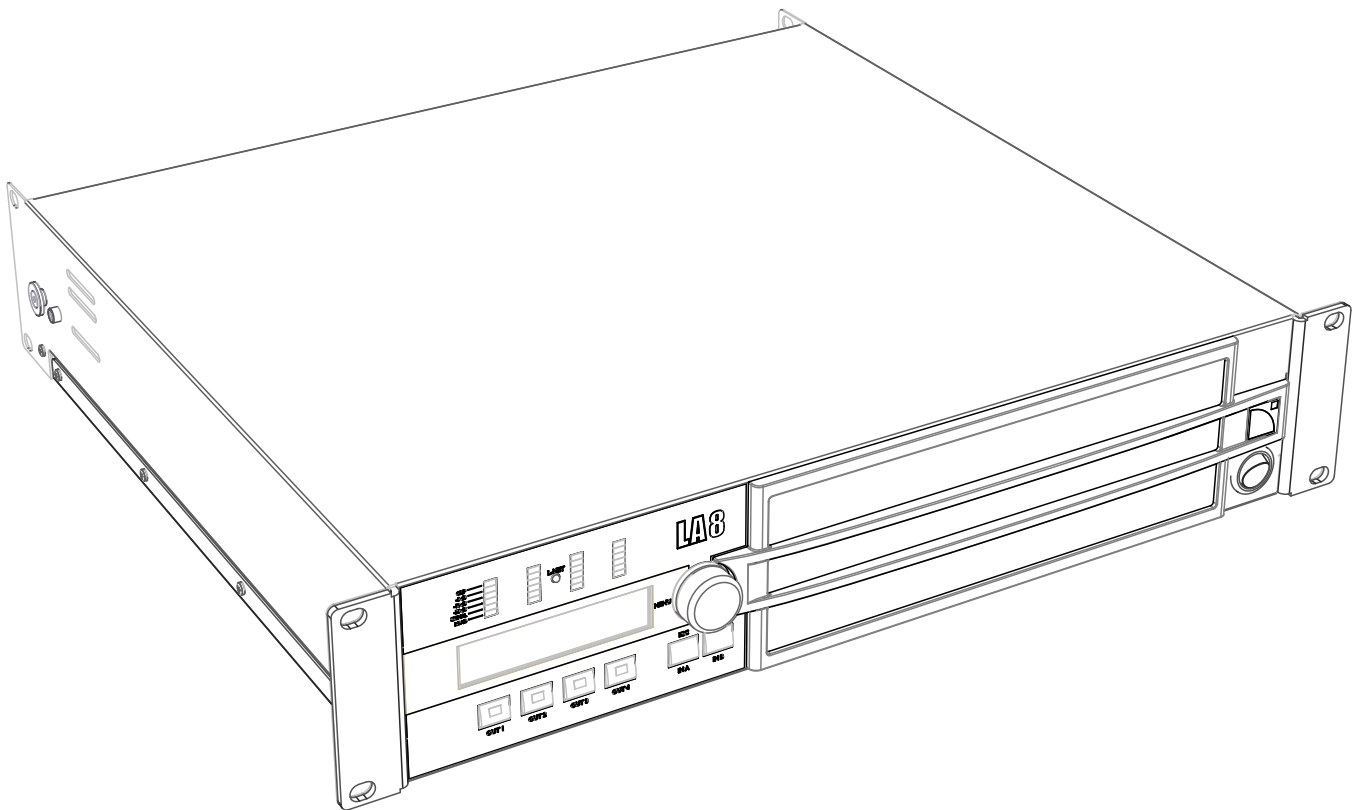


LA8



user manual (EN)



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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) or LA8US (US 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 or an LA8US 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 or LA8US), 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.

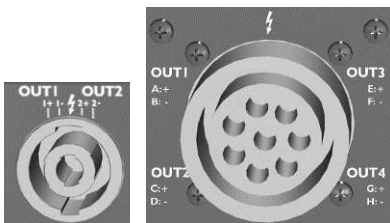
26. Shipping

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.

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.

Welcome

Thank you for purchasing the L-Acoustics LA8 amplified controller.

This document contains essential information on using the system properly.

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 document without prior notice. Please check www.l-acoustics.com on a regular basis to download the latest document and software updates.

Presentation

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 LA8 has the following characteristics:

- A 2U lightweight format for high amplified density.
- A four-channel high efficiency amplifier section fed by two inputs.
- A DSP section featuring advanced filter algorithms and an exclusive L-DRIVE protection system for the transducers allowing optimum system performance.
- An on-board preset library to cover all the principal L-Acoustics loudspeaker system configurations.
- An intuitive and ergonomic user interface, fully accessible from the front panel for standalone operation.
- Two I/O Ethernet ports for networking up to 253 units, remote-monitored by LA Network Manager (Windows and Mac compatible).
- The LA8 delivers up to 4 x 1800 watt into 4 or 2.7 ohm.
- An AES/EBU input card is integrated to the LA8 for digital audio implementation.
- The LA8 includes most current factory presets.
- The output connectors are CA-COM/speakON

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.

The factory preset libraries are derived from 6 basic system templates:

- 3-way active mono, quad-amplified
- cardioid subwoofer mono
- 2-way active stereo
- passive stereo
- hybrid active/subwoofer mono
- hybrid passive/subwoofer stereo

System components

A complete L-Acoustics system includes loudspeaker enclosures, amplified controllers, cables, rigging system, and software applications. The main components of an L-Acoustics system that includes LA8 are the following:

Loudspeaker enclosures



Refer to the user manuals 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
LA-RAK	touring rack containing three LA8, for power, audio and network distribution
L-CASE	2U Electronics transport and protection case

Loudspeaker cables



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

Software applications

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



Refer to the **LA Network Manager video tutorial**.

Illustrations



LA Network Manager



LA-RAK



L-Case

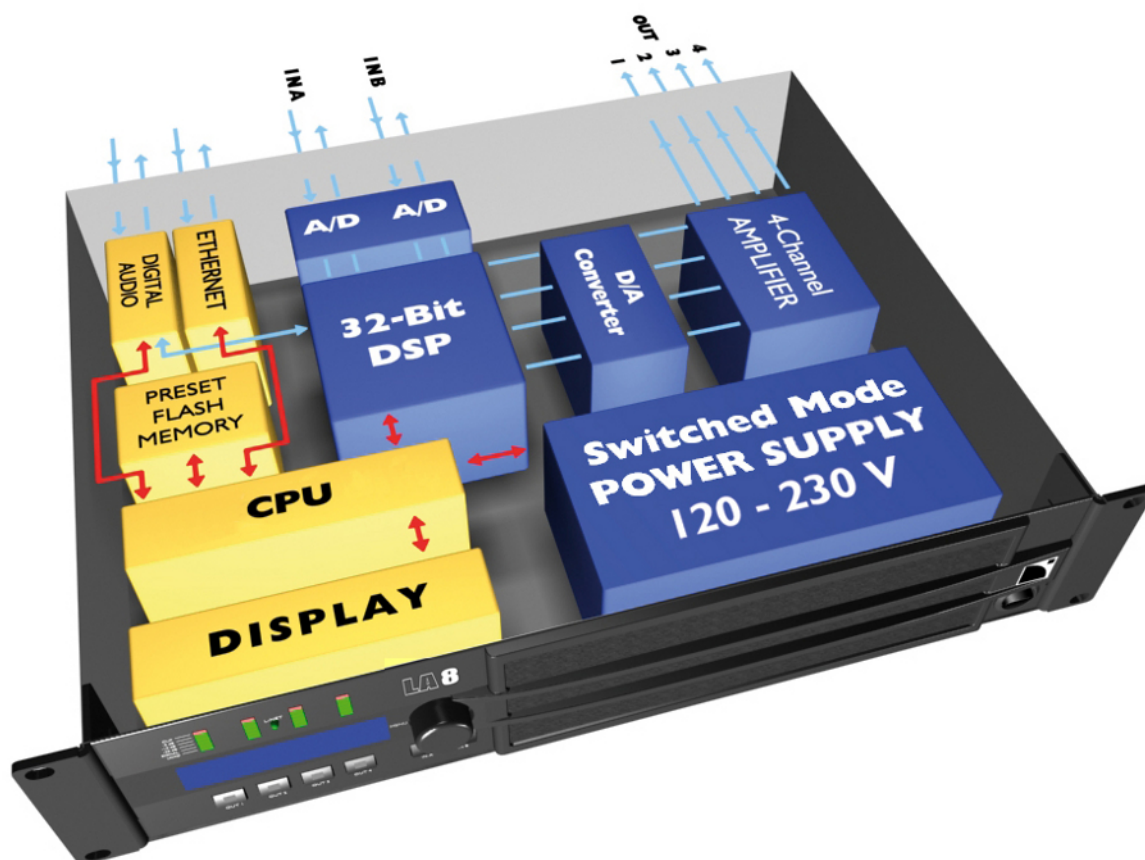
Technical description

Main features

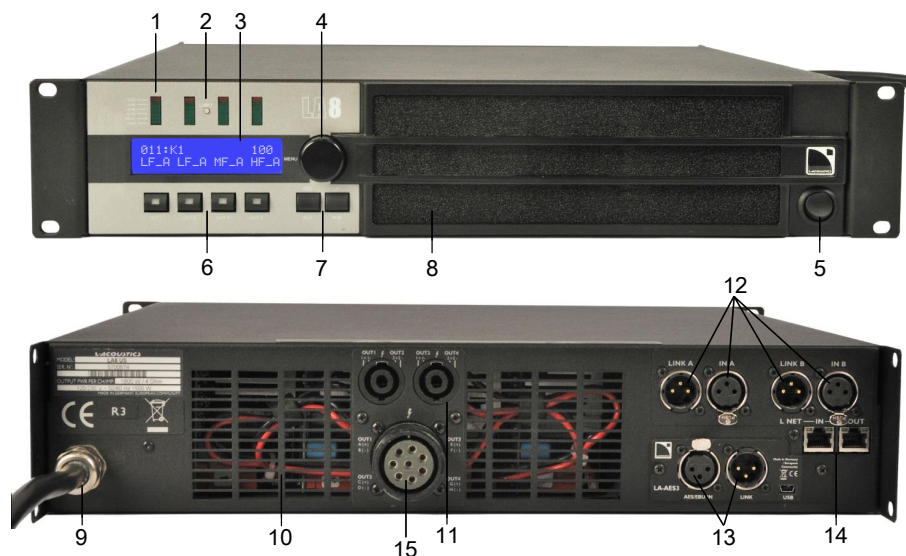
Internal components

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.

LA8simplified block diagram



Front and rear panels



- | | |
|---|--|
| <p>1 LED meters:</p> <ul style="list-style-type: none"> — CLIP level — audio levels (-5 dB, -10 dB and -25 dB) — SIGNAL presence — LOAD presence <p>2 L-NET network control LED</p> <p>3 2 x 20 characters LCD display</p> <p>4 navigation/edition encoder wheel</p> <p>5 power switch</p> <p>6 channel selection keys</p> <p>7 menu keys</p> <p>8 inward ventilation grill and foam filter</p> | <p>9 A/C power cord</p> <p>10 outward ventilation grills</p> <p>11 speakON output connectors</p> <p>12 XLR analog input/link connectors</p> <p>13 XLR AES/EBU input/link connectors</p> <p>14 etherCON L-NET network connectors</p> <p>15 CA-COM output connector</p> |
|---|--|

Signal processing

Signal inputs

Analog

The 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

The 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 will provide the following benefits (with any digital mixing desk or any audio network) compared to the analog signal distribution:

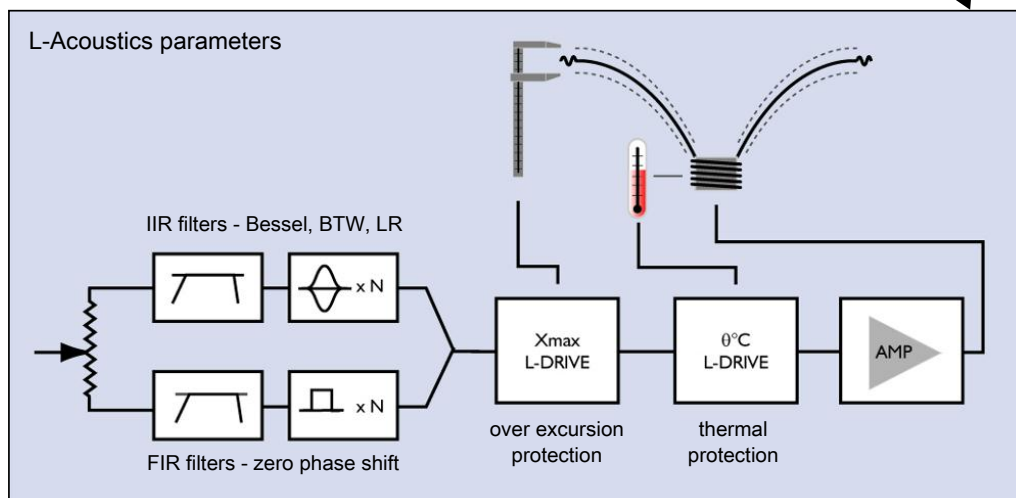
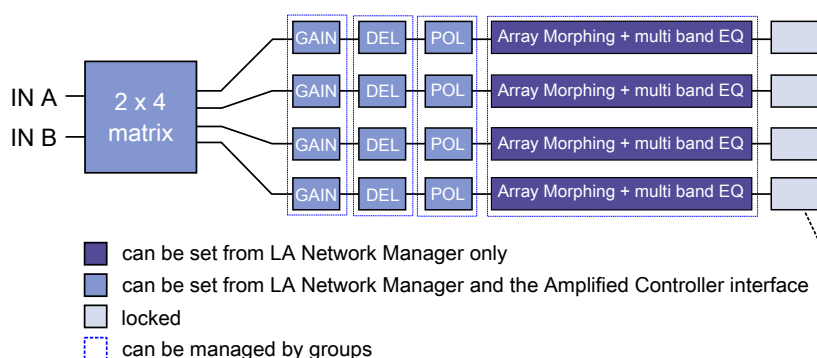
- Better audio quality by removing one D/A - A/D cycle
- Better dynamics thanks to the digital links' immunity to ground loops
- Optimized level chain by removing the risk of level misalignment between console and amplified controllers
- Digital signal refreshed at each amplified controller in a daisy-chain
- Improved maximum cable length. The LA8 has been tested with up to 305 m/1000 ft of 3 models of AES/EBU rated cables: 1696A from BELDEN INC., OT234H from KLOTZ communications GmbH, and SC-BINARY 234 from SOMMER CABLE GmbH (single cuts, digital source signal running at $F_s = 48$ kHz)

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 x 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

The LA8 features two 4-point speakON connectors and one 8-point CA-COM 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 for the two input and four output channels

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



Operating instructions

Refer to section [Operation](#) (p.35) 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.



Operating instructions

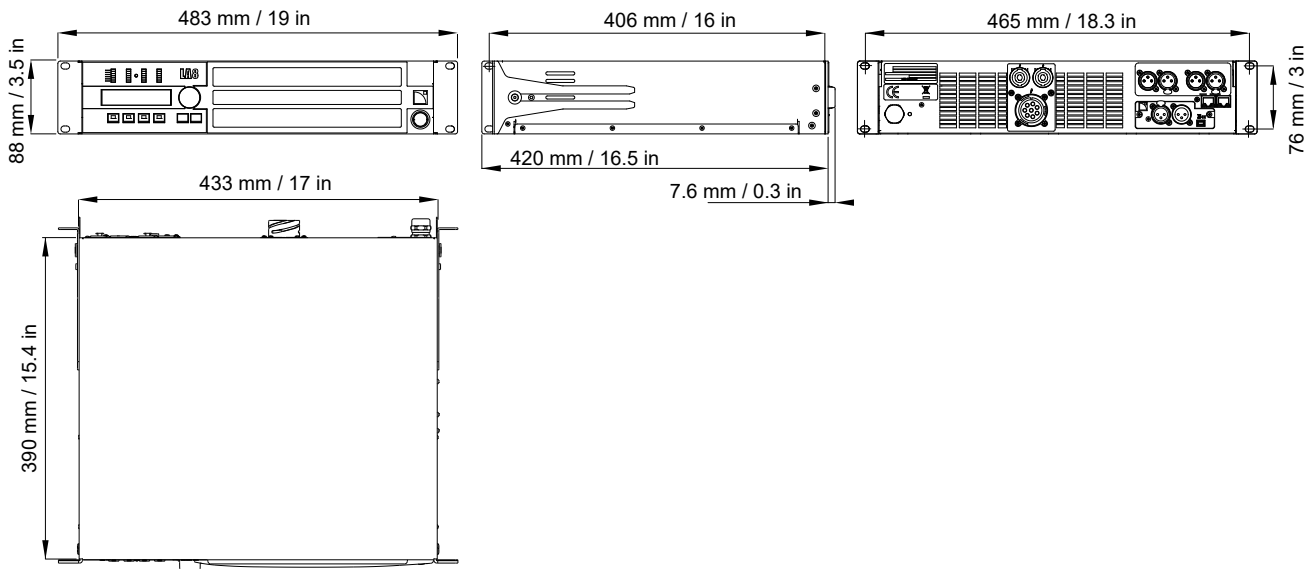
Refer to the **LA Network Manager video tutorial** for detailed operating instructions.

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



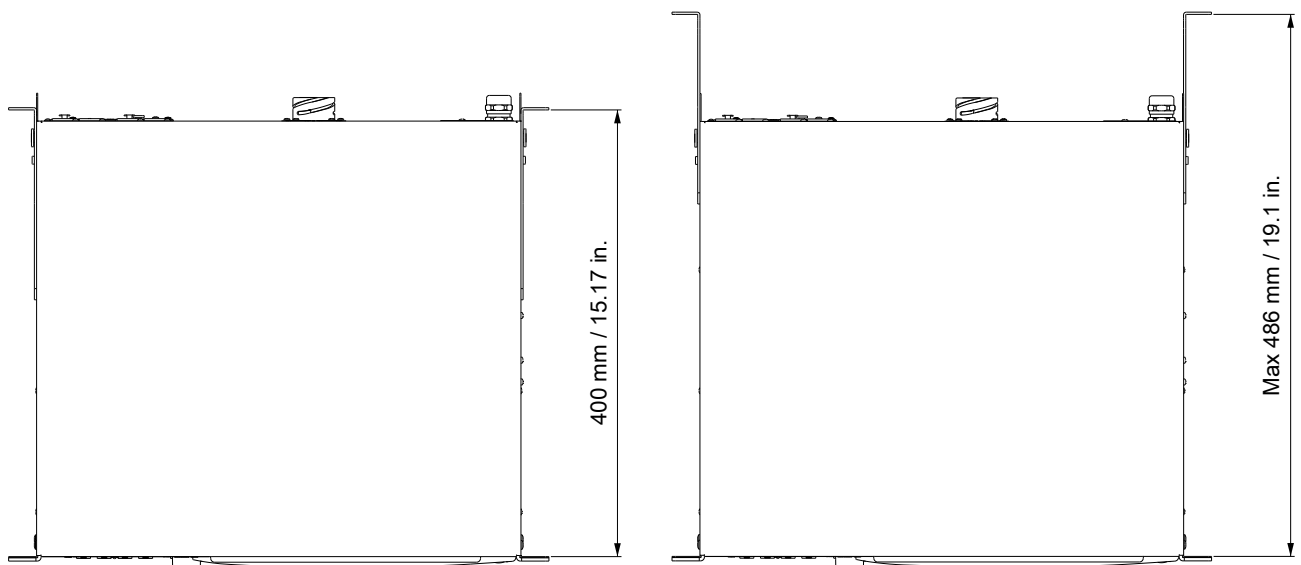
Risk of damaging the amplified controller during transport

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





LA-RAK touring rack

The L-Acoustics LA-RAK 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 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) or LA8US (US 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.20)).

Voltage (V) *	Frequency (Hz)	Current (A)	Power consumption (W)
120 / 230 (LA8, LA8US)	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 or LA8US), 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.

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

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:

$$(16 \text{ A} \times 230 \text{ V}) / (0.8 \times 70 \%) = 6.5 \text{ kVA}$$

This calculation is an example using typical values. It can be adapted using the table in section [Power consumption](#) (p.20).

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
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.19).

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 x 1800 W at 4 Ω	4 x 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.



Output power references

A third 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 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).

Heat power calculation

If a $4\ \Omega$ load is connected to each output channel of the LA8, each channel delivers up to 1800 W.

With a standard use at 1/8 of full power (9 dB headroom), the power delivered per channel is:

$1800 / 8 = 225\ \text{W}$, so a total power of $4 \times 225 = 900\ \text{W}$.

According to the table in section [Power consumption](#) (p.20), the LA8 power consumption is 1500 W. The heat power produced is then (difference between power consumption and output power):

$1500 - 900 = 600\ \text{W}$

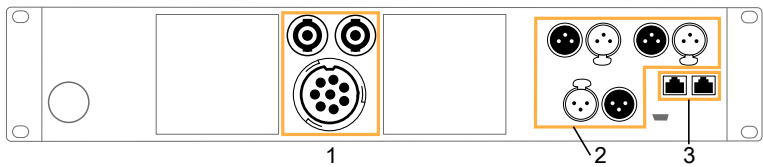
Audio and network cabling

Connection panels

The amplified controller's rear side features three panels for audio and network cabling:

- a speaker panel (1) to connect the loudspeakers
- a signal panel (2) to connect the analog and/or digital (AES/EBU or S/PDIF) audio sources and link the signals to another amplified controller
- an L-NET panel (3) to connect to a network and be remotely controlled by LA Network Manager

LA8 audio and network connection panels



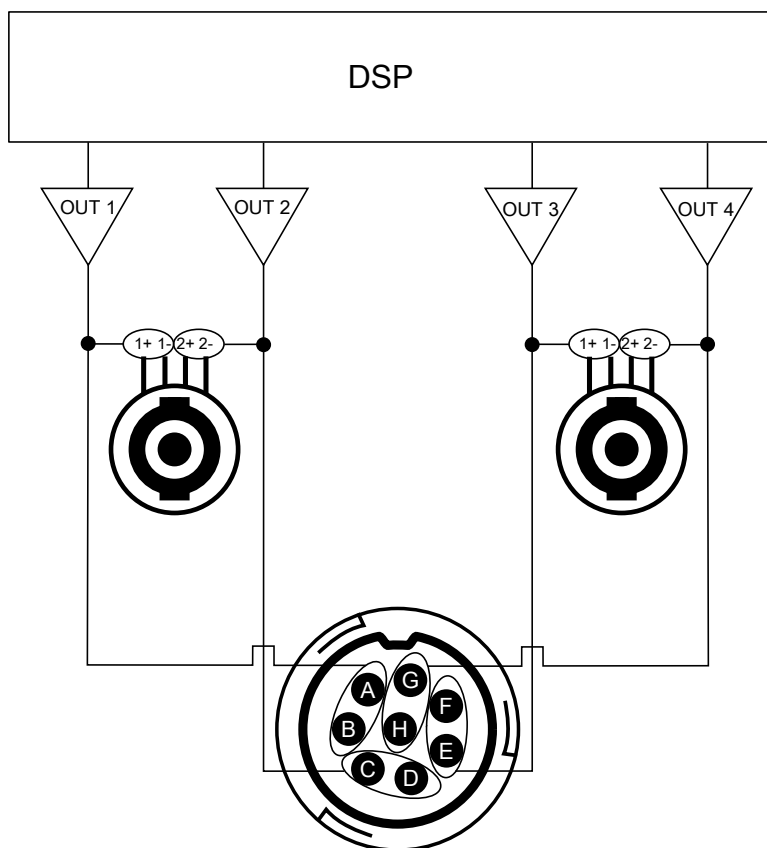
Speaker panel

The two 4-point SpeakON connectors and the 8-point CA-COM connector on the rear panel are for loudspeaker connection. They are wired as follows:

left SpeakON connector		right SpeakON connector	
Pin 1 +	Out 1 +	Pin 1 +	Out 3 +
Pin 1 -	Out 1 -	Pin 1 -	Out 3 -
Pin 2 +	Out 2 +	Pin 2 +	Out 4 +
Pin 2 -	Out 2 -	Pin 2 -	Out 4 -

CA-COM connector			
Pin A	Out 1 +	Pin E	Out 3 +
Pin B	Out 1 -	Pin F	Out 3 -
Pin C	Out 2 +	Pin G	Out 4 +
Pin D	Out 2 -	Pin H	Out 4 -

Output audio paths

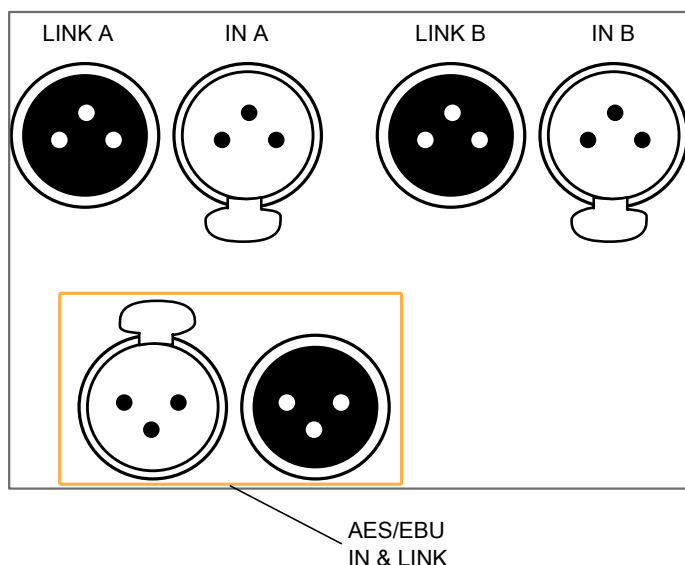


Signal panels

The six XLR connectors on the rear panel are for analog or digital signal cabling.

Two IN and two LINK connectors are for analog signals, and one IN and one LINK connectors are for AES/EBU signals.

LA8 signal panel

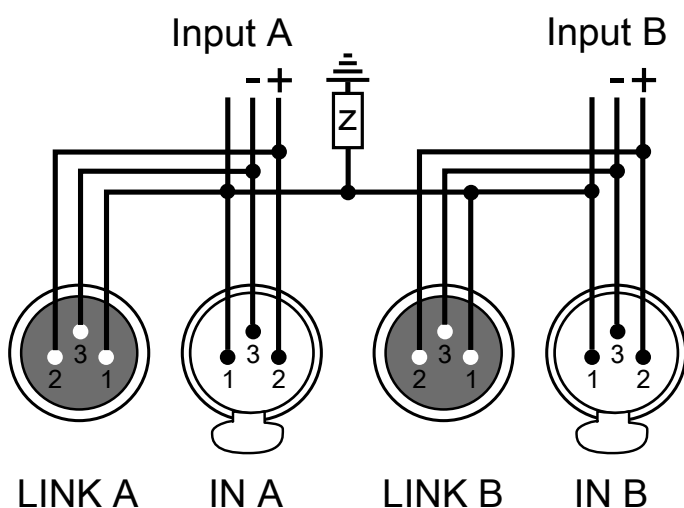


Analog input mode

The XLR connectors are wired according to IEC 60268-12:

- pin 1: shield
- pin 2: + signal
- pin 3: - signal

Analog input panel wiring



The female XLR input connectors IN A and IN B can receive two analog signals. The headroom of the input circuits is high enough to accept the maximum output level from virtually any line level signal source (up to 22 dBu).

Each LINK connector is passively wired in parallel to the corresponding IN channel. The input impedance is high enough (22 k Ω , balanced) to allow multiple parallel input connections.

AES/EBU input mode



Digital audio source specifications

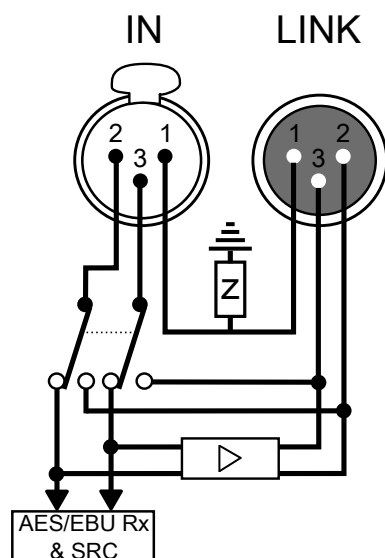
Standard: AES/EBU (AES3) or electrical S/PDIF (IEC 60958 Type II)

Sampling frequency: 44.1, 48, 64, 88.2, 96, 128, 176.4 or 192 kHz

Word length: 16, 18, 20 or 24 bits

The AES/EBU inputs are transformer balanced and their XLR connectors are wired according to IEC 60268-12.

Digital input panel wiring



The female XLR input connector can receive one digital signal. The input format is AES/EBU (AES3) or electrical S/PDIF (IEC 60958 Type II).

The link connector is electronically buffered to allow daisy-chaining any number of amplified controllers. It also features a failsafe relay to ensure wiring continuity in case of amplified controller shutdown.

L-NET panel

The two RJ45 I/O connectors are for the remote control of LA8 over an Ethernet network called L-NET using LA Network Manager.

Analog audio



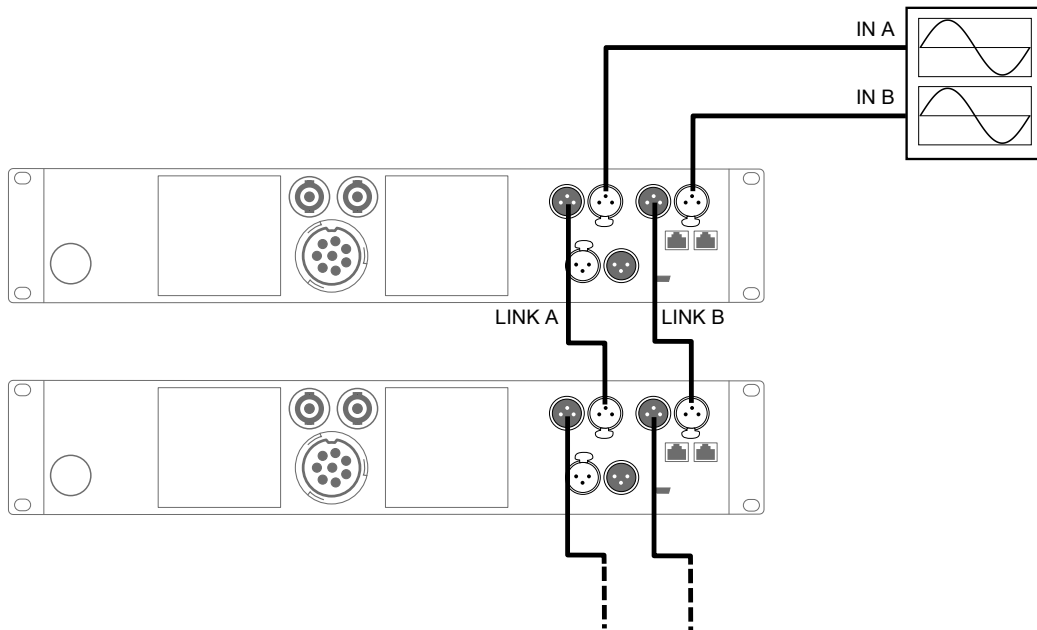
Balanced cables

Symmetrical (balanced) shielded cables are highly recommended as balanced signals are less sensitive to AC hum and radio interference.

Unbalanced lines may add noise especially over long cable runs.

In a daisy-chain layout, the male XLR link connectors LINK A and LINK B feed the input signals to the next amplified controller in the signal chain.

Daisy-chaining analog audio



Analog daisy-chain and LA4/LA8 with power off or in standby

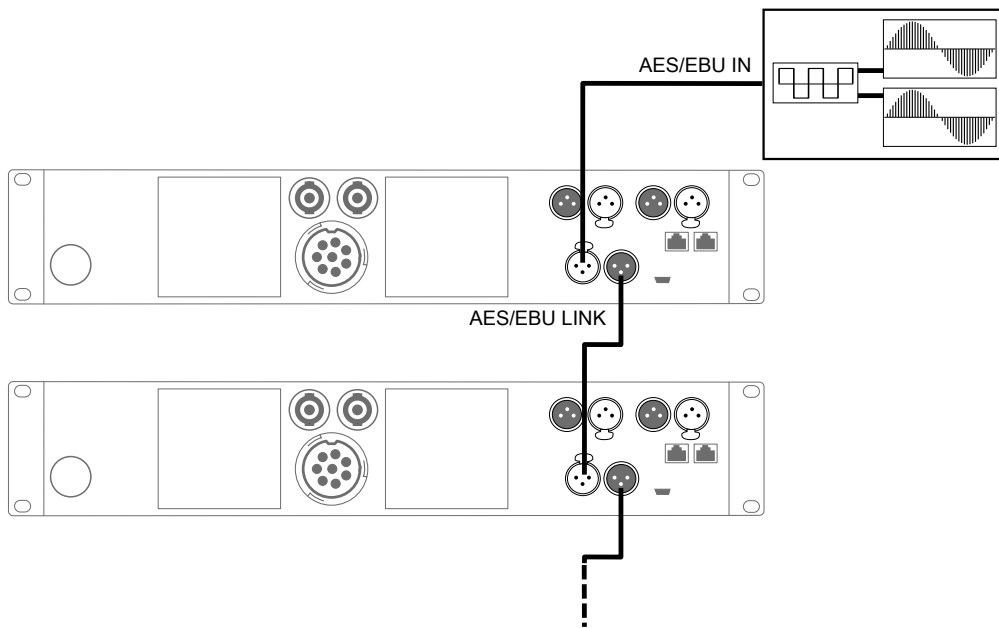
In an analog daisy-chain, LA4 and LA8 with power off or in standby cause sound distortion at high input levels to the other amplified controllers they are connected to.

Make sure all Units are powered on and in operating (not in standby) mode, or disconnect them from the daisy-chain.

Digital audio

In a daisy-chain layout, the male XLR link connector feed the input signals to the next amplified controller in the signal chain.

Daisy-chaining digital audio



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 short distances.

It is recommended to use single cuts of cable between AES/EBU outputs and inputs. Using several pieces reduces performances. If it is not possible to use single cuts, it is required to use the same model of cable between two AES/EBU interfaces.

In case an amplified controller shuts down, the failsafe relay makes a passive connection between the AES/EBU IN port and the LINK port to maintain continuity. However the signals are no longer refreshed for the next amplified controller, so that the input cable and the link cable must be considered as a unique input cable with regard to the maximum supported length.

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.

L-NET



Do not create loops in the network setup



LA4X and LA12X amplified controllers should always be placed before LA4 and LA8 amplified controllers in daisy-chain networks.

LA4 and LA8 amplified controllers are equipped with former generation 100 Mb/s Ethernet ports that cannot communicate with Ethernet ports of different capabilities, creating detection issues in LA Network Manager.



L-NET cables specifications

Connect the computer and the amplified controllers to the L-NET network using straight-through Ethernet cables of CAT5e U/FTP category (or higher) and of 100 m / 328 ft maximum length.

Exception: If the Auto MDI/MDIX functionality is not available on a switch used to build a star or hybrid topology, use a crossover cable between the switch and each controller.



Network and cable specifications

The L-NET network is rated at 100 Mbits/s.

A straight-through cable has pin 1 of one side connected to pin 1 of the other side, pin 2 to pin 2, etc. A crossover cable has pin pairs 1-2 and 3-6 crossed.

The type of a cable can be directly identified comparing the wire colors between its two RJ45 connectors. CAT5e U/FTP stands for a category 5, unshielded cable with foiled twisted pairs.

Using lower category cables or CAT5e "patch" cables will result in connection issues.

The maximum length for a typical CAT5e U/FTP cable is 100 m / 328 ft.

This value is indicative and can vary depending on the quality of the cable.

To connect LA8 to L-NET in a daisy-chain, star or hybrid topology, use the etherCON connectors on the L-NET panel.

Refer to the **LA Network Manager** video tutorial for network setup.

Speaker



There is a risk of damaging the speakers

The DO2W, DOFILL and DOSUB PA-COM cables are not compatible with the LA8.

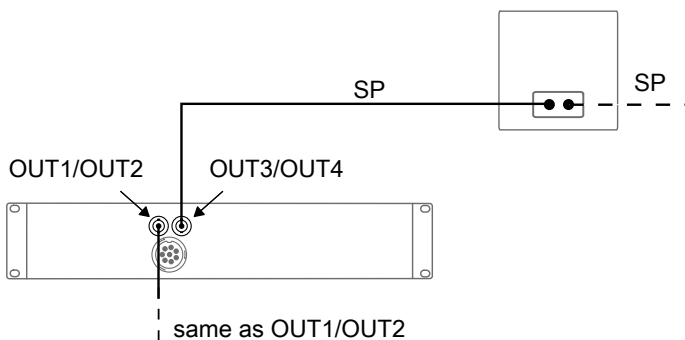
All other L-Acoustics PA-COM cables can be used.

Refer to the **LA8 PACOM CABLES technical bulletin** for more details.

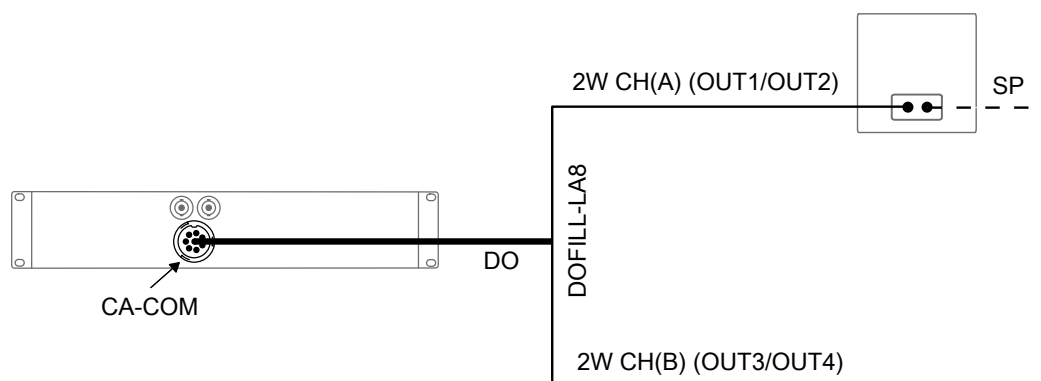
To connect an enclosure to the amplified controller, use the speakON or the CA-COM connectors.

Connecting 2-way active enclosures

SP on speakON output

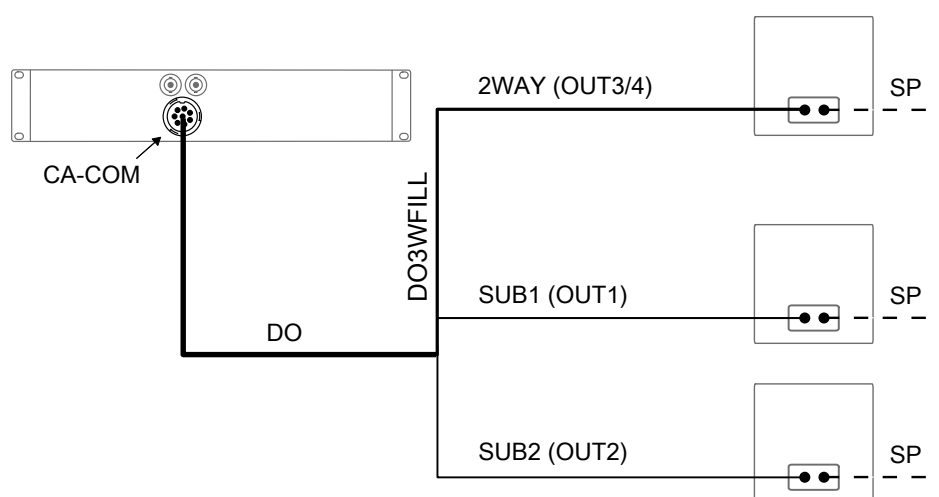


DO and DOFILL-LA8 on CA-COM output



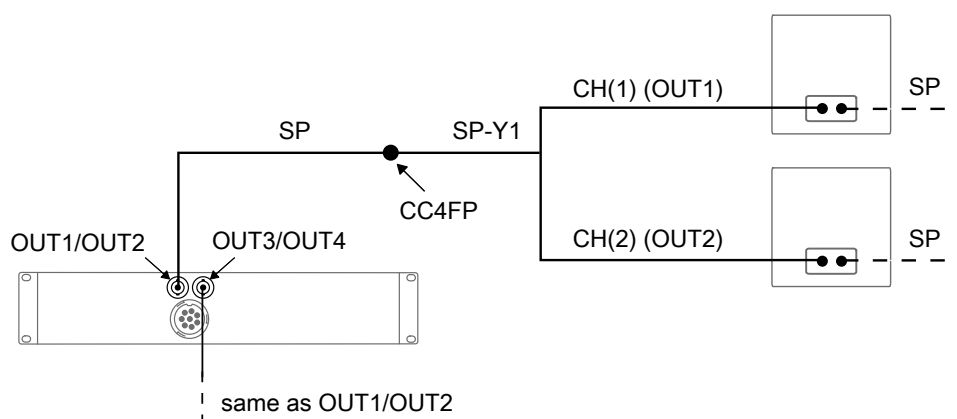
Connecting a 2-way active enclosure with subwoofers

DO and DO3WFILL on CA-COM output

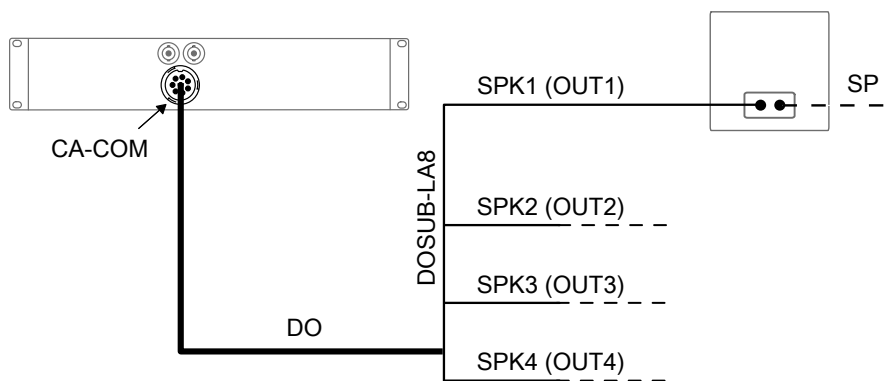


Connecting 2-way passive enclosures or subwoofers

SP and SP-Y1 on speakON output

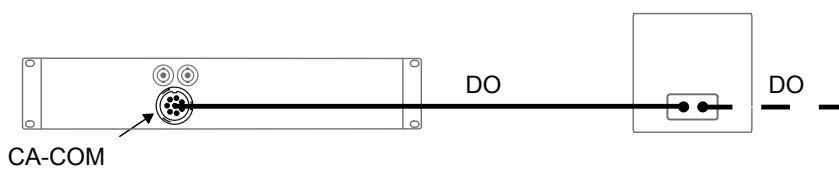


DO and DOSUB-LA8 on CA-COM output



Connecting 3-way active enclosures

DO on CA-COM output

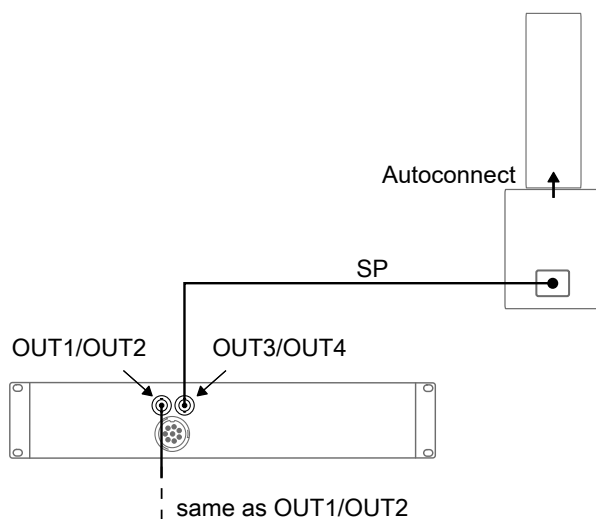


Connecting hybrid configurations

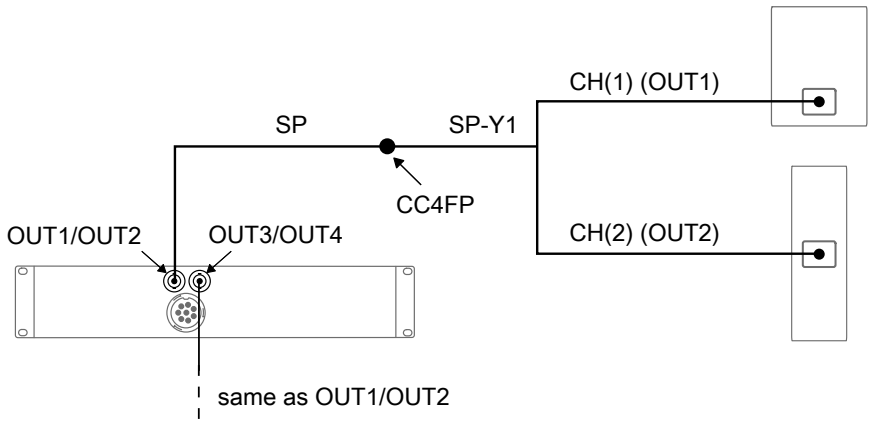


Refer to the Syva user manual for more information.

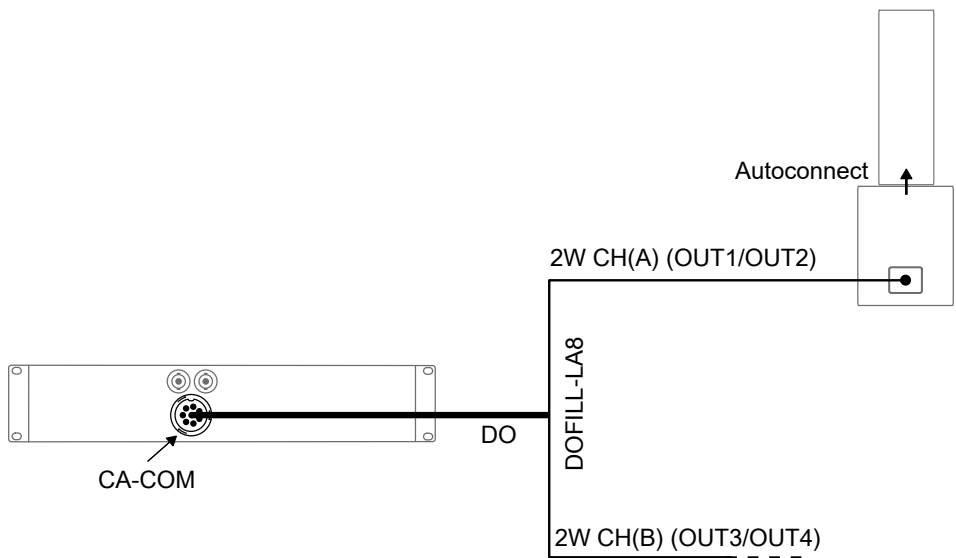
SP on speakON output



SP and SP-Y1 on speakON output



DO and DOFILL-LA8 on CA-COM output

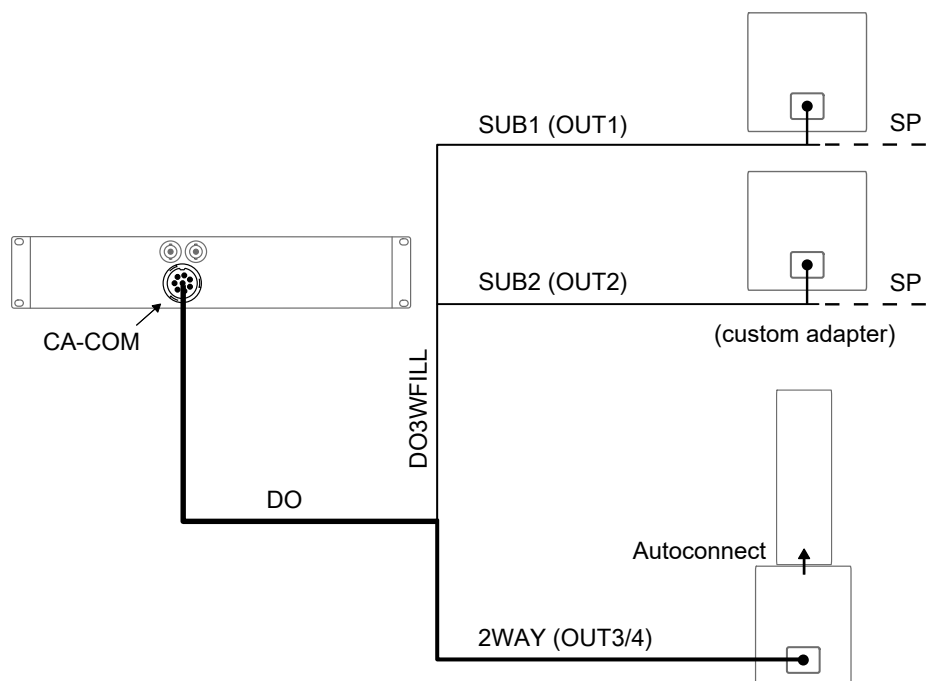


Connecting a hybrid configuration with subwoofers



Refer to the Syva user manual for more information.

DO and DO3WFILL on CA-COM output



Enclosure drive capacity per LA8

Make sure the total number of connected enclosures does not exceed the maximum number of enclosures per controller. LA8 can drive up to three X8 per output, but no more than eight per controller. LA8 can drive up to two SB15m per output, but no more than six per controller.

Maximum number of coaxial enclosures per LA8

Loudspeaker enclosure	Maximum number of connections per output*	Maximum number of enclosures per controller
5XT	6	24
X8	3	8
X12	2	8
X15 HiQ	2	4
8XT	3	12
Active 12XT	3	6
Passive 12XT	2	8
112XT	3	6
115XT	3	6
115XT HiQ	2	4
MTD108a	3	12
MTD112b	2	8
Active MTD115b	2	4
Passive MTD115b	2	8

Maximum number of constant curvature WST enclosures per LA8

Loudspeaker enclosure	Maximum number of connections per output*	Maximum number of enclosures per controller
ARCS Wide / ARCS Focus	2	8
ARCS II	2	4
ARCS	3	6

Maximum number of variable curvature WST enclosures per LA8

Loudspeaker enclosure	Maximum number of connections per output*	Maximum number of enclosures per controller
Kiva / Kilo	3	12
Kiva II	4	16
Kara	3	6
K2	3	3
K1	2	2
K1-SB	1	4
Kudo	3	3
V-DOSC	2	2
dV-DOSC	3	6

Maximum number of colinear sources per LA8

Loudspeaker enclosure	Maximum number of connections per output*	Maximum number of enclosures per controller
Syva	2	8

Maximum number of subwoofer enclosures per LA8

Loudspeaker enclosure	Maximum number of connections per output*	Maximum number of enclosures per controller
SB15m	2	6
SB18	2	8
SB28	1	4
SB118	2	8
SB218	1	4
Syva Low	1	4
Syva Sub	2	8
dV-SUB	1	4

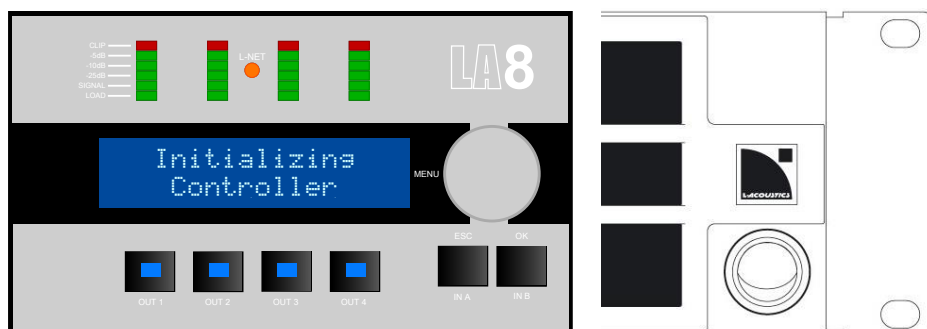
* For passive loudspeakers, the value corresponds to the number of enclosures in parallel on the output. For active loudspeakers, the value corresponds to the number of sections in parallel on the output.

Operation

Powering on

Press the power switch up.

The amplified controller goes through a 9 seconds start-up sequence displaying **Initializing Controller**. All LEDs lit for test.

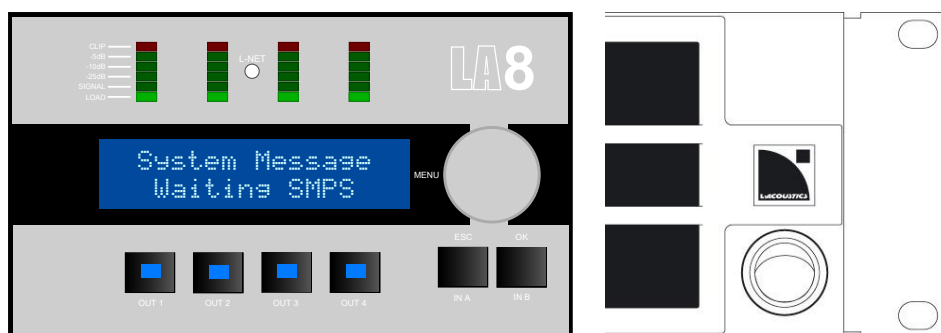


The amplified controller is ready for use when the main screen is displayed. Refer to section [Main screen description](#) (p.38).

Powering off

Press the power switch down.

The amplified controller goes through a shutdown sequence displaying **Waiting SMPS** and lighting the four LOAD LED.



Powering off the amplified controller does not disconnect it from mains.



Power loss

If power is lost, the amplified controller shuts down, but all parameters are restored when the amplified controller switches on again.

Setting to standby mode

To reduce the electrical consumption, the amplified controller can be put in standby mode.

Use LA Network Manager to set the amplified controller to standby or back to operating mode. Refer to the **LA Network Manager** video tutorial.

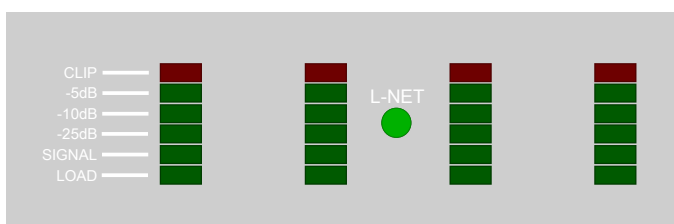
An amplified controller in standby mode displays **Standby mode**.

Standby mode can also be cancelled from the amplified controller front panel by pushing and holding the encoder wheel for one second.

Interpreting the front panel LEDs

L-NET

The L-NET LED on the front panel displays the L-NET status.

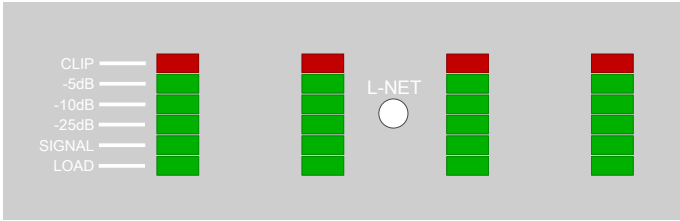


- green: when the LA8 is remotely controlled by software such as LA Network Manager (refer to the **LA Network Manager** video tutorial).
- off: when no software remotely controls the amplified controller.

The front panel commands remain accessible when the L-NET LED is lit.

Meters

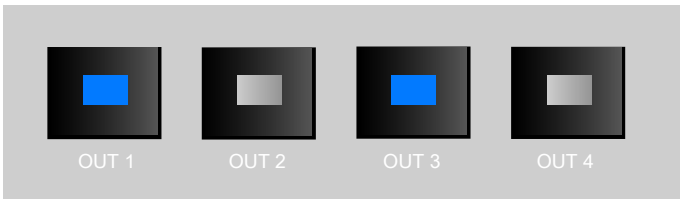
The four LED meters (six LEDs each) display the state of the corresponding output channel.



CLIP	red: the output voltage reaches the maximum level (signal clip)
-5dB	green: the output voltage reaches 5, 10 or 25 dB below the maximum level
-10dB	
-25dB	
SIGNAL	green: a signal is detected and the output voltage reaches 0.1 V
LOAD	green: a load is connected and the output module delivers a minimum of 0.8 A

OUT

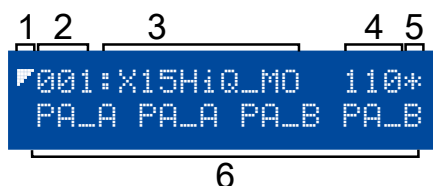
The four OUT LEDs on the front panel display the mute status.



- blue: when the corresponding output channel is muted
- off: when the corresponding output channel is unmuted

Main screen description

The amplified controller displays the main screen at the end of the startup sequence.



1. **low latency symbol:** indicates loaded preset is a low latency preset (refer to the **LA Network Manager** video tutorial)
2. **preset memory number (001 to 255):** memory space containing the current preset. The preset can be a user preset or come from the on-board preset library — refer to section [LOAD PST](#) (p.44)
3. **preset name:** as in the on-board preset library or as entered by the user (if stored in a user preset)
4. **last number of the IP address (1 to 254):** identifies the controller within the L-NET network — refer to section [NETWORK ADDRESS](#) (p.56)
5. **star sign:** indicates unsaved changes in the preset parameters — refer to section [STORE PRESET](#) (p.46)
6. **output name and input selection:** placed above the corresponding output key, written in the **xx_y** form, where:
 - **xx** indicates the type of transducer section or enclosure to be connected to the output channel:
 - LF:** low frequency transducer section, part of a 2 or 3-way loudspeaker enclosure
 - MF:** mid frequency transducer section, part of a 3-way loudspeaker enclosure
 - HF:** high frequency transducer section, part of a 2 or 3-way loudspeaker enclosure
 - PA:** passive loudspeaker enclosure
 - SB:** subwoofer enclosure with the front face towards the audience
 - SR:** subwoofer enclosure with the front face in the opposite direction from the audience (in a cardioid configuration)
 - **y** indicates the input selection of the output channel (input channel or input channels combination selected to drive the output channel) — refer to section [PRESET PARAMETERS](#) (p.47):
 - A:** IN A
 - B:** IN B
 - +:** sum of IN A and IN B (A+B)
 - :** difference between IN A and IN B (A-B)

Using quick access functions

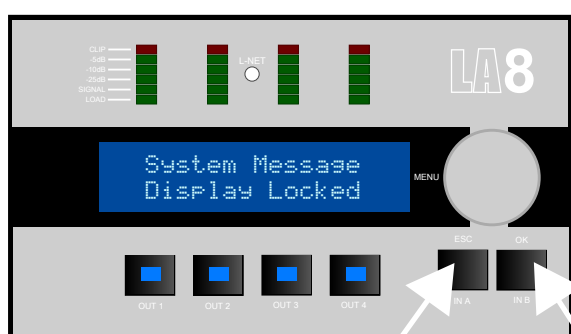
Quick access functions are available directly from the main screen. Quick access functions include:

- [Locking/Unlocking the front panel](#) (p.39)
- [Muting/Unmuting an output channel](#) (p.39)
- [Modifying gain](#) (p.40)
- [Identifying an amplified controller](#) (p.41)
- [Displaying input level, input selection, input mode and group information](#) (p.41)

Locking/Unlocking the front panel

The front panel can be locked to prevent unintentional operations.

- To lock: press and hold simultaneously the ESC and OK keys until **Display Locked** is displayed.
- To unlock: press and hold simultaneously the ESC and OK keys until **Display Unlocked** is displayed



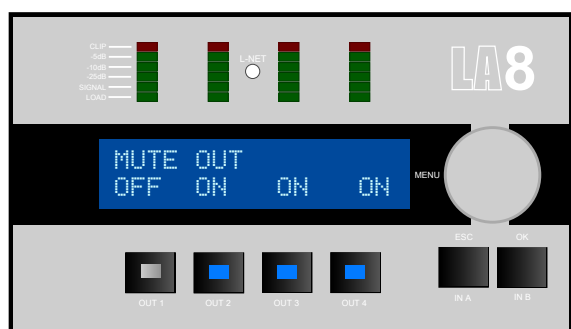
Muting/Unmuting an output channel

By default, all output channels are muted in all factory presets (the OUT LEDs are lit).

- To unmute an output channel: press the corresponding OUT key for less than 0.3 seconds.
- To mute an output channel: press the corresponding OUT key for less than 0.3 seconds.

The screen displays **MUTE OUT** and the mute status of each output channel for 2 seconds.

Example: unmuting OUT1



Gain can be set before unmuting.

Modifying gain

About this task

Gain can be modified for sets of output channels having input channels in common in their input selections.

Examples of output channels having input channels in common:

```

INPUT SELECTION  ↔
A      B      A+B  A-B

```

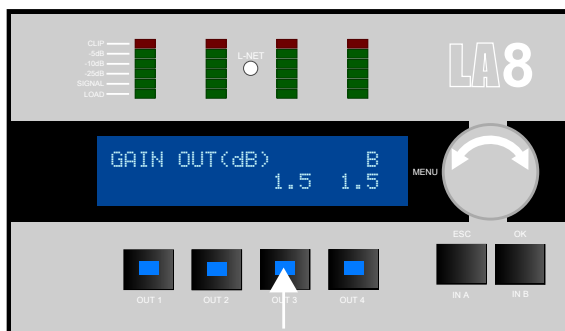
- The OUT1 key displays gain for OUT1, OUT3 and OUT4 (containing IN A)
- The OUT2 key displays gain for OUT2, OUT3 and OUT4 (containing IN B)
- The OUT3 and OUT4 keys display all channels (containing IN A and/or IN B)

For individual gain settings, refer to section [PRESET PARAMETERS](#) (p.47).

Procedure

1. Press and hold the OUT key of the corresponding output channel.
The screen displays the gain values of all the output channels having an input channel in common.

Example with OUT3 displaying OUT3 and OUT4 (IN B)



2. Turn the encoder wheel to modify the gain values.



Turn the encoder wheel to modify gain by steps of 0.1 dB, or
Press and turn simultaneously the encoder wheel to modify gain by steps of 1 dB.

3. Release the OUT key to return to the main screen.

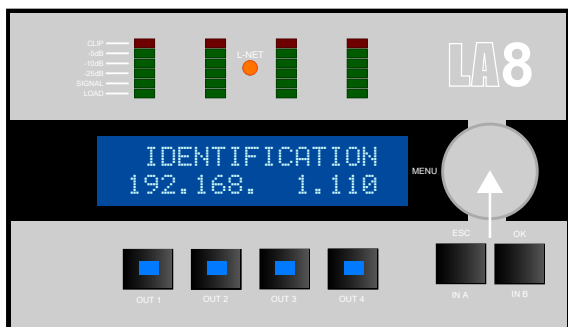
Identifying an amplified controller

If the amplified controller is connected to the L-NET network, it can be identified among other amplified controllers on the Workspace of LA Network Manager (refer to the **LA Network Manager** video tutorial).

To identify an amplified controller, press and hold the encoder wheel.

On the Workspace of LA Network Manager, the amplified controller blinks in yellow.

On the amplified controller, the L-NET and OUT LEDs flashes and the screen displays **IDENTIFICATION** and the complete IP.



Displaying input level, input selection, input mode and group information

Press and hold the ESC or the OK key to display information about the input level, the input selection, the input mode and the group(s) the amplified controller is assigned to.

- The LED meters and the first line of the screen display information about input channels IN A and IN B respectively from left to right:
 - The SIGNAL to CLIP LEDs (1) indicate the level of the signal of the corresponding input channel.



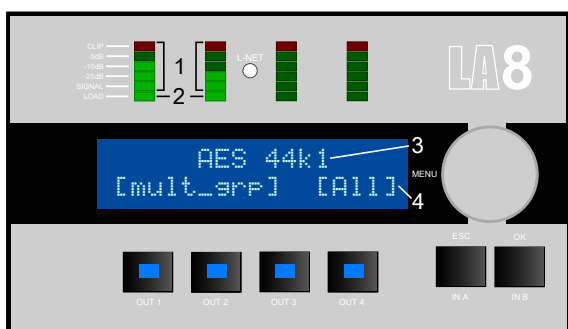
Input voltage values

The SIGNAL LED is lit when the input voltage reaches -38 dBu (analog audio source) or -60 dBFS (digital audio source).

The CLIP LED is lit when the input voltage reaches +22 dBu (analog audio source) or -0.1 dBFS (digital audio source).

Reminder: -38 dBu = 10 mV, 22 dBu = 9.8 V.

- The LOAD LED (2) is lit if the corresponding input channel is part of the input selection of at least one output channel.
- The first line of the LCD screen (3) indicates the input mode and status of input channel pairs AB.
- The second line of the screen indicates the group names (if any) of output channels OUT1, OUT2, OUT3 and OUT4 respectively from left to right — refer to section [CLEAR GRP PARAMS](#) (p.49). In case of multiple group assignments, the screen displays **mult_grp**.



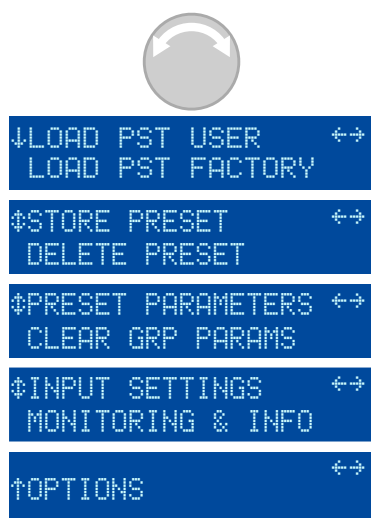
For example, in the illustration:

- The signal of channel IN A has a level of -10 dB and the signal of channel IN B has a level of -20 dB (1)
- Channels IN A and IN B are selected (2)

- The IN A/IN B pair receives an AES/EBU signal of 44.1 kHz (3)
- Channels OUT1 and OUT2 are assigned to the same set of groups, OUT3 is not assigned to any group, and OUT4 is assigned to group **All** (4)

Using the main menu

The main menu gives access to functions and submenus.



Vertical arrows on the left indicate the current position in the menu:

- ↓ indicates the page is the first in the menu. Turn the encoder wheel clockwise to display the other pages
- ⌘ indicates the page is between the first and last in the menu. Turn the encoder wheel clockwise or counterclockwise to display the other pages
- ↑ indicates the page is the last in the menu. Turn the encoder wheel counterclockwise to display the other pages



Horizontal arrows on the right indicate the availability of submenus:

- ↔ indicates a submenu is available. Press the OK key or the encoder wheel to access it
- ⌘ indicates no submenu is available

Procedure

1. From the main screen, press and release the encoder wheel.
2. Turn the encoder wheel to select the page.
A page is selected when it is displayed on the first line of the screen.
3. Press the OK key or the encoder wheel to enter the page.
To return to the main screen, press the ESC key.

Main menu pages

Page	Functionalities	Reference
LOAD PST USER	load a user preset (from memories 1 to 10)	LOAD PST (p.44)
LOAD PST FACTORY	load a factory preset (from memories 11 to 199)	
STORE PRESET	save the current preset (including current settings) as a user preset (in a memory from 1 to 10)	STORE PRESET (p.46)
DELETE PRESET	delete a user preset (in memory from 1 to 10)	DELETE PRESET (p.47)
PRESET PARAMETERS	set parameters for gain, delay, polarity and input selection	PRESET PARAMETERS (p.47)
CLEAR GRP PARAMS	remove the group parameters defined in LA Network Manager (name, gain, delay, and Contour EQ)	CLEAR GRP PARAMS (p.49)
INPUT SETTINGS	set the input mode, fallback mode and AES/EBU gain	INPUT SETTINGS (p.50)
MONITORING & INFO	display real-time measured values: RMS output voltage and output temperature (in percentage of the maximum values) display firmware and preset library versions and amplified controller's MAC address	MONITORING & INFO (p.54)
OPTIONS	set the amplified controller's IP address, delay unit, screen contrast reset all parameters to factory settings	OPTIONS (p.55)



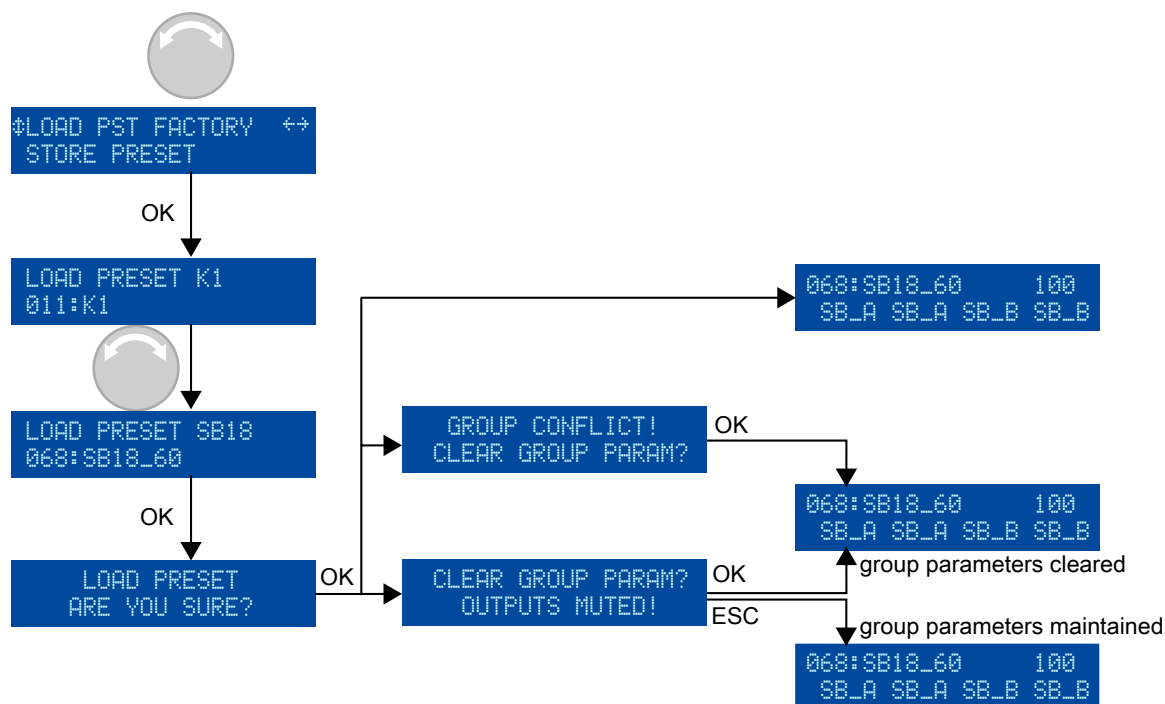
All parameters can also be selected from LA Network Manager. Refer to the **LA Network Manager** video tutorial.

LOAD PST

A preset can be loaded from two pages:

Page	Memory range	Contents
LOAD PST USER	1 to 10 (read and write)	User presets stored by user — refer to STORE PRESET (p.46)
LOAD PST FACTORY	11 to 199 (read only)	Factory preset library created by L-Acoustics and automatically installed during firmware update (refer to the LA Network Manager video tutorial)

Example with a factory preset



Procedure

1. From the main menu, select **LOAD PST USER** or **LOAD PST FACTORY**.



When selecting **LOAD PRESET USER**, the amplified controller displays **NO PRESETS AVAILABLE!** when all user memories are empty.
Press the ESC key to cancel.

2. Turn the encoder wheel and select the preset.

The first line displays **LOAD PRESET** and the preset family name to help make a coarse selection.

The second line displays the preset name to select within a family.



If a user preset has a customized name, press and hold the encoder wheel to display the original name — refer to section [STORE PRESET](#) (p.46).

3. Press the OK key to load the selected preset.

The amplified controller displays **ARE YOU SURE?**

4. Press the OK key or the encoder wheel to validate (or press the ESC key to cancel).

- The amplified controller displays **CLEAR GROUP PARAM? OUTPUTS MUTED!** when it is assigned to groups and is no longer connected to the L-NET network.

Either press the OK key to load the preset while clearing the group parameters

Or press the ESC key to load the preset while maintaining the group parameters

- The amplified controller displays **GROUP CONFLICT! CLEAR GROUP PARAM?** when it is assigned to groups and there is a group conflict. Loading the preset is only possible while clearing the group parameters.

Either press the OK key to load the preset while clearing group parameters

Or press the ESC key twice to cancel

- The amplified controller displays **GROUP CONFLICT! CANNOT LOAD PRESET!** when it is assigned to groups and there is a group conflict, but it is not possible to clear the group parameters as the amplified controller is connected to the L-NET network.

Press the ESC key twice to cancel.



Possible group conflicts:

The output channels are assigned to groups and the assignation structure is not compatible with the channel sets of the preset to be loaded.

Group parameters include enabled FIR filters (Zoom Factor, FIR1, FIR2, FIR3 or Air Absorption Compensation) and the preset to be loaded is a low latency preset.

STORE PRESET

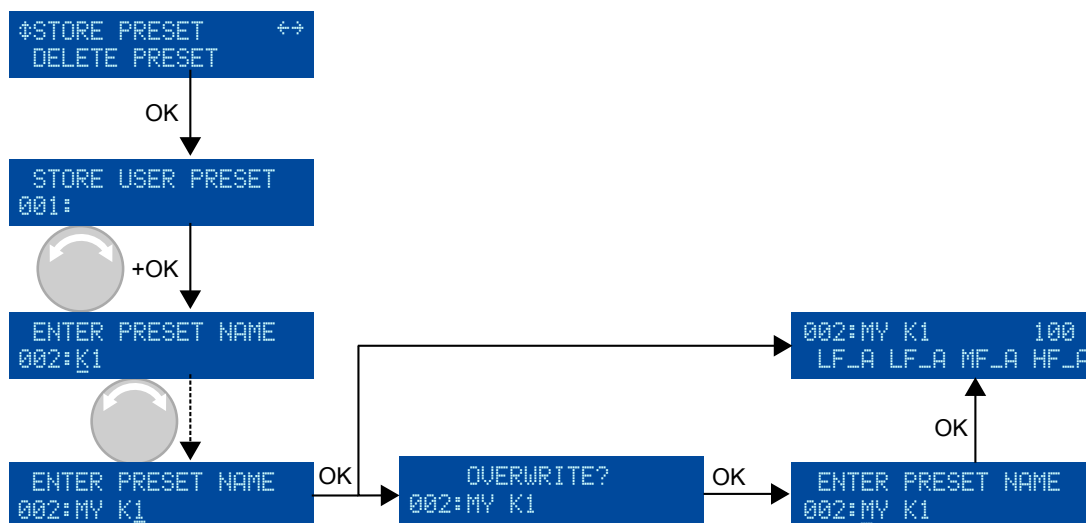
The currently loaded preset, including all modified settings, can be stored to a user memory (in memory location 1 to 10).



Unsaved modifications to the preset parameters are indicated by a star sign at the end of the first line.

Unsaved modifications are lost if the preset is reloaded prior to storing.

However, the current state of a loaded preset is saved when the amplified controller is turned off.



Procedure

1. From the main menu, select **STORE PRESET**.
2. Turn the encoder wheel and select the user memory space.
3. Press the OK key or the encoder wheel to validate.
4. If necessary, enter a user preset name (16 characters max):
 - a) Turn the encoder wheel to select the first character.
 - b) Press the encoder wheel to set the cursor on the second character.
 - c) Repeat until all characters are entered.



Pressing the encoder wheel after the 16th character sets the cursor back to the first character.

5. Press the OK key to validate the name.



The controller displays **OVERWRITE?**, when the selected memory space is not empty.

Press the OK key to overwrite (or the ESC key to cancel).

DELETE PRESET

A user preset stored in a user memory (in memory range 1 to 10) can be deleted.



Procedure

1. From the main menu, select **DELETE PRESET**.



The amplified controller displays **NO PRESETS AVAILABLE!** when all user memories are empty. Press the ESC key to cancel.

2. Turn the encoder wheel to select the user memory space.
3. Press the OK key or the encoder wheel to validate.



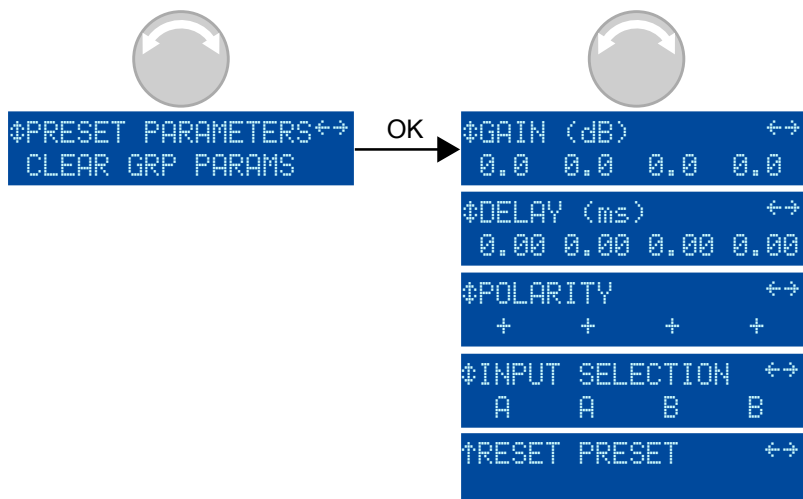
The amplified controller displays **CANNOT DELETE THE CURRENT PRESET**, when the selected preset is the currently loaded preset. It is not possible to delete the currently loaded preset. Press the ESC key to cancel.

The amplified controller displays **ARE YOU SURE?**

4. Press the OK key or the encoder wheel to validate (or press the ESC key to cancel).

PRESET PARAMETERS

The preset parameters include gain, delay, polarity and input selection.



Gain and delay value ranges

Gain is adjustable from -60 dB to +15 dB.

Delay is adjustable from 0 to 680 ms — see also section [DELAY UNIT](#) (p.57).



Total delay

The total delay includes all group delays (set in LA Network Manager) and the output channel delay. Total delay cannot exceed 680 ms.

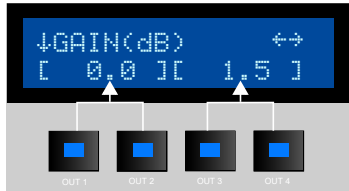
The parameters of the currently loaded preset can be set individually for each output channel or channel set.

i Channel set

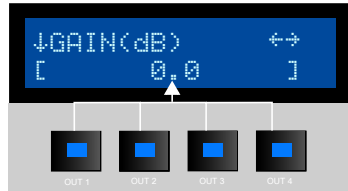
In certain presets, some channels are interdependent and form a channel set.

Within a channel set the preset parameters are common to all channels.

On the amplified controller's screen, channel sets are indicated by brackets above the corresponding output channel keys.

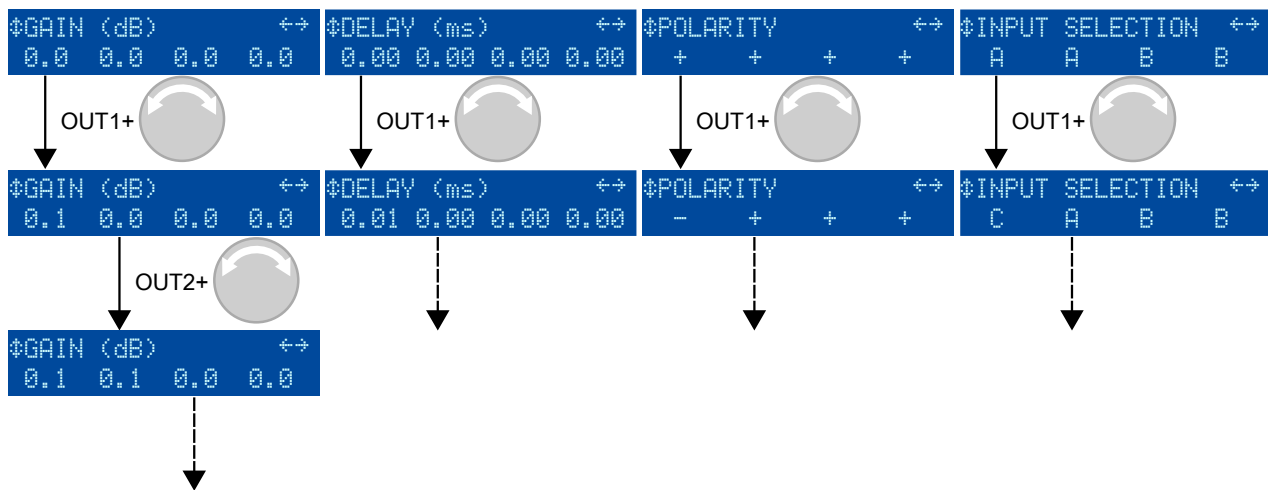


Two 2-channel sets (LF/HF - LF/HF)



One 4-channel sets (LF/LF/MF/HF)

Setting the preset parameters



Procedure

1. From the main menu, select **PRESET PARAMETERS**.
2. Turn the encoder wheel to select a preset parameter (**GAIN (dB)**, **DELAY (ms)**, **POLARITY** or **INPUT SELECTION**).
3. Press and hold the output key of an output channel or one of the output keys of a channel set to select it.
4. Turn the encoder wheel to select the value.

i Gain and delay value setting

Turn the encoder wheel for fine resolution (last digit).

Press and turn the encoder wheel for coarse resolution (second to last digit).

5. Release the output key.
6. Repeat steps 3 to 5 for each output channel or channel set.
7. Repeat steps 2 to 5 for each preset parameters.

Preset parameter modifications apply immediately.

i Saving preset parameters

Preset parameter modifications are not automatically saved and are lost if the preset is reloaded.

Refer to [STORE PRESET](#) (p.46).

Resetting the preset parameters

All preset parameters (including preset name) can be reset to the default values.



Procedure

1. From the main menu, select **PRESET PARAMETERS**.
2. Turn the encoder wheel to select **RESET PRESET**.
3. Press the OK key or the encoder wheel to validate.
The amplified controller displays **ARE YOU SURE? OUTPUTS MUTED!**.
4. Press the OK key or the encoder wheel to validate (or the ESC key to cancel).



Resetting the parameters of a user preset (stored in memory space 001 to 010) only affects the current parameters.

To reset the parameters of a stored preset, overwrite the memory space after resetting the preset. Refer to [STORE PRESET](#) (p.46).

CLEAR GRP PARAMS

Group parameters (names, gains, delays, contour EQs) are defined in LA Network Manager and cannot be accessed from the amplified controller. They remain active when the amplified controller is disconnected from the computer running LA Network Manager (in standalone mode), and when the amplified controller is shut down or restarted. Group parameters are not preset-dependent and remain active when a different preset is loaded.

Therefore, L-Acoustics recommends to clear group parameters when an amplified controller is used in standalone mode after being used within a network.

To verify if output channels are assigned to a group, refer to [Displaying input level, input selection, input mode and group information](#) (p.41).



CLEAR GRP PARAMS does not clear the preset parameters. Refer to [PRESET PARAMETERS](#) (p.47)

Clearing the group parameters



Procedure

1. From the main menu, select **CLEAR GRP PARAMS**.



The amplified controller displays **L-NET ACTIVE. CANNOT CLEAR** when the amplified controller is connected to the L-NET network. Group parameters cannot be cleared when the amplified controller is remotely controlled by LA Network Manager.

Press the ESC key to cancel.



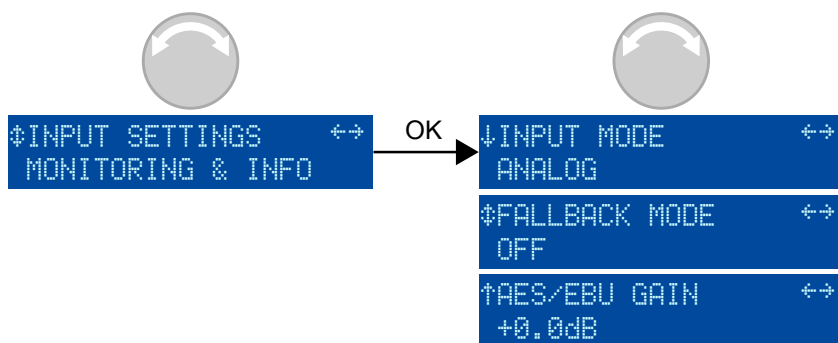
The amplified controller displays **NO GROUP DEFINED. CANNOT CLEAR** when the amplified controller is not assigned to any group.

Press the ESC key to cancel.

2. Press the OK key or the encoder wheel to validate.
The amplified controller displays **ARE YOU SURE? OUTPUTS MUTED!**.
3. Press the OK key or the encoder wheel to validate (or press the ESC key to cancel).

INPUT SETTINGS

The INPUT SETTINGS menu gives access to settings of the input mode, the fallback mode and the AES/EBU gain.



INPUT MODE

The XLR connectors of the signal panel can receive analog or digital signals. Use **INPUT MODE** to select the type of signal, depending on the type of connected audio sources.

Selecting the input mode



Procedure

1. From the main menu, select **INPUT SETTINGS**.
2. Press the OK key or the encoder wheel to validate.
3. Turn the encoder wheel to select **INPUT MODE**.
4. Press the OK key or the encoder wheel to validate.
5. Turn the encoder wheel to select between the input modes (**ANALOG** for analog audio source, **AES/EBU** for digital audio source).
6. Press the OK key or the encoder wheel to validate.

AES/EBU signal status

When AES/EBU is enabled, the status of the signals is displayed:

LOCK and the sampling frequency indicates a digital audio source is connected to the AES/EBU input, the signal delivered by the source has a format supported by the controller's digital audio board, and no loss or fault is being detected during data transfer.

For example, LOCK 44k1 indicates the digital audio source provides signals of sampling frequency of 44.1 kHz.

LOCK-WARN indicates the incoming digital signal has a sampling frequency that is out of the nominal range, but it does not lead to sound cut.

UNLOCKED indicates the incoming digital signal is faulty and leads to sound cut.

If the fallback mode is active, UNLOCKED on the AES/EBU signal automatically switches to the analog signal. AN.FBACK and the status of the signal on the AES/EBU input is displayed. Refer to section [FALLBACK MODE](#) (p.52).

The LOCK status is re-acquired after at least 500 ms of stability.

INVALID indicates non-audio data in the payload or errors in the AES/EBU transmission.

```

↓INPUT MODE      ↔
AES/EBU  LOCK 44k1

↓INPUT MODE      ↔
AES/EBU  LOCK-WARN

↓INPUT MODE      ↔
AES/EBU  UNLOCKED

↓INPUT MODE      ↔
AES/EBU  INVALID
  
```

```

↓INPUT MODE      ↔
AN.FBACK  LOCK 44k1

↓INPUT MODE      ↔
AN.FBACK  LOCK-WARN

↓INPUT MODE      ↔
AN.FBACK  UNLOCKED

↓INPUT MODE      ↔
AN.FBACK  INVALID
  
```

Reverting from fallback

When the LOCK status is recovered on the AES/EBU signal, reverting to the initial input mode is manual.



Procedure

1. From the **INPUT MODE** menu, press the OK key.
2. Turn the encoder wheel to select the input mode.
3. Press the OK key or the encoder wheel to validate.

FALLBACK MODE

Sound cuts in case of digital signal failure on the AES/EBU input can be avoided with the fallback option.

When automatic fallback is enabled (ON), the amplified controller automatically switches the analog input in case of digital signal failure.



Switchover conditions

No clock, loss of lock, CRC error, bipolar encoding error or data slip triggers the automatic fallback.

Validity bit (invalid audio) value does not trigger the automatic fallback. Instead the signal is muted.

Reverting to digital input when the digital signal returns to a normal state is manual — refer to [INPUT MODE](#). It can also be done simultaneously for all amplified controllers in LA Network Manager.

When automatic fallback is disabled (OFF), sound is cut off in case of digital signal failure on the AES/EBU input, but sound is automatically recovered when the signal returns to a normal state.

Enabling the fallback mode



Procedure



Precautions to avoid sound cuts or level differences upon fallback

The analog inputs must be connected to an audio source playing the same program as the digital audio source connected to the AES/EBU input.

The level of the digital audio source connected to the AES/EBU input must be aligned to the level of the analog audio source using AES/EBU GAIN — refer to section [AES/EBU GAIN](#) (p.53).

1. From the main menu, select **INPUT SETTINGS**.
2. Press the OK key or the encoder wheel to validate.
3. Turn the encoder wheel to select **FALLBACK MODE**.
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.

AES/EBU GAIN

AES/EBU GAIN must be used when the fallback mode is enabled.

This gain allows aligning the digital audio source level to the analog level for a seamless fallback switch — refer to section [FALLBACK MODE](#) (p.52). It can be set from -12 dB to +12 dB by steps of 0.1 dB.

This gain must be set according to the analog audio source's calibration (based on manufacturer's specs or user measurements) and the amplified controller's analog inputs calibration (0 dBFS for an input signal of +22 dBu). These examples illustrate the most common cases:

analog audio source calibration	AES/EBU gain
+18 dBu for 0 dBFS	- 4 dB
+24 dBu for 0 dBFS	+ 2 dB
+22 dBu for 0 dBFS or, if fallback is disabled	+ 0 dB



Procedure

1. From the main menu, select **INPUT SETTINGS**.
2. Press the OK key or the encoder wheel to validate.
3. Turn the encoder wheel to select **AES/EBU GAIN**.
4. Press and hold the ESC, OK or OUT1 key.
5. Turn the encoder wheel to select an input value.
Setting applies in real-time.

i

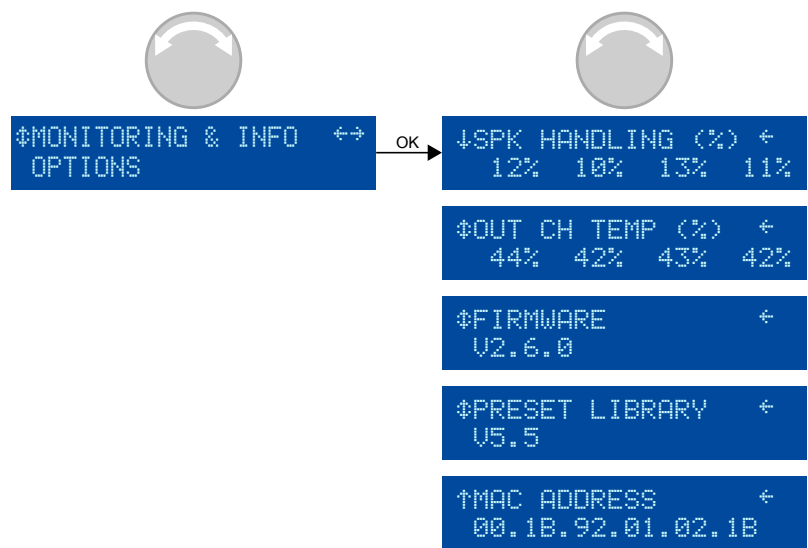
 Turn the encoder wheel for steps of 0.1 dB.
 Press and turn the encoder wheel for steps of 1 dB.
6. Release the key.

MONITORING & INFO

The MONITORING & INFO menu provides real-time measurements and information on the amplified controller:

- For each output channel:
 - real-time RMS output voltage (in percentage of the maximum value supported by the connected transducer section)
 - output temperature (in percentage of the operating range)
- version numbers of the amplified controller onboard firmware and preset library
- amplified controller's MAC address

MONITORING & INFO



SPK HANDLING (%)

SPK HANDLING (%) (speaker handling) displays the RMS voltage measured at each individual amplifier circuit output as a percentage of the maximum voltage supported by the connected speaker section.

For example in this illustration, the RMS voltage of channels OUT 1 to OUT 4 is respectively 12, 10, 13, and 11 % of the maximum values.

OUT CH TEMP (%)

OUT CH TEMP (%) (output channel temperature) displays the temperature measured at each individual amplifier circuit output as a percentage of the maximum operating temperature supported by the amplified controller: 85° C / 185° F = 100%.

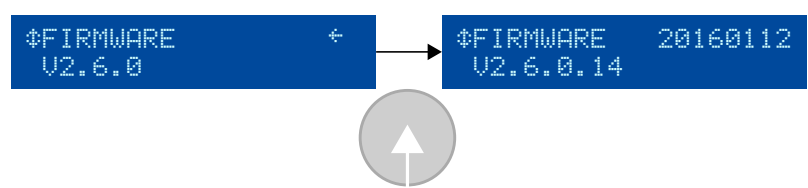
For example in this illustration, the temperature of channels OUT 1 to OUT 4 is respectively 52, 53, 50, and 48 % of the maximum values.

Refer to [Error messages](#) (p.61) for information on the temperature-related messages.

FIRMWARE

FIRMWARE displays the version number of the amplified controller onboard firmware.

Press the encoder wheel to display the fourth digit and the build date (in the YYYYMMDD format).



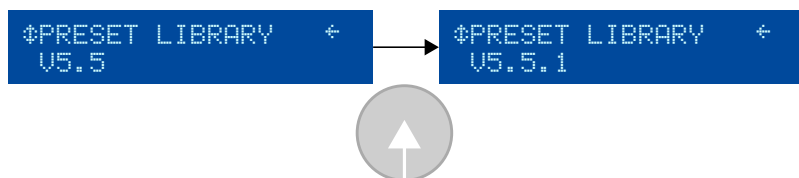
! Network

Always ensure that all LA8 amplified controllers used in a given network run the same firmware version.

PRESET LIBRARY

PRESET LIBRARY displays the version number of the amplified controller onboard preset library.

Press the encoder wheel to display the third digit.



Refer to the PRESET GUIDE for the full description of the factory preset library.

MAC ADDRESS

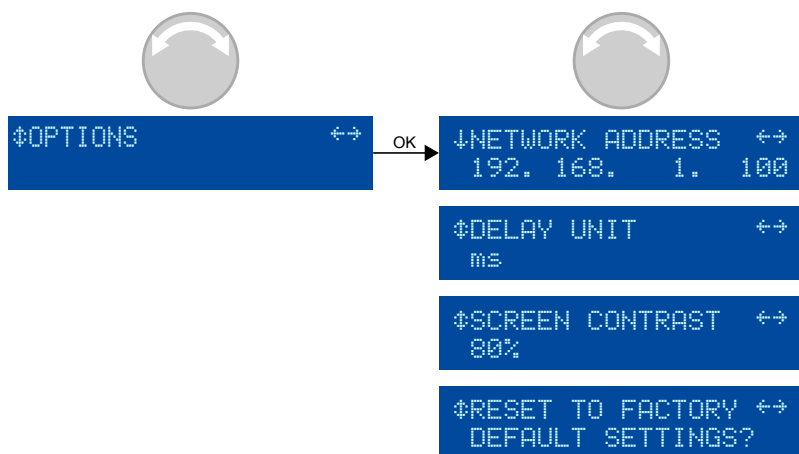
MAC ADDRESS displays the MAC (Media Access Control) address of the amplified controller. This address is unique to each amplified controller and is the equivalent of an international identification serial number. It is set by the manufacturer and cannot be modified.

For example, in this illustration, the MAC address is 00:1B:92:01:90:3A.

OPTIONS

The OPTIONS menu gives access to the amplified controller general settings:

- IP address
- delay unit (ms, meters, feet or samples)
- LCD screen contrast
- reset to default factory settings



NETWORK ADDRESS

Remote control of amplified controllers requires setting up a private local area Ethernet network to interconnect up to 253 units with a single control computer (and possible additional devices such as Ethernet switches). This Ethernet network is called L-NET and uses a proprietary communication protocol based on TCP/IPv4 called L-COM. The IP addresses on the units are class C addresses and must be set manually. The default subnet for L-NET is 192.168.1.0.



IP address setting

Each unit must be given an IP address that is unique within the local area network.

It is suggested to give the units consecutive IP addresses from 192.168.1.1 to 192.168.1.253, and to set the control computer to 192.168.1.254.

The Subnet mask on the computer must be set to 255.255.255.0.



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. In class C private local area IP subnets, the three first bytes are the network prefix and the last byte is the device identifier on the subnet. Regarding device identifiers, two numbers are reserved: 0 for designating the subnet, and 255 to communicate with all devices of the subnet (the IP broadcast address).

Modifying the IP address



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 **NETWORK ADDRESS**.
4. Turn the encoder wheel to select a value for the last byte (the last number).



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

5. Press the OK key to validate.



Subnet modification

According to the network administration requirements the default subnet (192.168.1.0) can be modified.

Use only Subnet prefixes corresponding to private local area networks according to RFC1918 for LA Network Manager to be able to connect to the amplified controllers.

Subnet mask is automatically defined in firmware according to the network class induced by the Subnet prefix (class A, class B, class C).

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 to validate.
 - d) 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**.

DELAY UNIT

Delay values can be displayed in ms (milliseconds), meters, feet or samples. The values in meters and feet are given for a temperature of 20° C / 68° F.



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 **DELAY UNIT**.
4. Press the OK key or the encoder wheel to validate.
5. Turn the encoder wheel to select the value.

SCREEN CONTRAST

The LCD screen contrast can be modified to adapt to a very bright or very dark environment.

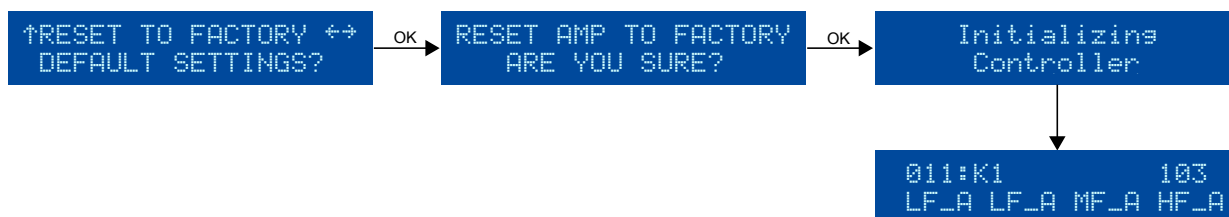


Procedure

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 **SCREEN CONTRAST**.
4. Press the OK key or the encoder wheel to validate.
5. Turn the encoder wheel to select the value.
6. Press the OK key or the encoder wheel to validate.

RESET TO FACTORY DEFAULT SETTINGS?

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



Procedure



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.

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** video tutorial 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.

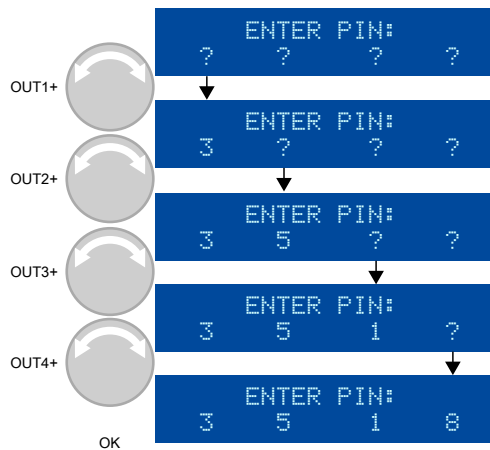
setting	protection
quick access to gain on OUT1 to OUT4	locked
LOAD PST FACTORY	PIN code protected
STORE PRESET	PIN code protected
DELETE PRESET	locked
PRESET PARAMETERS (all parameters)	PIN code protected
CLEAR GRP PARAMS	PIN code protected
NETWORK ADDRESS	PIN code protected
RESET TO FACTORY DEFAULT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



Entering a PIN code



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.

Maintenance

Error messages

A system message blinks.



There is a corresponding event message in LA Network Manager (refer to the **LA Network Manager** video tutorial)

Mains voltage messages

LA8 uses an auto-sensing SMPS (Switched Mode Power Supply) compatible with mains input nominal voltages of 120 / 230 V $\pm 10\%$ (LA8, LA8US) or 100/200 V $\pm 10\%$ (LA8JP). The mains voltage is continuously monitored for under and over-voltage as well as for failure in alternating cycles.

System Message
Fuseprotect

Displayed if the mains voltage reaches a value 30 % to 20 % below nominal. The outputs are muted. Normal operation resumes when mains voltage returns to nominal state.

System Message
Waiting SMPS

Displayed if the mains voltage reaches a value 30 % below nominal or 10 % above nominal, or if it skips about two cycles. The SMPS is switched off and the outputs are muted. A soft start sequence begins automatically when mains voltage returns to nominal state.

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.

Output channel internal error messages

The output channels are continuously monitored for internal errors.

DC on channel #
Channel muted

Displayed if a sporadic DC voltage above 3 V is detected at an output channel. The channel is muted. The channel is automatically unmuted when returning to nominal state.

DC on channel #
Channel disabled

Displayed if a persistent DC voltage above 3 V is detected at an output channel. The channel is disabled. To re-activate the channel, the controller must be restarted manually when the issue is solved.

Error on channel #
Channel disabled

Displayed if a cross-conduct in the power stage is detected at an output channel. The channel is disabled.

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 amplified controller 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 amplified controller. 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 85° 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 96° C. The signal delivered at this output channel is muted until the temperature returns to nominal conditions.

For temperature 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: <ul style="list-style-type: none"> — 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).

Glossary

CE	Europe
CHK	check procedure
CN	China
D/R	disassembly/reassembly procedure
INSP	inspection procedure
JP	Japan
KR	repair kit
LA8	CE version of the LA8 amplified controller (when used along with "LA8CN", "LA8JP" or "LA8US")
LA8CN	CN version of the LA8 amplified controller
LA8JP	JP version of the LA8 amplified controller
LA8US	US version of the LA8 amplified controller
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

Specifications

All values given in this section are typical values.

General

output power EIA (1% THD, 1 kHz, all channels driven)	4 x 1100 W RMS, 4 x 1300 W peak (at 8 Ω) 4 x 1800 W RMS, 4 x 1800 W peak (at 4 or 2.7 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	± 0.15 dB at 8 Ω
distortion THD+N (20 Hz - 10 kHz)	< 0.0005% , at 8 Ω , 11 dB below rated power
output dynamic range (20 Hz - 20 kHz, 8 Ω A-weighted)	107 dB
amplification gain	32 dB
noise level (20 Hz - 20 kHz, 8 Ω A-weighted)	- 67 dBV
channel separation (at 1 kHz)	> 85 dB
damping factor	> 600 (1 kHz and below, 8 Ω)
output delay	0 ms to 680 ms

mains input power and current draw (all channels driven)

maximum output power	4 x 1800 W at 4 Ω	4 x 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 $\pm 10\%$ range, the maximum power is no longer guaranteed.

mains rating

LA8 & LA8US	120/230 V AC ($\pm 10\%$), 50-60 Hz
LA8JP	100/200 V AC ($\pm 10\%$), 50-60 Hz

operating conditions

room temperature	from 0° C / 32° F to +50° C / 122° F
temperature inside controller	from 0°C / 32° F to + 85° C / 185° F

protection

circuits protection	heat sinks and transformers temperature monitoring inrush-current limitation main supply failure and over-voltage detection output DC protection 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: 24 dBA at maximum speed: 42 dBA

interface and connections

indicators	1 x LED for L-NET information for each output: 7 x LEDs for mute, load, signal, levels and limit/clip information
interface	2 x 20 characters LCD screen
output connectors	2 x 4-point speakON 1 x 8-point CA-COM
L-NET connectors	2 fast Ethernet RJ45 (in/out)

Input signal distribution

connectors

input	2 Neutrik® female XLR3, IEC 268, ESD protected (analog) 1 Neutrik® female XLR3, IEC 268, ESD protected (digital)
link	2 Neutrik® male XLR3, IEC 268, ESD protected (analog) 1 Neutrik® male XLR3, IEC 268, ESD protected, electronically buffered, failsafe relay (digital)
USB	1 Mini-B type female USB (not used)

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

CA-COM is a trademark of ITT Cannon

Analog Input

input impedance	22 k Ω (balanced)
maximum input level	22 dBu (balanced, THD 1%)
A/D conversion	two cascaded 24-bit analog/digital converters (130 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 or 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)

Automatic fallback option

switchover conditions	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 AES/EBU gain, independent from input Fs
revert to initial signal	upon manual user selection

input gain

range	-12 dB to +12 dB
steps	0.1 dB

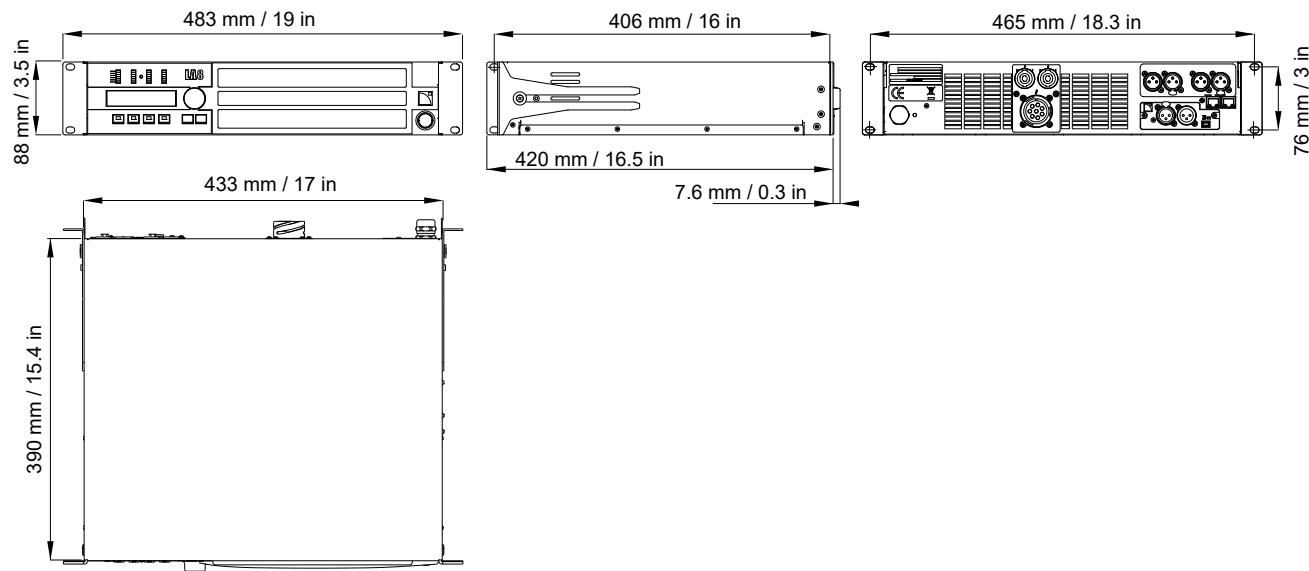
Latency

analog and AES/EBU

in standard operating mode	3.84 ms (independent from input Fs)
in low latency operating mode	1.19 ms (independent from input Fs)

Physical data

height	2U
weight	12.2 kg / 26.9 lb
finish	black and anthracite gray



Approvals

LA8 EC DoC

declaration of conformity - version 1.0



EC declaration of conformity

L-Acoustics

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

states that the LA8 is in conformity with the provisions of:

2006/95/EC: Low Voltage Directive

2004/108/EC: Electro-Magnetic Compatibility Directive

Applied standards:

EN 60065:2002+A1:2006+A11:2008+A2:2010+A12:2011 Safety requirements for audio, video and similar electronic apparatus

EN55103-1: 2009+A1:2012 Electromagnetic compatibility - Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use - Part 1: Emissions

EN55103-2: 2009 Electromagnetic compatibility - Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use - Part 2: Immunity

CE marking date: 2008

Issued in Marcoussis, France

01/12/2012

A handwritten signature in black ink, appearing to read 'Genio KRONAUER'.

Genio KRONAUER, Electronics Director

The LA8 amplified controller is certified with the following:





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