

# LA12X AMPLIFIED CONTROLLER



- 12,000 W with record hold times
- DSP controlled universal SMPS
- Advanced Power Factor Correction
- 4 in x 4 out architecture
- Boosted DSP resources
- AVB/TSN-ready



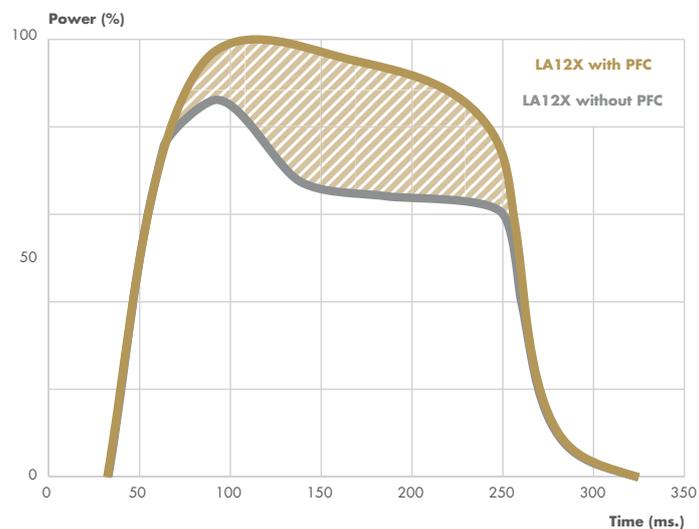
## POWER SUPPLY

The LA12X relies on a proprietary switch mode power supply (SMPS) equipped with a DSP-controlled PFC, capable of delivering 12,000 W regardless of mains voltages (from 240 V down to 100 V.)

The PFC offers high immunity to unstable mains and lowers typical power consumption by up to 40% for the same usage conditions i.e., more power is available to the output stages from a given circuit (16 A at 230 V mains, 30 A at 120 V mains).

In addition to the high raw RMS power rating, the ability to deliver energy (power x hold time) yields the best performance from loudspeaker systems, especially in LF reproduction.

**RMS output power of LA12X with and without PFC**



## I/O

The four LA12X inputs are available in analogue, AES and AVB. Four cascaded 24-bit and 96 kHz A/D converters at the front-end yield an impressive encoding dynamic of 130 dB. AES/EBU digital inputs operate with sample rate converters from 44.1 kHz to 192 kHz. Automatic fallback functions make the creation of redundant audio paths possible with constant delay and constant level.

# DSP

Operating at 96 kHz with 32 bit float precision, the DSP combines IIR and FIR filters to generate perfectly linearized phase curves and significantly improved impulse responses for an even, more natural, transparent and realistic sound experience.

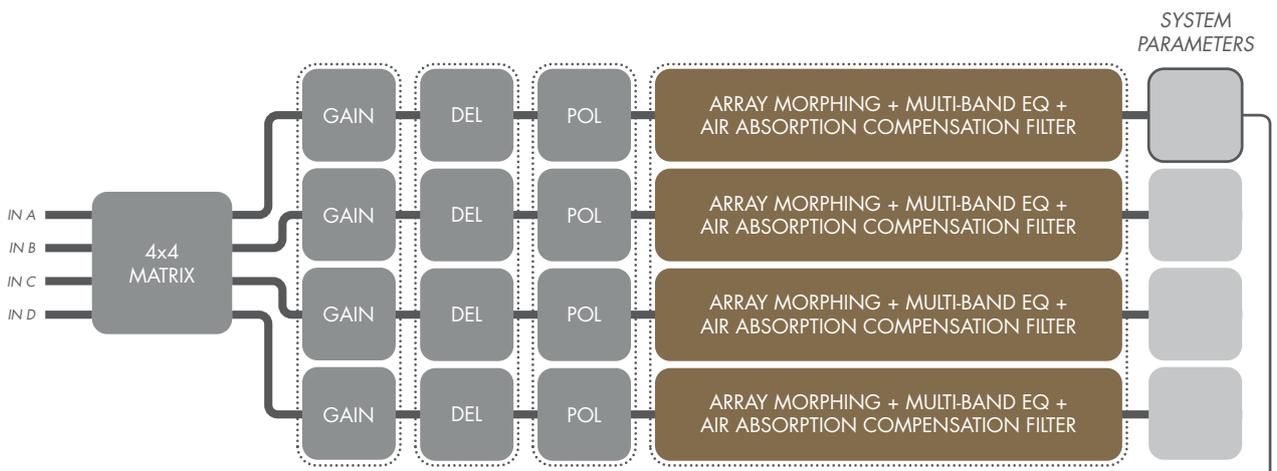
## Engineer Workflow Tools

Positioned after the DSP block dedicated to gain, delay and polarity adjustment of the system, the advanced DSP tools can be used along the live engineering workflow, comprising three steps from overall system settings to specific adjustments:

First, setting the frequency response of the line source with Array Morphing: the System Engineer can easily achieve the same tonal balance for different geometry line source arrays and combine different line source speakers in the same installation while offering the same sonic signature.

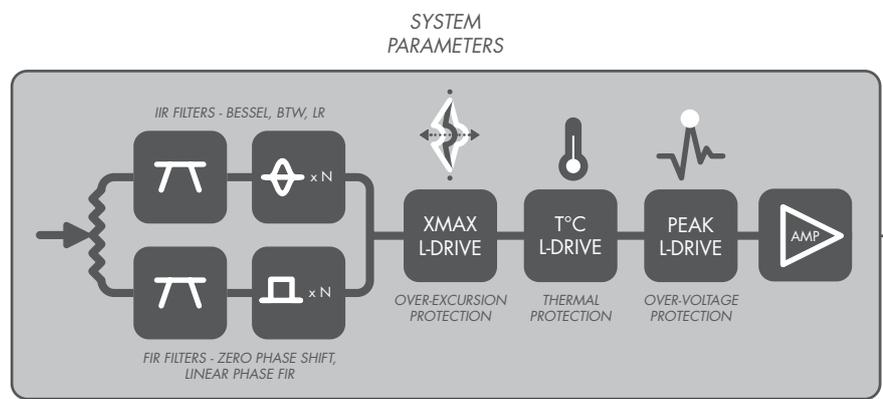
Second, ensuring the linearization of HF using plateau FIR filters and the air absorption compensation filter. In long throw applications, high frequency propagation can be strongly affected by air absorption. Compensation of this phenomenon re-establishes the original frequency response of loudspeaker enclosures, up to a limit dictated by the need to preserve a maximum of the driver resources.

Third, tweaking the system response (EQ station features) using the pool of 8 IIR filters to fine tune the system within its environment and notch out frequencies.



## System Protection

The latest L-DRIVE protection system carries out an advanced analysis of signal level. When transducers operate in the non-linear domain, either at high excursion, high temperature or high voltage, L-DRIVE acts as a smart power regulator to extend the component durability, while maintaining the highest dynamic range. The L-DRIVE circuit has been designed to preserve the sonic transparency of the system.



## USER INTERFACE



- 1 Status LED
- 2 LOAD/SIGNAL/LIMIT/CLIP LED
- 3 L-NET control network LED
- 4 2 x 24 char. LCD display
- 5 Navigation/Edition rotary encoder
- 6 Power/Standby button and LED
- 7 Channel selection key
- 8 Menu key
- 9 Anti-dust cover



- 10 PowerCON 32 A power supply inlet
- 11 Fan grill
- 12 SpeakON output connector
- 13 XLR analog or AES/EBU input connector
- 14 XLR analog or AES/EBU link connector
- 15 EtherCON 1 Gbit Ethernet connector

## ASSOCIATED ENCLOSURES

| Systems                                | Preset families | Max number of connections per channel (*) | Max number of enclosures per controller |
|--|-----------------|---|---|
| <b>Coaxials</b>                        | 5XT             | 6   | 24                                      |
|  | X8              | 3   | 12                                      |
|  | X12             | 3   | 12                                      |
|  | X15 HiQ         | 3   | 6                                       |
| <b>Constant Curvature Line sources</b> | ARCS WIFO       | 3   | 12                                      |
|  | ARCS II         | 3   | 6                                       |
| <b>Variable Curvature Line sources</b> | KIVA II         | 6   | 24                                      |
|  | KARA            | 3   | 6                                       |
|  | K2              | 3   | 3                                       |
|  | K1              | 2   | 2                                       |
| <b>Colinear source</b>                 | SYVA            | 3   | 12                                      |
| <b>Subwoofers</b>                      | SB15m           | 3   | 12                                      |
|  | SB18 (i/m)      | 3   | 12                                      |
|  | K1-SB           | 1   | 4                                       |
|  | SB28            | 1   | 4                                       |
|  | SYVA LOW        | 2   | 6                                       |
|  | SYVA SUB        | 3   | 12                                      |
|  | KS28            | 1   | 4                                       |

\* The number of connections corresponds either to the number of passive enclosures or the number of sections for active speakers.

# SOFTWARE AND NETWORK



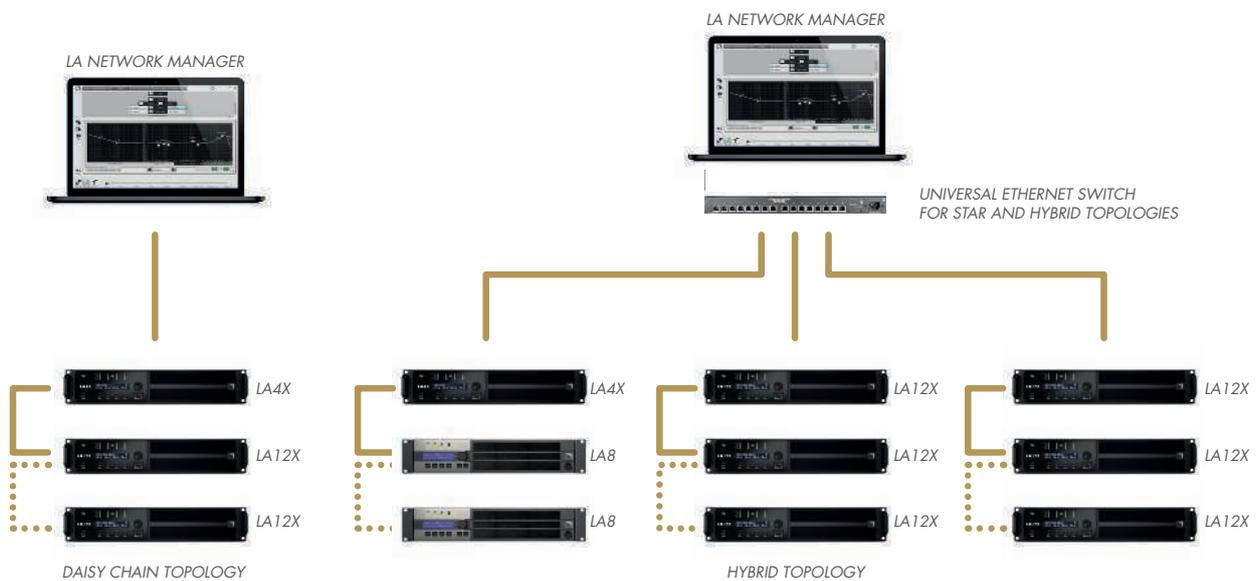
SNMP



The design of complex systems is made possible by the integration of the L-NET Ethernet-based network. Thanks to its high speed data transfer protocol of 1 Gbit/s, up to 253 units can be controlled and monitored in real-time by the LA Network Manager software. Multiple network topologies such as daisy-chain, star, and hybrid, are quickly and easily configurable for full flexibility in the required system architecture. The computer running LA Network Manager and the units are connected to each other by using industry standard CAT5e U/FTP fitted cables.

Optimized for Mac® and Windows® platforms, LA Network Manager relies on a purely graphical approach and allows amplified controller units and groups to be dragged and dropped in a workspace that reflects their location in the field. It is designed to quickly take the user through the workflow process of Setup, Tuning, and Live by implementing the tools required for each task into the dedicated page for each process. An advanced network engine allows automatic discovery of connected units. Multiple-group assignment capability, comprehensive real-time monitoring with event logging, as well as numerous productivity tools underpin the remarkably practical and application oriented network management software.

For third party management solutions, L-Acoustics provides SNMP support to facilitate the integration via third party control and monitoring systems. As a certified member of the CRESTRON® and EXTRON® partner programs, L-Acoustics also provides software modules allowing control integration into their automation systems, for ultimate convenience in cultural and event centers, universities, houses of worship, sport facilities, etc.



## AMPLIFIED CONTROLLERS – THE RANGE

L-Acoustics amplified controllers offer high performance and efficient loudspeaker amplification, digital signal processing and comprehensive system protection in a single ergonomic package. The onboard preset library allows for rapid system optimization with minimum EQ correction and delivers a unique sonic signature across all L-Acoustics systems.

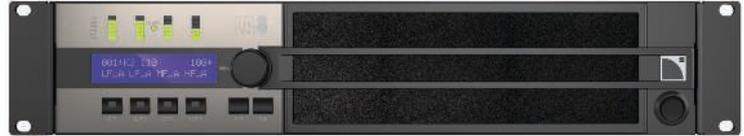
### LA4X: Amplified controller with DSP

4 x 1000 W @ 8 ohms  
4 inputs x 4 outputs architecture



### LA8: Amplified controller with DSP

4 x 1800 W @ 4 ohms  
2 inputs x 4 outputs architecture



### LA12X: Amplified controller with DSP

4 x 3300 W @ 2.7 ohms  
4 inputs x 4 outputs architecture



## ACCESSORIES

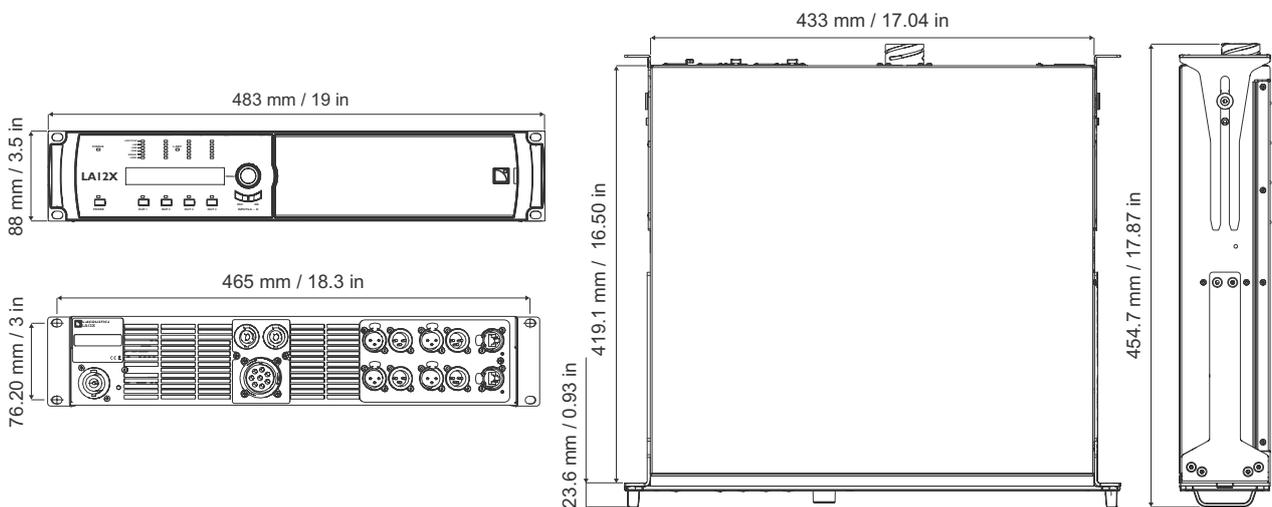


**LA-RAK II: Touring rack**  
with three LA12X, with power, audio  
and network distribution



**L-CASE: Transport and  
operation case for electronics**  
Capacity: single 2U amplified  
controller

## DIMENSIONS



# SPECIFICATIONS

## Operating conditions

|             |   |
|-------------|---|
| Temperature | Room temperature from 0° C / 32° F to +50° C / 122° F |
|-------------|---|

## Amplification and power supply

|   |   |
|---|---|
| Amplification class   | Class D   |
| Output power CEA-2006 / 490A (1% THD, 1 kHz, all channels driven) | 4 x 1400 W RMS (at 8 Ω)<br>4 x 2600 W RMS (at 4 Ω)<br>4 x 3300 W RMS (at 2.7 Ω) |
| Power supply model  | Universal Switched Mode Power Supply (SMPS) with Power Factor Correction (PFC)  |
| Power factor  | > 0.9   |
| Mains rating  | 100 V - 240 V ~ ±10%, 50-60 Hz  |
| Nominal current requirements                                      | 30 A for 100-120 V, 16 A for 200-240 V  |

## Audio specifications

|  |   |
|--|---|
| Frequency response                                     | 20 Hz - 20 kHz, ± 0.1 dB (at 8 Ω, 60 W output power)<br>20 Hz - 20 kHz, ± 0.1 dB (at 4 Ω, 120 W output power) |
| Distortion THD+N (20 Hz - 10 kHz)                      | < 0.05% (at 8 Ω, 60 W output power)<br>< 0.1% (at 4 Ω, 120 W output power)                                    |
| Output dynamic range (20 Hz - 20 kHz, 8 Ω, A-weighted) | > 114 dB  |
| Noise level (20 Hz - 20 kHz, 8 Ω, A-weighted)          | < -72 dBV   |
| Channel separation (at 1 kHz, 4 Ω)                     | > 85 dB   |
| Latency (for both analog and digital inputs)           | Standard operating mode: 3.84 ms<br>Low latency operating mode: 0.76 ms                                       |

## DSP

|                                |  |
|--------------------------------|--|
| Digital Signal Processor (DSP) | 2 x SHARC 32-bit, floating point, 96 kHz sampling rate   |
| I/O routing                    | Flexible 4x4 routing matrix  |
| Per output channel             | Built-in EQ station with 8 IIR, 3 FIR EQ filters<br>Array morphing (LF contour, zoom factor)<br>Air absorption compensation filters<br>Internal IIR and FIR EQ algorithms for speaker phase linearization and improved impulse responses<br>L-DRIVE protection (excursion, temperature and over-voltage) |
| Output delay                   | 0 ms to 1000 ms  |
| Transducers protection         | L-DRIVE: excursion / temperature / over-voltage  |

## Circuits protection

|                        |  |
|------------------------|--|
| Mains and power supply | Over and under voltage / over temperature / overcurrent (fuse protection, and inrush current protection) |
| Power outputs          | Over current / DC / short circuit / rail over and under voltage / over temperature                       |
| Cooling                | Cooling fans with temperature control speed  |

## Inputs

### Analog: 4 balanced analog line inputs with passively connected link

|                  |  |
|------------------|--|
| A/D conversion   | 4 cascaded 24-bit analog/digital converters (130 dB dynamic range) |
| Input impedance  | 22 kΩ (balanced)   |
| Max. input level | 22 dBu (balanced, THD 1%)  |

### Digital: 2 AES/EBU inputs (4 channels) with electronically buffered link and failsafe relay

|                         |  |
|-------------------------|--|
| Standard                | AES/EBU (AES3)   |
| Sampling frequency (Fs) | 44.1, 48, 88.2, 96, 176.4 or 192 kHz                                   |
| Word length             | 16, 18, 20 or 24 bits  |
| Synchronization         | Signal resampled to internal clock at 96 kHz                           |
| Sampling frequency      | 96 kHz (SRC referenced to the amplified controller internal clock)     |
| Dynamic range           | 140 dB   |
| Distortion (THD+N)      | < -120 dBfs  |
| Bandpass ripple         | ± 0.05 dB (20 Hz - 40 kHz, 96 kHz)                                     |
| Fallback mode           | AB to CD: digital to analog / digital to digital                       |
| Switchover conditions   | No clock, loss of lock, CRC error, bipolar encoding error or data slip |
| Constant delay          | Independent of input Fs  |
| Constant level          | Upon user setting of AES/EBU gain, independent of input Fs             |
| Input gain              | -12 dB to +12 dB, 0.1 dB steps   |
| Revert to AES/EBU       | Upon manual user selection   |

## Remote control and monitoring

|                                      |                                      |
|--------------------------------------|--------------------------------------|
| Network connection                   | Dual-port Ethernet Gigabit interface |
| LA Acoustics remote control software | LA Network Manager 2                 |
| Third-party management solutions     | SNMP / Extron® / Crestron®           |

## Physical data

|                   |                 |
|-------------------|-----------------|
| Height            | 2U              |
| Weight            | 14.5 kg / 32 lb |
| Protection rating | IP2X            |