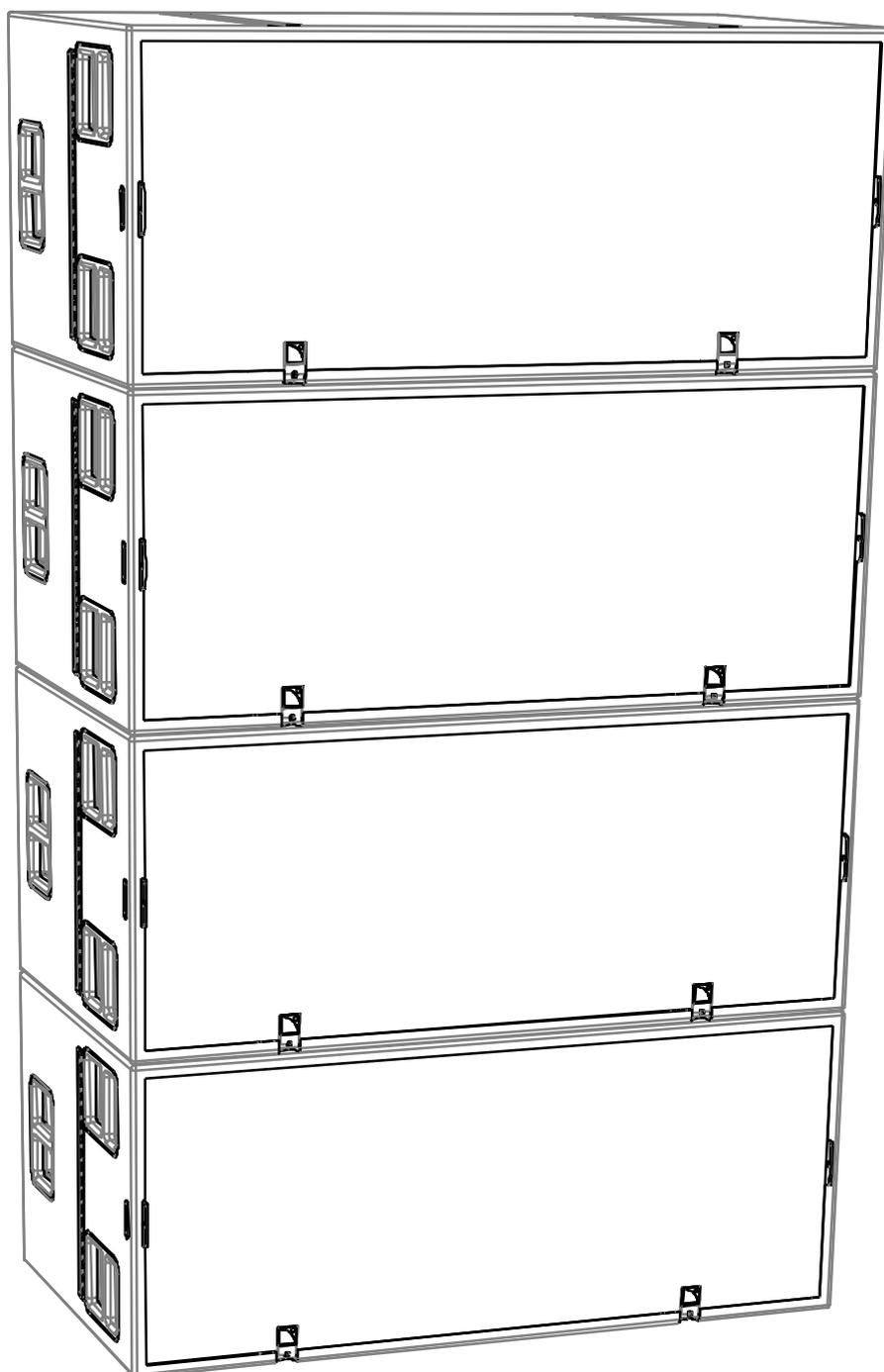


SB28 SUBWOOFER

USER MANUAL

VERSION 2.0



SAFETY INSTRUCTIONS

- 1. Read this manual**
- 2. Heed 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. Read the RIGGING MANUAL before installing the product**
Use the rigging elements described in the rigging manual and follow the associated procedures.
- 6. 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).

SYMBOLS

The following symbols are used in this document:



DANGER

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.



OBLIGATION

This symbol notifies the user about instructions that must be strictly followed to ensure proper installation or operation of the product.



INFORMATION

This symbol notifies the user about complementary information or optional instructions.

CONTENTS

1	SB28 HIGH POWER SUBWOOFER	3
2	SYSTEM COMPONENTS	3
3	OPERATING MODES	5
3.1	STANDARD mode.....	5
3.2	CARDIOID mode.....	5
4	LOUDSPEAKER CONNECTION	5
APPENDIX A: PRESET DESCRIPTION		7
[SB28_60] and [SB28_100]: standard subwoofer		7
[SB28_60_C] and [SB28_100_C]: cardioid subwoofer		7
APPENDIX B: SPECIFICATIONS FOR LOUDSPEAKER CABLES		7

WELCOME TO L-ACOUSTICS®

Thank you for choosing the L-ACOUSTICS® **SB28** subwoofer enclosure.

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, L-ACOUSTICS® reserves the right to change the specifications of its products and the content of its documents without prior notice.

Please check the L-ACOUSTICS® web site on a regular basis to download latest updates for documents and software:
www.l-acoustics.com.

1 SB28 HIGH POWER SUBWOOFER

The SB28 contains two 18" direct radiating LF transducers integrated into a bass-reflex tuned enclosure. The specially designed 18" transducers provide an exceptional cone excursion capability combined with low thermal compression even at the very highest operating levels. The progressive profile of vents allows laminar airflow and reduces turbulence noise. The combination of these characteristics provides a greatly improved +5 dB peak SPL output compared to the previous standards. The SB28 enclosure is made of first grade Baltic birch plywood to ensure maximum acoustical and mechanical integrity. The SB28 enclosure is exclusively driven and amplified by the LA8 amplified controller. This one ensures linearization, protection and optimization for the loudspeaker system in the different operating modes of the SB18, cardioid included.

2 SYSTEM COMPONENTS

The system approach developed by L-ACOUSTICS® consists in offering a global solution that guarantee the highest and most predictable level of performance at any step of loudspeaker system deployment: modeling, installation and operation. A complete L-ACOUSTICS® system includes enclosures, amplified controllers, cables, rigging system and software applications. The main components of an L-ACOUSTICS® system that includes the SB28 subwoofer are:

2.1 Powering and driving system

LA8 Amplified controller with DSP library and networking capabilities

LA-RAK Touring rack containing three LA8, for mains, audio signals and network distribution



Operating instructions

Refer to the **LA8** and the **LA-RAK user manual**.

2.2 Loudspeaker cables

DO cables (DO.7, DO10, DO25)	8-point PA-COM® loudspeaker cables respective lengths of 0.7m/2.3ft, 10m/32.8ft, and 25m/82ft
DO3WFILL	Breakout cable for one 2-way active enclosure and two passive enclosures PA-COM® < 3 x SpeakON®
DOSUB-LA8	Breakout cable for four passive enclosures PA-COM® < 4 x SpeakON®
SP cables (SP.7, SP5, SP10, SP25)	4-point SpeakON® loudspeaker cables, respective lengths of 0.7m/2.3ft, 5m/16.4ft, 10m/32.8ft and 25m/82ft
SP-YI	Breakout cable for two passive enclosure SpeakON® < 2 x SpeakON®



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

2.3 Software

LA NETWORK MANAGER Remote control and monitoring of amplified controllers

SOUNDVISION 3D acoustical and mechanical modeling software



Using L-ACOUSTICS® software

Refer to the **SOUNDVISION user manual** and the **LA NETWORK MANAGER tutorial**.

SB28 SUBWOOFER
USER MANUAL
VERSION 2.0



LA-RAK



SP-Y1



SP.7



SP5



SP10



SP25



LA8



DO.7



DO10



DO3WFILL



DOSUB-LA8



DO25



Soundvision



LA Network Manager

L-ACOUSTICS® system components for SB28
(excluding main systems, rigging elements and modulation cables)

3 OPERATING MODES

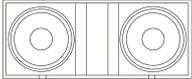
3.1 STANDARD mode

In STANDARD mode, a subwoofer system operates with an omni-directional directivity pattern.

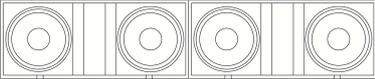
It corresponds to the use of SB subwoofers as single elements or as an array in standard configuration.

The SB28 subwoofers are driven by the LA8 amplified controller with a choice of two factory presets, each one offering a distinct upper frequency limit in order to optimize the acoustic coupling between the subwoofer system and a main full-range system.

SB28 in standard configuration



Single element

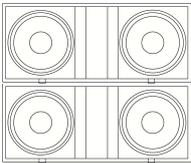


Horizontal

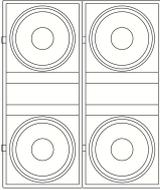
[PRESET] ► [SB28_60] or [SB28_100]

LF extension (-10dB)
25 Hz

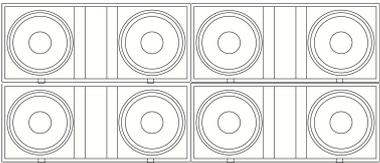
Directivity pattern
Omni-directional



Vertical



On-end



Block

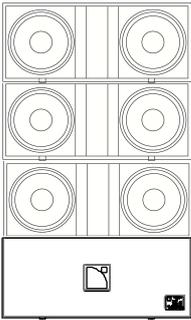
3.2 CARDIOID mode

In CARDIOID mode, a subwoofer system produces a rear SPL rejection.

It corresponds to the use of an array of four SB enclosures with one reversed element, i.e. turned towards the rear.

The SB28 subwoofers are driven by the LA8 amplified controller with a choice of two different factory presets, each one offering a distinct upper frequency limit, in order to optimize the acoustic coupling between the subwoofer system and a main full-range system. Both presets feature delay settings optimized for SB28 arrays in cardioid configuration.

SB28 array in cardioid configuration

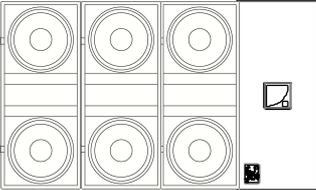


Vertical

Directivity pattern
Horizontal symmetric
Central rear rejection

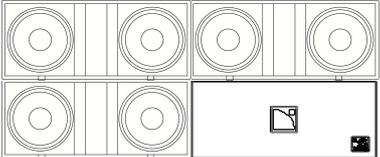
[PRESET] ► [SB28_60_C] or [SB28_100_C]

LF extension (-10dB)
25 Hz



On-end

Directivity pattern
Horizontal asymmetric
Rear rejection on the side of the reversed subwoofer



Block



Delay settings

When combining a line source with subwoofers, delays may have to be added to the presets. Refer to the **LA8 PRESET LIBRARY user manual** to obtain the pre-alignment delay values.



Grouping subwoofers

Place the subwoofer enclosures side by side. If not possible, the maximum distance between two adjacent acoustic centers must be 2.8 m or 1.7 m whether the upper frequency limit of the subwoofer system is 60 Hz or 100 Hz, respectively.

4 LOUDSPEAKER CONNECTION

The SB28 subwoofer is equipped with one 4-point SpeakON® connector.



Internal pinout for SB28 subwoofers

SpeakON® points	1+	1-	2+	2-
Transducer connectors	LF +	LF -	Not used	Not used

The SB28 is exclusively amplified by the L-ACOUSTICS® LA8 amplified controller.

To cable SB28 subwoofers with the LA8, three options are available:

Option A:

► Connect a **DO** cable (DO.7, DO10 or DO25) to the PA-COM® connector of the LA8 and use the **DOSUB-LA8** to split the audio signals into four channels, each one feeding one subwoofer.

Option B:

► Connect an **SP** cable (SP.7, SP5, SP10 or SP25) to one of the SpeakON® connectors of the LA8, and use the **SP-YI** cable to split the audio signals into two channels, each one feeding one subwoofer. The **CC4FP** adaptor allows interfacing the **SP** and **SP-YI** cables. Apply the same cabling scheme with the other LA8 SpeakON® connector.

Option C:

► Connect a **DO** cable (DO.7, DO10 or DO25) to the PA-COM® connector of the LA8 and use the **DO3WFILL** to split the audio signals into one channel pair, feeding one two-way enclosure, and two single channels, each one feeding one SB28 subwoofer. ⚠ This cabling scheme needs a dedicated custom preset.



Maximum of 4 SB28 subwoofers per LA8

1 SB28 subwoofer can be connected to each output channel on the LA8.



PA-COM® standard

Using cable other than specified in this document to connect a subwoofer via the PA-COM® connector of the LA8 may affect the acoustic results. Refer to the **LA8 PACOM CABLES technical bulletin**.



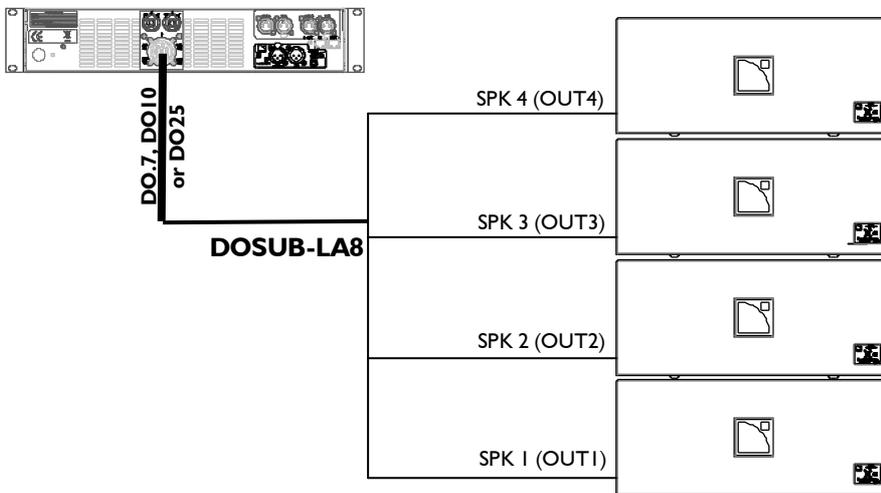
CARDIOID mode

By connecting the reversed subwoofer to OUT 1, Option A and Option B allow using the cardioid preset



Impedance load

4 Ω for 1 SB28.



Connecting four SB28 to one LA8 with the DOSUB-LA8 (Option A)

APPENDIX A: PRESET DESCRIPTION



The latest version of each **PRESET LIBRARY** and the corresponding **user manuals** are downloadable from the L-ACOUSTICS® web site.

[SB28 60] and [SB28 100]: standard subwoofer

To use SB28 subwoofers in STANDARD mode, as single elements or as an array in standard configuration.

LA8 Inputs/Outputs	Elements to connect	Routing*	Accessible (O) and locked (X) parameters			
			Mute	Gain	Delay	Polarity
IN A	Input signal A	IN_A	X	O	O	O
IN B	Input signal B	IN_B	X	O	O	O
OUT 1	Subwoofer	SB_A	O	O	O	O
OUT 2	Subwoofer	SB_A	O	O	O	O
OUT 3	Subwoofer	SB_B	O	O	O	O
OUT 4	Subwoofer	SB_B	O	O	O	O

* IN: input signal. A, B: channel A, B. SB: subwoofer.

[SB28 60 C] and [SB28 100 C]: cardioid subwoofer

To use SB28 subwoofers in CARDIOID mode, as an array in cardioid configuration.

LA8 Inputs/Outputs	Elements to connect	Routing*	Accessible (O) and blocked (X) parameters			
			Mute	Gain	Delay	Polarity
IN A	Input signal A	IN_A	X	O	O	O
IN B	Input signal B	IN_B	X	O	O	O
OUT 1	Reversed subwoofer	SR_A	O	X	X	X
OUT 2	Subwoofer	SB_A	O	X	X	X
OUT 3	Subwoofer	SB_A	O	X	X	X
OUT 4	Subwoofer	SB_A	O	X	X	X

* IN: input signal. A, B: channel A, B. SB: subwoofer. SR: reversed subwoofer.

APPENDIX B: SPECIFICATIONS FOR LOUDSPEAKER CABLES



Cable quality and resistance

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

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

The following table provides the recommended maximum length depending on the cable cross-section and on the impedance load connected to the amplifier.

Cable cross-section			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
10	9	7	120	390	60	195	40	130



Document reference: SB28_UM_EN_2-0

Distribution date: June 13, 2012

© 2012 L-ACOUSTICS®. All rights reserved.

**No part of this publication may be reproduced or transmitted in any form
or by any means without the express written consent of the publisher.**