X8

user manual 1.0 (EN)

L·ACOUSTICS

Contents

Safety

Instructions

Never incorporate equipment or accessories not approved by L-Acoustics.

Read all the related PRODUCT INFORMATION documents shipped with the products before exploiting the system.

Beware of sound levels.

Do not stay within close proximity of loudspeakers in operation and consider wearing earplugs.

Loudspeaker systems are capable of producing very high sound pressure levels (SPL) which can instantaneously lead to permanent hearing damage to performers, production crew and audience members.

Hearing damage can also occur with prolonged exposure to sound: 8 h at 90 dB(A), 30 min at 110 dB(A), less than 4 min at 130 dB(A).

Do not store the product on an unstable cart, stand, tripod, bracket, or table.

Read the RIGGING MANUAL before installing the system.

Use the rigging accessories described in the rigging manual and follow the associated procedures.

Do not expose the product to extreme conditions.

Do not expose the product to rain or sea spray.

Do not expose the product to moisture (mist, steam, humidity, condensation…) or excessive heat (direct sun, radiator…) for a long period of time.

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 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.

Welcome

Thank you for purchasing the L-Acoustics X8.

This document contains essential information on using the system properly. Carefully read this document in order to become familiar with the system.

As part of a continuous evolution of techniques and standards, reserves the right to change the specifications of its products and the content of its document without prior notice. Please check on a regular basis to download the latest document and software updates.

System components

Loudspeaker enclosures

X8	Passive 2-way coaxial enclosure
SB15m	Compact subwoofer enclosure

Powering and driving system

LA4X / LA8	Amplified controller with DSP, preset library and networking capabilities
LA-RAK	Touring rack containing three LA8, for power, audio and network distribution

i Refer to the LA4X / LA8 user manual for operating instructions.

Loudspeaker cables

SP cables	4-point SpeakON loudspeaker cables (4 mm² gauge)
	SP cables come in four sizes: SP.7 (0.7 m/2.3 ft), SP5 (5 m/16.4 ft), SP10 (10 m/32.8 ft) and SP25 (25 m/82 ft)
SP-Y1	Breakout cable for two passive enclosures (2.5 mm² gauge) provided with a CC4FP adapter
	4-point SpeakON to 2 × 2-point SpeakON
DO cables	8-point PA-COM loudspeaker cables (4 mm² gauge)
	DO cables come in three sizes: DO.7 (0.7 m/2.3 ft), DO10 (10 m/32.8 ft) and DO25 (25 m/82 ft)
DOSUB-LA8	Breakout cable for four passive enclosures (4 mm² gauge)
	8-point PA-COM to 4 × 2-point SpeakON

i **Information about the connection of the enclosures to the LA amplifiers is given in this document.**
Refer to the LA4X / LA8 user manual for detailed instructions about the whole cabling scheme, including modulation cables and network.

Rigging elements

(!) Rigging elements or procedures are not presented in this document.
Refer to the X8 rigging manual.

Software applications

Soundvision	3D acoustical and mechanical modeling software.
LA Network Manager	Remote control and monitoring of amplified controllers

Technical description

Low-latency preset

A low latency preset is available for the X8 enclosure used as a monitor ([X8_MO]). It reduces latency from 3.84 ms down to 1.19 ms (LA8) and 0.76 ms (LA4X). If the monitor is combined with a subwoofer, a custom preset must be used.
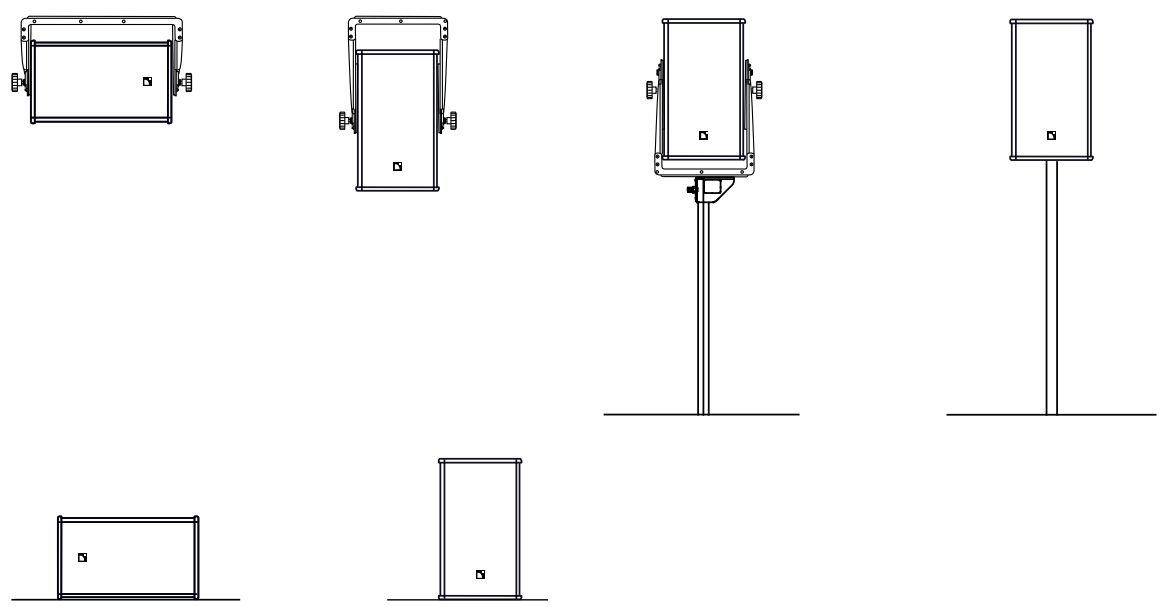
Loudspeaker configurations

X8 point source

Deployed as a standalone point source, a X8 system operates over the nominal bandwidth of the X8 enclosure.

The [X8] preset allows for a reference frequency response in short throw applications.

The X8 enclosure is driven by the LA4X / LA8 amplified controllers.

Standalone X8

Enclosure	Preset
X8	[X8]
Frequency range (-10 dB)	60 Hz - 20 kHz ([X8])

X8 point source with LF

Deployed as a point source with SB15m subwoofers, an X8 system operates with augmented LF resources.
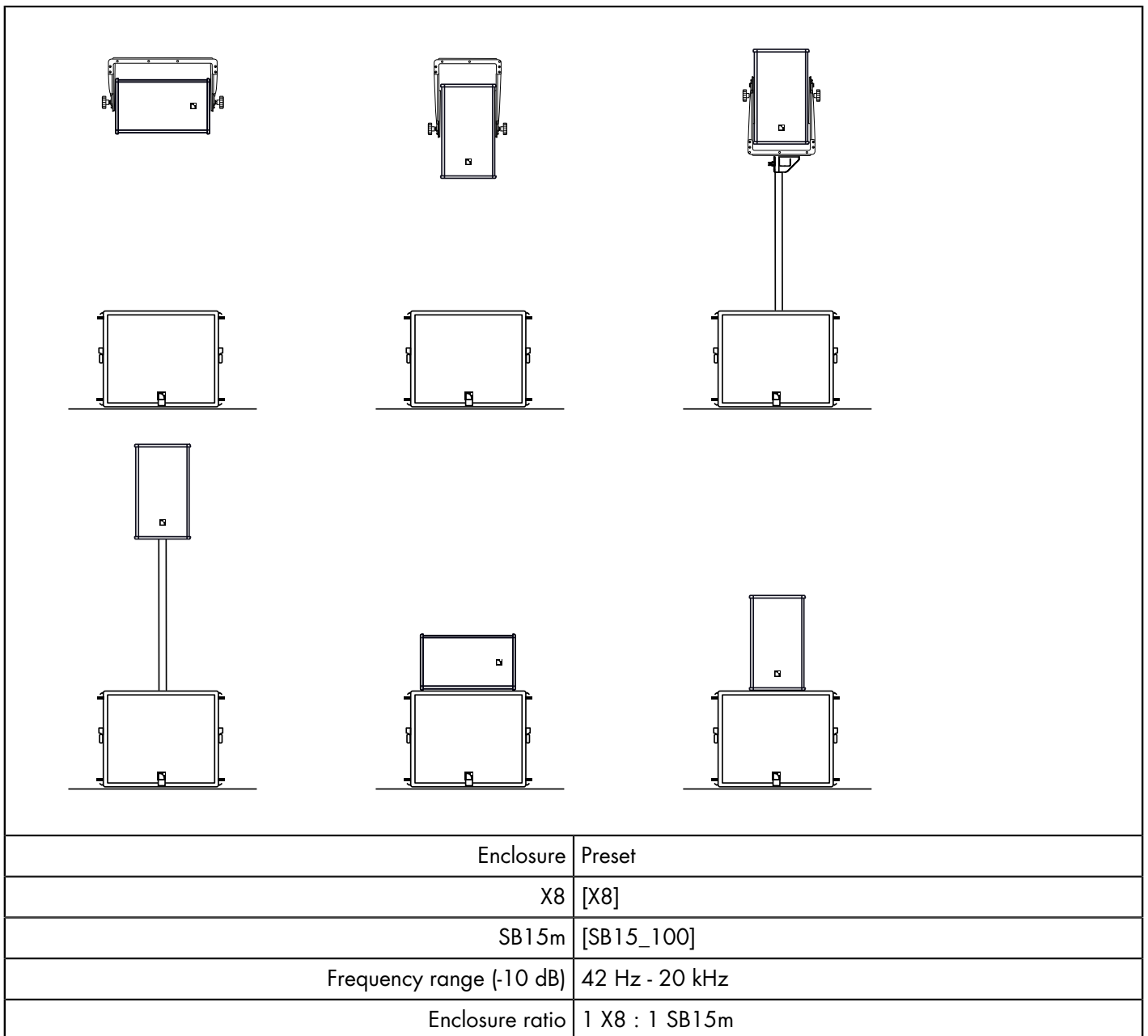
The [X8] preset allows for a reference frequency response in short throw applications.

The [SB15_100] preset provides the SB15m with an upper frequency limit at 100 Hz for an optimal frequency coupling with the X8.

The X8 and SB15m enclosures are driven by the LA4X / LA8 amplified controllers.

X8 with SB15m

With SB15m, the X8 system contour is reinforced by 8 dB contour at 100 Hz and the bandwidth is extended down to 42 Hz.

Enclosure	Preset
X8	[X8]
SB15m	[SB15_100]
Frequency range (-10 dB)	42 Hz - 20 kHz
Enclosure ratio	1 X8 : 1 SB15m

⚠ Delay values
Do not forget to add the pre-alignment and geometric delays depending on the configuration.

[X8] + [SB15_100]	X8 = 0	SB15m = 2.6

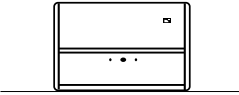# X8 stage monitor

Deployed as a stage monitor, an X8 system operates over the nominal bandwidth of the X8 enclosure.

The [X8_MO] preset allows for a reference frequency response in stage monitoring applications.

The X8 enclosure is driven by the LA4X / LA8.

Standalone X8

35°

Enclosure	Preset
X8	[X8_MO]
Frequency range (-10 dB)	55 Hz - 20 kHz ([X8_MO])

X8 stage monitor with LF

Deployed as a stage monitor with SB15m subwoofers, an X8 system operates with augmented LF resources.
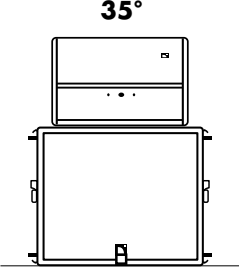
The [X8_MO] preset allows for a reference frequency response in stage monitoring applications.

The [SB15_100] preset provides the SB15m with an upper frequency limit at 100 Hz for an optimal frequency coupling with the X8.

The X8 and the SB15m enclosures are driven by the LA4X / LA8 amplified controllers.

X8 with SB15m

With SB15m, the X8 system contour is reinforced by 8 dB contour at 100 Hz and the system bandwidth is extended down to 42 Hz.

Enclosure	Preset
X8	[X8_MO]
SB15m	[SB15_100]
Frequency range (-10 dB)	42 Hz - 20 kHz
Enclosure ratio	1 X8 : 1 SB15m

Delay values
Do not forget to add the pre-alignment and geometric delays depending on the configuration.

[X8_MO] + [SB15_100]	X8 = 0	SB15m = 2.6

[xx_MO] presets for the X series use the amplified controller low latency operating mode. When used along with subwoofers, it is recommended to use the subwoofers in low latency operating mode. To achieve this, create custom presets combining low latency channel sets and subwoofer channel sets.

If the subwoofers are driven from a dedicated amplified controller using a subwoofer factory preset, they are operated in normal latency mode. Therefore, an additional delay should be set to the [xx_MO] low latency channels to align them: 2.65 ms on LA4 and LA8 or 3.08 ms on LA4X.

Loudspeaker connection

Connectors

X8

IN   LINK
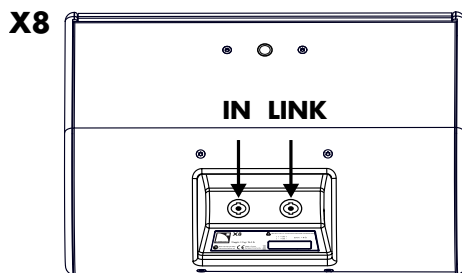
Internal pinout for L-ACOUSTICS 2-way passive enclosures

SpeakON points	1 +	1 -	2 +	2 -
Transducer connectors	+	-	Not linked	Not linked

SB15m

IN   LINK
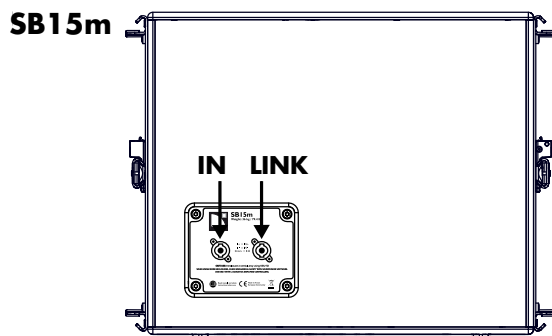
Internal pinout for L-ACOUSTICS subwoofers

SpeakON points	1 +	1 -	2 +	2 -
Transducer connectors	LF +	LF -	Not linked	Not linked

Connection to LA4X

Maximum number of coaxial enclosures per LA4X

loudspeaker enclosure	max number of connections per output[*]	max number of enclosures per controller
X8	2	8

Maximum number of subwoofer enclosures per LA4X

loudspeaker enclosure	max number of connections per output[*]	max number of enclosures per controller
SB15m	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.

Impedance load for:

— X8
— SB15m

| number of enclosures in parallel	nominal impedance
1	8 Ω
2	4 Ω

Using SP cables with passive enclosures

- Use SP cables (SP.7, SP5, SP10 or SP25) to connect one enclosure to each of the four SpeakON® connectors of the amplified controller.
- If necessary, use SP cables to connect identical enclosures in parallel with the first ones.

Refer to the cabling schemes below for more instructions.

X8
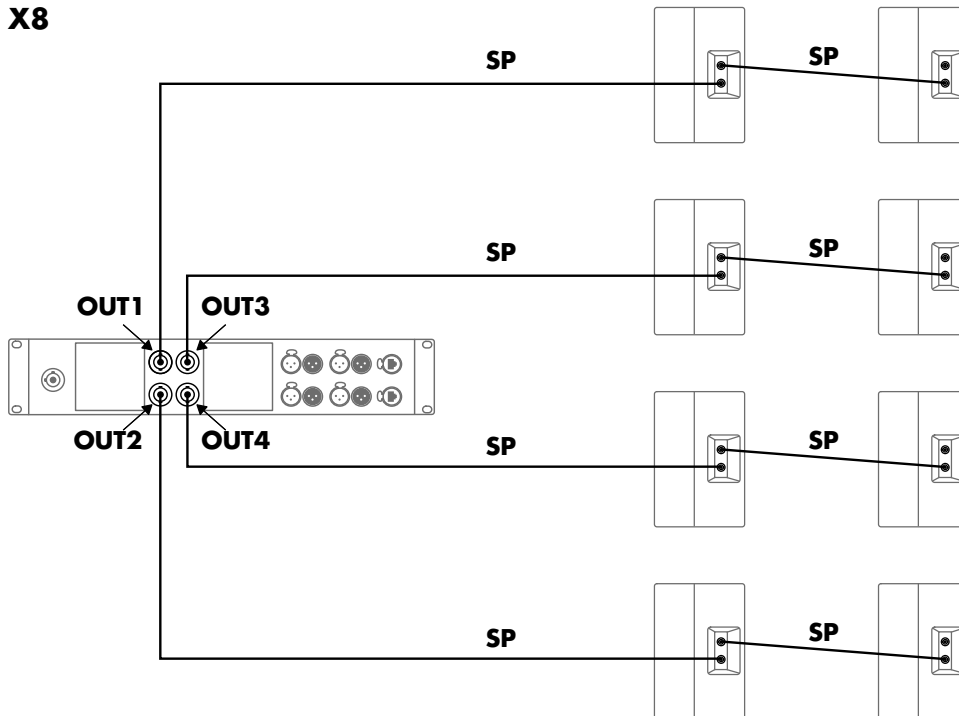
SB15m
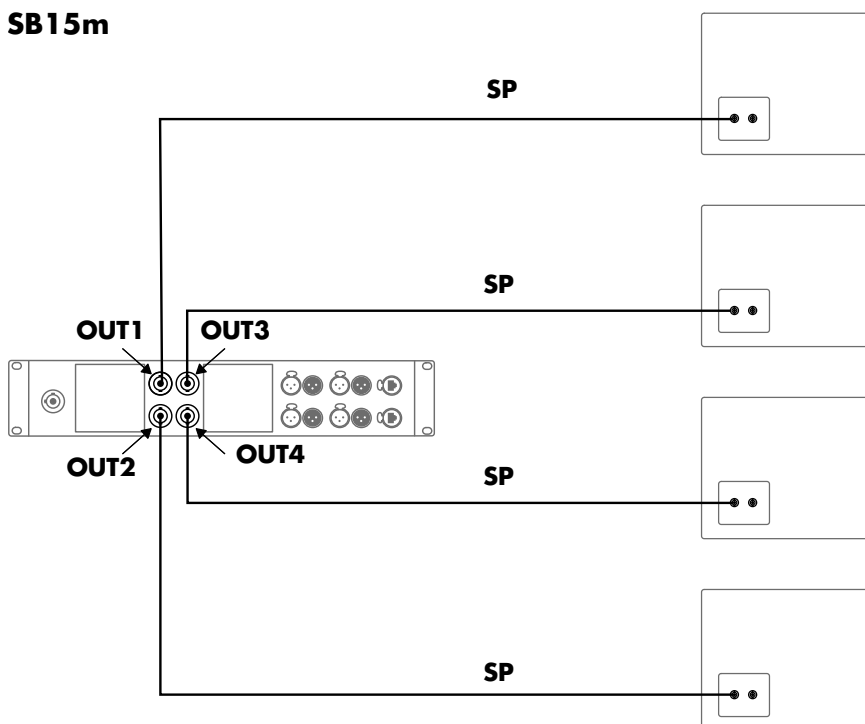
Using SP-Y1 cables

— Connect an SP cable (SP.7, SP5, SP10 or SP25) to the OUT1/OUT2 and OUT3/OUT4 SpeakON® connectors of the amplified controller.
— Use the CC4FP adapter of an SP-Y1 cable to split the signal into two channels, each feeding one enclosure.
— If necessary, use SP cables to connect identical enclosures in parallel with the first ones.

Refer to the cabling schemes below for more instructions.

X8
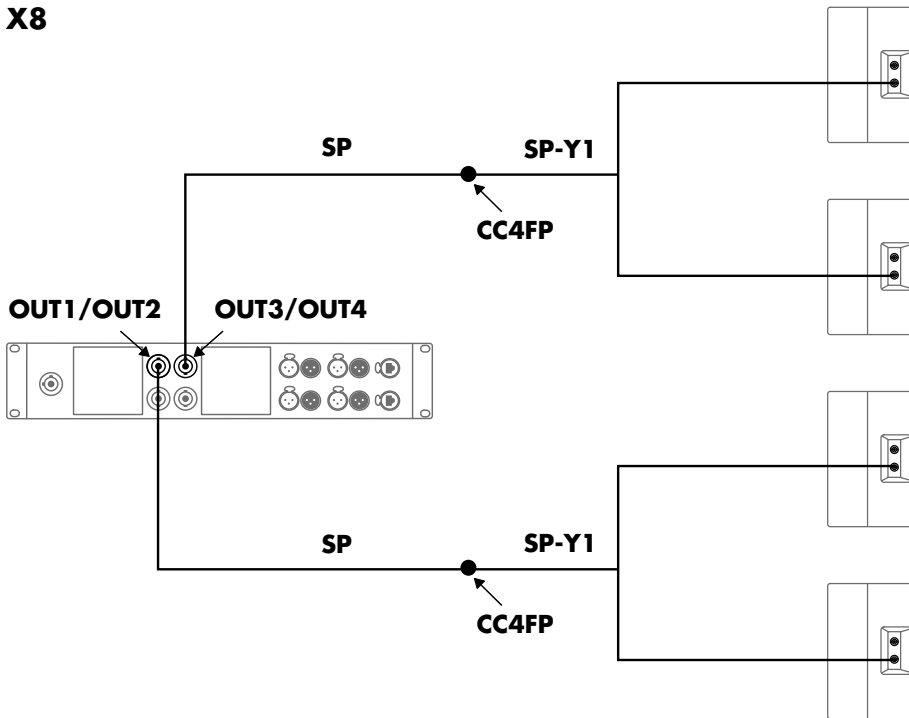
SB15m
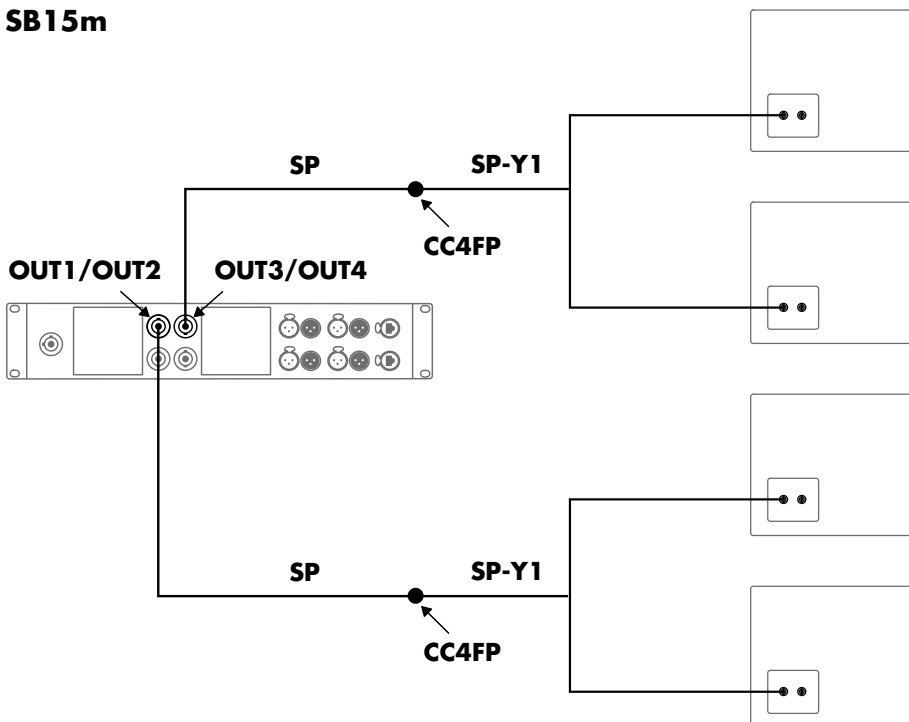
Connection to LA8

Maximum number of coaxial enclosures per LA8

loudspeaker enclosure	max number of connections per output[*]	max number of enclosures per controller
X8	3	12

Maximum number of subwoofer enclosures per LA8

loudspeaker enclosure	max number of connections per output[*]	max number of enclosures per controller
SB15m	2	8

[*] 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.

Impedance load for:

— X8
— SB15m

| number of enclosures in parallel	nominal impedance
1	8 Ω
2	4 Ω
3	2.7 Ω

Using SP-Y1 cables

- Connect SP cables (SP.7, SP5, SP10 or SP25) to the OUT1/OUT2 and OUT3/OUT4 SpeakON® connectors of the amplified controller.
- Use the CC4FP adapter of an SP-Y1 cable to split the signal into two channels, each feeding one enclosure.
- If necessary, use SP cables to connect identical enclosures in parallel with the first ones.

Refer to the cabling schemes below for more instructions.

X8
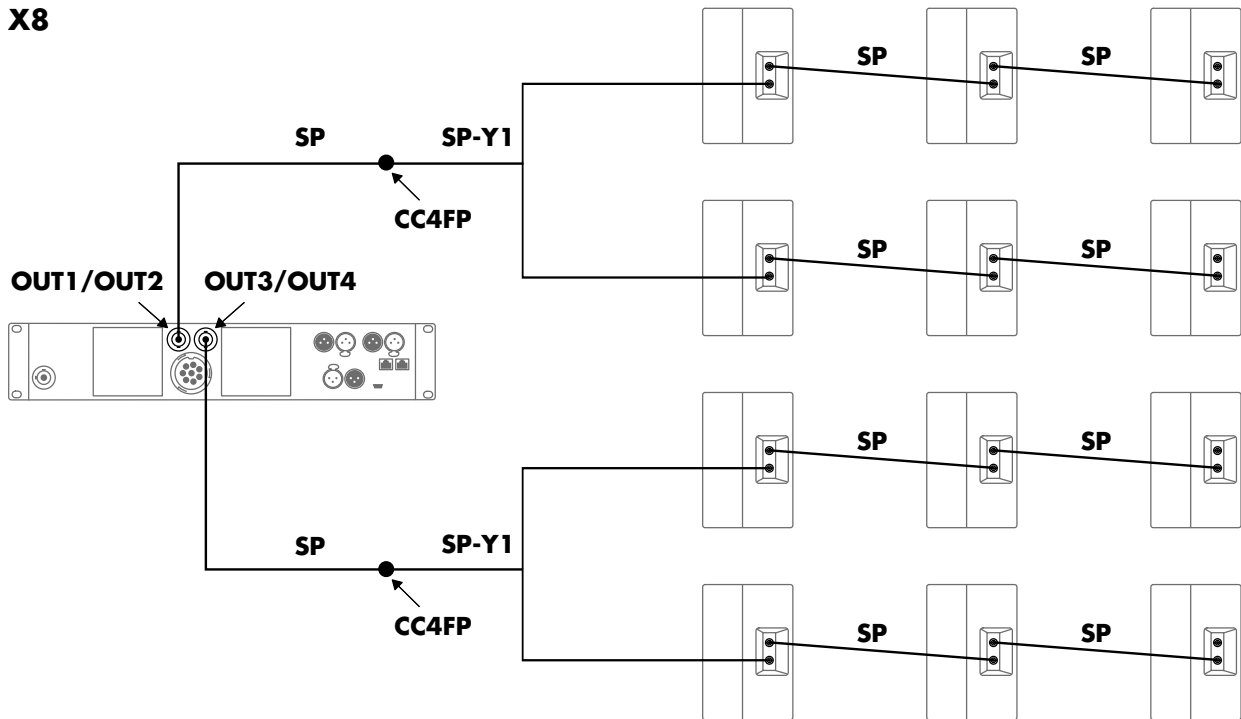
SB15m
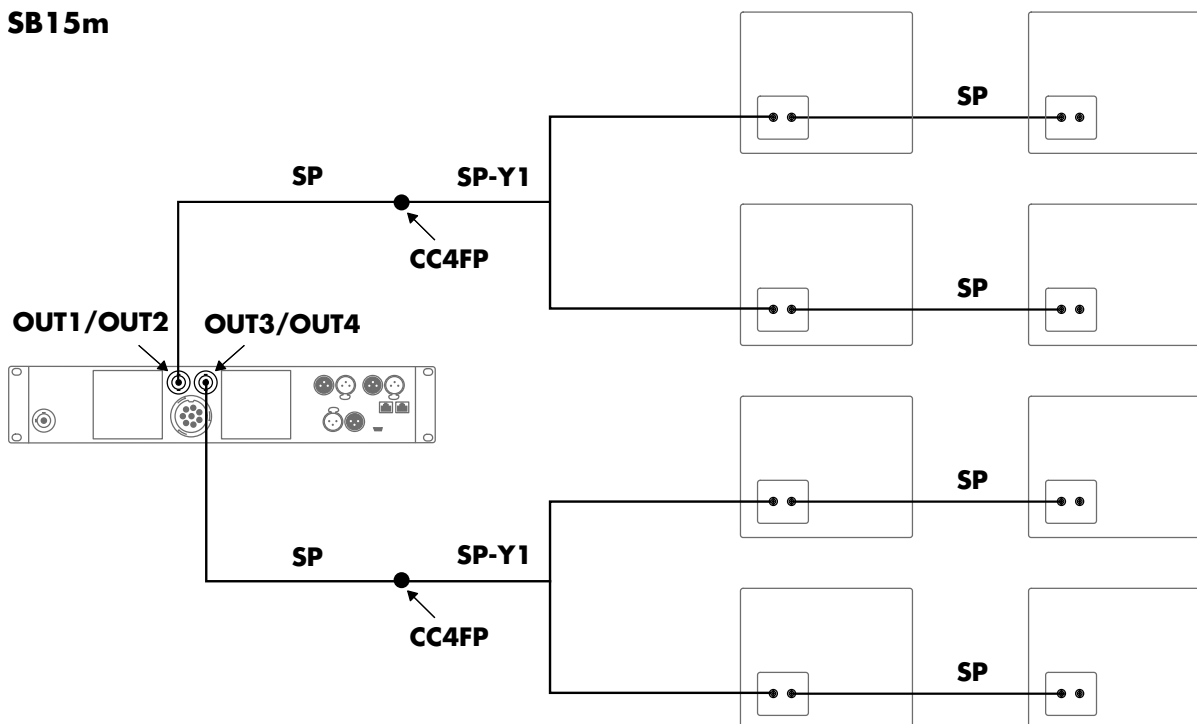
Using a DO cable with a DOSUB-LA8

— Connect a DO cable (DO.7,DO10 or DO25) to the CA-COM® connector of the amplified controller.
— Use a DOSUB-LA8 to split the signal into four channels, each feeding one enclosure.
— If necessary, use SP cables to connect identical enclosures in parallel with the first ones.

Refer to the cabling schemes below for more instructions.

X8

CA-COM

DO

DOSUB-LA8

SP

SB15m

CA-COM

DO

DOSUB-LA8

SP

Preset description

[X8]

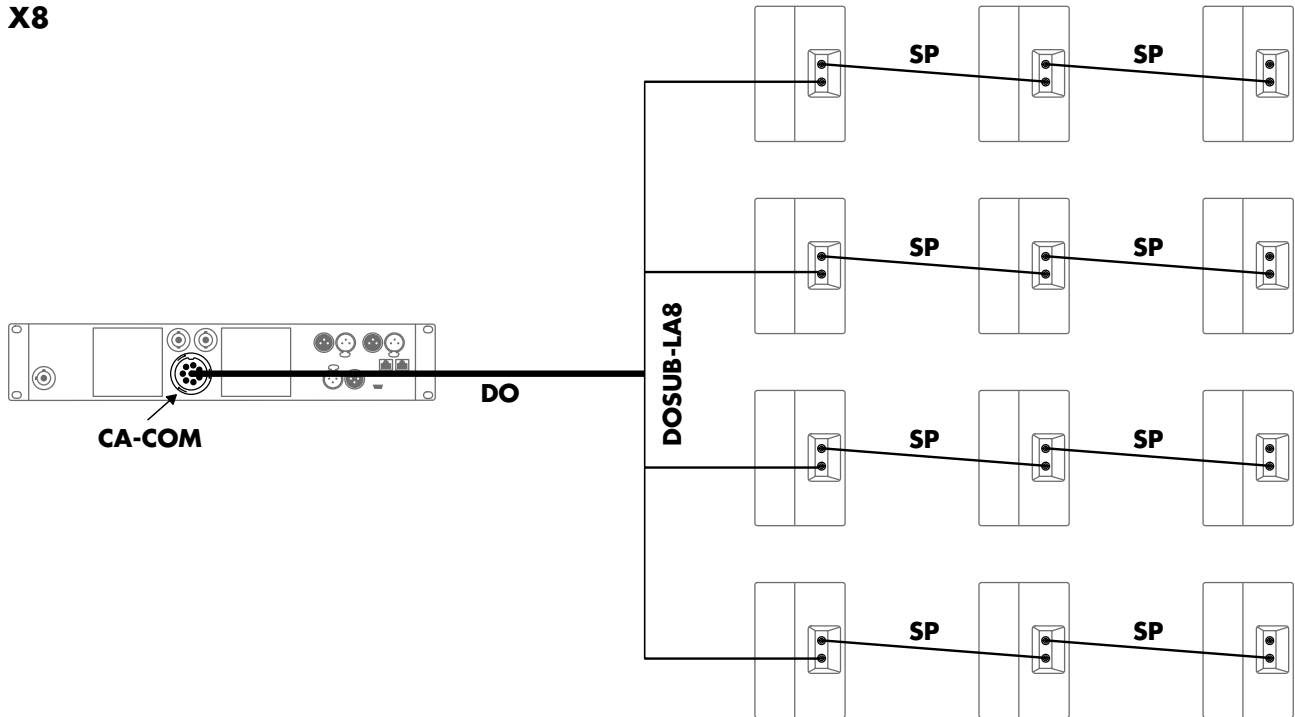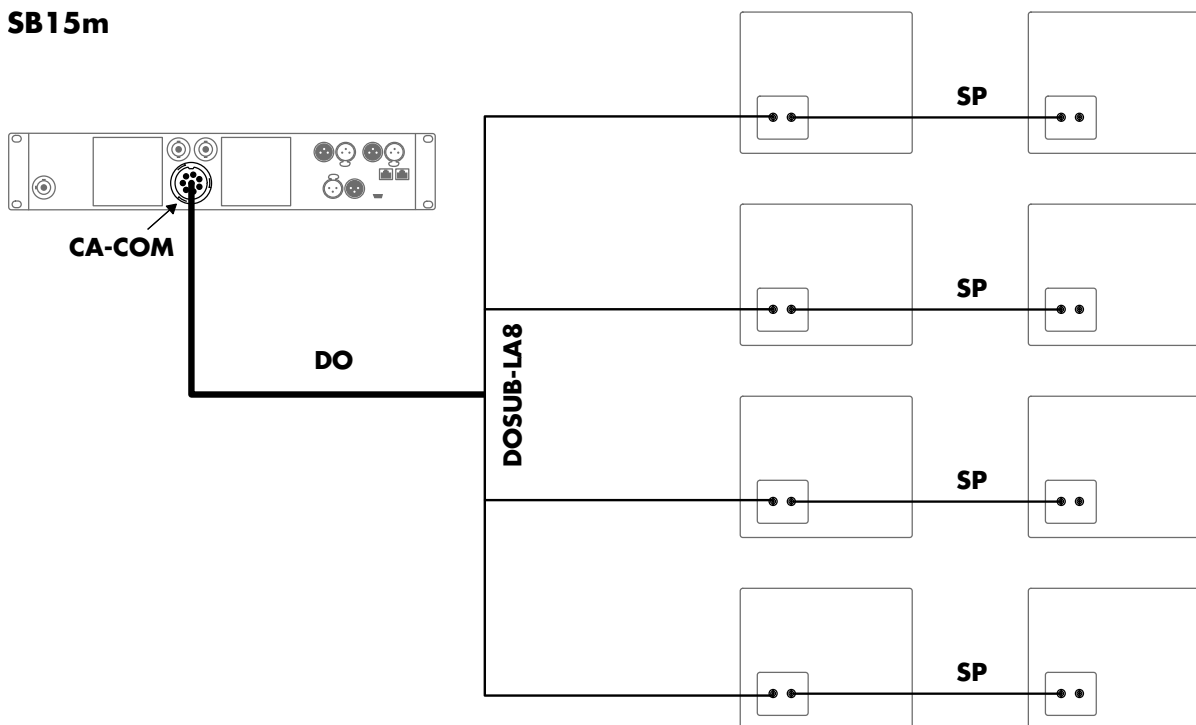| enclosure	outputs	channels	routing	gain	delay	polarity	mute
X8	OUT 1	PA	IN A	0 dB	0 ms	+	ON
X8	OUT 2	PA	IN A	0 dB	0 ms	+	ON
X8	OUT 3	PA	IN B	0 dB	0 ms	+	ON
X8	OUT 4	PA	IN B	0 dB	0 ms	+	ON

[SB15_100]

enclosure	outputs	channels	routing	gain	delay	polarity	mute
SB15m	OUT 1	SB	IN A	0 dB	0 ms	+	ON
SB15m	OUT 2	SB	IN A	0 dB	0 ms	+	ON
SB15m	OUT 3	SB	IN A	0 dB	0 ms	+	ON
SB15m	OUT 4	SB	IN A	0 dB	0 ms	+	ON

[SB15_100_C]

enclosure	loudspeaker elements	outputs	channels	routing	gain	delay	polarity	mute
SB15m	SR	OUT 1	SR	IN A	0 dB	0 ms	+	ON
SB15m	SB	OUT 2	SB					ON
SB15m	SB	OUT 3	SB					ON
SB15m	SB	OUT 4	SB					ON

Recommendation for speaker cables

Follow the recommended maximum length for loudspeaker cables to ensure minimal SPL attenuation.

Cable quality and resistance

Only use high-quality fully insulated speaker cables made of stranded copper wire.

Use cables with a gauge offering low resistance per unit length and keep the cables as short as possible.

The table below provides the recommended maximum length for loudspeaker cables depending on the cable gauge and on the impedance load connected to the amplifier.

cable gauge			recommended maximum length					
			8 Ω load		4 Ω load		2.7 Ω load	
mm^2	SWG	AWG	m	ft	m	ft	m	ft
2.5	15	13	30	100	15	50	10	33
4	13	11	50	160	25	80	17	53
6	11	9	74	240	37	120	25	80

For your installation projects, you can use the more detailed L-ACOUSTICS calculation tool to evaluate cable length and gauge based on the type and number of enclosures connected. The calculation tool is available on our website:
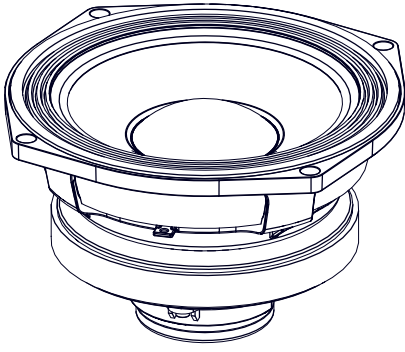
http://www.l-acoustics.com/installation-outils-de-calcul-1367.html

Maintenance

Repair kits

G03170

KR coaxial speaker X8

03046
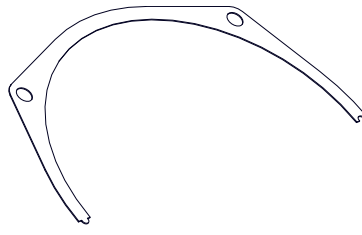
100604

S182

S100033

S342

code	description	qty
03046	8" coaxial speaker - 8 ohms	1
100604	8" speaker gasket	2
S182	Vis btr tc 4 x 12 acier zingué noir	4
S100033	M5x25 Tuflok coated flat countersunk head machine screw	4
S342	M5x20 Tuflok coated hexagon socket head cap screw	4

Disassembly and Reassembly procedures

In order to operate follow the order outlined here.

START

X8 GRILL
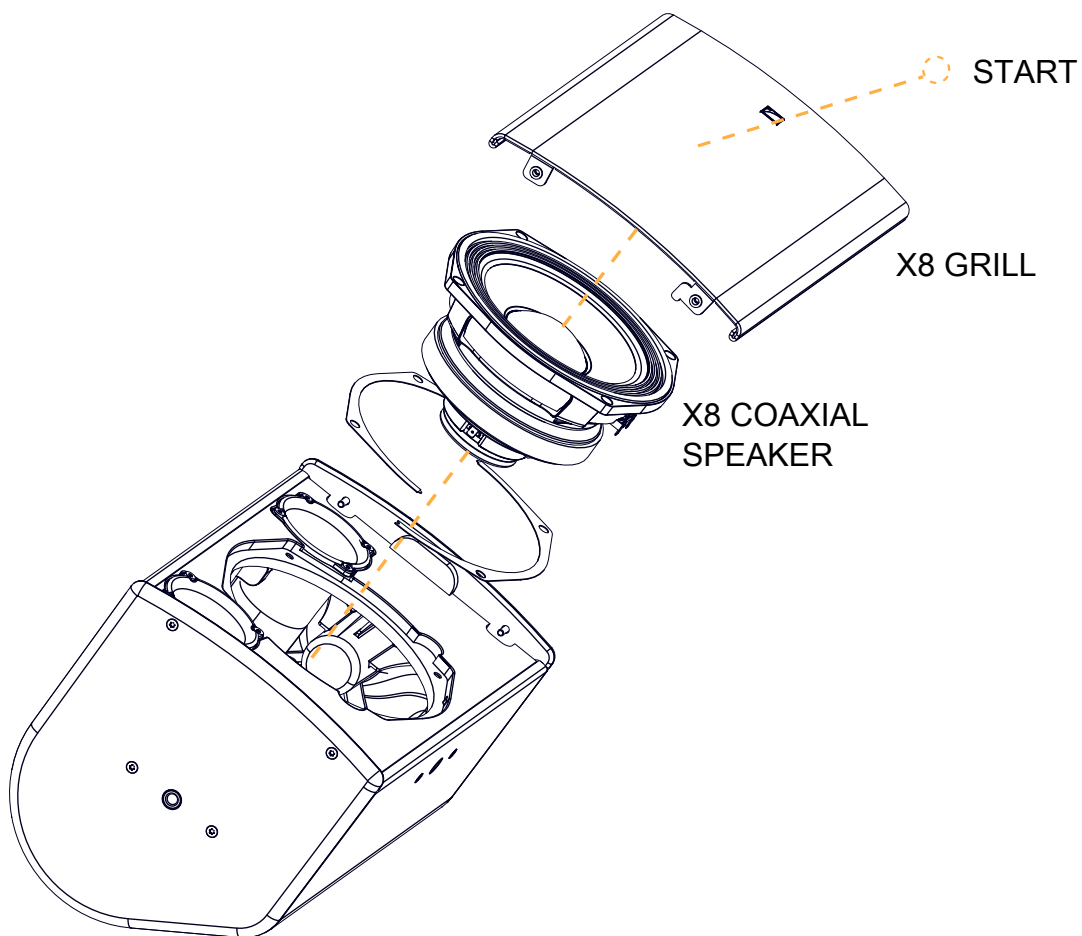
X8 COAXIAL
SPEAKER

Illustrations

Loudspeaker enclosures
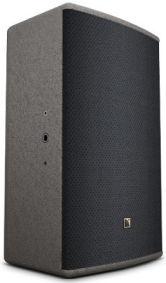
	X8	passive 2-way coaxial enclosure
	SB15m	high power compact subwoofer

Powering and driving system

	LA4X	amplified controller with DSP, preset library and networking capabilities
	LA8	amplified controller with DSP, preset library and networking capabilities
	LA-RAK	touring rack containing three LA8, for power, audio and network distribution

Loudspeaker cables

|		
	SP.7	4-point SpeakON loudspeaker cable (0.7 m / 2.3 ft)
	SP5	4-point SpeakON loudspeaker cable (5 m / 16.4 ft)
	SP10	4-point SpeakON loudspeaker cable (10 m / 32.8 ft)
	SP25	4-point SpeakON loudspeaker cable (25 m / 82 ft)
	DO.7	8-point PA-COM loudspeaker cable (0.7 m / 2.3 ft)
	DO10	8-point PA-COM loudspeaker cable (10 m / 32.8 ft)
	DO25	8-point PA-COM loudspeaker cable (25 m / 82 ft)
	DOSUB-LA8	breakout cable for four passive enclosures
	SP-Y1	breakout cable for two passive enclosures

Software applications

Soundvision   3D acoustical and mechanical modeling
                         software
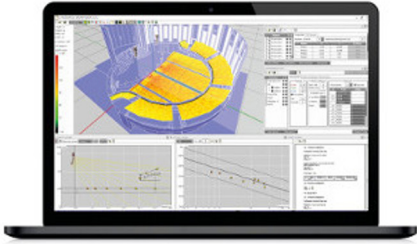
LA Network Manager   remote control and monitoring of amplified
                         controllers

X8 specifications

Description	X8 passive 2-way coaxial enclosure, amplified by LA4X / LA8.
Usable bandwidth (-10 dB)	60 Hz - 20 kHz
Maximum SPL [1]	127 dB ([X8])
Nominal directivity	Vertical: Axisymmetric 100°
Monitoring angle	35°
Transducers	1 × 8" weather-resistant, bass-reflex laminar vents.
	1 × 1.5" compression driver, neodymium, weather-resistant, partial horn.
Nominal impedance	LF: 8 Ω
	HF: 8 Ω
Connectors	IN: SpeakON
	LINK: SpeakON
Rigging and handling	1 × handles
	DIN580-compatible M8 threaded insert
	4 × M10 threaded inserts
	1 × 35 mm pole sockets
Weight (net)	12 kg / 26.5 lb
Cabinet	First grade Baltic beech and birch plywood
Finish	Dark Grey brown PANTONE 426C
	Pure white RAL 9010
	Custom RAL code on special order
IP	IP43

[1] Peak level at 1 m under free field conditions using 10 dB crest factor pink noise with specified preset.

X8 dimensions

On-end H/W/D

424 mm / 250 mm / 264 mm
16.7 in / 9.8 in / 10.4 in

Monitor H/W/D

278 mm / 424 mm / 306 mm
10.9 in / 16.7 in / 12 in

264 mm / 10.4 in

250 mm / 9.8 in

424 mm / 16.7 in

306 mm / 12 in

278 mm / 10.9 in