USER GUIDE

KISS 4U V3 SKX

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KISS 4U V3 SKX - USER GUIDE

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Intended Use

This product, sold by Kontron, is also intended for the use in harsh industrial environments. The product can operate in a temperature range from 0°C to plus 50°C; the storage elements can withstand temperatures from minus 20°C to plus 70°C, and a humidity of 10 to 93 percent does not affect the function of the product. This makes it particularly suitable for use in industrial automation, process control, high-end image processing and for SCADA/MES applications. This product can be installed in tower, desktop and rackmount environments, as more described in this user manual. You must comply with all product specifications stated in the product documentation and this user guide. If you intend, to incorporated the product into any total systems or applications, please carry out sufficient, compatibility and functions tests prior to any use or resale.

THIS PRODUCT IS NOT DESIGNED, MANUFACTURED OR INTENDED FOR USE OR RESALE FOR THE OPERATION OF 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 products as a component in High Risk Applications is entirely at your own risk. To minimize the risks associated with your systems and applications, you must provide adequate design and operating safeguards. You are responsible to ensure that your systems (and any Kontron hardware or software products incorporated in your systems) meet all applicable requirements. Unless otherwise stated in the product documentation, the Kontron product is not provided with error-tolerance capabilities and therefore cannot be deemed as being engineered, manufactured or setup to be compliant for implementation or for resale as a component 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 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.

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Revision History

Revision	Brief Description of Changes	Date of Issue	Author/ Editor
1.0	Initial version	2019-June-18	CW
1.1	Remove noise specification, added new type label and added new logo	2023-Sept-15	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 https://www.kontron.com/terms-and-conditions.

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

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

Customer Support

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

Customer Service

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

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

Customer Comments

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

Symbols

The following symbols may be used in this user guide:

⚠DANGER	DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠WARNING	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠CAUTION	CAUTION indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	NOTICE indicates a property damage message.
	Electric Shock! This symbol and title warn of hazards due to electrical shocks (> 60 V) when touching products or parts of them. 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. Please refer also to the "High-Voltage Safety Instructions".
	ESD Sensitive Device! This symbol and title inform that the electronic boards and their components are sensitive to static electricity. Care must therefore be taken during all handling operations and inspections of this product in order to ensure product integrity at all times.
	HOT Surface! Do NOT touch! Allow to cool before servicing.
	This symbol indicates general information about the product and the user guide. This symbol also indicates detail information about the specific product configuration.
	This symbol precedes helpful hints and tips for daily use.

For Your Safety

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

High Voltage Safety Instructions

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

⚠CAUTION

Warning

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

⚠CAUTION

Electric Shock!

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

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

Special Handling and Unpacking Instruction

NOTICE

ESD Sensitive Device!

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

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

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

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

Lithium Battery Precautions

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

⚠CAUTION

Danger of explosion if the battery is replaced incorrectly.

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

General Instructions on Usage

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

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

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

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

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

Quality and Environmental Management

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

Disposal and Recycling

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

WEEE Compliance

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

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

Environmental protection is a high priority with Kontron.

Kontron follows the WEEE directive

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1/ General Safety Instructions for IT Equipment

⚠WARNING

Read and observe the instructions within this chapter that have been compiled for user's safety and to ensure accordance with regulations. If the following General Safety Instructions for IT Equipment are not observed, it could lead to injuries to the operator and/or damage to the product. Kontron is exempt from accident liability, also during the warranty period if the instructions within this user guide are not observed.

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

- The product must be used as specified in the product documentation, in which the instructions for safety for the product and for the operator are described. These contain guidelines for setting up, installation and assembly, maintenance, transport or storage.
- The on-site electrical installation must meet the requirements of the country's specific local regulations.
- If supplied with a power cable, only use the supplied power cable.
- Do not use an extension cable to connect the product.
- To guarantee sufficient airflow to cool the product, ensure that:
  - Ventilation openings are not covered or blocked
  - Filter pad cleaned regularly
  - Do not place close to heat sources or damp places
  - Product is well ventilated
- Only products or parts which fulfill the requirements of SELV (Safety Extra Low Voltage) circuits as stipulated by IEC 62368-1 may be connected to the available interfaces.
- 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 system does not exceed the value stated on the product label.
- Only original accessories that have been approved by Kontron can be used.
- Note that safe operation is no longer possible when any of the following applies:
  - Product has visible damage
  - Product is no longer functioning

  In these cases, the product must be switched off and it must be ensured that the product can no longer be operated.

Additional safety instructions for DC power supply circuits

- To guarantee safe operation of products with DC power supply voltages larger than 60 volts DC or a power consumption larger than 120 VA, observe that:
  - Product is set up, installed and operated in a room or enclosure marked with “RESTRICTED ACCESS”, if there are no safety messages such as safety signs and labels on the product.
  - Do not touch either directly or indirectly, cables or parts without insulation in electrical circuits with dangerous voltage or power.
  - Reliable protective earth connection is provided
  - Suitable, easily accessible disconnecting device is used in the application (e.g. overcurrent protective device), if the product cannot be disconnected
  - A disconnect device, if provided in or as part of the equipment, must disconnect both poles simultaneously
  - Interconnecting power circuits of different devices cause no electrical hazards
- A sufficient dimensioning of the power cable wires must be selected – according to the maximum electrical specifications on the product label – as stipulated by EN 62368-1 or VDE0100 or EN60204 or UL508 regulations.
- The products do not generally fulfill the requirements for "centralized DC power systems“ (UL 60950-1, Annex NAB; D2) and therefore may not be connected to such devices!

1.1. Operation of Laser Source Devices

Laser!

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

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

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

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

1.2. Electrostatic Discharge (ESD)

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

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

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

1.2.1. Grounding Methods

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

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

1.3. Instructions for the optional Lithium Battery

When replacing the mainboard's battery, observe the instructions described in Chapter 10.3 Replacing the Lithium Battery.

⚠WARNING

Danger of explosion when replacing with wrong type of battery

Replace only with the same (CR2032) or equivalent type recommended by the manufacturer. The lithium battery type must be UL recognized.

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

2/ Introduction

This user guide focuses on describing the special features of the KISS 4U V3 SKX made by Kontron. New users are recommended to study the instructions within this user guide before switching on the power.

The KISS 4U V3 SKX is a scalable 4U rackmount system equipped with a mainboard using dual Intel® Xeon ® scalable processors and supporting multiple expansion capabilities and external interfaces.

The KISS 4U V3 SKX is designed for high performance, reliability and use in harsh Industrial environments offering total flexibility with installation options in a 19" industrial rack cabinet, desktop or as a tower.

General KISS 4U V3 SKX features are:

- ATX mainboard
- Supporting Dual Intel® Xeon® scalable processors
  - XEON Gold 5119T, Xeon Silver 4116T/ 4114T and 4109T processors
- Intel® C621 PCH
- Up to 192 GB memory with 12x RDIMM, DDR 2400 (ECC) with Dual CPU
- Expansion slot:
  - 7x PCIE (full height, full length)
- Mass storage capabilities with HDD, SSD and DVD devices
- External Interfaces: 4x USB 2.0, 4x USB 3.1 Gen 1, 2x USB 3.1 Gen 2, 2x 1 Gb Ethernet, optical S/PDIF, audio, keyboard and mouse
- Active cooling

3/ Scope of Delivery

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

Table 1: Scope of Delivery

Part	Qty.	Part Description
KISS 4U V3 SKX	1	System configuration as ordered
Access key	2	Locks front access panel lock to stop unauthorized access to front panel controls
Rubber feet	4	Self adhesive
AC power cable	1	With Europe rating, other cable ratings are optional
Safety instructions	1	Safety Instructions for IT equipment
Hold down clamp	1	Fastens to the expansion card bracket on one end and clamps on the expansion card using a notch of the free end (height adjustable by shortening the free end)

3.1. Accessories and Spare Parts

Table 2: Accessories and Spares Parts

Accessories	Part Number	Part Description
	3-A260-0385	Slide rail kit
Spare parts	1036-5058	Filter pad
	1036-5056	Fan assembly
	1065-0203	Front panel key

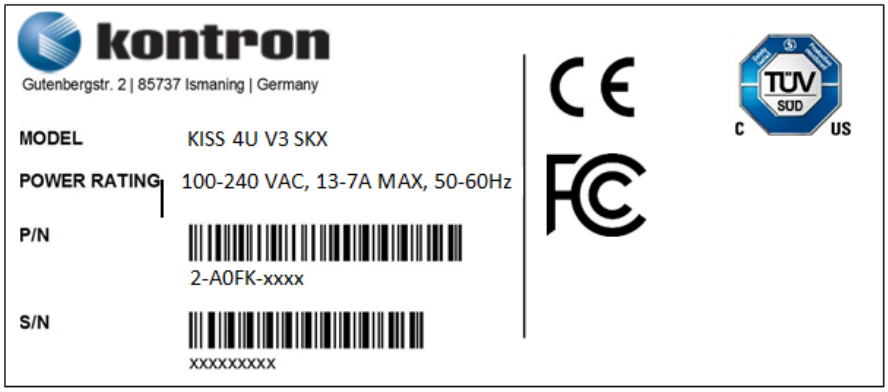
3.2. Shipment, Packaging and Unpacking

The KISS 4U V3 SKX is delivered with all standard parts in a product specific cardboard packaging with suitable shock absorbers inside.

3.3. Type Label and Product Identification

The type label contains the product name, part number, serial number and further technical data.

Figure 1: Type label Example



4/ Product Description

The KISS 4U V3 SKX platform expands the Kontron KISS computer line. KISS 4U V3 SKX is a scalable 4U (19") platform, equipped with a mainboard and supporting various system configurations. 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.

The KISS 4U V3 SKX platform's design enables installation in 19" industrial racks, desktop or tower

Figure 2: Rackmount Variant (closed front access panel)

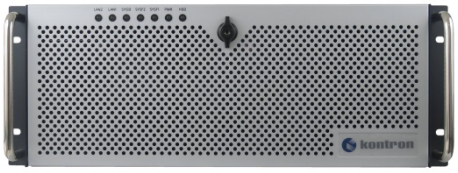


Figure 3: Tower Variant (closed front access panel)

Figure 4: Desktop Variant (closed front access panel)

Figure 5: Rackmount Variant (opened front access panel)

Figure 6: Tower Variant (opened front access panel)

Figure 7: Desktop Variant (opened front access panel)

The KISS 4U V3 SKX platform may be operated horizontally (rackmount and desktop variant) or vertically (tower variant).

⚠CAUTION

When operating the KISS 4U V3 SKX as a tower, the fan assembly including the three system fans must be located in the lower part and the drive bays in the upper part of the front side.

The KISS 4U V3 SKX platform supports up to four drive bays, where drive bays D1 , D2 and D3 are front accessible and drive bay D4 is internal. Each drive bay can support a range of drives and drive bay D1 and D2 may be combined.

The KISS 4U V3 SKX is powered with a 800 W Power Supply Unit (PSU) with an input voltage range of 100 V to 240 V. The power button is located on the front side behind the front access panel. The LED indicators are located on the front side and consist of a power, hard disk activity, LAN activity, system status and system ID LEDs

Three system fans are installed at the front side of the system. The three fans are part of interchangeable fan assembly. The fan assembly simplifies the installation and removal of the three system fans, and enables replacement even during operation. The washable filter pad attaches to the fan assembly to protect the system against dust and dirt. The filter pad can be replaced during operation.

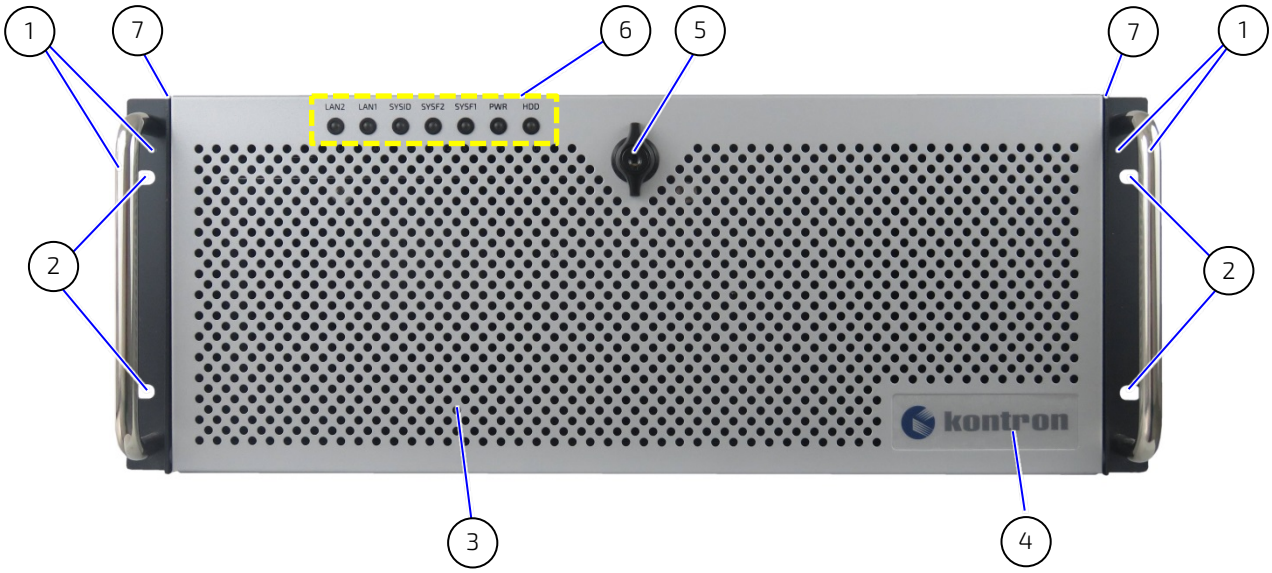
The KISS 4U V3 SKX is highly customizable and can be expanded with up to seven PCIe expansion devices, see Chapter 5.3: PCIe Slots; and up to eight SATA drives either front accessible or internal drives, see Chapter 5.2: Drive Bay.

Before switching on the KISS 4U V3 SKX, make sure that the ventilation holes (air intake and air exhaust) are not obstructed.

4.1. Front Side

The front side consists of two handle brackets for installation in a 19" Industrial rack and a front access panel with two front access panel side-plates attached via the handle brackets.

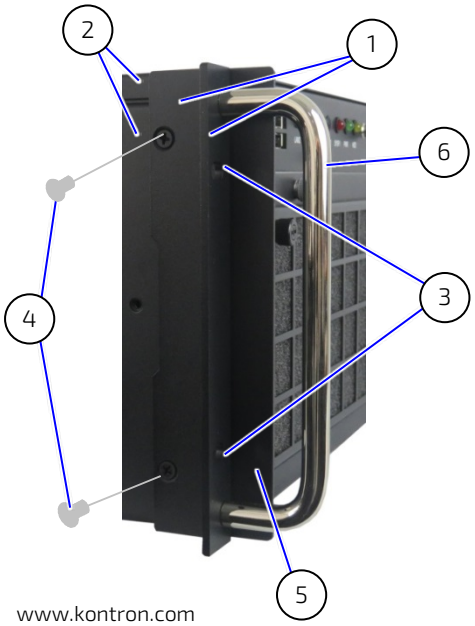
Figure 8: Rackmount Variant with Front Access Panel Closed



1 19" Handle bracket
2 Holes for mounting in 19" racks
3 Front access panel with air intake ventilation holes
4 Kontron logo
5 Securing lock mechanism
6 LED indicators
7 Front access panel side-plate

For use as a desktop system, remove both handle brackets (right side and left side), see Chapter 8.2: Removing the Handle Brackets and attach the four supplied rubber feet, see Chapter 8.1: Attaching the Rubber Feet. Depending on the security requirements, the lockable front access panel and the two front access panel side-plates can be removed or left in-place.

Figure 9: 19" Handle Bracket



1 19" handle bracket
2 Chassis and cover
3 Holes for mounting in 19" industrial racks
4 Fastening screws of the 19" Handle bracket
5 Front access panel side plate
6 Handle

The power button, LED indicators, two USB ports, filter pad holder and the integrated drives are located at the front side of the KISS 4U V3 SKX platform behind the front access panel.

Figure 10: Front Side with Front Access Panel Opened

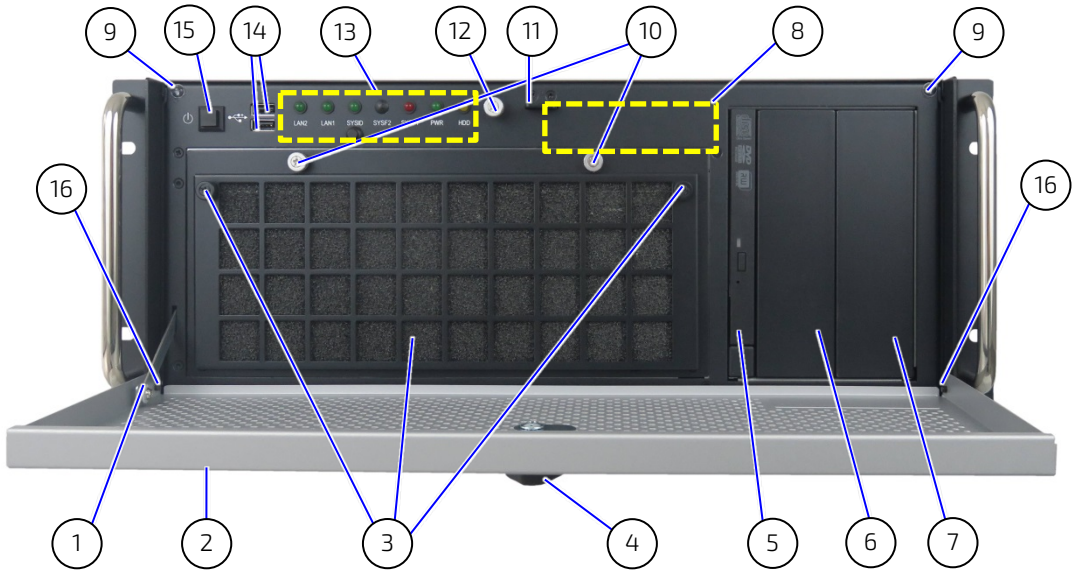
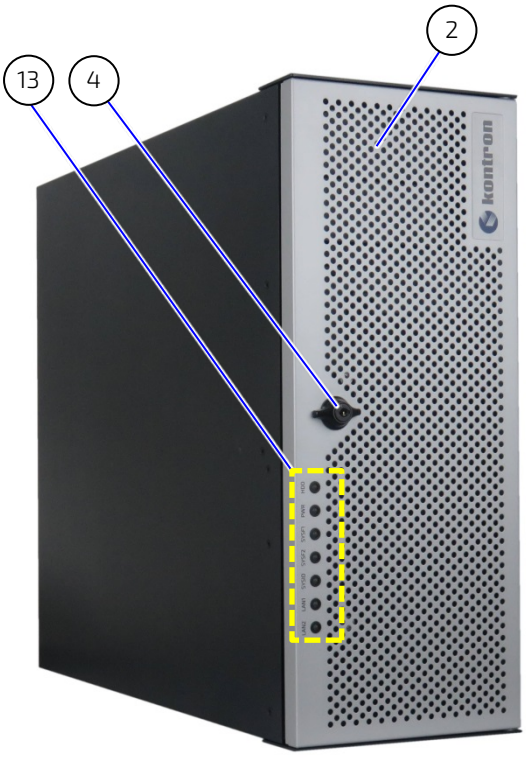


Figure 11: Front side (Tower Variant) with Front Access Panel Closed



1 Holder arm for the front access panel
2 Front access panel with air-intake ventilation holes
3 Filter pad and filter pad holder with knurled screws
4 Securing lock mechanism (two keys provided)
5 D3: fixed front-accessible slim drive bay
6 D2: shown with bland panel and internal drive
7 D1: shown with blank panel and internal drive
8 D4: shown position of internal only drive
9 Bump stop front access panel buffer
10 Fan assembly with two knurled screws
11 Slot for the locking mechanism
12 Cover knurled screw
13 LED Indicators
14 2x USB 2.0
15 Power button
16 Front access panel left and right hinges

4.1.1. Power Button

The power button is located on the front side of the platform, behind the front access panel and is used to power on or off the system. Press the button to switch the system on or off.

Pressing the power button for longer than four seconds immediately switches the power off.

Figure 12: Power Button

⚠WARNING

The power button does not disconnect the system from the mains power supply. When switched off using the power button, there is still a standby voltage of 5 VSB on the mainboard.

⚠WARNING

Power cable and power connectors must always remain easily accessible

Switching off the power using the front panel power button or the PSU's power On/Off switch may not disconnect the KISS 4U V3 SKX platform from the main power source. A standby-voltage of 5 VSB may remain. The KISS 4V V3 SKX is only completely disconnected from the main power source, when the power cable is disconnected, either from the mains power plug socket (power outlet) or the PSU'S AC power cable connector. Therefore, for safety reasons 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.

NOTICE

Performing a forced power off can lead to loss of data or other undesirable effects! Use the Power Button to shut down correctly.

4.1.2. USB Ports

Two USB 2.0 ports are located on the front side of the system behind the front access panel.

Figure 13: USB 2.0 Ports on the Front Side

If USB devices are connected to the USB ports on the front of the device, the front access panel cannot be closed and locked

4.1.3. LED Indicators

The LED indicators are located at the front side behind the front access panel. The LED status is also visible when the front access panel is closed.

Figure 14: LED Indicators

Table 3: LED Indicators

LED Function	Color	Description
LAN2	Green	Indicates LAN2 activity by lighting up/flashing when Ethernet Link/Activity is established/detected
LAN1	Green	Indicates LAN1 activity by lighting up/flashing when Ethernet Link/Activity is established/detected
SYSID	Green	Pressing the SYSID Button powers On/Off the SYSID LED to identify the system in a multi-system environment
SYSF2		NC
SYSF1	Red	Indicates system status and signalizes if a signal failure occurs: LED OFF - system OK LED ON - system fail
PWR	Green	Lights up green when system is switched on via power button
HDD	Orange	Lights up during all drive activities to indicate that drives are active and transferring data

4.1.4. SYSID Button

The system identification (SYSID) button is located below the SYSID indicator LED. The SYSID LED marks system for intended maintenance, to ease identification in operating environments with multiple-systems. Pressing the SYSID button, lights up the SYSID LED. The SYSID LED is switched off, by pressing the SYSID button.

Figure 15: SYSID Button

4.1.5. Front Access Panel

The front access panel is lockable using a securing lock mechanism (Figure 10 and Figure 11, pos. 4) and the two keys provided in the scope of delivery, see Table 1: Scope of Delivery. The secure locking mechanism enables users, to protect the KISS 4U V3 SKX platform from unauthorized use. Locking the front access panel means that the cover cannot be removed, and the drives, filter pad holder and power button are not accessible.

The front access panel key must be kept safe and not be accessible to unauthorized persons.

If USB devices are connected to the two front side USB ports, the front access panel cannot be closed and locked.

4.1.6. Fan Assembly

The three system fans are integrated in a user-friendly, interchangeable fan assembly (hot-swap) mounted in a fan compartment on the front side of the system. The systems fans are temperature controlled. Each fan has its own temperature sensor located near the air-outlet ventilation holes that detects changes in the ambient temperature and power dissipation. This ensures sufficient airflow for an optimal, active cooling of the system.

The fan assembly (Figure 10, pos. 10) can be replaced as described in the Chapter 10.2: Replacing the Fan Assembly.

⚠WARNING

Operate the KISS 4U V3 SKX only with a functional fan assembly!
Replace a defective fan assemble only with Kontron's original fan assembly, see Table 2: Accessories and Spares Parts.

⚠CAUTION

Fan assembly replaceable during operation.

Replace fan only by qualified specialist or a suitably instructed persons aware of the associated dangers. Before removing the fan assembly, wait until the fans have totally stopped. Keep hands and fingers away from rotating fan parts. No special tools are required! (Key is required if the front access panel has been locked).

4.1.7. Filter Pad and Filter Pad Holder

The filter pad and the filter pad holder (Figure 10, pos. 3) are located behind the ventilation holes of the front access panel (Figure 8, pos. 3). This filter pad protects against dust and dirt and will over time become soiled by pollution. If heavily soiled, the filter pad can cause excessive heating of the system. Kontron recommends cleaning the filter pad. How often the filter pad needs to be cleaned depends on level of pollution in the operating environment. For information on how to clean the filter pad, see Chapter 10.1: Cleaning the Filter Pad.

The filter pad inserts into the filter pad holder and then fastens to the fan assembly's front side using two position latches and two knurled screws. For more information, see Chapter 10.2: Replacing the Fan Assembly.

The filter pad can be changed during operation.

4.1.8. Drive Bays

The drive bay can be a mixture of front accessible and internal drives, with a maximum of eight drives. The drive bays D1, D2 and D3 are accessible on the front panel or internally accessible. Drive bays D1 and D2 can be fitted with removable, fixed or internal drives and may be used in combination to implement a three-drive solution.

Front accessible drive option:

- D1: 1x 3.5" HDD or 2x 2.5" HDD/SSD or 4x 2.5" HDD/SSD
- D2: 1x 3.5" HDD or 2x 2.5" HDD/SSD or 4x 2.5“HDD/SSD
- Combined D1 and D2: 2x 3.5”HDD or 3x 3.5” HDD
- D3: 1x DVD (RW slimline)

Internal drive options:

- D1: 3.5” HDD
- D2: 3.5” HDD
- D4: 1x 2.5" HDD/SSD or 2x 2.5" HDD/SSD or 1x 3.5" HDD

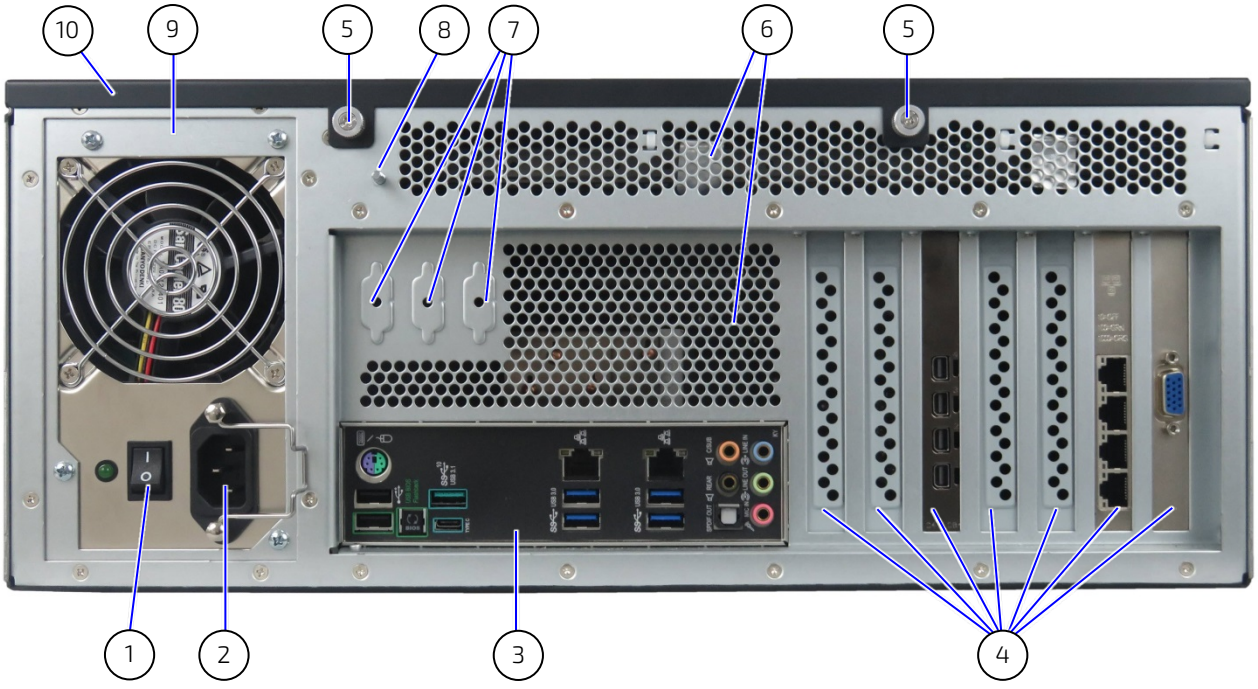
For more information on the possible drive bay combinations and the drive bay capacity, see Chapter 5.2: Drive Bay.

4.2. Rear Side

The rear side consists of the mainboards interface panel, PSU and PCI expansion slots.

For technical mainboard information, see Chapter 11.2: Technical Specification.

Figure 16: Rear Side



1 PSU power On/Off switch

2 AC inlet connector

3 External mainboard interfaces, see Chapter4.2.1: External Interface

4 7x PCIe 3.0 (full height, full length) expansion slots

5 2x rear side of the cover knurled screws

6 Ventilation air-exhaust openings

7 Cut-outs for optional (customer-specific) interfaces routed to the rear (9-pin D-SUB type)

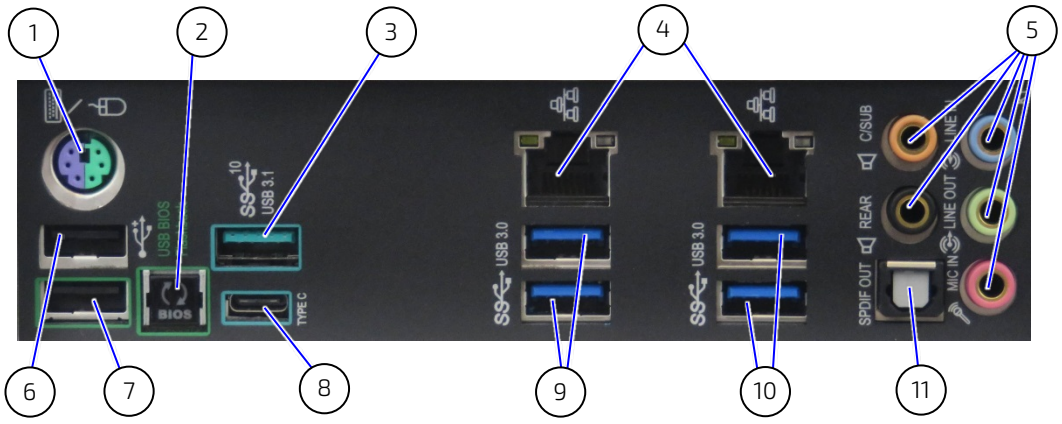
8 Potential equalization stud

9 PSU

10 Cover

4.2.1. External Interface Panel KISS 4U V3 SKX

Figure 17: External Mainboard Interface



1 PS/2 mouse and keyboard port
2 USB BIOS Flashback button
3 USB 3.1 Gen 2 port EA2
4 2x LAN ports
5 Audio I/O ports
6 1x USB 2.0 port
7 1x USB 2.0 port (supports USB BIOS Flashback function)
8 USB 3.1 Gen 2 Type C port
9 2x USB 3.1 Gen 1 (Ports 3 & 4)
10 2x USB 3.1 Gen 1 (Ports 1 & 2)
11 Optical S/PDIF OUT port

USB 3.1 Gen 1 and Gen 2 data transfer rates differ. For optimum performance Kontron recommends using USB devices that match the USB ports transfer rate.

USB 3.1 Gen 1/Gen 2 devices can be used as data storage only

4.2.1.1. PS/2 Port

The PS/2 port is a combined keyboard or mouse port. For the pin assignment, see Chapter 12.1: PS/2 Keyboard Mouse Connector.

4.2.1.2. USB BIOS Flashback Button

The BIOS flashback button enables users to update the BIOS without entering the existing BIOS or the Operating System (OS). For information on how to automatically update the BIOS with a USB storage device and the USB BIOS Flashback button, see Chapter 13.3: Using the BIOS Flashback Button.

4.2.1.3. USB 3.1 Gen 2 Type A Port (cyan)

The USB 3.1 Gen 2 port is backward compatible enabling the connection of both USB 3.1 and USB 2.0 devices. When using non-compliant USB 3.1 Gen 2 devices and cables that violate the USB 3.1 Gen 2 specified date rates of up to 10 Gbit/s, may cause conditions such as non-recognition of the device or read/write errors.

To enhance the USB compatibility it is possible to reduce the speed of the USB 3.1 Gen 2 ports in the BIOS Setup Advanced>USB Configuration>USB 3.1 Gen 2 Speed.

The default setting of 10 Gbits/s, can be reduced to 5 Gbits/s to be in-line with the USB 3.1 Gen 1 specified data rates. For the pin assignment, see Chapter 12.3: USB 3.1 Gen 1 and USB 3.1 Gen 2 (Type A) Port.

4.2.1.4. USB 3.1 Gen 1 Type A Ports (blue)

The USB 3.1 Gen 1 ports are backwards compatible enabling the connection of USB 3.1/3.0/2.0 compatible devices. The USB 3.1 Gen 1 specified data rate is up to 5 Gbit/s. For the pin assignment, see Chapter 12.3: USB 3.1 Gen 1 and USB 3.1 Gen 2 (Type A) Port.

4.2.1.5. USB 3.1 Gen 2 Type C Port (cyan)

The USB 3.1 Gen 2 ports are backwards compatible enabling the connection of USB 3.1/3.0/2.0 compatible devices. For the pin assignment, see Chapter 12.4: USB 3.1 Gen 2 (Type C) Port.

4.2.1.6. USB 2.0 Ports

The USB 2.0 port (green) supports the USB BIOS flashback function (Figure 17, pos. 7). The USB strorage device is inserted into the USB 2.0 port (green) to update the BIOS, see Chapter 13.3: Using the BIOS Flashback Button. The second USB port enables the connection of USB 2.0 compatible devices. For the pin assignment, see Chapter 12.2: USB 2.0 Port.

4.2.1.7. LAN Ports

The dual LAN ports are IEEE1588 capable and enable the connection of Gigabit Ethernet (10/100/1000 Mb/s) devices. The RJ45 connectors including two status LEDs indicating speed and link activity. For the pin assignment , see Chapter 12.5: Ethernet Connector.

4.2.1.8. Audio I/O Ports

The audio barrel connectors are color-coded and enable the connection of High Definition (HD) devices or legacy devices to be connected to the system. Legacy audio signals are selectable in the BIOS setup menus. The 8-channel audio port supports audio configurations for 2-channels (headset), 4-channels, 5.1-channels or 7.1-channels connections. For the cabling configuration, see Chapter 12.6: Audio 8-Channel (2, 4, 5.1, or 7.1 Channel configurations).

4.2.1.9. S/PDIF Ouput Port

The S/PDIF output is a digital audio optical output for the transfer of high quality audio signals. The signal is transferred digitally from device to device thus maintaining the quality of the signal as not converted to analogue before being transferred.

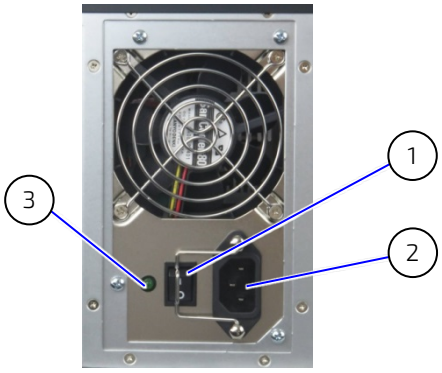
The S/PDIF output is a digital audio optical output. S/PDIF enables high-quality audio signals by transferring the audio signal digitally from device to device, thus maintaining signal quality as no conversion to an analogue signal is required before transfer.

To achieve high quality data transfer, Kontron recommends the use of optical cables.

4.2.2. Power Supply Unit (PSU)

The PSU supports 860 W with a nominal voltage range of 100 V to 240 V. The PSU supplies the required internal voltages using standard certified cabling. The systems type label (Figure 1) indicates the required electrical data.

Figure 18: ATX PSU (860 W)



1 Power On/Off switch
2 AC inlet connector with safety clip
3 LED power indication

⚠WARNING

Power cable and power connectors must always remain easily accessible.

Switching off the power using the power button on the front panel or the PSU's power On/Off switch may not disconnect the system from the main power source. A standby-voltage of 5 VSB may remain. The KISS 4V V3 SKX is only completely disconnected from the main power source, when the power cable is disconnected, either from the mains power plug socket (power outlet) or the PSU'S AC inlet connector. Therefore, for safety reasons 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.

NOTICE

Do not disconnect the power from the system while the system is powered up!

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

4.2.3. Potential Equalization Stud

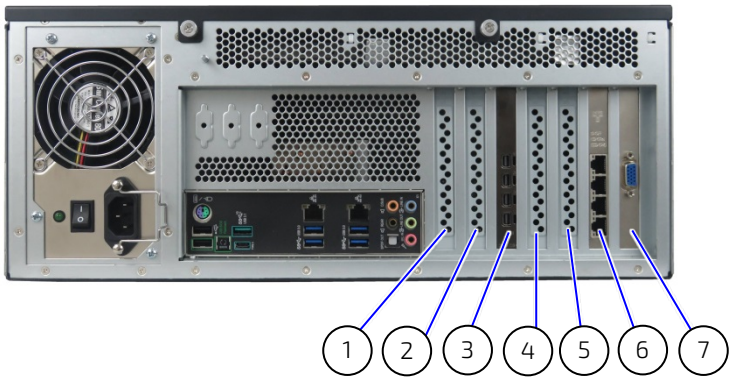
The potential equalization stud (Figure 16, pos. 8) can be used to set several systems to the same potential.

The potential equalization stud ensures that all connected systems share a common potential.

4.2.4. PCIe Slots

The seven PCIe slots support the installation of PCIe expansion cards. The PCIe slots brackets include ventilation holes and can be removed to install a PCIe expansion card by releasing an internal screw at the top of the slot bracket. PCIe Slots 3, 6 and 7 are predefined as default slots for specific functions. For more information, see Figure 19.

Figure 19: PCIe Expansion Card Slot Numbering



1 Slot 1

2 Slot 2

3 Slot 3 (default slot for graphics)
Shown here with 4x DP 1.4 PCIe card

4 Slot 4

5 Slot 5

6 Slot 6 (default slot LAN)
Shown here with Quad Gigabit Ethernet port PCI adapter card

7 Slot 7 (default slot for VGA)
Shown here with a VGA panel connected directly to mainboard

For more information on the possible PCIe expansion card types, see Chapter 5.3: PCIe Slots.

4.3. Sides (Left and Right)

On the left side and right side are six M4 threaded screw holes (Figure 20 and Figure 21, pos. 2) used to install 19" industrial rack slide rails.

If implemented as a tower variant the left side of the KISS 4U V3 SKX becomes the bottom side of the tower, see Chapter 4.6: Bottom Side View (Tower Variant).

Figure 20: Left Side View

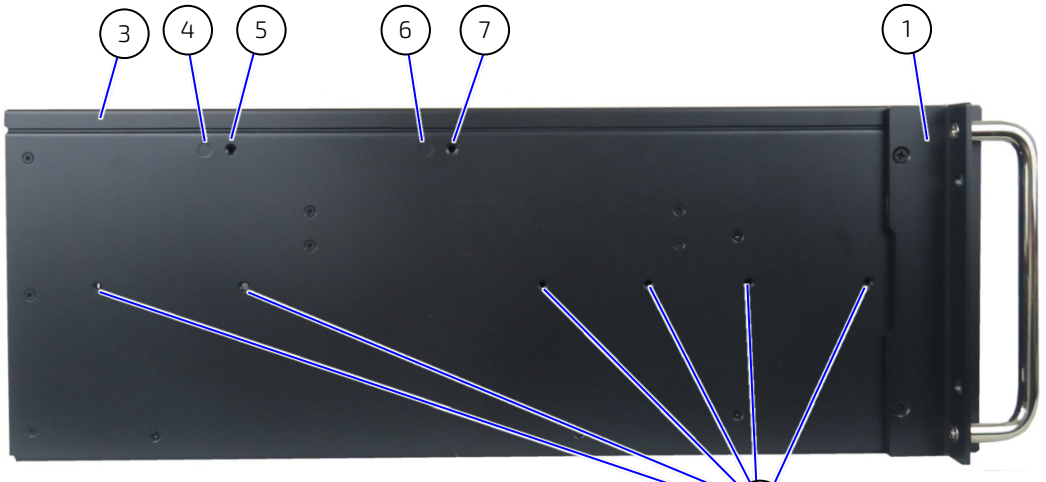
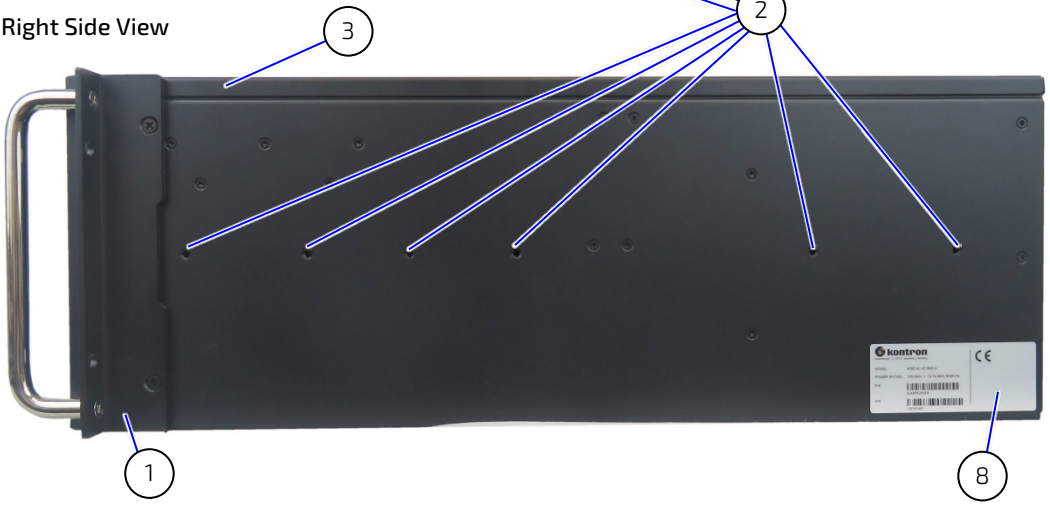


Figure 21: Right Side View



1 19" Handle bracket

2 6x M4 tapped holes for slide rails assembly (on both sides)

3 Cover

4 Internal bolt for long card hold down bracket

5 Externally accessible fastening screw (countersunk, M3x6) for long card hold down bracket

6 Internal bolt for short card hold down bracket

7 Externally accessible fastening screw (countersunk, M3x6) for short card hold down bracket

8 Kontron type label

4.4. Cover

⚠WARNING

Energy hazards-240 VA present inside the chassis!

Before removing the KISS 4U V3 SKX's cover, ensure that: the system is switched off and disconnected from the mains power supply.

Activities such as work inside the system, system expansion with expansion cards, or maintenance must be performed by qualified personnel aware of the associated dangers!.

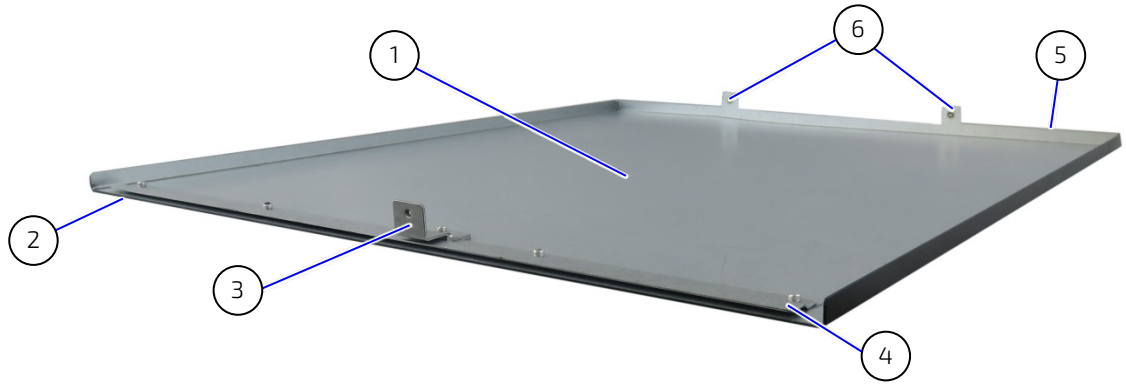
⚠WARNING

The KISS 4U V3 SKX's is only properly closed if the cover is attached and the cover's knurled screws are securely fastened:

- **Cover fastening screw (Figure 10, pos. 12) on the front side**
- **Two knurled screws (Figure 16, pos. 5) on the rear side**

The cover fastens to the chassis using a knurled screw on the front side (Figure 22, pos. 3), and two knurled screw on the cover's rear side (Figure 22, pos. 6). For information on how to open the cover, see Chapter 7.1: Opening and Closing the Cover.

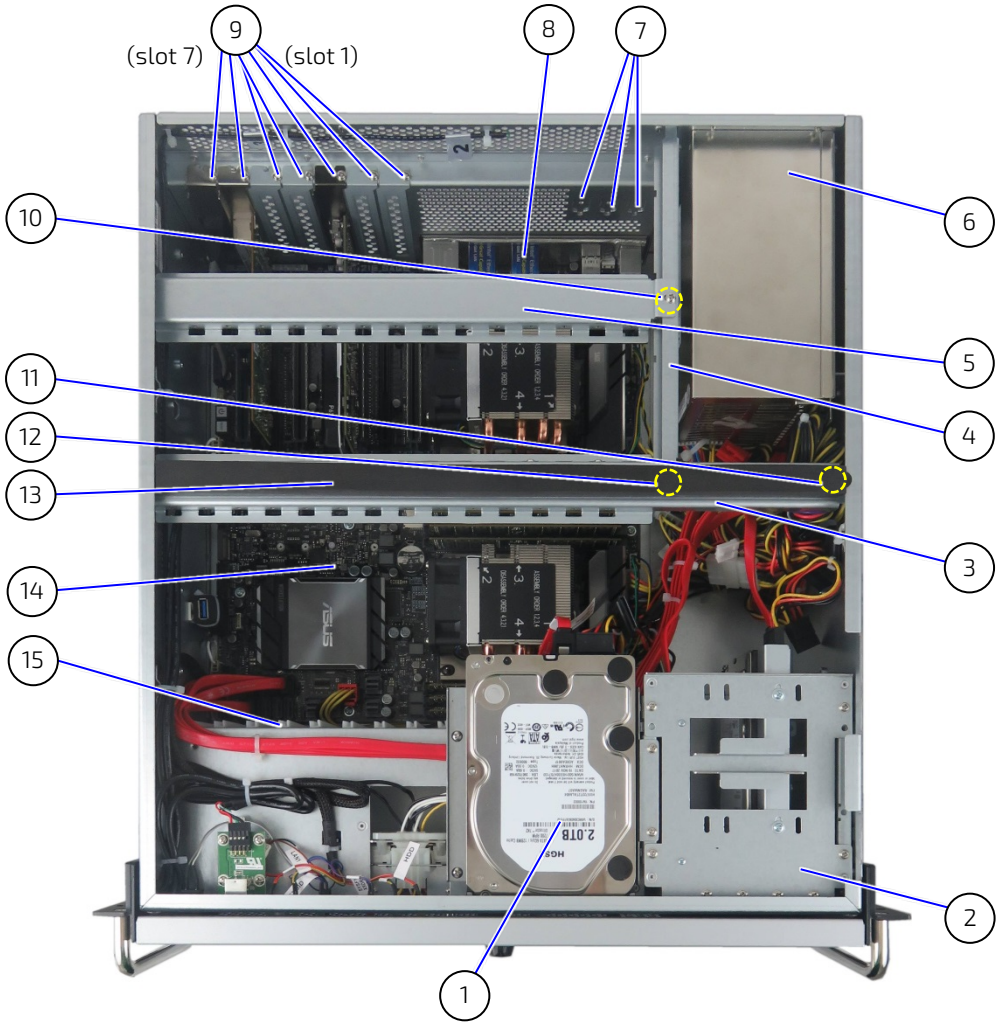
Figure 22: Cover Underside



1 Underside of cover
2 Cover front side
3 Angled centering fixing bracket with tapped hole (on front side)
4 Fixing bracket (on front side)
5 Cover rear side
6 2x knurled screws (on rear side)

4.5. Internal View

Figure 23: Internal View



1 Drive bay (D4) (internal only)

2 Drive bay cage including Drive bays D1, D2 and D3 (all with external access, and D1 and D2 also internal access)

3 Card hold down bracket (long expansion cards)

4 Retaining bracket for the card hold down bracket

5 Card hold down bracket (short expansion cards)

6 PSU

7 3x Serial ports openings (optional)

8 Mainboard interface panel

9 Expansion card (slots 1 to slot 7) and fastening screw

10 Internal fastening screw short card hold down bracket

11 Internal fastening screw long card hold down bracket (underneath foam strip)

12 Internal fastening screw retaining bracket (underneath foam strip)

13 Adhesive Foam strip on top of long card hold down bracket to support the cover

14 Mainboard (Dual processors, 8x DIMM slots and 7x PCIe 3.0 expansion slot)

15 Holder slots (long expansion cards)

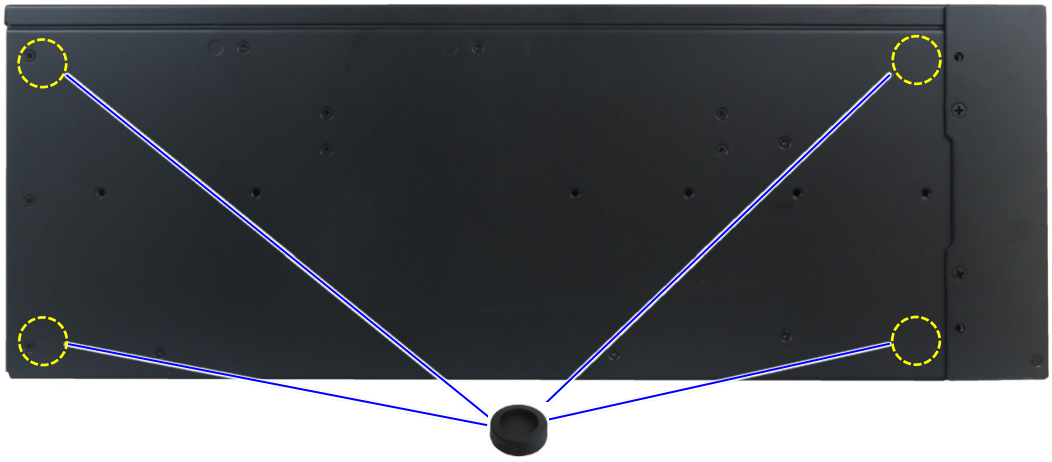
4.6. Bottom Side View (Tower Variant)

To implement the KISS 4U V3 SKX platform as a tower, remove the two handle brackets, see Chapter 8.2: Removing the Handle Brackets and attached the four supplied rubber feet, see Chapter 8.1: Attaching the Rubber Feet. For the recommended position of the four rubber feet, see Figure 24.

When the tower is upright, the three system fans must be located in the lower part and the drive bays in the upper part of the tower. For more information, see Chapter 8.7: Installing as a Tower

⚠CAUTION	**Attach the four rubber feet close to the four corners of the underside of the tower to improve the tower's stability.**

Figure 24: Bottom Side View (Tower Variant) with Rubber Feet Position



5/ System Expansion

Before expanding the KISS 4U V3 SKX platform, observe the instructions and guideline within this chapter.

When expanding a system, do not exceed PSU specified maximum power consumption.

5.1. System Memory

The system memory consists of up to 12x DIMM using DDR4 2400 RDIMMs, with six DIMMs per CPU/six channels per CPU. Standard system memory configurations range from 32 GByte (4x 8 GByte) to 192 GByte (12x 16 GByte).

For information on Kontron reference network cards, contact Kontron Support.

5.2. Drive Bay Combinations

The external and internal drive bays (Figure 10, pos. 5 to 8) support a maximum of eight SATA drives. All eight drives may be front accessible or a mix of front accessible and internal.

Table 4: Drive Bay Combinations

Front Accessible Drive Bays				
Drive Bay	**Storage Device**	**Capacity (HDD/SSD)**	**Type**	**Description**
Bay1	1x 3.5" HDD	2 TB, 4 TB, 6 TB	fixed or removable	
	2x 3.5"HDD	2 TB, 4 TB, 6 TB/	removable	Occupying Bay 1 and Bay 2 / RAID
	3x 3.5" HDD	2 TB, 4 TB, 6 TB	removable	Occupying Bay 1 and Bay 2
	2x 2.5" HDD/SSD	1TB HDD/ 256 GB to 1TB SSD	removable	
	4x 2.5" HDD/SSD	1TB HDD/ 256 GB to 1TB SSD	removable	
Bay 2	1x 3.5" HDD	2 TB, 4 TB, 6 TB	fixed or removable	
	2x 2.5" HDD/SSD	1 TB HDD/ 256 GB to 1TB SSD	removable	
	4x 2.5"HDD/SSD	1TB/ 256 GB to 1TB SSD	removable	
Bay 3	1x DVD		fixed	RW slimline
Internal Drive Bay				
Drive Bay	**Storage Device**	**Capacity (HDD/SSD)**	**Type**	**Description**
Bay 1	1x 3.5" HDD	2 TB, 4 TB, 6 TB	fixed	
Bay 2	1x 3.5" HDD	2 TB, 4 TB, 6 TB	fixed	
Bay 4	1x 2.5" HDD/SSD	1TB HDD /256 GB to 1T SSD	fixed	SATA drive
	2x 2.5" HDD/SSD	1TB HDD /256 GB to 1TB SSD	fixed	

5.3. PCIe Expansion Cards

The KISS 4U V3 SKX platform supports up to seven PCIe 3.0 expansion cards using the rear side PCIe slots. For information on the possible PCIe expansion card types, see Table 5. The slots numbering is shown in Figure 23, pos.9.

Table 5: PCIe 3.0 Expansion Card Slots/Type

Slot No.	Expansion Card Type (full height, full length)	Description
1	PCIe 3.0 x16 (x16 Link)	
2	PCIe 3.0 x16 (x8 Link)	
3	PCIe 3.0 x16 (x16/x8)	Default slot for optional GPU expansion card
4	PCIe 3.0 x16 (x0/x8)	
5	PCIe 3.0 x16 (x16)	
6	PCIe 3.0 x16 (x8 Link)	Default slot for optional LAN expansion card
7	PCIe 3.0 x16 (x16 Link)	Default slot for VGA panel

When expanding a system, observe that the specified maximum power consumption supported by the PSU is not exceeded.

5.3.1. Graphics Processing Unit (GPU) Cards

The standard display output is VGA (max. resolution 1920x1200@ 60 Hz), led out from the mainboard to a VGA panel and installed by default in PCIe slot 7 as shown in Figure 19, pos. 7. For additional graphics performance, an optional GPU expansion cards can be implemented in slot 3 (default GPU slot), as shown in Figure 19, pos. 3.

For information on Kontron reference GPU expansion cards, contact Kontron Support.

5.3.2. Network Card

The standard network outputs are two Gigabit Ethernet ports. For additional network performance, an optional Ethernet adapter card can be implemented in slot 6 (default LAN slot), as shown in Figure 19, pos. 6.

For information on Kontron reference network cards, contact Kontron Support.

6/ Thermal Considerations

6.1. Active Cooling

The KISS 4U V3 SKX platform is forced air-cooled using a fan assembly with three system fans that force air to flow from the air-intake ventilation holes on the front side to the air outlet ventilation holes on the rear side. Each system fans is controlled by its own internal temperature sensor. Two temperature sensors are positioned on the rear side air outlet ventilation holes and one temperature sensor is positioned on the right side behind the drive bays. This enables variations in ambient temperature and power dissipation to be controlled.

If a filter pad is used to stop dust and dirt entering the system, clean the filter pad regularly to ensure that the filter pad does not obstruct the airflow, see Chapter 10.1: Cleaning the Filter Pad.

⚠WARNING

Operate the KISS 4U V3 SKX only with a functional fan assembly!

Replace a defective fan assemble only with Kontron's original fan assembly, see Table 2: Accessories and Spares Parts.

Additionally, each of the dual CPUs is equipped with an active cooler controlled by the mainboard. The PSU is equipped with a fan to extract air directly at the rear of the system.

6.2. Minimum System Clearance

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

Before installing the KISS 4U V3 SKX, observe any thermal considerations such as airflow obstructions and the correct orientation, see Chapter 8/: Installation

⚠WARNING

Ensure Sufficient Airflow

Ensure the KISS 4U V3 SKX is well ventilated and that nothing obstructs the KISS 4U V3 SKX from taking in air at the front and exhausting air at the rear.

⚠WARNING

Do not place the KISS 4U V3 SKX close to heat sources or damp places.

There are no ventilation restrictions above and below the KISS 4U V3 SKX, enabling installation directly on top of or below another system.

6.3. Third Party Components

When extended and configured with third party components such as PCIe expansion cards, DIMMs and drives (HDD, SSD DVD), there is an internal temperature rise. Thus, the air temperature inside the KISS 4U V3 SKX is higher than the ambient temperature around the system.

7/ Assembly

To assembly and maintain the KISS 4U V3 SKX, no special tools are required.

7.1. Opening and Closing the Cover

To access, internal components open the cover.

⚠WARNING

Energy hazards-240 VA present inside the chassis!

Before removing the KISS 4U V3 SKX's cover, ensure that the system is switched off and disconnected from the mains power supply.

Activities such as work inside the system, system expansion with expansion cards, or maintenance must be performed by qualified personnel aware of the associated dangers!

To open the cover, proceed as follows:

1. Switch off and disconnect the system from the mains power supply.
2. If the front access panel is locked, open the securing mechanism using the supplied key.
3. Loosen the cover's knurled screw on the front side (Figure 25) and the two knurled screws on the rear side (Figure 26) that secure the cover.

Figure 25: Loosening Front Side Knurled Screw

Figure 26: Loosening Rear Side Knurled Screws

4. Pull the cover out slightly as shown in Figure 27 to release the cover's front centering and fixing brackets (Figure 22, pos.3 and pos. 4) from the retaining brackets of the chassis.

Figure 27: Releasing the Cover

5. Lift up the cover (on the rear edge) and remove the cover as shown in Figure 28.

Figure 28: Removing the Cover

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

⚠WARNING

The KISS 4U V3 SKX is only properly closed when the cover is attached properly and the cover's knurled screws fastened:

- **Cover fastening screw (Figure 25) on the front side**
- **Two Knurled screws (Figure 26) on the rear side**

7.2. Accessing Internal Components

This chapter contains important information on working safely with internal components. Follow these instructions when handling internal components such as expansion cards.

⚠WARNING

Energy hazards-240 VA present inside the chassis!

Before removing the KISS 4U V3 SKX's cover, ensure that: the system is switched off and disconnected from the mains power supply.

Activities such as work inside the system, system expansion with expansion cards, or maintenance must be performed by qualified personnel aware of the associated dangers!

ESD Sensitive Device!

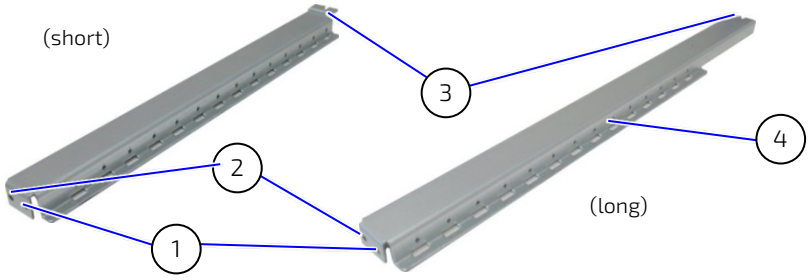
Follow the safety instructions for components that are sensitive to electrostatic discharge (ESD). Failure to observe this warning notice can result in damage to the components.

Consult the documentation provided by the expansion card's manufacturer for instructions before installing/removing an expansion card. Read and observe the corresponding safety instructions included in Chapter 1/: General Safety Instructions for IT Equipment.

7.2.1. Installing /Removing Expansion Cards

The expansion cards are secured using the front slot bracket (Figure 23, pos. 9), the holder slots for long expansion cards (Figure 23, pos. 15) and the card hold down brackets (Figure 23, pos. 3 and 5 & Figure 29). To install or remove expansion cards the card hold down brackets must be removed.

Figure 29: Card Hold Down Brackets (Short and Long)



1 Threaded holes for the externally accessible fastening screws (Figure 20, pos. 5 & 7)

2 Holes for internal bolts (Figure 20, pos. 4 & 6)

3 Notches for fastening screws to secure card hold down brackets to the internal brackets

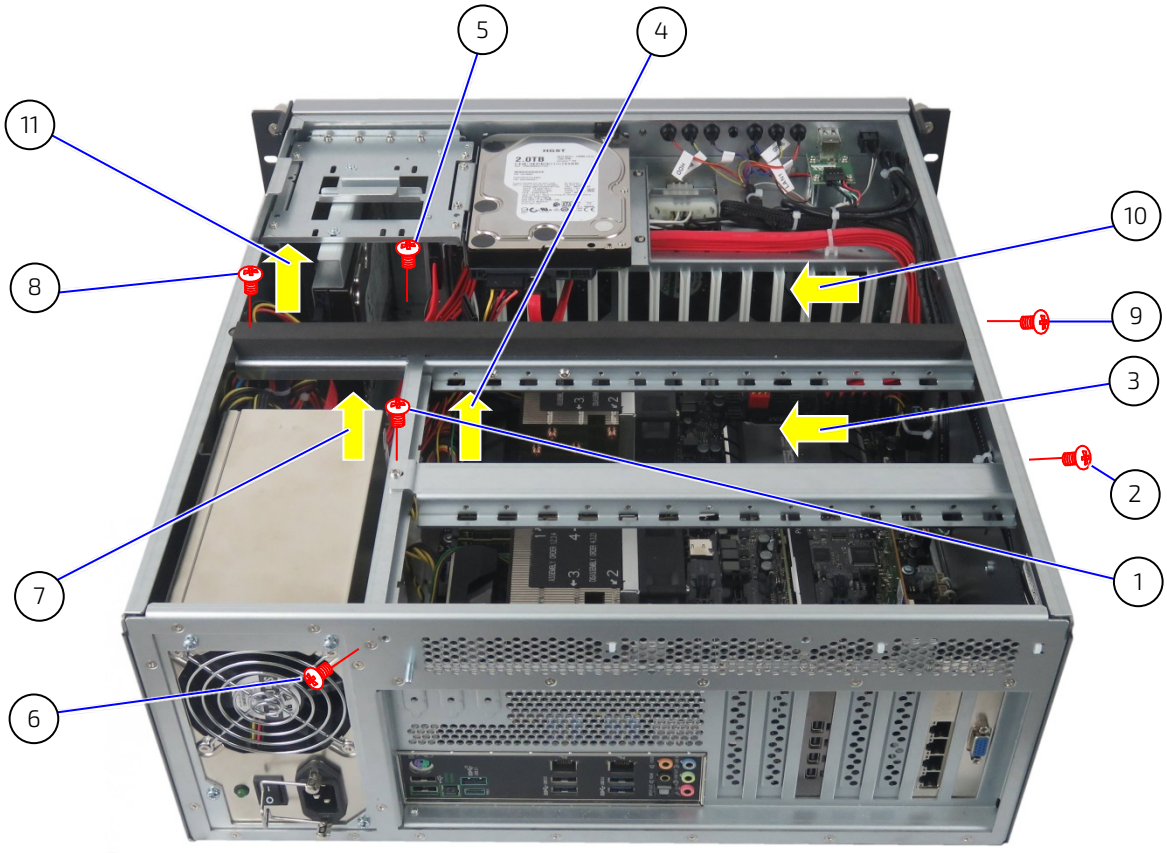
4 Threaded holes for expansion card fixation using supplied holding clamp and screws

To install or remove an expansion card, proceed as follows:

1. Switch off and disconnect the system from the main power source.
2. Open the cover, see Chapter 7.1: Opening and Closing the Cover.
3. Access the expansion cards or expansion card slots by removing the short and long card hold down brackets (Figure 23, Pos.5 and 3), and the retaining bracket that secures the card hold down brackets (Figure 23, pos. 4).

To install short expansion cards (half length), only the card hold down bracket for short expansion cards must be removed.

Figure 30: Step to Remove the Card Hold Down Brackets



4. Loosen the internal fastening screw (Figure 30, step 1) and then the externally accessible fastening screw (Figure 30, step 2) that secure the short card hold down bracket. Pull the card hold down bracket to the left (Figure 30, step 3) to detach the card hold down bracket from the sideways mounted internal bolts (Figure 20, pos. 4). Lift the card hold down bracket upwards (Figure 30, step 4) to remove. Retain the short card hold down bracket and two screws for later use.
5. Loosen the internal fastening screw (Figure 30, step 5) and then the externally accessible fastening screw that secure the retaining bracket (Figure 30, step 6). Lift the retaining bracket upwards (Figure 30, step 7) to remove. Retain the retaining bracket and two screws for later use.
6. Loosen the internal fastening screw (Figure 30, step 8) and then the externally accessible fastening screw (Figure 30, step 9) that secure the long card hold down bracket. Pull the card hold down bracket to the left (Figure 30, step 10), to detach the card hold down bracket from the sideways mounted internal bolts (Figure 20, pos. 6). Lift the card hold down bracket upwards (Figure 30, step 11) to remove. Retain the long card hold down bracket and two screws for later use.
7. Install/remove the expansion card into/out of the mainboard expansion slot and fasten the slot bracket or the expansion card bracket to the rear side slot.
8. To re-assemble the card hold down brackets, follow the steps in reversed order. Tighten the internal screws half way at first. Then, tighten the externally accessible screws firmly and the retaining bracket. Only then, tighten the internal screws at the notches that secure the card hold down brackets.

9. Close the KISS 4U V3 SKX platform and secure the cover with the captive knurled screws.

⚠WARNING

The KISS 4U V3 SKX's is only properly closed if the cover is attached and all knurled screws are securely fastened:

- Cover fastening screw (Figure 25) on the front side
- Knurled screws (Figure 26) on the rear side

8/ Installation

Before installing or removing the KISS 4U V3 SKX in a 19" industrial rack or desktop environment, read the general installation instructions within this chapter.

⚠WARNING	Read and observe the information in Chapter 1/:General Safety Instruction for IT Equipment.
⚠CAUTION	The KISS 4U V3 SKX must be mounted and installed only by qualified personnel aware of the associated dangers.
⚠WARNING	Ensure sufficient air circulation Ensure the KISS 4U V3 SKX is well ventilated and that nothing obstructs the KISS 4U V3 SKX from taking in air at the front and exhausting air at the rear. Above and below the KISS 4U V3 SKX there are no restrictions, enabling installation directly on top of another system.
⚠WARNING	Do not place the KISS 4U V3 SKX close to heat sources or damp places.
i	The KISS 4U V3 SKX platform may be operated horizontally (rackmount and desktop variant) or vertically (tower variant).
	If access is restricted, install expansion cards before installing the KISS 4U V3 SKX.

8.1. Attaching the Rubber Feet

Attach the supplied four rubber feet to the KISS 4U V3 SKX platform, to avoid scratching the user environment's surface. For the desktop variant, position a rubber foot close to each corner on the bottom side. For the tower variant, position the four rubber feet on the left side of the desktop variant, close to each corner as shown in Figure 24. When used in a 19" industrial rack, no rubber feet are required.

⚠CAUTION	Attach the four rubber feet close to the four corners to improve the stability of the KISS 4U V3 SKX tower variant.

1. Switch off and disconnect from the mains power supply. Disconnect all peripherals.
2. Ensure that all expansion cards are secured and that the cover is installed and secured.
3. Turn the chassis upside down with the bottom side facing upwards (desktop and rackmount variant), or so that the left side is accessible (tower variant).
4. Remove the protective film from the self-adhesive rubber feet.
5. Attach the self-adhesive rubber feet to the bottom side of the chassis (desktop and rackmount variant) or the left side (tower variant).
6. Stand the KISS 4U V3 SKX on the rubber feet with the cover facing upwards (desktop and rackmount variant), or on the left side (tower variant).

8.2. Removing the Handle Brackets

The two handles brackets are removable. To remove the two handles brackets, proceed as follows:

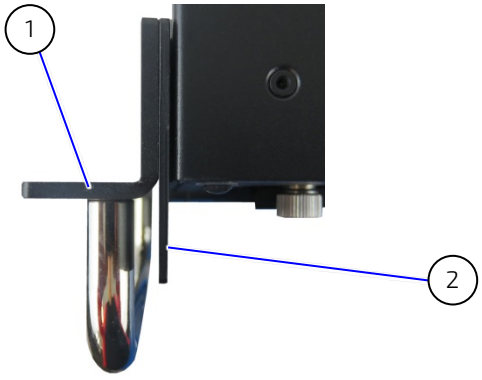
1. Loosen and the remove the two screws (Figure 9, pos. 4) that fasten the handle brackets (left side, right side) and retain for later use.
2. Remove the handle bracket and store with the screws retained in step 1.
3. To reinstall the handle brackets proceed in the reverse order.

The KISS 4U V3 SKX platform is delivered with the handle brackets already assembled.

8.3. Removing the Front Access Panel and Front Access Panel Side-Plates

The front access panel and the two front access panel side-plates are removable.

Figure 31: Front Access Panel Side-plate and Handle Bracket



1. Bracket handle
2. Front access panel side-plate

To remove the front access panel and front access side-plates, proceed as follows:

1. Remove the handle brackets as described in Chapter 8.2: Removing the Handle Brackets (steps 1-2) and retain the handle bracket and screws for later use.
2. Loosen the two screws that hold the front access panel side-plates to the chassis (left side, right side).
3. When the front access panel side-plates are loosened enough the front access panels can be released from the hinges (Figure 11, pos. 16) on the right side and then the left side.
4. Lift the front access panel away while carefully guiding the front access panel's holder arm out of holding slot (Figure 10, pos. 1).
5. Store the front access panel for future use.
6. Tighten the front panel side-plate screws loosened in step 2 to reinstall the front access panel side-plates, or disassemble the front panel side-plates by removing the front access panel side-plate screws loosened in step 2
7. If required, install the handle bracket, see Chapter 8.2: Removing the Handle Brackets, step 3.

8.4. Installing as a Desktop

Before installing the KISS 4U V3 SKX platform in a desktop environment, to avoid scratching the installation surface, install the four supplied rubber feet, as described in Chapter 8.1: Attaching the Rubber Feet. Additionally, observe the general instructions and any safety warnings within this chapter.

⚠WARNING

Voltage feeds must not be overloaded

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.

⚠WARNING

Ensure sufficient air circulation

Make sure the product is well ventilated and that nothing obstructs the KISS 4U V3 SKX from taking in air at the front and exhausting air at the rear.

Above and below the KISS 4U V3 SKX there are no restrictions, enabling installation directly on top of another system.

To install in a desktop environment, proceed as follows:

1. Attach the four supplied rubber feet, see Chapter 8.1: Attaching the Rubber Feet.
2. If not required, remove the handle brackets, see Chapter 8.2: Removing the Handle Brackets.
3. If not required, remove the front access panel and two front access panel side-plates, see Chapter 8.3: Removing the Front Access Panel and Front Access Panel Side-Plates.

8.5. Installing in a 19" Industrial Rack

Before installing the KISS 4U V3 SKX platform in a 19" industrial rack, observe the instructions described in this chapter and any additional safety warnings. To assemble the slide rails for a 19" industrial rack cabinet, see Chapter 8.6: Installing Slide Rails (Option).

⚠WARNING

Use two separate fixation methods

To support the KISS 4U V3 SKX's weight, two separate fixation methods must be used:

- Front handle brackets (right side and left side)
- Slide rails / L brackets / a 19" rack rear side fixation

⚠WARNING

Ensure Sufficient Airflow

Ensure that the 19" Industrial rack cabinet is well ventilated and does not prevent the KISS 4U V3 SKX from taking in air at the front and exhausting air at the rear.

⚠WARNING

Install only in a stable 19" industrial rack cabinet:

To improve stability of the cabinet:

- Install systems from the bottom up
- Place heavy systems lower down
- Bolt the cabinet to the floor or anchor the cabinet to the wall

⚠CAUTION

Installing the KISS 4U V3 SKX alone can result in product damage or personal injury.

Above and below the KISS 4U V3 SKX there are no restrictions, enabling installation directly on top of another system.

Due to possible access restrictions, before installing in a 19" industrial rack:

- Install all expansion card
- Connect peripherals to the corresponding system ports.

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

1. Install the slide rails to the KISS 4U V3 SKX, see Chapter 8.6: Installing Slide Rails (Option).
2. Install the corresponding rail slide kits to the 19" industrial rack cabinet as shown in Figure 35.
3. Push the KISS 4U V3 SKX with slide rail assembly into the corresponding slide rail within the 19" industrial rack as far as possible and fasten at the rear of the 19" industrial rack cabinet.
4. Firmly attach the KISS 4U V3 SKX to the front side of the 19" industrial rack using the two handle brackets mounting holes (Figure 9, pos. 3).
5. Verify that the KISS 4U V3 SKX is securely mounted.

8.6. Installing Slide Rails (Option)

Kontron offers compatible 19" Slide Rails and Rack Slide Rails Kit for the KISS 4U V3 SKX. For more information, see Table 2: Accessories and Spares Parts.

⚠WARNING

Use two separate fixation methods

To support the KISS 4U V3 SKX's weight, two separate fixation methods must be used:

- Front handle brackets (right side and left side)
- Slide rails L brackets / 19" rack rear side fixation

⚠CAUTION

Verify KISS 4U V3 SKX is securely mounted

When using slide rails, the system must be securely mounted on the slide rails and front handle brackets.

⚠CAUTION

Use only the screws provided in the Slide Rail Kit to attach slide rails to KISS 4U V3 SKX.

To install slide rails, proceed as follows:

1. Extend the slide rail to the pulled-out position to expose the inner part of the slide rail with screw holes (Figure 32, pos. 2).
2. Using the supplied screws firmly attach the side rail to the left side and right side.
3. Push the slide rail into the pushed-in position (Figure 34).
4. Install the corresponding rack slide rail kits to the 19" industrial rack cabinet, see Figure 35: Assembling Slide Rails in an Industrial Rack Cabinet.

Figure 32: Slide Rail (inner part) on a KISS 4U V3 SKX

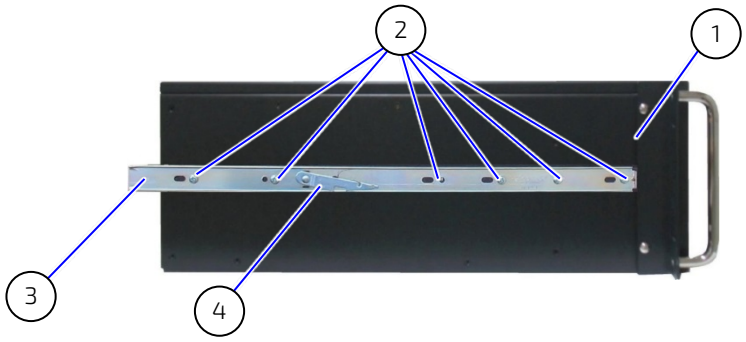


Figure 33: Slide Rail in the Pulled-out Position

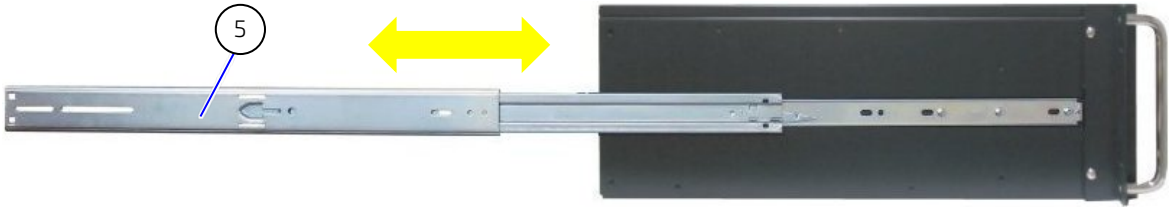
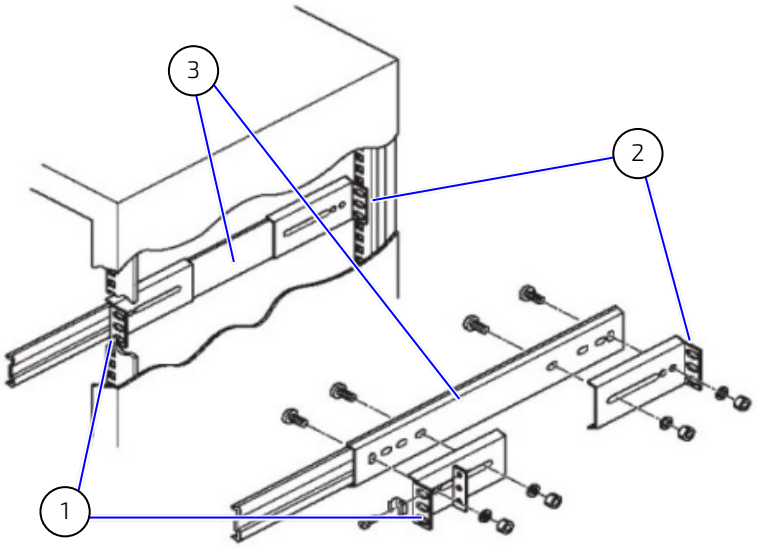


Figure 34: Slide Rail in the Pushed-in Position

1 Side view of the KISS 4U V3 SKX
2 6x M4 rounded head screws(per side)
3 Inner part of the slide rail
4 Locking/unlocking lever
5 Slide rail in pulled-out position
6 Slide rail in pushed-in position

Figure 35: Assembling Slide Rails in an Industrial Rack Cabinet



1 Short front bracket

2 Long rear bracket

3 Telescopic slide rail attached to Industrial rack cabinet

Short brackets are usually used at the front of the chassis and long brackets at the rear.

8.7. Installing as a Tower

To installing the KISS 4U V3 SKX platform as a tower variant:

1. Remove the handle brackets from the front left side and right side, as described in Chapter 8.2:Removing the Handle Brackets.
2. Add the four supplied rubber feet to the left side of system as described in Chapter 8.1: Attaching the Rubber Feet.

⚠CAUTION **Attach the four rubber feet close to the four corners of the tower's underside to improve stability.**

3. If not required, remove the front access panel and two front access panel side-plates, as described in Chapter 8.3: Removing the Front Access Panel and Front Access Panel Side-Plates.
4. Stand the tower upright with the fan assemble in the lower part and the drive bays in the upper part of the tower's front side.

⚠CAUTION **When operating the KISS 4U V3 SKX as a tower, the fan assembly including the three system fans must be located in the lower part and the drives in the upper part of the front side.**

9/ Starting Up

Before staring up, observe the instructions in Chapter 1: General Safety Instruction for IT Equipment.

⚠WARNING	Recommended intended used is closed and locked Only when the cover is properly secured with the knurled screws on the rear side and front side, and the front access panel is locked, is it ensured that the operator does not have access to the internal parts, loaded with hazardous energy.

9.1. Connecting the Power Connection

The AC mains input socket is located on the rear side of the KISS 4U V3 SKX.

⚠WARNING	Power cable and power connectors must always remain easily accessible. Switching off the power using the front panel power button or the PSU's power On/Off switch may not disconnect the KISS 4U V3 SKX platform from the main power source. A standby-voltage of 5 VSB may remain. The KISS 4V V3 SKX is only completely disconnected from the main power source, when the power cable is disconnected, either from the mains power plug socket (power outlet) or the PSU's AC power cable connector. Therefore, for safety reasons 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.
⚠CAUTION	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	The rated mains voltage range must agree with the voltage specified on the type label. Use a power cable rated for the mains power supply in your country.
NOTICE	Do not disconnect the power from the system while the system is switched on! Performing a forced shut down can lead to loss of data or other undesirable effects!

To connect the power cable, proceed as follows:

1. Connect the AC power cord to the AC input power connector.
2. Connect the other end of the AC power cord to a corresponding mains power supply.
3. Unlock the front access panel (Figure 8, pos. 5) and press the power button (Figure 11, pos. 15).
4. Close and lock the front access panel.
5. The power LED illuminates green (Figure 14, PWR).

9.1.1. Loss of AC Power

After an AC power loss, the KISS 4U V3 SKX restores as specified in the BIOS setup menu. To change the specified restore state in the BIOS go to: **Advanced> Advanced Power Management (APM)> Restore on AC Power loss>**

Choose between:

- Power Off
- Power On
- Last State

Observe the settings option for "Restore on AC Power Loss" in the BIOS Setup.
When set in Advanced> Advanced Power Management (APM)> Restore on AC Power loss>

- **[Power Off], the system goes into the OFF state after AC power loss**
- **[Power On] the system reboots after AC power loss**
- **[Last State] the system uses the last state before the AC power loss**

9.2. Operating System (OS) and Hardware Components Drivers

The KISS 4U V3 SKX is operational when switched on for the first time with a pre- installed OS and with all required drivers. Drivers are available from Kontron's Customer Section.

If ordered without a pre- installed OS, before starting the KISS 4U V3 SKX, install the operating system and the appropriate drivers for the system configuration. Consider the manufacturer's specifications for the OS and the integrated hardware components.

Download the relevant drivers for the installed hardware from our web site at www.kontron.com by selecting the product or visit Kontron's Customer Section.

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

10/ Maintenance and Prevention

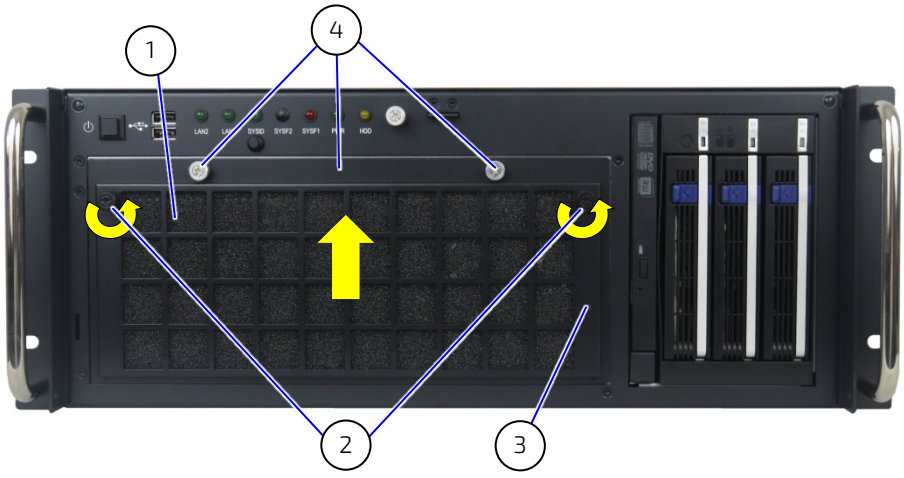
To operate correctly Kontron systems only require minimal maintenance and care:

- Wipe the system with a soft dry cloth if required
- Remove persistent dirt by use of a soft, slightly damp cloth (only use a mild detergent).
- Clean the filter pad regularly (as often as necessary, depending on the environment).

10.1. Cleaning the Filter Pad

The removable filter pad inserts in the filter pad holder on the front side of the fan assembly. The filter pad is soiled by pollution within the operating environment. If heavily soiled, the filter pad can cause excessive heating of the system. Kontron recommends cleaning the filter pad when soiled. How often the filter pad needs to be cleaned depends on level of pollution in the operating environment. The filter pad can be changed during operation.

Figure 36: Filter Pad Holder on the Front Side



1	Filter pad	3	Filter pad holder
2	Filter pad holder's knurled screws	4	Fan assembly with two knurled screws

To replace the filter pad, proceed as follows:

1. Open the front access panel.
2. Loosen the knurled screws that secure the filter pad holder to the fan assembly (Figure 36, pos. 2).
3. Pull out the filter pad holder from the positioning holes (Figure 37, pos. 4) by moving upwards and lifting out the filter pad holder.
4. Remove the soiled filter pad (Figure 40) from the filter pad holder (Figure 38).
5. Clean the filter pad as follows:
    a. Rinse in water (up to approx. 40°C/104°F; with a mild commercial detergent).
    b. It is also possible to beat the filter pad, suction clean the filter pad or blast the filter pad with warm compressed air.
    c. If the filter is soiled with grease and dust, rinse the filter pad in warm water with a degreaser.
    d. Do not clean the air filter pad with a piercing jet of water.
6. Do not wring out the filter pad. Allow the filter pad to air dry.

7. After cleaning and drying the filter pad, place the filter pad in the filter pad holder (Figure 39).
8. Reattach the filter pad holder to the front side of the fan assembly by inserting the positioning latches (Figure 38, pos. 7) into the positioning holes (Figure 37, pos. 4).
9. Fasten the filter pad holder by tightening the knurled screw (Figure 36, pos. 2) to the bolt with tapped hole (Figure 37, pos. 1) on the fan assembly.

Defective components may only be replaced by Kontron original spare parts.
For a list of spare parts, see Table 2: Accessories and Spares Parts

Figure 37: Fan Assembly without Filter Pad Holder

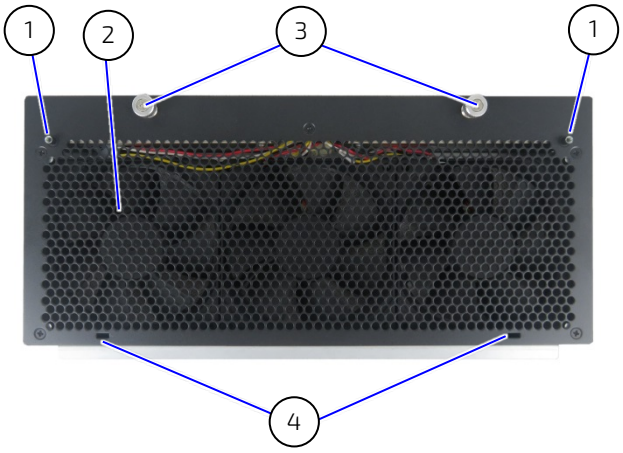


Figure 38: Filter Pad Holder without Filter Pad

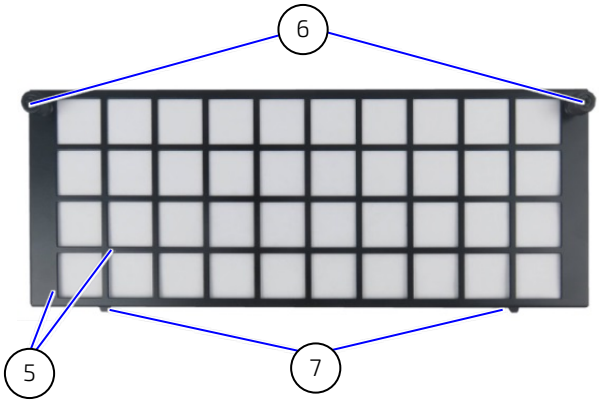


Figure 39: Filter Pad Holder with Filter Pad

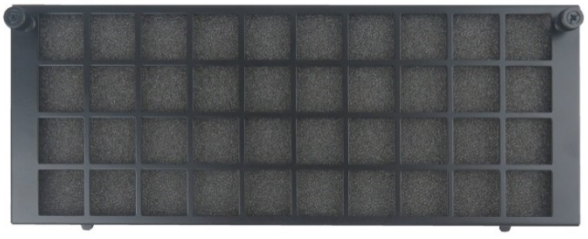


Figure 40: Filter Pad

1 Fan assembly with tapped hole for knurled screw of filter pad holder
2 Air intake openings at the front side of the fan assembly
3 Fan assembly knurled screws
4 Positioning holes for the filter pad holder
5 Filter pad holder
6 Knurled screws of the filter pad holder
7 Positioning latches of the filter pad holder

10.2. Replacing the Fan Assembly

Before replacing the fan assembly, read the following instructions:

⚠WARNING

Operate the KISS 4U V3 SKX only with a functional fan assembly!

Replace a defective fan assemble only with Kontron's original fan assembly, see Table 2: Accessories and Spares Parts.

⚠CAUTION

Fan assembly replaceable during operation

Replace fan only by qualified specialist or a suitably instructed persons aware of the associated dangers. Before removing the fan assembly, wait until the fans have totally stopped. Keep hands and fingers away from rotating fan parts. No special tools are required! (Key is required if the front access panel has been locked)

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

To replace the fan assembly, proceed as follows:

1. Open the front access panel.
2. Loosen the two knurled screws of the fan assembly (Figure 41, pos. 1)
3. Pull out the fan assembly carefully to disconnect the fan assembly from the internal fan power and control socket on the fan assembly's top side (Figure 42, pos. 3).
4. Lift upwards and outwards to remove the fan assembly from the fan compartment.

Figure 41: Removing the Fan Assembly

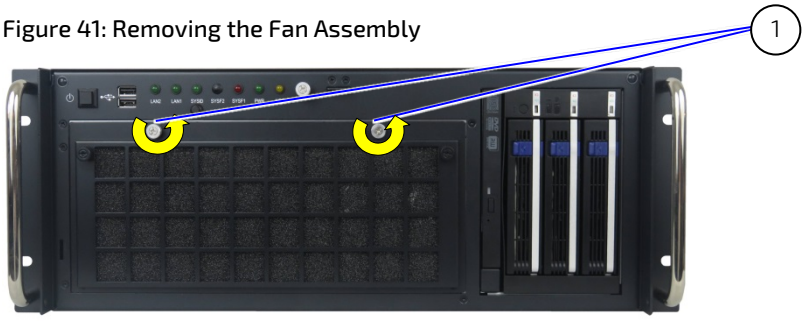
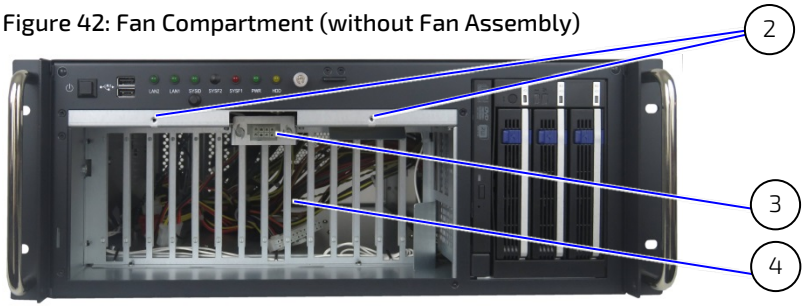
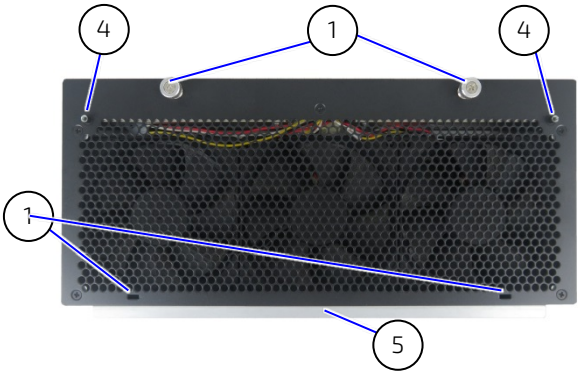


Figure 42: Fan Compartment (without Fan Assembly)



1 Fan assembly with two knurled screws
2 Threaded holes to secure the fan assembly
3 Socket for fan power supply and control
4 Fan compartment

Figure 43: Fan Assembly Front Side



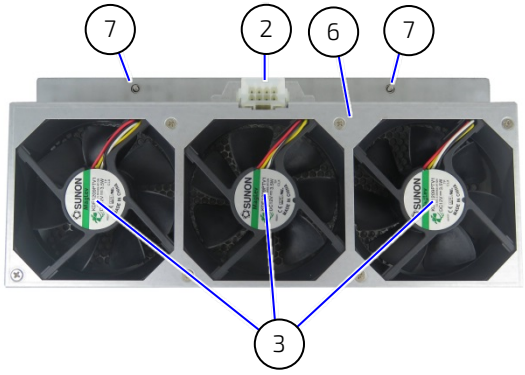
1 Fan assembly with two knurled screws

2 Connector for fan control

3 3x fans

4 2x tapped hole for knurled screw of filter pad holder

Figure 44: Fan Assembly Rear Side



5 Positioning plate of the fan assembly

6 Fan assembly housing

7 Reverse side of (Figure 43, pos. 1) Knurled screws

5. Replace the fan assembly with a new functional fan assembly.
6. Insert the fan assembly's positioning plate (Figure 43, pos. 5) behind the fan compartment's bottom plate and push the fan assembly carefully into the fan compartment until the fan assembly's connector (Figure 44, pos. 2) is inserted completely into the internal fan power and control socket (Figure 42, pos. 3).
7. Fasten the fan assembly's knurled screws (Figure 41, pos. 1)

10.3. Replacing the Lithium Battery

⚠WARNING

Danger of explosion when replaced with wrong battery type
Replace the button cell lithium battery only with the same (CR2032) or equivalent battery type recommended by the manufacturer. The battery type must be UL recognized.

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

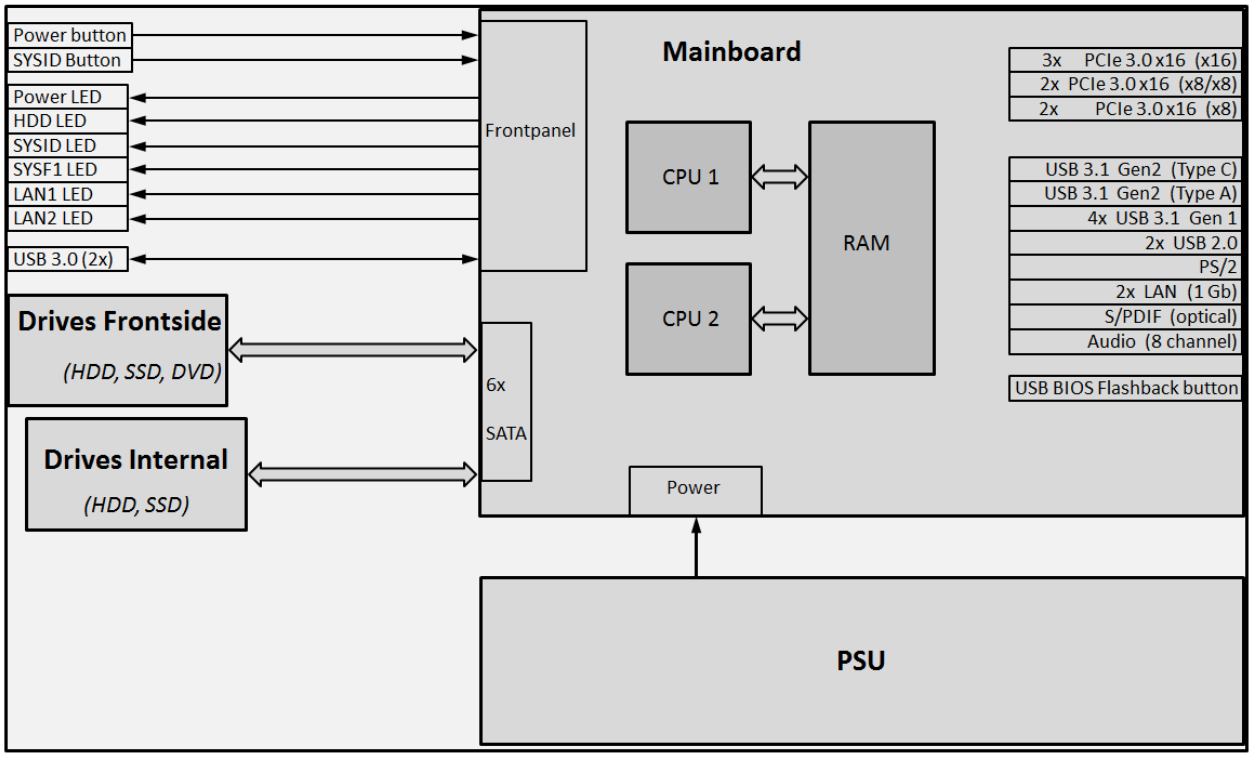
To replace the button cell lithium battery (CR2032) on the mainboard, proceed as follows:

1. Switch off and disconnect the system from the mains power supply.
2. Open the cover, as described in the Chapter 7.1: Opening and Closing the Cover.
3. Remove expansion cards that prevent access to the battery, see Chapter 7.2: Accessing Internal Components.
4. Remove the lithium battery from the holder by pulling the ejector spring outwards.
5. Place a new lithium battery in the battery holder and pay close attention to the polarity of the battery.
6. Replaced the lithium battery only with the same type of battery or with a Kontron recommended battery.
7. Reinstall the removed expansion cards and reattach the connecting cables.
8. Close the cover, as described in the Chapter 7.1: Opening and Closing the Cover.(step 6)

11/ Technical Data

11.1. Block Diagram

Figure 45: Block Diagram KISS4U V3 SKX



11.2. Technical Specification

Table 6: Technical Specification

Mainbaord	WS C621E SAGE	WS C621E SAGE (BMC)
Processor Type	Dual Intel® Xeon® scalable processors: ▶ Xeon® Gold 5119T ▶ Xeon® Silver 4116T ▶ Xeon® Silver 4114T ▶ Xeon® Silver 4109T	
Chipset	Intel® C621 PCH	
System Memory	12x RDIMM, DDR 2400 (ECC) max. with Dual CPU Support for 6 channel per CPU/ 6 RDIMM per CPU Memory capacity: ▶ 32 GByte (4x 8 GByte) ▶ 192 GByte max. (12x 16 GByte)	
Graphics	VGA (Max. resolution 1920x1200@ 60 Hz)	
Front Interfaces		
USB	2x USB 2.0	
Rear Interfaces		
USB	2x USB 2.0 (1x USB port supports USB BIOS Flashback) 4x USB 3.1 Gen1 1x USB 3.1 Gen2 Type A 1x USB 3.1 Gen2 Type C	
LAN	2x 1 Gb (Intel® I210-AT controllers)	2x 1 Gb (Intel®i210-AT controllers) With support share LAN (failover LAN)
PS/2	Keyboard Mouse	
Audio	1x 8-channel HD Audio I/O (with REALTEK® ALC S1220A CODEC)	
S/PDIF	1x optical S/PDIF out	
BIOS Flash back	USB BIOS Flash back™	
Expansion Slots		
Expansion Cards Slots (full height, full length)	Slot 1	PCIe Gen3 x16 (x16 Link)
	Slot 2	PCIe Gen3 x16 (x8 Link)
	Slot 3	PCIe Gen3 x16 (x16/x8 Link)
	Slot4	PCIe Gen3 x16 (x0/x8 Link)
	Slot 5	PCIe Gen3 x16 (x16 Link)
	Slot 6	PCIe Gen3 x16 (x8 Link)
	Slot7	PCIe Gen3 x16 (x16 Link)
Miscellaneous		
BMC		BMC remote Management with ASMB9 card
Software		
OS	MS Windows 10 x64 MS Windows Server 2016 (tested)	
BIOS	UEFI BIOS With USB BIOS Flash back™ function	

Front Accessible Drive Options				
Drive Bay 1	1x 3.5" HDD	2 TB, 4 TB, 6 TB	fixed or removable	
	2x 3.5"HDD	2 TB, 4 TB, 6 TB	removable	Occupying Bay 1 &2 / RAID
	3x 3.5" HDD	2 TB, 4 TB, 6 TB	removable	Occupying Bay 1 & 2
	2x 2.5" HDD/SSD	1TB HDD or 256 GB to 1TB SSD	removable	
	4x 2.5" HDD/SSD	1TB HDD or 256 GB to 1TB SSD	removable	
Drive Bay 2	1x 3.5" HDD	2 TB, 4 TB, 6 TB	fixed or removable	
	2x 2.5" HDD/SSD	1 TB HDD or 256 GB to 1TB SSD	removable	
	4x 2.5"HDD/SSD	1TB HDD or 256 GB to 1TB SSD	removable	
Drive Bay 3	1x DVD		fixed	RW slimline
Internal Drive Options				
Drive Bay 1	1x 3.5" HDD	2 TB, 4 TB, 6 TB	fixed	
Drive Bay 2	1x 3.5" HDD	2 TB, 4 TB, 6 TB	fixed	
Drive Bay 4	1x 2.5" HDD/SSD	1TB HDD or 256 GB to 1TB SSD	fixed	Internal drive bay only
	2x 2.5" HDD/SSD	1TB HDD or 256 GB to 1TB SSD	fixed	
Fans				
External System Fan	3x Fans (front) hot swappable and controlled by sensors			
Internal fans	1x Fan (integrated in PSU) 1x Fan (pro CPU heatsink) controlled by the main board			
Power				
PSU Type	Industrial AC/DC PS/2 PSU 860 W			
Input Voltage	100 VAC to 240 VAC			
Input Current	13 A to 7 A			

11.3. Mechanical Specification

Table 7: Mechanical Specification

Dimension	KISS 4U V3 SKX (with front panel & handle brackets)	KISS 4U V3 SKX (without front panel & handle brackets)
Height (4U)	177 mm (6.97"")	177 mm (6.97")
Width	483 mm (19")	430 mm (16.93")
Depth	515 mm (20.27")	473 mm (18.62")
Weight	20 kg (39.6 lbs.) approx.	
Chassis	Chassis: RAL 7021 Front panel: RAL 9022 - standard Front panel: RAL 5017 - option	

11.4. Environmental Specification

Table 8: Environmental Specification

Temperature	Description
Temperature (operating)	0°C … +45°C (32°F ... 113°F)
Temperature (storage)	-20°C … +70°C (-4°F … 158°F)
Humidity (Operating/Storage)	+40 °C @ 93 % non-condensing
Environment	**Description**
Altitude (operating)	5000 m max. (16400 ft.)
Max. Storage / Transport Altitude	10000 m (32810 ft.)
Shock (operating)	15 g, 11 ms, half sine
Shock (storage)	30 g, 11 ms, half sine
Vibration (operating)	10 – 150 Hz, 1.0 g
Vibration (storage)	0 – 150 Hz, 2.0 g
MTBF	50,000h @ 30°C (min. configuration)

11.5. Directives and Standards

The KISS 4U V3 SKX platform complies with the European Council Directive and the approximation of the laws of the member states. If the user modifies the prerequisites for the CE conformity declaration, safety requirements may no longer apply.

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

Table 9: Directives and Standards

CE			
CE Marking	93/68/ECC		
EMC			
Europe	Emission (Class B)	EN 55032:2012	Electromagnetic compatibility of multimedia equipment- Emission requirements
		EN6100-3-2:2014	Limits for harmonic currents emissions (for equipment with rated input current <= 16 A per phase)
		EN6100-3-3:2013	limitations 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 condition
	Immunity (Industrial Environment)	EN 55024:2010	Information technology equipment- immunity characteristics
Safety			
Europe	EN 62368-1:2014		Audio/video, information and communication technology equipment – Safety requirements
CB Scheme	CB Report for IEC 62368-1:2014		
USA & Canada	NRTL certified – UL 62368-1:2014 / CAN/CSA-C22.2 No. 62368-1:2014		
FCC			
FCC 47 CFR Part 15B/ ICES-003	Complies with the requirements of the Federal Communications Commission (FCC) rules and regulations of title 47 of the Code of Federal Regulations(CFR) Part 15B:2017 and ICES-003:2016 rules to limit the potential of harmful interference		
Environment			
WEEE	Compliant with the Waste Electrical and Electronic Equipment (WEEE) 2012/19/EU directive; to reduce waste of electrical and electronic equipment, encourage recycling and environmental disposal and increase the environmental awareness of producers		
RoHS II	Compliant with the Restriction of Hazardous Substances (RoHS) 2011/65/EU directive to reduce hazardous substances in electrical and electronic equipment		
REACH	Compliant with the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Regulation No. 1907/2006 to identify the intrinsic properties of chemical substances earlier		

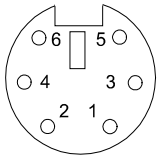
The use of shielded I/O cables is required when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC and ICES rules.

12/ Standard Interfaces – Pin Assignments

Low-active signals are indicated by a minus sign.

12.1. PS/2 Keyboard Mouse Connector

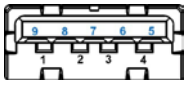
The PS/2 connector is a combined keyboard or mouse connector.

Pin	Signal Name	6-pin mini-DIN (female) Connector
1	Keyboard/Mouse Data	
2	N.C.	
3	GND	
4	+5 V	
5	Keyboard/Mouse Clock	
6	N.C.	

12.2. USB 2.0 Port

Pin	Signal name	4-pin USB 2.0 (Type A)
1	VCC	
2	Data-	
3	Data+	
4	GND	

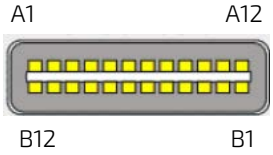
12.3. USB 3.1 Gen 1 and USB 3.1 Gen 2 (Type A) Port

Pin	Signal Name	Pin	Signal Name	9-pin USB 3.1 (Type A) Connector
1	+ 5V	5	RX-	
2	Data-	6	RX+	
3	Data+	7	GND	
4	GND	8	TX-	
		9	TX+	

USB 3.1 Gen 1/ USB 3.1 Gen 2 devices can be used as data storage only.

USB 3.1 Gen 1 and USB 3.1 Gen 2 data transfer rates differ. For optimum performance, use USB devices that match the USB port's transfer rate.

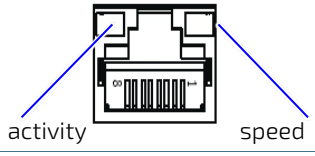
12.4. USB 3.1 Gen 2 (Type C) Port

Pin	Signal Name	Pin	Signal Name	24-pin USB 3.1 (Type C) Connector
A1	GND	B12	GND	
A2	TX1+	B11	RX1+	
A3	TX1-	B10	RX1-	
A4	+V	B9	+V	
A5	CC1	B8	SBus	
A6	Data+	B7	Data-	
A7	Data-	B6	Data+	
A8	SBU1	B5	CC2	
A9	+V	B4	+V	
A10	RX2-	B3	TX2-	
A11	RX2+	B2	TX2+	
A12	GND	B1	GND	

USB 3.1 Gen 1/Gen 2 devices can be used as data storage only.

USB 3.1 Gen 1 and USB 3.1 Gen 2 data transfer rates differ. For optimum performance, use USB devices that match the USB port's transfer rate.

12.5. Ethernet Connector

Pin#	Signal Name	Pin #	Signal Name	RJ 45 8-pin connector
1	MDI0+	5	MDI2-	
2	MDI0-	6	MDI1-	
3	MDI1+	7	MDI3+	
4	MDI2+	8	MDI3-	

Ethernet Port LED Indicators

Activity Link LED		Speed LED	
Status	**Description**	**Status**	**Description**
Off	No link	Off	10 Mbps connection
Orange	Linked	Orange	100 Mbps connection
Orange (Blinking)	Data activity	Green	1 Gbps connection
Orange (blinking then steady)	Ready to wake-up		

12.6. Audio 8-Channel (2, 4, 5.1, or 7.1 Channel configurations)

The audio connectors are colored coded barrel connectors supporting:

- Connection of HD devices or legacy devices
- Audio configurations for 2-channels (headset), 4-channels, 5.1-channels or 7.1-channels connections

Port	Headset 2-Channel	4 Channel	5.1 channel	7.1 channel
Light Blue	Line-in	Line-in	Line-in	Side Speaker Out
Green	Line-out	Front Speaker out	Front speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Mic In	Mic In
Orange			Center/sub-woofer	Center/sub-woofer
Black		Rear speaker out	Rear speaker out	Rear speaker out

The audio connectors outputs signals connect to the audio devices input signals and vice versa.

12.7. S/PDIF Port

The S/PDIF is a digital audio optical output.

To achieve high quality data transfer, Kontron recommends the use of optical cables.

13/ BIOS

The KISS 4U V3 SKX uses the UEFI BIOS supported by the WS C621E SAGA mainboard. The uEFI BIOS features a variety of enhanced functions specifically tailored to the KISS 4U V3 SKX's hardware features:

- 256 Flash ROM
- Plug & Play
- WfM2.0
- SMBIOS 2.6.1
- ACPI 3.0
- ASUS EZ Flash Utility
- USB Flashback button
- ASUS CrashFree Technology

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

The BIOS features listed in this user guide are open to change and may not be available in the latest version of the mainboard's BIOS.

13.1. Starting the uEFI BIOS

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

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

1. Power-up the board.
2. Wait until the Power On Self Test (post) starts.
3. Press the <DEL> key.
4. If the uEFI BIOS is password-protected, a request for password will appear. Enter either the User Password or the Supervisor Password, press <RETURN>, and proceed with step 5.
5. The Setup menu appears.

If the <DEL> key is not press the POST continues with the test routines

The KISS 4U V3 SKX uEFI BIOS Setup program uses a hot key navigation system. The hot key legend bar is located at the bottom right corner of the Setup screens. For a list of the navigation hot keys available in the legend bar, see Table 10: Navigation Hot Keys Available in the Legend Bar.

Table 10: Navigation Hot Keys Available in the Legend Bar

Sub-screen	Description
<→> or <←>	Selects screen from the menu bar (for example, Main or Advanced)
<↑> or <↓>	Select item in current screen
<Enter>	Selects a submenu
<+>/<->	<Plus> selects the next higher value and <Minus> selects the next lower value within a field
<+>	<Plus> key selects the next higher value within a field
<F1>	Invokes the General Help window
<F2>	Loads previous values
<F5>	Loads the optimized defaults
<F10>	Save changes and Resets
<F12>	Print screen
<ESC>	Exits a major Setup menu and enters the Exit Setup menu Pressing the <ESC> key in a sub-menu displays the next higher menu level

The BIOS default setting ensure optimum performance. If changes are made to the BIOS the original default settings can be reloaded by Pressing <F5>.

13.2. BIOS Update

To ensure compatibility with new operating systems (OS), hardware or software and to integrate new BIOS functions Kontron recommends updating the BIOS. To update the BIOS easily use the available BIOS Flashback button and the USB Flashback port

For information regarding available BIOS updates, visit https://www.asus.com/support/and enter the mainboard's product name for direct access to the latest BIOS update.

If the system fails to boot after a BIOS update, the BIOS maybe damaged, contact Kontron Support.

For the implemented mainboard's product name, see Table 6: Technical Specification.

13.3. Using the BIOS Flashback Button

The BIOS flashback button enables users to update the BIOS to the latest version without entering the existing BIOS or the OS.

To use the BIOS Flashback function:

1. Insert a USB storage device into the USB Flashback port (Figure 17, pos. 7).
2. Download the latest BIOS version available for the WS C621E SAGA mainboard from the ASUS support website, visit https://www.asus.com/support/
3. Rename the download file to WSC621ES.CAP and copy the download file to the USB storage device inserted into the USB Flashback port.

4. Press the Flashback button for at least 3 seconds until the BIOS Flash back LED blinks three times to indicate a successful BIOS update and wait until BIOS update is completed and the light goes out.

Do not switch off or interrupt the system during a BIOS update.
If interrupted, the BIOS update process must be restarted.

If the BIOS Flashback LED is a solid light, the BIOS Flashback is not working properly.
Possible errors are:

- Installation of the USB storage device
- File name file format error

In such cases, start the BIOS update process again.

14/ Technical Support

In order to request technical support, send an email with the information below to support@kontron.com

- Product name
- Product model number
- Serial number of the product
- Brief problem description
- Complete company address

Customers with service portal access may maintain their tickets directly in the service portal https://support-kontron.snt.at/

The serial number can be found on the type label, placed on the bottom side of the chassis.

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:

RMA website -http://www.kontron.com/support-and-services/support/rma-information

2. Download and fill out the RMA Request form for your region. Take care to include a short detailed description of the observed problem or failure and to include the product identification (product name, material number and serial-number). If more than one product is sent in a delivery. Fill out the above information in the RMA Request form for each product.
3. Send the completed RMA-sheet to the given Kontron fax or email address. Kontron will provide an RMA-Number within one business day.
4. The goods for repair shall be packed properly for shipping, considering shock and ESD protection.

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

5. Send the product to the relevant regional delivery address on the RMA form or the address specified by Kontron, and include the RMA form with RMA number.
6. After receiving the product, a confirmation email is sent to the RMA sheet name and address.

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 mains power source .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

Kontron defines product warranty in accordance with regional warranty definitions. Claims are at Kontron's discretion and limited to the defect being of a material nature. To find out more about the warranty conditions and the defined warranty period for your region, following the steps below:

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

16.1. Limitation/Exemption from Warranty Obligation

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

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

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

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

Appendix A: List of Acronyms

Table 11: List of Acronyms

ATX	Advanced Technology eXtended
BIOS	Basic Input Output System
CFR	Code of Federal Regulations
CLI	Command-Line Interface
COM	Communication port
CPU	Central Processing Unit
DC	Direct Current
DDR	Double Data Rate
DIMM	Dual Inline Memory Module
DP	Display port
DVD	Digital Video Device
DVI	Digital Video Interface
ECC	Error Checking and Correction
EMC	Electromagnetic Compatibility
ESD	ElectroStatic Dischange
FCC	Federal Communications Commission
GbE	Giga bit Ethernet
GPSD	General Product Safety Directive
GPU	Graphics Processing Unit
HD/HDD	Hard Disk /Drive
HPM	PICMG Hardware Platform Management specification family
ICES	Interference Causing Equipment standard
IOL	IPMI-Over-LAN
IOT	Internet of Things
IPMI	Intelligent Platform Management Interface
KCS	Keyboard Controller Style
KBD	Keyboard
KVM	Keyboard Video Mouse
LAN	Local Area Network
LED	Light-Emitting Diode
LVD	Low Voltage Directive
MEI	Management Engine Interface
NCSI	Network Communications Services Interface
NRTL	Nationally Recognized Test Laboratory
OS	Operating System
PCB	Plastic Circuit Board
PCI	Peripheral Component Interconnect
PCIe	PCI-Express
PECI	Platform Environment Control Interface
PICMG®	PCI Industrial Computer Manufacturers Group
PSU	Power Supply Unit
RAM	Random Access memory
RDIMM	Registered DIMM
REACH	Registration, Evaluation, Authorization and restriction of Chemicals
RMA	Return of Material Authorization
RTC	Real Time Clock
SBC	Single Board Computer
SEL	System Event Log
ShMC	Shelf Management Controller
SLI	Scalable Link Interface
SMBus	System Management Bus
SMWI	System Monitor Web Interface
SOL	Serial Over LAN
SRAM	Synchronous Dynamic Random Access Memory
SSD	Solid State Drive
SSH	Secure Shell
TPM	Trusted Platform Module
UDIMM	Unregisterd DIMM
UEFI	Unified Extensible Firmware Interface
USB	Universal Serial Bus
WEEE	Waste Electrical and Electronic Equipment

About Kontron

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

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