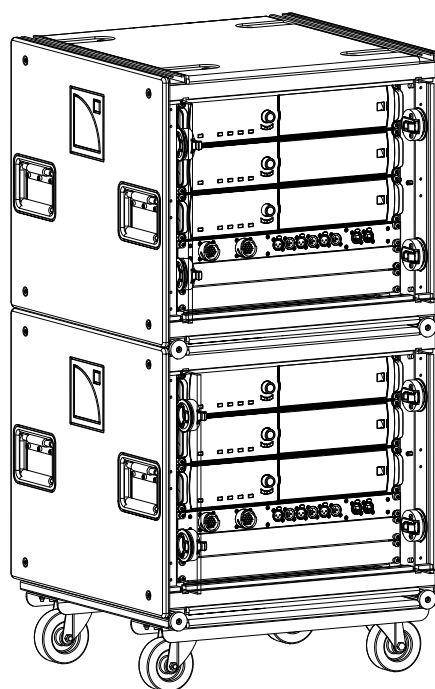
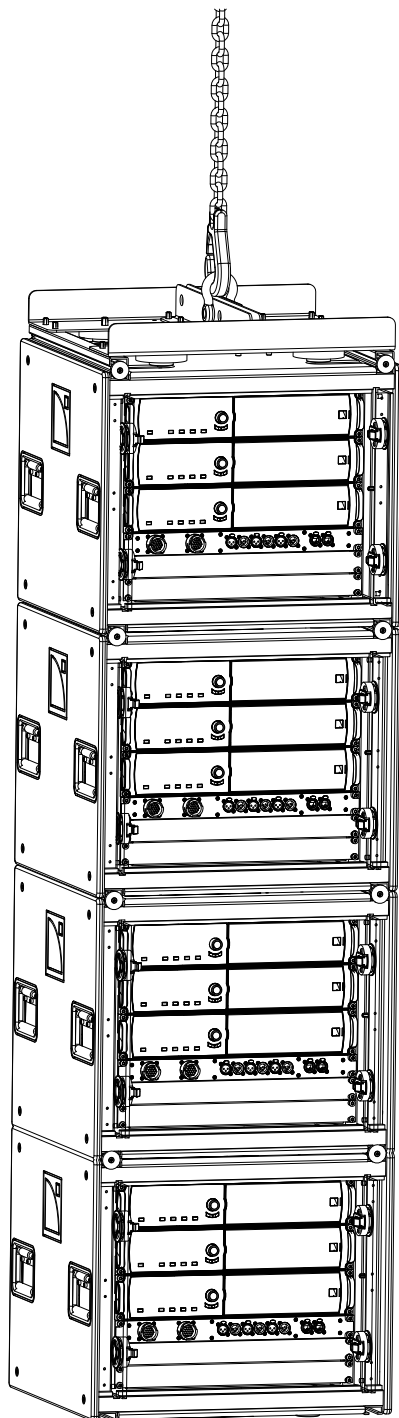


LA-RAK II



owner's manual (EN)



Document reference: LA-RAK II owner's manual (EN) version 5.0

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Safety

Important safety instructions



Explanation of graphical symbols



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the product.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the grounding-type plug. A grounding-type plug has two blades and a third grounding prong. The third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. **WARNING:** To reduce the risk of fire or electric shock, this apparatus should not be exposed to rain or moisture and objects filled with liquids, such as vases, should not be placed on this apparatus.



- 16.** To completely disconnect this equipment from the mains, disconnect the power supply cord plug from the receptacle.
Pour déconnecter complètement l'appareil du secteur, débranchez la prise de la fiche secteur.
- 17.** The main plug of the power supply cord shall remain readily accessible.
La prise principale du cordon d'alimentation doit rester totalement accessible.
- 18.** The power supply of the product shall be protected in the installation by a 30 A circuit breaker certified for constant current at 100% (US MODE 100-120 V).

Additional 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)
200-240 V: 32 A (EU MODE)

WARNING: The product is of CLASS 1 construction and shall be connected to a mains socket outlet with a protective connection to earth.



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 II 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).

200-240 V (EU MODE): 32 A, Class C.

Circuit breakers of different characteristics could trip in case of short-term, high current draw, because they do not match LA12X 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 0 °C / 32 °F and 50 °C / 122 °F.
 Do not expose the product to direct sun.
- 
Only use the product in a conformed electro-magnetic environment.
 Conformed environments are: E1 (residential), E2 (commercial and light industrial), E3 (urban outdoors), E4 (controlled EMC environment, ex. TV studio), as per EN55103-2 standards.
- 
Avoid radio interference.
 This product has been tested and complies with the limits indicated in the EMC directive (Electro Magnetic Compatibility). These limits are designed to provide reasonable protection against harmful interference from electrical equipment, but it cannot be guaranteed that interference will never occur.
- 
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.

Introduction

LA-RAK II touring rack

LA-RAK II offers worldwide compatibility in one sole model, a universal system that can be used around the globe, thanks to the three LA12X amplified controllers included and LA-POWER II, compatible with 115V and 230V power distributions.

LA-RAK II is electrically and mechanically compatible with LA-RAK (LA-RAK BUMP).

How to use this manual

The LA-RAK II owner's manual is intended for all actors involved in the system design, implementation, preventive and corrective maintenance of the LA-RAK II 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.10)
2. Before installing the product, perform mandatory inspections and functional checks.
 - [Inspection and preventive maintenance](#) (p.17)
3. To deploy the product, follow the step-by-step installation instructions and refer to the cabling schemes.
 - [Rigging procedures](#) (p.28)
4. To configure the settings and parameters of the product, follow the step-by-step operation instructions.
 - [Operation](#) (p.34)



The [Corrective maintenance](#) (p.50) 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

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.



Do not open unless authorized.

This symbol indicates the presence of electrical shock hazards.

It also indicates that no maintenance performed by the end user requires access to internal components.

System components

Loudspeaker enclosures

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

Powering and driving system

LA12X Amplified controller with DSP, preset library and networking capabilities

Rack

LA-RAK II Touring rack containing three LA12X, LA-POWER II for power distribution and LA-PANEL II for audio and network distribution

Software applications

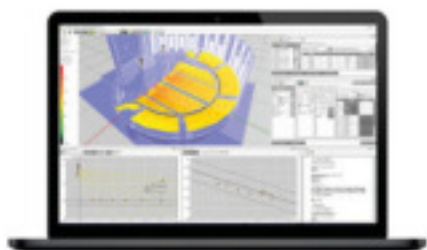
Soundvision 3D acoustical and mechanical modeling software

LA Network Manager Software for remote control and monitoring of amplified controllers

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

i **Other LA-RAK II system components**
Other components of the system are presented in the LA-RAK II user manual along with the connection schemes.

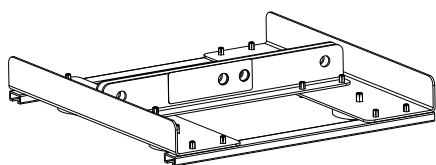
Illustrations



Soundvision



LA Network Manager



LA-RAK BUMP

Technical description

Main features

LA-RAK II is a 9U rack cabinet in which are mounted three LA12X amplified controllers and two distribution panels: LA-PANEL II for analog and AES3 audio signal and network, and LA-POWER II for power.

On the front face, an 2U space can receive additional material (such as a switch for L-NET network star topologies).

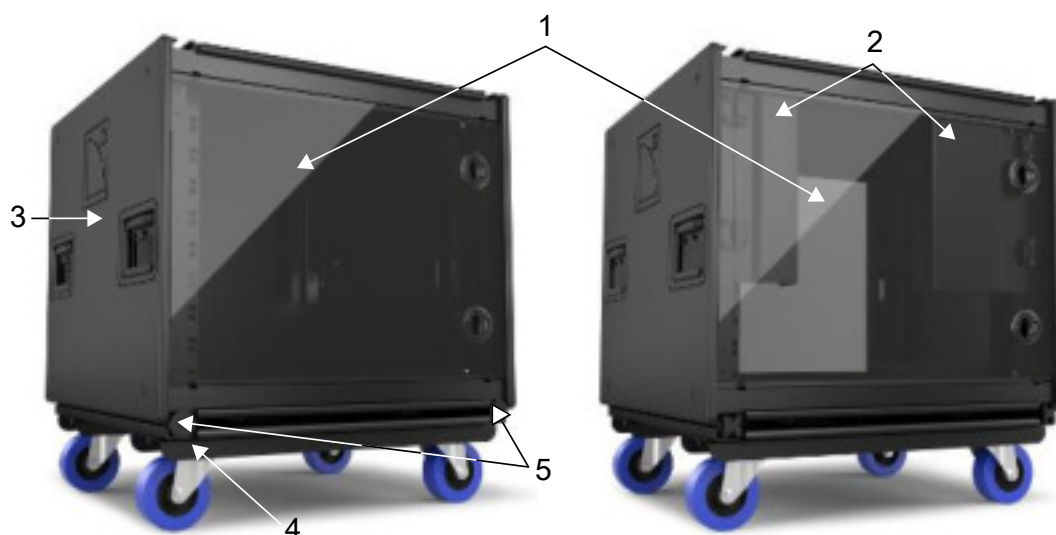


RK9U structure

The LA-RAK II 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 CA-COM and speakON sockets remains 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 II 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 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 LA12X per phase.

LA-POWER II is fitted with three power cords equipped with 32 A Neutrik powerCON sockets for the LA12X amplified controller.

Additional outlets (one NEMA, one "Schuko" and two IEC) are available to power auxiliary accessories such as Ethernet switches and laptop. The auxiliary circuit is protected by a circuit breaker. Refer to section [Powering auxiliary devices](#) (p.37) 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 LA12X |
| 2 AC input connector (EU mode) | 9 mains switch |
| 3 AC link connector (EU mode) | 10 AC auxiliary output connector with Schurter V-Lock (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 II distribution panel

LA-PANEL II is a 1U distribution panel for network, analog and digital signals.

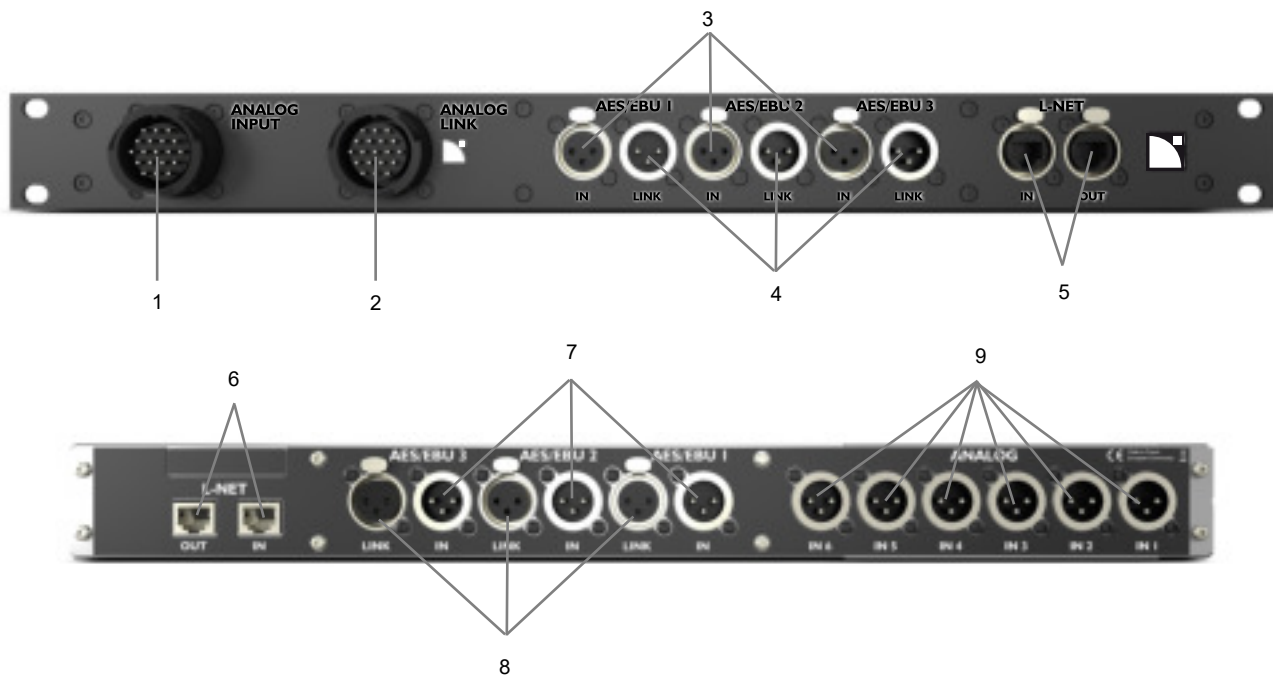
LA-PANEL II can distribute up to 6 analog or digital audio signals. The analog signals are fed through the 19-point input CA-COM connector and the AES/EBU digital signals through three IN XLR connectors.

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

The link 19-point CA-COM connector and the three LINK XLR connectors can send the signals to another LA-RAK II in a daisy-chain layout.

LA-PANEL II is equipped with 2 etherCON and 2 RJ45 I/O sockets for L-NET control and monitoring network.

Accessories include four XLR cables (two analog, two digital) to connect LINK and IN connectors on the front of the panel and set a daisy-chain between controllers within the LA-RAK II.

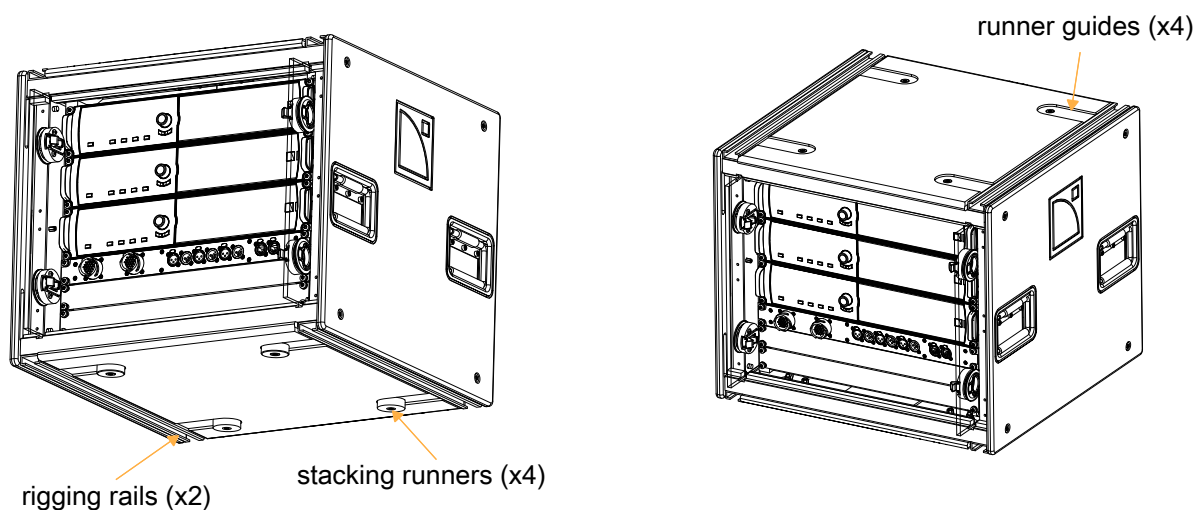


- | | |
|--|---------------------------------------|
| 1 analog input connector | 6 RJ45 L-NET network |
| 2 analog link connector | 7 XLR AES/EBU input connectors |
| 3 XLR AES/EBU input connectors | 8 XLR AES/EBU link connectors |
| 4 XLR AES/EBU link connectors | 9 analog input connectors |
| 5 etherCON L-NET network connectors | |

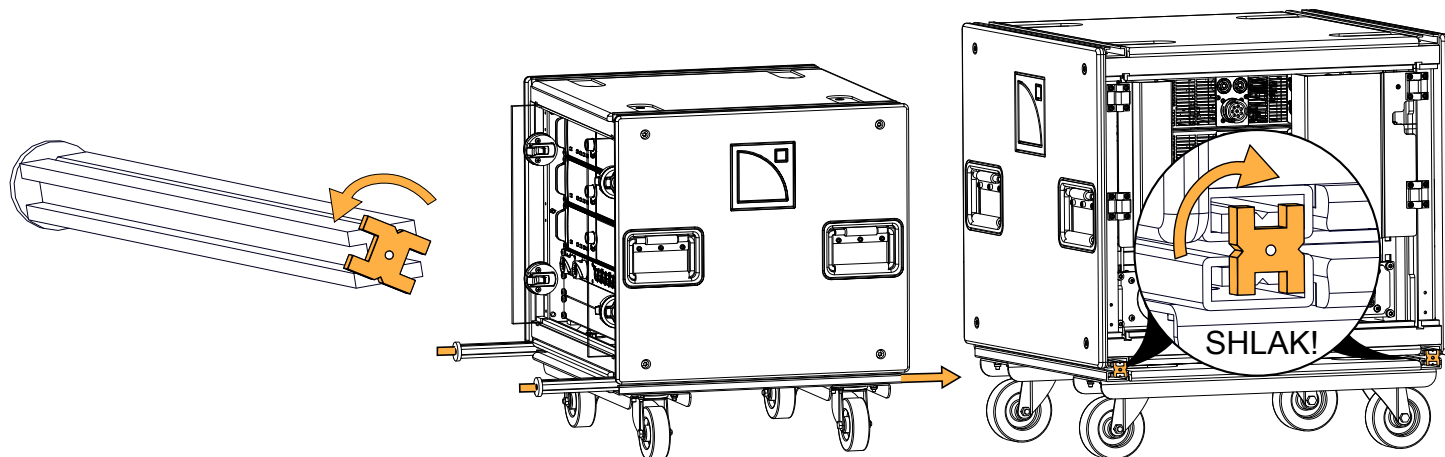
Rigging system description

LA-RAK II

LA-RAK II 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 II in stacked or flown configuration.

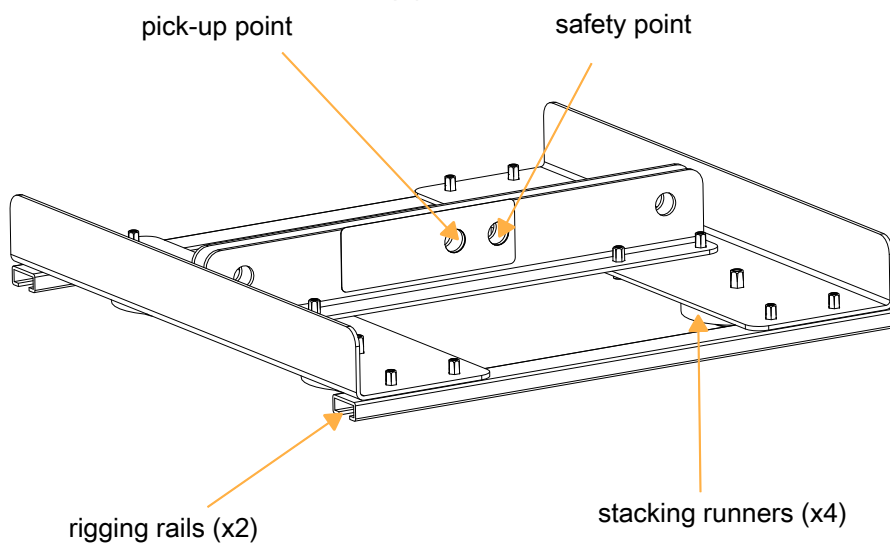


Connection with other LA-RAK II or rigging elements is ensured by two coupling bars with spring-loaded safety.



LA-RAK BUMP

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

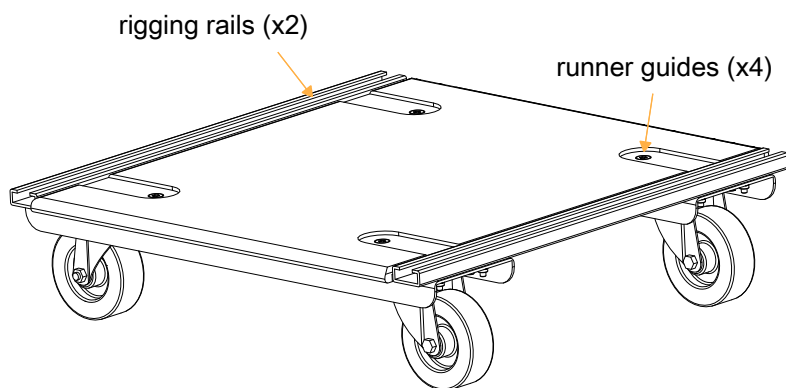


Dolly board

The removable dolly board is designed to move and transport an array of two LA-RAK II. It is secured to the bottom LA-RAK II using the two coupling bars.



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



Mechanical safety

Flown configurations

The LA-RAK II 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 always compliant with the 2006/42/EC: Machinery Directive, regardless of the other deployment parameters (site angles, inter-enclosure 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.

Configuration	Rigging accessory	Maximum / Safe limit
Flown	LA-RAK BUMP	4

Other configurations

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

Configuration	Rigging accessory	Maximum / Safe limit
Stacked	dolly board	3
During transportation	dolly board	2



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.

Assessing mechanical safety

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.

Maximum pullback angle

If a pullback accessory is available, the pullback angle must not exceed a 90° negative site angle.

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.26) for comparison and specific manipulation.



If any parts are damaged, refer to the [Corrective maintenance](#) (p.50) section for repair kits and maintenance instructions, or contact your L-Acoustics representative.

INSPECTION	
rigging	Rigging part inspection (p.18)
	Mechanical system overview (p.19)
rack	LA-RAK II components (p.21)
amplified controllers	External structure (p.24)
	Cleanness (p.24)
FUNCTIONAL CHECKS	
electronics	Normal start-up sequence (p.25)
	Network functionalities and firmware (p.25)

Inspection

Rigging part inspection

About this task

For critical rigging parts, use the [Preventive maintenance references](#) (p.26) for comparison and specific manipulations.

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 pictures**.

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.18) on critical parts.

For each part, refer to the [Preventive maintenance references](#) (p.26).



Replacing screws

If a screw is loose, remove and replace it.

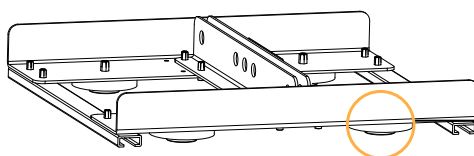
Always use the new screws provided in the repair kit.

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

Do not apply more than the indicated torque.

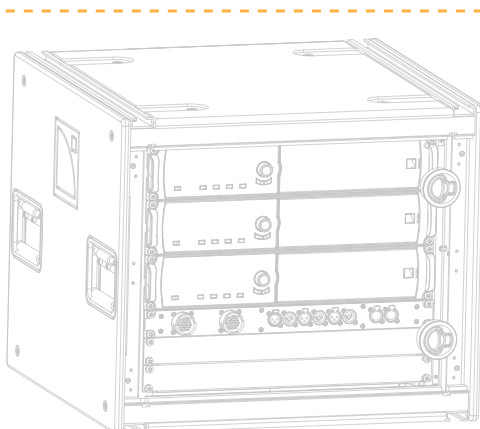
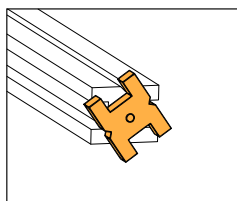
LA-RAK II under LA-RAK BUMP

[Shackles](#) (p.26)



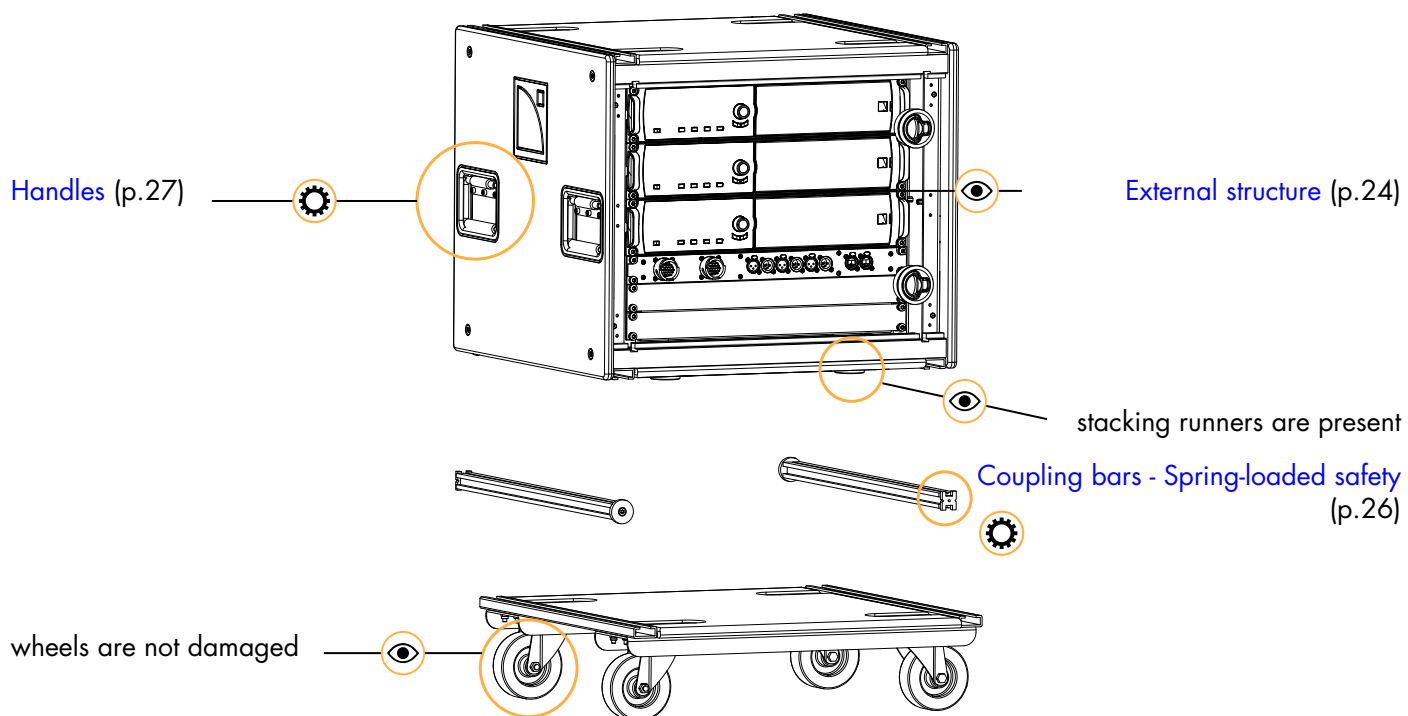
runners are tightened to LA-RAK BUMP

[Coupling bars - Spring-loaded safety](#) (p.26)



Refer to [LA-RAK II components](#) (p.21)

LA-RAK II stacked on dolly board



LA-RAK II - Structure and internal components

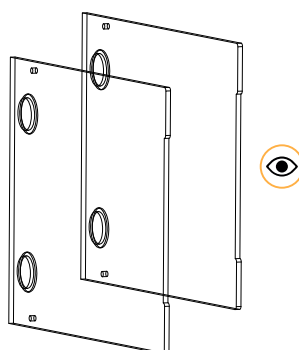
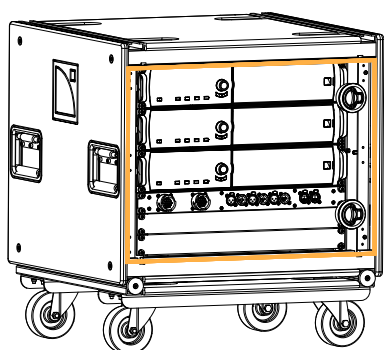
Procedure

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

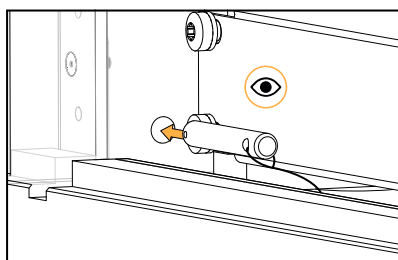
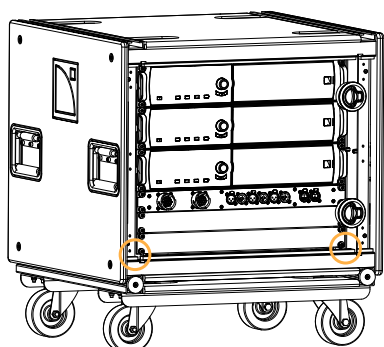
- Check the RK9U internal frames and electric/electronic devices mounted on it, their screws and washers
- Check the cables and make sure they are not damaged or bent.
- Check the connectors and make sure the pins are not bent.
- Check the contact quality and locking action of all the LA-PANEL II sockets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

LA-RAK II components

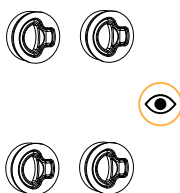
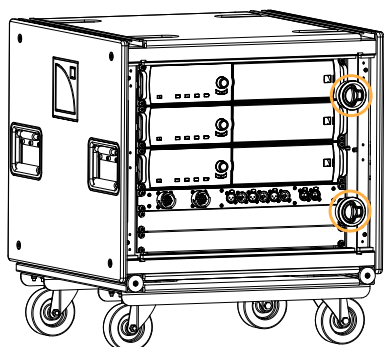
Physical parts



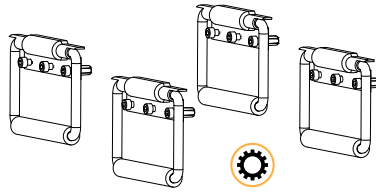
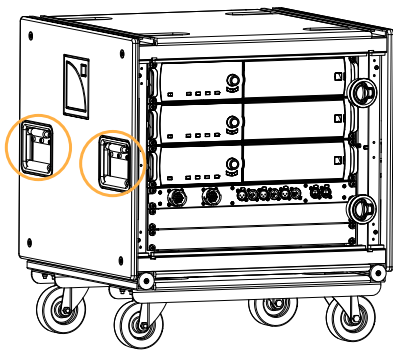
doors are not damaged



door locking pins are present
sling is present

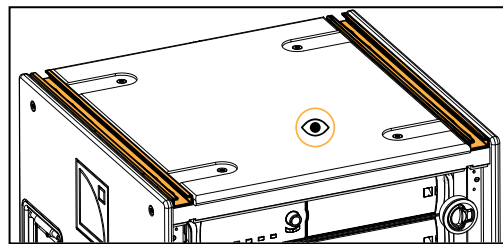
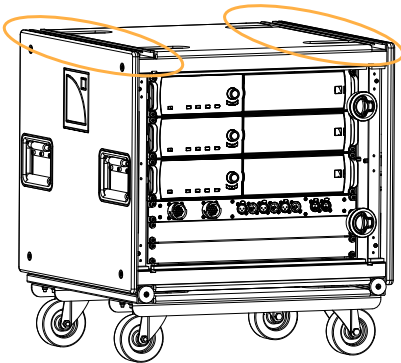


door locks are present



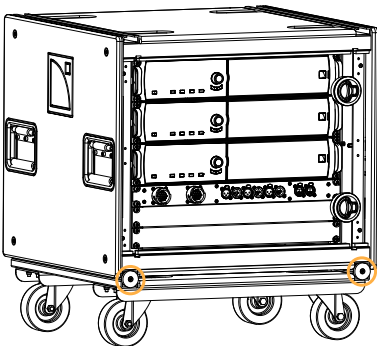
handles springs are not damaged

[Handles](#) (p.27)



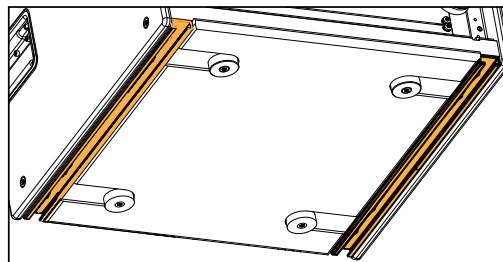
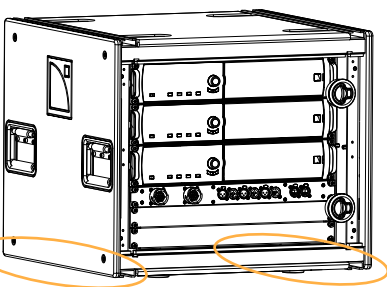
top rails are not damaged

screws are tightened



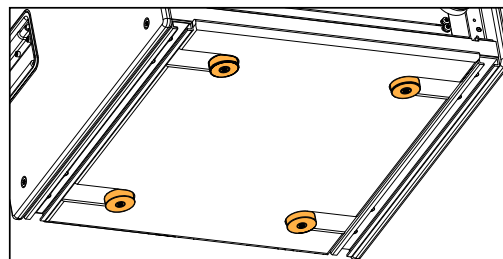
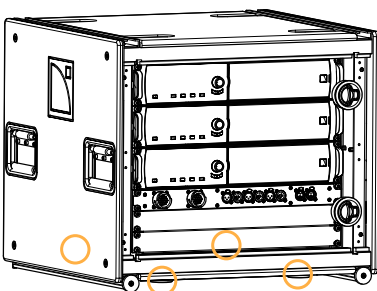
coupling bars are present

[Coupling bars - Spring-loaded safety](#) (p.26)



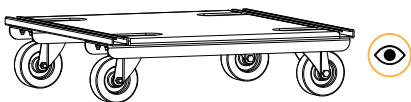
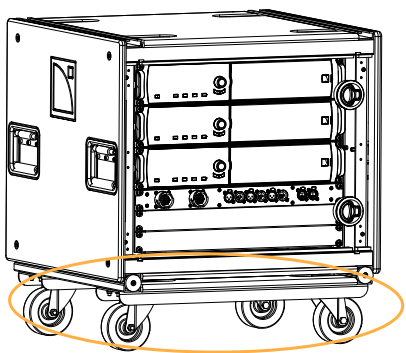
bottom rails are not damaged

screws are tightened



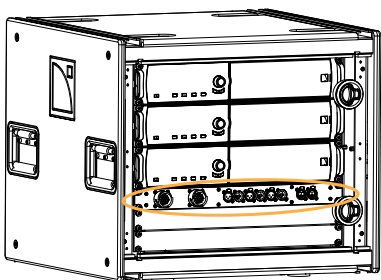
screws are tightened

stacking runners are present and not damaged

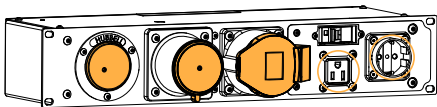
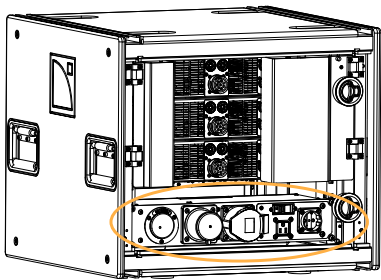


wheels are not damaged

Electronic parts




LA-PANEL II is present
ports are not damaged

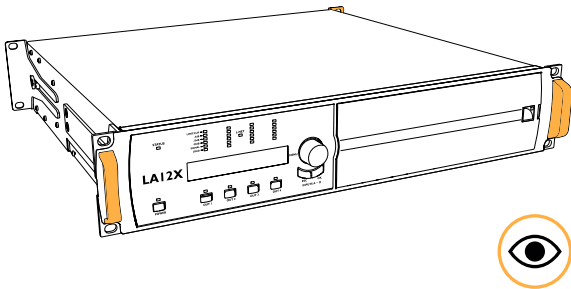


LA-POWER II is present
covers are not damaged or missing
plugs are not damaged

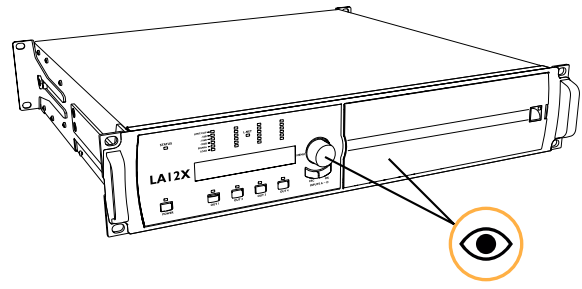
Amplified controllers

External structure

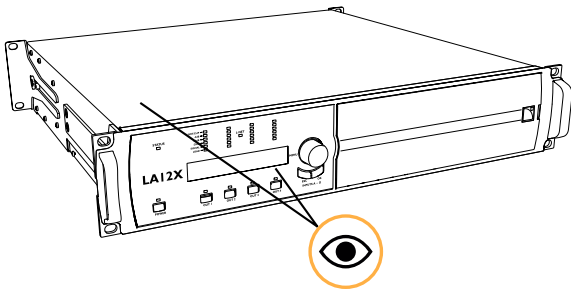
The  indicates a visual inspection.



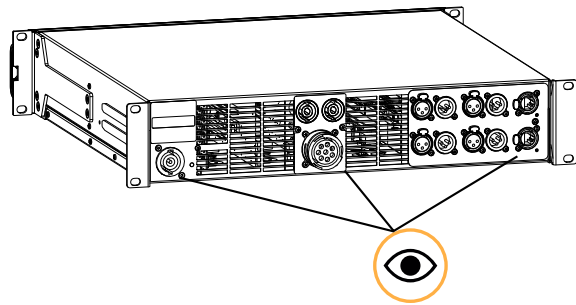
front handles are present and not damaged



encoder wheel, and grill and foam filter are present and not damaged
see also [Cleanness](#) (p.24)



chassis, Lexan plate, LCD screen, and LEDs are not damaged



connectors are not damaged

Cleanness

Equipment

- air blower

Procedure

1. Disassemble the grill to clean the foam filter.
Refer to the [grill and foam filter](#) (p.54) procedure.
2. Clean the amplified controller through the front grill with an air blower.
3. Reassemble the foam filter and the grill.

Functional checks

Normal start-up sequence

Procedure

1. Plug LA-POWER II to mains.
2. Power on LA-POWER II and the amplified controller.
3. Check that the LCD screen and all the LEDs lit during the start-up sequence.

Network functionalities and firmware

Equipment

- computer with LA Network Manager version 2.4.3 minimum and CAT5e U/FTP cable

Procedure

1. Connect the rack to an Ethernet port of a computer running LA Network Manager.
Use the CAT5e cable.
2. Run LA Network Manager.
3. Check that the amplified controller is detected as an online Unit.
Refer to the **LA Network Manager Help**.
4. Check that all LA12X 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.



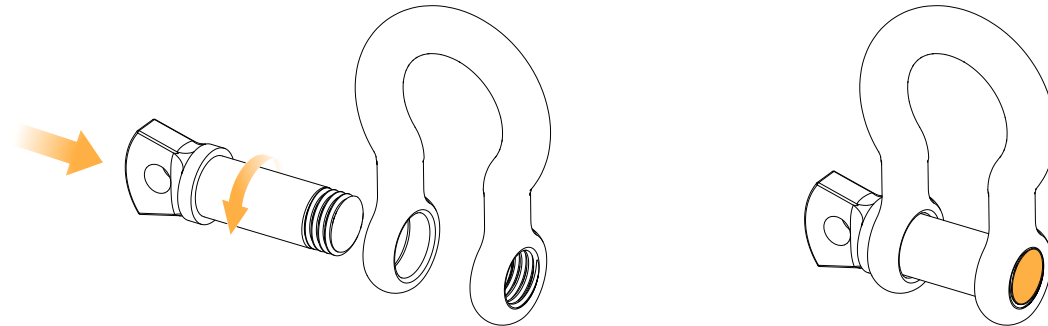
If using a third-party control system such as Crestron or Extron, check that updating firmware does not break compatibility.

Preventive maintenance references

Shackles

Moving parts

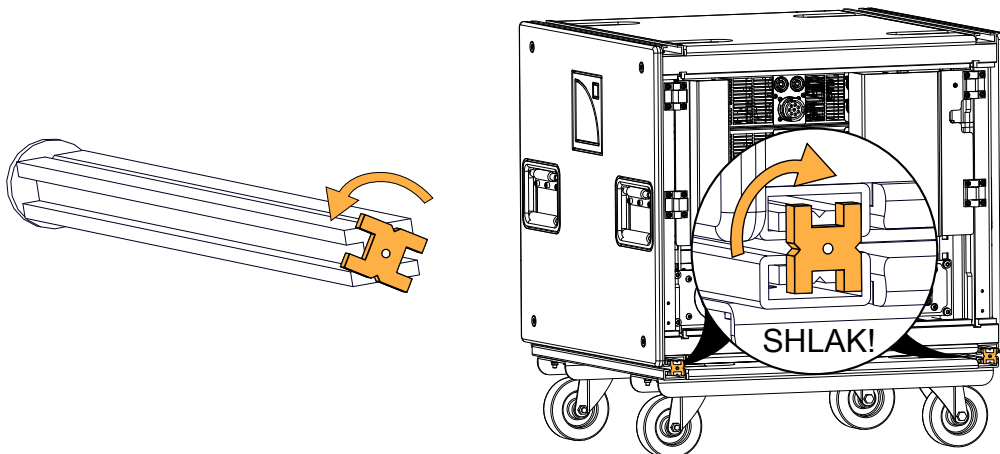
Drive the shackle axis in its lodging. Make sure that the end is flush with the shackle.



Coupling bars - Spring-loaded safety

Moving parts

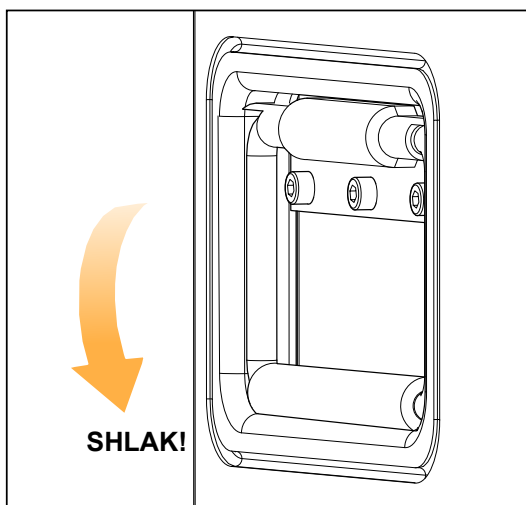
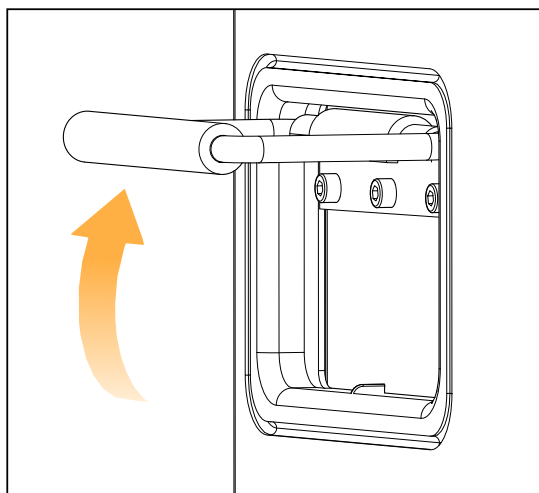
Turn the spring-loaded safety. Make sure that it quickly returns to its storage position.



Handles

Moving parts

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

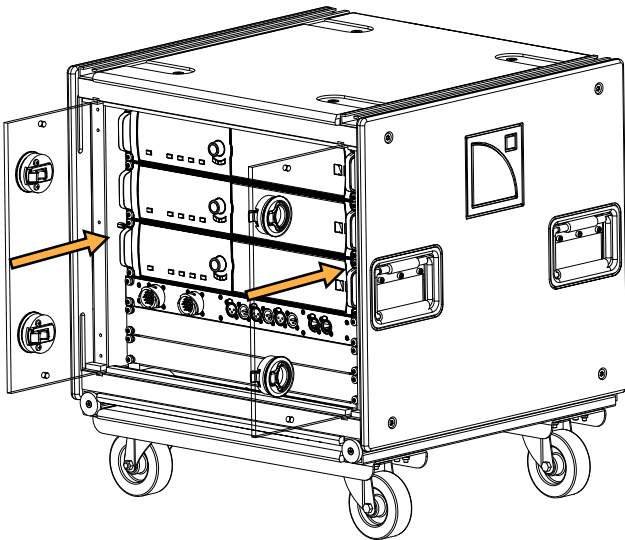


Rigging procedures

Storing the LEXAN doors

Procedure

1. Pull on the handles to detach both doors.
2. Facing the LA-RAK II, 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.

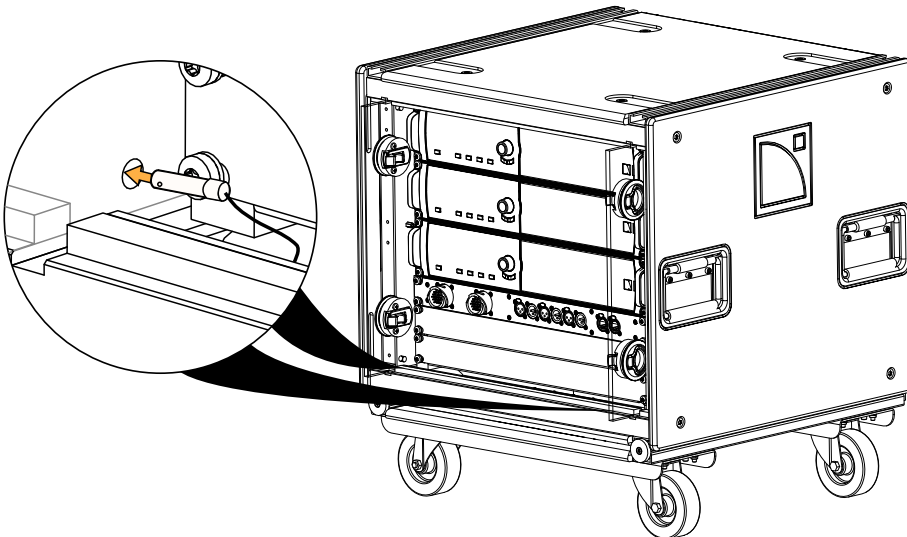


3. Insert and lock the ball-locking pins through each door's safety hole to secure the doors.



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 II

type of deployment	stacked array
min number of operators	2



Additional safety for stacked arrays

Secure the stacked LA-RAK II 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

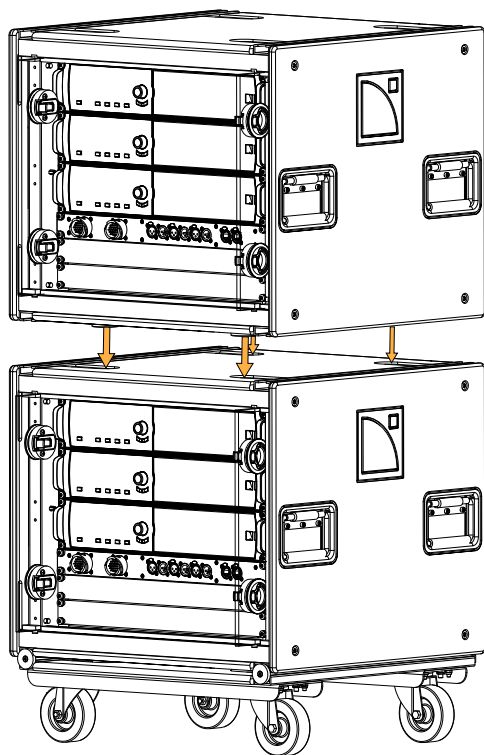
1. Position a first LA-RAK II at the stacking location.
2. Bring a second LA-RAK II and remove its dolly board.
3. Lift up the second LA-RAK II and install it on the first one.



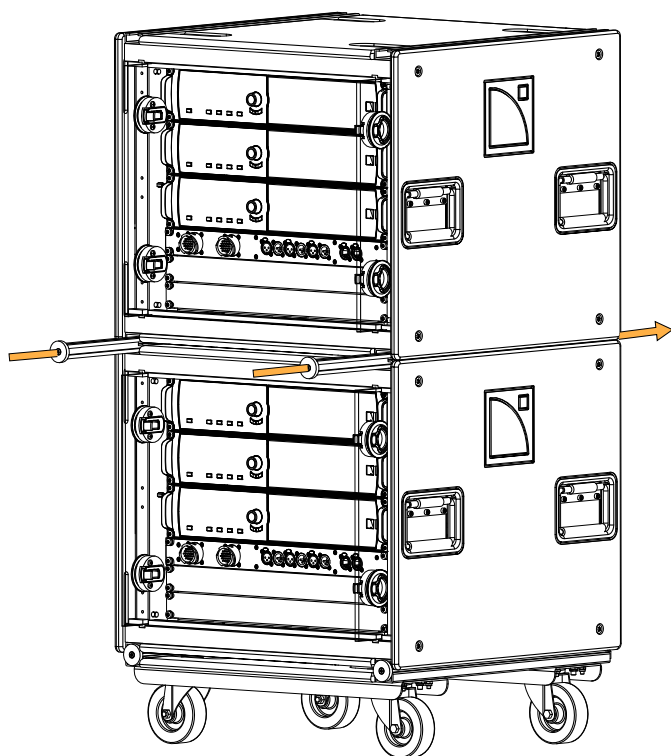
Runners inspection

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

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



4. Secure the second LA-RAK II to the first one using the coupling bars.



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

5. Repeat steps 2 (p.29) to 4 (p.30) until the stack is complete.

Flying LA-RAK II

type of deployment	flown array
rigging accessories	LA-RAK BUMP
	2 x Ø19 mm shackles WLL 3.25 t
min number of operators	2



Additional safety for flown arrays

Secure the LA-RAK II flown array to the main structure using the safety point on the LA-RAK BUMP and a sling.



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 the LA-RAK BUMP are not damaged or worn-out.

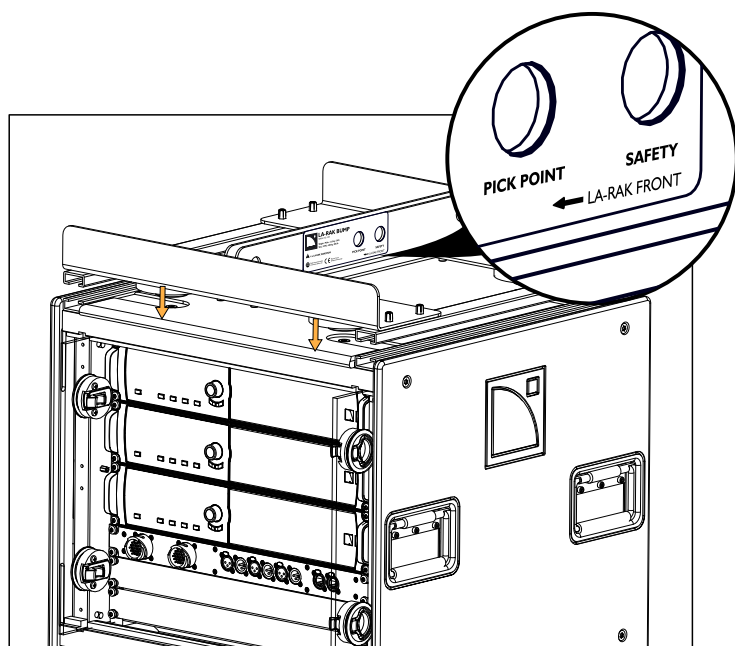
1. Install an LA-RAK BUMP on LA-RAK II.



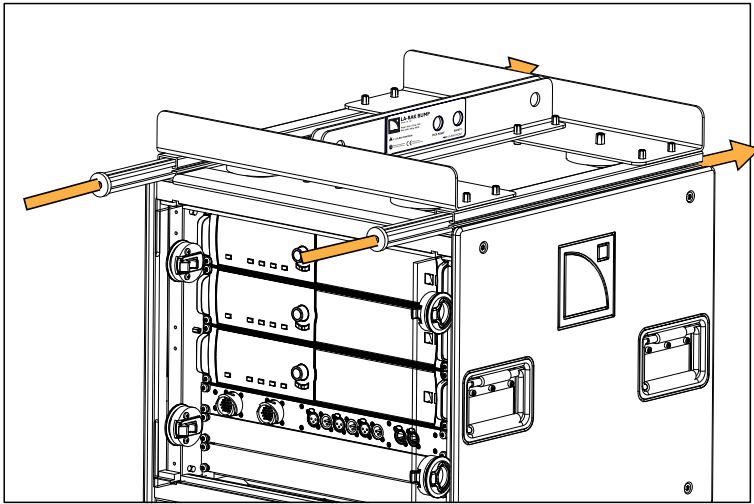
LA-RAK BUMP orientation

Respect the orientation indicated on the LA-RAK BUMP label.

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



2. Remove the dolly board and secure the LA-RAK BUMP to the LA-RAK II using the coupling bars.



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

3. Lift the assembly with a shackle attached to the pickup point.



The dolly board should separate from the array.

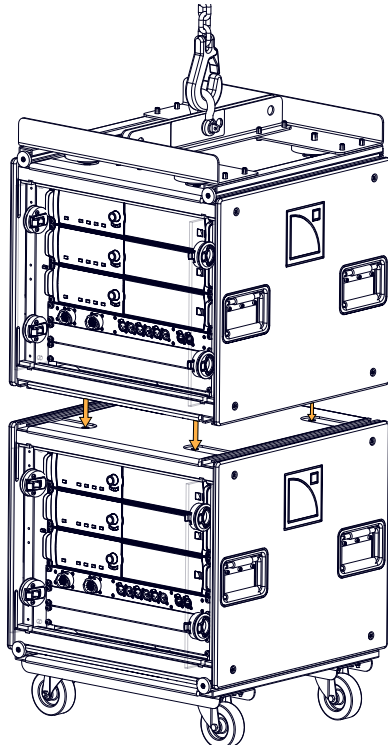
4. Prepare a second LA-RAK II for lifting.
Refer to [steps 1 to 3](#) of this procedure.



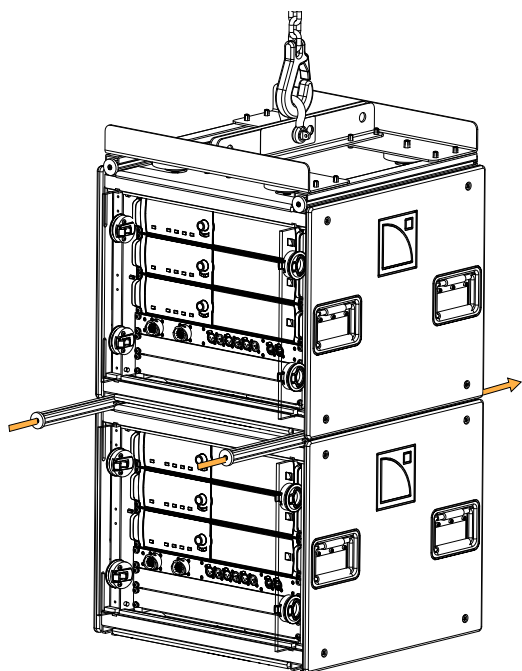
Runners inspection

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

5. Position the LA-RAK II under the assembly and lower the assembly until it rests on the LA-RAK II.



6. Remove the dolly board and secure the two LA-RAK II using the coupling bars.



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

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

Operation

Ventilation

To maintain a moderate operating temperature, the LA12X contains fans providing front to rear airflow.

! Before operation, ensure that the front filter system of each LA12X is clean and dust free. Refer to the **LA12X owner's manual**.

While operating, keep the LEXAN front and rear doors stored and do not block the LA12X front and rear air vents.

Do not expose LA-RAK II to temperature below 0 °C / 32 °F or above 50 °C / 122 °F.

! Do not expose LA-RAK II to wet or salt environments.
Refer to [Inspection and preventive maintenance](#) (p.17) for more information on the LA-RAK II maintenance and the cleanliness process of the amplified controllers.

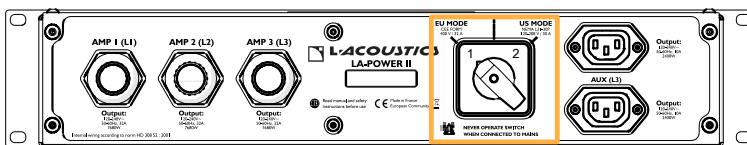
! **Cleaness**

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

Connecting to AC mains

! 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** before connecting to a power source.



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

⚡ The power supply feeding LA-RAK II 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).

200-240 V (EU MODE): 32 A, Class C.

Circuit breakers of different characteristics could trip in case of short-term, high current draw, because they do not match LA12X Fuse Protect algorithms.

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 II can be plugged in the female link socket to be powered in parallel.

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

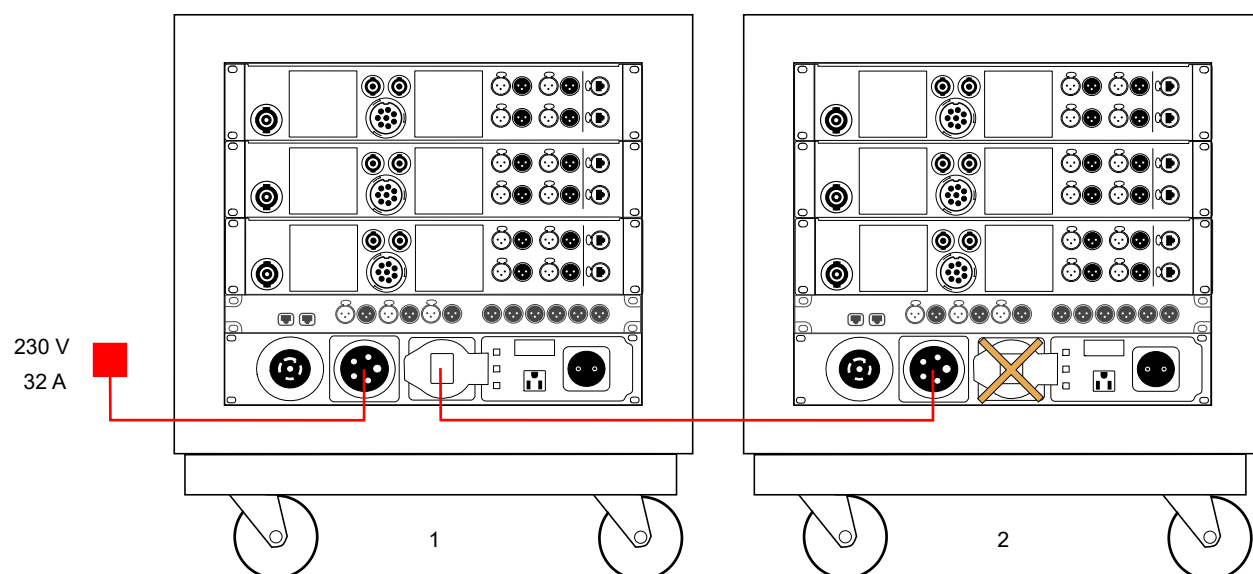
Do not use the female link socket on other ratings.

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



Do not power more than two LA-RAK II 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).

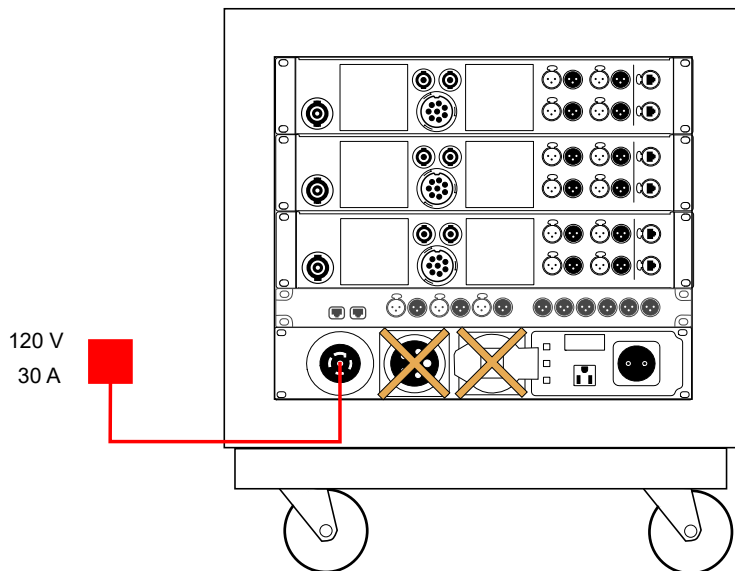


Do not power more than one LA-RAK II from the same AC mains outlet.



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

Connecting a rack to AC mains in US mode

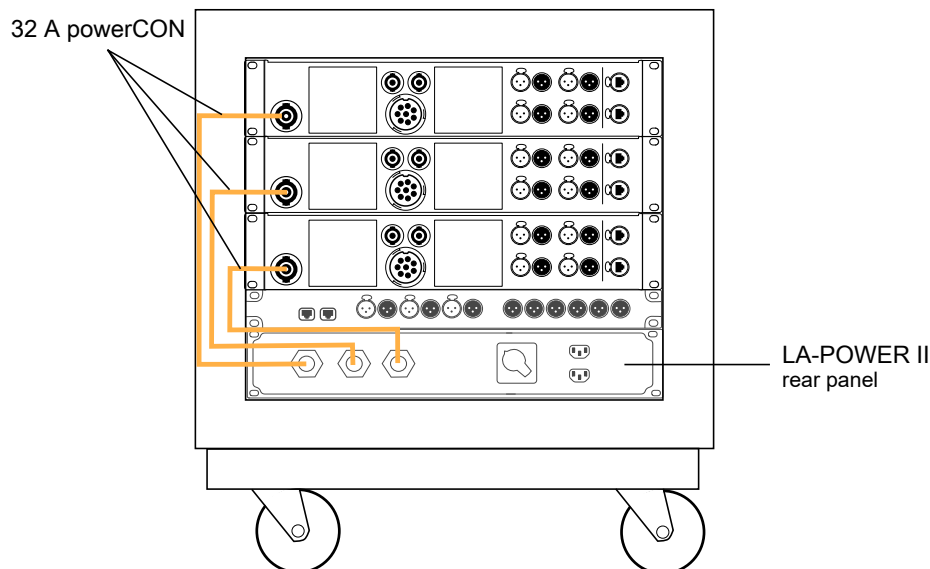


Place socket covers on unused sockets.

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 LA12X amplified controllers mounted in the LA-RAK II. Three dual LEDs help monitor the presence of each phase on the front end of the LA-POWER II.

Powering the three amplified controllers (any mode)



i If the 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 connect laptops or additional Ethernet switches 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.

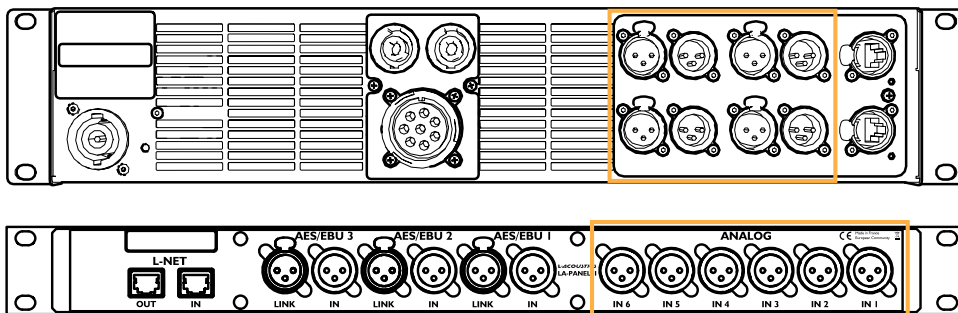
Analog audio cabling

With analog audio, routing modularity is achieved through internal cabling, whereas external cabling uses a constant scheme.

Internal analog audio cabling

An XLR connection panel located on the rear side of LA-PANEL II and six XLR cables allow distributing up to six different analog audio signals to the LA12X amplified controllers.

Analog connectors on the rear panels of LA12X and LA-PANEL II

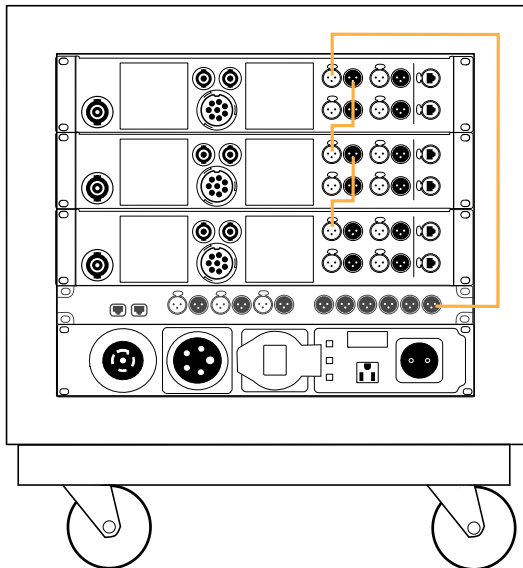


Several internal audio cabling schemes are possible. Two are shown in this manual.

Cabling scheme A

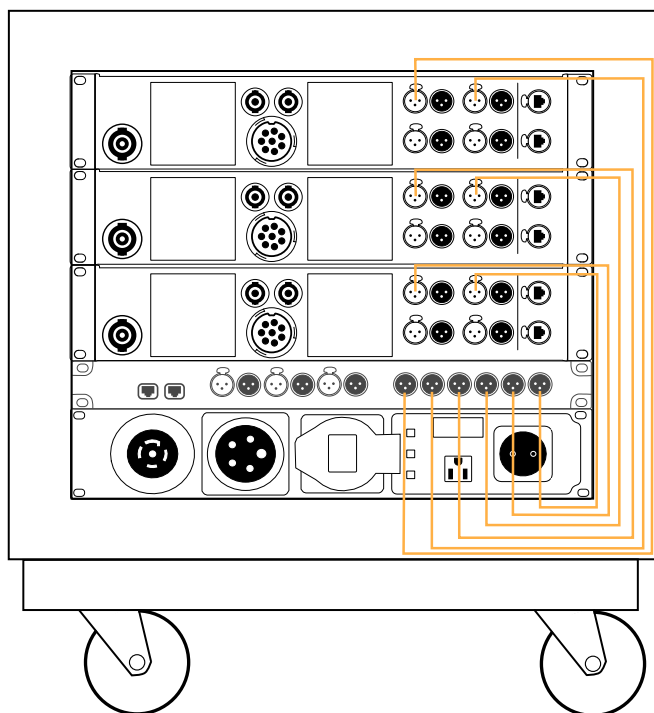
One audio signal is routed from channel 1 to the analog IN A on the first amplifier. LINK A / IN A cabling is then used to cascade all three LA12X.

Only the A channel is physically linked on each LA12X and only the A channel can further be routed to all four output channels on each LA12X. Use LA Network Manager routing as described in the **LA Network Manager** video tutorial.



Cabling scheme B

Six audio signals respectively routed from channels 1-6 to the six controller analog inputs. In this case only the IN connectors are used on the amplifiers.



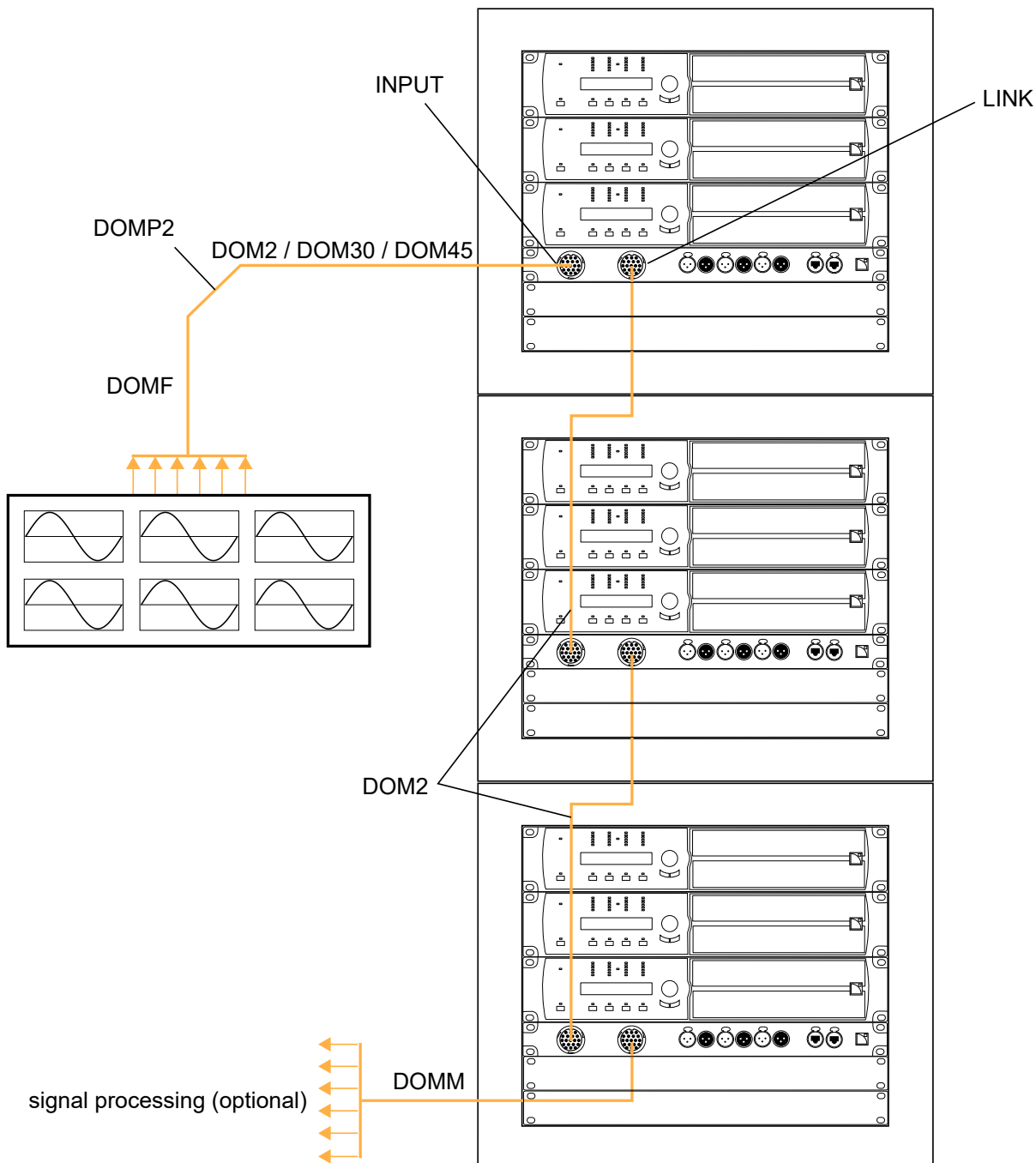
External analog audio cabling

With analog audio, external cabling uses a constant scheme that allows feeding a LA-RAK II or a daisy-chain of several LA-RAK II with up to 6 signals. For any LA-RAK II, the internal cabling determines how many channels are used, which ones, and which amplifier receives them.

With L-Acoustics modulation cables, six audio signals can be routed from an analog audio source (mixing console or EQ device) to the 19-point CA-COM INPUT connector on the LA-PANEL II of a first LA-RAK II.

An LA-RAK II daisy-chain layout can then be set up by cabling the LINK connector of the LA-PANEL II with the INPUT connector located on the LA-PANEL II of another LA-RAK II.

The six analog audio signals can also be routed from the last LA-RAK II to other signal processing devices using a DOMM cable.





Loss in the analog signal

Do not connect more than 36 LA12X (12 LA-RAK II) in parallel to avoid loading the console output with less than 600 Ω .

If more than 36 LA12X need to be connected to the same analog signal, use another console output or a line distribution amplifier.

Typically, cascading 16 LA-RAK II causes a -1 dB loss with a 50 Ω console and a -3 dB loss with a 150 Ω console.

Cable reference	Input connector(s)	Output connector(s)	Length (m / ft)
DOMF	6 x balanced female XLR	19-point female PA-COM with ring	1.5 / 5
DOMM	19-point female PA-COM with ring	6 x balanced male XLR	1.5 / 5
DOM2	19-point female PA-COM with ring	19-point female PA-COM with ring	2 / 6.5
DOM30	19-point female PA-COM with ring	19-point female PA-COM with ring	30 / 100
DOM45	19-point female PA-COM with ring	19-point female PA-COM with ring	45 / 150
DOMP-2	19-point male PA-COM	19-point male PA-COM	0.5 / 1.5

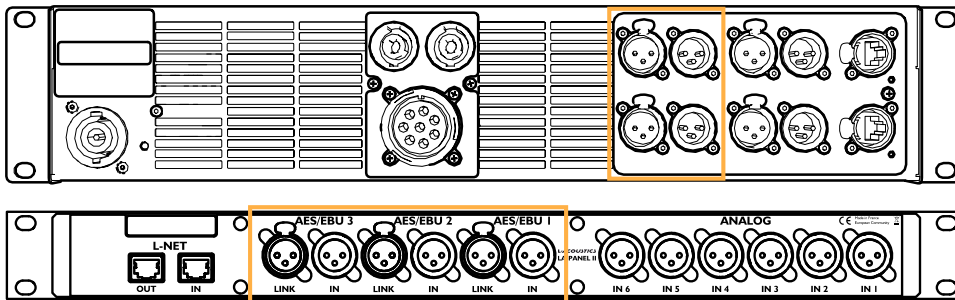
Digital audio cabling

With digital audio, internal cabling uses a constant scheme. As digital audio requires an active refresh of the signal, routing modularity is achieved through external cabling.

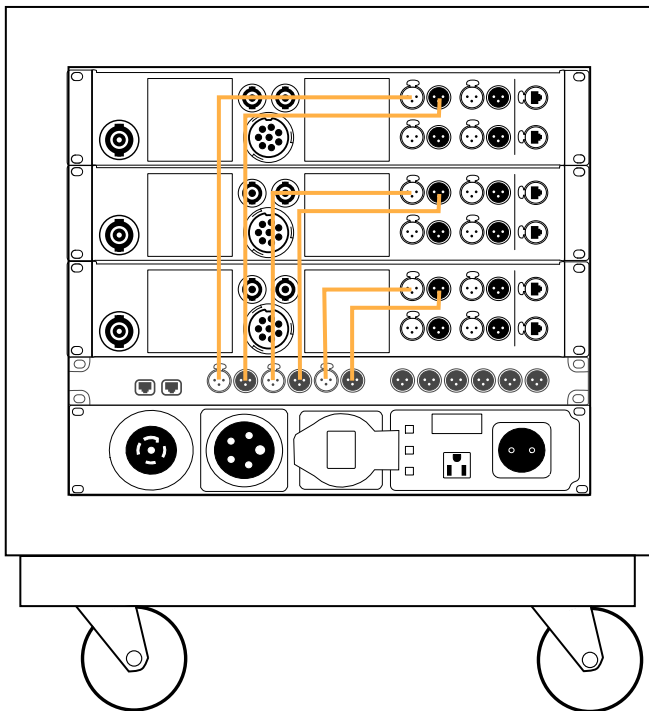
Internal digital audio cabling

An XLR connection panel located on the rear side of LA-PANEL II and three XLR cables allow distributing up to six different digital audio signals (two channels per signal) to the LA12X amplified controllers.

Digital connectors on the rear panel of LA12X and LA-PANEL II



The IN connectors of the front of LA-PANEL II are cabled to an AES/EBU IN connectors on the LA12X amplified controllers using the appropriate IN XLR cable. The AES/EBU LINK connectors on the LA12X amplified controllers are cabled to the LINK connectors of the LA-PANEL II using the appropriate LINK XLR cable.



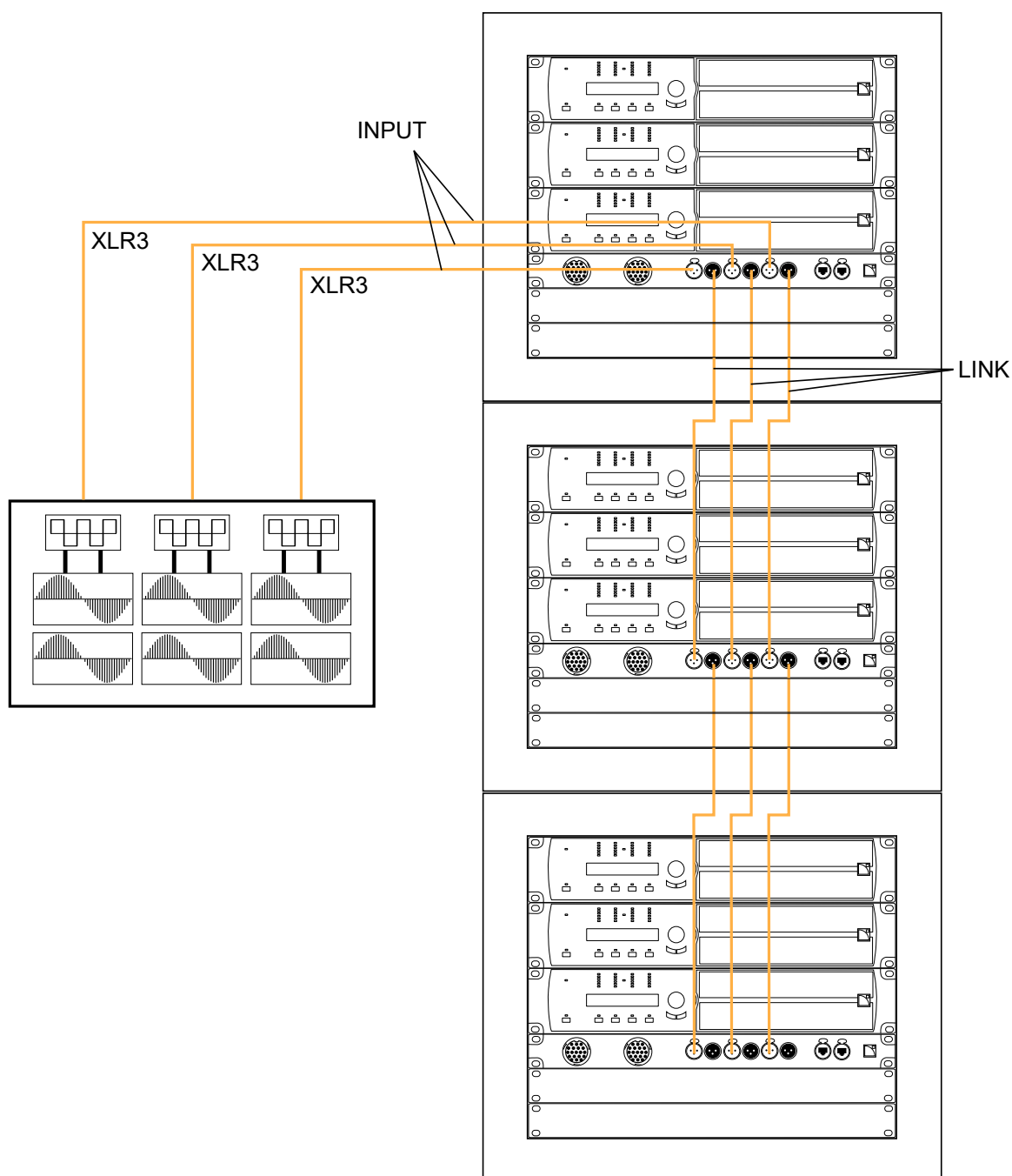
External digital audio cabling

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

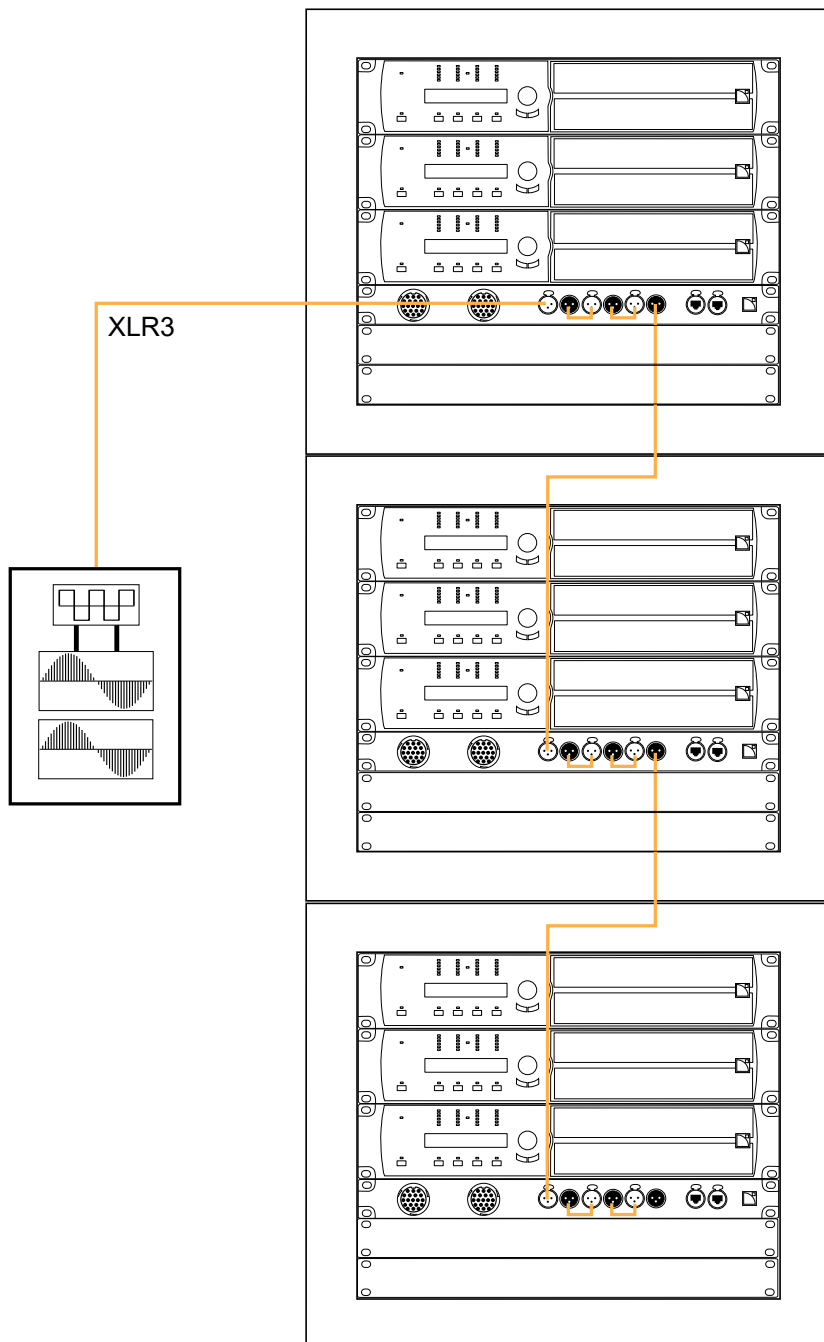
Up to six digital audio signals can be routed from an AES/EBU digital audio source (mixing console or EQ device) to the LA-PANEL II through three XLR cables, each one conveying two channels.

Each pair of signals can be routed in a daisy-chain layout by cabling the corresponding LINK connector of the LA-PANEL II to another IN connector of the same LA-PANEL II (for internal daisy-chaining), or to an IN connector of another LA-PANEL II (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 $110\ \Omega \pm 20\%$, 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.

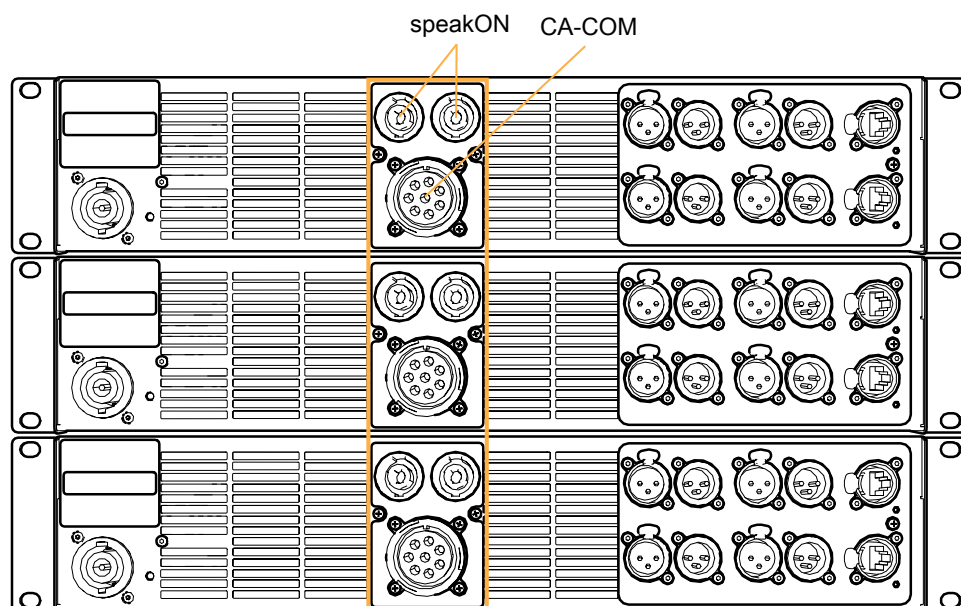
In case of transmission losses, try to reduce the sampling frequency of the digital audio source. Moreover, as a general rule, avoid using sources rated beyond 96 kHz, as the maximum possible cable length is reduced, while the additional information is cancelled by SRC to 96 kHz.

Loudspeaker cabling

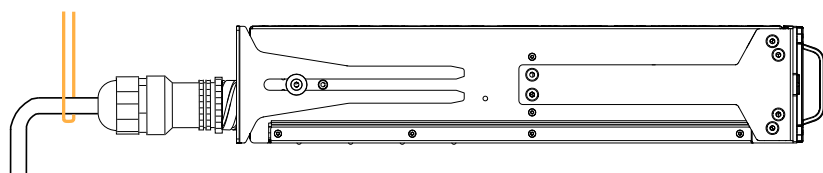
The rear side of the LA-RAK II gives access to the output connection panel of each LA12X. For each amplifier, this panel features one CA-COM connector and two speakON connectors.

! Refer to the system **user documentation** and the **LA12X** owner's manual before connecting an enclosure to LA-RAK II.

Loudspeaker connectors



Consider supporting the cables connected to the 8-point outputs to reduce mechanical stress on the LA12X chassis, in particular when flying LA-RAK II.



L-NET cabling

The integration of the Ethernet-based L-NET network, with its high speed data transfer protocol up to 1 Gb/s, allows up to 253 amplified controllers to be controlled and monitored in real-time from the LA Network Manager software.

Multiple network topologies such as daisy-chain, star and hybrid are configurable. The computer running LA Network Manager and the amplified controllers are connected to each other using industry standard CAT5e U/FTP cables (or higher category) fitted with RJ45 connectors.

Operating instructions

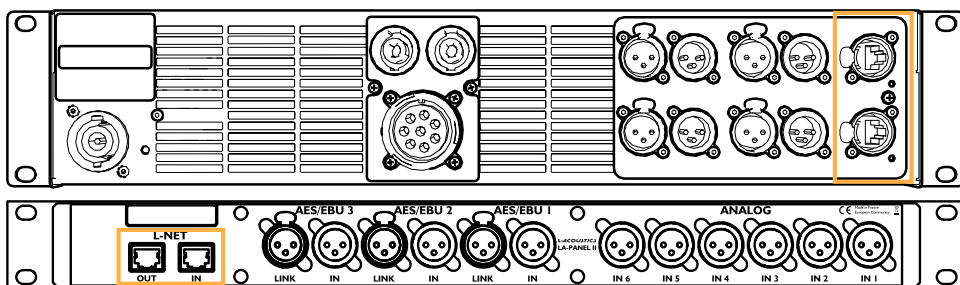
Refer to the **LA Network Manager** video tutorial for detailed operating instructions.

LA-PANEL II is equipped with four RJ45 sockets and four CAT5e U/FTP cables.

Internal L-NET cabling

LA-PANEL II rear side features two etherCON sockets for internal L-NET network connection to all three LA12X.

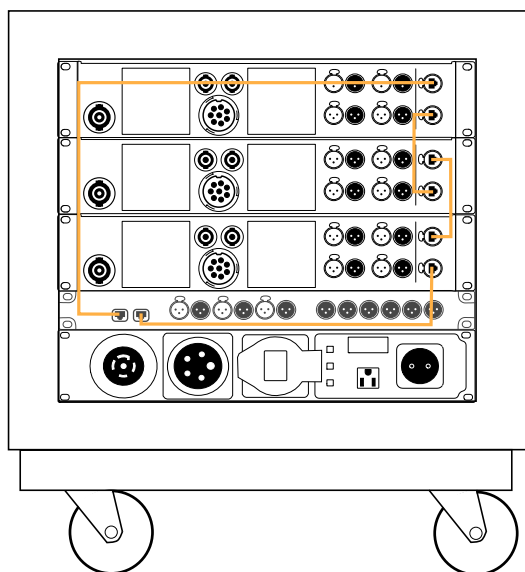
L-NET connectors on rear panels of LA12X and LA-PANEL II



There are two potential cabling schemes:

Cabling scheme A

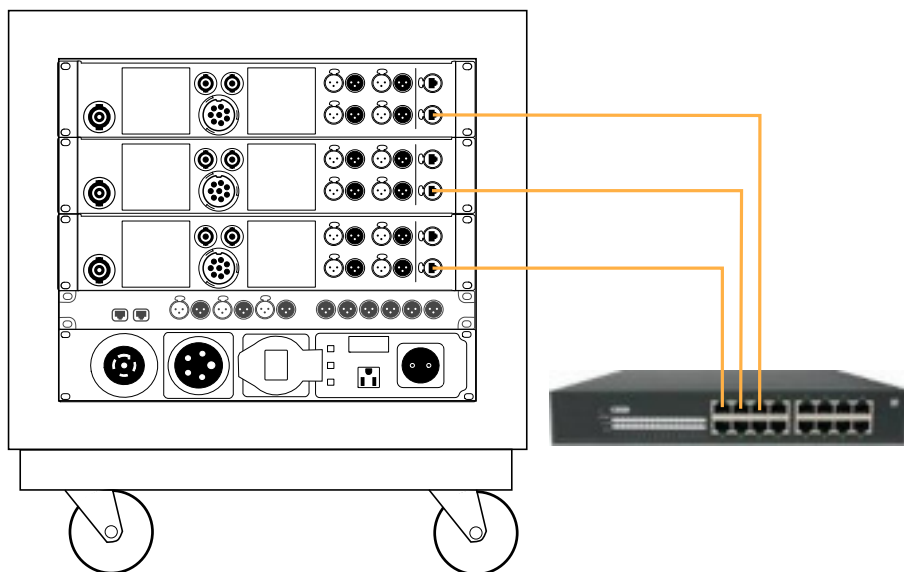
Connecting a first LA12X through one of its L-NET sockets and routing the network towards another LA12X through its other L-NET sockets, for a daisy-chain topology.



Line from AMP 3 to L-NET IN: for daisy-chaining multiple LA-RAK II. Refer to [Daisy-chain topology](#) (p.48) and [Hybrid topology](#) (p.49).

Cabling scheme B

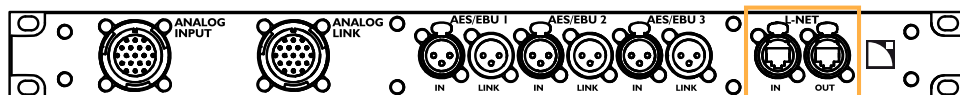
Connecting the cable to a switch (not provided) which feeds all three LA12X, for a star topology.



External L-NET cabling

LA-PANEL II front side features two etherCON I/O sockets for external L-NET network cabling.

L-NET connectors on front panel of LA-PANEL II

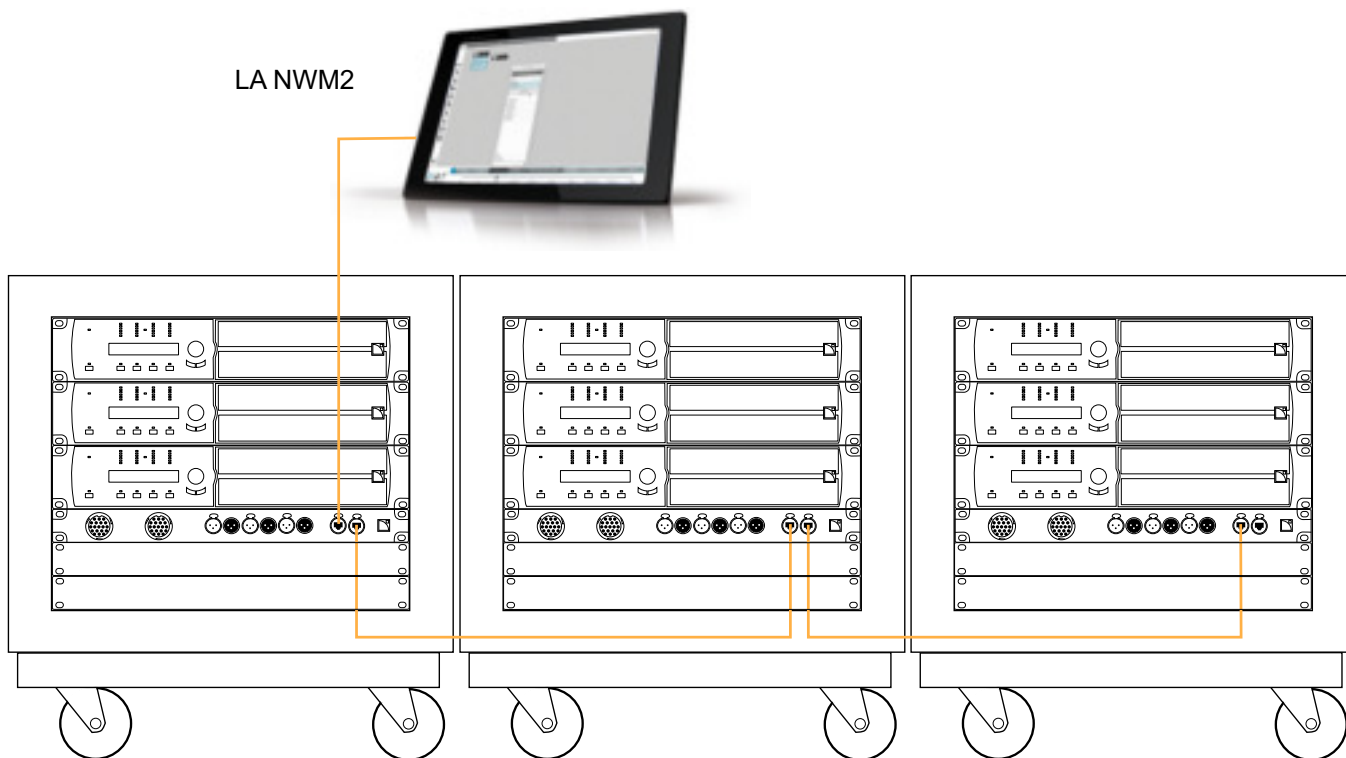


! A maximum of 253 LA12X can be interconnected within the same network (84 LA-RAK II + 1 LA12X).

To set up an L-NET network with several LA-RAK II, three cabling schemes can be used: daisy-chain, star or hybrid.

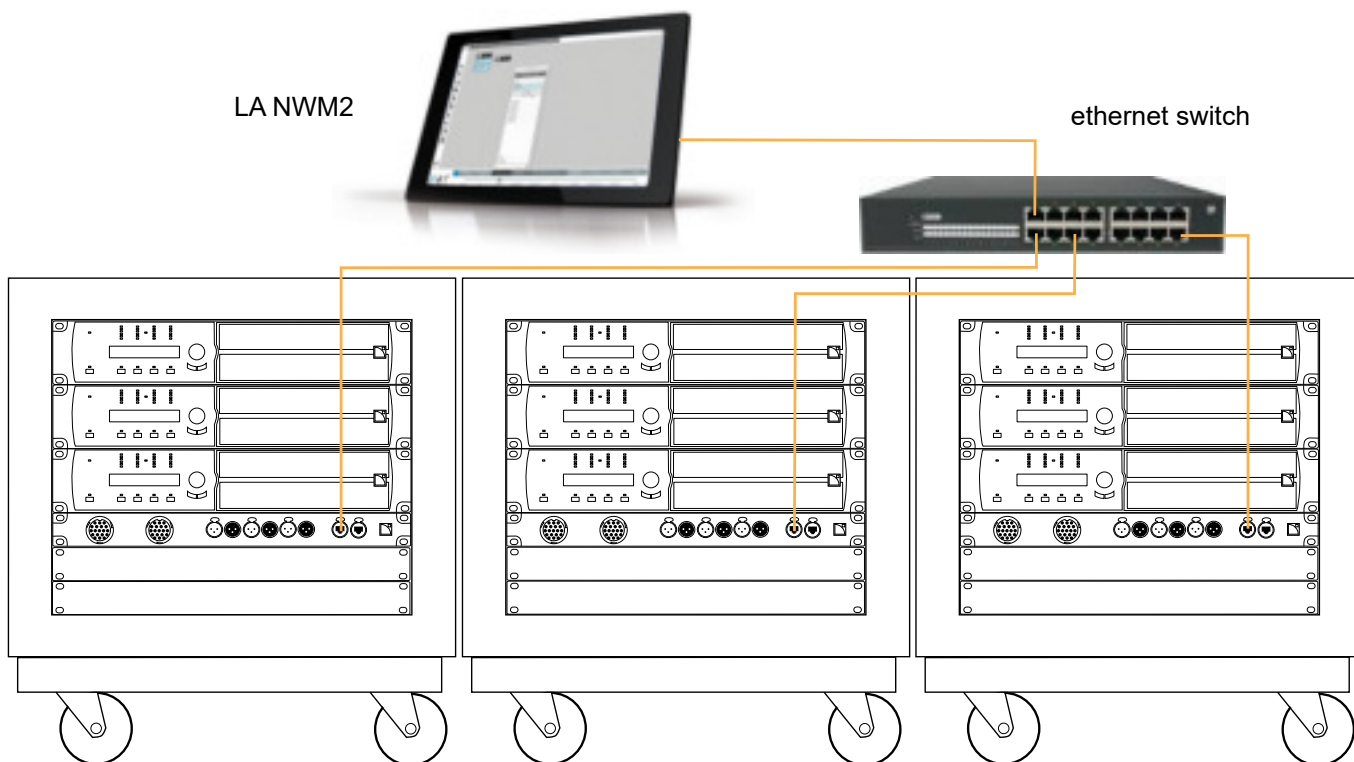
Daisy-chain topology

The IN connector of a first LA-RAK II is linked to the computer running LA Network Manager. The network is then set up by linking the OUT connector of each LA-RAK II to the IN connector of the following LA-RAK II in the chain.



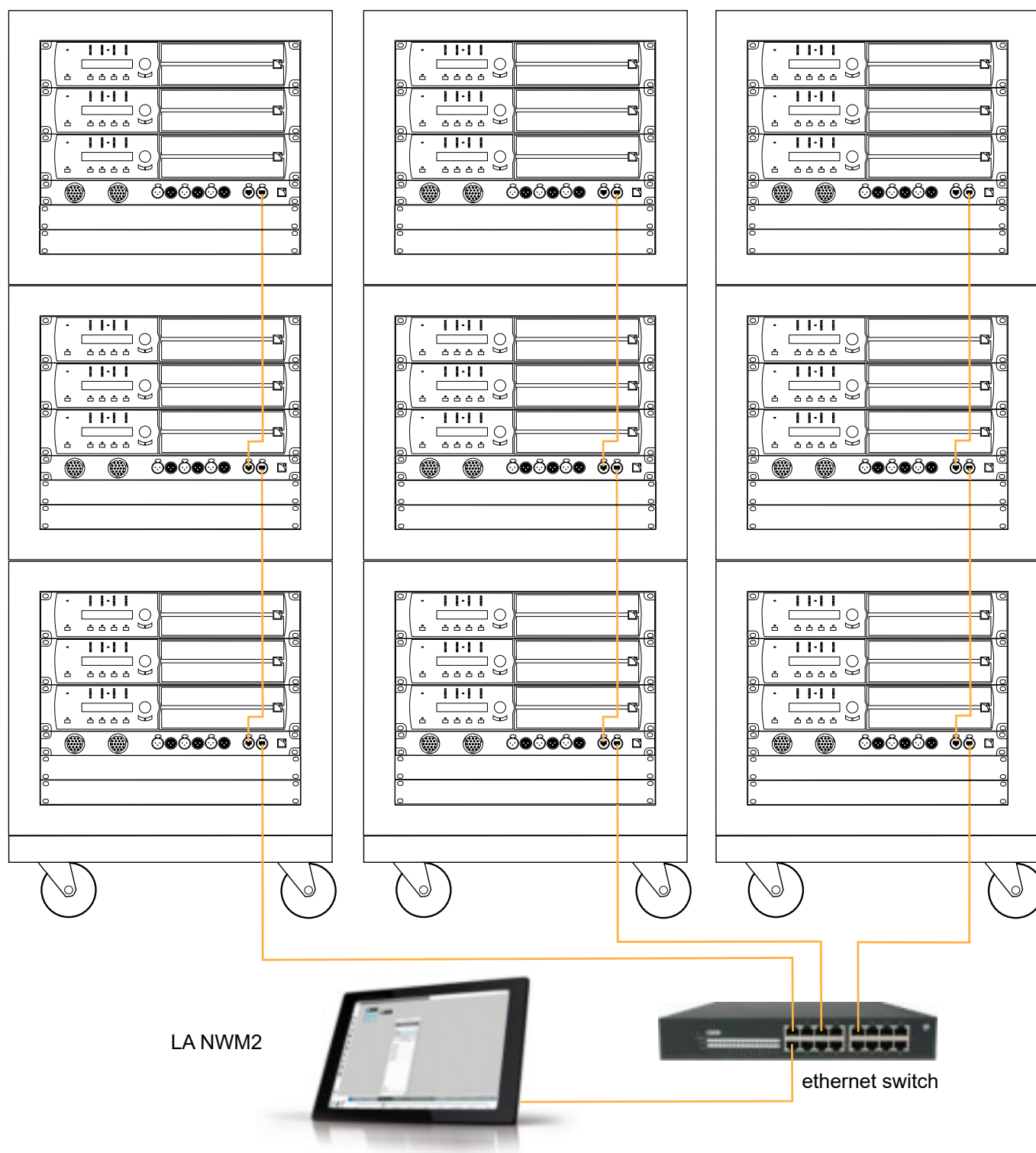
Star topology

The computer driving LA Network Manager is connected to a switch (not provided) which is directly linked to each of the LA-RAK II through their IN connector.



Hybrid topology

The star topology is used to distribute the network to several LA-RAK II and the daisy-chain topology is used to serially cable other LA-RAK II with each of the first LA-RAK II.



Corrective maintenance

Introduction

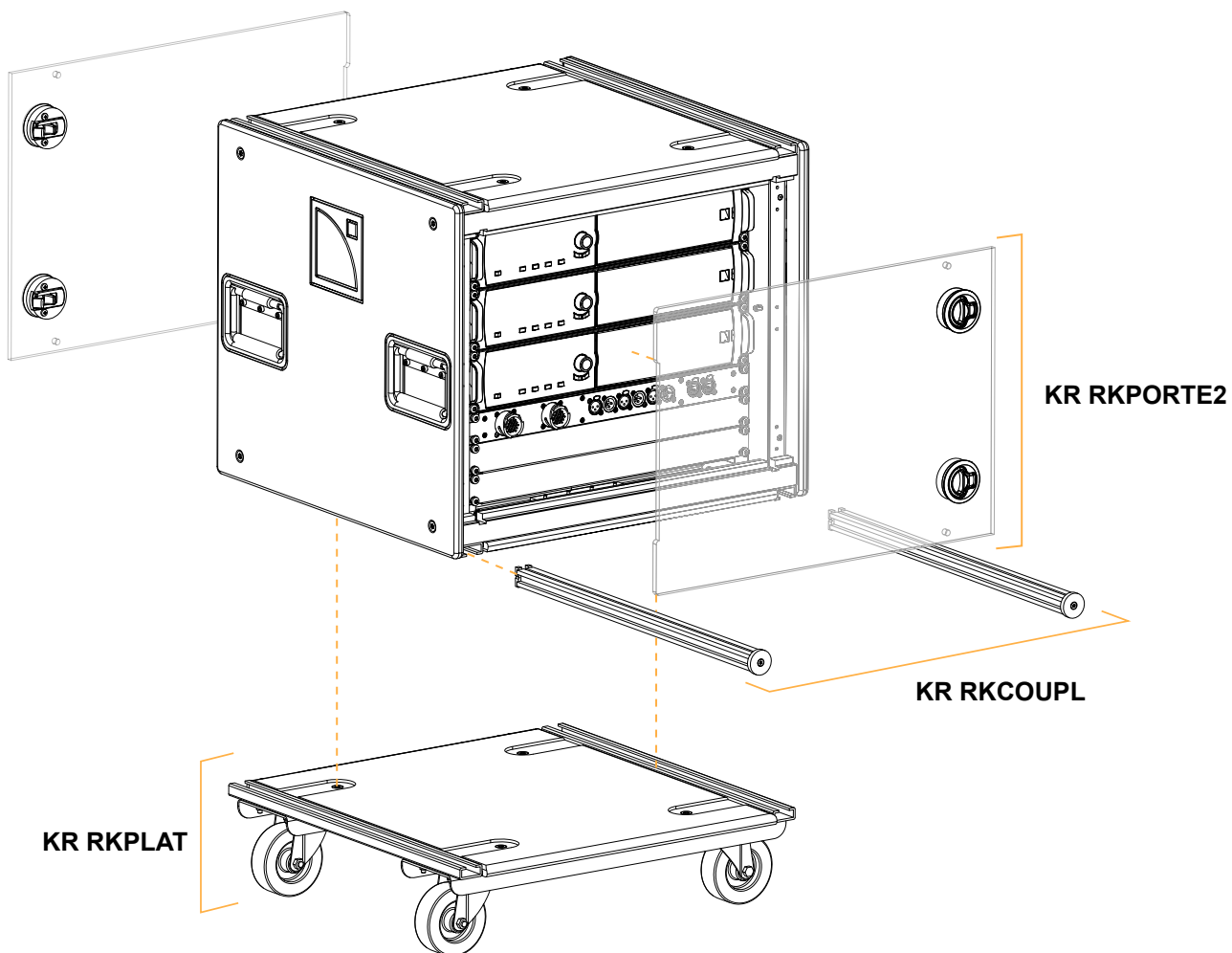
This section contains the following maintenance procedures:

- [Mounting components on the RK9U inner frame](#) (p.51)
- [LA12X grill and foam filter](#) (p.54)

For advanced maintenance, contact your L-Acoustics representative.

LA-RAK II

Exploded view



Provided KRs

KR RKPORTE2

KR RKCOUPL

KR RKPLAT

two Lexan doors

two coupling bars

one dolly board

Mounting components on the RK9U inner frame

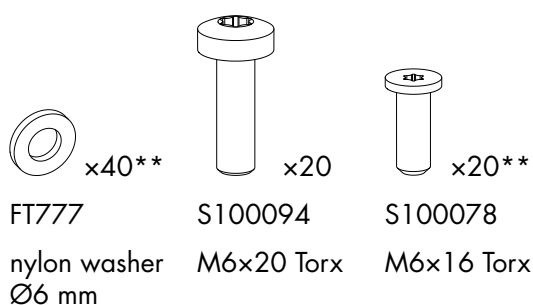
Tools

- torque screwdriver
- T25 Torx bit
- T30 Torx bit

Repair kits

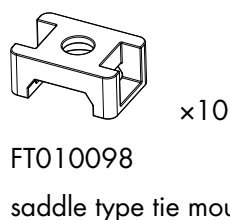
G03264 x5*

KR screws and washers LA-RAK II



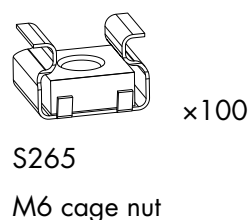
G03260

KR tie wraps (x10) LA-RAK II



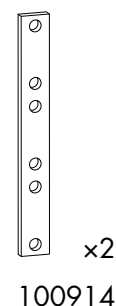
KR CVECRAGE2

KR cage nuts M6 (x100) LA-RAK II



G03263

KR 3U spacers (x2) LA-RAK II



* quantity for one LA-RAK II

** includes 8 extra spare parts

Procedure



Risk of damaging the amplified controller during transport

During transport or while on tour it is essential that the amplified controller is rear supported in addition to the front panel mounting.

Use the rear rack support brackets provided with the controller.

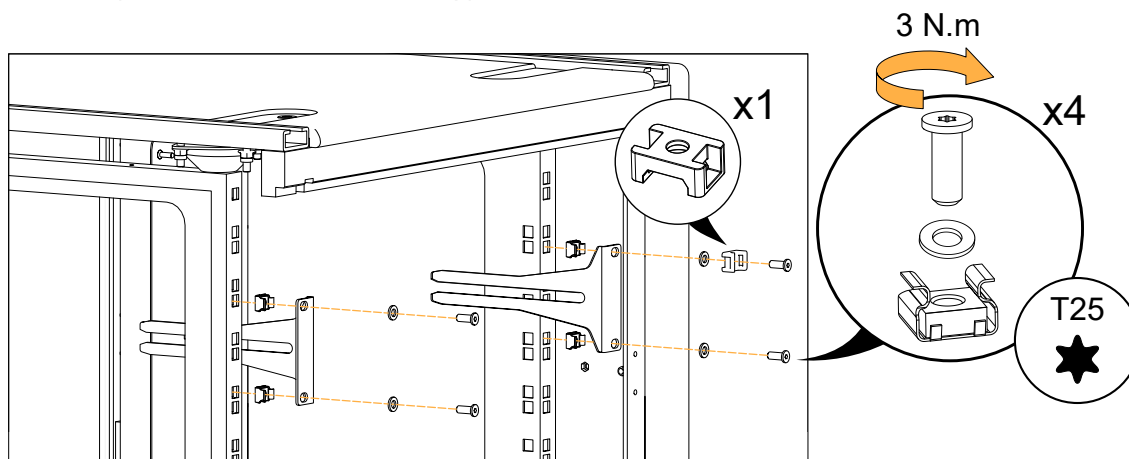
Any mechanical damage to the controller used in portable applications without rear support will not be covered by warranty.

1. Mount each LA12X on both the front and the rear faces:

- Mount the LA12X rear brackets to the inner frame at the rear face of the rack.

Use four M6 cage nuts, four nylon washers and four M6x16 Torx screws.

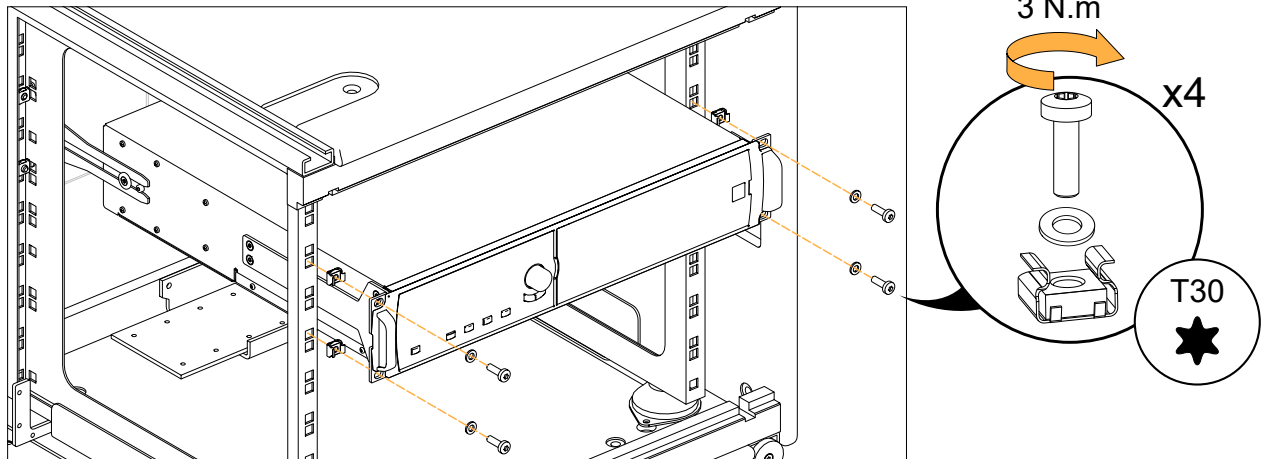
On the top right, also use one saddle type tie mount.



- Slide the LA12X on its rear brackets from the front face of the rack.

c) Mount the LA12X to the inner frame.

Use four M6 cage nuts, four nylon washers and four M6×20 Torx screws.

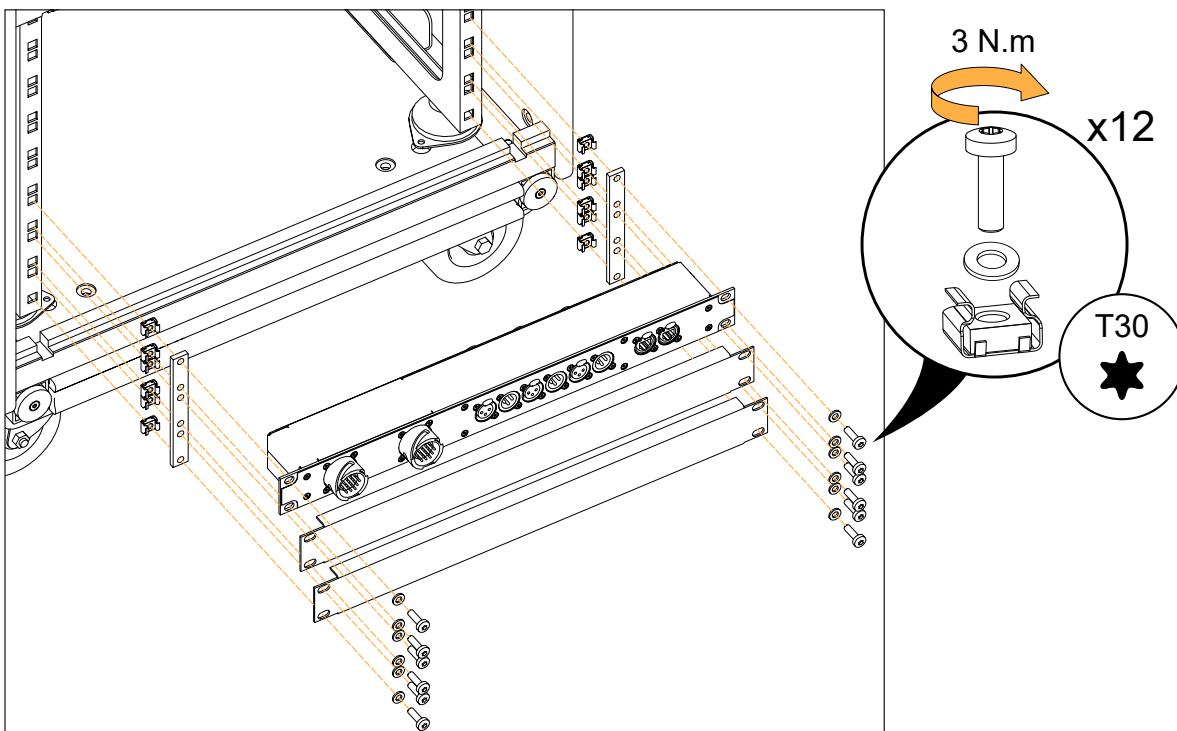


2. Mount LA-PANEL II and the two 1U blank panels to the front face of the rack.



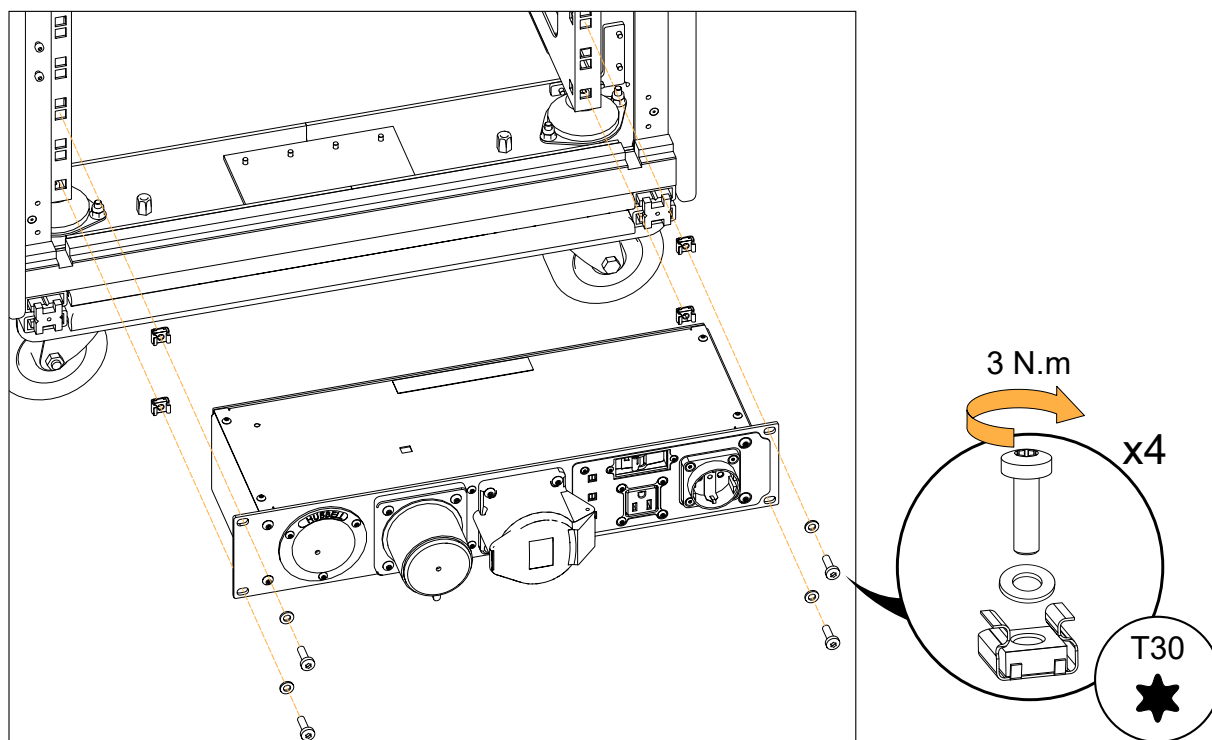
There is a 3U spacer on the inner frame behind the LA-PANEL II and the two 1U blank panels.

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



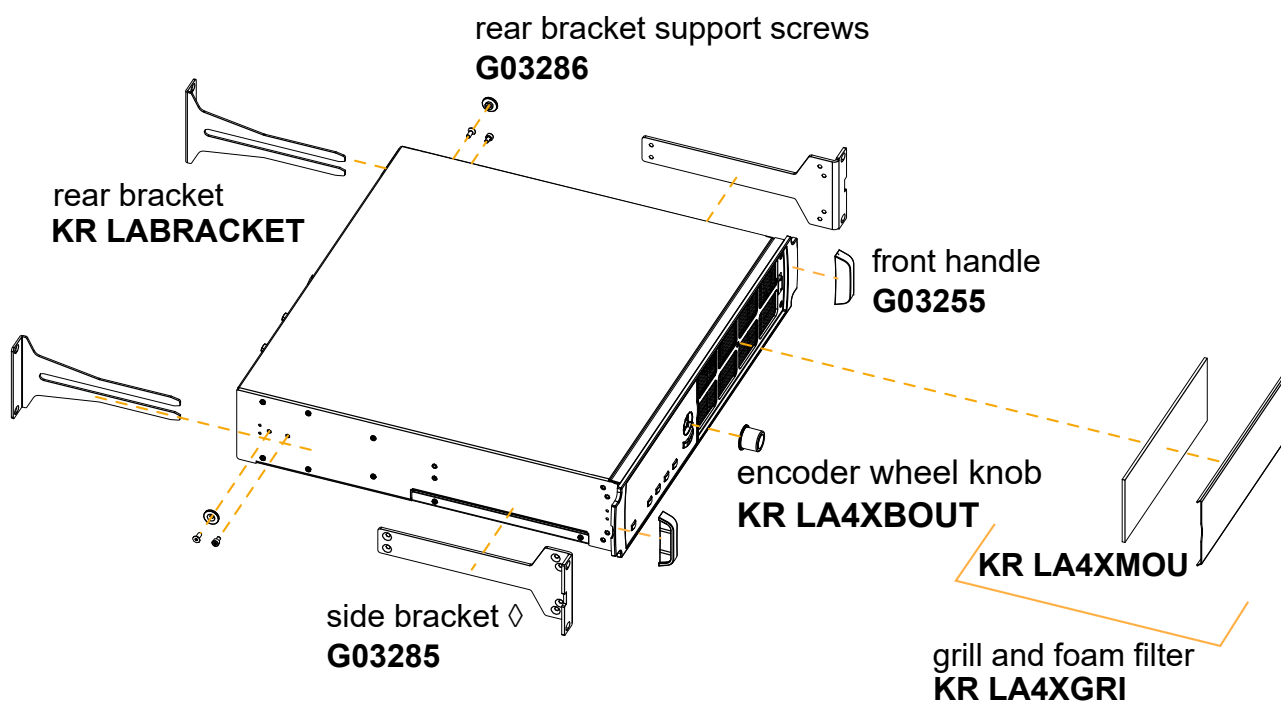
3. Mount LA-POWER II to the rear face of the rack.

Use four M6 cage nuts, four nylon washers and four M6x20 Torx screws.



LA12X

Exploded view - external modules



D/R - grill and foam filter

This procedure describes how to disassemble the grill and foam filter for replacement or cleaning.

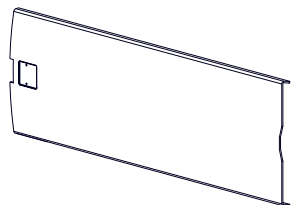
Tools

- 3 mm slotted screwdriver

Repair kits

KR LA4XGRI

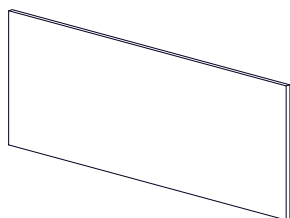
KR grill LA4X / LA12X



×1

1339

LA4X and LA12X grill



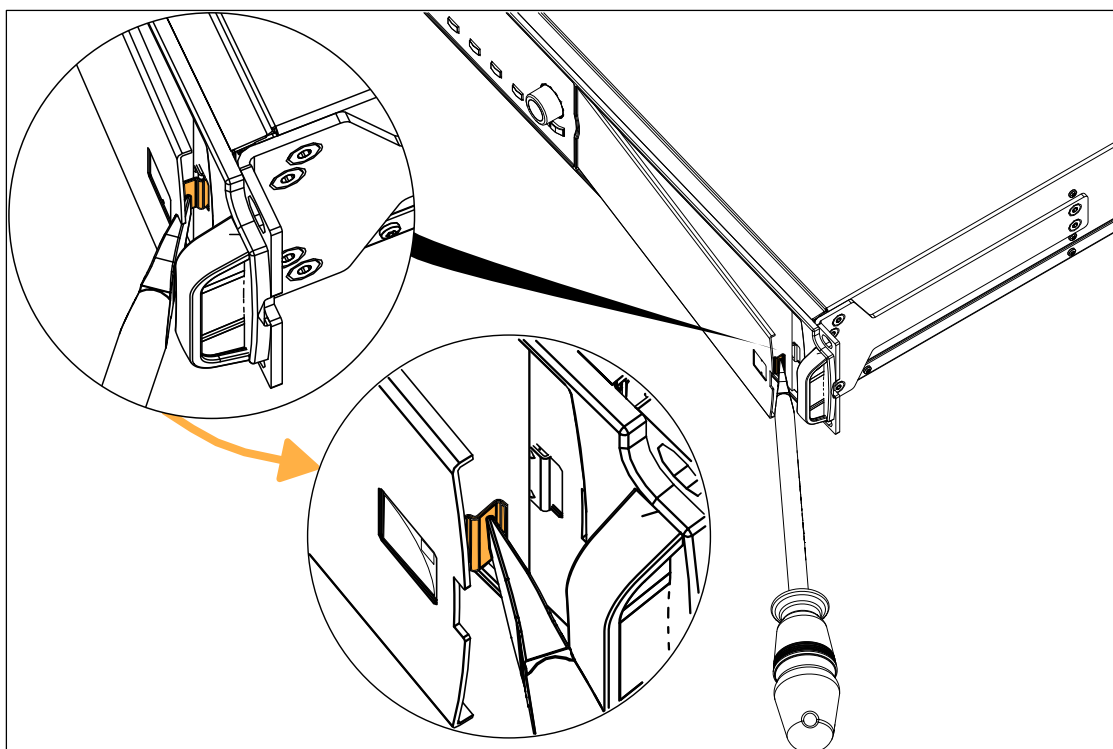
×1

1338

LA4X and LA12X foam filter

Exploded view

To clean the foam filter, use mild dishwashing detergent or soap then dry it.



D/R - side bracket

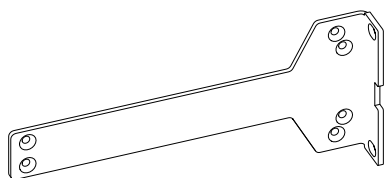
Tools and consumables

- torque screwdriver
- T20 Torx bit
- blue threadlocker

Repair kits

G03285

KR front bracket LA12X



17721

LA12X side bracket

G03286

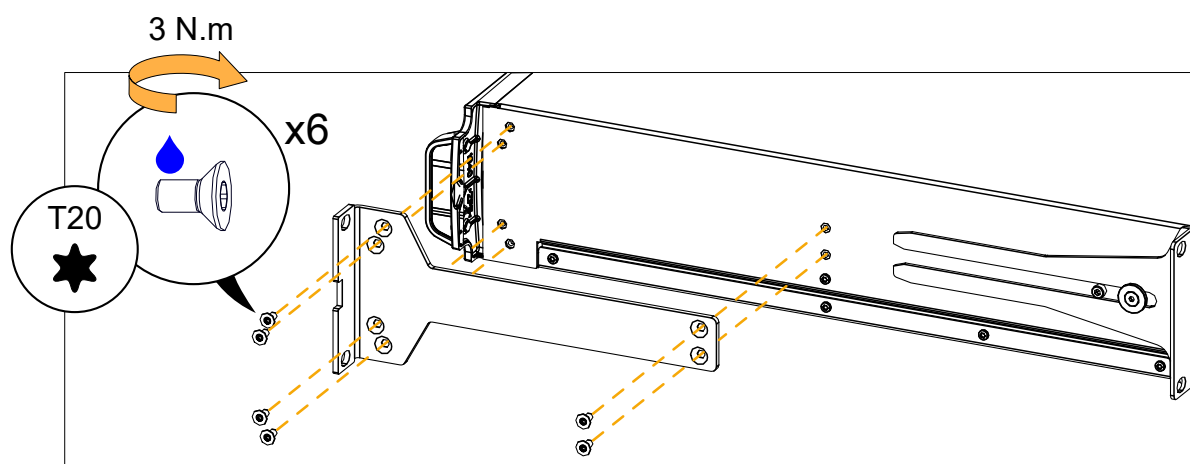
KR spare external fasteners LA12X



ISO14581 M4X8

M4x8 Torx

Exploded view

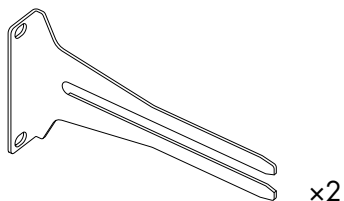


D/R - rear bracket

Repair kits

KR LABRACKET

Kit rear brackets LA4/LA4X/LA8/LA12X



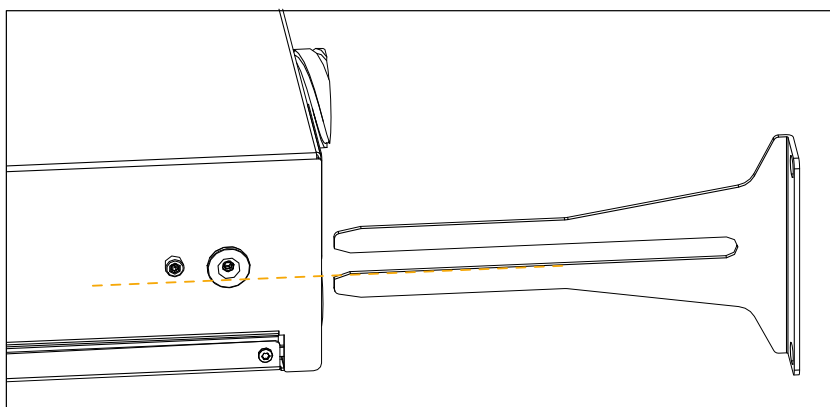
1362

amplified controller rear bracket



Kit contains additional components that are not required for this procedure.

Exploded view



D/R - rear bracket support screws

Tools

- torque screwdriver
- 3 mm hex bit
- 2.5 mm hex bit

Repair kits

G03286

KR spare external fasteners LA12X



x5

DIN7991 M4X10

M4x10 hex



x5

DIN912 M4X6

M4x6 hex

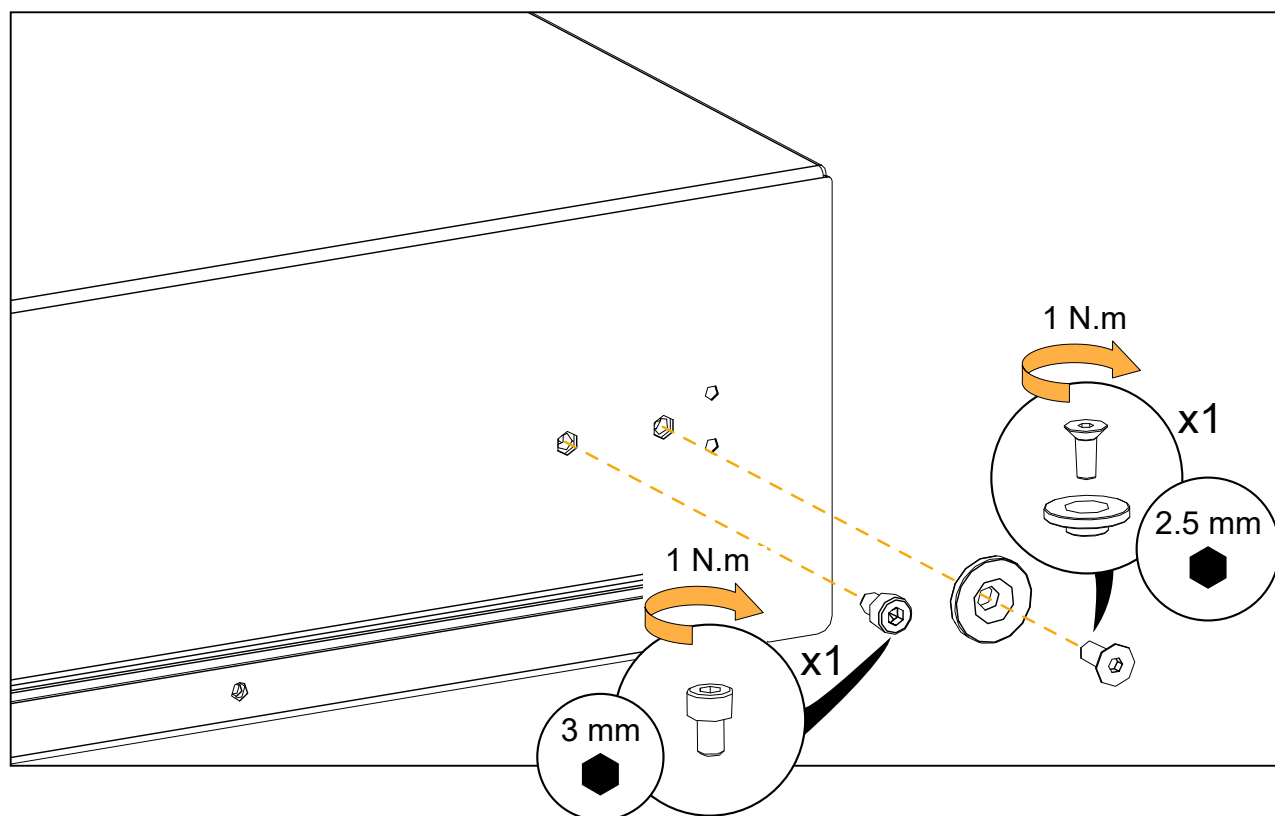


x5

CHA162 RESUP1

support disk

Exploded view



D/R - front handle

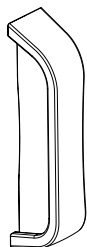
Tools

- torque screwdriver
- T15 Torx bit

Repair kits

G03255

KR handles (x2) LA12X



x2

100526

amplified controller front handle



x4

S100067

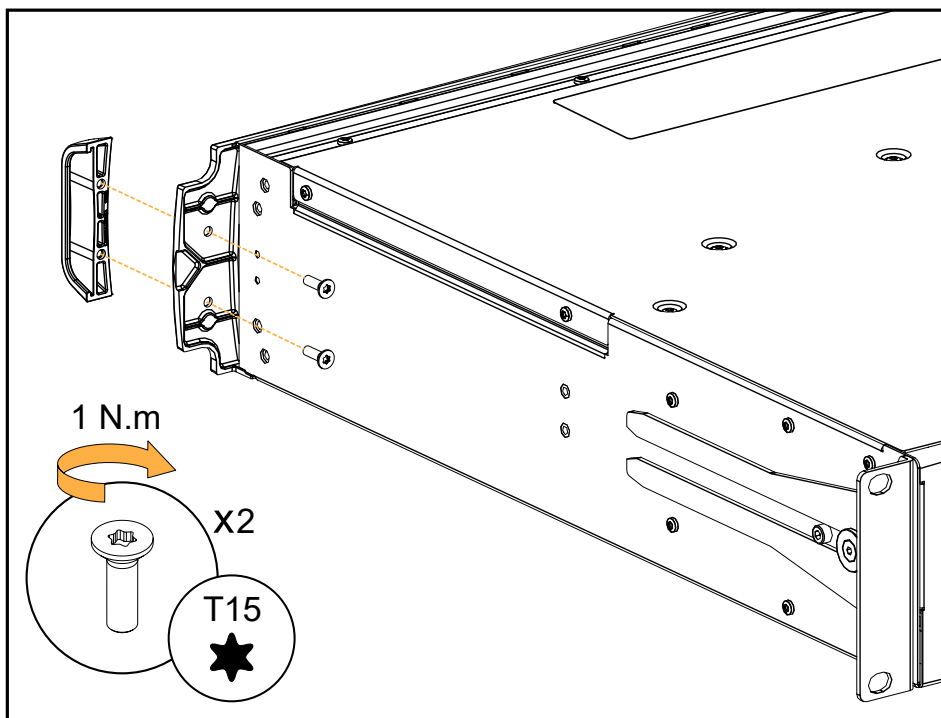
M3.5x12 Torx

Prerequisite

Side brackets disassembled.

See [side bracket](#) (p.55).

Exploded view



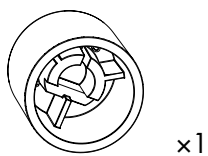
S100067 are self-drilling screws. For safety reasons, always reassemble new front handles.

D/R - encoder wheel knob

Repair kits

KR LA4XBOUT

KR encoding wheel button LA4X/LA12X/P1



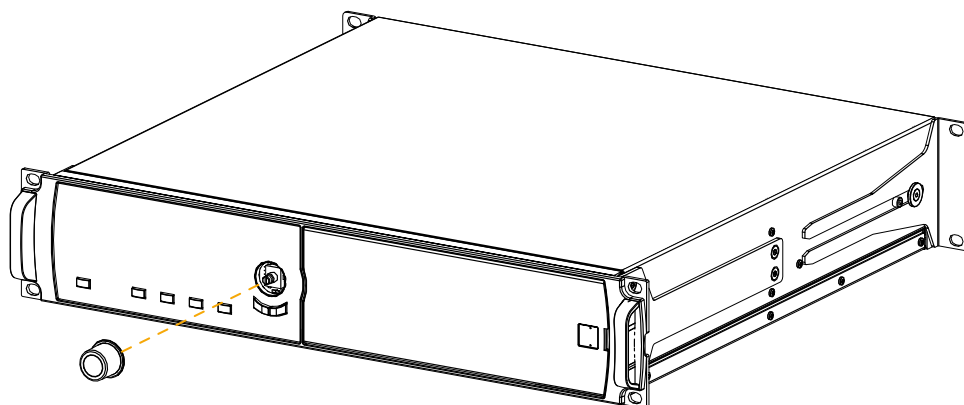
1348

LA4X and LA12X encoder wheel knob



Kit contains additional components that are not required for this procedure.

Exploded view

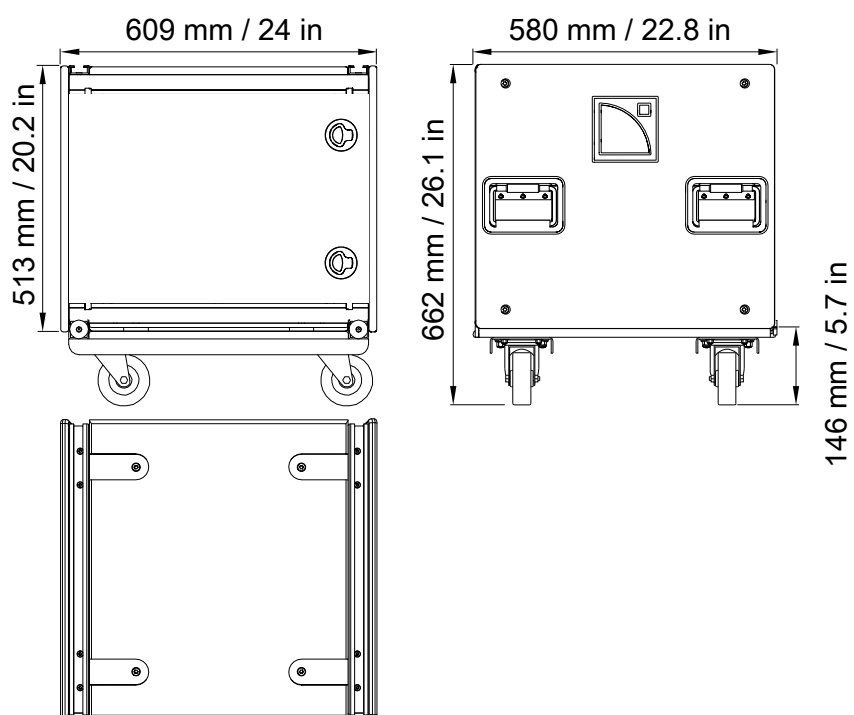


Specifications

LA-RAK II specifications

Description	Touring rack containing three LA12X, LA-POWER II for power distribution and LA-PANEL II for audio and network distribution, compatible with LA-RAK BUMP	
Rigging and handling	2 coupling bars	
	2 coupling rails	
	4 handles	
	1 dolly board	
Cables	<ul style="list-style-type: none">• 6 ANALOG OUT XLR3 male/female labeled cables, 1.10 m / 3.61 ft• 3 AES OUT XLR3 male/female labeled cables, 1.10 m / 3.61 ft• 3 AES LINK XLR3 male/female labeled cables, 1.10 m / 3.61 ft• 2 ANALOG XLR3 male/female labeled cables, 0.55 m / 1.8 ft• 2 AES XLR3 male/female labeled cables, 0.55 m / 1.8 ft• 2 CAT5e U/FTP labeled cables, 1 m / 3 ft• 2 CAT5e U/FTP labeled bridge cables, 0.25 m / 0.82 ft	
Weight	LA-RAK II (with doors, 2 coupling bars, LA-PANEL II, cables, 3 LA12X and LA-POWER II)	96.5 kg / 212.8 lb
	1 dolly board	13.5 kg / 29.8 lb
	2 coupling bars	1.5 kg / 3.3 lb
Materials	External structure	polyethylene, aluminum, steel
	Doors	LEXAN® polycarbonate
	Rigging components	polyester-coated steel
Finish	black	

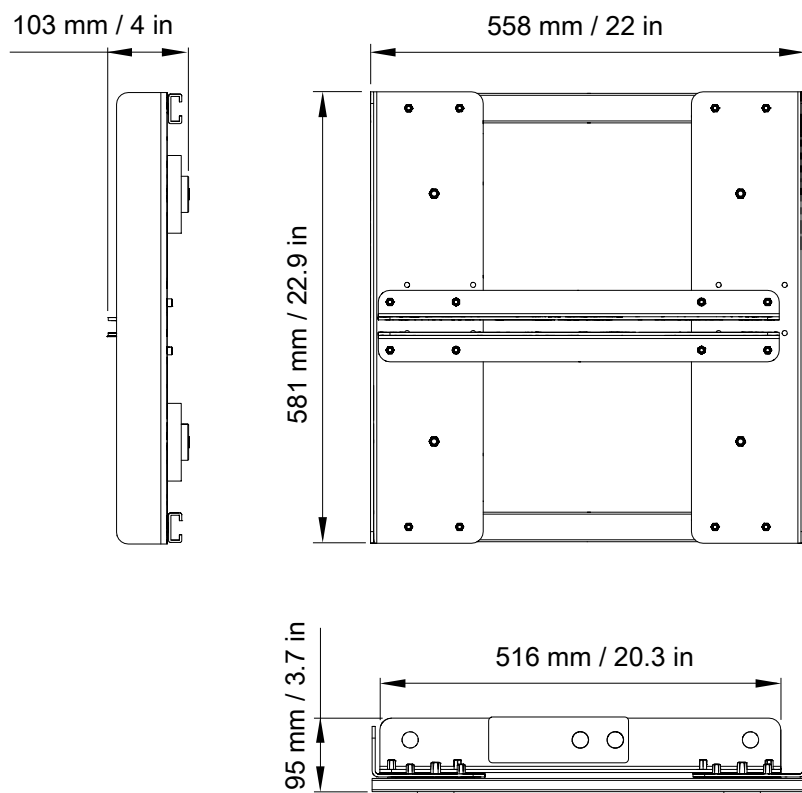
Lexan is a trademark of SABIC Innovative Plastics IP BV.

LA-RAK II dimensions

LA-RAK BUMP specifications

Description	Structure for flying 4 LA-RAK 2 x Ø19 mm shackles WLL 3.25 t
Weight (net)	13.5 kg / 29.7 lb
Material	high grade steel with anti-corrosion coating

LA-RAK BUMP dimensions



LA-PANEL II specifications

Description audio and network distribution panel

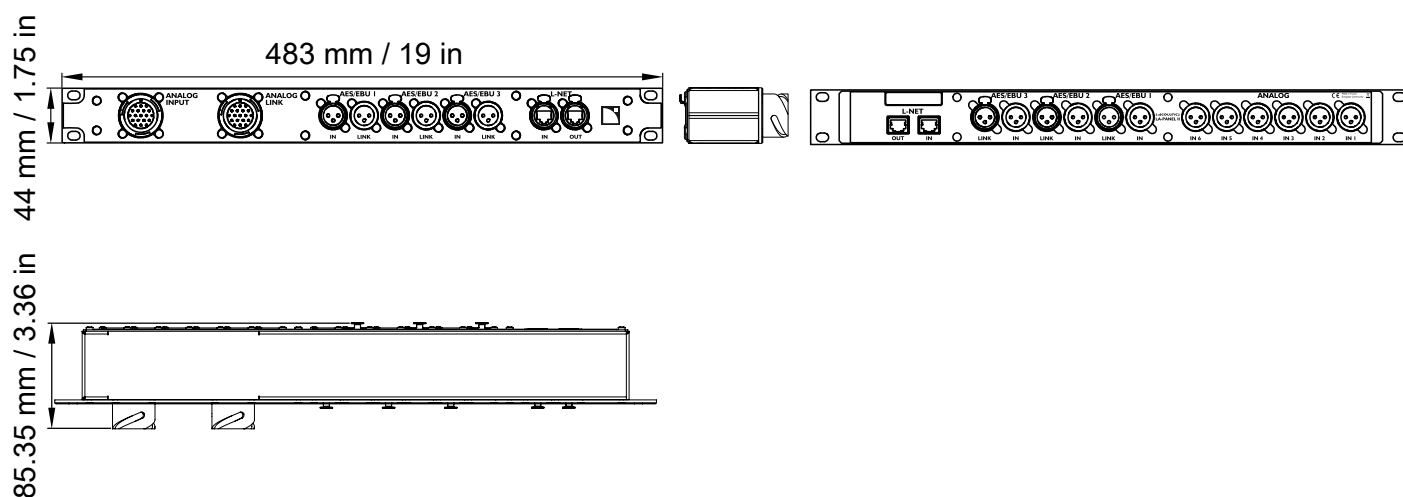
Front connectors

Analog input/link	2 x 19-point CA-COM
AES/EBU input/link	3 female Neutrik® XLR3 (IN) 3 male Neutrik® XLR3 (LINK)
Network	2 etherCON® (L-NET IN/OUT)

Rear connectors

Network	2 RJ45 (L-NET)
AES/EBU input/link	3 female Neutrik® XLR3 (IN) 3 male Neutrik® XLR3 (LINK)
Analog input	6 male Neutrik® XLR3 (IN 1 to IN 6)

LA-PANEL II 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 LA12X	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



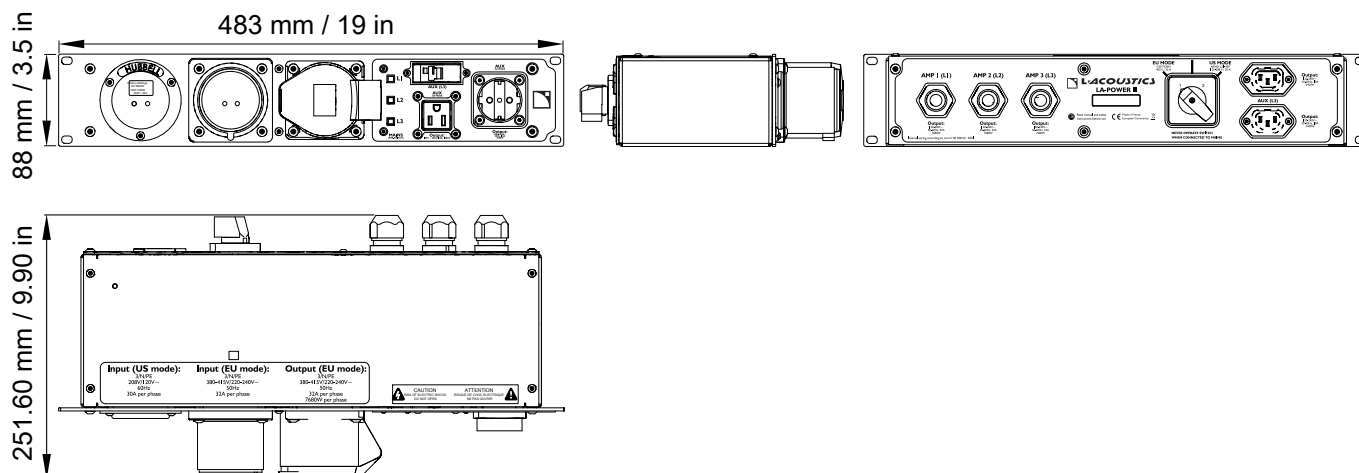
Do not switch between modes when connected to power supply

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	0 °C / 32 °F to 50 °C / 122 °F
Maximum altitude	5000 m
Climate	temperate and tropical

LA-POWER II 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
 91462 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-RAK II touring rack

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

2006/42/EC: Machinery Directive
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 13155:2003 + A2:2009 Cranes - Safety - Non-fixed load lifting attachments
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 55103-2: 2009 Electromagnetic compatibility — Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use — Part 2: Immunity
EN 50581: 2012 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Technical file compiled by:

Christophe COMBET
 13 rue Levacher Cintrat
 Parc de la Fontaine de Jouvence
 91462 Marcoussis Cedex
 France

Year CE marking was first affixed: 2016

Issued in Marcoussis, France

15.02.2018



Christophe COMBET, Director of Sound System Design

LA-POWER II EC DoC

Declaration of Conformity - version 1.0



EU Declaration of Conformity (DoC)

We

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13 rue Levacher Cintrat
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91462 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
2014/30/EU: Electro-Magnetic Compatibility Directive
2011/65/EU: RoHS 2 Directive

The following harmonized standards and technical specifications have been applied:

EN 60065: 2002 + A1: 2006 + A11: 2008 + A12: 2010 + A2: 2011 Safety requirements for audio, video and similar electronic apparatus
EN 55032: 2015 Electromagnetic compatibility of multimedia equipment – Emission Requirements
EN 55103-2: 2009 Electromagnetic compatibility - Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use - Part 2: Immunity

Year CE marking was first affixed: 2016

Issued in Marcoussis, France

14/09/2016

Genio KRONAUER, Electronics Director



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 **L-ACOUSTICS**
GROUP