LA12X AMPLIFIED CONTROLLER

- **12,000 W with record hold times**
- **DSP controlled universal SMPS**
- **Advanced Power Factor Correction**
- **4 in x 4 out architecture**
- **Increased DSP resources**
- **Milan-AVB seamless redundancy**

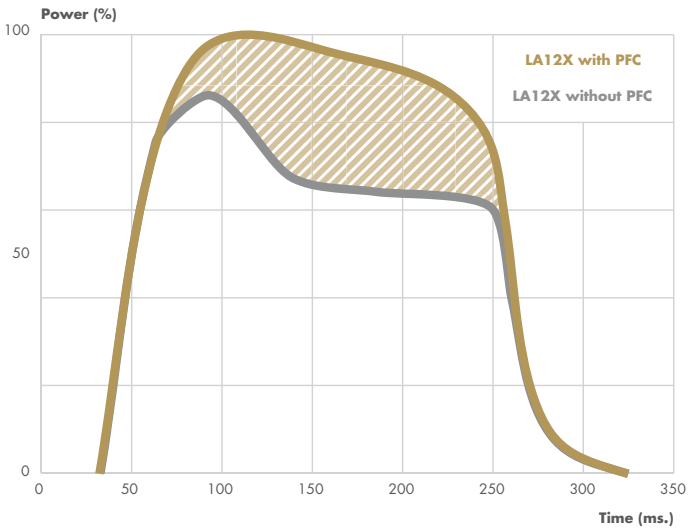
POWER SUPPLY

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 analog, AES/EBU and Milan-AVB. With Milan-AVB seamless redundancy as standard, if there is a connection loss on the primary network audio will continue from the secondary network with no audible artifacts. If non-redundant network mode is selected the two Milan-AVB ports can be used to daisy-chain units, reducing the need for additional AVB switches.

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

All L-Acoustics amplified controllers integrate powerful DSP resources gathering loudspeaker management, protection for transducers and electronics, and a comprehensive set of tools for system adjustments to create a natural, transparent, and realistic sound experience. The LA12X DSP engine is divided into three blocks.

System alignment:

The first block provides tools to create a coherent system by setting optimal summation of each element:

- Gain, polarity and up to 1 second of delay for each output channel
- The Autoalign tool, available as part of the M1 measurement suite, enables quick and easy alignment of an entire system

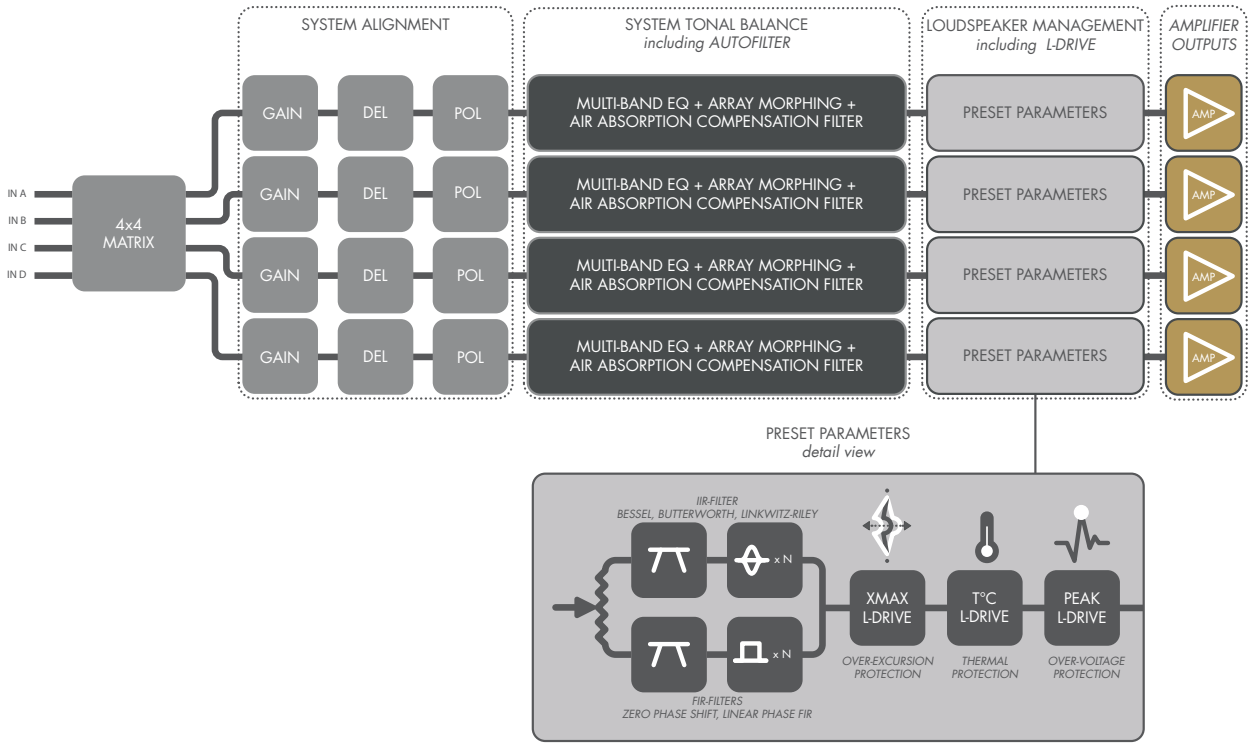
System tonal balance:

The second block provides advanced tools to maintain a consistent sonic signature between arrays in the system and from one venue to another:

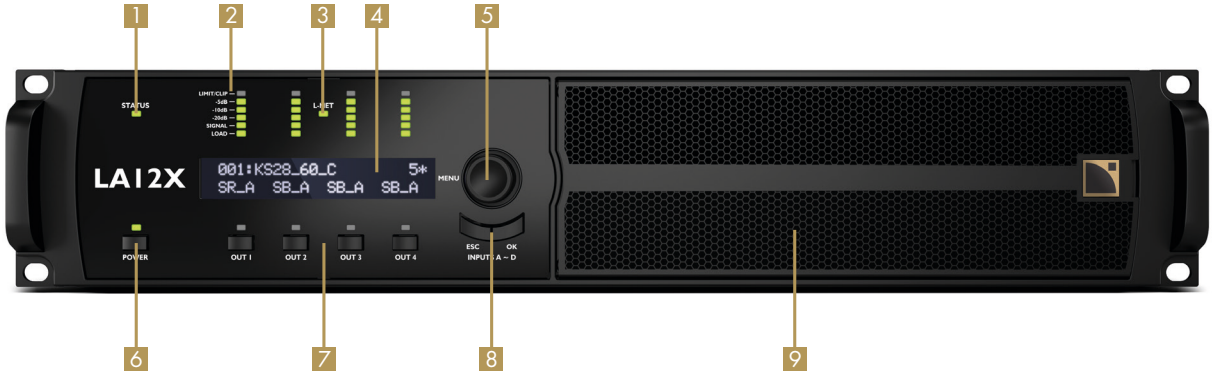
- The Autofilter tool is used to linearize the full frequency response of the entire array across the audience space on a per amplifier channel basis
- The adjustable IIR & linear phase FIR filters are used to fine-tune the system to a specific venue or configuration
- The Array Morphing tool is a simple and yet efficient means to adjust the sonic signature of line sources to meet the program material needs
- The Autoclimate and Air Compensation tools are used to adjust the system response in relation to atmospheric conditions while preserving driver resources

Loudspeaker management:

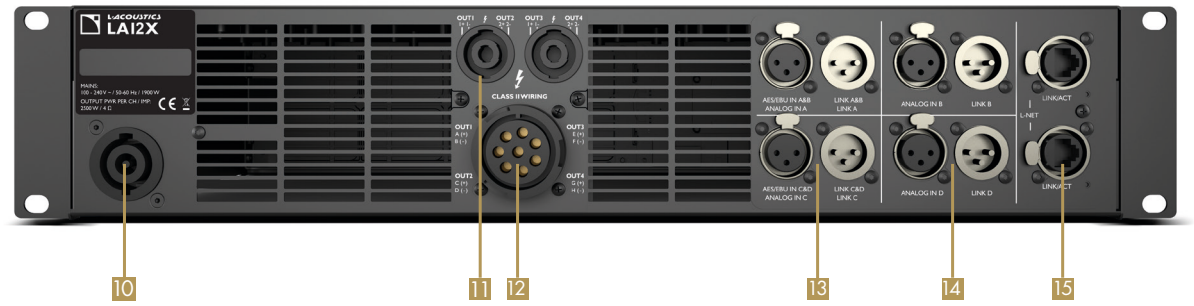
The third block is the system parameters that unify loudspeaker response and system protection through specific loudspeaker presets developed in-house. It integrates the proprietary L-DRIVE system, providing over-excursion, over-voltage and thermal protection, to maximize output power and minimize nonlinearities. L-DRIVE's optimum protection ensures durable performance and preserves sonic transparency in the linear and nonlinear domains.



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 keys
8 Menu keys
9 Anti-dust cover



10 powerCON™ 32 A power supply inlet
11 speakON™ output connectors
12 CA-COM output connector
13 XLR analog or AES/EBU input and link connectors
14 XLR analog input and link connectors
15 etherCON™ 1 Gb/s Ethernet connectors

AMPLIFIED CONTROLLERS – THE RANGE

The latest generation of amplified controllers share similar architecture with extremely powerful DSP. The main differentiators between amplified controllers are gathered in the following table:

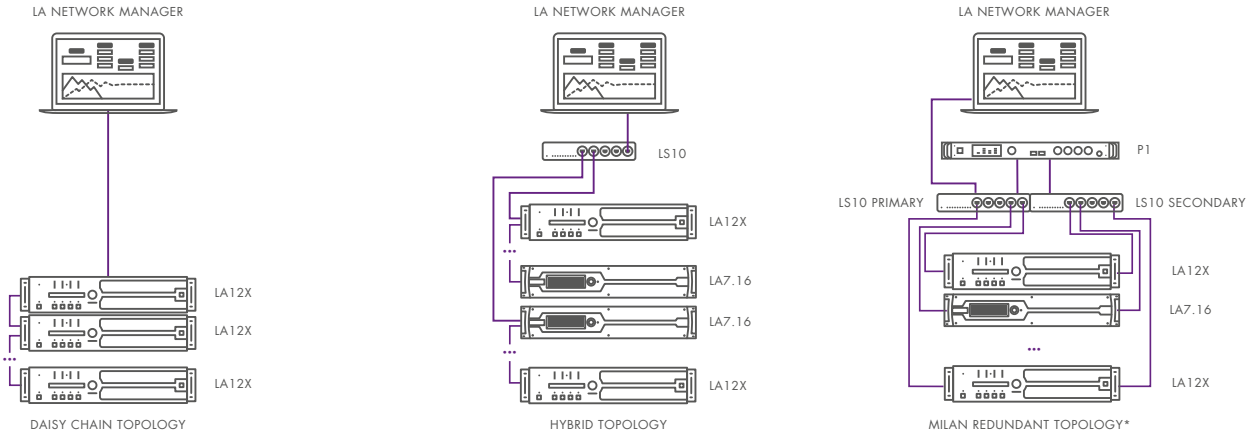
Specifications	LA7.16(i)	LA2Xi	LA4X	LA12X
Touring / Install	Touring / (i) Install	Install	Touring / Install	Touring / Install
Multi / Four channel	Multi-channel	Four-channel	Four-channel	Four-channel
In x Out	16 x 16	4 x 4/ 4 x 3 / 4 x 2 / 4 x 1	4 x 4	4 x 4
Output power **12 dB Crest Factor, sine burst, 1 kHz, 2 ms**	16 x 700 W (at 16 ohms) 16 x 1300 W (at 8 ohms) 16 x 1100 W (at 4 ohms)	4 x 190 W (at 16 ohms) 4 x 370 W (at 8 ohms) 4 x 710 W (at 4 ohms)	4 x 560 W (at 16 ohms) 4 x 1100 W (at 8 ohms) 4 x 1400 W (at 4 ohms)	4 x 1400 W (at 8 ohms) 4 x 2600W (at 4 ohms) 4 x 3300W (at 2.7 ohms)
All channels loaded **CEA-2006/490A, Sine burst , 1 kHz, 20 ms, THD < 1%, all channels loaded**	16 x 580 W (at 16 ohms) 16 x 920 W (at 8 ohms) 16 x 1000 W (at 4 ohms)	4 x 190 W (at 16 ohms) 4 x 360 W (at 8 ohms) 4 x 640 W (at 4 ohms)	4 x 1000 W (at 8 ohms) 4 x 1000 W (at 4 ohms)	4 x 1400 W (at 8 ohms) 4 x 2600 W (at 4 ohms) 4 x 3300 W (at 2.7 ohms)
Nominal current requirements for 200 - 240 V / 100 - 120 V	16 A / 30 A	10 A / 20 A	10 A / 20 A	16 A / 30 A
Input channels	16 x AVB** 1 x Analog / 2 x AES/EBU	4 x AVB* 4 x Analog / 4 x AES/EBU	4 x AVB* 4 x Analog / 4 x AES/EBU	4 x AVB* 4 x Analog / 4 x AES/EBU
Noise level (20 Hz - 20 kHz, 8 Ω, A-weighted, digital input)	< - 79 dBV	< - 77 dBV	< - 70 dBV	< - 75 dBV
Front panel	TFT Colour Touch Screen (i: LED's only)	LED's only	LCD display with rotary encoder, power and mute keys	LCD display with rotary encoder, power and mute keys
Height	2U	1U	2U	2U
Weight	15.8 kg / 34.8 lb (i: 14.5 kg / 32 lb)	4.40 kg / 9.70 lb	11.3 kg / 24.9 lb	14.5 kg / 32 lb

** 4 channels from one AVB stream of up to 8 channels ** 16 channels from up to 16 AVB streams of up to 8 channels*

SOFTWARE AND NETWORK

LA Network Manager is designed to efficiently take users through the workflow process of Setup, Tuning, and Live. The tools required for each task are available on the dedicated page for each step of the control and supervision process. An advanced network engine allows automatic discovery of connected units, multiple-group assignment, real-time monitoring with event logging, and includes numerous productivity tools.

Our proprietary Ethernet based L-Net protocol is used to configure and monitor all L-Acoustics amplified controllers. Thanks to its high-speed data transfer capability of 1 Gbit/s, up to 253 units can be controlled and monitored in real-time by LA Network Manager, a proprietary software available for both Windows and Mac operating systems. All amplified controllers are fitted with two Ethernet ports allowing daisy-chain topologies, star topologies or a hybrid of the two, using standard CAT5e U/FTP cables.



*Milan redundant topology is not available for LA4X.

AVB is the only protocol that guarantees deterministic and synchronous network behavior, ensuring on-time delivery of time-sensitive data. Milan is the applications layer on top of AVB, independent from any private entity, that ensures seamless interoperability between any Milan-certified device. The Milan initiative developed agreed-upon standards for media stream format, media clocking, seamless redundancy, and more so that no IT expertise is required to set up a reliable and deterministic AVB network with Milan-certified devices.

Milan-AVB is an evolving, long-term, viable and durable network developed by the industry for the industry.

Supported AV control solutions:

SYSTEM MONITORING

L-Acoustics amplified controllers integrate system supervision functions that monitor amplifier and loudspeaker status, behavior, and continuity. The amplified controllers can monitor input and output signal integrity, levels, temperature, voltage values, and a power amplifier fault status. Any malfunction is reported in real-time within LA Network Manager control software or third-party control systems.

The Load Checker feature verifies the output cabling and validates that the preset loaded matches the expected load and number of enclosures in parallel.

LA12X monitors the output circuits using a combination of real-time load presence and periodic silent tests. Providing comprehensive status monitoring via the control network interfaces, including amplifier channel, and PSU status reporting. In addition to Milan-AVB seamless redundancy, options for automatic fallback and backup of input signals are available.

ENCLOSURE DRIVE CAPACITY

Categories - Series	Reference	Max number of connections per channel*	Max number of enclosures per controller
Short throw X Series	X4i	6	24
	5XT	6	24
	X6i	3	12
	X8(i)	3	12
	X12	3	12
	X15 HiQ	3	6
Medium throw S Series	Soka	3	12
	Syva	3	12
	Syva Low	2	6**
	Syva Sub	3	12
Medium throw A Series	A10(i) Wide/Focus	3	12
	A15(i) Wide/Focus	3	12
Long throw K Series* **	KIVA II	6	24
	KARA II(i)	3	6
	K3(i)	3	6
	K2	3	3
	K1	2	2
Subwoofers	SB6i	2	8
	SB10i	3	12
	SB15m	3	12
	SB18 (IIi)	3	12
	KS21(i)	2	8
	K1-SB	1	4
	KS28	1	4

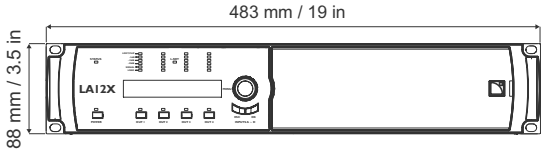
* The number of connections corresponds either to the number of passive enclosures or the number of sections for active speakers.
** LA12X can drive up to two Syva Low per output, but no more than six per amplified controller
*** L Series is only supported by LA7.16(i) amplified controllers

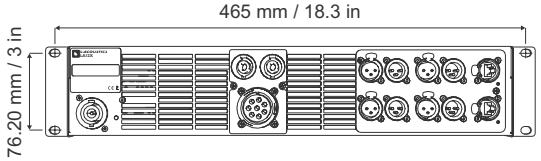
ACCESSORIES

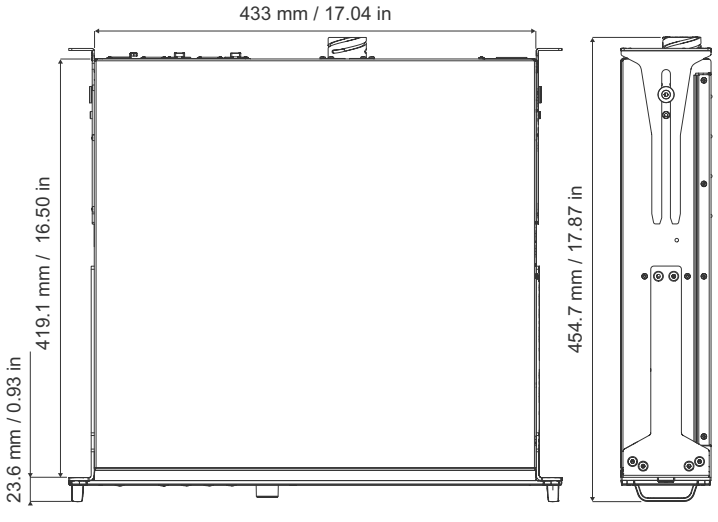
LA-RAK II AVB: Touring rack
Utilizing three LA12X, with power, audio and network distribution

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

DIMENSIONS







LA12X AMPLIFIED CONTROLLER

LA12X is a four-channel amplified controller designed to power the largest loudspeakers in the L-Acoustics catalog. LA12X features a proprietary switch mode power supply (SMPS) with DSP-controlled power factor correction (PFC) capable of delivering 12,000 watts of output power with record hold times.

The universal SMPS (100 - 240 V) allows worldwide operation of LA12X with identical performance while the PFC grants a high tolerance to unstable mains with low power consumption. The 4 x 4 architecture offers both flexibility to power a high density of passive loudspeakers and a powerful amplfication for large format active enclosures.

Packaged in a 2U chassis, LA12X integrates powerful DSP resources with built-in loudspeaker optimization tools and the proprietary L-DRIVE system to protect the loudspeakers and the amplified controller. Beyond analog and AES/EBU inputs, LA12X features AVB inputs and allows for seamless redundancy following the Milan-AVB protocol.

SPECIFICATIONS

Amplification and power supply			
Output power, all channels loaded	4 channels at 2.7 Ω	4 channels at 4 Ω	4 channels at 8 Ω
Output power CEA-2006 / 490A (1% THD, 1 kHz, all channels driven)	3300 W	2600 W	1400 W
Amplification class	High efficiency class D		
Power supply model	Universal Switched Mode Power Supply (SMPS) with Power Factor Correction (PFC)		
Mains rating	100 V - 240 V ~ ±10%, 50-60 Hz		
Audio specifications			
Frequency response (20 Hz - 20 kHz, 8 Ω load, 60 W output power)	± 0.1 dB		
Distortion THD+N (20 Hz - 20 kHz, 8 Ω load, 60 W output power)	< 0.05%		
Output dynamic range (20 Hz - 20 kHz, 8 Ω, A-weigthed, Digital input)	> 114 dB		
Noise level (20 Hz - 20 kHz, 8 Ω, A-weigthed, Digital input)	< - 75 dBV		
DSP			
Digital Signal Processor (DSP)	Dual SHARC 32-bit, floating point, 96 kHz sampling rate		
I/O routing	4 x 4 routing and summation		
Per output channel	Built-in EQ station with 8 IIR, 4 FIR EQ filters Array morphing (LF contour, zoom factor), Air absorption compensation filters		
	Internal IIR and FIR EQ algorithms for speaker phase linearization and improved impulse responses		
	Output delay from 0 to 1000 ms		
Technologies			
Loudspeaker Management	L-DRIVE advanced system protection (excursion, temperature and over-voltage)		
Circuits protection			
Mains and power supply	Over and under voltage / over temperature / overcurrent / inrush current protection		
Power outputs	Over current limiting / DC / short circuit / over temperature		
Inputs / Outputs			
AVB input with support of Milan seamless dual networking	4 channels 48kHz / 96 kHz from 1 stream of up to 8 channels		
AES/EBU XLR inputs (shared with analog A & C)	4 channels (2 x AES/EBU, 44.1 - 192 kHz sampling rate) With active XLR link outputs and bypass relay		
Analog XLR inputs (shared with AES/EBU A & C)	4 channels with XLR link outputs		
Loudspeaker output	2 x 4-point speakON™ / 1 x 8-point CA-COM		
Control and monitoring			
Network connection	Dual-port Ethernet Gigabit interface etherCON™ I/O		
Third-party control solutions	Q-SYS® / Crestron® / Control4® / Savant® / HTTP API		
Operating conditions			
Temperature	Room temperature from 0° C / 32° F to +50° C / 122° F		
Physical data			
Dimensions W x H x D	483 x 88 (2U) x 419.1 mm / 19 x 3.5 (2U) x 16.5 in		
Weight	14.5 kg / 32 lb