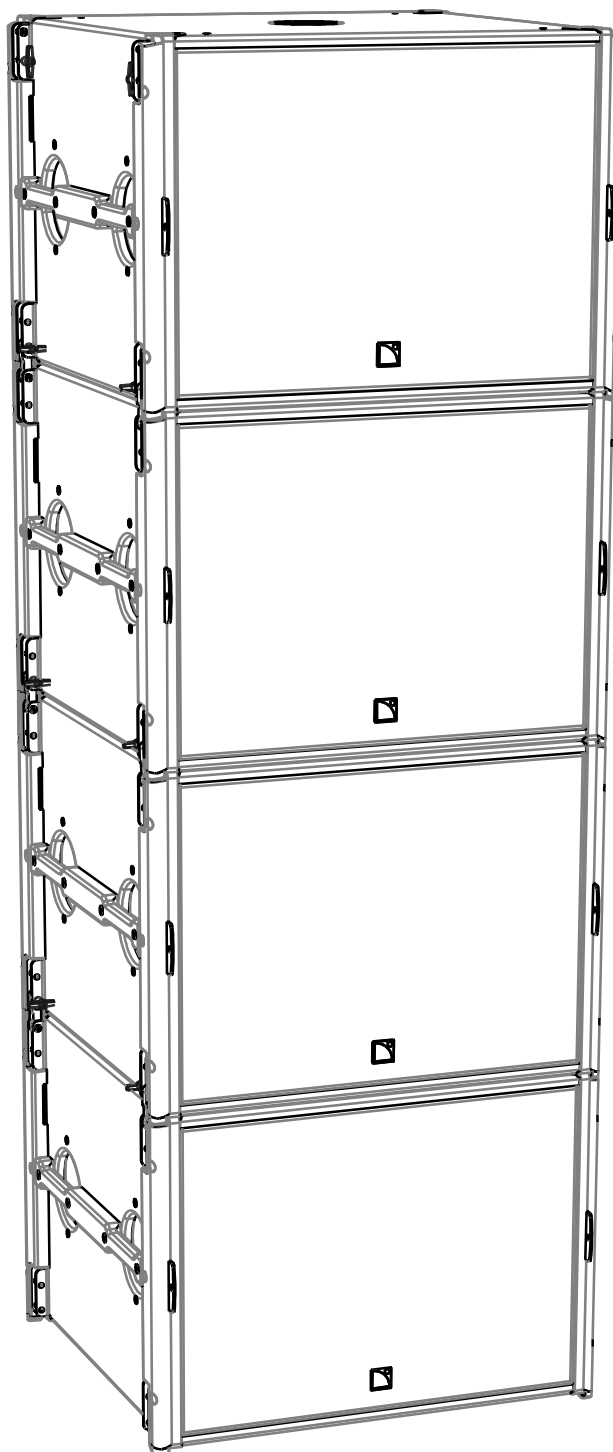


# SB18/SB18i/SB18m SUBWOOFER

## USER MANUAL

VERSION 2.1



## **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.

## **WELCOME TO L-ACOUSTICS®**

Thank you for choosing the L-ACOUSTICS® **SB18**, **SB18i** or **SB18m** 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](http://www.l-acoustics.com).

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## 1 SB18 SUBWOOFER

The SB18 subwoofer is a universal low-frequency extension, specifically recommended for KARA WST® line source, ARCS® FOCUS/WIDE WST® line sources and the XT coaxial enclosures. It allows extending the operating frequency range of the system down to 32Hz.

The association of a specifically designed 18" transducer with a dual bass-reflex tuned enclosure provides exceptional impact and high sensitivity, low thermal compression and reduced distortion. A vent with a progressive profile allows laminar airflow and reduces turbulence noise, even at the very highest operating levels. These combined properties contribute to the sonic qualities of the SB18 in terms of precision and musicality. The SB18 cabinet is made of first grade Baltic birch plywood to ensure maximum acoustical and mechanical integrity.

The SB18 enclosure is driven and amplified by the LA4 or the LA8 controller. These ensure linearization, protection and optimization for the loudspeaker system in the different operating modes of the SB18, cardioid included.



### SB18 / SB18i / SB18m

In this document, the SB18 term and illustration will refer equally to SB18, SB18i or SB18m. These products are different versions of the same subwoofer and share the same operating modes, presets and recommended configurations. The rigging system of each version has been designed to be compatible with a distinct main system: SB18 with KARA®, SB18i with KARAI and SB18m with ARCS® FOCUS/WIDE. All SB18 versions feature a pole mount socket for use with one XT, two KIVA or one ARCS® FOCUS/WIDE.

## 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 SB18 subwoofer are the following:

### 2.1 Powering and driving system

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LA4	Amplified controller with DSP library and networking capabilities
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 **LA4**, **LA8** or **LA-RAK user manual**.

### 2.2 Loudspeaker cables

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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 **LA4**, **LA8** or **LA-RAK user manual** for detailed instructions about the whole cabling scheme, including modulation cables and network.

### 2.3 Rigging elements

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Rigging elements or procedures are not presented in this document.

According to the version of the subwoofer and the system to set-up, refer to the applicable rigging manual.

### 2.4 Software

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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 training** and the **LA NETWORK MANAGER tutorial**.



LA-RAK



SP-Y1



LA4



DO.7



SP.7



LA8



SP5



DO3WFILL



DO10



SP10



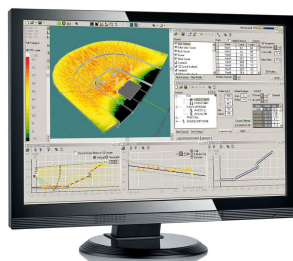
DOSUB-LA8



DO25



SP25



Soundvision



LA Network Manager

**L-ACOUSTICS® system components compatible with the SB18 subwoofer**  
(excluding main systems, rigging elements and modulation cables)

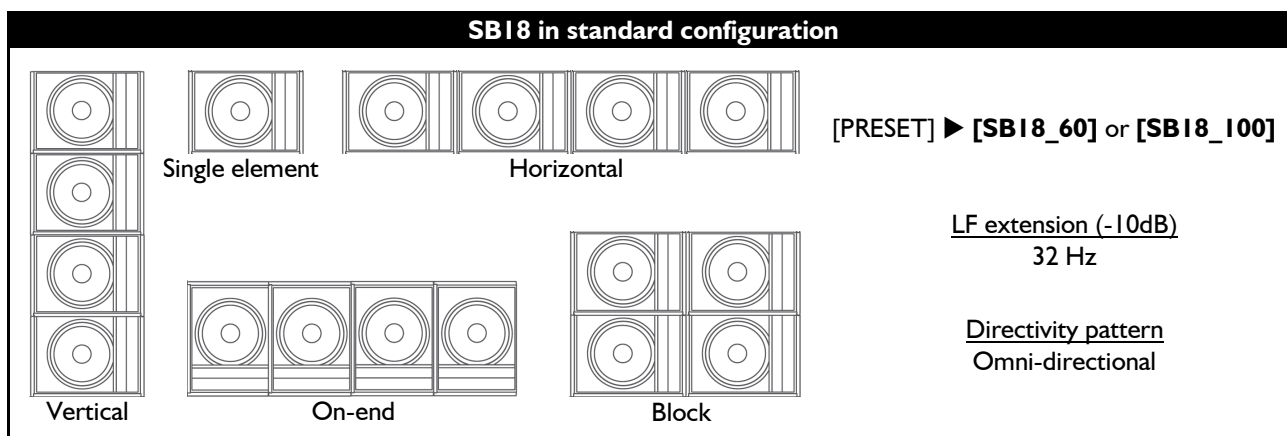
### 3 OPERATING MODES

#### 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 a standard subwoofer array.

The SB18 subwoofers are driven either by the LA8 or the LA4 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.

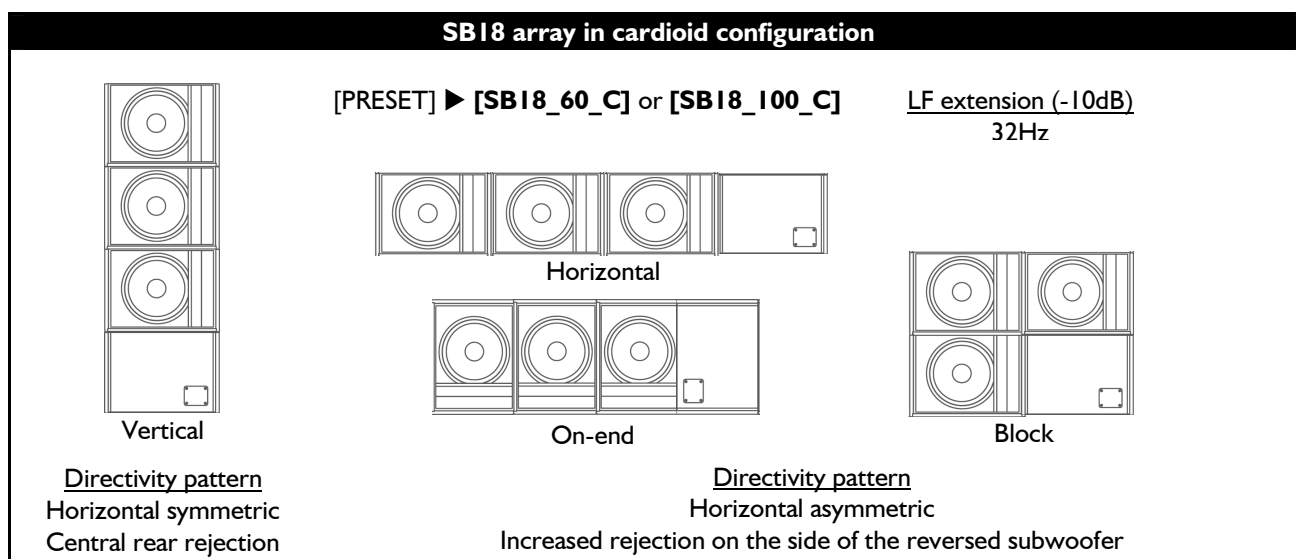


#### 3.2 CARDIOID mode

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 SB18 subwoofers are driven either by the LA8 or the LA4 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 SB18 arrays in cardioid configuration.



#### Delay settings

When combining a line source with subwoofers, delays may have to be added to the presets. Refer to the **LA4** or **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 SB18 subwoofer is equipped with two 4-point SpeakON® connectors.

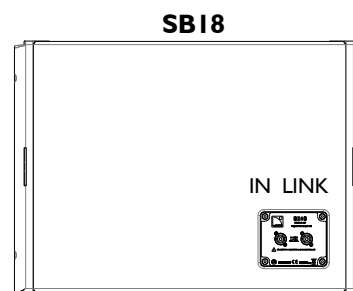
The IN connector allows receiving the audio signal, whereas the LINK connector allows routing it to another SB18 enclosure in parallel.

❗ SB18 parallel connection is only possible with the LA8 amplified controller.



### Internal pinout for L-ACOUSTICS® subwoofers

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



### 4.1 Connection to LA8

To cable SB18 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 SB subwoofer of the same type.

#### 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 2-way active enclosure, and two single channels, each one feeding one SB subwoofer. ❗ This cabling scheme needs a dedicated custom preset.

One additional SB18 can be connected in parallel with each of the first ones, by using **SP** cables.



### Maximum of 8 SB18 subwoofers per LA8

2 SB18 subwoofers in parallel 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**.



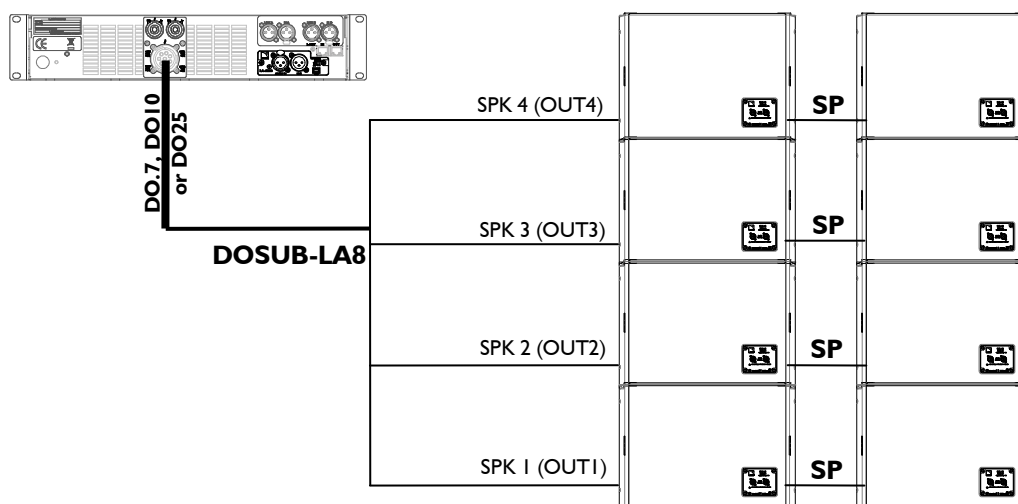
### Subwoofer array in CARDIOID configuration

The reversed sub must be connected to OUT 1.



### Impedance load

8 Ω for 1 SB18, 4 Ω for 2 SB18 in parallel.



Connecting eight SB18 to one LA8 with the DOSUB-LA8 (Option A)

### 4.2 Connection to LA4

To cable the SB18 subwoofers with the **LA4** amplified controller, two options are available:

#### Option A:

► Connect an **SP** cable (SP.7, SP5, SP10 or SP25) to the OUT1 connector of the LA4, and use the **SP-YI** cable to split the audio signals into two channels, each one feeding one enclosure. The **CC4FP** adaptor allows interfacing the **SP** and **SP-YI** cables. Apply the same cabling scheme with the OUT3 connector to connect two more enclosures.

#### Option B:

► Use an **SP** cable (SP.7, SP5, SP10 or SP25) to connect one similar enclosure to each of the four LA4 output channels.



#### Maximum of 4 SB18 per LA4

1 SB18 subwoofers can be connected to each output channel on the LA4.  
Therefore, a single LA4 amplified controller can drive up to 4 SB18 subwoofers.



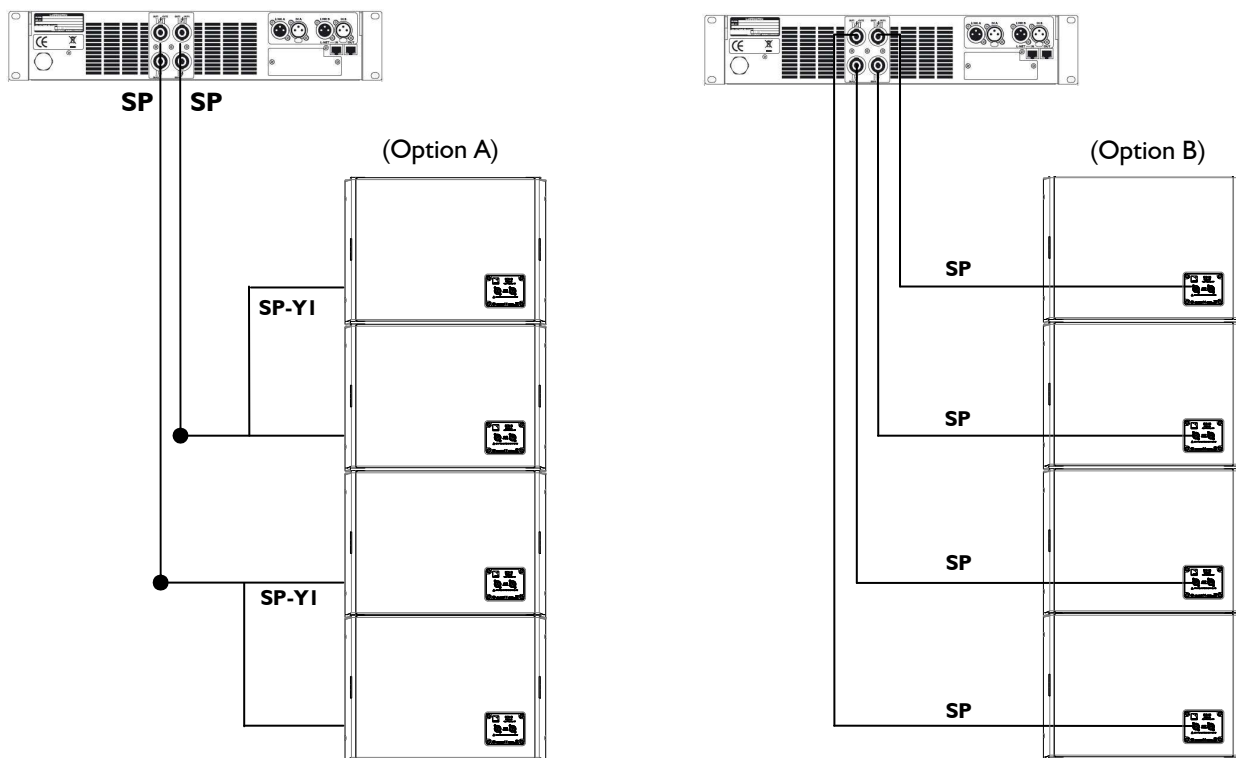
#### Subwoofer array in CARDIOID configuration

The reversed sub must be connected to OUT 1.



#### Impedance load

8 Ω for 1 SB18



Connecting four SB18 to one LA4



## APPENDIX A: PRESET DESCRIPTION



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

### [SB18 60] and [SB18 100]: standard

To use SB18 subwoofers in STANDARD mode, as single elements or as an array in standard configuration.

LA4 or 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.

### [SB18 60 C] and [SB18 100 C]: cardioid

To use SB18 subwoofers in CARDIOID mode, as an array in cardioid configuration.

LA4 or 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: RECOMMENDATIONS FOR SPEAKER 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 $\Omega$ load		4 $\Omega$ load		2.7 $\Omega$ load	
mm <sup>2</sup>	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

**SB18 / SB18i / SB18m SUBWOOFER**  
**USER MANUAL**  
VERSION 2.1





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