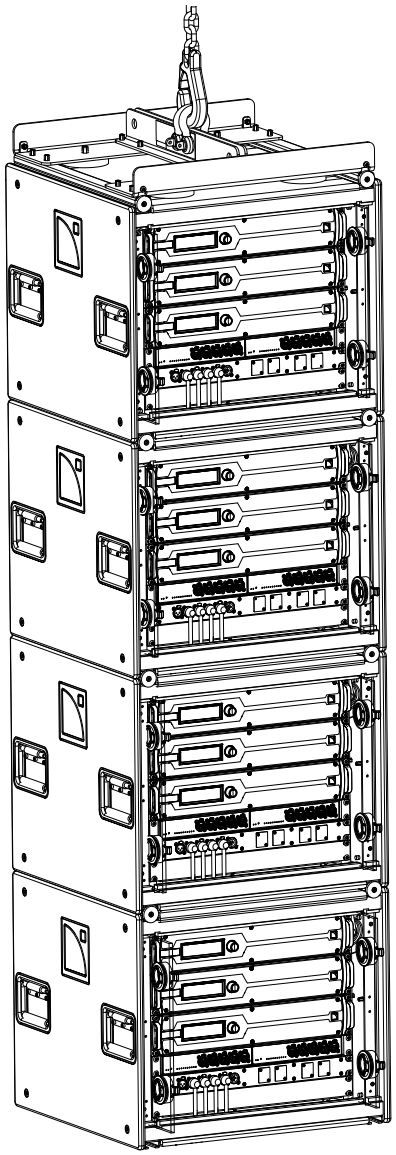
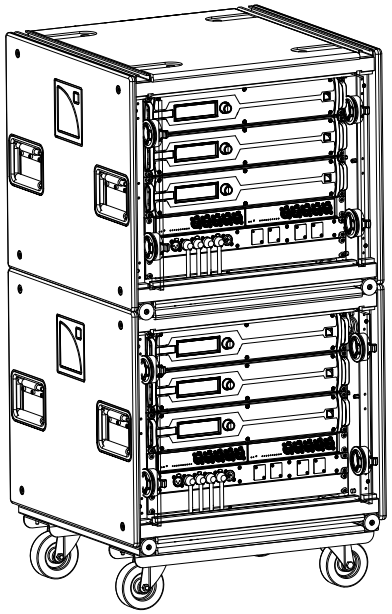
LA-RAK III

owner's manual (EN)





Document reference: LA-RAK III owner's manual (EN) version 2.0
Distribution date: October 21, 2024

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Safety

Important safety instructions

Inspect the product before operation.

If any sign of defect or damage is detected, immediately withdraw the product from use for maintenance.

Perform preventive maintenance at least once a year.

Refer to the preventive maintenance section for a list of actions and their periodicity.

Insufficient upkeep of the product can void the warranty.

Verify the electrical conformity and compatibility of the mains supply.

Only connect the product to an AC power outlet rated 100-240 V, 50-60 Hz, with the following current values:

100-120 V: 30 A (US MODE)

220-240 V: 32 A (EU MODE)

WARNING: The product is of Class I construction and shall be connected to a mains socket outlet with a Protective Earth connection.

When the product is used in a three-phase circuit, verify the electrical conformity and compatibility of the three-phase circuit.

Verify that the three phases work, and balance the loads between the three phases.

Verify that the neutral and earth work.

Never try to emulate a 230 V circuit connecting an apparatus to two live wires of a 120 V three-phase circuit.

Never try to emulate a 200 V circuit connecting an apparatus to two live wires of a 100 V three-phase circuit.

The power supply feeding LA-RAK III must be equipped with circuit breakers meeting the following requirements:

There must be one dedicated circuit breaker for each phase (no mechanical link between phases).

Use these references, or equipment with equivalent characteristics:

100-120 V (US MODE): 30 A, Schneider Electric Square D 30A QO (in North America), or Mitsubishi CP30-BA-M (in Japan).

220-240 V (EU MODE): 32 A, Type C.

Circuit breakers of different characteristics could trip in case of short-term, high current draw, because they do not match LA7.16 Fuse Protect algorithms.

Electrical generator

You must power on the generator before powering on the product.

Verify that the product is turned off before powering on the generator.

Terminals marked with the lightning flash symbol are HAZARDOUS LIVE.

The external wiring connected to these **terminals** requires installation by an **instructed person** or the use of ready-made leads or cords.

Never attempt to touch any exposed speaker wiring while the product is operating: first disconnect the connector from the product.

Mute all output channels before connecting a speaker to an amplified controller.

Do not connect a speaker output in parallel or series with any output of another amplified controller.

Do not connect the speaker outputs to any other voltage source, such as a battery, power mains, or power supply, regardless of whether the amplified controller is turned on or off.

Never incorporate equipment or accessories not approved by L-Acoustics.

Read all the related PRODUCT INFORMATION documents shipped with the products before exploiting the system.

Intended use

This system is intended for use by trained personnel for professional applications.

As part of a continuous evolution of techniques and standards, L-Acoustics reserves the right to change the specifications of its products and the content of its documents without prior notice.

Check www.l-acoustics.com on a regular basis to download the latest document and software updates.

Beware of sound levels.

Do not stay within close proximity of loudspeakers in operation.

Loudspeaker systems are capable of producing very high sound pressure levels (SPL) which can instantaneously lead to permanent hearing damage to performers, production crew, and audience members. Hearing damage can also occur at moderate level with prolonged exposure to sound.

Check the applicable laws and regulations relating to maximum sound levels and exposure times.

Beware of over power risks.

Only use compatible loudspeakers with appropriate presets to avoid damage to the loudspeakers.

Do not place sources of open flame, such as lighted candles, on the product.

Do not use the product outside its operating temperature range.

The product operates at a room temperature between -5 °C / 23 °F and 50 °C / 122 °F.

Do not expose the product to direct sun.

Do not expose the product to extreme conditions.

Do not expose the product to moisture (rain, mist, sea spray, steam, humidity, condensation…) or excessive heat (direct sun, radiator…) for a long period of time.

For more information, refer to the **Products weather protection** document, available on the website.

Use the product in a conformed electro-magnetic environment.

The product can be used in the following environment: non-residential (class A).

Avoid radio interference.

This product has been tested and complies with the regulations of the EMC directive (Electro Magnetic Compatibility). These regulations are designed to provide reasonable protection against harmful interference from electrical equipment, but it cannot be guaranteed that interference will never occur.

Product disconnection

To completely disconnect this product from the mains, disconnect the power supply cord plug from the mains socket outlet.

Power supply cord and socket accessibility

The main plug of the power supply cord shall remain easily accessible.

The mains socket outlet shall be easily accessible.

Read the maintenance section of this document before servicing the product.

Contact L-Acoustics for advanced maintenance.

Any unauthorized maintenance operation will void the product warranty.

Shipping

Use the original packaging for shipping the product.

This marking indicates that this product should not be disposed of with other household waste throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmentally safe recycling.

Introduction

LA-RAK III touring rack

LA-RAK III is a flyable touring rack offering 48 channels of amplification in a 9U frame. It is equipped with three LA7.16 amplified controllers, two LS10 AVB switches, two panels for mains power and signal distribution, and a blank panel. All devices are internally prewired for audio, control, and power to offer a plug-and-play solution with seamless Milan-AVB network redundancy.

The unique high-density approach of the LA-RAK III makes it a versatile and flexible addition to the LA-RAK family. The multichannel capacity of LA-RAK III enables it to discretely process and amplify distributed, immersive, and line source systems very efficiently, with the capability to power most L-Acoustics loudspeakers in large quantities.

The rugged LA-RAK III features a shock-absorbing inner frame, retractable front and rear doors, a detachable dolly and four handles to facilitate transport and manipulation. An optional flying frame supports up to four LA-RAK III.

LA-RAK III comes with three-phase 32 A IEC input and link connectors, allowing the linking of two LA-RAK III. It also comes with a 30 A NEMA connector for 110 V operation. Additional power sockets are available for auxiliary equipment.

Usable worldwide, LA-RAK III facilitates tour logistics and cross-rental between L-Acoustics rental network agents. LA-RAK III is mechanically and electrically compatible with the LA-RAK II AVB and LA-RAK legacy standards.

How to use this manual

The LA-RAK III owner's manual is intended for all actors involved in the system design, implementation, preventive and corrective maintenance of the LA-RAK III product. It must be used as follows:

1. Read the technical description for an overview of all product elements, their features, and their compatibilities.
   - Technical description (p.13)
2. Before installing the product, perform mandatory inspections and functional checks.
   - Inspection and preventive maintenance (p.21)
3. To deploy the product, follow the step-by-step installation instructions and refer to the cabling schemes.
   - Rigging procedures (p.34)
4. To configure the settings and parameters of the product, follow the step-by-step operation instructions.
   - Operation (p.42)

The Corrective maintenance (p.54) section contains the operations authorized for the end user.
Performing another operation exposes to hazardous situations.
For advanced maintenance, contact your L-Acoustics representative.

As part of a continuous evolution of techniques and standards, L-Acoustics reserves the right to change the specifications of its products and the content of its documents without prior notice.

Check www.l-acoustics.com on a regular basis to download the latest document and software updates.

Contact information

For information on advanced corrective maintenance:
- contact your Certified Provider or your L-Acoustics representative
- for Certified Providers, contact the L-Acoustics customer service: customer.service@l-acoustics.com (EMEA/APAC), laus.service@l-acoustics.com (Americas).

Symbols

The following symbols are used in this document:

This symbol indicates a potential risk of harm to an individual or damage to the product.
It can also notify the user about instructions that must be strictly followed to ensure safe installation or operation of the product.

This symbol indicates a potential risk of electrical injury.
It can also notify the user about instructions that must be strictly followed to ensure safe installation or operation of the product.

This symbol notifies the user about instructions that must be strictly followed to ensure proper installation or operation of the product.

This symbol notifies the user about complementary information or optional instructions.

Revision history

version number	publication date	modification
1.0	Jan. 2023	Initial version for pilot phase.
2.0	Oct. 2024	• Added Corrective maintenance (p.54). • Updated Mechanical safety (p.19) for stacked configurations on dolly board. • Updated Rigging procedures (p.34). • Added LS10 IP address setup (p.47) recommendations.

System components

Racks

LA-RAK III	Touring rack containing three LA7.16, one LA-POWER II for power distribution, one LA-PANEL III for audio signal distribution, and two LS10 for AVB distribution

Powering and driving system

LA7.16	Amplified controller 16 × 1300 W / 8 ohms

Distribution

LA-PANEL III	Panel for audio signal distribution (AES/EBU, ANA, housings for custom optical connectors)
	Four D-shape compatible housings behind blank plates enable the addition of optical fiber connectors or etherCON connectors to link to LS10 Ethernet ports 6 and 7
LA-POWER II	Power distribution panel

Networking

LS10	Avnu™-certified AVB switch

Cables

DOE cables	Dual AVB Network cable CAT6A, etherCON (black = primary network, red = secondary network)
	Come in different sizes: DOE2 (2 m / 6.6 ft), DOE45 (45 m / 147.6 ft), and DOE100 (100 m / 328.1 ft)
SC32-4DO	Breakout cable
	SC32 connector to 4 × 8-point CA-COM

Components

BOB32	Breakout box: SC32 to 2 × CA-COM + 8 × NL4

Rigging elements

LA-RAK BUMP III	Structure for flying four LA-RAK III
	Compatible with LA-RAK, LA-RAK II, and LA-RAK II AVB

Software applications

Soundvision	3D acoustical and mechanical modeling software
LA Network Manager	Software for remote control and monitoring of amplified controllers

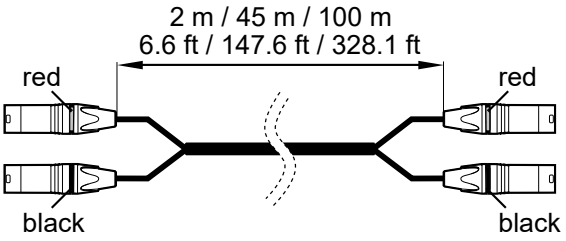
Refer to the Soundvision help.
Refer to the LA Network Manager help.

Loudspeaker enclosures

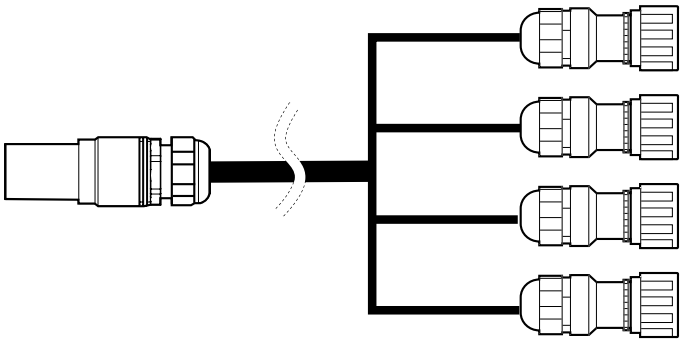
Refer to the user documentation of the loudspeaker systems for detailed instructions about the enclosures and their connection to the amplified controllers.

System component illustrations

Cables

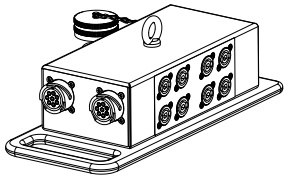


DOE cables



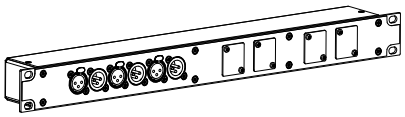
SC32-4DO

Components

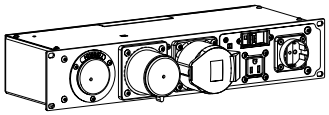


BOB32

Distribution

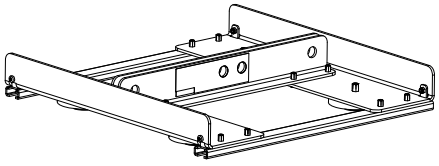


LA-PANEL III



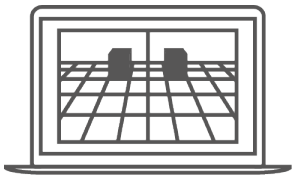
LA-POWER II

Rigging accessories



LA-RAK BUMP III

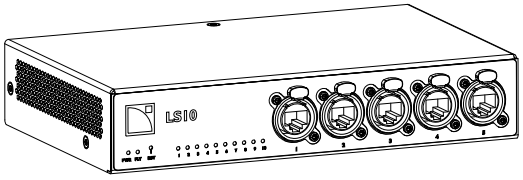
Software applications



Soundvision

LA Network Manager

Network switch



LS10

Technical description

Main features

LA-RAK III is a 9U rack cabinet in which are mounted three LA7.16 amplified controllers and two distribution panels: LA-PANEL III for analog and AES3 audio signal, and LA-POWER II for power.

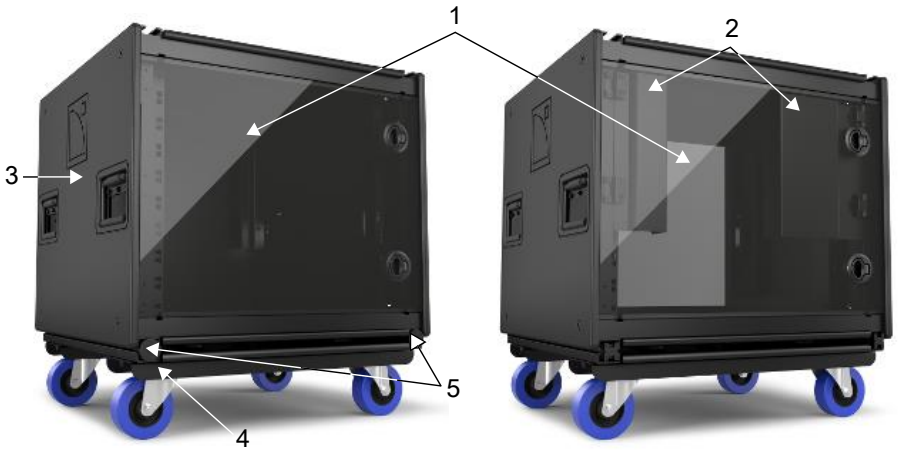
On the front face, a 1U space can receive additional material. For instance it allows to adapt a custom-built patch panel that accomodates optical connectors such as Fiberfox or OpticalCON to link to LS10 SFP optical interfaces.

RK9U structure

The LA-RAK III RK9U cabinet is a dual structure consisting of a rubber shock inner steel frame braced by an external aluminum frame sided with highly resistant polyethylene panels. Two storable LEXAN doors protect the internal components during transport.

On the rear face, two hinge-mounted panels cover and protect the analog, digital and network connectors of the amplified controllers. The SC32 sockets remain accessible for loudspeaker cabling.

The RK9U is equipped with a detachable transport dolly board and two coupling bars. The coupling bars can also be used to array several LA-RAK III in flown or stacked configurations.



1 storable LEXAN doors

2 hinge-mounted panels

3 polyethylene panel

4 dolly board

5 coupling bars

LA-POWER II power distribution panel

LA-POWER II is a 2U / 19 inch I/O power distribution panel.

The LA-POWER II is equipped with a mains switch. The factory default settings is **EU MODE CEE FORM 400 V / 32 A**.

To use LA-POWER II in US mode, position the switch on **US MODE NEMA L21-30P 120-208 V / 30 A** before connecting to a power source.

LA-POWER II is equipped with an IN socket for US MODE, and one IN and one LINK socket for EU MODE (to power a secondary rack). Power is automatically balanced with an even number of LA7.16 per phase.

LA-POWER II is fitted with three power cords equipped with 32 A Neutrik powerCON sockets for the LA7.16 amplified controller.

The two IEC auxiliary outlets are available to power two LS10. Additional outlets (one NEMA, one "Schuko") are available to power auxiliary accessories such as a laptop. The auxiliary circuit is protected by a circuit breaker. Refer to section Powering the amplified controllers (p.44) before use.

Three dual LEDs help monitor phase presence, independently from the mains switch position: their left sides indicate phase presence at the US IN connector, and their right sides indicate phase presence at the EU IN connector. The LEDs are for information only. Always apply the necessary safety precautions regardless of the LED status.

1	AC input connector (US mode)	**8**	AC output cables for LA7.16
2	AC input connector (EU mode)	**9**	mains switch
3	AC link connector (EU mode)	**10**	AC auxiliary output connector V-Lock compatible for LS10 (AUX L3)
4	AC presence LEDs		
5	circuit breaker (AUX L3)		
6	AC auxiliary output connector (US mode)		
7	AC auxiliary output connector (EU mode)		

LA-PANEL III signal distribution panel

LA-PANEL III is a 1U distribution panel for analog and digital audio signal distribution.

LA-PANEL III can distribute up to six digital audio channels using AES/EBU digital signals through three IN XLR connectors.

The signals can be distributed to the three amplified controllers through three digital XLR connectors on the rear side of the panel.

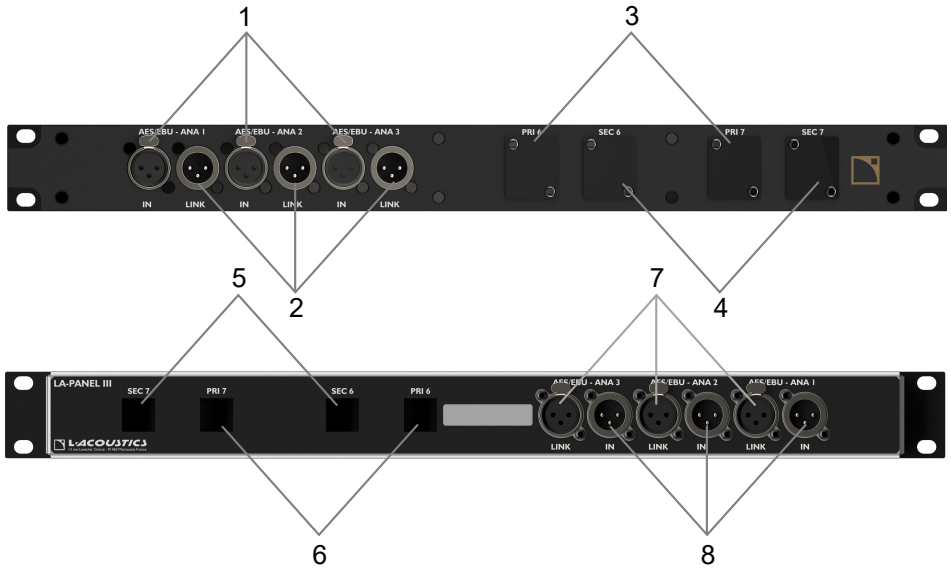
The three LINK XLR connectors can send the signals to another LA-RAK III in a daisy-chain layout.

The three LINK XLR connectors for AES/EBU must be connected to their corresponding LA7.16 LINK connectors to provide refreshed signals to another LA-RAK III, as required by the AES/EBU standard.

When linking LA7.16, make sure the linked amplified controllers are configured in the same mode.

Four D-shape compatible housings behind blank plates enable the addition of optical fiber connectors, such as HMA or opticalCON™ for additional flexibility. These connectors can be connected to the ports 6 and 7 of each LS10.

Accessories include two XLR cables to connect LINK and IN connectors on the front of the panel and set a daisy-chain between controllers within the LA-RAK III. The connectors on the front are not needed if analog or AES/EBU are not used.



1	XLR AES/EBU input connectors	**5**	housing for custom optical connectors (dedicated to SECONDARY network)
2	XLR AES/EBU link connectors	**6**	housing for custom optical connectors (dedicated to PRIMARY network)
3	housing for custom optical connectors (dedicated to PRIMARY network)	**7**	XLR AES/EBU link connectors
4	housing for custom optical connectors (dedicated to SECONDARY network)	**8**	XLR AES/EBU input connectors

LS10

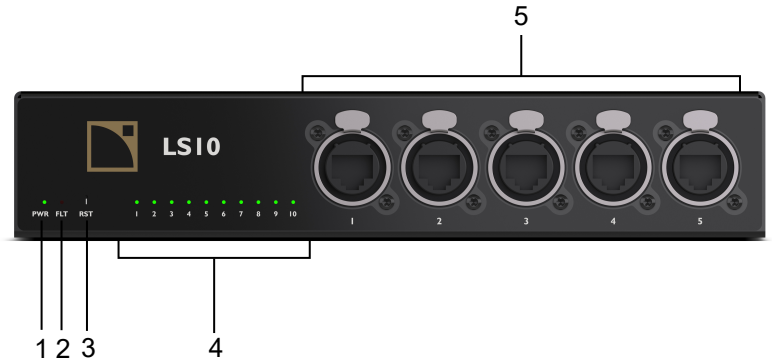
LS10 is a plug-and-play Avnu™-certified AVB switch.

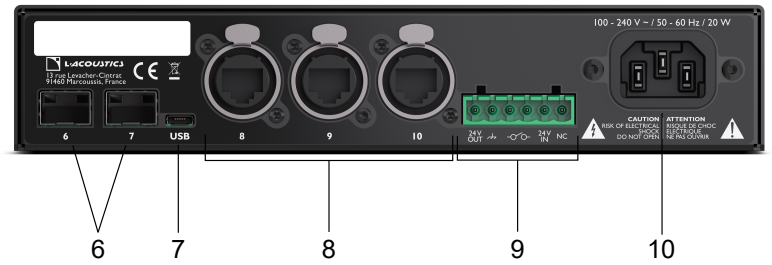
AVB

AVB is an open standard protocol developed by the Avnu Alliance organization for the transport of time-sensitive data. It ensures true synchronicity between devices on the network and guarantees the delivery of audio packets.

AVB networks reserve specific bandwidth for media to eliminate interference with other data and provide an extremely precise clock for all devices.

Front and rear panels



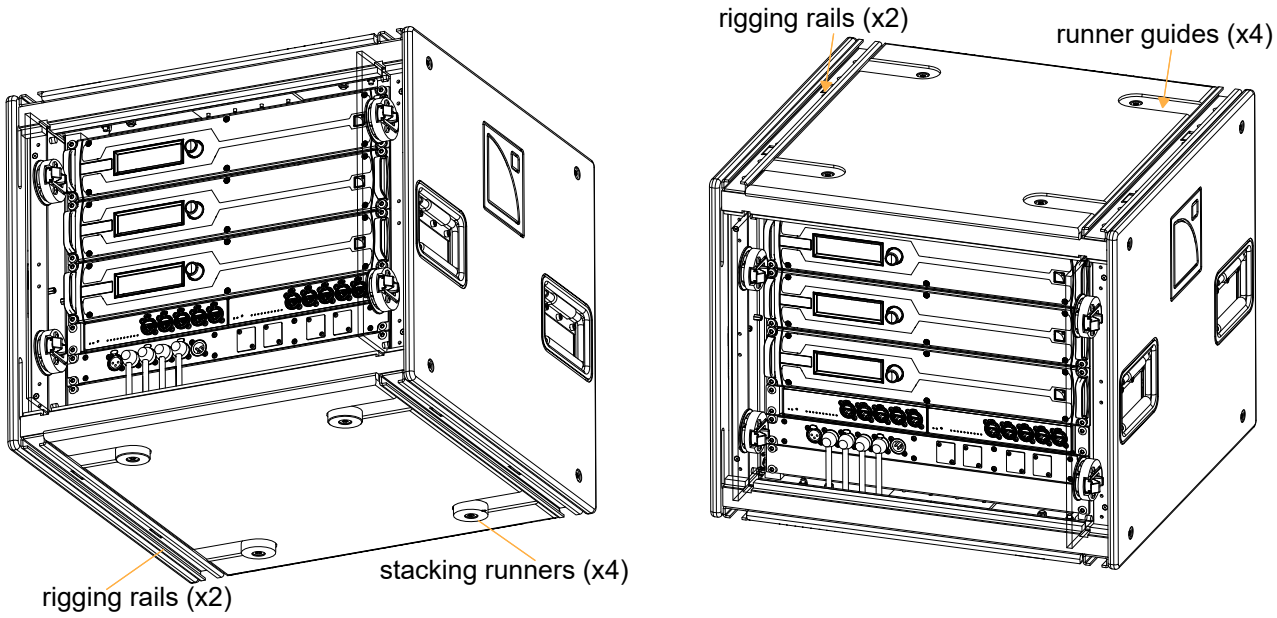


1	1 Power indicator	**6**	2 SFP cages
2	1 Fault indicator	**7**	1 female micro type USB port
3	1 Reset button	**8**	3 Ethernet etherCON I/Os
4	10 link status/port indicators	**9**	1 × 6-point terminal block, step 5 mm
5	5 Ethernet etherCON I/Os	**10**	1 mains power input, IEC C13 V-Lock compatible socket

Rigging system description

LA-RAK III

LA-RAK III features four fully integrated rigging rails on top and bottom faces as well as four stacking runners which mate with four runner guides. These are for assembling several LA-RAK III in stacked or flown configuration.

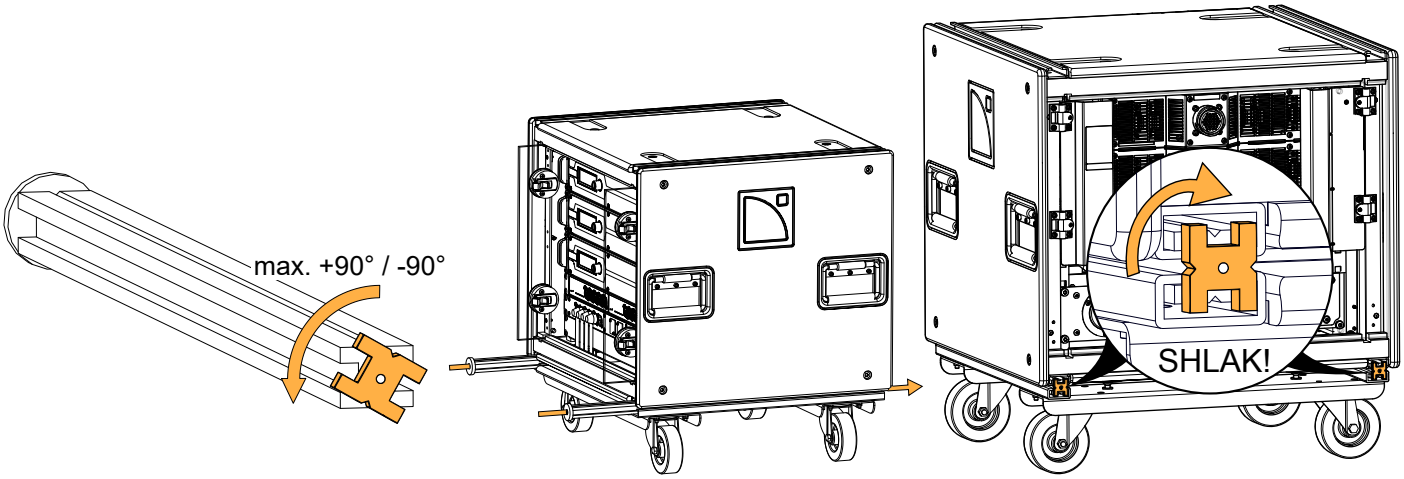


Connection with other LA-RAK III or rigging elements is ensured by two coupling bars with spring-loaded safety.

Risk of damage to the product

Do not rotate the spring-loaded safety more than 90° from its resting position.

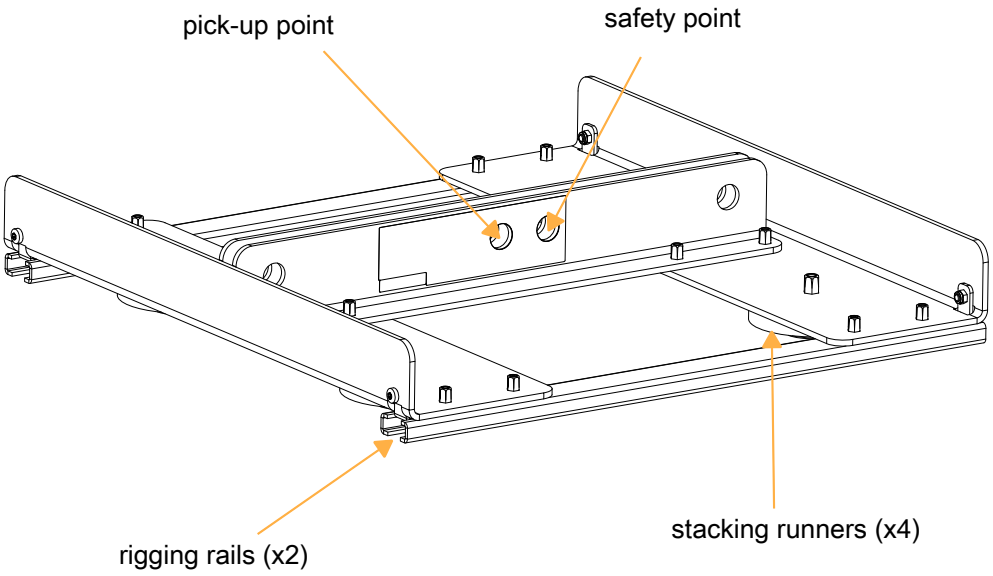
Make sure that the spring-loaded safety is aligned with the coupling bar before pulling on it.



The front linking cables of LA-PANEL III are angled so that the doors can be closed without removing them.

LA-RAK BUMP III

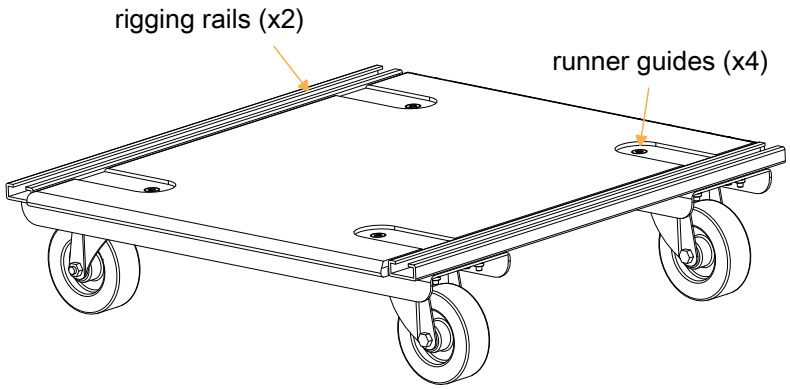
The LA-RAK BUMP III flying frame is designed to fly an array of up to 4 LA-RAK III. It is flown using a single pick-up point and secured using an additional safety point. It comes with two Ø19 mm shackles WLL 3.25 t.



Dolly board

The removable dolly board is designed to move and transport a stack of two LA-RAK III. It is secured to the bottom LA-RAK III using the two coupling bars.

Do not move or transport more than two LA-RAK III on one dolly board.



Mechanical safety

Flown configurations

The LA-RAK III rigging system complies with 2006/42/EC: Machinery Directive. It has been designed following the guidelines of BGV-C1.

2006/42/EC: Machinery Directive specifies a safety factor of 4 against the rupture. The flown deployments described in this manual achieve a safety factor of **4 or more**.

Refer to Soundvision for the safety factor of a specific deployment.

The **safe limit** gives the maximum number of elements for which the safety factor is compliant with the 2006/42/EC: Machinery Directive, within the use defined in this manual and regardless of the other deployment parameters (site angles, inter-element angles, etc.).

The **maximum limit** gives the maximum number of elements for which the safety factor can be compliant with the 2006/42/EC: Machinery Directive, when the other deployment parameters provide the best mechanical conditions.

For mixed arrays refer to your Soundvision model.

LA-RAK III

configuration	rigging accessory	safe/maximum limit
Flown	LA-RAK BUMP III	4

Other configurations

For other configurations, respect the recommended maximum limit for optimal stability.

Additional safety for stacked arrays

Secure the stacked LA-RAK III assembly to the structure, platform, or stage using ratchet straps or any other applicable device.

LA-RAK III

configuration	rigging accessory	safe/maximum limit
Stacked	dolly board	3
During transportation	dolly board	2

Assessing mechanical safety

Mechanical safety of the rigging system

Before any installation, always model the system in Soundvision and check the **Mechanical Data** section for any stress warning or stability warning.

In order to assess the actual safety of any array configuration before implementation, refer to the following warnings:

Rated working load limit (WLL) is not enough

The rated WLL is an indication of the element resistance to tensile stress. For complex mechanical systems such as loudspeaker arrays, WLLs cannot be used per se to determine the maximum number of enclosures within an array or to assess the safety of a specific array configuration.

Mechanical modeling with Soundvision

The working load applied to each linking point, along with the corresponding safety factor, will depend on numerous variables linked to the composition of the array (type and number of enclosures, splay angles) and the implementation of the flying or stacking structure (number and location of flying points, site angle). This cannot be determined without the complex mechanical modeling and calculation offered by Soundvision.

Assessing the safety with Soundvision

The overall safety factor of a specific mechanical configuration always corresponds to the lowest safety factor among all the linking points. Always model the system configuration with the Soundvision software and check

the **Mechanical Data** section to identify the weakest link and its corresponding working load. By default, a stress warning will appear when the mechanical safety goes beyond the recommended safety level.

Safety of ground-stacked arrays in Soundvision

For ground-stacked arrays, a distinct stability warning is implemented in Soundvision. It indicates a tipping hazard when the array is not secured to the ground, stage or platform. It is the user's responsibility to secure the array and to ignore the warning.

Additional safety for flown arrays

When flying an array, use available holes to implement a secondary safety.

Considerations must be given to unusual conditions

Soundvision calculations are based on usual environmental conditions. A higher safety factor is recommended with factors such as extreme high or low temperatures, strong wind, prolonged exposition to salt water, etc. Always consult a rigging specialist to adopt safety practices adapted to such a situation.

Inspection and preventive maintenance

How to do preventive maintenance

Perform the following tasks:

- before each deployment
- at least once a year
- after any corrective maintenance operation

For critical rigging parts, refer to Preventive maintenance references (p.32) for comparison and specific manipulation.

INSPECTION	
rigging	Rigging part inspection (p.22)
	Mechanical system overview (p.23)
rack	LA-RAK III components (p.25)
amplified controllers	CHK - External structure (p.28)
	CHK - Cleanness (p.28)

FUNCTIONAL CHECKS	
electronics	Normal start-up sequence (p.30)
	Network functionalities and firmware (p.30)

Inspection

Rigging part inspection

About this task

For critical rigging parts, use the Preventive maintenance references (p.32) for comparison and specific manipulations.

The term "rigging part" comprises:

- lifting accessories such as clamps and shackles
- rigging accessories such as rigging frames, rigging interfaces, and brackets
- fasteners used for assembling two products together such as ball-locking pins, rigging axes, and safety pins
- rigging elements integrated in the product such as rigging arms and rails
- transportation accessories

This inspection procedure covers only L-Acoustics products. To inspect other products that are part of the lifting chain, refer to the manufacturer's instructions.

Prerequisite

Perform the inspection in a well-lit environment.

Procedure

1. Check that the rigging part is present.
2. If applicable, disassemble the rigging part from the rack or the rigging accessory.

   Check that the tethers are intact and safely secured.
3. Inspect the part from every side.

   Compare with the **reference illustrations**.

   Check for:
   - corrosion
   - wear and cracks
   - bends and dents
   - holes
   - missing safety cues
   - missing identification labels
   - missing or loose fasteners

   Replacing screws

   If a screw is loose, remove and replace it.

   Always use the new screws provided in the repair kit.

   If no new screw is available, add blue threadlocker before reusing the screw.

   Do not apply more than the indicated torque.
4. Check the **geometry** of the part to identify critical deformations.

   Place the rigging part on a flat surface or hold a level against it.
5. Check the **moving parts**.

   Make sure that the mechanism engages correctly.

What to do next

If a problem is detected, perform the authorized maintenance operations or contact your L-Acoustics representative.

Mechanical system overview

Critical parts of the lifting chains are highlighted.

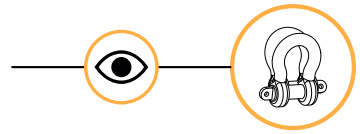
The indicates a visual inspection. The indicates a functional check.

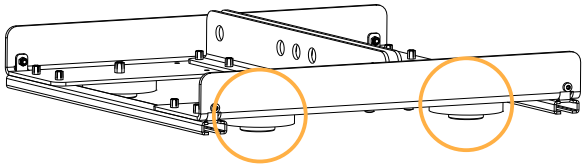
Perform the Rigging part inspection (p.22) on critical parts.
For each part, refer to the Preventive maintenance references (p.32).

Replacing screws
If a screw is loose, remove and replace it.
Always use the new screws provided in the repair kit.
If no new screw is available, add blue threadlocker before reusing the screw.
Do not apply more than the indicated torque.

LA-RAK III under LA-RAK BUMP III

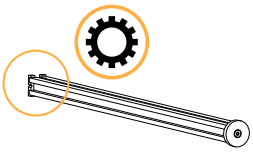
Shackles (p.32)

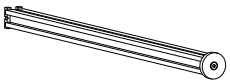


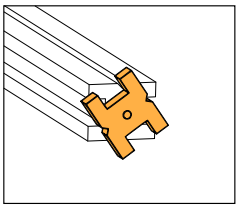


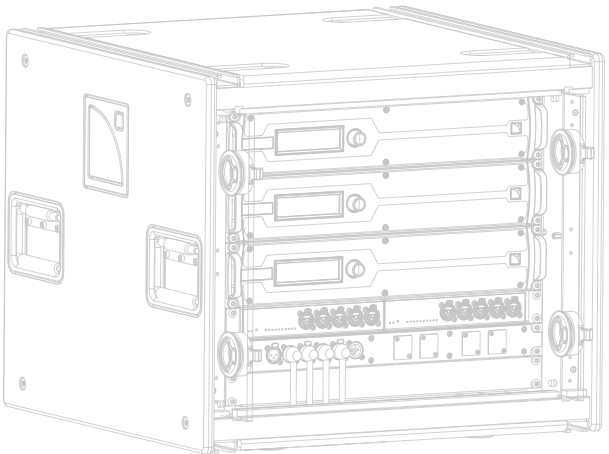
runners are tightened to LA-RAK BUMP III

Coupling bars - Spring-loaded safety (p.32)



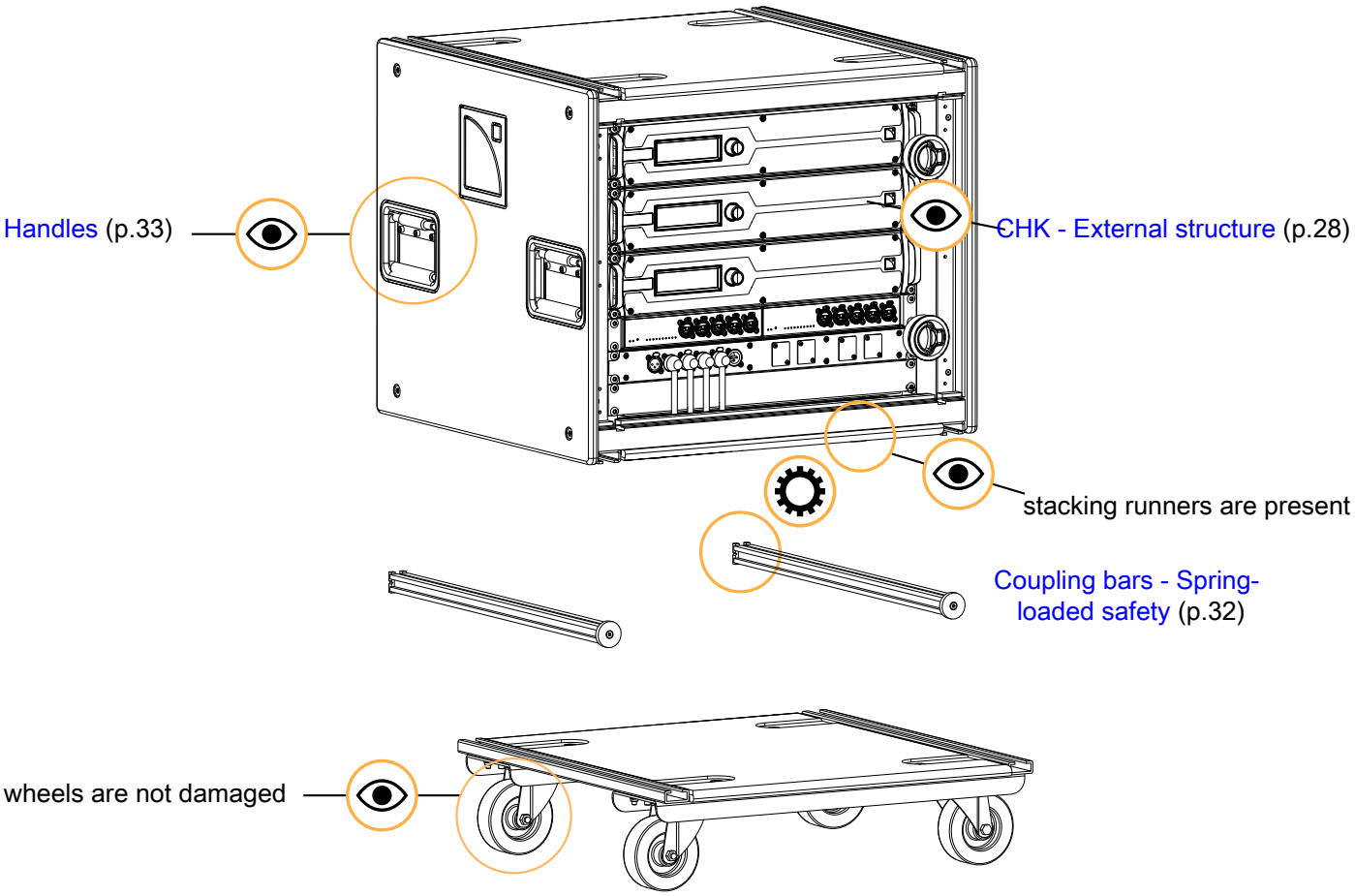






Refer to LA-RAK III components (p.25)

LA-RAK III stacked on dolly board



LA-RAK III - Structure and internal components

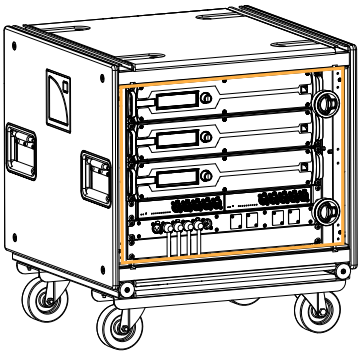
Procedure

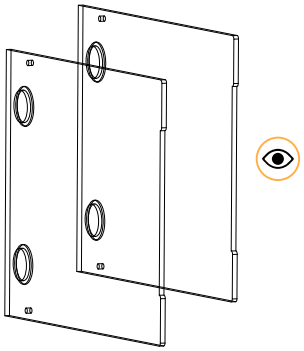
Visually inspect the mechanical assembly and rigging parts for obvious damage or lost parts.

a) Check the RK9U internal frames and electric/electronic devices mounted on it, their screws and washers
b) Check the cables and make sure they are not damaged or bent.
c) Check the connectors and make sure the pins are not bent.
d) Check the contact quality and locking action of all the LA-PANEL III sockets (XLR3 and etherCON).
e) Check the contact quality of all the LA-POWER II power plug and sockets.

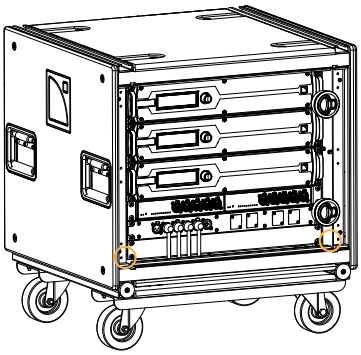
LA-RAK III components

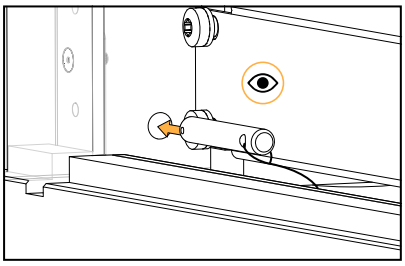
Physical parts





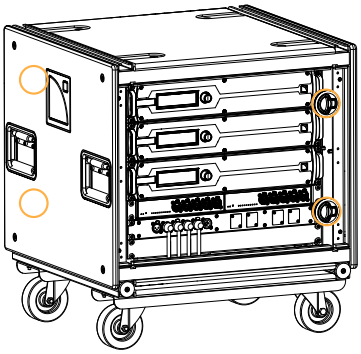
doors are not damaged

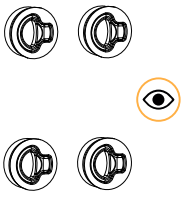




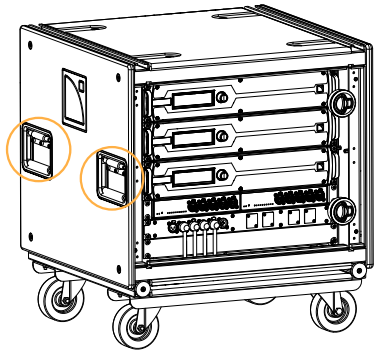
door locking pins are present

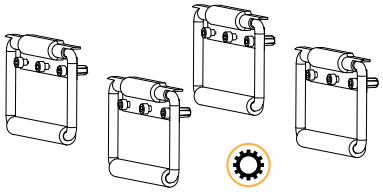
sling is present





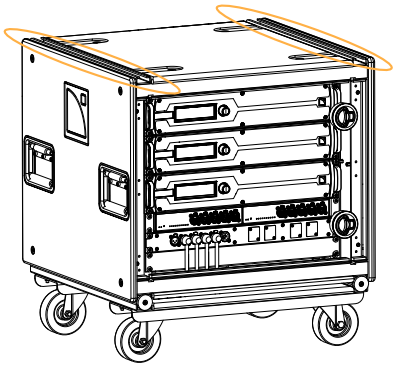
door locks are present

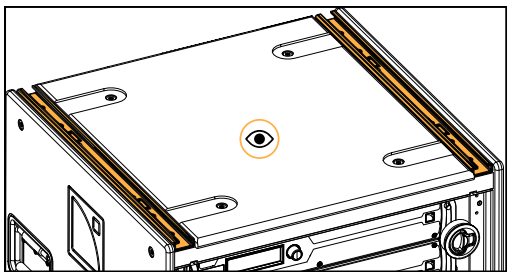




handles springs are not damaged

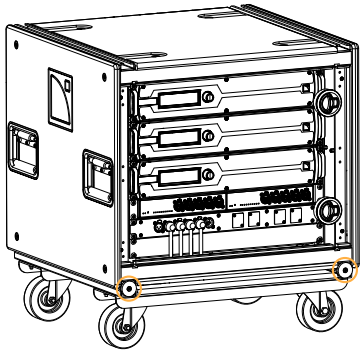
Handles (p.33)





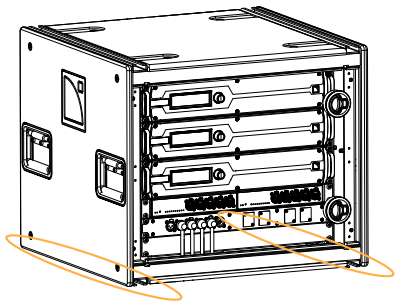
top rails are not damaged

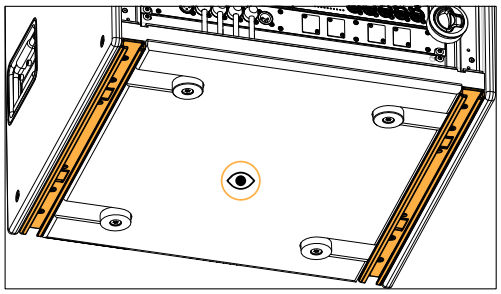
screws are tightened



coupling bars are present

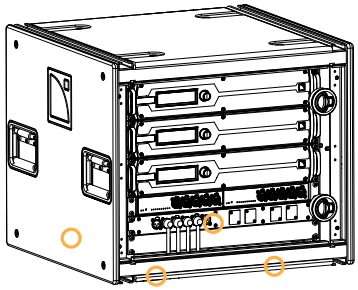
Coupling bars - Spring-loaded safety (p.32)

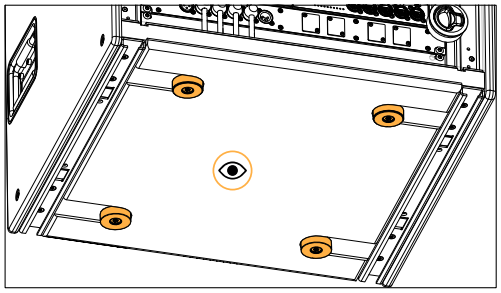




bottom rails are not damaged

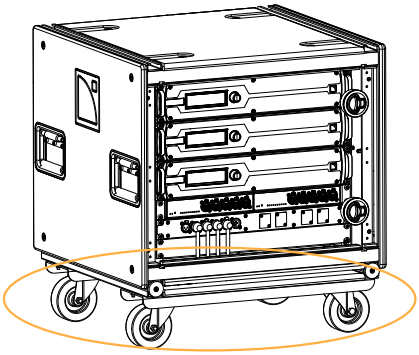
screws are tightened

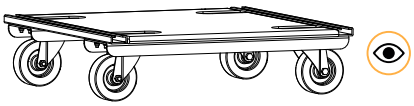




screws are tightened

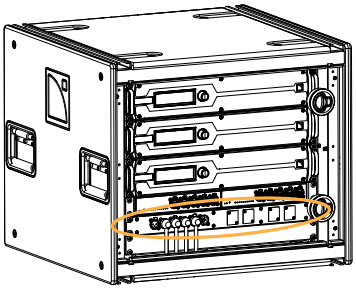
stacking runners are present and not damaged





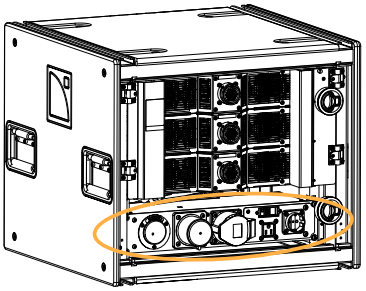
wheels are not damaged

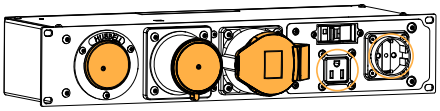
Electronic parts



LA-PANEL III is present

ports are not damaged

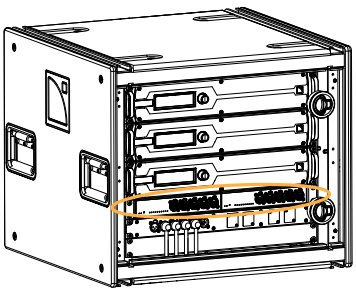


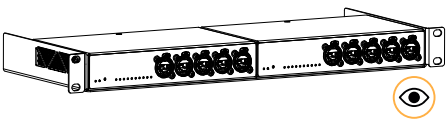


LA-POWER II is present

covers are not damaged or missing

plugs are not damaged





switches are present

ports are not damaged

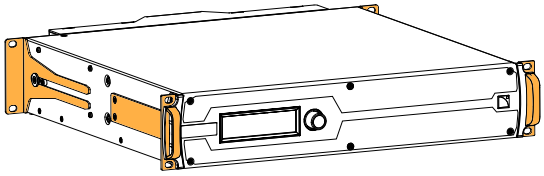
rackshelf is present and not damaged

LS10 (p.29)

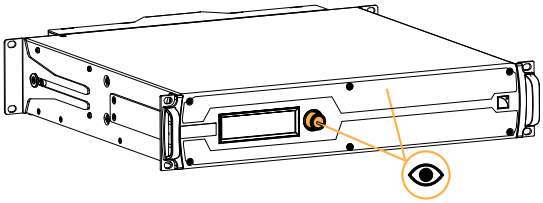
Amplified controllers

CHK - External structure

The  indicates a visual inspection.

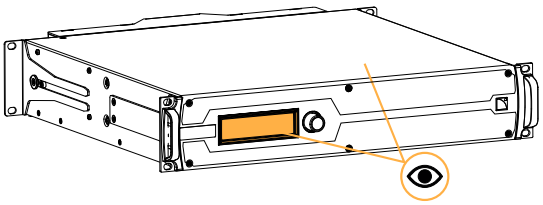


side brackets, front handles, and rear brackets are present and not damaged

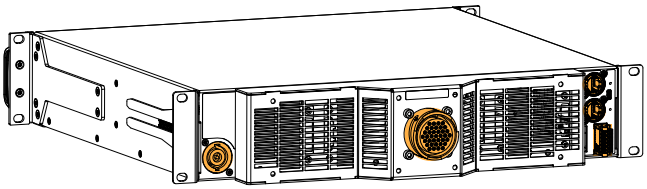


front grill and encoder wheel are present and not damaged

see also CHK - Cleanness (p.28)



front panel touchscreen display and chassis are not damaged



connectors and power cable are not damaged

CHK - Cleanness

Equipment

- air blower

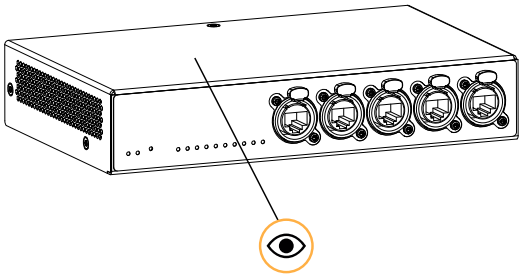
Procedure

Clean the amplified controller through the front grill with an air blower.

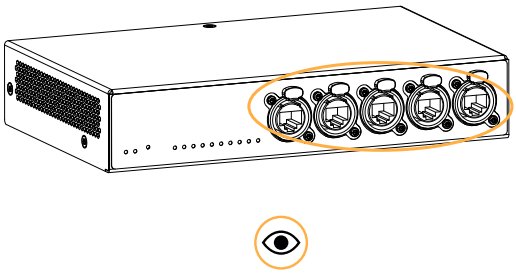
LS10

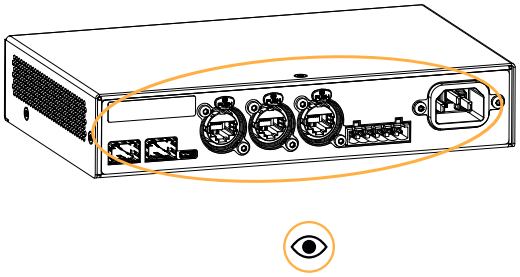
External structure

The  icon indicates a visual inspection.



chassis is not damaged





front and rear connectors are not damaged

Cleanness

Use a dry cloth to remove any dust from the side grills.

Functional checks

Normal start-up sequence

Procedure

1. Plug LA-POWER II to mains.
2. Check that AUX circuit breaker is enabled.
3. If needed, wake up the amplified controller.
4. Check that the TFT screen light up during the start-up sequence.
5. Check that the power LED of LS10 lits.
6. Check that fan noise can be heard for a few seconds during the start-up sequence.

Network functionalities and firmware

Equipment

- computer with LA Network Manager version 3.5.0 minimum (or 3.4.0 with pilot license)
- appropriate network cable (CAT5e, DOE, etc.)

Procedure

1. Connect the rack to an Ethernet port of a computer running LA Network Manager.
   Use the appropriate network cable.
2. Run LA Network Manager.
3. Check that the amplified controllers are detected as online Units.
   Refer to the **LA Network Manager Help**.
4. Check that all LA7.16 in the system run the same version of the firmware, and that it matches with the version of LA Network Manager in use.
   Refer to the **LA NWM and Firmware Compatibility Issues** technical bulletin.
5. If convenient, update LA Network Manager and the firmware to the latest versions.

   If using a third-party control system such as Crestron or Extron, check that updating firmware does not break compatibility.

LS10

Network functionalities and firmware

Equipment

- computer with LA Network Manager version 3.1.0 minimum
- appropriate network cable (CAT5e, DOE, etc.)

It is recommended to use the latest version of LA Network Manager and the firmware.

Prerequisite

Refer to the **LS10 owner's manual** for more information on the use of the LS10 Manager.

Procedure

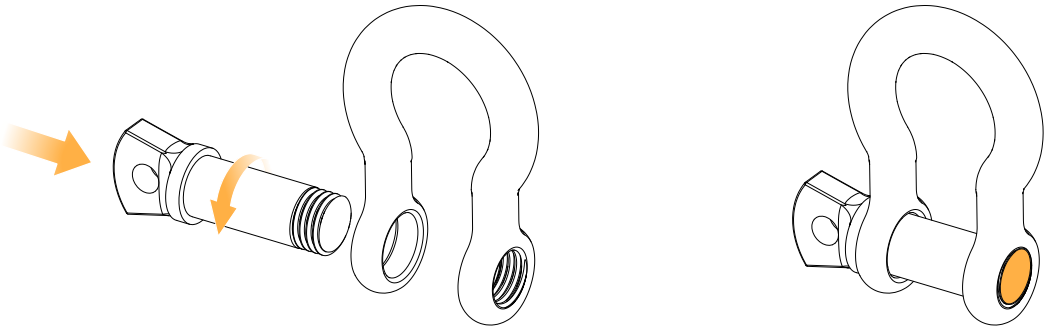
1. Plug LS10 to mains.
2. Connect LS10 to an Ethernet port of a computer running LA Network Manager.
   Use the network cable.
3. Open the LS10 Manager application.
   a) Open LA Network Manager.
   b) Click  **> Utilities > LS10 Manager**.
   Refer to the **LA Network Manager help** for more information.
   c) Scan the network.
4. Check that the switch is detected by the application.
5. Perform the firmware update.
6. Check that all L-Acoustics switches in the system run the same version of the firmware.

Preventive maintenance references

Shackles

Moving parts

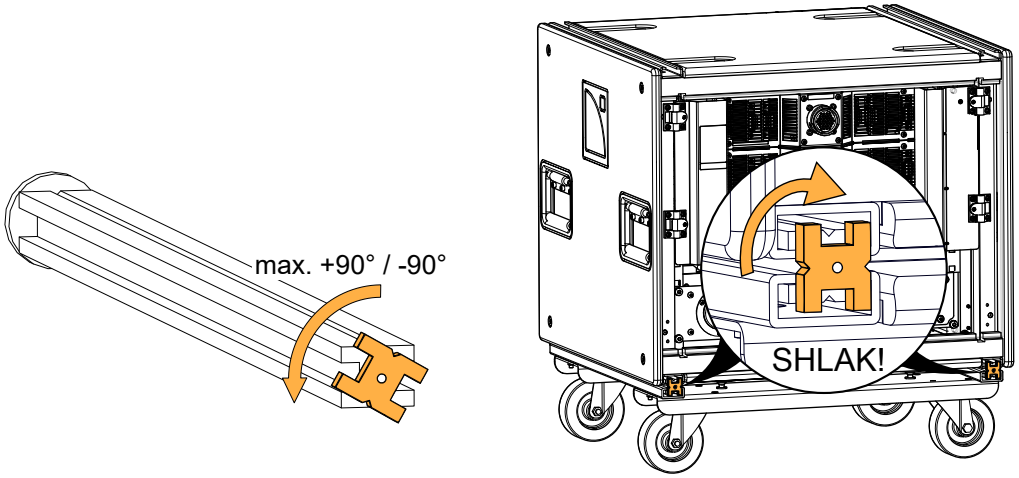
Drive the shackle axis in its lodging. Make sure that the end is flush with the shackle.



Coupling bars - Spring-loaded safety

Moving parts

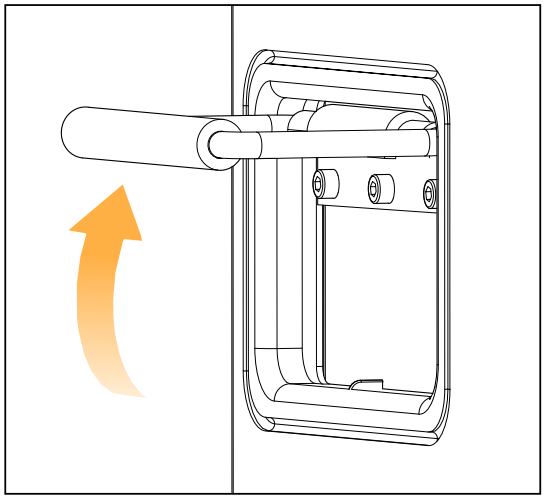
Turn the spring-loaded safety. Make sure that it quickly returns to its storage position.

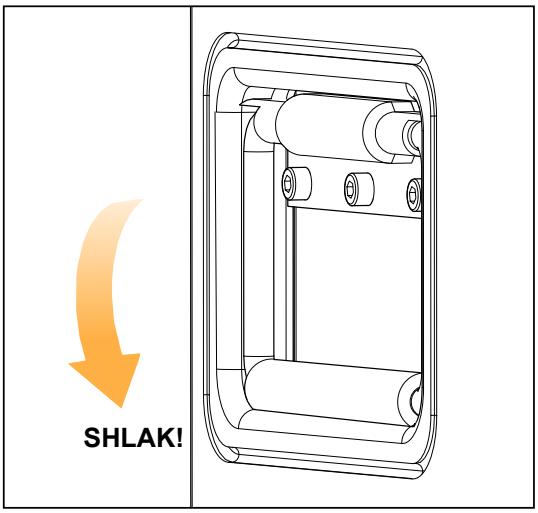


Handles

Moving parts

Pull the handles. Once released, make sure that the handles quickly return to their storage position.





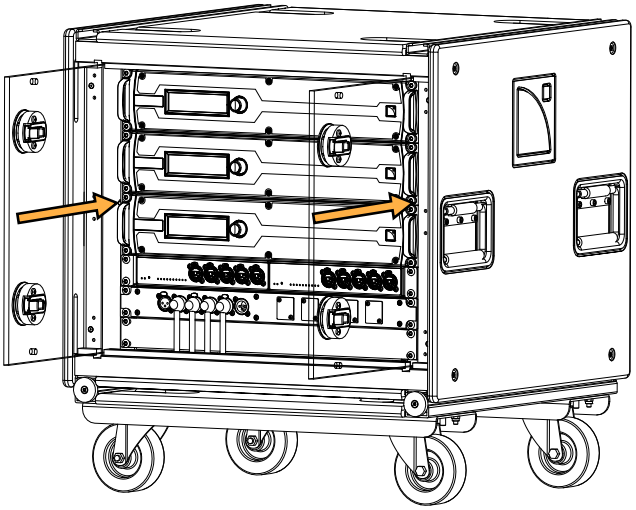
Rigging procedures

Storing the LEXAN doors

Procedure

1. Pull on the handles to detach both doors.
2. Facing LA-RAK III, slide the doors along the sides (between the outer aluminium frame and the inner steel frame).

   The door handles must be positioned towards the outside.

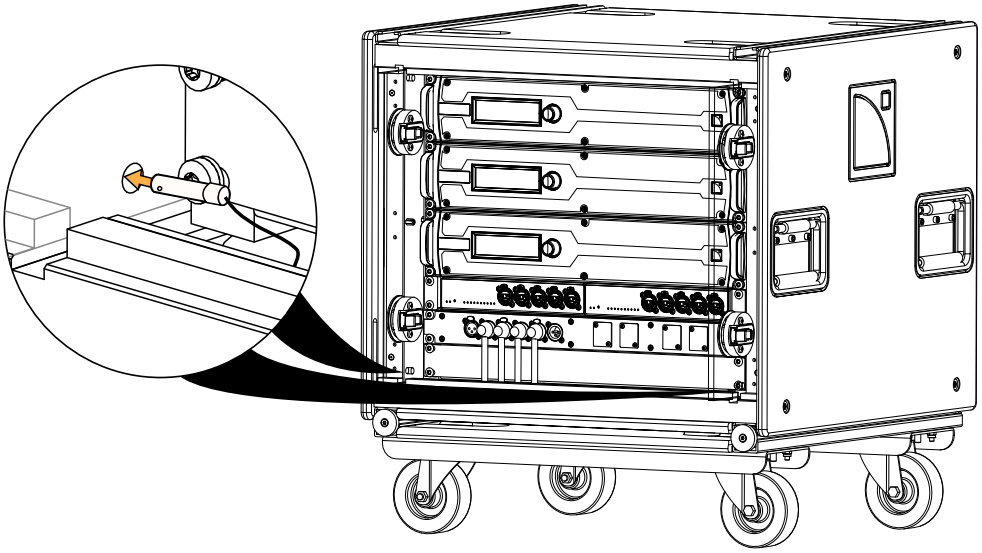


3. Insert and lock the ball-locking pins through each door's safety hole to secure the doors.

   Safety pin

   Make sure the doors are inserted all the way before securing the pin.

   The safety hole must be inside the inner frame.

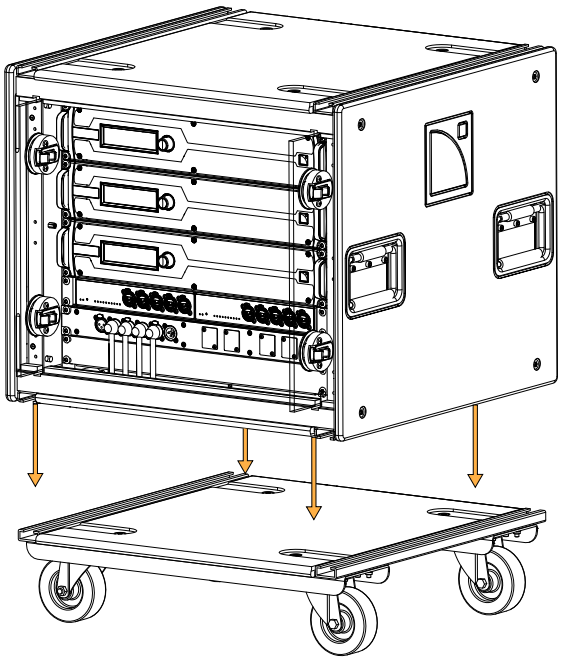


Stacking LA-RAK III on its dolly board

Type of deployment	stacked array
Rigging accessories	Dolly board
Min number of operators	2

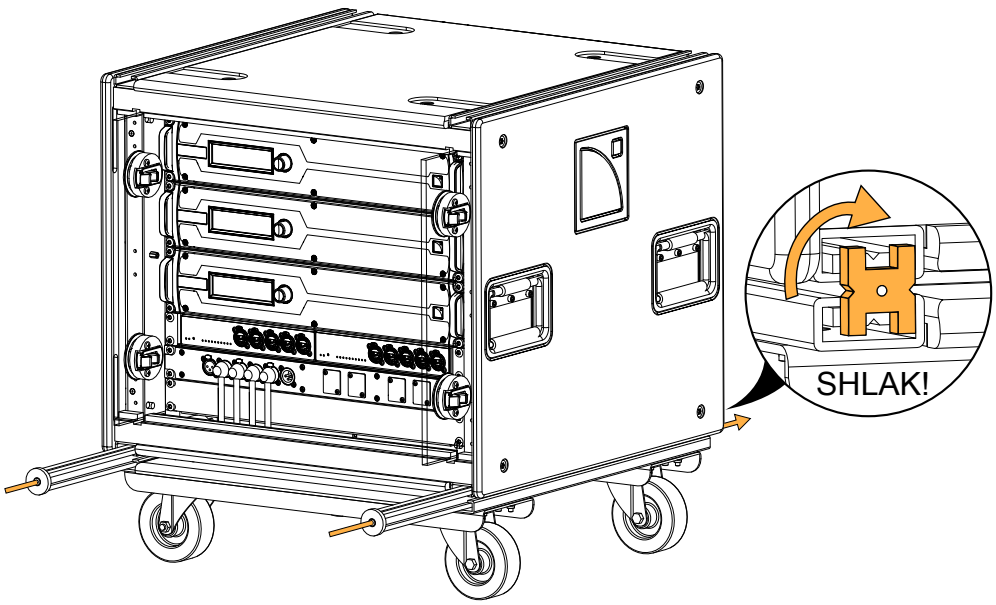
Procedure

1. Position LA-RAK III on the dolly board.



2. Secure LA-RAK III to the dolly board using the coupling bars:
   a) Insert the spring-loaded safety in the LA-RAK III rails.
   b) Give a quarter turn and slide the bar until the safety locks in place.

Risk of damage to the product
Do not rotate the spring-loaded safety more than 90° from its resting position.



Make sure that each spring-loaded safety is in locking position.

Stacking LA-RAK III

Type of deployment	stacked array
Rigging accessories	Dolly board
Min number of operators	2

Additional safety for stacked arrays

Secure the stacked LA-RAK III assembly to the structure, platform, or stage using ratchet straps or any other applicable device.

Risk of falling objects

Verify that no unattached items remain on the product or assembly.

Assembly

Procedure

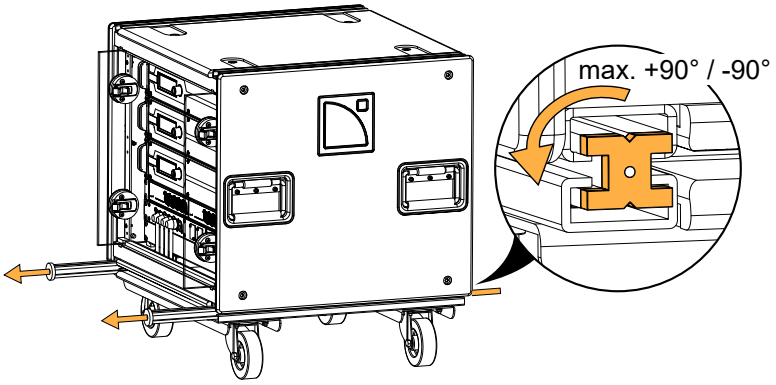
1. Position a first LA-RAK III with its dolly board.
2. Bring a second LA-RAK III and disconnect it from the dolly board by removing the coupling bars.

   Turn the spring-loaded safeties to release the bars and slide them out.

   Risk of damage to the product

   Do not rotate the spring-loaded safety more than 90° from its resting position.

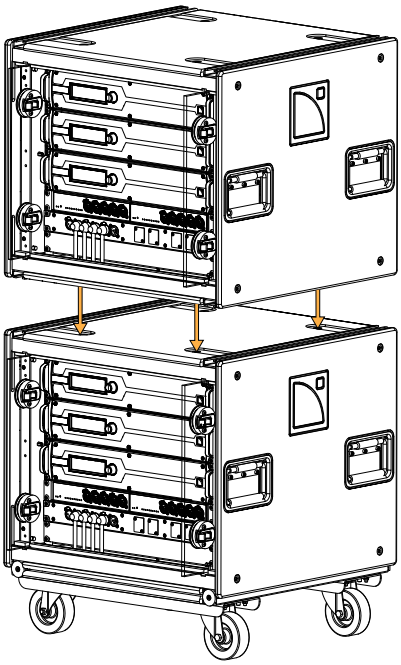
   Make sure that the spring-loaded safety is aligned with the coupling bar before pulling on it.



3. Lift up the second LA-RAK III and install it on the first one.

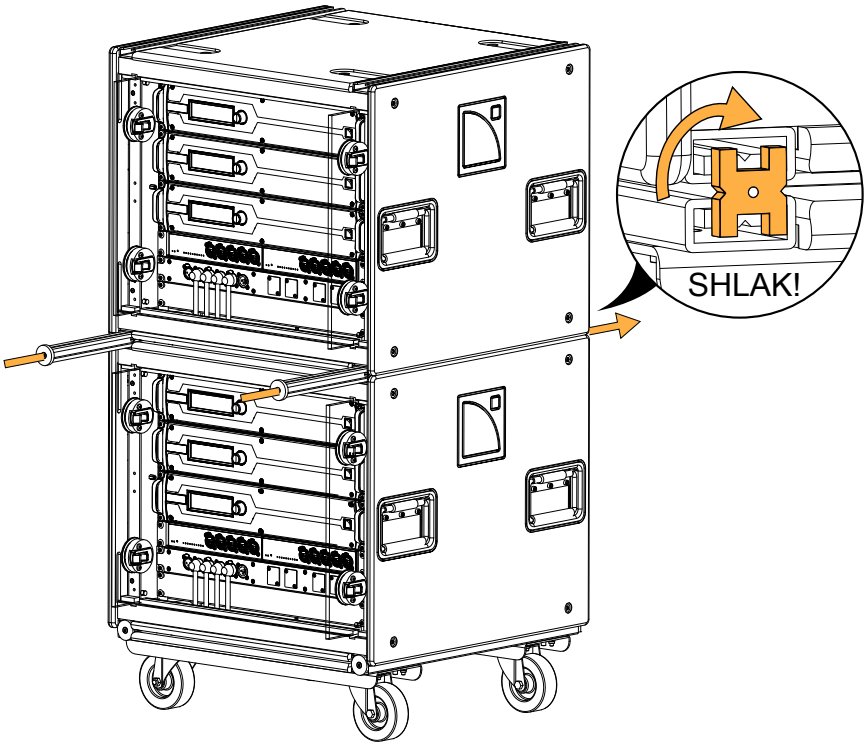
Runners inspection
Make sure the stacking runners are not damaged or worn-out before stacking LA-RAK III.

Align the rails and set the stacking runners into the runner guides.



4. Secure the second LA-RAK III to the first one using the coupling bars:
   a) Insert the spring-loaded safety in the LA-RAK III rails.
   b) Give a quarter turn and slide the bar until the safety locks in place.

Risk of damage to the product
Do not rotate the spring-loaded safety more than 90° from its resting position.



Make sure that each spring-loaded safety is in locking position.

5. Repeat steps 2 (p.36) to 4 (p.37) until the stack is complete.

Flying LA-RAK III

Type of deployment	flown array
Rigging accessories	LA-RAK BUMP III
	2 x Ø19 mm shackles WLL 3.25 t
Min number of operators	2

Additional safety for flown arrays

Secure the LA-RAK III flown array to the main structure using the safety point on LA-RAK BUMP III and a steel rope.

Risk of falling objects

Verify that no unattached items remain on the product or assembly.

Assembly

Procedure

Runners inspection

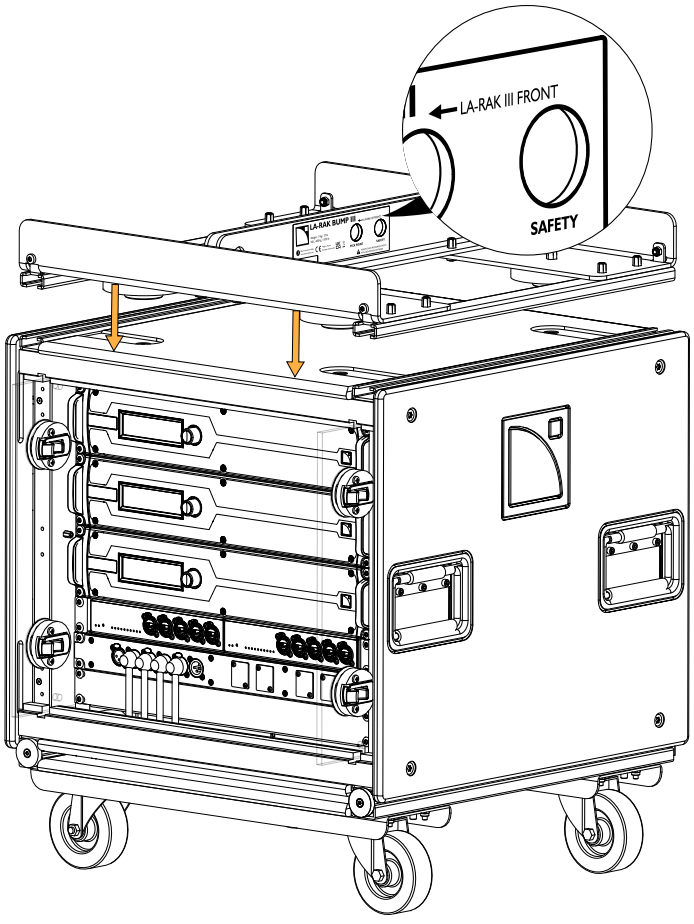
Make sure the stacking runners on LA-RAK BUMP III are not damaged or worn-out.

1. Install LA-RAK BUMP III on LA-RAK III.

LA-RAK BUMP III orientation

Make sure to position the bumper according to the label.

Align the rails and set the stacking runners into the runner guides.



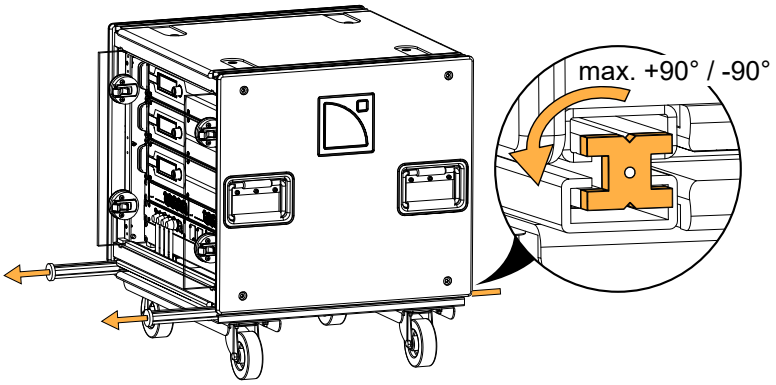
2. Disconnect LA-RAK III from the dolly board by removing the coupling bars.

   Turn the spring-loaded safeties to release the bars and slide them out.

   Risk of damage to the product

   Do not rotate the spring-loaded safety more than 90° from its resting position.

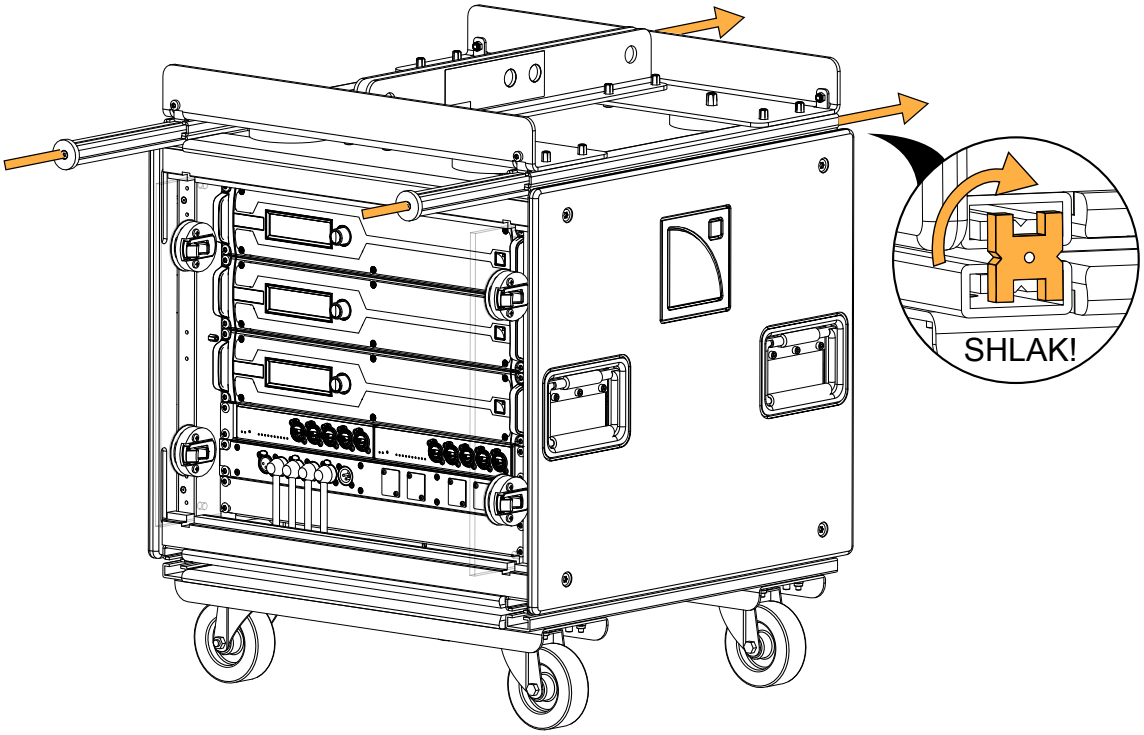
   Make sure that the spring-loaded safety is aligned with the coupling bar before pulling on it.



3. Secure LA-RAK BUMP III to LA-RAK III using the coupling bars:
   a) Insert the spring-loaded safety in the LA-RAK III rails.
   b) Give a quarter turn and slide the bar until the safety locks in place.

   Risk of damage to the product

   Do not rotate the spring-loaded safety more than 90° from its resting position.



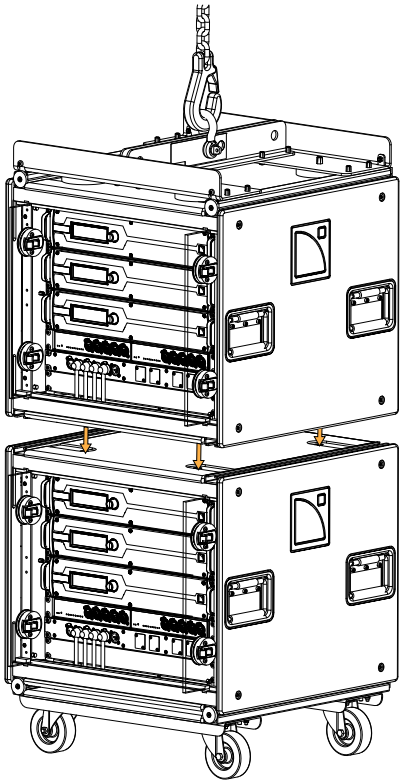
   Make sure that each coupling bar spring-loaded safety is in locking position.

4. Lift the assembly with a shackle attached to the pickup point.
5. Prepare a second LA-RAK III for lifting.

Runners inspection

Make sure the stacking runners on the top LA-RAK III are not damaged or worn-out.

6. Position the second LA-RAK III under the assembly and lower the assembly until it rests on LA-RAK III.



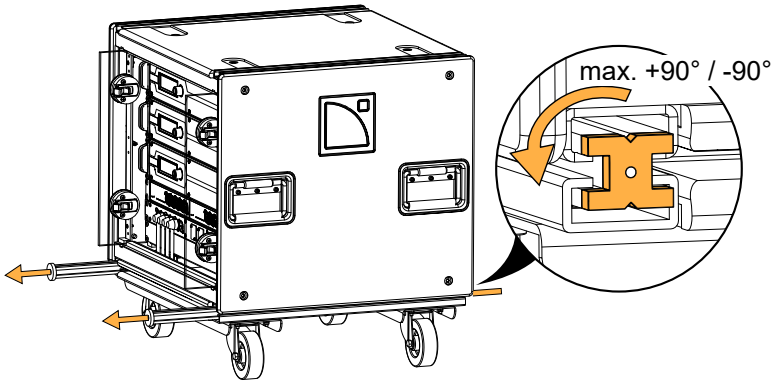
7. Disconnect LA-RAK III from the dolly board by removing the coupling bars.

   Turn the spring-loaded safeties to release the bars and slide them out.

Risk of damage to the product

Do not rotate the spring-loaded safety more than 90° from its resting position.

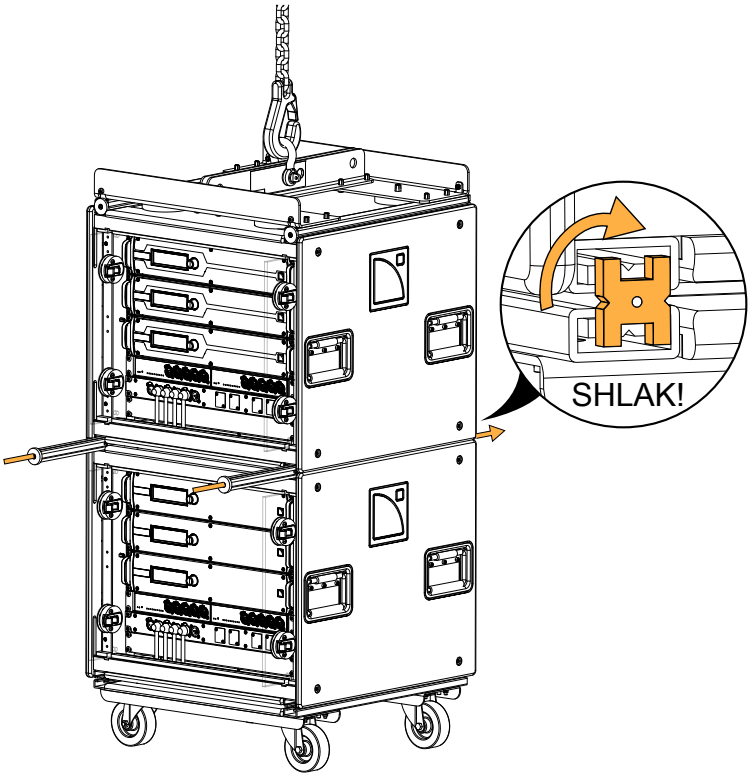
Make sure that the spring-loaded safety is aligned with the coupling bar before pulling on it.



8. Secure the two LA-RAK III using the coupling bars:
   a) Insert the spring-loaded safety in the LA-RAK III rails.
   b) Give a quarter turn and slide the bar until the safety locks in place.

Risk of damage to the product

Do not rotate the spring-loaded safety more than 90° from its resting position.



Make sure that each coupling bar spring-loaded safety is in locking position.

9. Lift the assembly and repeat the procedure until the array is complete.

Operation

Ventilation

To maintain a moderate operating temperature, the LA7.16 contains fans providing front to rear airflow.

Before operation, ensure that the front panel of each LA7.16 is clean and dust free. Refer to the **LA7.16 owner's manual**.

While operating, keep the LEXAN front and rear doors stored and do not block the LA7.16 front and rear air vents.

Do not expose LA-RAK III to temperature below -5 °C / 23 °F or above 50 °C / 122 °F.

Do not expose LA-RAK III to wet or saline environments.

Refer to Inspection and preventive maintenance (p.21) for more information on the LA-RAK III maintenance and the cleanness process of the amplified controllers.

Cleanness

Before operation, make sure LA-RAK III is clean and dust free.

Connecting to AC mains

The power supply feeding LA-RAK III must be equipped with circuit breakers meeting the following requirements:

There must be one dedicated circuit breaker for each phase (no mechanical link between phases).

Use these references, or equipment with equivalent characteristics:

100-120 V (US MODE): 30 A, Schneider Electric Square D 30A QO (in North America), or Mitsubishi CP30-BA-M (in Japan).

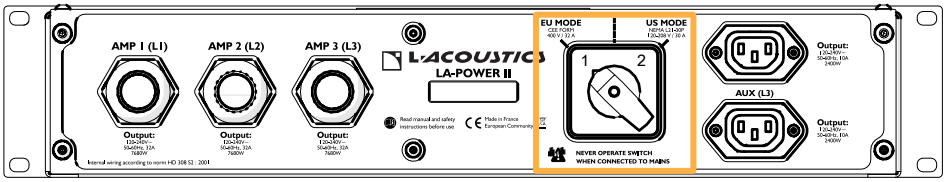
220-240 V (EU MODE): 32 A, Type C.

Circuit breakers of different characteristics could trip in case of short-term, high current draw, because they do not match LA7.16 Fuse Protect algorithms.

The LA-POWER II is equipped with a mains switch. The factory default settings is **EU MODE CEE FORM 400 V / 32 A**.

To use LA-POWER II in US mode, position the mains switch on **US MODE NEMA L21-30P 120-208 V** before connecting to a power source.

Contact a local L-Acoustics distributor for countries in which these standards do not apply.



EU mode

In EU MODE, LA-POWER II connects to 230 V / 32 A three phase AC mains using the male input socket (IEC 60309 - 3P+N+G).

A second LA-RAK III can be plugged in the female link socket to be powered in parallel.

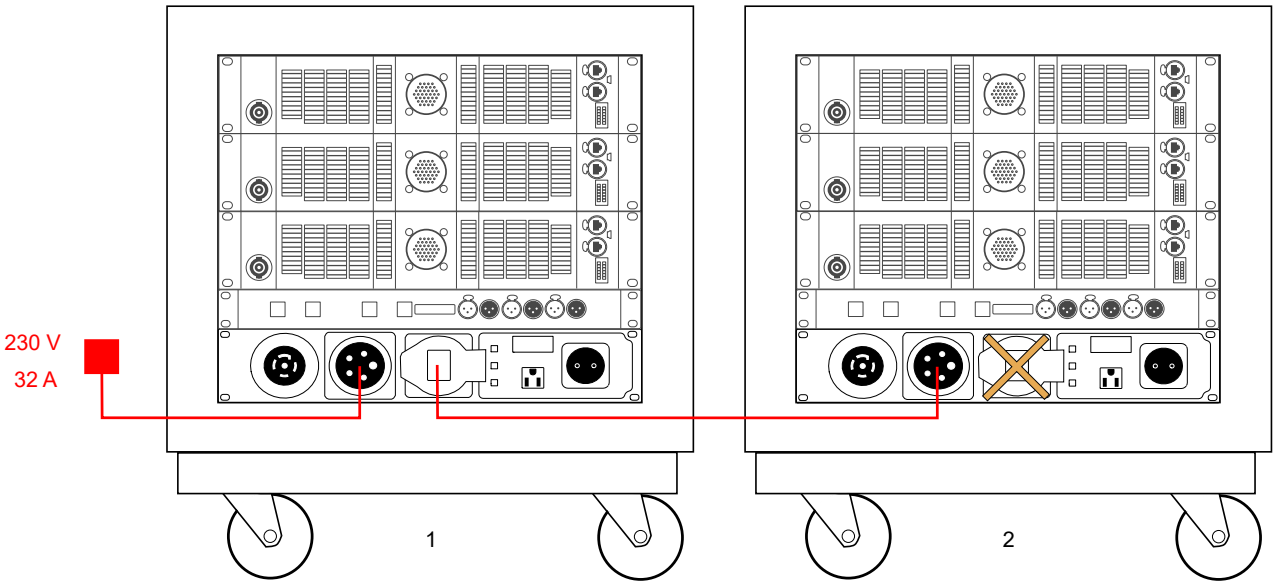
Do not power LA-RAK III racks in parallel on mains ratings other than 230 V (± 10%).

Do not use the female link socket on other ratings.

The EU MODE sockets are not powered when the mains switch is positioned on **US MODE NEMA L21-30P 120-208 V**.

Do not power more than two LA-RAK III racks in parallel from the same AC mains outlet.

Connecting two racks to AC mains in EU mode



Place socket covers on unused sockets.

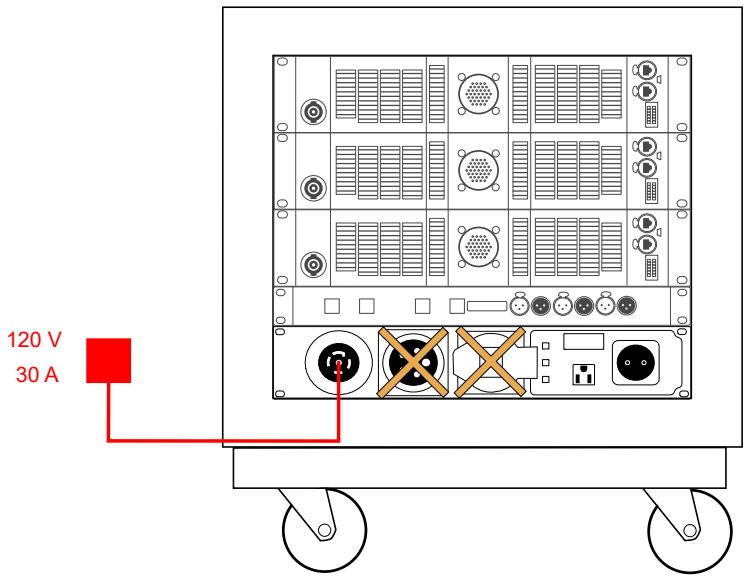
US mode

In US MODE, LA-POWER II connects to 120 V / 30 A three phase AC mains using the male input socket (L-21-30P 3P + N + G).

Do not power more than one LA-RAK III from the same AC mains outlet.

The EU MODE sockets are not powered when the mains switch is positioned on **US MODE NEMA L21-30P 120-208 V**.

Connecting a rack to AC mains in US mode

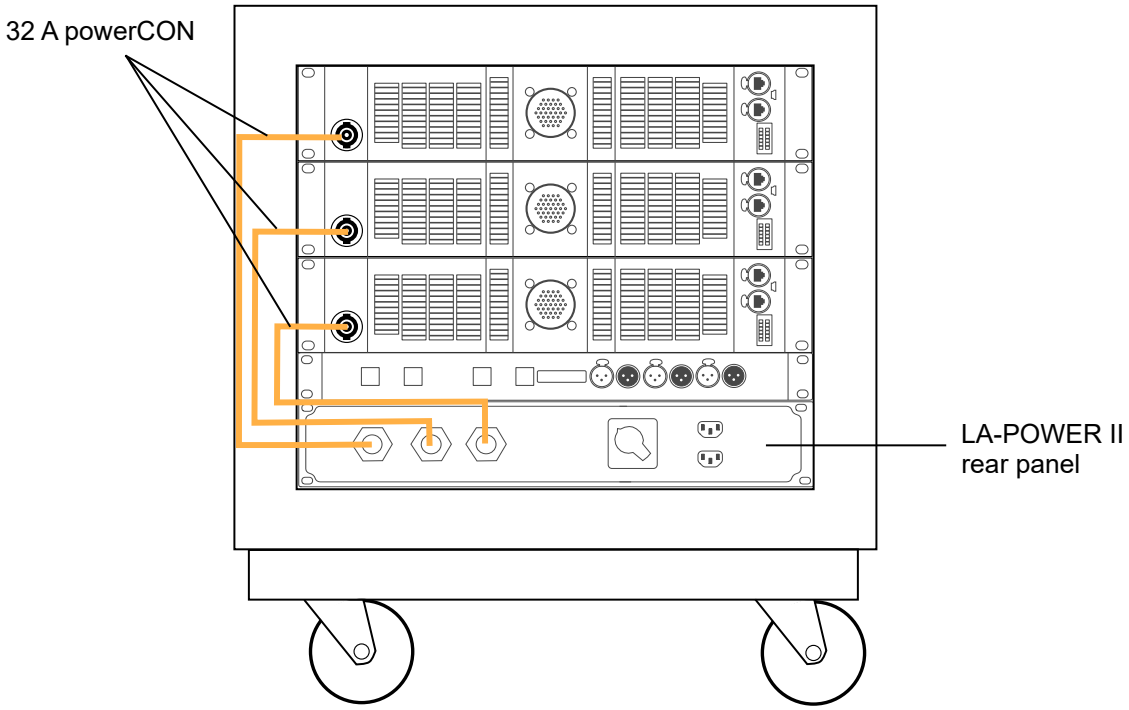


Place socket covers on unused sockets.

Powering the amplified controllers

The LA-POWER II three-phase circuit powers three mono-phase circuits (L1, L2, L3) corresponding to the three power cords on the rear face. These cables are fitted with 32 A Neutrik powerCON to connect to the three LA7.16 amplified controllers mounted in the LA-RAK III. Three dual LEDs help monitor the presence of each phase on the front of the LA-POWER II.

Powering the three amplified controllers (any mode)



If the AC presence LEDs are lit but the amplified controllers do not power on:

— check the cabling and connections

— check that the mains switch position corresponds to the currently used 3-phase socket (EU or US)

Powering auxiliary devices

LA-POWER II also includes an auxiliary circuit protected by the **AUX L3** 10 A circuit breaker, shunted from phase 3.

This circuit powers one "Schuko" socket (only powered in EU MODE) and one NEMA 5-15 socket (only powered in US MODE) on the front face, and two IEC 60320-1 type C13 sockets located on the rear face (powered in both modes).

The auxiliary sockets are intended to power laptops or other devices equipped with country-specific plugs only.

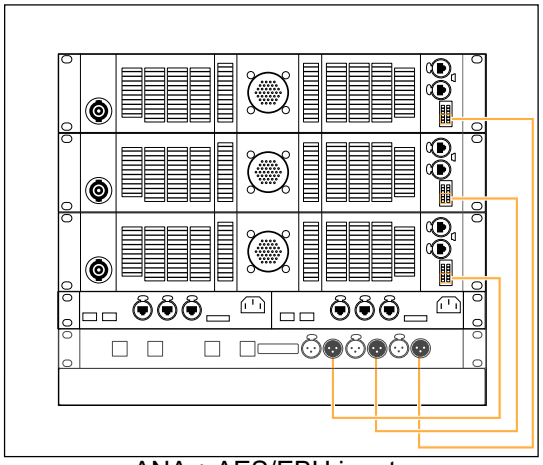
Auxiliary sockets power

In both modes, the recommended consumption is 100 W maximum.

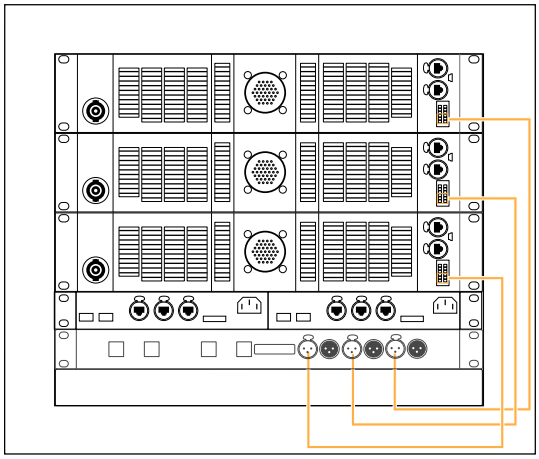
Check that the overall consumption does not exceed LA-POWER II maximum capacity.

Audio cabling

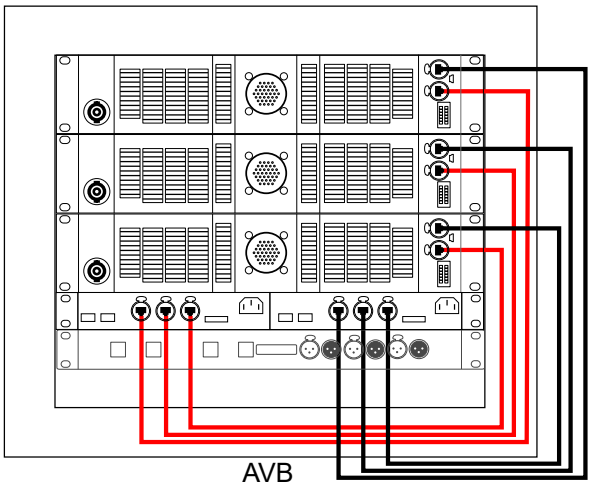
LA-RAK III is cabled as follows:



ANA + AES/EBU inputs



ANA + AES/EBU links



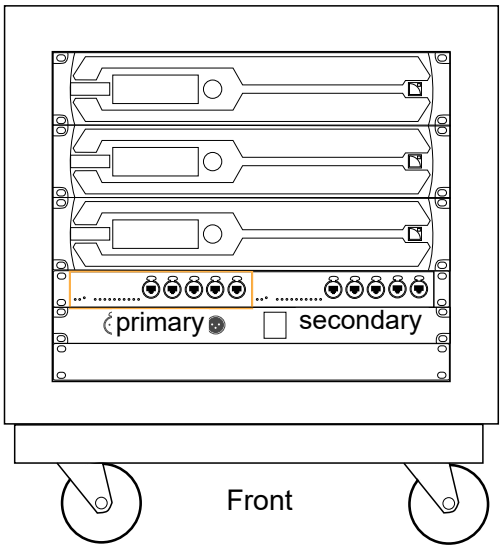
AVB

LA-RAK III is delivered pre-cabled. Refer to Milan-AVB audio and control cabling (p.46) for more information on the cabling.

Milan-AVB audio and control cabling

LA-RAK III is designed to enable Milan-AVB seamless network redundancy by embedding two LS10 Avnu™-certified Milan-AVB switches. See avnu.org for more details about Milan seamless network redundancy specifications.

The left LS10 (as viewed from the front of LA-RAK III) pertains to the Primary network.



By convention, black Ethernet cables are used to connect the primary LS10 to the first port of each LA7.16 using ports 8, 9 and 10 at the back of LS10. Similarly, the right LS10 (as viewed from the front of LA-RAK III) pertains to the Secondary network. By convention, red Ethernet cables are used to connect it to the second port of each LA7.16 using ports 8, 9 and 10 at the back of LS10.

The LA7.16 amplified controllers must always be in redundant network mode.

The network mode can be set from the amplified controller screen or from LA Network Manager. Refer to the LA7.16 owner's manual or the LA Network Manager Help.

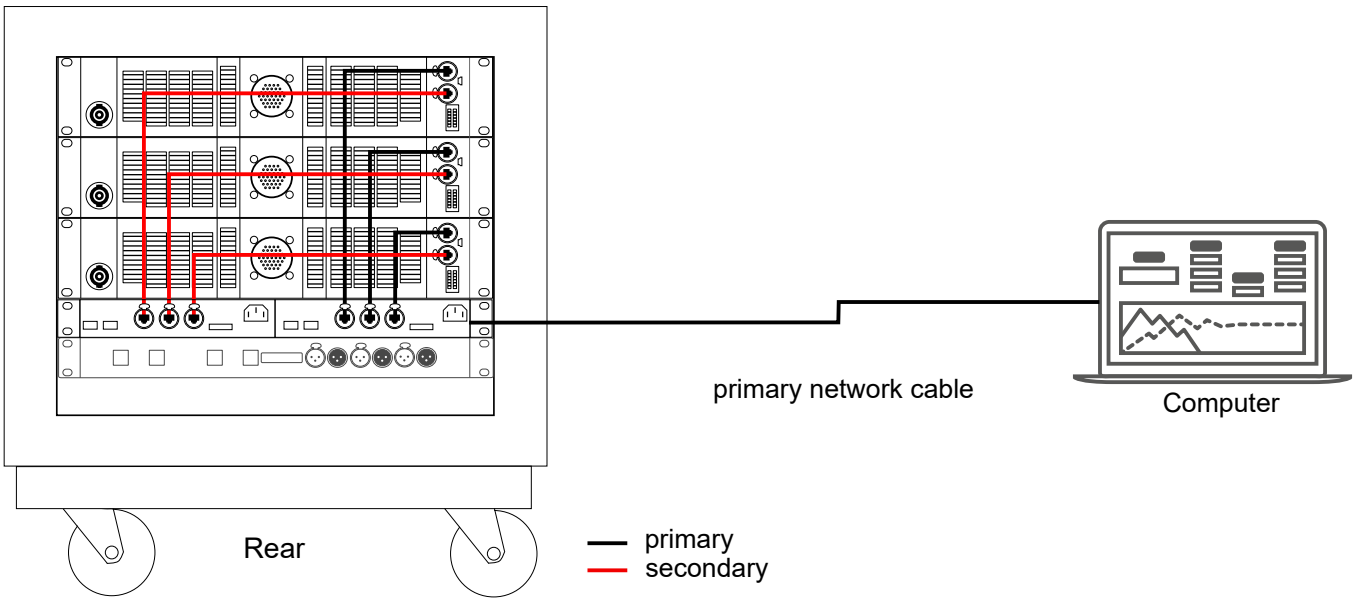
Multiple LA-RAK III can be connected to the same primary network by daisy-chaining the primary LS10 on each. The same goes for secondary LS10. Refer to Redundant cabling scheme with LS10 and LA-RAK III (p.49).

LA Network Manager must be connected to the Primary network only.

Never connect the Primary network and the Secondary network together.

Never connect port 2 of LA7.16 to the Primary Network or port 1 to the Secondary network.

Both LS10 are connected to the LA7.16 amplified controllers with three Cat 7 Ethernet cables with etherCON connectors.



LS10 IP address setup

Default IP address is:

- 192.168.1.200 for the Primary network LS10 (left)
- 192.168.2.200 for the Secondary network LS10 (right)

It is highly recommended to select another IP address for each LS10, unique across all units in the inventory.

Connect one LS10 at a time to a computer with LA Network Manager and use LS10 Manager to change the IP address (refer to the LA Network Manager Help).

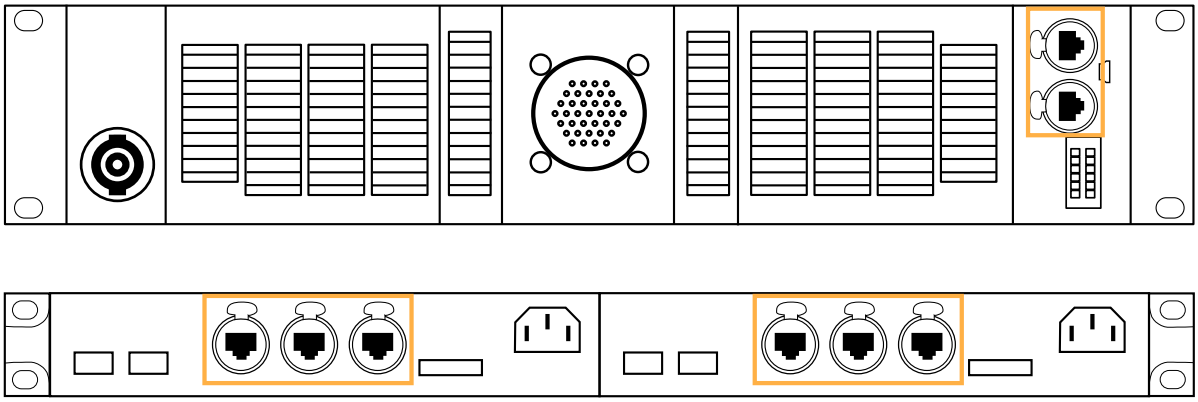
Each LS10 must be on a separate subnet. The subnets can be different from the default subnets.

It is possible to assign multiple IP addresses to a single NIC (Network Interface Card), and select which subnet to scan using LS10 Manager to detect the LS10.

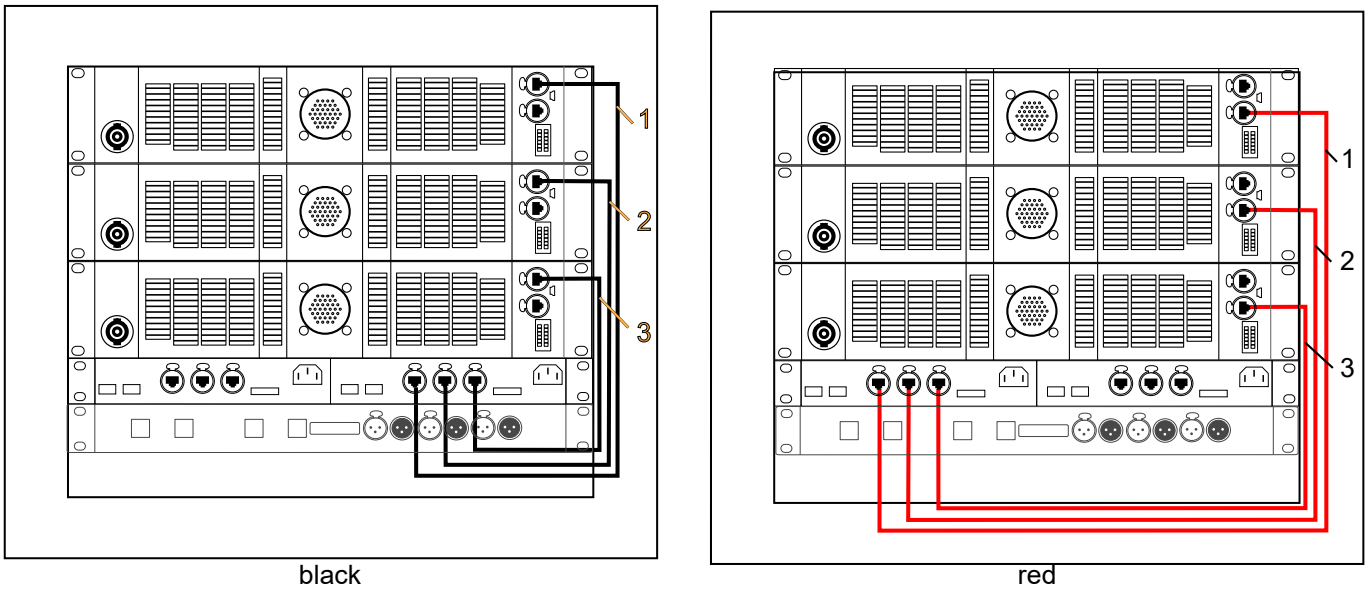
Internal AVB audio and control cabling

In order to create redundant networks inside LA-RAK III, three Ethernet etherCON ports are connected at the rear of each LS10 and two at the rear of LA7.16.

Ethernet etherCON® I/O ports on the rear of LS10 and on the rear panel of LA7.16



Internal AVB cabling with primary and secondary network



black red

Six Ethernet etherCON cables are connected to LA7.16. Red cables and black cables are used to distinguish the networks. Three first cables create a Primary network (black). Three other cables create a Secondary network (red).

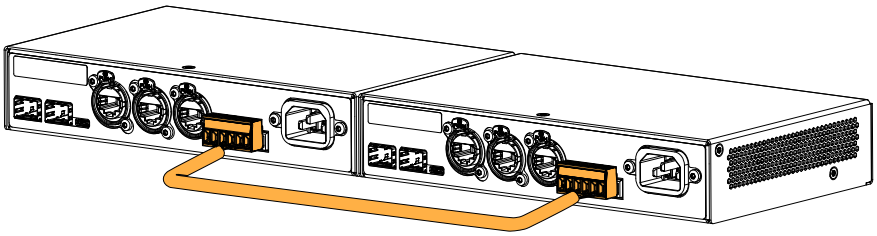
Thanks to the redundant network star topology, each LA7.16 receives AVB audio from both networks simultaneously. If a failure somewhere in one of the networks happens, then AVB audio is still delivered by the other network and no audible artefact is heard. It remains also possible to additionally secure the signal distribution by configuring LA7.16 automatic fallback to AES/ANA inputs.

External AVB audio and control cabling

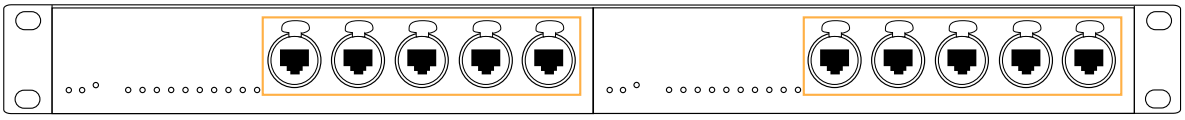
In order to create redundant networks with other switches from an external setup, five Ethernet etherCON ports can be used at the front of each LS10.

At the rear of LS10, two SFP cages (port 6 and 7) enable the addition of optical fiber connectors or Ethernet etherCON connectors.

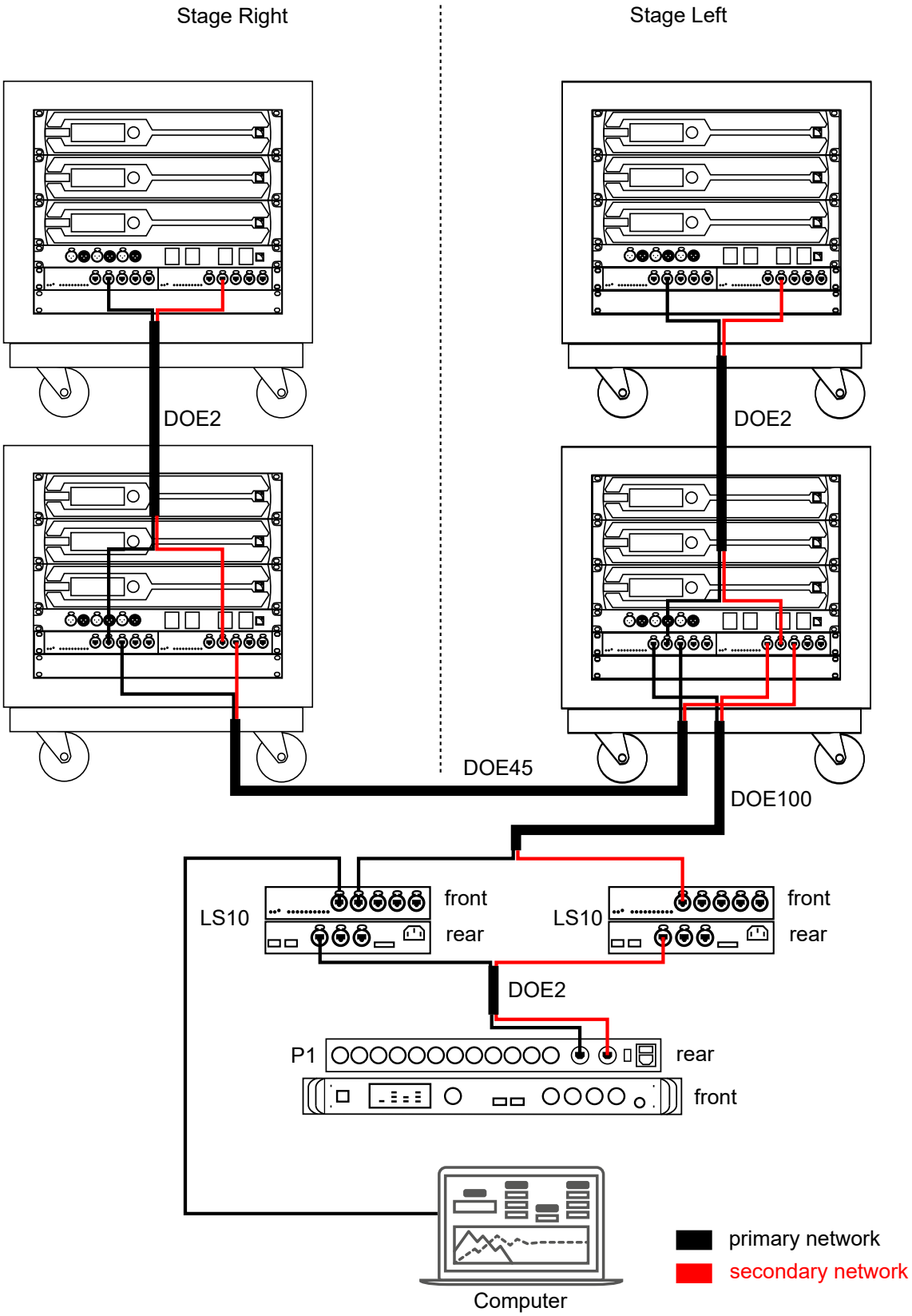
A 24 V DC backup power cable is connected to both LS10.



Ethernet etherCON I/Os ports on front of LS10



Redundant cabling scheme with LS10 and LA-RAK III



It is possible to connect LA-RAK III to LA-RAK II AVB in the same way.

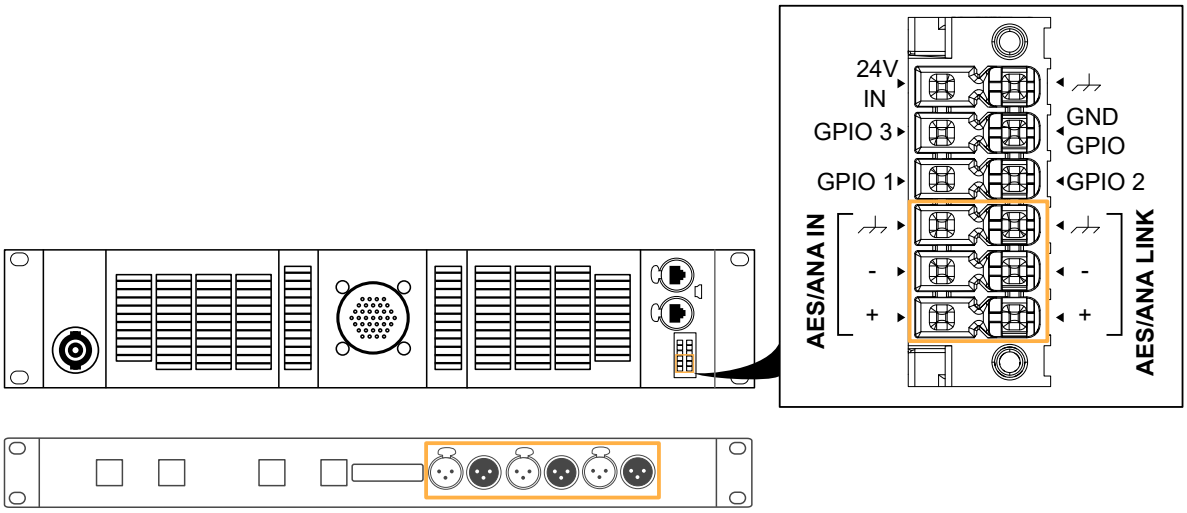
AES/EBU and analog audio cabling

AES/EBU and analog signals share the same connector in LA7.16. Make sure to configure the appropriate settings in LA Network Manager.

Internal AES/EBU and analog audio cabling

An XLR connection panel located on the rear side of LA-PANEL III and three XLR cables allow distributing up to six different digital audio channels (two channels per signal) or three different analog audio channels to the LA7.16 amplified controllers.

Digital and analog connectors on the rear panel of LA7.16 and LA-PANEL III



The IN and LINK connectors of the rear of LA-PANEL III are pre-cabled to the 12-point terminal block on the LA7.16 amplified controller using the appropriate LINK XLR cable.

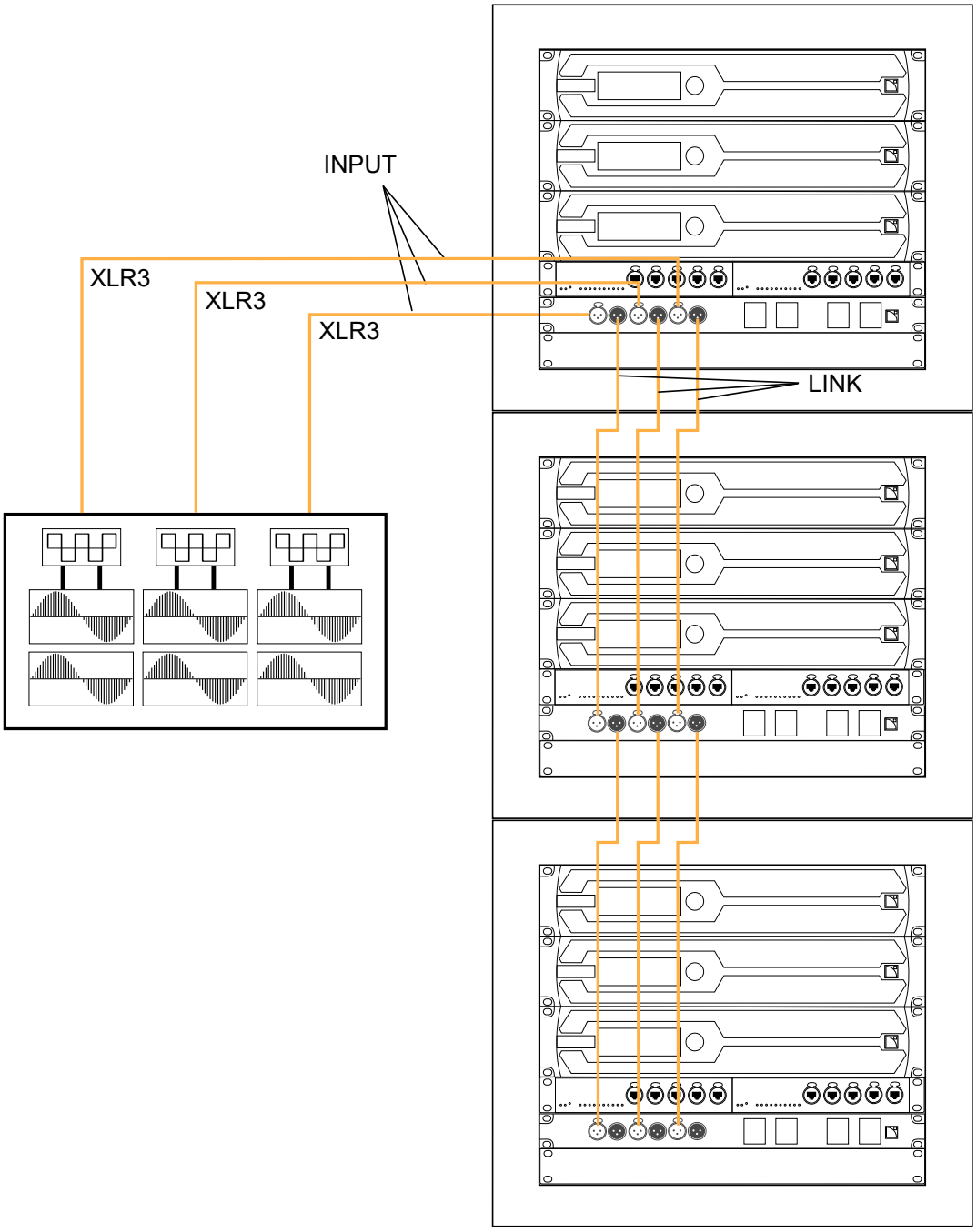
External AES/EBU audio cabling

With AES/EBU audio, routing of the signals is flexible through external cabling with the front of LA-PANEL III. Two examples are given in this manual.

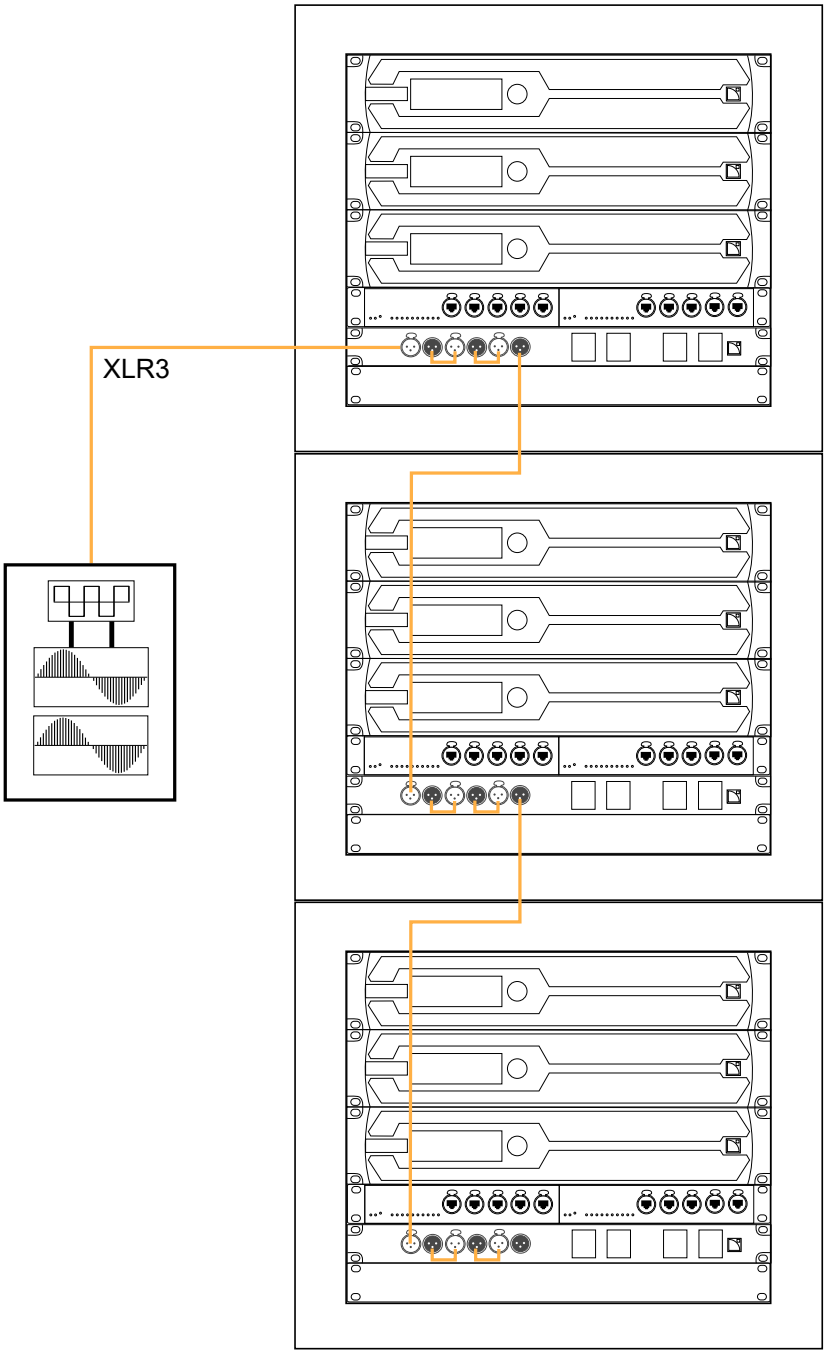
Up to six digital audio channels can be routed from an AES/EBU digital audio source (mixing console or EQ device) to the LA-PANEL III through three XLR cables, each one conveying two channels.

Each pair of channels can be routed in a daisy-chain layout by cabling the corresponding LINK connector of the LA-PANEL III to another IN connector of the same LA-PANEL III (for internal daisy-chaining), or to an IN connector of another LA-PANEL III (for external daisy-chaining). It allows modular routing layouts.

External audio cabling with three pairs of digital signal



External audio cabling for FOH applications



Cables for AES/EBU digital audio

AES3 specifies that the nominal characteristic impedance of cables used for AES/EBU digital audio transmission shall be 110 Ω ± 20%, and closer tolerances allow for increased transmission reliability over long lengths or higher sampling rates.

Therefore, it is highly recommended to use high-quality AES/EBU rated cables only, although certain cables designed for balanced analog audio prove to be acceptable at 48 kHz sampling rate over very short distances.

It is recommended to use single lengths of cable between AES/EBU outputs and inputs. Using several shorter cables joined together reduces performance. If it is not possible to use single lengths, it is required to use the same model of cable between two AES/EBU interfaces.

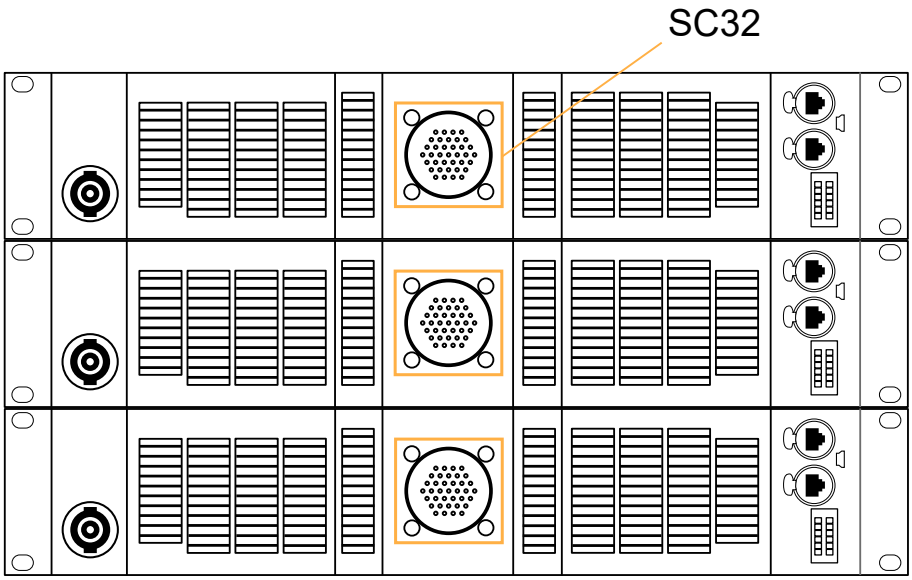
In case of transmission losses, try to reduce the sampling frequency of the digital audio source. Moreover, as a general rule, avoid using sources rated beyond 96 kHz, as the maximum possible cable length is reduced, while the additional information is discarded by the SRC to 96 kHz.

Loudspeaker cabling

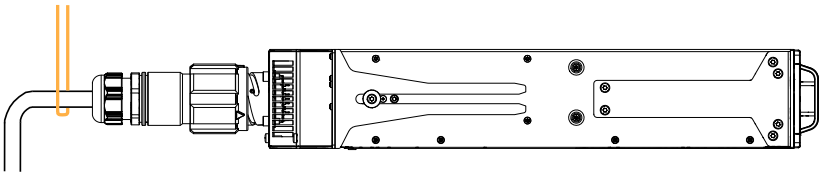
The rear side of the LA-RAK III gives access to the output connection panel of each LA7.16. For each amplified controller, this panel features one SC32 female connector.

Refer to the system **user documentation** and the **LA7.16** owner's manual before connecting an enclosure to LA-RAK III.

Loudspeaker connectors



Consider supporting the cables connected to the SC32 connectors to reduce mechanical stress on the LA7.16 chassis, in particular when flying LA-RAK III.



Corrective maintenance

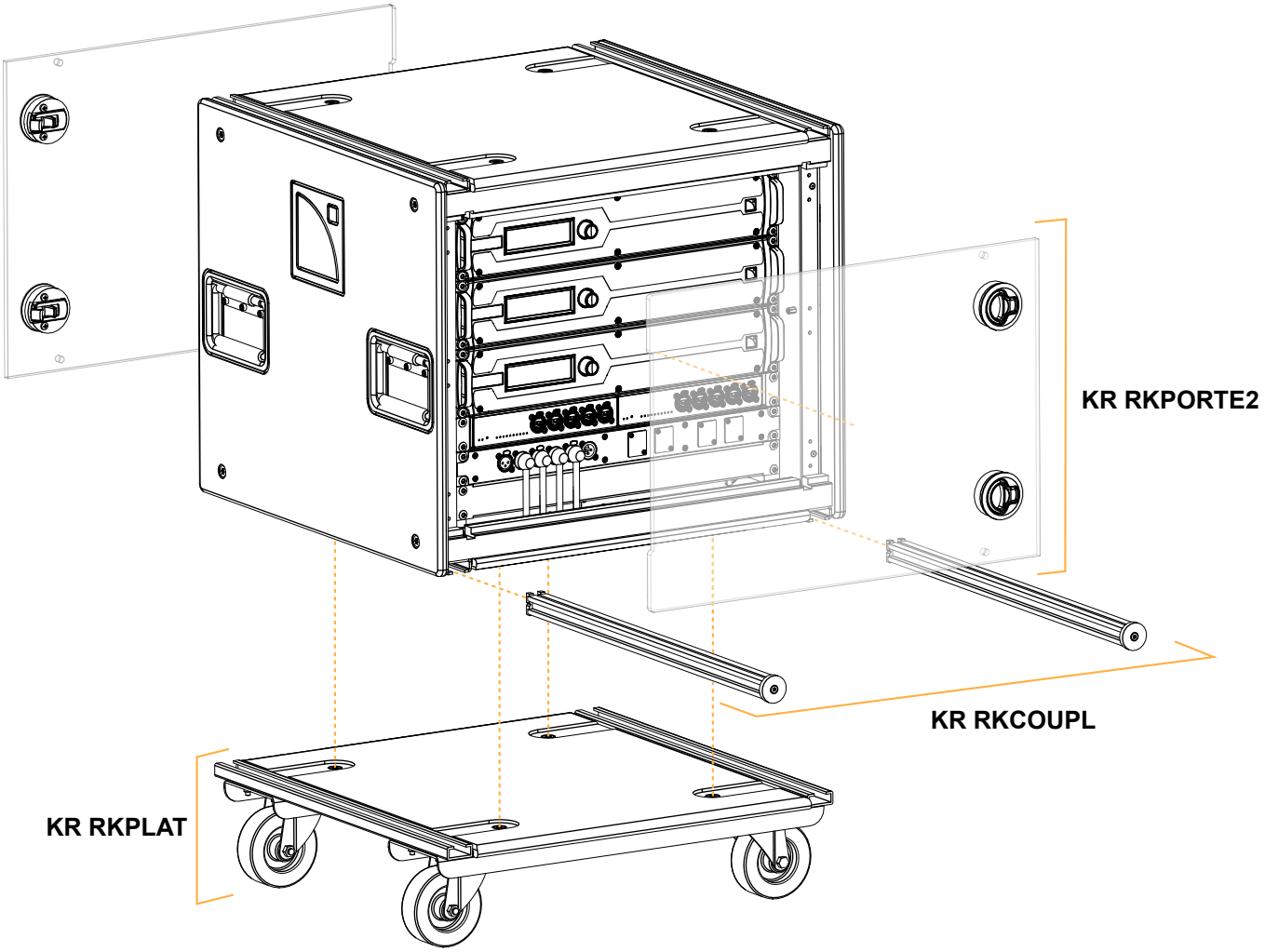
Introduction

This section contains the following maintenance procedure:

- Mounting components on the RK9U inner frame (p.55)

For advanced maintenance, contact your L-Acoustics representative.

Exploded view



Screws and fasteners repair kits

Name	Designation	Quantity
KR RKCACH	KR blank panel 1U LA-RAK II (AVB) / LA-RAK III	1
G03583	KR screws and washers LA-RAK II (AVB) / LA-RAK III	7
G03260	KR tie wraps LA-RAK II (AVB) / LA-RAK III	1
KR CVECRCAGE2	KR cage nuts M6 LA-RAK II (AVB) / LA-RAK III	1
G03263	KR 3U spacers LA-RAK II (AVB) / LA-RAK III	1

Mounting components on the RK9U inner frame

Tools

- torque screwdriver
- T25 Torx bit
- T30 Torx bit

Repair kits

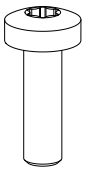
G03583 ×7*

KR screws and washers LA-RAK II (AVB) / LA-RAK III

×56**

FT777

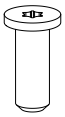
nylon washer Ø 6 mm



×28

S100094

M6×20 Torx



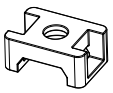
×28**

S100078

M6×16 Torx

G03260

KR tie wraps LA-RAK II (AVB) / LA-RAK III



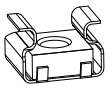
×10

FT010098

saddle type tie mount

KR CVECRCAGE2

KR cage nuts M6 LA-RAK II (AVB) / LA-RAK III



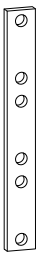
×100

S265

M6 cage nut

G03263

KR 3U spacers LA-RAK II (AVB) / LA-RAK III



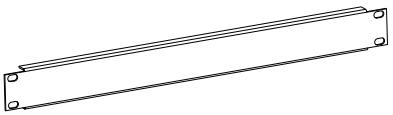
×2

100914

3U spacer

KR RKCACH

KR blank panel 1U LA-RAK II (AVB) / LA-RAK III



×2

FT010217

1U blank panel

* quantity for one LA-RAK III

** includes 16 extra spare parts

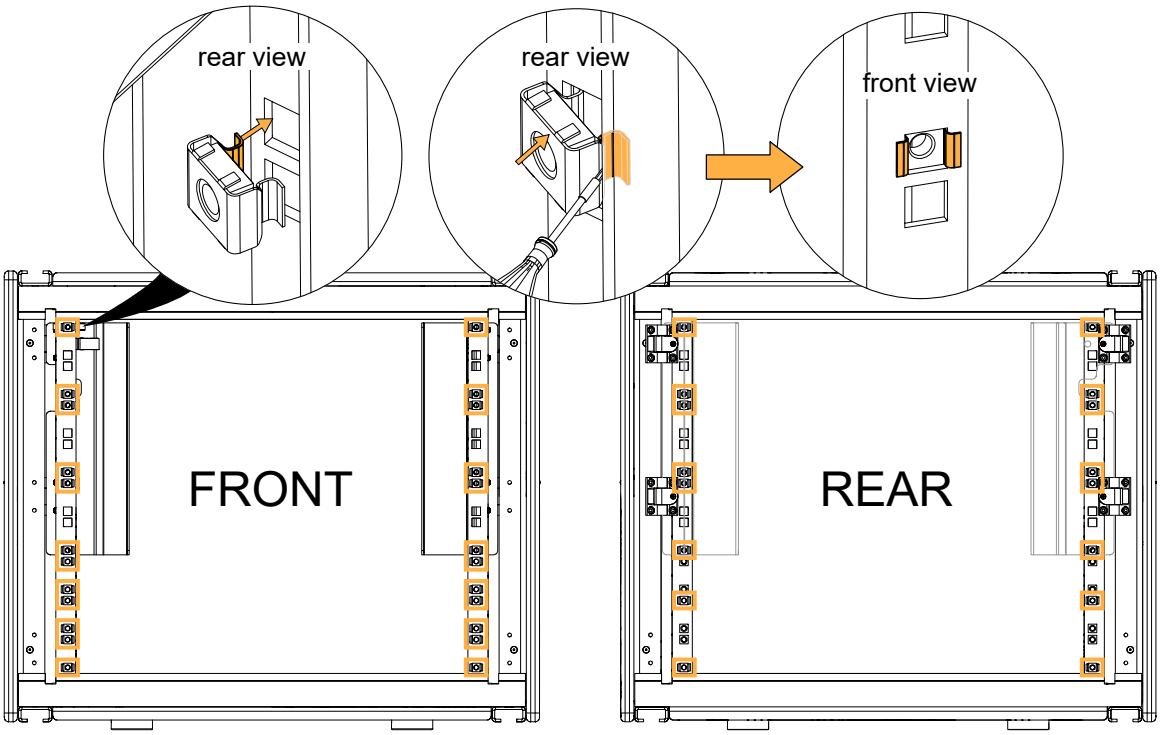
Prerequisite

LEXAN doors removed.

See Storing the LEXAN doors (p.34).

Replace the cage nuts if they are damaged.

Insert the left side in the hole, use a screwdriver as a lever to insert the right side. Use a finger to push the cage nut in the hole.



Procedure

Risk of damaging the amplified controller

The amplified controller should be rear supported in addition to the front panel mounting.

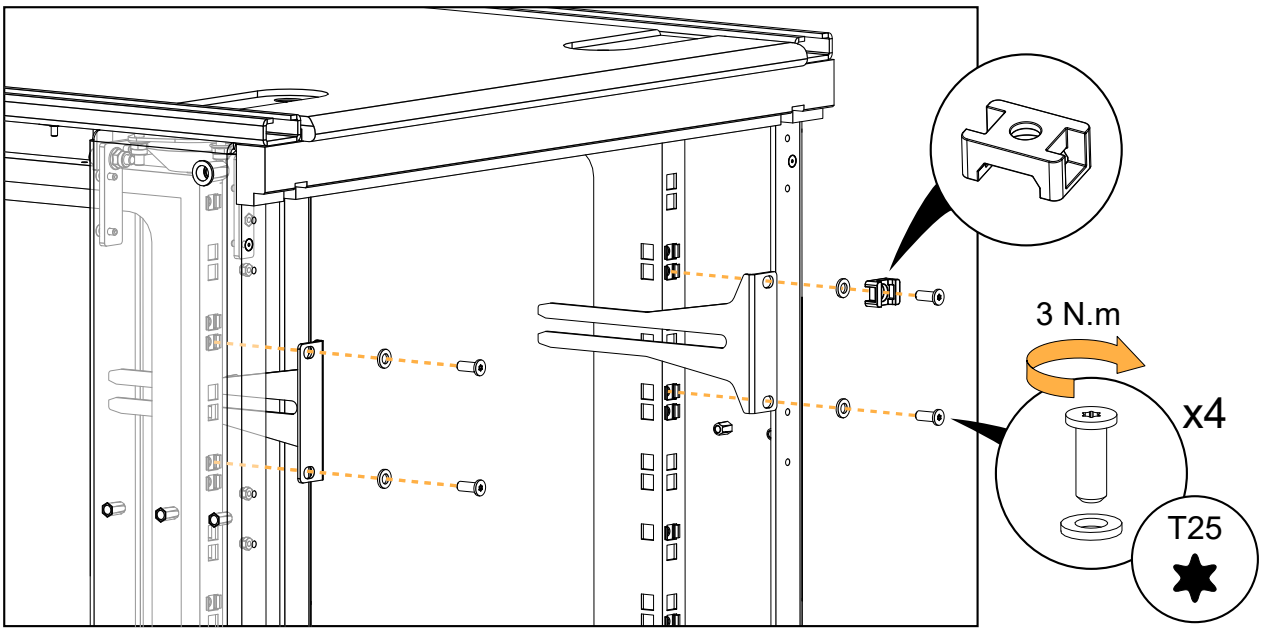
Use the rear brackets provided with the amplified controller.

Any mechanical damage to the amplified controller used without rear support is not covered by warranty.

1. Mount each LA7.16 on both the front and the rear faces:
   a) Mount the LA7.16 rear brackets to the inner frame at the rear face of the rack.

   Use four nylon washers and four M6×16 Torx screws.

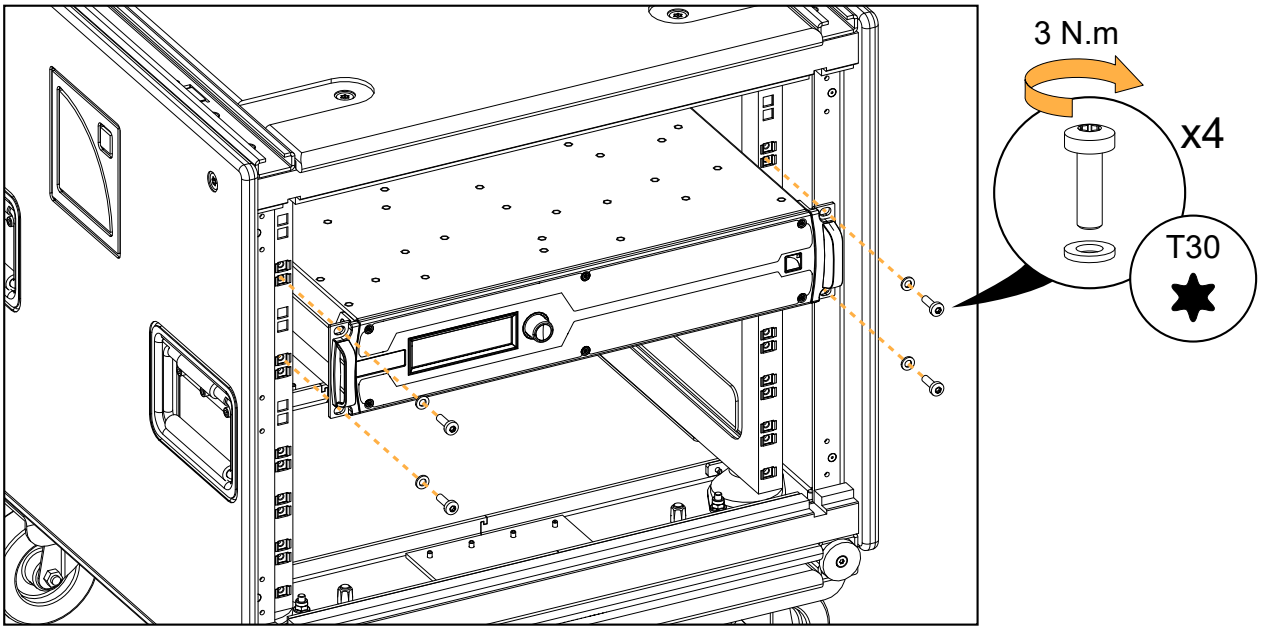
   On the top right, also use one saddle type tie mount.



   b) Slide LA7.16 on its rear brackets from the front face of the rack.

c) Mount LA7.16 to the inner frame.

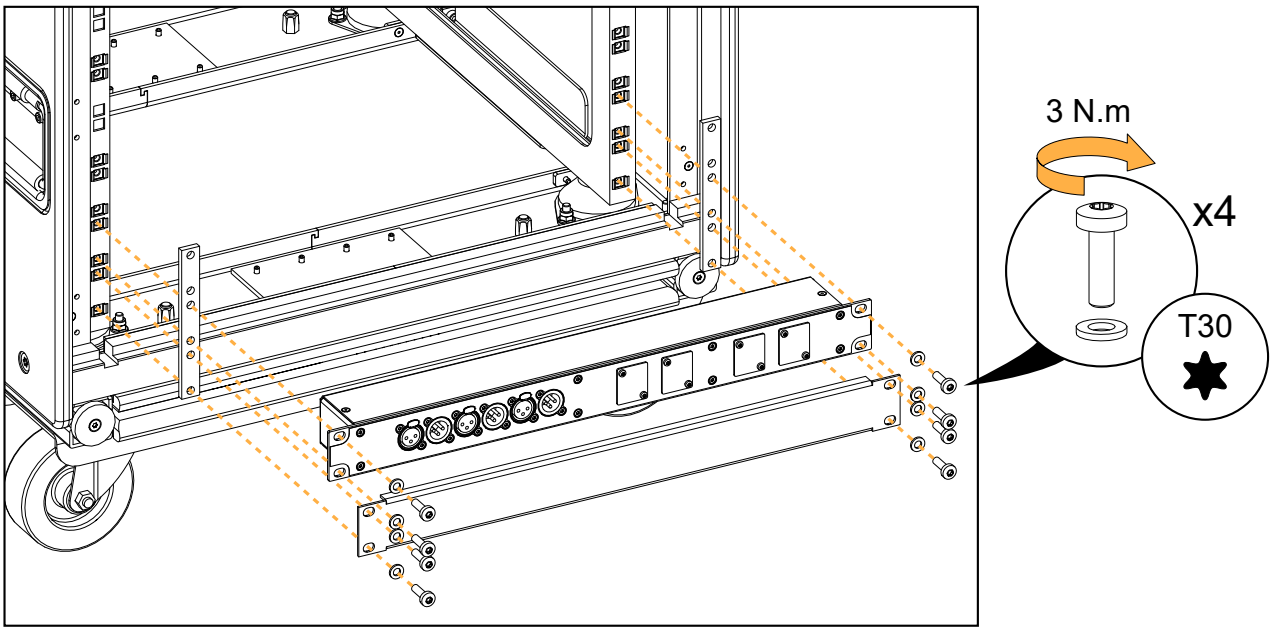
Use four nylon washers and four M6×20 Torx screws.



2. Mount LA-PANEL III and the 1U blank panel to the front face of the rack.

There is a 3U spacer on the inner frame behind LA-PANEL III and the 1U blank panel.

Use four nylon washers and four M6×20 Torx screws for each panel.

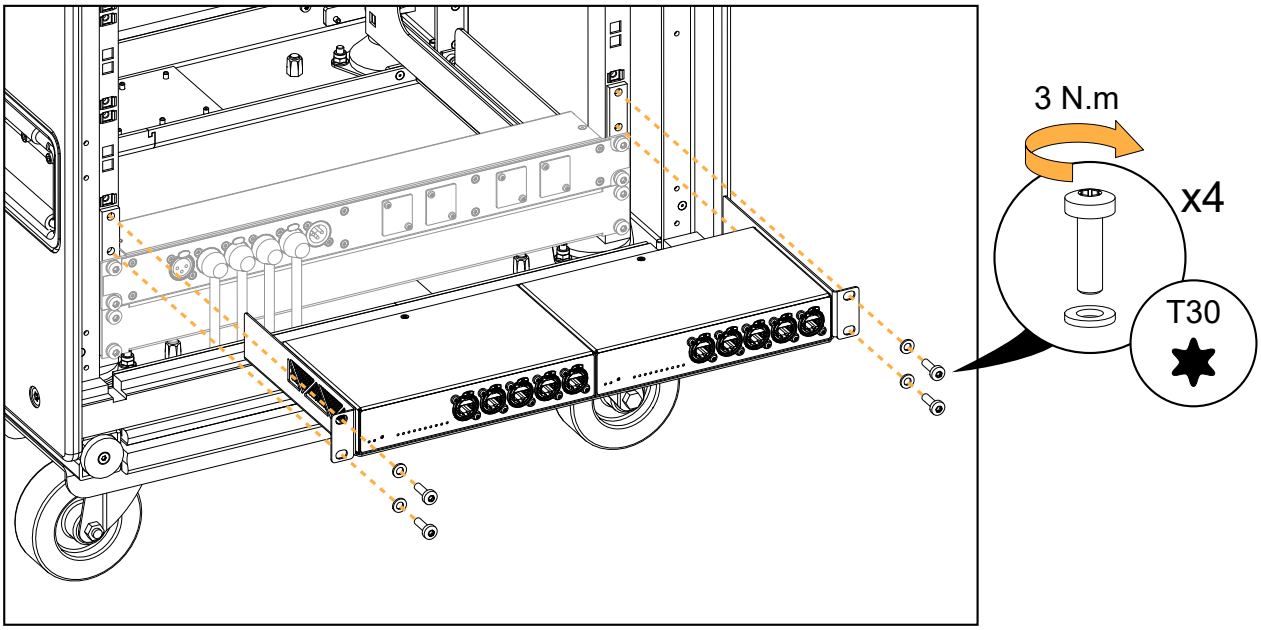


3. Mount LS10-RAKSHELF to the front face of the rack.
   a) Mount one or two LS10 on LS10-RAKSHELF.

   Refer to the **LS10 owner's manual** for more information.

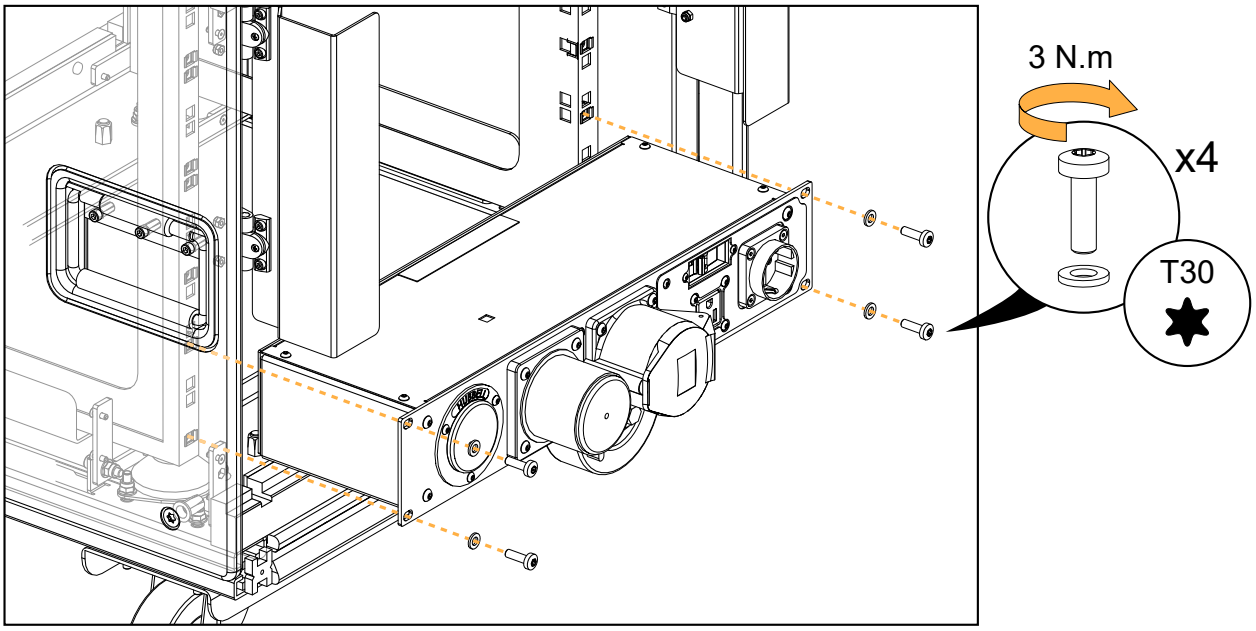
   b) Mount LS10-RAKSHELF to the inner frame.

   Use four nylon washers and four M6×20 Torx screws.



4. Mount LA-POWER II to the rear face of the rack.

   Use four nylon washers and four M6×20 Torx screws.



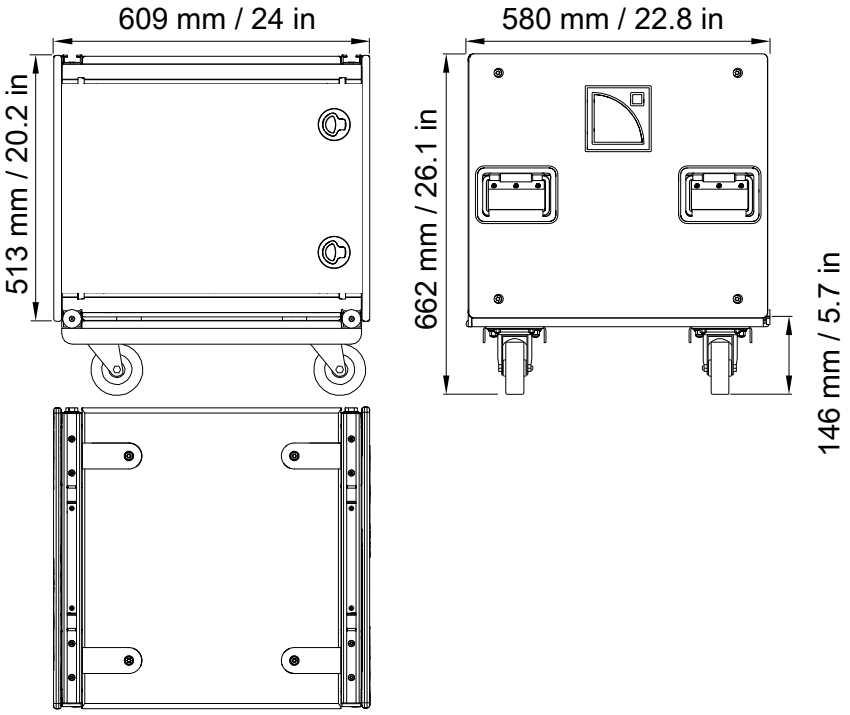
Specifications

LA-RAK III specifications

Description	Touring rack containing three LA7.16, one LA-POWER II for power distribution, one LA-PANEL III for audio signal distribution, and two LS10 for AVB distribution, compatible with LA-RAK BUMP III	
Rigging and handling	2 coupling bars	
	4 coupling rails	
	4 handles	
	1 dolly board	
Cables	• 2 XLR male/female cables with right-angle connectors, 0.5 m / 1.6 ft • 1 (XLR female + XLR male) dual cable from LA-PANEL III to Phoenix connector (AES/EBU - ANA OUT 1 + LINK 1), 1 m / 3.2 ft • 1 (XLR female + XLR male) dual cable from LA-PANEL III to Phoenix connector (AES/EBU - ANA OUT 2 + LINK 2), 1 m / 3.2 ft • 1 (XLR female + XLR male) dual cable from LA-PANEL III to Phoenix connector (AES/EBU - ANA OUT 3 + LINK 3), 1 m / 3.2 ft • 3 CAT7 red Ethernet labeled cables, 1 m / 3 ft • 3 CAT7 black Ethernet labeled cables, 1 m / 3 ft	
Weight	LA-RAK III (with doors, 2 coupling bars, dolly board, LA-PANEL III, cables, 3 LA7.16, LA-POWER II, and 2 LS10)	117.5 kg / 259 lb
	2 coupling bars	1.5 kg / 3.3 lb
	1 dolly board	14 kg / 30.9 lb
Materials	External structure	polyethylene, aluminum, steel
	Doors	LEXAN® polycarbonate
	Rigging components	polyester-coated steel
Finish	black	

Lexan is a trademark of SABIC Innovative Plastics IP BV.

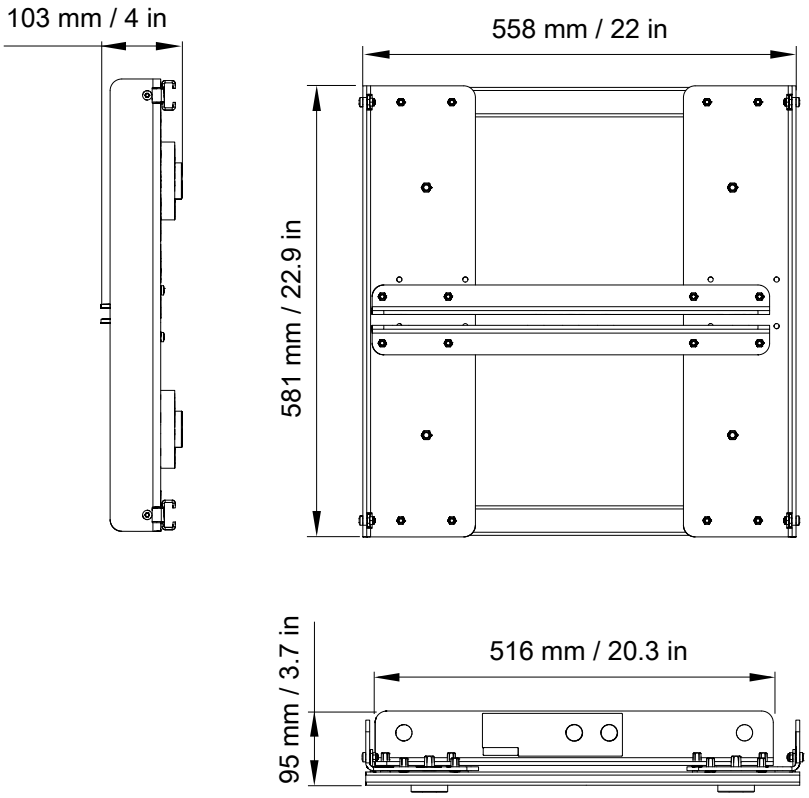
LA-RAK III dimensions



LA-RAK BUMP III specifications

Description	Structure for flying four LA-RAK III Compatible with LA-RAK, LA-RAK II, and LA-RAK II AVB 2 x Ø19 mm shackles WLL 3.25 t
Weight (net)	17 kg / 37.5 lb
Material	high grade steel with anti-corrosion coating

LA-RAK BUMP III dimensions

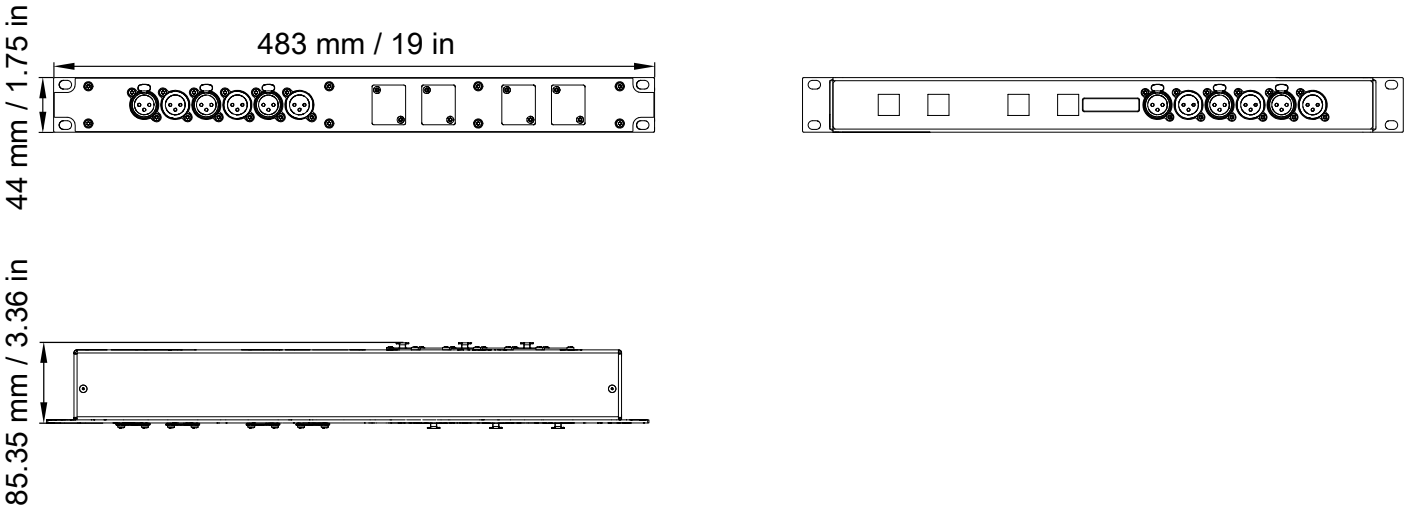


LA-PANEL III specifications

Description	Panel for audio signal distribution (AES/EBU, ANA, housings for custom optical connectors) Four D-shape compatible housings behind blank plates enable the addition of optical fiber connectors or etherCON connectors to link to LS10 Ethernet ports 6 and 7	
Front connectors	AES/EBU input/link	3 female Neutrik® XLR3 (IN) 3 male Neutrik® XLR3 (LINK)
Rear connectors	AES/EBU input/link	3 male Neutrik® XLR3 (IN) 3 female Neutrik® XLR3 (LINK)

powerCON, etherCON, speakON, Neutrik are registered trademarks of Neutrik AG.

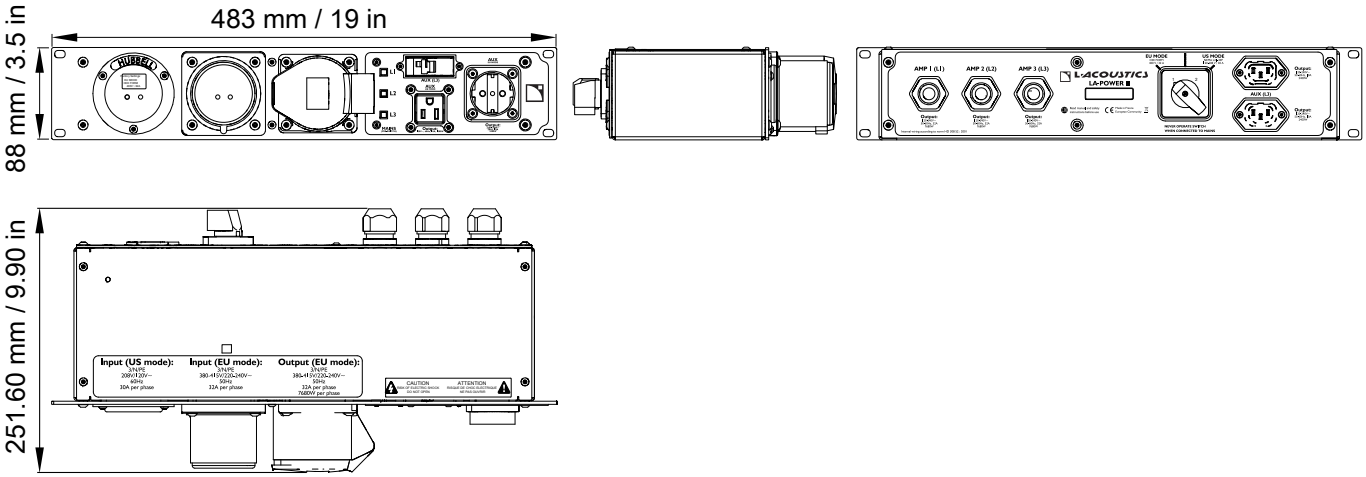
LA-PANEL III dimensions



LA-POWER II specifications

Description	Power distribution panel	
Front interface		
	AC input (US)	30 A - NEMA L21-30P (3P+N+E) male outlet
	AC input (EU)	32 A - IEC 60309 (3P+N+E) male outlet
	AC link out (EU)	32 A - IEC 60309 (3P+N+E) female outlet
		Do not use with a 120 - 208 V power supply
	AC presence	3 dual LEDs (L1, L2, L3) left: US AC input / right: EU AC input
	AC auxiliary output (US)	NEMA 5-15 female outlet (AUX US MODE)
	AC auxiliary output (EU)	type F "Schuko" female outlet (AUX EU MODE)
	Protection	10 A type C circuit breaker (AUX L3)
Rear interface		
	AC output for LA7.16	3 power cords fitted with 32 A Neutrik powerCON® connectors (AMP 1 L1, AMP 2 L2, AMP 3 L3)
	AC input selector switch	switch between EU MODE and US MODE
		Do not switch between modes when connected to power supply
	AC auxiliary output	2 IEC 60320-1 type C13 female outlets with Schurter V-Lock (AUX L3)
Storage and operating conditions		
	Storage temperature	-5 °C / 23 °F to 70 °C / 158 °F
	Operating temperature	-5 °C / 23 °F to 50 °C / 122 °F
	Maximum altitude	5000 m
	Climate	temperate and tropical

LA-POWER II dimensions



LS10 specifications

All values given in this section are typical values.

General

Mains rating	100 V AC - 240 V AC (± 10%), 50 Hz - 60 Hz
Power consumption	10 W - 20 W max when powering another LS10
Backup power circuit	24 V DC back-up input
	24 V DC output for powering another LS10
External backup power supply requirements	24 V DC (± 10%) 10 W minimum (over -5 °C / 23 °F to 50 °C / 122 °F ambient)
Startup time	ready to forward AVB streams in 5 seconds
Plug-and-play	open standard (no license required), AVB-enabled without configuration, no manual configuration required

Storage and operating conditions

Storage temperature	-5 °C / 23 °F to 70 °C / 158 °F
Operating temperature	-5 °C / 23 °F to 50 °C / 122 °F
Maximum altitude	2000 m
Climate	moderate, tropical

Interface

Indicators	1 LED for power status, 1 LED for fault status
	10 LEDs for link/act status
Button	reset to factory settings

Ethernet port features

Management	gPTP grandmaster capable, priority selection
	RSTP: enable/disable
Port sensing	auto negotiation
Auto crossover	MDI / MDIX (allows to use straight or cross cables)
Auto sensing	Full or Half Duplex (Gigabit is always Full Duplex Mode)
AVB ports	10 ports at 10/100/1000 Mb/s

Connectors

Network	8 × Ethernet etherCON® I/O (5 on front, 3 on rear)
	2 × SFP cages
Mains input	IEC C13 V-Lock compatible socket
Terminal block connector	5 mm 6-point terminal block connector for GPO and DC powering with: • 1 × 24 V DC power output (maximum 10 W) to power another LS10 • 1 × 24 V DC backup power input (maximum 10 W) • 1 GPO for fault indication (Relay, max 30 V DC / 1 A)
USB	female micro USB type

Milan-AVB

Featured AVB entities	Avnu™-certified Milan-AVB Bridge
Standards	Ethernet Milan-AVB: IEEE 802.1BA-2011 standard augmented by Avnu ProAV 1.1 requirements
Supported streams	Number: 150
	Class: A and B

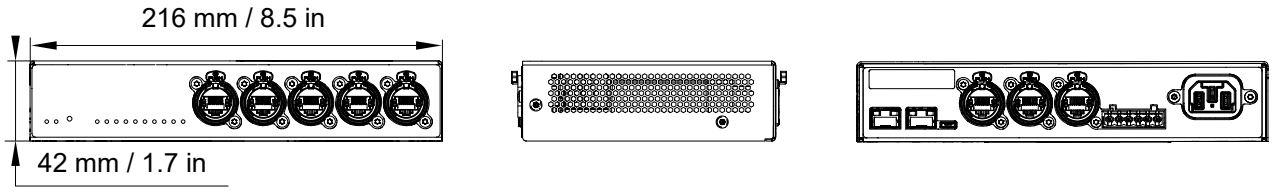
Management

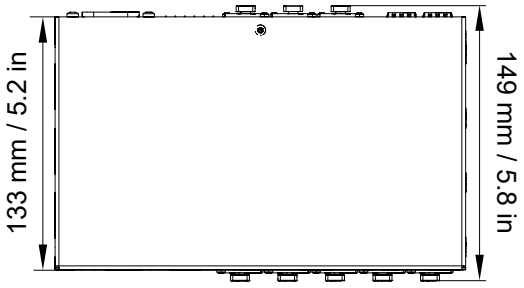
IP	static
Firmware update	through Ethernet

Physical data

Height × Width	1.7 in × 8.5 in (1U × 1/2U)
Weight	1 kg / 2.2 lb
Finish	black
Protection rating	IP2x

LS10 dimensions





Appendix

Approvals

EU Declaration of Conformity (DoC)

EU Declaration of Conformity (DoC)

We

L-Acoustics

13 rue Levacher Cintrat
Parc de la Fontaine de Jouvence
91460 Marcoussis Cedex
France

+33 (0)1 69 63 69 63
info@l-acoustics.com

declare that the DoC is issued under our sole responsibility and belongs to the following product:

LA-POWER II distribution panel

The object of the declaration described above is in conformity with the relevant Union harmonization legislation:

2014/35/EU: Low Voltage Directive
2015/863/EU: RoHS 3 Directive

The following harmonized standards and technical specifications have been applied:

EN 62368-1: 2014 Audio/video, information and communication technology equipment — Part 1: Safety requirements
EN 62368-1: 2018 Audio/video, information and communication technology equipment — Part 1: Safety requirements
EN 63000: 2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Technical file compiled by:

Genio KRONAUER

13 rue Levacher Cintrat
Parc de la Fontaine de Jouvence
91460 Marcoussis Cedex
France

Year CE marking was first affixed: 2024

Issued in Marcoussis, France

21/10/2024

Genio KRONAUER, Executive Director of Research & Development, Technologies and Platforms

EU Declaration of Conformity (DoC)

We

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Parc de la Fontaine de Jouvence
91460 Marcoussis Cedex
France

+33 (0)1 69 63 69 63
info@l-acoustics.com

declare that the DoC is issued under our sole responsibility and belongs to the following product:

LS10 network switch

The object of the declaration described above is in conformity with the relevant Union harmonization legislation:

2014/35/EU: Low Voltage Directive
2014/30/EU: Electro-Magnetic Compatibility Directive
2011/65/EU: RoHS 2 Directive

The following harmonized standards and technical specifications have been applied:

EN 62368-1: 2014 Audio/video, information and communication technology equipment — Part 1: Safety requirements
EN 55032: 2015 Electromagnetic compatibility of multimedia equipment — Emission Requirements
EN 55035:2017 Electromagnetic compatibility of multimedia equipment — Immunity requirements

Technical file compiled by:

Genio KRONAUER

13 rue Levacher Cintrat
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91460 Marcoussis Cedex
France

Year CE marking was first affixed: 2020

Issued in Marcoussis, France 09.07.2020

Genio KRONAUER, Electronics Director

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