provided by the PCIe expansion card's manufacturer for instructions before installing/removing the expansion card.
	Only loosen the slide bracket screw. Do not remove the slide bracket screw!

To install or remove an expansion card, performing the following:

1. Switch off properly using the power button and disconnect the power cable from the mains power supply or the input power socket.
2. Remove the cover as described in Chapter 7.2: Opening and Closing the Cover, (steps 1 to 4).

3. Remove the slot bracket screw (Figure 15, pos. 3). Retain the screw for later use.
4. Loosen the slide bracket screw (Figure 15, pos. 4) but do not remove the screw.
5. Move the slide bracket (Figure 15, pos. 5) to the right to disengage and remove the slot or card bracket.
6. Insert/remove the expansion card (Figure 15, pos. 6) in the internal PCIe slot (Figure 15, pos. 1) and position the bracket of the expansion card or a slot bracket (if the slot is not in use) at the rear side of the chassis (Figure 15, pos. 2).
7. Move the slide bracket to the left until it rests firmly on the expansion card or the slot bracket.
8. Lock the slide bracket in this position by fastening the slot or card bracket screw (removed in step 3) firmly.
9. Secure the slide bracket in position by fastening the screw loosened in step 4.
10. Close and secure the cover as described in Chapter 7.2: Opening and Closing the Cover, (step 5).

Figure 15: Installed PCIe Card



1. Internal PCIe x16 expansion slot
2. PCIe card slot bracket
3. Slot bracket screw
4. Slide bracket screw in opening
5. Slide bracket (closed)
6. PCIe card

7.4. Installing and Removing the Handle Brackets

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.

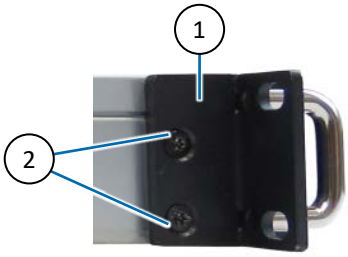
To install the two handle brackets, perform the following:

1. Install the handle brackets (Figure 16, pos. 1) to the left and right sides of the product securely; use the two screws (Figure 16, pos. 2) removed in step 1 and a TX 10 screwdriver.

To remove the two handle brackets, perform the following:

1. Remove both handle brackets (Figure 16, pos. 1) by removing the two screws (Figure 16, pos. 2) with a TX 10 screwdriver that attach the handle brackets to the left and right sides of the product. Retain the two screws with the handle brackets for later use.

Figure 16: Handle Bracket



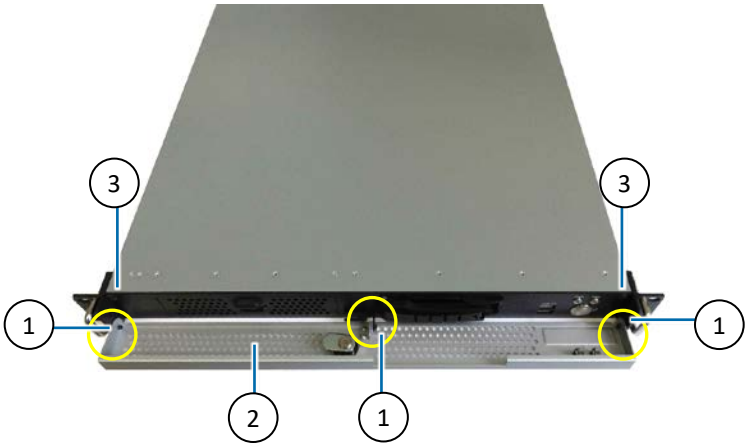
1. 1x Handle bracket
2. 2x Handle bracket screws

7.5. Installing or Removing the Front Flap

If the front flap plate and handle brackets are both installed, position the front flap plate between the chassis and the handle bracket.

If front flap plates and the handle brackets are both installed they are fasten to the side of the chassis using the same screw.

Figure 17: Installing or Removing the Front Flap

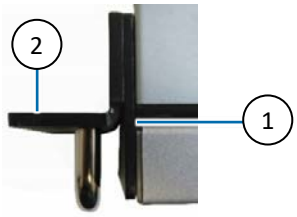


1. 3x Front flap hinges
2. Opened front flap
3. 2x Buffers (for front flap)

To install or remove the front flap, perform the following:

1. Remove the handle brackets as described in Chapter 7.4: Installing and Removing the Handle Brackets, step 2. Retain the two screws for later use.
2. Position the front flap plate and the handle bracket on the right side of the product and fasten loosely with the two screws retained in step 1.

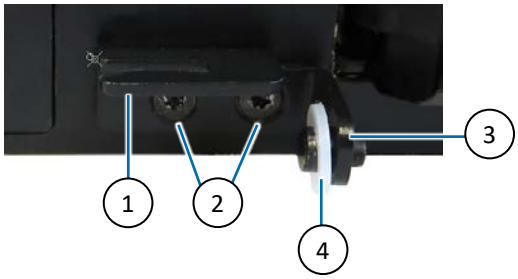
Figure 18: Front Flap Plate Position



1. Front flap plate
2. Handle bracket

3. Install the lock mechanism to the front panel with the two screws provided (Figure 19, pos. 2).
4. Position the plastic washer on the arm of the locking mechanism (Figure 19, pos. 4)

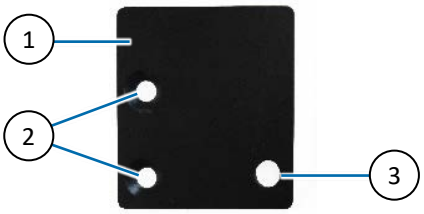
Figure 19: Front Flap Locking Mechanism



1. Front flat locking mechanism
2. 2x Screws
3. Locking mechanism hinge
4. Plastic washer

5. Slide the front panel on to the locking mechanism's hinge (Figure 19, pos. 3) and the opening in the front flap plate (Figure 20, pos. 3) on the right side of the front panel.

Figure 20: Front Flat Plate Hinge



1. Front flap plate
2. 2x Front flap screw openings
3. Front flat hinge opening

6. Position the remaining front flap plate on to the left side and guide the front flap's hinge in to the opening (Figure 20, pos. 3) and firmly attach the front flap plate (with or without handle bracket) to the left side of the product, using the corresponding screw openings (Figure 20, pos. 2) and the screws retain in step 1.
7. Attach the front flap plate (with or without handle bracket) firmly to the right side of the product, using the corresponding screw openings (Figure 20, pos. 2) and the screws retain in step 1.
8. Install the two silicon buffers included in the delivery to the front panel's left and right upper corners (Figure 17, pos. 3).
9. To remove the front flap proceed in the reverse order (steps 7 to 1).

7.6. Installing the Rubber Feet

The four rubber feet are included in the delivery. To avoid scratching the installation surface, attach the four rubber feet. Always attach all four rubber feet.

The Rubber feet are self-adhesive and require no tools. Always install all four rubber feet.

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

To install the rubber feet, perform the following:

1. Switch off using the power button and disconnect the product from the mains power supply.
2. Ensure that the cover is closed and secured.

3. Turn the chassis upside down (bottom side facing upwards).
4. Remove the protective film from the self-adhesive rubber feet and attach the self-adhesive rubber feet to the four corners of the product's bottom side.
5. Return the product to the upwards position (cover facing upward).

7.7. Installing Slide Rails

Kontron offers compatible 19" Slide Rails with a mounting kit for the KISS 1U V4 ADL. For more information, see Table 2: Accessories and Spare 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

⚠CAUTION

Verify Secure Mounting

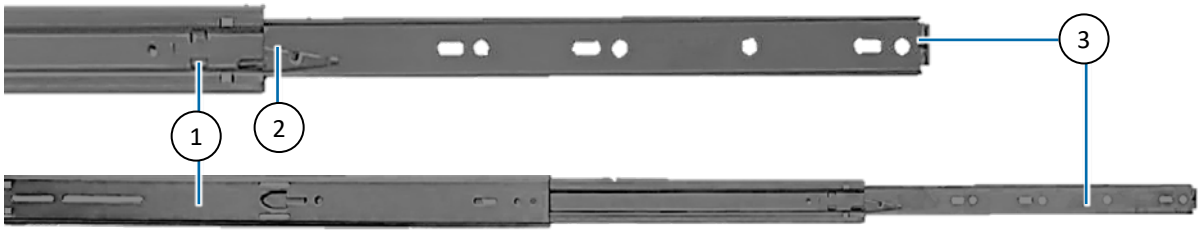
Mount using the slides rails on both the left and right sides and ensure the front handle brackets are fastened to the left and right sides of the 19" Industrial rack cabinet.

⚠CAUTION

Use only the specified screw to attach the telescope slide rails to the product.

The left and right slide rails have the same design.

Figure 21: Slide Rail



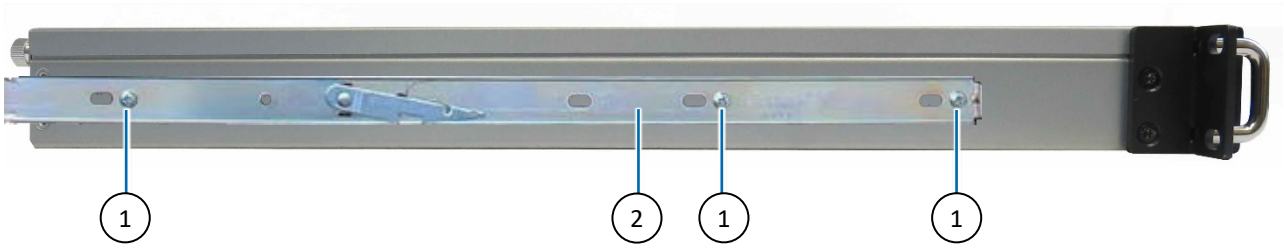
1. Outer slide rail part
2. Lock lever
3. Inner slide rail part

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) 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 installing the inner slide rails to the product, push the left and the right locking lever in opposite directions.

Figure 22: Installed Inner Slide Rail



1. 3 Screws
2. Inner slide rail part

8/Mounting

This chapter contains important information on how to mount the KISS 1U V4 ADL in a 19” Industrial rack and in customer specific environments.

8.1. Before Mounting

Before mounting the KISS 1U V4 ADL in a 19” industrial rack cabinet or desktop environment 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 to the corresponding ports, before mounting the product.

Figure 23: 19” Rack cabinet Variant with Front Flap

Figure 24: Desktop Variant with Front Flap

Figure 25: 19” Rack Cabinet Variant without Front Flap

Figure 26: Desktop Variant without Front Flap

WARNING

Ensure Sufficient Airflow

Ensure the product is well ventilated and that obstructions do not prevent the product from taking in air at the front and exhausting air at the rear.

WARNING

Hot and Damp!

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

WARNING

Mounting Dangers

The product must only be mounted by qualified personnel aware of the associated dangers.

CAUTION

Interface Connections

Before connecting any interface cables. Ensure that the product is switched off properly and the power cable is disconnected connected from the mains power supply or input power connector.

CAUTION

Cable procedures

When connecting cables, following proper cabling procedures:

- Potential equalization stud pin is connected first
- Connect all interface cables
- Input power connection is the last connection

The product is design 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 ports.

8.2. Mounting in a 19” Industrial Rack Cabinet

The product is designed for horizontal installation in a 19” industrial rack cabinet (four-post rack) with the top cover facing upwards. Vertical operation is not permitted. 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. There are no ventilation holes on the top and bottom side enabling installation directly on top of or below other systems in a 19” industrial rack cabinet.
Both handle brackets must be used when attaching the product to the front side posts of the 19” industrial rack cabinet. The product may be mounted in a 19” industrial rack cabinet with or without the flat flap.

WARNING

Disconnect Power

Switching off the product using the power button on the front panel does not disconnect from the product from the mains power supply. The product is only completely switched off by switching off the power using the power button and disconnecting the power cable from the mains power supply or input power socket.

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

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

To ensure a secure installation in a 19” rack cabinet use two methods of fixation: handle brackets (both left and right sides) 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 is restrictions, before installing the product install all expansion cards and connect required peripherals to the corresponding system port.

The four cage nuts and screws to secure the handle brackets to the 19” industrial Rack cabinet’s front posts are not included in shipment and must be provided by the user to suit the 19” industrial rack cabinet’s fixtures.

To install in a 19” industrial rack cabinet (four-post rack) using Kontron’s Slide Rails Kit, perform the following:

1. Switch off properly using the power button and disconnect the power cable from the mains power supply or the input power socket.
2. Attach the inner slide rails to the product, see Chapter 7.7: 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 Rack Mount 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) on the product, see Chapter 7.4: Installing and Removing the Handle Brackets.
6. Insert the product’s inner slide rails onto 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 shipment). 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

To install the product in a desktop environment, rubber feet are attach to the underside of the product to avoid scratching the installation surface. The handle brackets are not required and may be removed.

Ensure Sufficient Air Flow

⚠WARNING

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

To install in a desktop environment, perform the following:

1. Attach the four rubber feet as described in Chapter 7.6: Installing the Rubber Feet.
2. If required, remove the handle brackets as described in Chapter 7.4: Installing and Removing the Handle Brackets.
3. If required, remove the front flap as described in Chapter 7.5: Installing or Removing the Front Flap.

9/Starting Up

This chapter contains important information on how to connect to a power supply and start the KISS 1U V4 ADL.

9.1. Before Starting

Before staring up observe the instructions in Chapter 2/: General Safety Instructions and read the instructions and warnings in this chapter.

⚠WARNING	**Easy Access to AC 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	**Energy hazards-240 VA present!** To switch off the product properly and ensure no energized internal parts, switch off the product using the power switch on the front panel and disconnecting the product's power cable from the input power socket or the mains power supply.
⚠WARNING	**Intended used is closed** Use only when the cover is closed using the three rear side knurled screws to ensured that the operator doesn't have access to energized internal parts.
⚠WARNING	**Power Cable Damage** Ensure that the mains power supply socket (power outlet) is properly grounded and the power cable is in perfect condition with no visible damage.
NOTICE	**Voltage Specification** The rated mains voltage range must agree with the voltage specified on the type label.
NOTICE	**Forces Shutdown** Do not disconnect the power from the product while the product is switched on! Performing a forced shutdown can lead to loss of data or other undesirable effects! Switch off using the power button to perform an orderly shutdown without data loss.

9.2. Connecting the Power Supply

The input power socket is located at the rear side. To connect the power and start up, perform the following:

1. Connect the ends of the supplied AC power cable to the input power socket and mains power supply socket using the electrical plug for the region.

Figure 27: Input Power Socket

1. Input power socket

9.3. Switching On

To switch on the product, perform the following:

1. Unlock the front flap (if installed)
2. Press the power button.
3. The power LED illuminates green.

Figure 28: Power Button and Power LED

1. Power Button
2. Power LED

9.4. Operating System and Hardware Component Drivers

The product is fully operational when switched on for the first time with a pre-installed Operating System (OS) and drivers. The drivers are available from Kontron's Customer Section.
If ordered without a pre-installed OS, before switching on for the first time the OS and the appropriate drivers must be installed. Consider the manufacturer's specifications for the OS and the integrated hardware components.

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

Pay attention to the manufacturer specification for OS and installed hardware components.

10/ BIOS

The KISS 1U V4 ADL uses the uEFI BIOS supported by the motherboard. Only UEFI BIOS is supported. This chapter informs users 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 this chapter.

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 7: 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.

For the latest BIOS updates and BIOS release information, visit Kontron's Customer Section Website and select: Motherboards & SBC > Mini ITX > K3833-Q mITX > 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 29: BIOS FTP Server

kontron

Name	Size	Modified	File Download Link
..			
BIOS-Release-Document_RaptorLake-S_K383x_K384x.pdf	1.7 MB	2024-06-03 17:08:08	Download
K3833-Q1.R2.13.0.SetupItemId.txt	6.8 KB	2024-04-26 11:44:04	Download
K3833-Q1.R2.13.0.ZIP	27.4 MB	2024-04-26 14:39:36	Download
Previous_Versions	-	2024-05-31 11:36:00	-

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 “Load Optimized Default Values” (F3) in BIOS Setup solves the problem.

To recover BIOS perform the following:

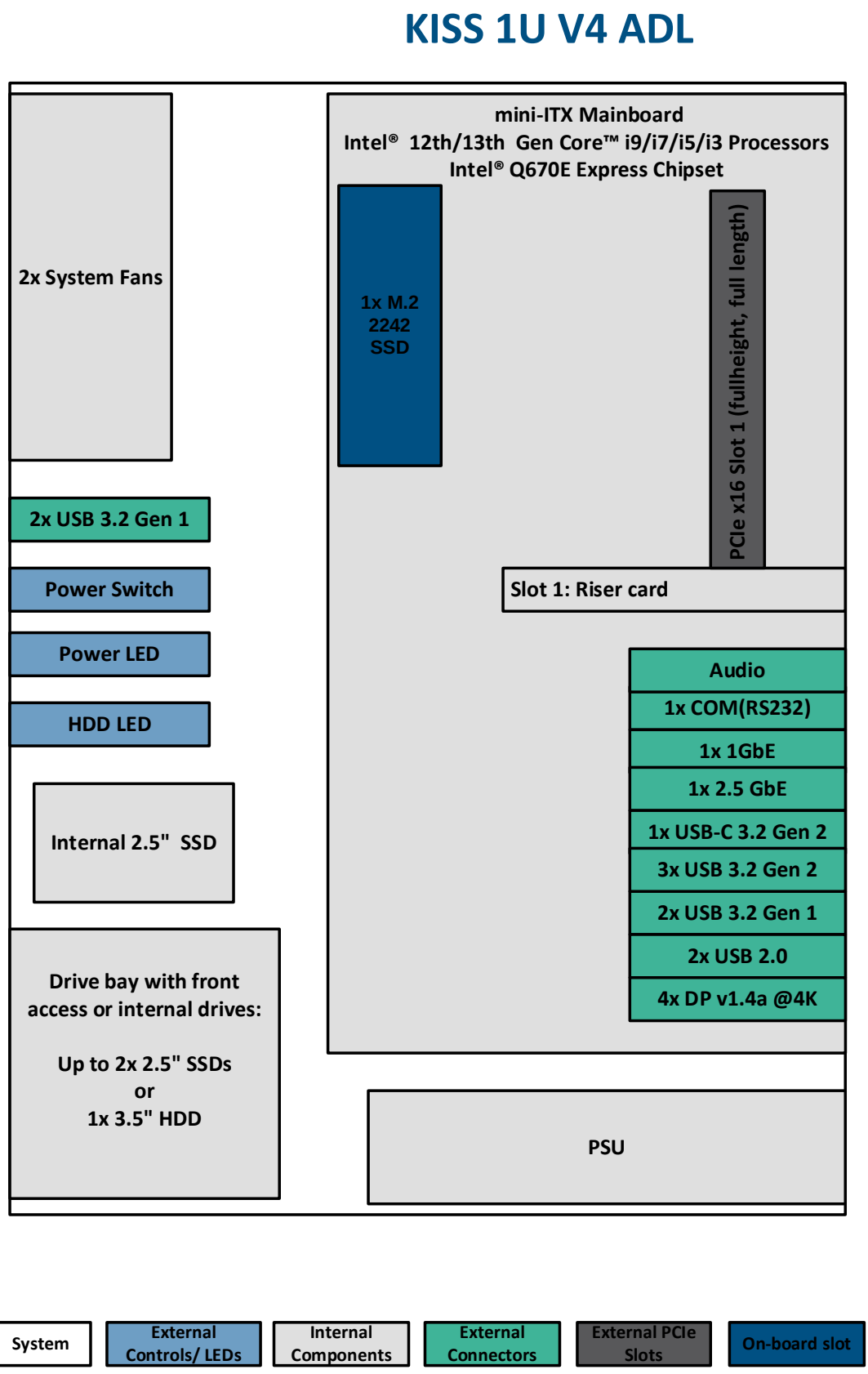
1. Copy the complete content of BIOS ZIP package (K3833-Q.ROM file) to a FAT32 formatted USB drive/stick.
2. Connect the prepared drive such as a USB stick to the product. Disconnect all other drives
3. Change the recovery jumper to “Recovery position, orange” (Figure 31 , pos. 2).
4. Switching on the product. The BIOS bootloader automatically initiates recovery and restores the BIOS contents from the ROM file.
5. Product enters a “BIOS setup” user interface. Confirm “Proceed with flash update” message.
6. Wait until “Updating main firmware” has been completed. DO NOT interrupt power or press any key during the update.
7. Set the recovery jumper back to the default position (Figure 31, pos. 1).
8. Press any key to reset the 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 lists the main KISS 1U V4 ADL technical specifications.

11.1. Block Diagram

Figure 30: Block Diagram KISS 1U V4 ADL



11.2. Hardware Specification

Table 8: Hardware Specification

KISS 1U V4 ADL			
Board			
Motherboard	K3833-Q (mini-ITX)		
Processor Type	Intel® Core™ i9, i7, i5, i3 series, 12th/13th Generation		
Chipset	Intel® Q670E Express		
Graphics	i3, i5 Intel ® UHD Graphics 730 i7, i9 Intel® UHD Graphics 770		
Memory	2x DDR5 SODIMM sockets Up to 64GB max.		
Front I/O			
USB	2x USB 3.2 Gen 1		
Drive Bays			
Front Accessible	1x 3.5” HDD	**OR**	1x or 2x 2.5” SSD
Mass Storage			
M.2	1x M.2 2242 Key M (interface: PCIe Gen 4)		
Rear I/O			
USB	2x USB 2.0 2x USB 3.2 Gen1 3x USB 3.2 Gen2 1x USB-C 3.2 Gen 2		
LAN	1x 1 GbE (10/100/1000Mbps) Intel® i219LM supporting : iAMT features, Wake on LAN		
	1x 2.5 GbE (10/100/1000/2500 Mbps) Intel® i225LM supporting : TSN Support and Wake on LAN (WOL)		
Display	4x Display Port Version 1.4a (@4K)		
Audio	1x Audio (Line-in/Line-out)		
Serial Port	1x COM1 (RS232)		
Expansion Slots			
Slots	1x PCIe x16 slot		
Fans			
Internal fans	2x System fans 1x PSU (integrated in PSU) 1x CPU (heatsink with fan)		

11.3. Software Specification

Table 9: Software Specification

Software	Description
BIOS	AMI UEFI BIOS 5.x
Operating System	MS Windows 10 64 bit LTSC Linux Others on request

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 within this chapter and on the product's type label, see Chapter 3.5: Product Identification Type Label.

WARNING

Easy Access to AC 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

Only use the AC power cable delivered with the product that meets the requirements of the Limited Power Source (LPS) and Power Source (PS2) of UL/IEC 62368-1.

WARNING

Energy hazards-240 VA present!

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

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.

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.

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.

Table 10: Electrical Specification

Power Supply	Description
PSU Type	Industrial AC/DC 1HE
Output Power	400 W
Input Voltage Range	240 VAC to 100 VAC (50 Hz to 60 Hz)[1]
Input Current	6 A max. @ 115 VAC
Ground (GND)	Signal ground connected to internal chassis ground

The 400 W PSU is a single PSU. A product does not support a redundant PSU.

11.5. Environmental Specification

Table 11: Environmental Specification

Environmental		Description
Temperature	Operating	0°C to +50°C (+50°F to +122 °F)
	Storage & Transit	-25°C to +70°C (-13°F to +158°F)
Relative Humidity	Operating	10-93 % @ 40° C, non condensing
	Storage & Transit	
Altitude	Operating	5,000 m (16,405 ft.) max.
Shock (according to IEC 60068-2-27)	Operating	10 g, 11 ms, Shock counts: 3/ directions 18
	Storage & Transit	20 g, 11 ms, Shock counts: 3/ directions 18
Vibration (according to IEC 60068-2-6)	Operating	10 – 150 Hz, 0.5 g
	Storage & Transit	10 – 150 Hz, 1.0 g
Noise		28.1 dbA @ desktop operation 36.8 dbA @ typical load
MTBF		75,964 hours KISS 1U V4 ADL with 16 GB System memory, 5 TB Storage (HDD and M.2 SSD) and LAN PCIe card.

11.6. Mechanical Specification

Table 12: Mechanical Specification

Dimension	Front Panel & Handles	Front Panel without Handles
Height (1U)	44 mm (1.73“)	44 mm (1.73“)
Width	482 mm (19“)	432 mm (17“)
Depth	430 mm (16.93")	430 mm (16.93")
Weight	6 kg to 7 kg (approx.)	
Chassis	Chassis: RAL 7021 Front panel: RAL 9022 – standard	

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

11.7. Compliance

The KISS 1U 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, and country specific certifications.

Table 13: Compliance

Europe – CE Mark	
Directives	**2014/30/EU** Electromagnetic compatibility **2014/35/EU** Low Voltage **2011/65/EU** RoHS II Restriction of the use of 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** Electromagnetic compatibility of multimedia equipment - Immunity requirements
Safety	**EN 62368-1** Audio/video, information and communication technology equipment – Part 1: Safety requirements

Table 14: International Compliance

USA/CANADA	
EMC	**FCC 47 CFR Part 15 (Class B) and ICES-003** Complies with part 15 FCC rules and regulations of title 47 of the CFR rules for class B products; under which an unintentional radiator may be operated, administrated and other conditions relating to the marketing of part 15 devices.
Safety	**UL 62368-1 and CAN/CSA-C22.2 No. 62368-1** Audio/video, information and communication technology equipment – Part 1: Safety requirements

UK CA (UK Conformity Assessed)	
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** Electromagnetic compatibility of multimedia equipment - Immunity requirements
Safety	**EN 62368** Audio/video, information and communication technology equipment – Safety requirements

International Certifications	
EMC	**IEC 61000-3-2** Electromagnetic Compatibility (EMC) Part 3-2 : Limits – Limits for harmonic current emissions (equipment input current = 16 A per phase)
Safety	**IEC 62368-1 (CB certificate)** 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.

All tests were performed with supplied external AC/DC power supply. Failure to use the supplied power supply may invalidate the FCC compliance & class.

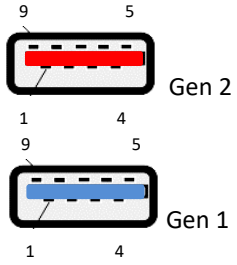
Use shielded I/O cables when connecting to peripheral devices. Failure to do so may violate FCC/ICES rules.

For additional information, visit Kontron's Customer Section.

12/ Standard Interfaces

12.1. USB 3.2 Gen 2/1 Port Pin Assignment

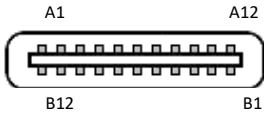
Table 15: USB 3.1 Gen 2/1 (Type-A) Pin Assignment

Pin	Signal Name	Pin	Signal Name	9-pin USB 3.2 (Type-A) Port
1	+5V (fused protected)	5	RX-	
2	Date-	6	RX+	
3	Data+	7	GND	
4	GND	8	TX-	
		9	TX+	

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

12.2. USB-C 3.2 Gen 2 Port Pin Assignment

Table 16: USB 3.2 Gen 2 Type-C Pin Assignment

Pin-A	Signal Name	Pin-B	Signal Name	USB Type-C 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	

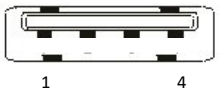
[1] Configuration channel

[2] Sideband use

Power delivery not supported.

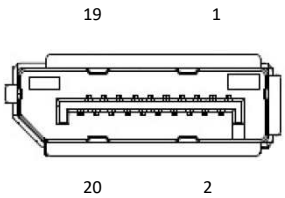
12.3. USB 2.0 Port Pin Assignment

Table 17: USB 2.0 Connector Pin Assignment

Pin	Signal Name	4-pin USB 2.0 (Type-A) Connector
1	+5 V (fused protected)	
2	Data-	
3	Data+	
4	GND	

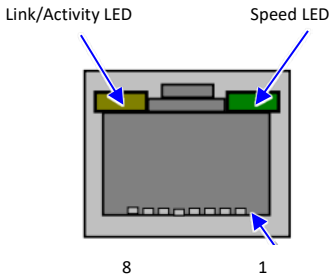
12.4. Display Port (DP) V1.4a Pin Assignment

Table 18: Display Port (DP) Connector Pin Assignment

Pin	Signal Name	Pin	Signal Name	DPP (V1.4a) 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]	

12.5. LAN 2.5 GbE/1GbE Connector Pin Assignment

Table 19: LAN (2.5 GbE/1 GbE) Connector Pin Assignment

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

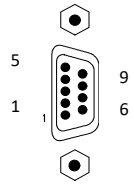
Link/Activity LED		Speed LED	
LED Status	Description	LED Status	Description
Green	Link	Green	2.5 GBE
Green Flashing	Activity	Yellow	1 GBE
		Off	10/100 Mbps

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

12.6. COM Port Pin Assignment

Table 20: RS232 Connector Pin Assignment

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

12.7. Audio Line-out and Line-in Connector Pin Assignment

Table 21: Audio Line-out Audio Line-in Pin Assignment

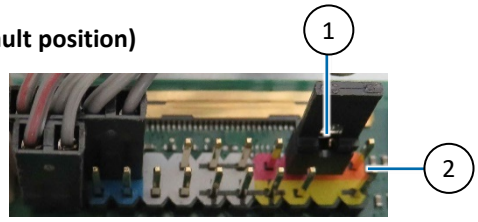
Jack	Signal Name
Blue	Line input (Line-in)
Green	Headphone output (Line-out)

12.8. Jumpers

12.8.1. Recovery BIOS Jumper

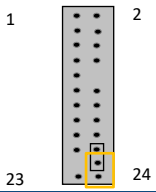
The recover BIOS Jumper is located on the motherboard's front panel header. To recover the BIOS move the jumper to the recover BIOS position on the front panel header.

Figure 31: Recover BIOS Jumper (in default position)



1 Default jumper setting 2 Recover position (orange)

Table 22: Recover BIOS Jumper

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

For further motherboard information, visit Kontron's K3833-Q mITX motherboard website.

13/ Maintenance and Prevention

Maintenance or repair may only be carried out by Kontron authorized qualified personnel. The KISS 1U 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.

⚠CAUTION	Handling and operation of the product is permitted only for trained personnel aware of the associated dangers, within a work place that is access controlled and fulfills all necessary technical and environmental requirements.

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.

⚠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(s) from the input power socket(s) or the mains power supply socket(s).

13.2. Cleaning the Product

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

To clean the product, perform the following:

1. Remove dust using a clean soft brush.
2. Wipe the product with a soft dry cloth.
3. Remove stubborn dirt using a mild detergent only and a soft cloth.

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 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 a functional fans assembly! Replace a defective fan assemble only with an original Kontron fan assembly.

	The filter pad door may be removed to clean or replace the filter pad during operation.

	Only replace the filter pad with Kontron's spare part

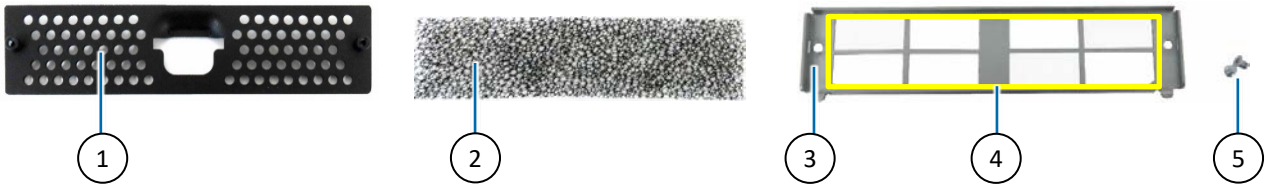
To clean the filter pad, perform the following:

1. Unlock and open the front flap (if installed).
2. Release the magnetic filter door from the product by placing a finger in the filter door's opening (Figure 32, pos. 2) and pulling the filter door way from the front panel.
3. Removing the two screws (Figure 32, pos. 3) with a TX 8 screwdriver on the magnetic filter door's rear side to dismantle the door and remove the filter pad.
4. Clean the filter pad by performing the following:
    a. Rinse the filter pad in water (up to approx. 40°C/104°F; with a mild commercial detergent).
    b. Alternatively, beat the filter pad, suction clean the filter pad, or blast the filter pad with warm compressed air.
    c. If clogged with grease and dust, rinse the filter pad in warm water with a degreaser.
    d. Do not clean the filter pad with a piercing jet of water.
    e. Do not wring out the filter pad allow the filter pad to air dry.
5. Dry the cleaned filter pad, before inserting the filter pad into the magnetic filter door.
6. Insert the cleaned filter pad into the magnetic filter door, while taking care to cover the openings but not to cover the screw holes. Fasten the rear side of the filter door using the two screws removed in step 3.
7. Reposition the filter door on the front panel. The door is magnetic and clicks into place without any assembly.

Figure 32: Filter Door with Pad (front and rear side)

1. Filter door front panel
2. Finger opening
3. Filter door rear side
4. 2x Screws

Figure 33: Filter Door (dismantled)



1. Filter door front panel
2. Filter pad
3. Filter door rear side panel
4. Position of the installed filter pad
5. 2x Screws

13.3.1. Replacing the Filter pad

To replace the filter pad with the Kontron's spare part (Table 2: Accessories and Spare Parts), perform the following:

1. Remove the old filter pad from the filter door by perform the previous step 1 to 3.
2. Insert the new filter pad in the filter door, by performing the previous steps 6 to 7.

Replacing the System Fan Assembly

The system fan assembly is not hot swappable and must be replaced when the product has been switch off properly. Operation of the product is only permitted with a functional fan assembly. To replace the fan assembly use the Kontron fan assembly spare parts, see Table 2: Accessories and Spare Parts.

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(s) from the input power socket or the mains power supply socket(s).

CAUTION

Operation is permitted only with functional fans!

Replace a defective fan assemble only with an original fan assembly.

CAUTION

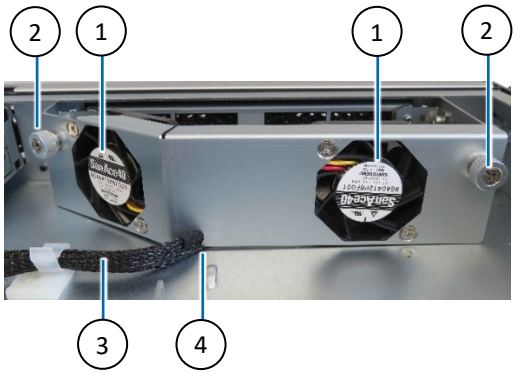
Replace the fan assembly only by qualified specialist or a suitably instructed persons aware of the associated dangers. Before removing the fan assembly, wait until the fans have totally stopped. Keep hands and fingers away from rotating fan parts.

No tools are required to replace the system fans.

To replace the fan assembly, perform the following:

1. Switch off properly and disconnect the product from the mains power supply.
2. Open the cover as described in Chapter 7.2: Opening and Closing the Cover (steps 1 to 4).
3. Loosen the two knurled screws on the fan assembly (Figure 34, pos. 2) to release the fan assembly.
4. Remove the fan assembly by disconnecting the two fans cables (Figure 34, pos. 3) from the two connectors attached to the motherboard's FAN CPU connector (Figure 11, pos. 10).
5. Securing the new fan assembly with the two knurled screws and connect the two fan cables to the two motherboard's FAN CPU connectors. The two fan cables may be connected to either of the motherboard's FAN CPU connectors.
6. Take care to insert the two fan cables in the opening (Figure 34, pos. 4) to ensure the cables are not damaged.
7. Close the cover as described in Chapter 7.2: Opening and Closing the Cover, step 5.

Figure 34: System Fans Internal Assembly



1. 2x System fans
2. 2x Knurled screws
3. 2x Fan Cables
4. Cable opening

13.4. Replacing the Lithium Battery

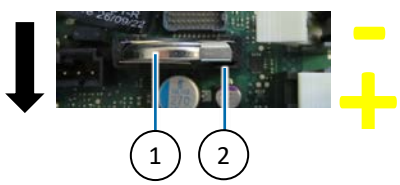
If the CR2032 lithium battery located in the vertical battery holder must be replaced, replace the lithium battery only with an identical 3 Volt lithium battery or a Kontron recommended lithium battery. The product is not designed to operate without a lithium battery. If the lithium battery is empty or disconnected, the BIOS settings will be set to the factory defaults.

⚠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(s) from the input power socket 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.
NOTICE	**Use Suitable (non-metal) Tools to Replace the Battery.** Do not use a screwdriver to remove the battery from the battery socket. A screwdriver could damage the solder pads, metal brackets or plastic noses and lead to malfunction of the battery contact, RTC reset or BIOS battery voltage error message. Do not use metal tools such as tweezers to grab the lithium battery. This shortcuts both terminals, and can damage the lithium battery!
	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).

To replace the Lithium battery, perform the following:

1. Switch off properly and disconnect the product from the mains power supply.
2. Remove the cover, see Chapter 7.2: Opening and Closing the Cover (steps 1 to 4).
3. Gently push the metal bracket (Figure 35, pos. 2) away from battery (Figure 35, pos. 1).
4. Remove the battery using your fingers or a suitable (non-metal) tool to pull the lithium battery out of the battery holder.
5. Insert the lithium battery into the battery holder. Ensure correct polarity with the (+) side of the battery facing towards the metal bracket.
6. Gently push the battery downwards until the metal bracket locks the battery.
7. Close the cover, see Chapter 7.2: Opening and Closing the Cover, step 5.

Figure 35: Vertical Battery Holder



1. Battery
2. Metal bracket

13.5. 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 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.

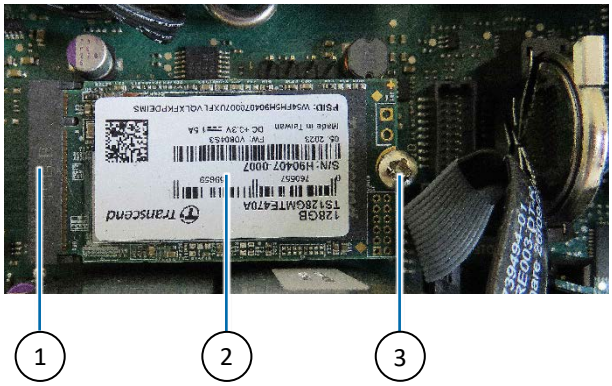
Max. torque must not be exceeded, otherwise the motherboard (solder nuts) may be damaged.

After installing or removing a storage device, memory partitioning maybe different and require repartitioning.

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

1. Switch off properly and disconnect the product properly from the mains power supply.
2. Remove the cover, see Chapter 7.2: Opening and Closing the Cover.(steps 1 to 4)
3. Locate the corresponding M.2 SSD module (Figure 36, pos. 2).
4. Release the screw fastening the M.2 SSD module to the motherboard (Figure 36, pos. 3). Retain the screw for later use.
5. Removed the M.2 SSD module by carefully holding the sides while pulling the module out of the socket (Figure 36, pos. 1).
6. Insert the new M.2SSD module by carefully holding the sides of the module and 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 using 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, step 5.

Figure 36: M.2 SSD Module



1. M.2 2242 Key M socket
2. M.2 SSD Module
3. 1x Screw

13.6. Replacing the Internal 2.5” SSD Drive

Energy hazards -240 VA present in the chassis

WARNING

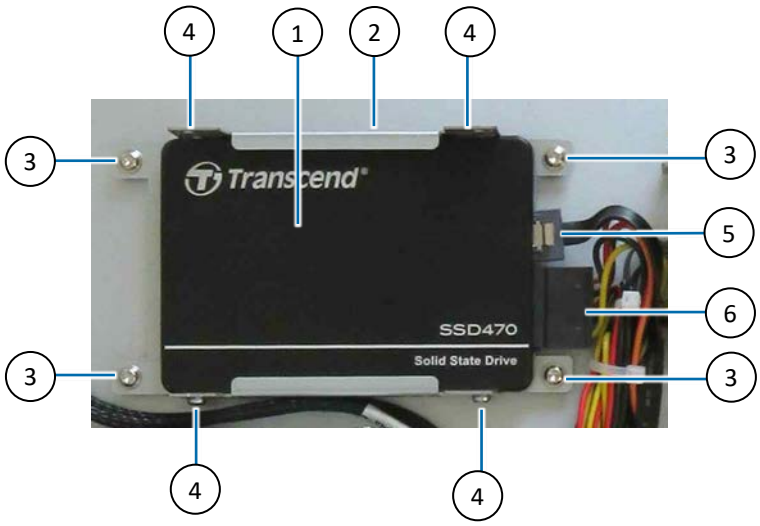
To switch off the product properly and ensure no energized internal parts, switch off the product using the power button on the front panel and disconnecting the product’s power cable(s) from the input power socket or the mains power supply socket(s).

After installing or removing a storage device, memory partitioning maybe different and require repartitioning.

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

1. Switch off properly and disconnect the product properly from the mains power supply.
2. Open the cover, see Chapter 7.2: Opening and Closing the Cover (steps 1 to 4).
3. Locate the corresponding 2.5” SSD drive (Figure 37, pos. 1).
4. Disconnect the SATA data cable (Figure 37, pos. 5) and SATA power cable (Figure 37, pos. 6) from the 2.5” SSD drive.
5. Remove the four screws securing the 2.5” SSD drive to the internal metal bracket (Figure 37, pos.3). Retain the screws for later use.
6. Remove the four screws attaching the 2.5” SSD drive to the metal bracket (Figure 37, pos. 4). Retain the screws for later use. Carefully pulling the 2.5” SSD drive out of the bracket.
7. Insert the new 2.5” SSD drive carefully into the bracket and attach to the metal bracket with the four screws removed in step 6.
8. Install the internal metal bracket with 2.5” SSD drive in the chassis using the four screws removed in step 5.
9. Attach the SATA data and SATA power cables removed in step 4 to the new 2.5” SSD drive and tie any excess cables together with cables ties.
10. Close the cover, see Chapter 7.2: Opening and Closing the Cover (step 5).

Figure 37: Internal 2.5”SSD Drive



1. 2.5” SSD drive
2. Metal bracket
3. 4x Screws (metal bracket to chassis)
4. 4x Screws (drive to metal bracket)
5. SATA data cable
6. SATA power cable

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 panel.

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: https://www.kontron.com/en/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.Send the completed RMA-Request form to the fax or email address given below at Kontron Europe GmbH. Kontron will provide an RMA-Number.
3. Kontron Europe GmbH
   RMA Support
   Phone: +49 (0) 821 4086-0
   Fax: +49 (0) 821 4086 111
   Email: service@kontron.com
4. 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

5. 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/ Storage and Transportation

15.1. Storage

If the product is not in use for an extended period time, disconnect the power plug from the power supply. If it is necessary to store the product then re-pack the product as originally delivered to avoid damage. The storage facility must meet the products environmental storage requirements as stated within this user guide. Kontron recommends keeping the original packaging material for future storage or warranty shipments.

15.2. Transportation

To ship the product use the original packaging, designed to withstand impact and adequately protect the product. When packing or unpacking products always take shock and ESD protection into consideration and use an EOS/ESD safe working area.

16/ 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 lithium battery, for example.

If there is a protection label on your product, then the warranty is lost if the product is opened.

17/ Disposal

17.1. 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.

17.1.1. 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

Environmental protection is a high priority with Kontron.
Kontron follows the WEEE directive
You are encouraged to return our products for proper disposal.

17.2. 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
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
OS	Operating System
PCI	Peripheral Component Interconnect
PCIe	PCI-Express
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.

For more information, please visit: www.kontron.com

Global Headquarters

Kontron Europe GmbH

Gutenbergstraße 2
85737 Ismaning, Germany
Tel.: +49 8214 4086-0
info@kontron.com

www.kontron.de

kontron
The Power of IoT