SPANNING TREE

When SPANNING TREE is ON, the Rapid Spanning Tree Protocol (RSTP) is used to detect and automatically disable Ethernet ports to cut loops created by redondant links in the network, and avoid damaging broacast storms.

In case of a cable or switch failure in the network, the protocol can re-enable these ports to restore connectivity.

- LA4X amplified controllers with HARDWARE INFO **ID1**, **ID2** or **ID3** (in MONITORING & INFO menu) do not support AVB nor redundancy. These Units can be upgraded to support AVB by purchasing and installing KR LA4XDSP2.
- LA4X amplified controllers with HARDWARE INFO **ID4** or higher (in MONITORING & INFO menu) support AVB but do not support redundancy.

```
⟡SPANNING TREE        ↔        OK        SPANNING TREE                          ⟡SPANNING TREE        ↔
 OFF                     →      >OFF<                           + OK      ON
```

Procedure

1. From the main menu, select **OPTIONS**.
2. Press the OK key or the encoder wheel to validate.
3. Turn the encoder wheel to select **SPANNING TREE**.
4. Press the OK key or the encoder wheel to validate.
5. Turn the encoder wheel to select the setting (**ON** or **OFF**).
6. Press the OK key or the encoder wheel to validate.

RESET AUDIO CONFIGURATION?

The audio configuration of the amplified controller can be reset. This includes the following parameters:

- Input settings:
    - ABCD input source
    - XLR input mode
    - AVB fallback mode
    - AES AB fallback mode
    - AES/EBU & AVB GAIN
    - AVB stream mapping
- Settings protection
- Group parameters
- User presets

```
⟡RESET AUDIO          ↔    OK    RESET AUDIO CONFIG        OK    011:K2 70                100
 CONFIGURATION?         →        ARE YOU SURE?              →    LF_A  LF_A  MF_A  HF_A
```

Procedure

i Clearing user presets implies loading the preset from memory 011.

1. From the main menu, select **OPTIONS**.
2. Press the OK key or the encoder wheel to validate.
3. Turn the encoder wheel to select **RESET AUDIO CONFIGURATION?**.
4. Press the OK key or the encoder wheel to validate.
   The amplified controller displays **RESET AUDIO CONFIG, ARE YOU SURE?**.
5. Press the OK key or the encoder wheel to validate (or the ESC key to cancel).

RESET TO FACTORY DEFAULT SETTINGS?

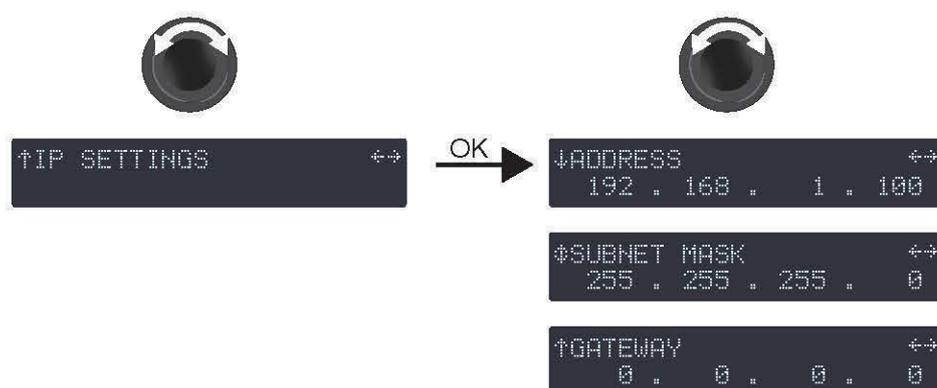The amplified controller settings can be reset to the factory default.

```
↑RESET TO FACTORY    ↔         RESET AMP TO FACTORY         Initializing
 DEFAULT SETTINGS?                ARE YOU SURE?                Controller
```
OK →   OK →

```
011:K2 70              103
LF_A  LF_A  MF_A  HF_A
```

Procedure

> **i** Amplified controllers default settings include loading the preset from memory 011.
> The amplified controller retains its IP address.

1. From the main menu, select **OPTIONS**.
2. Press the OK key or the encoder wheel to validate.
3. Turn the encoder wheel to select **RESET TO FACTORY DEFAULT SETTINGS?**.
4. Press the OK key or the encoder wheel to validate.
   The amplified controller displays **RESET AMP TO FACTORY, ARE YOU SURE?**.
5. Press the OK key or the encoder wheel to validate (or the ESC key to cancel).
   The amplified controller launches the start-up sequence. When complete, the amplified controller displays the main screen.

IP SETTINGS

The IP SETTINGS menu gives access to the amplified controller's IP address, and to advanced network settings (subnet mask and gateway).


```
↑IP SETTINGS          ↔        OK    ↓ADDRESS              ↔
                                        192 . 168 .    1 . 100
```

```
⊕SUBNET MASK          ↔
   255 . 255 . 255 .    0
```

```
↑GATEWAY              ↔
     0 .   0 .   0 .    0
```

Remote control of processors and amplified controllers requires setting up a private local area Ethernet network to interconnect up to 253 units (and additional devices such as Ethernet switches / AVB bridges) with a single control computer. This Ethernet network, called L-NET, uses L-COM PROTOCOL, a proprietary communication protocol based on TCP/IPv4.

An IP address is a unique identifier for a network device on a given IP network. In IPv4 networking, it is made of 4 bytes (32 bits). An IP address is composed of a subnet address and a host address. The host address serves as a unique device identifier on the subnet. The subnet mask determines how many bits define the subnet address, and how many define the host address.

By convention, the first possible number of the host address is reserved to designate the subnet, and the last number is reserved to communicate with all devices of the subnet (IP broadcast address).

The factory default IP settings of all L-Acoustics devices are:

- IP address: 192.168.1.100
- Subnet address: 192.168.1.0/24
- IP broadcast address: 192.168.1.255
- Subnet mask: 255.255.255.0

With these settings, the first three bytes of the IP address (192.168.1) define the subnet address, and the last byte is the host address (100).

In general, it is recommended to:

- Use the default subnet address and subnet mask.
- Edit the device host address to provide a unique identifier to each unit: use consecutive IP addresses starting from 192.168.1.**1** up to 192.168.1.**253**.
- Set the control computer to 192.168.1.**254**.

However, it is possible to configure other IP settings when required by network administration. Subnet mask may be defined from 255.0.0.0 to 255.255.255.0, and the IP and gateway addresses must both belong to one of the following IP ranges (standards for Private Local Area Networks):

- 10.0.0.1 to 10.255.255.254
- 100.64.0.1 to 100.127.255.254
- 172.16.0.1 to 172.31.255.254
- 169.254.0.1 to 169.254.255.254 (not recommended)
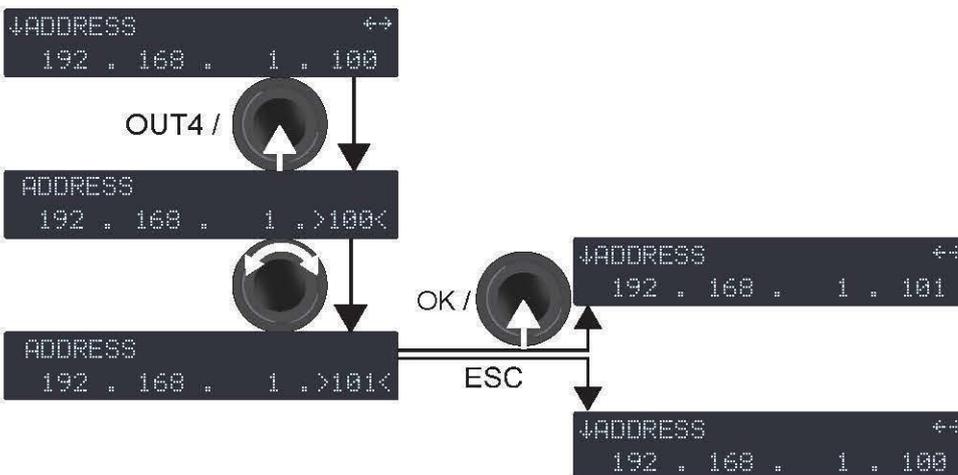- 192.168.0.1 to 192.168.255.254

❶ LA Network Manager and its host computer must be using the same subnet and Subnet mask as the units.

Make sure that:

- The IP address is included in one of the supported IP ranges.
- The gateway is set to an IP belonging to the same subnet, or is set to 0.0.0.0 if not used.

ADDRESS

modifying the IP address

Procedure

1. From the main menu, select **IP SETTINGS**.
2. Press the OK key or the encoder wheel to validate.
3. Long-press the OUT4 key or press the encoder wheel to select the last byte.
4. Turn the encoder wheel to select a value for the byte.

> ℹ️ Turn the encoder wheel for 1-step resolution.
>
> Press and turn the encoder wheel for 10-step resolution.

5. Press the OK key or the encoder wheel to apply, or the ESC key to cancel.
6. **If needed**, set another byte (first, second or third number) as follows:
   a) Long-press the OUT key under the byte to select it.
   b) Turn the encoder wheel to select a value.
   c) Press the OK key or the encoder wheel to apply.
   d) On the computer hosting LA Network Manager, configure the same subnet.

   Refer to the LA Network Manager Help (in **User guide** > **General**).

   e) In LA Network Manager:

   1. Click the L-Acoustics logo and select **Options**.
   2. Enter the corresponding values in **IP Range to scan for L-NET**.

> ℹ️ Values for the first byte (first number) are restricted to Private Local Area Network prefixes: 10, 100, 169, 172, and 192.
>
> For the first three bytes, set all Units of a system to the same values (for instance 192.168.1) for remote control by LA Network Manager.
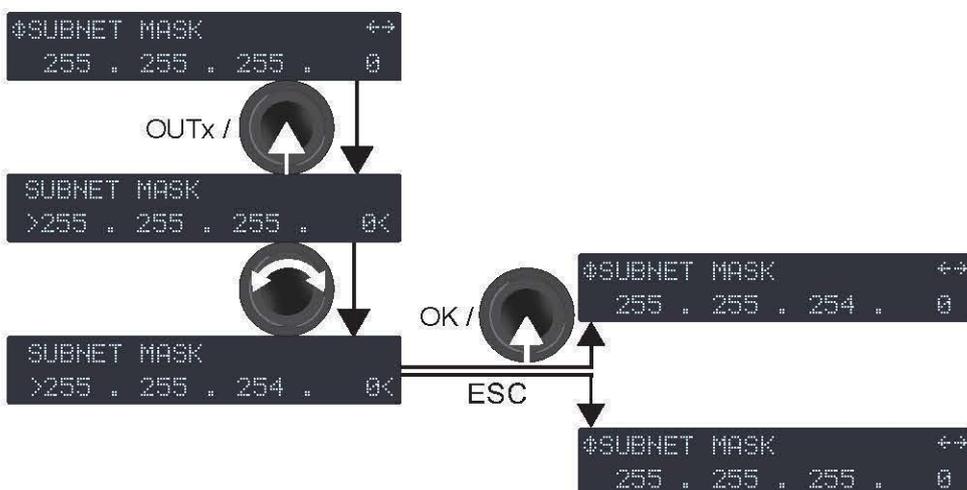
SUBNET MASK

The widest subnet mask that can be used is 255.255.255.0.

Wider subnet masks, such as 255.255.255.128, are not supported.

⚠️ **LA Network Manager and its host computer must be using the same subnet and Subnet mask as the units.**
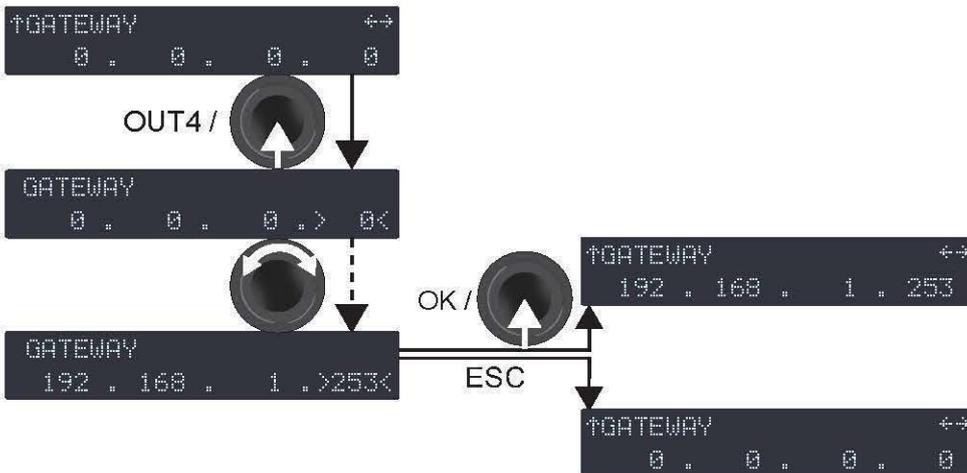
modifying the Subnet mask

Procedure

1. From the main menu, select **IP SETTINGS**.
2. Press the OK key or the encoder wheel to validate.
3. Turn the encoder wheel to select **SUBNET MASK**.
4. Press any OUT key or the encoder wheel to select the Subnet mask.
5. Turn the encoder wheel to select a value for the Subnet mask.
6. Press the OK key or the encoder wheel to apply, or press the ESC key to cancel.
7. On the computer hosting LA Network Manager, configure the same Subnet mask.

   Refer to the LA Network Manager Help (in **User guide** > **General**).

GATEWAY

A gateway IP address is an advanced setting reserved for specific applications such as amusement parks, campuses, and multi-room venues with a centralized third-party supervision tool (SNMP, Crestron, Extron, Q-SYS). In such contexts, the supervision tool is often located in a different subnet that is interconnected with the subnets of the units. Interconnection is achieved thanks to a gateway. The gateway address must be set on the units to enable communication with the supervision tool.

modifying the gateway

Procedure

1. From the main menu, select **IP SETTINGS**.
2. Press the OK key or the encoder wheel to validate.
3. Turn the encoder wheel to select **GATEWAY**.
4. Long-press the OUT key under a byte to select it.
5. Turn the encoder wheel to select a value for the selected byte.
6. Press the OK key or the encoder wheel to apply, or the ESC key to cancel.

Settings protection

Some settings can be protected from modifications.

Settings protection can only be enabled and disabled from LA Network Manager. Refer to the **LA Network Manager** Help and the **Settings Protection** technical bulletin.

When settings protection is enabled, some settings are completely locked, and the protection on the others can be temporarily bypassed by a 4-digit PIN code.

setting	protection
quick access to gain on OUT1 to OUT4	locked
LOAD PRESET FACTORY	PIN code protected
STORE PRESET	PIN code protected
DELETE PRESET	locked
PRESET PARAMETERS (all parameters)	PIN code protected
CLEAR GROUP PARAMS	PIN code protected
NETWORK ADDRESS	PIN code protected
RESET TO FACTORY DEFAULT SETTINGS?	locked

When settings protection is enabled and a user tries to modify a setting:

- Locked settings:
  - Screen displays **ACCESS LOCKED**.
  - Settings cannot be modified.
  - Press the ESC key to cancel.
- PIN code protected settings:
  - Screen display **ENTER PIN**.
  - Enter the PIN code to temporarily bypass the protection or press the ESC key to cancel.

```
ACCESS
LOCKED
```

```
ENTER PIN:
 ?     ?     ?     ?
```

Entering a PIN code

OUT1 +

```
        ENTER PIN:
    ?       ?       ?       ?
```

```
        ENTER PIN:
    3       ?       ?       ?
```

OUT2 +

```
        ENTER PIN:
    3       5       ?       ?
```

OUT3 +

```
        ENTER PIN:
    3       5       1       ?
```

OUT4 +

```
        ENTER PIN:
    3       5       1       8
```

OK
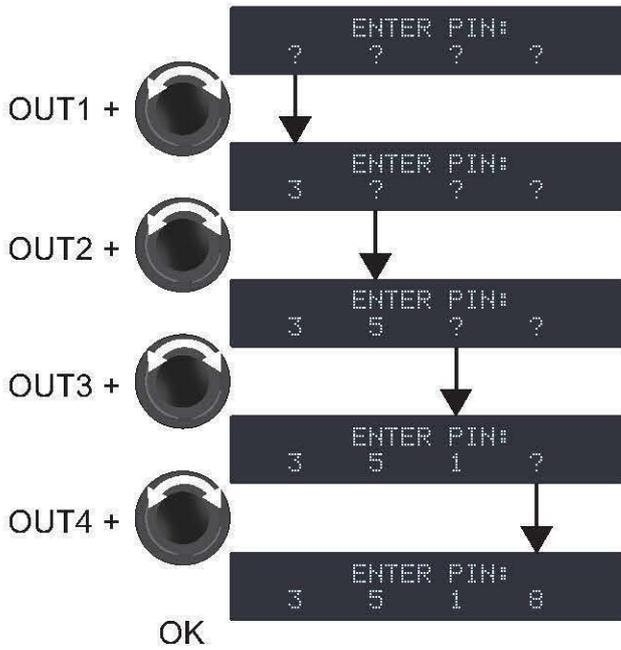
Procedure

1. Press and hold the OUT1 key.
2. Turn the encoder wheel to select the first digit of the PIN code.
3. Release the OUT1 key.
4. Repeat step 1 to 3 with the OUT2, OUT3 and OUT4 keys.
5. Press the OK key or the encoder wheel to validate.

   If the controller returns to the **ENTER PIN** screen, the entered PIN code is wrong.

   Repeat step 1 to 5 with the right PIN code, or press the ESC key to cancel.

Corrective maintenance

Introduction

Presentation

This section is intended for end users and gathers the level 1 procedures.

⚠️ **This manual contains the maintenance operations authorized for the end user.**
Performing another operation exposes to hazardous situations.

Troubleshooting and diagnosis (p.64)

This section contains the diagnosis tables and procedures to identify the issues and how to address them.

Exploded view (p.71)

This illustration gives an overview of the order in which the elements must be disassembled and reassembled. Each assembly refers to the corresponding D/R procedure and the necessary repair kit(s).

Disassembly and Reassembly procedures (p.72)

This section contains the maintenance procedures for each assembly identified in the exploded view.

Inspection and preventive maintenance (p.16)

These checks allow to detect an issue. The preventive maintenance must be performed regularly.

Equipment and tools

Tools

name	reference	distributor
Set of 6-point 1/4'' sockets	R.360NANO	FACOM
Torque screwdriver (0.2 N.m - 3 N.m)	-	-
3 mm slotted screwdriver	AEF.3X75	FACOM

Troubleshooting and diagnosis

For any issue, consider the diagnosis tables for the possible causes and inspection procedures (if any).

Before applying any procedure, consider the Exploded view (p.71) to get acquainted with the disassembly/reassembly procedures to perform before and after.

Interface issues

"black screen" and no LEDs when the controller is on

possible cause	diagnosis / procedure
power cord is not connected	• Check that the power cord is connected to mains. • Check that the powerCON is properly connected and locked.
mains failure or incompatible voltage	Check that mains are available and that voltage is compatible (100 V AC - 240 V AC ± 10%, 50 Hz - 60 Hz).
power cord damaged	Inspect the power cord. If necessary, replace it.
amplified controller on standby	Connect the amplified controller to a computer running LA Network Manager (the L-NET connector LEDs turn on) and switch the amplified controller to the operating mode.
other causes	Contact L-Acoustics.

"grey screen": LCD screen lit but nothing displayed

possible cause	diagnosis / procedure
condensing humidity	Put the controller in a non-condensing environment and wait until dry.
start-up / firmware issue	• Power off and on again. • Check if LA Network Manager detects the amplified controller. • Update the firmware.
other causes	Contact L-Acoustics.

LCD screen lit but dark

- LED & Backlight settings on low or off: Modify the LED & Backlight settings.
- Other causes: Contact L-Acoustics.

any action from the front interface has no effect

(controller not in standby mode and not locked, refer to the LA Network Manager help)

- Contact L-Acoustics.

one LED in a meter does not work (while the other LEDs of this meter work)

- Contact L-Acoustics.

the L-NET LED does not work when online

(refer to the LA Network Manager help)

- Contact L-Acoustics.

amplified controller does not power on (power LED is always red)

- Contact L-Acoustics.

amplified controller is continuously rebooting

- To force normal start-up:
  - Press and hold the encoding wheel for about 5 seconds.
  - If the issue persists, press and hold the encoding wheel, and as soon as the POWER LED turns red, release the encoding wheel, push the POWER button for about 2 seconds, then press and hold the encoding wheel again.
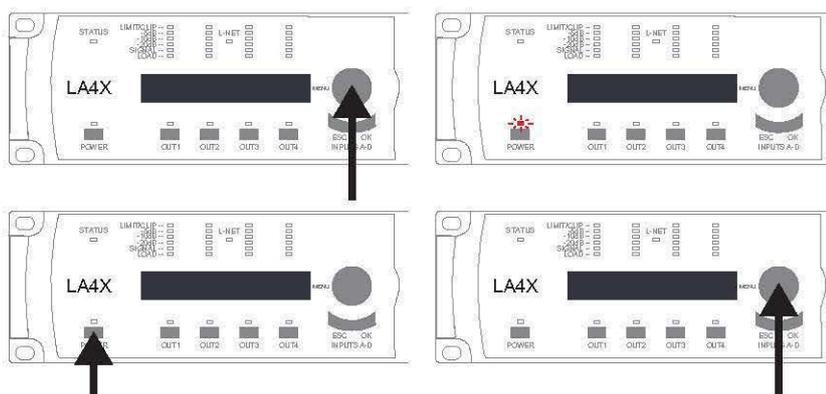
- The cause of the issue is a fault on the auxiliary power-supply board. The issue will occur again at the next power cycle. Contact L-Acoustics for a replacement of the board.

L-NET network issues

impossible to connect a controller to the L-NET network (controller not in "grey screen")

Refer to the LA Network Manager help for software use.

possible cause	diagnosis / procedure
LA Network Manager is set in offline mode	Select the online mode.
selected scanning range does not contain the amplified controller IP address	Include the amplified controller IP address into the scanning range.
amplified controller is set with an incorrect IP address, or several amplified controller are set with the same IP address	Set the computer IP address and subnet mask and the amplified controller IP address as indicated in the LA Network Manager help.
L-NET cable is not plugged or incorrectly plugged	Plug and secure CAT5e U/FTP cables into the L-NET connectors on the amplified controllers to connect it to the other amplified controllers, the computer or to the Ethernet switch (each of the amplified controller connectors can be equally used as an IN or LINK connector): The ACT/LINK LEDs should turn on. Refer to the LA Network Manager help.
L-NET cable is damaged	Replace any damaged CAT5e U/FTP cable in the network chain.
more than two software clients are already connected to the amplified controller	Disconnect all other software clients.
firmware failure	Restart the amplified controller.
other causes	Contact L-Acoustics.

Error messages

A system message blinks and the STATUS LED is lit in red.

> **i** There is a corresponding event message in LA Network Manager (refer to the **LA Network Manager** Help)

Component status messages

LA4X components are monitored for major or critical errors and faults.

`Unknown HW revision` `Contact L-ACOUSTICS`	Displayed if the DSP identification cannot be determined.
`System Message` `Hardware error`	Displayed if the firmware encounters a non-specified hardware error during startup or operation.
`System Error` `DSP start-up fault`	Displayed if the DSP cannot initialize. Try to update the firmware. If the issue persists, contact L-Acoustics.

The controller must be sent to an L-Acoustics representative for maintenance.

Output channel external error messages

The output channels are continuously monitored for external errors.

`Error on channel #` `Channel muted`	Displayed if an external error is detected at an output channel (typically due to a short-circuit in a cable). The channel is muted. The channel is automatically unmuted when the issue is solved.

If the error persists after disconnecting all cables and rebooting, the controller must be sent to an L-Acoustics representative for maintenance.

Network message

`System Message` `Invalid L-NET client`	Displayed if the unit detects a connection attempt from a version of LA Network Manager that is not compatible with the unit firmware (typically because the version of LA Network Manager is too old to manage the latest firmware features). Update LA Network Manager to version 2.3.0.0 minimum.

Other messages

System Message Update error	Displayed if the firmware update has failed. Try to restart the unit. If the issue persists, check that each L-NET cable is in working order and is correctly plugged on both ends, and relaunch the update process. If the issue persists, contact L-Acoustics.
High temp on ch # Channel attenuated	Displayed if temperature at an output channel is above 60° C. The signal delivered at the output channel is attenuated until temperature returns to nominal conditions.
Over temp on ch # Channel muted	Displayed if temperature at an output channel is above 65° C. The signal delivered at this output channel is muted until the temperature returns to nominal conditions.
System Message Fan blocked	Displayed if a fan is faulty. The unit remains operational but there is a risk of temperature rising.
Speaker fault on ch # Channel muted	Displayed if the unit detects a short-circuit fault in the speaker coil of the connected enclosure. The output channel is muted to avoid a potential risk of physical harm and further damages to the product. Verify the connected loudspeaker enclosures. Disconnect or replace the faulty enclosure, then unmute the output channel.

For temperature-related messages

possible cause	diagnosis / procedure
room temperature is too high / too low	Make sure room temperature is within amplified controller operating condition range (0° C / 32° F to +50° C / 122° F).
foam filter clogged, inside of amplified controller dusty	Clean or replace the foam filter, clean the amplified controller with an air blower.
amplified controller is not getting enough cool air	Install the amplified controller in an open area so that the front and rear panels are not blocked by an external objects or structure. If rack-mounted: • Do not block the ventilation grill with front and back panels or doors, or use a forced ventilation system. • When stacking more than one amplified controller, mount them directly on top of one another or close the free spaces with blank panels.
channel resources are solicited to their limits	Monitor the channel LED meter: In case of persistent high level or clip, reduce the audio source output level (refer to the third-party documentations) or the gain value on the channel.
loudspeaker impedance too low	Check that nothing causes a short-circuit at the output (incorrect cabling scheme, damaged cable or short-circuit in the speaker voice coil).

Sound issues

no sound with no error message

(amplified controller is not in standby mode. Refer to the LA Network Manager help)

possible cause	diagnosis / procedure
mains failure	Inspect the mains.
outputs are muted	Unmute the outputs.
incorrect input mode	If the fallback mode is ON, switch it OFF. Select the input mode according to the audio source format (analog or AES/EBU).
incorrect preset selection	Select a preset in accordance with the loudspeaker system connected to the outputs.
gain value is too low on the amplified controller	Set an appropriate gain value on channels OUT1 to OUT4. If the AES/EBU input mode is selected, set an appropriate AES/EBU input gain value.
audio source is not plugged, incorrectly plugged, or plugged into the wrong input connector	Plug/Replug and secure each XLR cable into the audio source and the corresponding input connector on the amplified controller (analog input connector for analog audio source, AES/EBU input connector for AES/EBU audio source).
audio source cable is damaged	Replace the XLR cable.
incorrect settings on the audio source	Set appropriate parameter values on the audio source, in particular the output gain value (refer to the third-party documentation).
non-audible bit stream	Check that the AES/EBU source does not deliver non-audio bit stream (for example encoded audio).
audio source failure	Inspect the audio source for failure. Reminder: A digital audio source can meet the following failures: no clock, loss of lock, invalid audio (validity bit), CRC error, bipolar encoding error, data slip.
loudspeaker not plugged, incorrectly plugged, or plugged into the wrong output connector	Plug/Replug and secure each speakON cable into the loudspeaker and the corresponding output connector on the amplified controller.
loudspeaker cable is damaged	Replace the loudspeaker cable.
loudspeaker is damaged	If only one loudspeaker is connected, inspect it.
other causes	Contact L-Acoustics.

noise, level loss, distorted sound, white noise (no error message)

possible cause	diagnosis / procedure
AES/EBU audio source is connected to an analog input	Check the input signal cabling and check that the input mode has been selected accordingly in the INPUT SETTINGS menu.
gain value too high on the amplified controller	Set an appropriate gain value on channels OUT1 to OUT4. If the AES/EBU input mode is selected, set an appropriate AES/EBU input gain value.
output gain value too high on the audio source	Set an appropriate output gain value on the audio source (refer to the third-party documentation).
switch to the analog fallback mode with incorrect AES/EBU input gain value	Set an appropriate AES/EBU input gain value and inspect the digital audio source for failure. Reminder: A digital audio source can meet the following failures: no clock, loss of lock, invalid audio (validity bit), CRC error, bipolar encoding error, data slip.
incorrect preset selection	Select a preset in accordance with the loudspeaker system connected to the outputs.
audio source cable incorrectly plugged	Unplug the XLR cable and plug it again on the audio source and the amplified controller. Verify with the installer if ground loops can occur.
audio source cable damaged	Replace the XLR cable.
incorrect settings on the audio source	Set appropriate parameter values on the audio source (refer to the third-party documentation).
audio source failure	Inspect the audio source for failure.
loudspeaker incorrectly plugged or plugged into the wrong output connector	Plug/Replug and secure each speakON cable into the loudspeaker and the corresponding output connector on the amplified controller. Verify with the installer if ground loops can occur.
loudspeaker cable damaged	Replace the speakON cable.
loudspeaker is damaged	If only one loudspeaker is connected, inspect it.
other causes	Contact L-Acoustics.

sound only available in one input mode and not the other

sound only available in AES/EBU and not in analog, or sound only available in analog and not in AES/EBU

- Contact L-Acoustics.

Exploded view

In the exploded view, each assembly corresponds to a D/R procedure and the necessary repair kit(s).

External modules

rear brackets
KR LABRACKET

side brackets
KR LA4XEQUAV

grill and foam filter
KR LA4XGRI

KR LA4XMOU

front handles
G03255
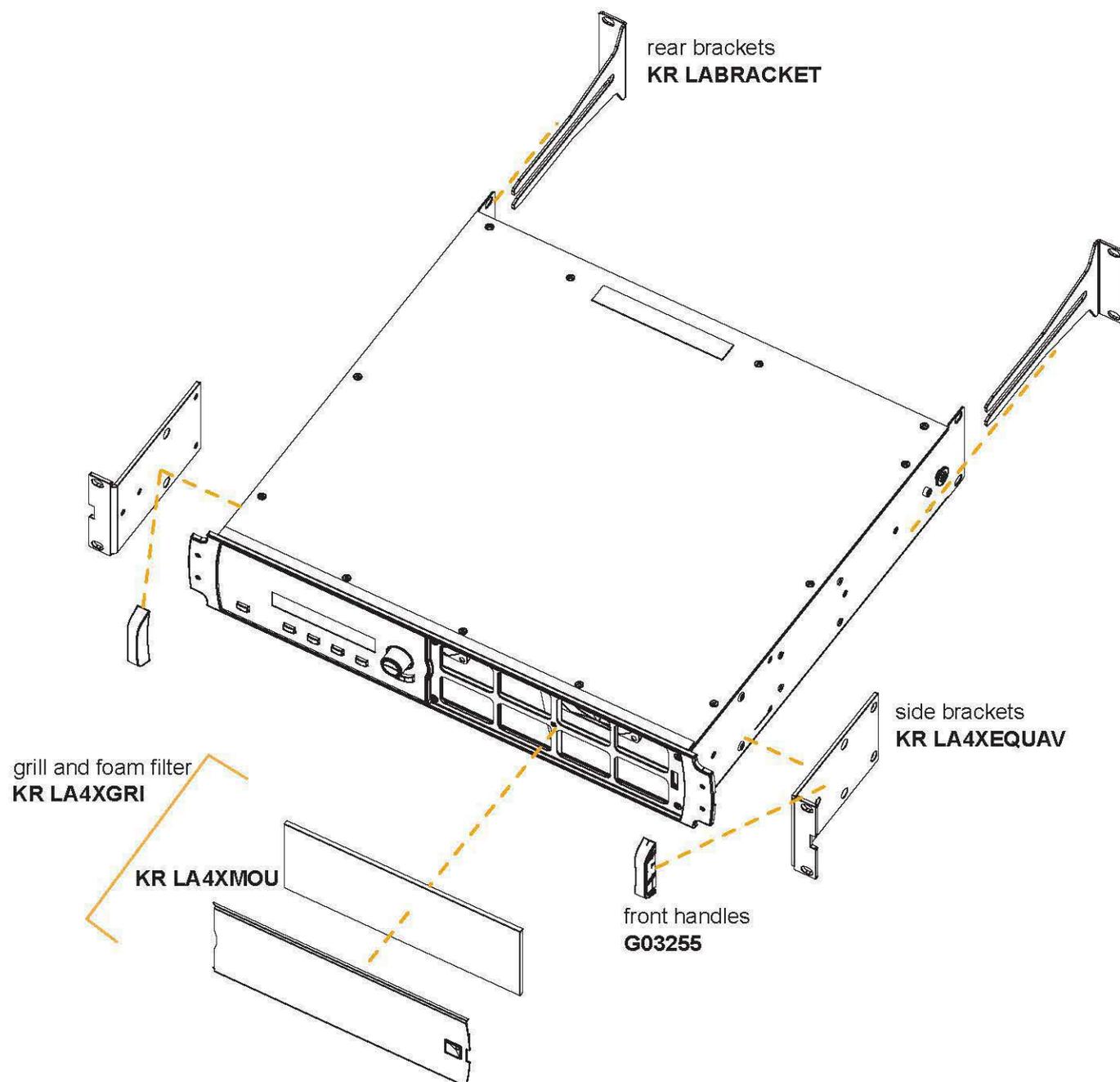
Disassembly and Reassembly procedures

D/R - Grill and foam filter
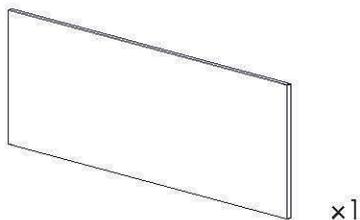
Tools

- 3 mm slotted screwdriver

Repair kit

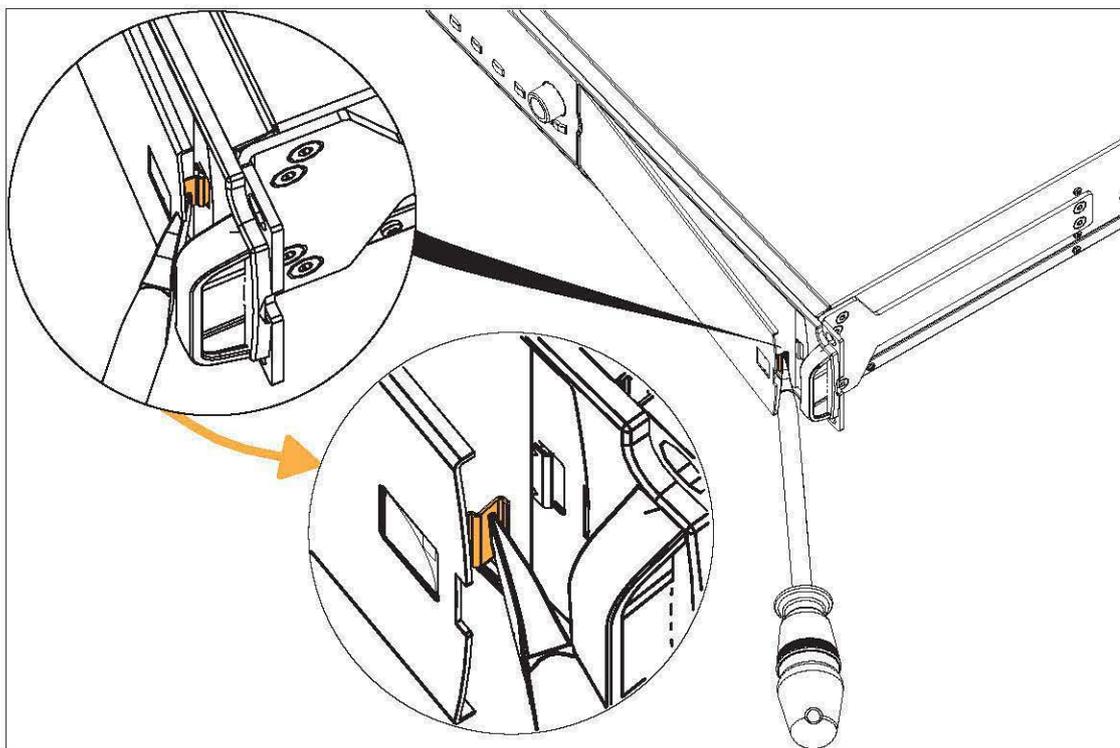### KR LA4XGRI

KR grill LA4X / LA12X

×1
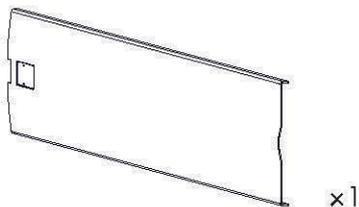
MC LA4XGRL

LA4X and LA12X grill

×1

CM LA4X

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

- torque screwdriver
- T10 Torx bit

Repair kit

KR LA4XEQUAV

LA4X 2 front L-bracket
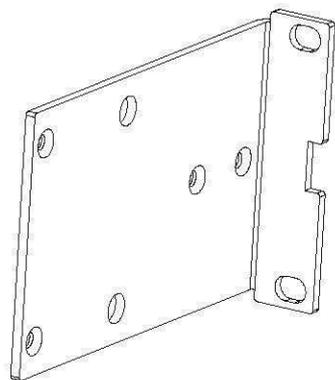
×2

G1920

side bracket

×8

S209

M4x10 Torx

Exploded view

1 N.m

T10
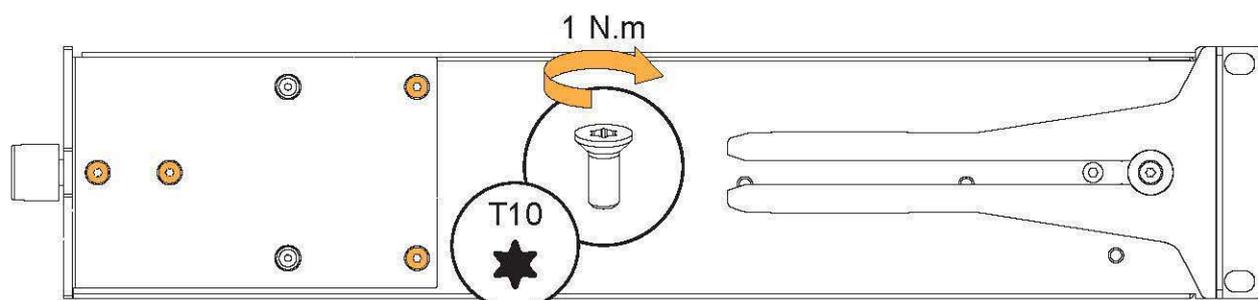
D/R - Rear bracket

Repair kit

KR LABRACKET

Kit rear brackets LA4/LA4X/LA8/LA12X

 ×1
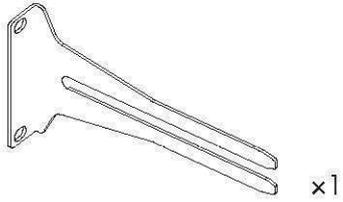
G1815

amplified controller rear bracket

Exploded view
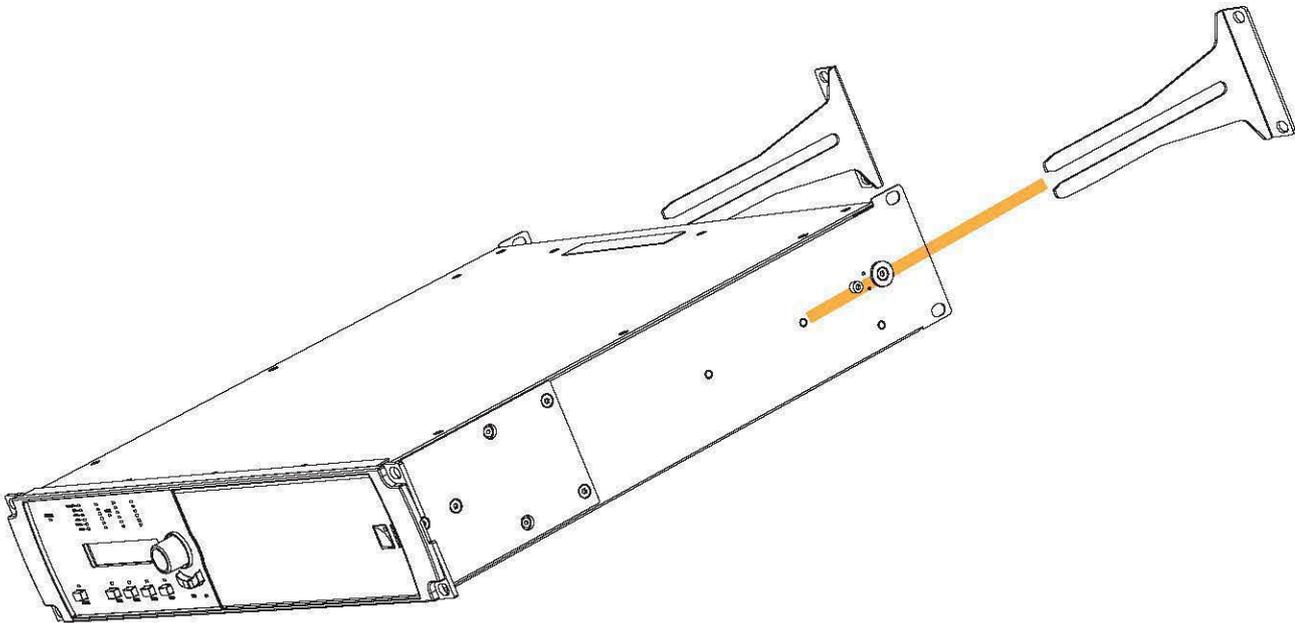
D/R - Front handles

Tools

- torque screwdriver
- T15 Torx bit

Repair kit

G03255

KR handles (x2) LA12X

×2

G03364

amplified controller front handle

×4

CV TF3512IP

M3.5×12 Torx

Prerequisite

Side bracket disassembled.   See Side bracket (p.73).

Exploded view

❗ Front handles can only be mounted on compatible front structure.
To upgrade an amplified controller with a non-compatible front structure, contact the L-Acoustics representative.

❗ **Self-drilling screws**
For safety reasons, always reassemble new front handles.

1 N.m

X2

T15
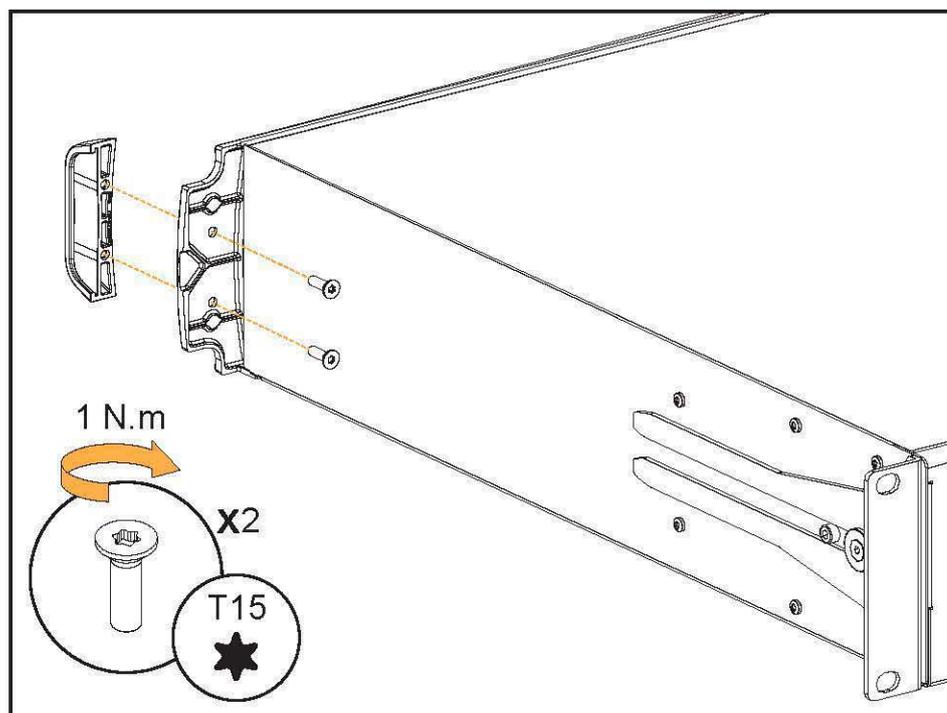
Specifications

All values given in this section are typical values.

General

Output power EIA (1% THD, 1 kHz, all channels driven)	4 × 1000 W RMS (at 8 or 4 Ω)
Maximum output voltage	150 V (Peak voltage, no load)
Amplification class	class D
Digital Signal Processor (DSP)	SHARC 32 bit, floating point, 96 kHz sampling rate
Frequency response 20 Hz - 20 kHz	± 0.25 dB at 8 Ω
Distortion THD+N (20 Hz - 10 kHz)	< 0.05% , at 8 Ω, 11 dB below rated power
Output dynamic range	110 dB (20 Hz - 20 kHz, 8 Ω A-weighted)
Amplification gain	32 dB
Noise level	-71 dBV (20 Hz - 20 kHz, 8 Ω A-weighted)
Channel separation	> 80 dB (at 1 kHz, 8 Ω)
Damping factor	> 500 (100 Hz and below, 8 Ω)
Output delay	0 ms to 1000 ms

Mains input power and current draw (all channels driven)

Maximum output power	4 × 1000 W at 4 or 8 Ω
1/3 output power (-5 dB)	7 A / 1600 W
1/8 output power (-9 dB)	3 A / 750 W

Current values above are given for mains rated at 230 V. Multiply by:
- 2.3 for 100 V
- 1.9 for 120 V
- 1.15 for 200 V

Mains input power and current draw in Idle and Standby modes

Idle	0.9 A / 60 W
Standby	0.7 A / 11 W

Due to line filter operation, power factor is < 0.3 in Idle mode, and < 0.1 in Standby mode. Current values above are given for mains rated at 230 V and decrease with lower mains.

Power supply

Model	universal Switched Mode Power Supply (SMPS) with Power factor correction (PFC)
Power factor	> 0.9 (4 Ω full power)
Mains rating	100 V AC - 240 V AC ~ ± 10%, 50 Hz - 60 Hz

Operating conditions

Temperature	room temperature (0 °C / 32 °F to 50 °C / 122 °F

Protection

Circuits protection	heat-sinks temperature monitoring
	output over current protection
Transducers protection	L-DRIVE:
	excursion
	temperature
	over-voltage
Fans	2 fans, temperature-controlled speed
Fans noise (free field, 1 m)	at minimum speed: 20 dBA
	at maximum speed: 45 dBA

Interface and connections

Indicators	3 LEDs for power, status and L-NET information
	For each output: 7 LEDs for mute, load, signal, levels and limit/clip information
Interface	2 × 24 characters LCD screen
Output connectors	4 × 4-point speakON
L-NET connectors	2 × 1 Gb/s Ethernet etherCON I/O

Input signal distribution

Connectors

Input	4 Neutrik® female XLR3, IEC 268, ESD protected
Link	4 Neutrik® male XLR3, IEC 268, ESD protected

Available input connectors vs. input mode

Analog AB / Analog CD	IN A, IN B / IN C, IN D (4 connectors, 4 channels)
Analog AB / Digital CD	IN A, IN B / IN C&D (3 connectors, 4 channels)
Digital AB / Analog CD	IN A&B / IN C, IN D (3 connectors, 4 channels)
Digital AB / Digital CD	IN A&B / IN C&D (2 connectors, 4 channels)

Link connectors

Analog input mode	passively connected
Digital input mode	electronically buffered, failsafe relay

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

Analog input

Input impedance	22 kΩ (balanced)
Maximum input level	22 dBu (balanced, THD 1%)
A/D conversion	4 cascaded 24-bit analog/digital converters (128 dB dynamic range)

Digital input

Supported operating mode

Standard	AES/EBU (AES3) or electrical S/PDIF (IEC 60958 Type II)
Sampling frequency (Fs)	44.1, 48, 64, 88.2, 96, 128, 176.4 or 192 kHz
Word length	16, 18, 20, 24 bits

Sample Rate Converter (SRC)

Sampling frequency	96 kHz (SRC referenced to the amplified controller internal clock)
Word length	24 bits
Dynamic range	140 dB
Distortion THD+N	< -120 dBFS (dB Full Scale)
Bandpass ripple	±0.05 dB (20 Hz - 40 kHz, 96 kHz)

Input gain

Range	-12 dB to 12 dB
Steps	0.1 dB

Latency

Analog and AES/EBU

In standard operating mode	3.84 ms (independent from input Fs)
In low latency operating mode	0.84 ms (independent from input Fs)

AVB

- LA4X amplified controllers with HARDWARE INFO **ID1**, **ID2** or **ID3** (in MONITORING & INFO menu) do not support AVB nor redundancy. These Units can be upgraded to support AVB by purchasing and installing KR LA4XDSP2.
- LA4X amplified controllers with HARDWARE INFO **ID4** or higher (in MONITORING & INFO menu) support AVB but do not support redundancy.

Featured AVB entities	MILAN™-certified, Avnu™-certified AVB Bridge and Listener
Standards	Ethernet AVB:
	IEEE 802.1BA-2011
	Transport: IEEE 1722-2016 (AVTP)
	Control: IEEE 1722.1-2013 (AVDECC)
Input audio stream	Number: 1
	Class: A
	Maximum network latency: 2 ms
	Formats:
	AAF PCM32, up to 8 channels, at 48 kHz or 96 kHz IEC 61883-6 AM824, 8 channels, at 48 kHz or 96 kHz
Media clock	automatically synchronized on clock of the connected AVB input stream (upsampling at 96 kHz in case of stream at 48 kHz)
Streams forwarded by AVB Bridge	up to 32

Automatic fallback option

Mode	AVB to XLR (on compatible units)
	XLR AB to XLR CD (digital to analog or digital to digital)
Switchover conditions	AVB to XLR: loss of lock
	XLR to XLR: no clock, loss of lock, CRC error, bipolar encoding error, or data slip
Constant delay	independent from input Fs
Constant level	upon manual user selection of AES/EBU & AVB gain
	independent from input Fs
Revert to initial input	upon manual user selection

Remote control and monitoring

Network connection	dual-port Ethernet Gigabit interface
L-Acoustics remote control software	LA Network Manager 2
Third-party management solutions	SNMP, Extron®, Crestron®, QSC Q-SYS

Extron is a registered trademark of Extron Electronics.

Crestron is a trademark or registered trademark of Crestron Electronics, Inc. in the United States, other countries or both.

QSC® and Q-SYS™ are trademarks or registered trademarks of QSC, LLC in the U.S. Patent and Trademark Office and other countries.

Physical data

Height

2U

Weight

11.3 kg / 24.9 lb

Finish

black

Protection rating

IP3x

483 mm / 19 in

88 mm / 3.5 in

406 mm / 16 in

420 mm / 16.5 in

16 mm / 0.63 in

465 mm / 18.3 in

76 mm / 3 in

434 mm / 17 in

398 mm / 15.7 in
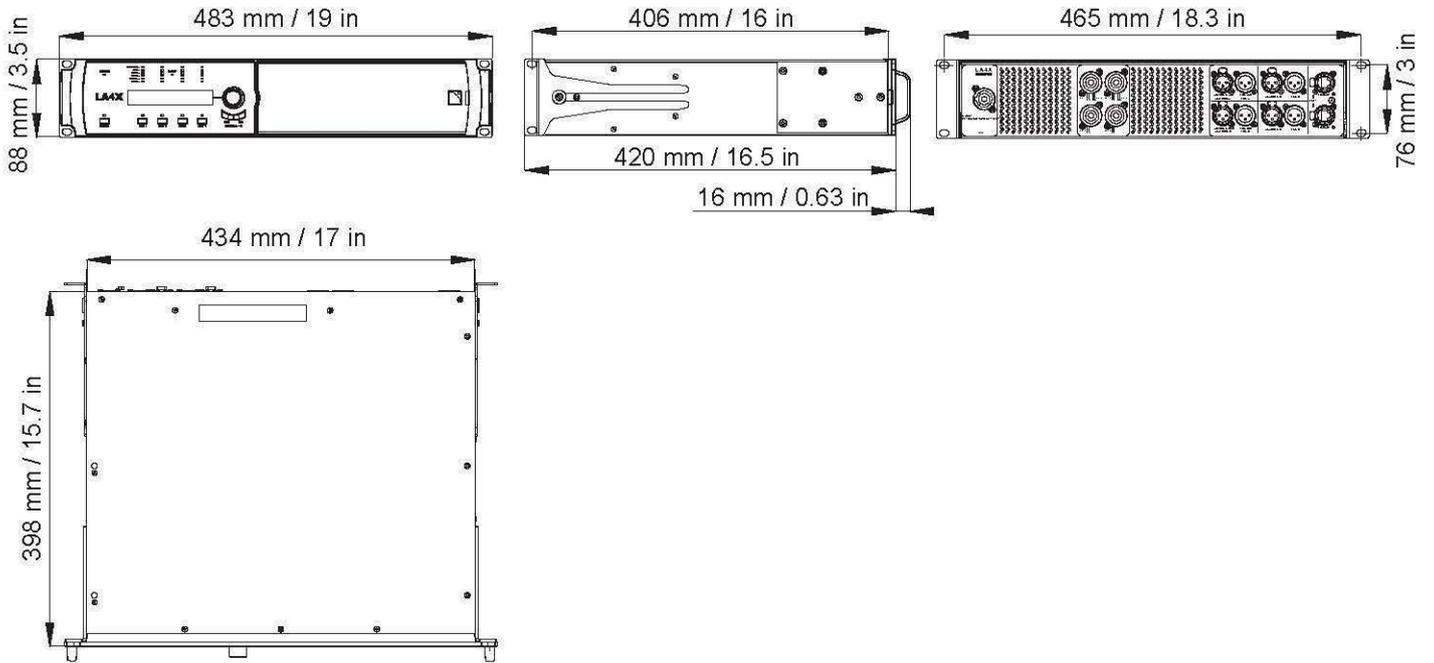
Glossary

CE   Europe

CHK check procedure

CN   China

D/R   disassembly/reassembly procedure

INSP inspection procedure

INT   international (bare lead version of the power cable)

KR   repair kit

N.m newton meter, international torque unit, 1 N.m = 9 in lbf

SMPS Switched Mode Power Supply (power supply inside of the amplified controller)

US   United States

List of AVB reservation (RSV) errors

code	error	resolution
1	Out of bandwidth	There is not enough bandwidth on the path from the talker to the listener. • Check that all the bridges in use have a speed of 1 Gb/s (minimum). • Check the configuration of the bridges: some allow a higher bandwidth allocation for AVB streams (default is 75% of link speed). • Change the stream format: select a lower sampling rate, reduce the number of channels if some are unused. • Optimize the stream and channel usage: for each talker, use the minimum number of streams and the maximum number of channels per stream. • Disconnect some of the already connected streams to release bandwidth.
2	Out of bridge resources	One of the bridges on the path from the talker to the listener reached its limits. • Try to reboot the bridges on the path from the talker to the listener. • Try to disconnect some streams.
3	Out of bandwidth for traffic class	See error 1.
4	Stream ID used by another talker	A device on the network is behaving incorrectly. • Disconnect and reconnect the stream. • Reboot the talker. • Reboot the bridges on the path from the talker to the listener. • If the talker supports manual configuration of the stream parameters, configure the stream to use another Stream ID.
5	Stream dest. addr. already in use	A device on the network is behaving incorrectly. • Disconnect and reconnect the stream. • Reboot the talker. • Reboot the bridges on the path from the talker to the listener.
6	Stream preempted by higher rank	An emergency stream has been connected and reclaimed the bandwidth that was used by the Unit stream. • Wait until the emergency stream is disconnected (bandwidth is automatically reallocated). • Try the resolutions of error 1.

code	error	resolution
7	Reported latency has changed	A device on the network is behaving incorrectly. • Disconnect and reconnect the stream. • Reboot the talker. • Reboot the bridges on the path from the talker to the listener.
8	Egress port is not AVB capable	Temporarily displayed when a network cable is disconnected then reconnected. If displayed for more than a few seconds, it indicates one of the switches in the network is non-AVB capable, or is configured incorrectly. • Only use AVB-capable bridges on the path from the talker to the listener. • If the bridges support configuration of the SR Class priority, configure all the bridges with the same setting (default is 3 for Class A streams).
9	Use a different dest. address	One of the bridges on the path from the talker to the listener has used all of its internal resources. • If the talker supports manual configuration of the stream parameters, configure it to use another destination MAC address. • Try to reboot the talker to make it use another MAC address. • Disconnect some already reserved streams.
10	Out of MSRP resources	One of the bridges on the path from the talker to the listener has reached its limits. • Try to disconnect some streams. • Try to reboot the bridges on the path from the talker to the listener.
11	Out of MMRP resources	One of the bridges on the path from the talker to the listener has reached its limits. • Try to disconnect some streams. • Try to reboot the bridges on the path from the talker to the listener.
12	Cannot store dest. addr.	One of the bridges on the path from the talker to the listener has reached its limits. • Try to disconnect some streams. • Try to reboot the bridges on the path from the talker to the listener.
13	Req. priority is not an SR class	The talker is behaving incorrectly, or the switches configuration has changed while the stream was active. • Disconnect and reconnect the stream. • Reboot the talker.
14	Max frame size too big for media	The talker is behaving incorrectly. • Disconnect and reconnect the stream. • Reboot the talker.
15	MSRP fan-in ports limit reached	One of the bridges on the path from the talker to the listener has AVB ports usage limitation and has reached its limits. • If possible, change the configuration of the bridges to allow more simultaneous usage of AVB ports. • Review the network cabling to use less ports on the limiting bridge(s).
16	Changed first value for reg. stream ID	A device on the network is behaving incorrectly. • Disconnect and reconnect the stream. • Reboot the talker. • Reboot the bridges on the path from the talker to the listener.
17	VLAN blocked on egress port	One of the bridges on the path from the talker to the listener is incorrectly configured. • Configure the bridges to allow dynamic VLAN registration. • If possible, configure the talker to use a different VLAN (one that is authorized by the bridges).

code	error	resolution
18	VLAN tagging off on egress port	One of the bridges on the path from the talker to the listener is incorrectly configured. • Configure the bridges to enable VLAN tagging of the egress packets.
19	SR class priority mismatch	A wrongly configured AVB bridge is present in the network. • Configure all the bridges with the same setting (default is 3 for Class A streams).

List of AVB connection (CON) errors

code	error	resolution
2	Talker unknown ID	The AVB controller has requested the listener to connect to a talker, specified by an identifier, but that identifier does not exist, or no longer exists. Check that the AVB controller is sending the correct information.
3	Talker dest. mac fail	A listener is trying to connect to a talker while the talker is allocating the destination MAC for the stream. If displayed for more than a few seconds, check for non-Avnu certified devices on the network. Preferably use Avnu-certified devices.
4	Talker no stream index	A third-party talker has an issue allocating an ID to a stream. Refer to the third-party documentation.
5	Talker no bandwidth	The talker cannot deliver all of its streams because a switch on the network does not have enough bandwidth. Use switches with enough bandwidth capabilities.
6	Talker exclusive	A third-party talker that supports a limited number of listeners has reached its limits. Refer to the third-party documentation.
13	Talker misbehaving	The talker has an internal error. Reboot the talker.
16	Controller not authorized	Another AVB controller has locked the talker. Unlock the talker.
17	Incompatible request	The listener is trying to connect to a talker that is already streaming with a different traffic class, or does not support the requested traffic class. If in redundant mode, check the cabling (port 1 must be used for the Primary network and port 2 for the Secondary network).
31	Not supported	Request is unknown to a third-party, non-MILAN compatible talker. Refer to the third-party documentation.

Approvals

EU Declaration of Conformity (DoC)

We

L-Acoustics

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France

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

LA4X amplified controller

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: 2014 Safety requirements for audio, video and similar electronic apparatus
EN 55103-1: 2009+A1:2012 Electromagnetic compatibility — Product family standard for audio, video, audio-visual andentertainment lighting control apparatus for professional use — Part 1: Emissions
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:

Genio KRONAUER

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France

Year CE marking was first affixed: 2013

Issued in Marcoussis, France
20/04/2018

Genio KRONAUER, Electronics Director

LA4X is certified with the following:
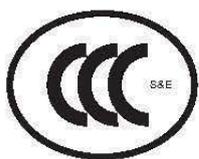
LA4X is compliant with the following:

Avnu Alliance and the Avnu design mark are registered trademarks and/or service marks of Avnu Alliance.

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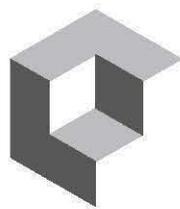
L-ACOUSTICS
GROUP

LA8

owner's manual (EN)

Contents

Safety

Safety instructions

1. **Read this manual**
2. **Follow all SAFETY INSTRUCTIONS as well as DANGER and OBLIGATION warnings**
3. **Never incorporate equipment or accessories not approved by L-Acoustics**
4. **Read all the related PRODUCT INFORMATION documents before exploiting the system**

   The product information document is included in the shipping carton of the related system component.

5. **Environments**

   Use the product only in E1, E2, E3, or E4 environments according to EN55103-2 standard.

6. **Radio interference**

   A sample of this product has been tested and complies with the limits for the EMC (Electro Magnetic Compatibility) directive. These limits are designed to provide reasonable protection against harmful interference from electrical equipment. However, there is no guarantee that interference will not occur in a particular installation.

7. **Power cord caution**

   Do not use the product if the power cord is broken or frayed.

   Protect the power cord from being walked upon or pinched - particularly at the plugs and the point where the power cord exits from the apparatus.

8. **Mains supply**

   Only connect the LA8 (CE model), LA8US (US model), or LA8CN (China model) to an AC power outlet rated 230 V, 16 A, 50-60 Hz or 120 V, 30 A, 50-60 Hz.

   Only connect the LA8JP (Japan model) to an AC power outlet rated 100 V, 30 A, 50 - 60 Hz or 200 V, 15 A, 50-60 Hz.

9. **Three-phase circuit**

   Verify that each phase works, in particular the neutral one.

   Balance the loads between the three phases.

   Never try to reproduce a 230 V circuit connecting an LA8, an LA8US, or an LA8CN to two live wires of a 120 V three-phase circuit.

   Never try to reproduce a 200 V circuit connecting an LA8JP to two live wires of a 100 V three-phase circuit.

10. **Electrical generator**

    You must power on the generator before powering on the amplified controllers

    Verify that the amplified controllers are turned off before powering on the generator.

11. **Thermal circuit breaker**

    Always interconnect a thermal circuit breaker between the product and the mains.

    The circuit breaker current rating depends on the mains voltage rating as follows:

    16 A for 230 V or 30 A for 120 V (LA8, LA8US, LA8CN), 15 A for 200 V or 30 A for 100 V (LA8JP).

12. Grounding

To plug the controller to mains only use an outlet fitted with a pin tied to ground.

Do not defeat the ground pin of the outlet as it connects the controller to earth. If the local outlet is obsolete, consult an electrician.

The product is fitted with a grounding-type plug. Do not defeat the ground wire connecting the plug's female contact to the product's chassis.

13. Plug replacement

If the AC plug on the power supply cord of this product does not match the local outlet, it must be replaced by an appropriate one. This operation should only be performed by qualified service personnel. Verify that the cut-off plug is withdrawn from use, as it can cause severe electrical shock if connected to an AC outlet.

14. Lightning storm

During lightning storms, disconnect the product from the mains.

Switching the product off does not disconnect it from the mains. To do this, remove the plug from the mains outlet.

15. Interconnections

When connecting the product to other equipment, mute all output channels. Carefully read the user manual of the other equipment and follow the instructions when making the connections.

Do not connect a speaker output in parallel or series with any other amplifier output.

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

16. Over power risks

The product is very powerful and can be potentially dangerous to both loudspeakers and humans alike.

Even reducing the gain it is still possible to reach very high output power if the input signal level is high enough.

17. Operating temperature

The product operates at a room temperature between 0 °C and +50 °C.

18. Ventilation

Openings in the product chassis are for ventilation. They prevent the product from overheating and thus ensure reliable operation. These openings must not be blocked or covered. The product must be installed in accordance with the instructions given in this manual.

19. Heat

Do not operate the product near any heat source, such as radiators or other devices.

20. Water and moisture

To prevent fire or shock hazard, do not expose the product to rain or moisture.

Do not use the product near water. Do not operate the product while wet.

21. Interference with external objects and/or liquids

Never push objects of any kind into the product through openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

22. Cleaning

Unplug the product from the mains before cleaning.

Do not use liquid or aerosol cleaners. Clean only with dry cloth.

23. Mounting instructions

Do not place the product on an unstable cart, stand, tripod, bracket, or table. The product may fall and be seriously damaged, and may cause serious human injury.

Any mounting of the product should follow the manufacturer's instructions given in this manual, and should use accessories recommended by the manufacturer.

24. Conditions which require immediate service

Refer all servicing to qualified service personnel.

Servicing is required when the product has been damaged in any way such as:

- Power supply cord or plug is damaged,
- Liquid has been spilled or an object has fallen into the product,
- The product has been exposed to rain or moisture,
- The product was dropped or the housing is damaged,
- The product does not operate normally.

25. Servicing and replacement parts

Do not attempt to service this product as removing covers may expose to dangerous voltage or other hazards.

The use of unauthorized replacement parts may result in injury and/or damage through fire, electric shock, or other electricity-related hazards.

All service and repair work must be carried out by an L-Acoustics authorized dealer.
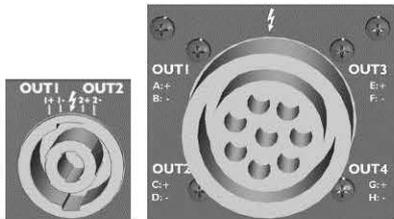
26. Shipping

Use the original packaging for shipping the product, unless it is mounted in a rack with the front and rear panels fixed to the rack, as described in this manual.

Symbols indicated on the product

The product is potentially life threatening if open. Never attempt to remove the back cover.

The lightning flash symbols next to the speakON® and CA-COM connectors indicate that the product can generate high output voltages that are potentially life threatening.

Always use ready-made leads to connect the product to speakers.

Never touch any exposed speaker wires while the product is operating without first disconnecting the wires from the product.

Introduction

How to use this manual

The LA8 owner's manual is intended for all actors involved in the system design, implementation, preventive and corrective maintenance of the LA8 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.12)
2. Before installing the product, perform mandatory inspections and functional checks.
   - Inspection and preventive maintenance (p.16)
3. To deploy the product, follow the step-by-step installation instructions and refer to the cabling schemes.
   - Installation (p.19)
   - Audio and network cabling (p.22)
4. To configure the settings and parameters of the product, follow the step-by-step operation instructions.
   - Operation (p.28)

> ⓘ The Corrective maintenance (p.55) 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.

LA8 amplified controller

At the heart of the L-Acoustics integrated system approach, the LA8 amplified controllers offer cutting edge loudspeaker amplification, DSP, network control, and comprehensive system protection in a single ergonomic package.

Based on similar platforms, the exceptional and ground-breaking performance level delivered by the LA8 units allow full optimization of the resources of all L-Acoustics systems and deliver outstanding audio quality combined with the best possible transducer protection.

The unique ensemble of on-board features and the addition of peripherals are all offered in a secured and standardized environment. This approach simplifies system setting and operation with the benefit of superior and predictable audio results across the entire product range.

Driving four amplified output channels through a DSP offers a wide range of options when it comes to sound system configuration. The LA8 on-board preset libraries allow the sound engineer a high degree of flexibility in choosing the enclosure models and the system configuration for a specified application.

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

LA8   Amplified controller with DSP, preset library and networking capabilities

Rack

LA-RAK   Touring rack containing three LA8 and power, 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

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

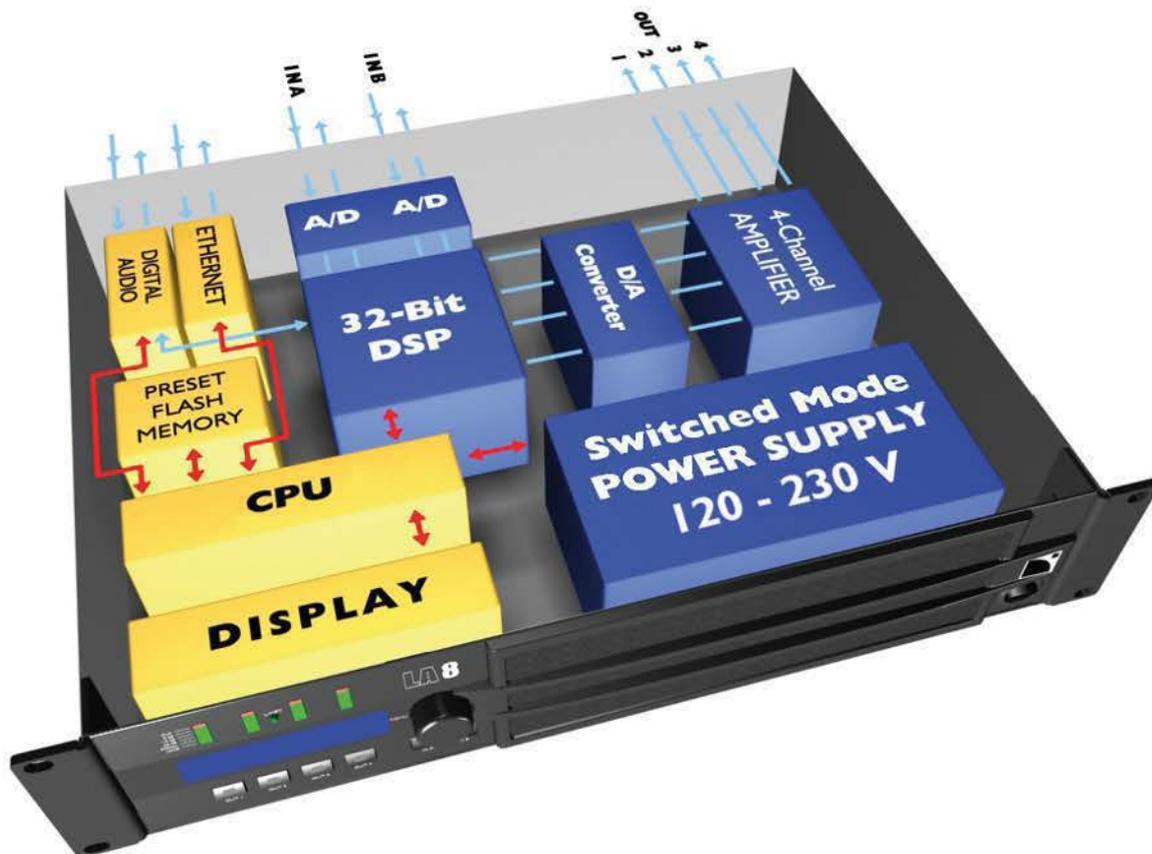# Illustrations

LA Network Manager

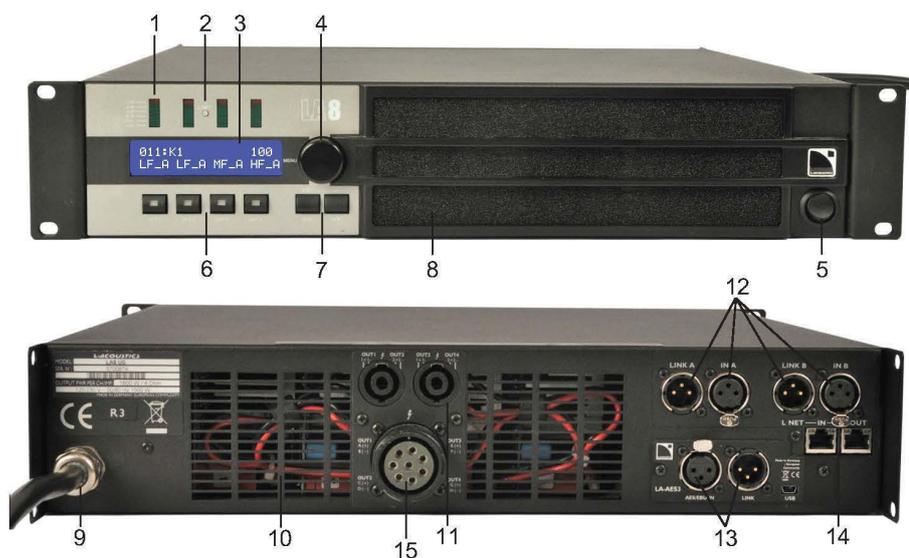LA-RAK

L-Case

Technical description

Main features

Internal components

The core of the LA8 is a DSP engine driving four channels of amplification from two inputs. The LA8 also features a flash memory for preset storage and management, high performance A/D-D/A converters and AES/EBU inputs for audio signals, an auto-sensing SMPS (Switched Mode Power Supply), a front panel user interface, and a fast Ethernet device for networked remote control.

LA8 simplified block diagram

Front and rear panels

1 LED meters:
- — CLIP level
- — audio levels (-5 dB, -10 dB and -25 dB)
- — SIGNAL presence
- — LOAD presence

2 L-NET network control LED

3 2 x 20 characters LCD display

4 navigation/edition encoder wheel

5 power switch

6 channel selection keys

7 menu keys

8 inward ventilation grill and foam filter

9 A/C power cord

10 outward ventilation grills

11 speakON output connectors

12 XLR analog input/link connectors

13 XLR AES/EBU input/link connectors

14 etherCON L-NET network connectors

15 8-point output connector

Signal processing and amplification

Signal inputs

Analog

LA8 can be fed with two balanced analog audio signals using the appropriate XLR input ports — see illustration in section Front and rear panels (p.13). Each analog input port is ESD protected and equipped with one XLR female connector.

The analog input panel also features two XLR male link connectors passively wired to the input connectors. They allow transmitting the input signals to daisy-chained amplified controllers. Each analog link port is ESD protected and equipped with one XLR male connector.

To be processed by the DSP, the analog signal must be converted into a digital signal. For this purpose, the LA8 amplified controller is fitted with two cascaded 24-bit A/D converters with a sampling rate of 96 kHz allowing an encoding dynamic range of 130 dB.

AES/EBU

LA8 can be fed with one AES/EBU digital audio signal carrying two audio channels using XLR input connectors AES/EBU IN A&B, thanks to the LA-AES3 card. The card features an XLR input port, an active XLR link port, and a Sample Rate Converter (SRC) — see illustration in section Front and rear panels (p.13).

The AES/EBU input port is an XLR female connector. The audio signals can come from a digital mixing desk or a digital audio network bridge compliant with the AES/EBU (AES3) or electrical S/PDIF (IEC 60958 Type II) digital audio standards. The AES/EBU input port is ESD protected and transformer balanced.

The AES/EBU link port is an XLR male connector transmitting the input signal to daisy-chained amplified controllers. It is ESD protected and transformer balanced.

The SRC embedded in the LA-AES3 board has been selected to support a wide range of input formats (16 - 24 bits / 44.1 - 192 kHz). It converts any of them to the 24 bits/96 kHz internal format used by the amplified controller. The SRC is a high-quality hardware component (140 dB dynamic range, THD+N < -120 dBFS, strong input jitter attenuation) and provides constant propagation delay regardless of the input sampling frequency. There is no external synchronization mode. The amplified controller's clock always runs using its high-precision internal quartz at 96 kHz. This ensures low jitter and high audio quality while preventing phase shift, as required for line source systems.

Digital domain benefits

Keeping the signal in the digital domain provides the following benefits (with any digital mixing desk or any audio network) compared to the analog signal distribution:
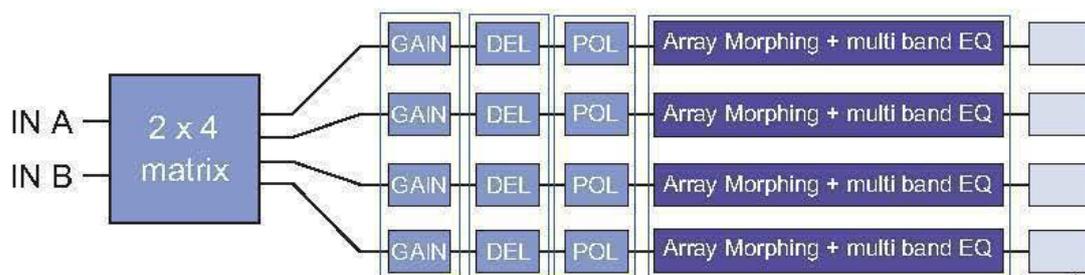
- Better audio quality by removing one D/A - A/D cycle.
- Optimized level chain by removing the risk of level misalignment between console and amplified controllers.
- Digital signal refreshed at each amplified controller in a daisy-chain.
- Improved maximum cable length. LA8 has been tested with up to 300 m / 984 ft of two models of AES/EBU rated cables (single cuts, digital source signal running at Fs = 48 kHz):
  - 1696A from BELDEN INC.
  - OT234H from KLOTZ communications GmbH.
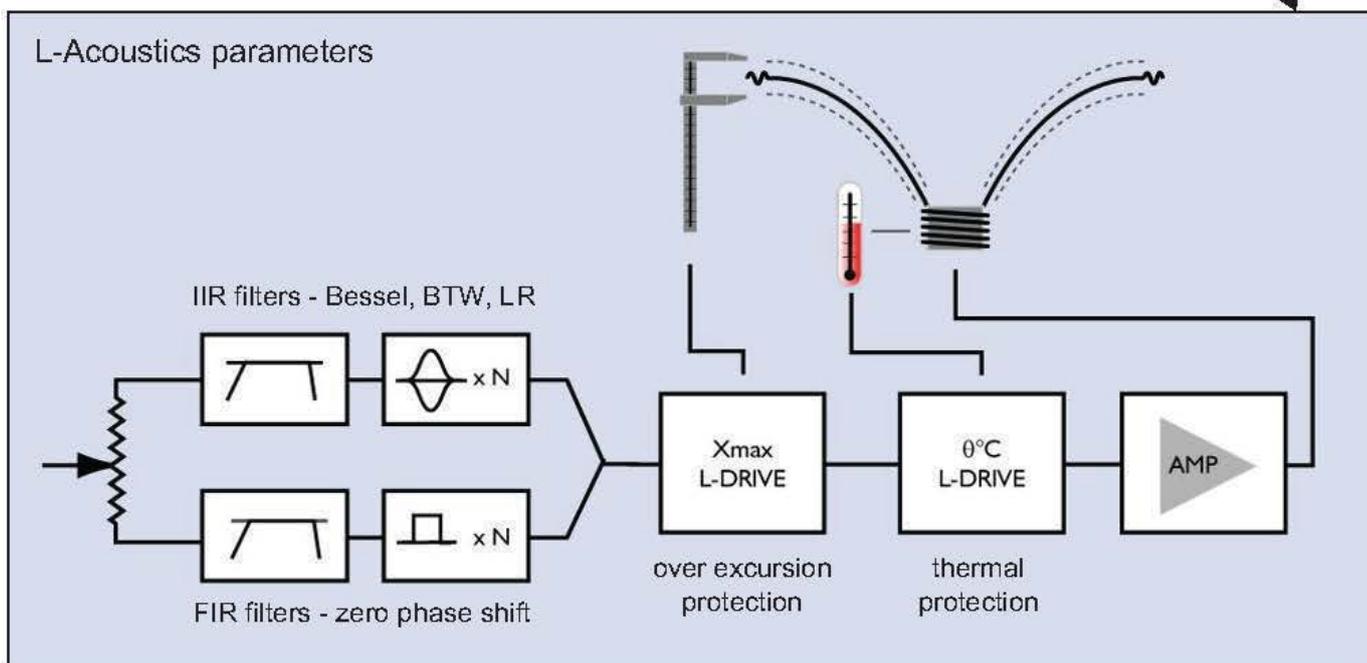
DSP architecture

The proprietary algorithms allow optimum performance and protection of each individual transducer of the L-Acoustics systems for an even more natural, transparent and realistic sound experience.

- The DSP engine is a 32-bit floating point DSP at 96 kHz sampling rate providing an enhanced dynamic range since it does not generate calculation clips like a fixed point DSP.
- A dedicated engineering approach combining IIR and FIR filters generates perfectly linearized phase curves and significantly improved impulse responses.
- The 2 × 4 matrix architecture offers flexibility for various system configurations.
- A delay of up to 680 ms can be set for each output channel.
- The L-DRIVE transducer protection system offers advanced protection by simultaneously monitoring the excursion and the temperature of the transducer.
- With a complete factory preset library and the possibility to create additional user presets, the flash memory provides a quick access to all the usual L-Acoustics speaker system configurations (refer to the **Preset Guide**).

audio path parameters

Power supply and amplifier section

The LA8 amplifier section uses a Class D technology supporting the very wide dynamic range found in live audio productions. The 4 channels can deliver up to 4 x 1800 watt into 4 or 2.7 ohm yielding perfect power matching to each individual L-Acoustics loudspeaker system.

The auto-sensing SMPS (Switched Mode Power Supply) offers better stability by associating two symmetrical power supplies.

Speaker outputs

LA8 features two 4-point speakON connectors and one 8-point connector for loudspeaker outputs.

Monitoring and control

User interface

The front panel user interface provides:

- Real-time monitoring functionalities via the LED display (signals presence and level) and the LCD screen (system parameters).
- Instant access to navigation and parameters control using the encoder wheel and the six keys.

See also illustration in section Front and rear panels (p.13).

i Refer to section Operation (p.28) for detailed operating instructions.

L-NET remote control network

The integration of the L-NET Ethernet-based network, with its high speed data transfer protocol of 100 Mbit/s, allows up to 253 amplified controllers to be controlled and monitored in real-time from LA Network Manager.

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.

The LA8 connects to the network via the two I/O Ethernet sockets located on its rear panel.

i Refer to the **LA Network Manager** Help for detailed operating instructions.

Inspection and preventive maintenance

How to do preventive maintenance

Inspect the product periodically as indicated, and after any corrective maintenance operation.

Structure and cleanness

Before and after each deployment (touring applications), or at least once a month (fixed installations):

- External structure (p.17)
- Cleanness (p.18)

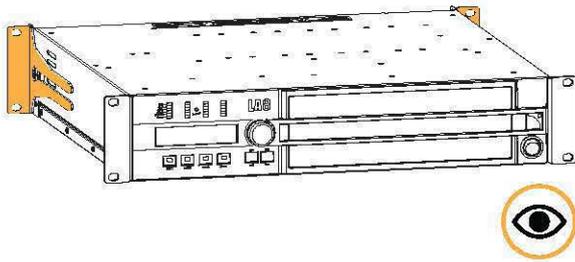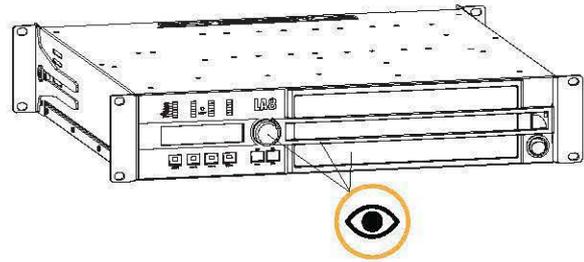### Functionalities

At least once a year:

- Normal start-up sequence (p.18)
- Network functionalities and firmware (p.18)
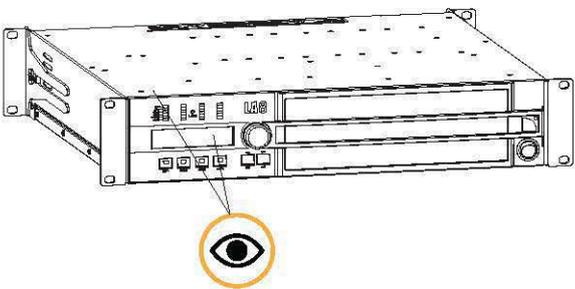
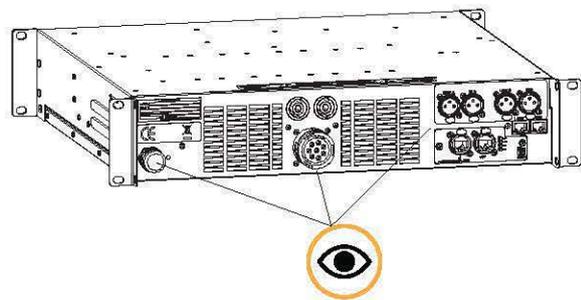## External structure

The indicates a visual inspection.

rear brackets are present and not damaged

encoder wheel, and grill and foam filter are present and not damaged

see also Cleanness (p.18)

chassis, LCD screen, and LEDs are not damaged

connectors and power cable are not damaged

Cleanness

Equipment

- air blower

Procedure

1. Disassemble the grill to clean the foam filter.
   Refer to the Front frame (p.63) procedure.
2. Clean the amplified controller through the front grill with an air blower.
3. Reassemble the foam filter and the grill.

Normal start-up sequence

Procedure

1. Plug the amplified controller to mains.
2. Power on 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 and CAT5e U/FTP cable

Procedure

1. Connect the controller to an Ethernet port of a computer running LA Network Manager.
   Use the CAT5e U/FTP 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 LA8 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.

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

Installation

Mounting

The LA8 is two rack units high (2U) and can be mounted in an EIA-standard 19" rack using the four points on the front panel. Use the fixing material provided by the rack manufacturer to mount the controller to the rack front rails.

LA8 dimensions
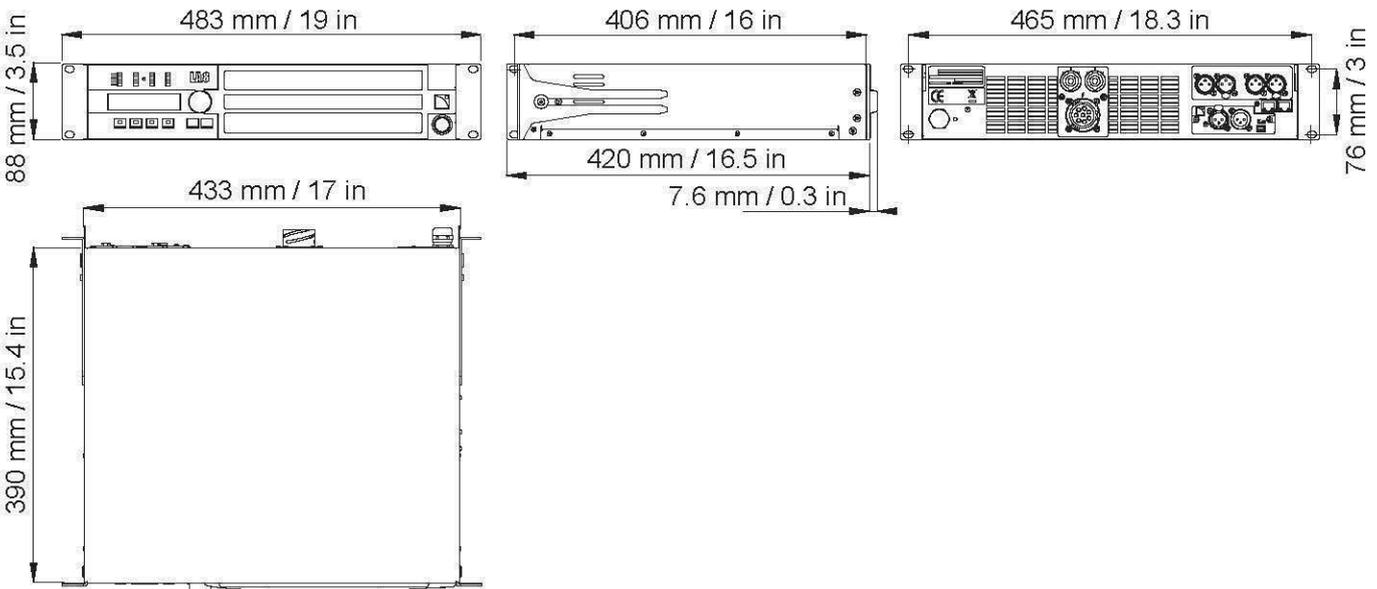
Risk of damaging the amplified controller during transport

During transport or while on tour 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 in portable applications without rear support is not covered by warranty.

LA8 with rear rack support brackets
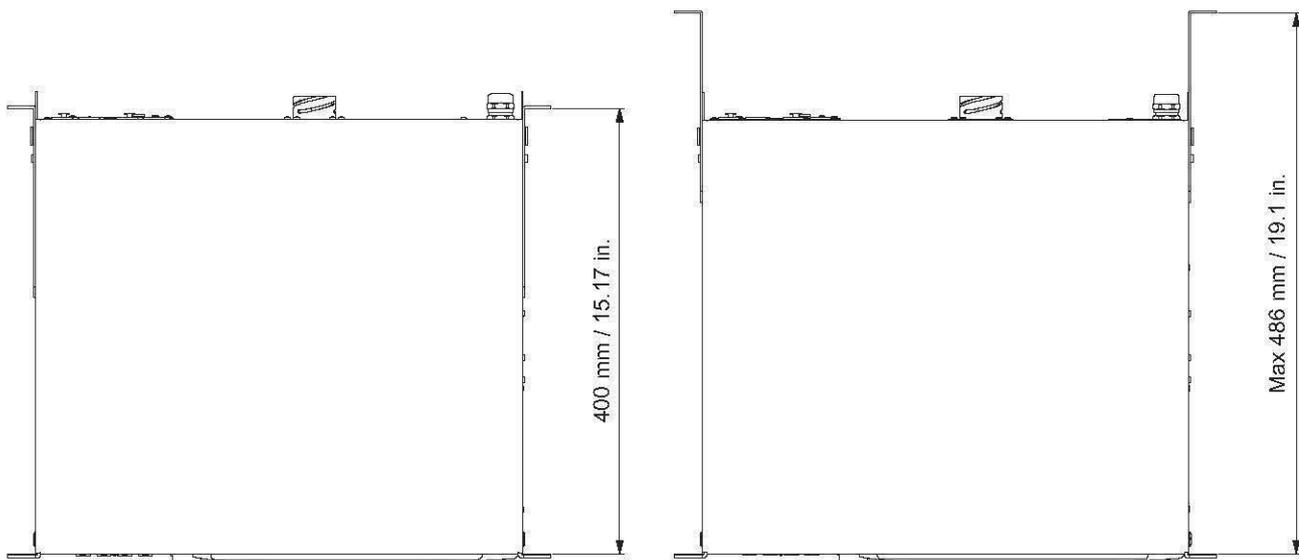
The LA-RAK touring rack is available for three LA8 with all power and signal connection facilities. Refer to the **LA-RAK** user manual.

Ventilation

To maintain moderate operating temperatures, the LA8 is equipped with fans and grills providing front to rear airflow.

⚠ Ventilation instructions

Ensure the front foam filter is clean and dirt free.

Do not block the front and rear ventilation grills.

Ventilation when rack-mounted

Do not block the ventilation grills with front or back panels or doors. If not possible, use a forced-ventilation system.

When stacking more than one controller in a rack, mount them directly on top of each other or close any open space in the rack with blank panels.

Connecting to AC mains

Electrical specifications

AC mains specifications

⚡ Only connect the LA8 (CE model), LA8US (US model), or LA8CN (China model) to an AC power outlet rated 230 V, 16 A, 50-60 Hz or 120 V, 30 A, 50-60 Hz.

Only connect the LA8JP (Japan model) to an AC power outlet rated 100 V, 30 A, 50 - 60 Hz or 200 V, 15 A, 50-60 Hz.

To plug the controller to mains only use an outlet fitted with a pin tied to ground.

Do not defeat the ground pin of the outlet as it connects the controller to earth. If the local outlet is obsolete, consult an electrician.

The following table gives the LA8 power data in nominal use (4 Ω, 1/8 of maximum output power. Refer to section Power consumption (p.21)).

voltage (V) *	frequency (Hz)	current (A)	power consumption (W)
120 / 230 (LA8, LA8US, LA8CN)	50 - 60	21 / 11	1500
100 / 200 (LA8JP)	50 - 60	25 / 13	1500

* If the mains voltage value increases up to more than 142 V, the amplified controller automatically switches to the 230 or 200 V mode.

If the mains voltage value decreases down to less than 132 V, the amplified controller automatically switches to the 120 or 100 V mode.

Three-phase circuit

⚡ 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.

Circuit breaker

ⓘ Always interconnect a thermal circuit breaker between the product and the mains.

The circuit breaker current rating depends on the mains voltage rating as follows:

16 A for 230 V or 30 A for 120 V (LA8, LA8US, LA8CN), 15 A for 200 V or 30 A for 100 V (LA8JP).

Planning the power of the electrical generator

⚡ Electrical generator

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

LA8 draws 16 A from 230 V.

A typical generator has a power factor of 0.8 and should operate at 70% load for good efficiency.

The kVA provision for one LA8 should therefore be:

(16 A × 230 V) / (0.8 × 70%) = 6.5 kVA

This calculation is an example using typical values. It can be adapted using the table in section Power consumption (p.21).

Power cord

The power cord plug and the wires color code depends on the cord type, as follows:

type	plug	live	neutral	ground
CE JP	CEE 7/7, 16 A / 250 V, grounded as selected by the distributor	brown	blue	green/yellow
CN	GB1002 GB2099	brown	blue	green
US	NEMA L5-30P, 30 A / 125 V, grounded	black	white	green

⚡ Strictly apply the specific safety regulations of the country of use.

Do not defeat the ground connection of the supplied power cord using an adaptor or any other methods.

If the power plug does not match the local power outlet, cut it off and wire a suitable plug.

Verify that the plug conforms to the specific voltage and current rating given in section Electrical specifications (p.20).

A new fixed power panel with larger gauge wiring is quite often required to connect the LA8US so as to meet the 30 A specification.

Power consumption

The LA8 power requirements depend on the load impedance and the signal level.

Mains input power and current draw (all channels driven)

Maximum output power	4 × 1800 W at 4 Ω	4 × 1100 W at 8 Ω
1/3 output power (-5dB)	22 A / 3100 W	15 A / 1950 W
1/8 output power (-9 dB)	11 A / 1500 W	10 A / 1300 W
Idle	0.5 A / 115 W	
Standby	< 0.1 A / 12 W	

Current values given for mains rated at 230 V. Multiply by:
- 2.3 for 100 V
- 2 for 120 V
- 1.15 for 200 V

If the voltage exceeds a ± 10% range, the maximum power is no longer guaranteed.

ℹ️ Output power references

A third (1/3) of the maximum output power corresponds to the worst case scenario of a program source using highly compressed music or pink noise with amplified controller driven to clip level.

An eighth (1/8) of the maximum output power corresponds to a loud music program with a small dynamic range and 9 dB of headroom (IEC standard power rating).