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Safety

Instructions

⚠️ Inspect the product before operation.
If any sign of defect or damage is detected, immediately withdraw the product from use for maintenance.

⚠️ 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.

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

⚠️ Beware of sound levels.
Do not stay within close proximity of loudspeakers in operation.
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 at moderate level with prolonged exposure to sound.
Check the applicable laws and regulations relating to maximum sound levels and exposure times.

⚠️ This system is intended for professional use.

⚠️ Read the RIGGING MANUAL before installing the system.
Use the rigging accessories described in the rigging manual and follow the associated procedures.

⚠️ Read the maintenance section of this document before servicing the product.

⚠️ 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.

⚠️ Contact L-Acoustics for advanced maintenance.
Any unauthorized maintenance operation will void the product warranty.

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.

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

Thank you for purchasing the L-Acoustics K2.

This document contains essential information on using the system properly.

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 document without prior notice. Please check www.l-acoustics.com on a regular basis to download the latest document and software updates.

K2 variable curvature WST line source

The K2 is the full range element of a WST® line source with variable curvature and adjustable horizontal directivity. The K2 loudspeaker enclosure is based on a 3-way active design. It comprises 4 input sections: 2 LF and 1 MF at a nominal impedance of 8 ohms, and 1 HF at a nominal impedance of 16 ohms. It features two 12" speakers and four 6.5", all direct-radiating neodymium speakers mounted in a bass-reflex enclosure, and two 3" neodymium diaphragm compression drivers coupled to individual DOSC® waveguides and adjustable directivity fins. The transducers are implemented in a K-shape configuration. The cabinet is made of machined first grade Baltic birch plywood (for top, bottom and back panels) combined to die cast aluminum side panels to ensure maximum acoustical and mechanical integrity while reducing weight to the minimum. A four-point rigging system is integrated into the cabinet.

The K2 enclosure operates over the nominal frequency range of 35 Hz to 20 kHz. Its LF contour can be reinforced with the dedicated K1-SB extension and its bandwidth can be extended down to 25 Hz with the KS28 subwoofer. In the horizontal plane, the directivity is adjustable down to 300 Hz, with two symmetric settings (70° or 110°) and two asymmetric settings (90° as 35°/55° or 55°/35°).

The K2 rigging system allows vertical assembly of enclosures with various inter-element angles (up to 10°), constituting a line array with variable curvature. The combination of the coplanar symmetry and the DOSC® waveguide in the HF region ensure a perfect acoustic coupling between the elements of an array. The WST® (Wavefront Sculpture Technology) criteria are fulfilled, so that such an array can be qualified as a true line source. Any WST® line source provides a smooth tonal response and a coverage that is free of secondary lobes over the entire frequency range.

The K2 is driven and quad-amplified by the LA12X or LA4X controller with factory presets which ensure linearization, protection, and optimization for the loudspeaker system.
System components

Loudspeaker enclosures

K2 3-way full-range active WST enclosure
K1-SB K1 system subwoofer 2 x 15"
KS28 Flyable subwoofer 2 x 18"
Kara 2-way modular WST enclosure

Powering and driving system

LA4X / LA12X Amplified controller with DSP, preset library and networking capabilities
LA-RAK II Touring rack containing three LA12X, LA-POWER II for power distribution and LA-PANEL II for audio and network distribution

Refer to the LA4X / LA12X 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 x 2-point speakON
DO 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 x 2-point speakON
DOFILL-LA8 breakout cable for two 2-way active enclosures (4 mm² gauge)
8-point PA-COM to 2 x 4-point speakON
DO3WFILL breakout cable for one 2-way active enclosure and two passive enclosures (4 mm² gauge)
8-point PA-COM to 1 x 4-point speakON and 2 x 2-point speakON

Information about the connection of the enclosures to the LA amplifiers is given in this document.

Refer to the LA4X / LA12X 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 K2 rigging manual.
Software applications

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

Refer to the Soundvision help.
Refer to the LA Network Manager help.

Loudspeaker cables

0.7 m / 5 m / 10 m / 25 m

SP.7 / SP5 / SP10 / SP25

1 m

CH(1)  CH(2)

SP-Y1

5 m

DO.7 / DO10 / DO25

DOSUB-LA8

3.5 m

2W CH(A)  2W CH(B)

DOFILL-LA8

DO3WFILL

2WAY

SUB1  SUB2
Technical description

K2 horizontal directivity settings

The K2 enclosure features an adjustable horizontal directivity system. Using the adjustable fins, horizontal directivity can be adjusted with four different settings: 110°/70° symmetric or 90° asymmetric (35°/55° or 55°/35°). A specific K2 preset must be used for each directivity setting.

Within a line source, different directivity settings can be combined to improve the coverage of the audience geometry.
## K1-SB applications

There are two distinct applications for K1-SB in a K2 system:

- As an LF extension in a line source for enhanced throw, using the [K1SB_X K2] preset with K2.
- As a subwoofer for increased impact, using the [K1SB_60] preset.

Both applications of K1-SB can be combined in the same configuration.

<table>
<thead>
<tr>
<th>K1-SB as an LF extension in a line source</th>
<th>K1-SB as a subwoofer</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Diagram of K1-SB as an LF extension in a line source]</td>
<td>![Diagram of K1-SB as a subwoofer]</td>
</tr>
</tbody>
</table>

**ENHANCED THROW**

**INCREASED IMPACT**
Loudspeaker configurations

Line source

Deployed as a line source, the system operates over the nominal bandwidth of the K2 enclosure, with an adjustable horizontal directivity.

Two configurations are possible:
- K2 line source
- K2/K1-SB line source: enhanced LF throw

The [K2 70], [K2 90] and [K2 110] presets allow for a reference frequency response in long throw applications. Each preset is dedicated to a horizontal directivity setting.

By providing the K1-SB with the same frequency response as the K2 low section, the [K1SB_X K2] preset allows the K1-SB enclosure to be used as an LF line source element, increasing the length of the sub-low line source.

The K2 enclosures are driven by the LA4X / LA12X amplified controllers.
The K1-SB enclosures are driven by the LA12X amplified controller.

### Standalone K2 line source

<table>
<thead>
<tr>
<th>Enclosure</th>
<th>K2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preset</td>
<td>[K2 70] [K2 90] [K2 110]</td>
</tr>
<tr>
<td>Frequency range (-10 dB)</td>
<td>35 Hz - 20 kHz</td>
</tr>
</tbody>
</table>
**Loudspeaker configurations**

**K2/K1-SB line source**

<table>
<thead>
<tr>
<th>Enclosure</th>
<th>K2</th>
<th>K1-SB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preset</td>
<td>[K2 70] [K2 90] [K2 110]</td>
<td>[K1SB_X K2]</td>
</tr>
</tbody>
</table>

- Frequency range (-10 dB): 35 Hz - 20 kHz
- Recommended ratio: 3 K2 : 1 K1-SB
- Minimum line length: 12 K2 + 4 K1-SB

⚠️ When using [K2 70], [K2 90], or [K2 110] with [K1SB_X K2], do not add any delay value between the K2 and K1-SB elements of a same line source.
Additional subwoofer system

A K2 line source or a K2/K1-SB line source can be deployed with additional subwoofer enclosures to provide increased sub-low resources to demanding applications.

Two subwoofer systems are available:
- K1-SB for increased LF contour
- KS28 for infra extension

The recommended ratio is 3 K2 for 2 subwoofers, whether using K1-SB subwoofers only, KS28 subwoofers only, or a combination of both.

The [K1SB_60] and [KS28_60] presets provide the subwoofers with an upper frequency limit at 60 Hz for an optimal frequency coupling with the line source.

The K1-SB and KS28 subwoofer enclosures are driven by the LA12X amplified controller.
**K1-SB**

The K1-SB provides an extension of the bandwidth in the low end, down to 30 Hz. Depending on the deployment, LF rejection can be produced.

Three deployments are available in this configuration:
- K1-SB on top of the K2 line source
- K1-SB beside the K2 or K2/K1-SB line source: side LF rejection (polarized)
- K1-SB behind the K2 or K2/K1-SB line source: rear LF rejection (cardioid)

### Line source with K1-SB on top

<table>
<thead>
<tr>
<th>Enclosure</th>
<th>K2</th>
<th>K1-SB as subwoofer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preset</td>
<td>[K2 70][K2 90][K2 110]</td>
<td>[K1SB_60]</td>
</tr>
<tr>
<td>Frequency range (-10 dB)</td>
<td>30 Hz - 20 kHz</td>
<td></td>
</tr>
<tr>
<td>Recommended ratio</td>
<td>3 K2 : 2 subwoofers</td>
<td></td>
</tr>
<tr>
<td>Maximum number line length</td>
<td>12 K2 + 4 K1-SB</td>
<td></td>
</tr>
</tbody>
</table>

⚠️ **Delay values**

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

**Pre-alignment delays**

| [K2] + [K1SB_60] | K2 = 6 ms | K1-SB = 0 ms |
**Line source with K1-SB beside**

- **Enclosure**: K2 in line source, K1-SB as subwoofer
- **Preset**: [K2 70][K2 90][K2 110] [K1SB_60]
- **Frequency range**: 30 Hz - 20 kHz
- **Recommended ratio**: 3 K2 : 2 subwoofers
- **Recommended spacing between side panels**: Between 0.5 m (1.5 ft) and 1 m (3 ft)

### Delay values

- **Do not forget to add the pre-alignment and geometric delays depending on the configuration.**
- **When using [K2 70], [K2 90], or [K2 110] with [K1SB_X K2], do not add any delay value between the K2 and K1-SB elements of a same line source.**

### Pre-alignment delays

<table>
<thead>
<tr>
<th>Configuration</th>
<th>K2 Delay</th>
<th>K1-SB Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>[K2] + [K1SB_60]</td>
<td>6 ms</td>
<td>0 ms</td>
</tr>
</tbody>
</table>
Line source with K1-SB behind

![Diagram of line source with K1-SB behind]

<table>
<thead>
<tr>
<th>Enclosure</th>
<th>K2</th>
<th>K1-SB in line source</th>
<th>K1-SB as subwoofer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preset</td>
<td>[K2 70][K2 90][K2 110]</td>
<td>[K1SB_X K2]</td>
<td>[K1SB_60]</td>
</tr>
<tr>
<td>Frequency range (-10 dB)</td>
<td>30 Hz - 20 kHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended ratio</td>
<td>3 K2 : 2 subwoofers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended spacing between front faces</td>
<td>Between 1.5 m (5 ft) and 2 m (7 ft)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

⚠️ **Delay values**

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

⚠️ **Pre-alignment delays**

K2 = 6 ms  K1-SB = 0 ms

[|K2| + |K1SB_60|  |
|---|---|---|

**Geometric delays**

| 1.5 m (5 ft) | Line source = 4.5 ms |
| 2 m (7 ft) | Line source = 6 ms |
KS28

The KS28 provides an extension of the bandwidth in the low end, down to 25 Hz.

**Line source with KS28**

<table>
<thead>
<tr>
<th>Enclosure</th>
<th>K2</th>
<th>K1-SB in line source</th>
<th>K1-SB as subwoofer</th>
<th>KS28</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preset</td>
<td>[K2 70]</td>
<td>[K2 90]</td>
<td>[K2 110]</td>
<td>[K1SB_X]</td>
</tr>
<tr>
<td>Frequency range (-10 dB)</td>
<td>25 Hz - 20 kHz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended ratio</td>
<td>3 K2 : 2 subwoofers</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**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 if the upper frequency limit of the subwoofer system is at 60 Hz or 100 Hz, respectively.

**Use [xxxx_xx_C] on a reversed subwoofer in a cardioid configuration**

The cardioid configuration consists in reversing 1 element in an array of 4 subwoofers. Refer to the subwoofer user manual and to the Cardioid configurations technical bulletin.
Delay values
Do not forget to add the pre-alignment and geometric delays depending on the configuration.

When using [K2 70], [K2 90], or [K2 110] with [K1SB_X K2], do not add any delay value between the K2 and K1-SB elements of a same line source.

Pre-alignment delays

<table>
<thead>
<tr>
<th>Configuration</th>
<th>K2 (ms)</th>
<th>K1-SB (ms)</th>
<th>KS28 (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[K2] + [KS28_60]</td>
<td>0</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>[K2] + [KS28_60_C]</td>
<td>0</td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td>[K2] + [K1SB_60] + [KS28_60]</td>
<td>8</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>[K2] + [K1SB_60] + [KS28_60_C]</td>
<td>13.5</td>
<td>7.5</td>
<td>0</td>
</tr>
</tbody>
</table>
**Additional downfill element**

All K2 system configurations can be combined with an additional Kara line source downfill system. This allows an extension of the vertical coverage to the closer audience.

**Kara**

The [KARADOWNK2] preset features a high-pass filter at 100 Hz for the low section, along with specific delay settings, in order to optimize the acoustic coupling between the Kara and K2 line sources.

The Kara enclosure is driven by the LA4X / LA12X amplified controller.

<table>
<thead>
<tr>
<th>Enclosure</th>
<th>K2</th>
<th>K1-SB in line source</th>
<th>Kara</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preset</td>
<td>[K2 70][K2 90][K2 110]</td>
<td>[K1SB_X K2]</td>
<td>[KARADOWNK2]</td>
</tr>
<tr>
<td>Frequency range (-10 dB)</td>
<td>35 Hz - 20 kHz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kara array</td>
<td>Up to 6 Kara enclosures</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

⚠️ Do not add any delay between the K2 and Kara elements of a mixed line source.

⚠️ When using [K2 70], [K2 90], or [K2 110] with [K1SB_X K2], do not add any delay value between the K2 and K1-SB elements of a same line source.

**Using the Kara system**

Refer to the Kara user manual for the operating modes of Kara as a main system.
Loudspeaker connection

Connectors

Kara is equipped with two 4-point speakON connectors.

Kara

Internal pinout for L-Acoustics 2-way active enclosures

<table>
<thead>
<tr>
<th>speakON points</th>
<th>1 +</th>
<th>1 -</th>
<th>2 +</th>
<th>2 -</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transducer connectors</td>
<td>LF +</td>
<td>LF -</td>
<td>HF +</td>
<td>HF -</td>
</tr>
</tbody>
</table>

K2 is equipped with two 8-point PA-COM connectors.

K2

Internal pinout for L-Acoustics 3-way active enclosures

<table>
<thead>
<tr>
<th>PA-COM points</th>
<th>A/B</th>
<th>C/D</th>
<th>E/F</th>
<th>G/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transducer connectors</td>
<td>left LF</td>
<td>right LF</td>
<td>MF</td>
<td>HF</td>
</tr>
</tbody>
</table>

K1-SB is equipped with one 4-point speakON connector.

K1-SB
KS28 is equipped with one 4-point speakON connector.

### Internal pinout for L-Acoustics subwoofers

<table>
<thead>
<tr>
<th>speakON points</th>
<th>1 +</th>
<th>1 -</th>
<th>2 +</th>
<th>2 -</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transducer connectors</td>
<td>LF +</td>
<td>LF -</td>
<td>Not linked</td>
<td>Not linked</td>
</tr>
</tbody>
</table>
Connection to LA4X

Maximum number of enclosures per LA4X

<table>
<thead>
<tr>
<th>enclosure</th>
<th>max enclosures in parallel *</th>
<th>max enclosures per controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>K2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Kara</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>

*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

K2
1 enclosure: LF 8 Ω / MF 8 Ω / HF 16 Ω

Kara
1 enclosure: LF 8 Ω / HF 8 Ω
2 enclosures in parallel: LF 4 Ω / HF 4 Ω

Connecting 3-way active enclosures

custom speakON-to-PA-COM on speakON output

L-Acoustics does not supply the speakON-to-PA-COM interface. It must be built with two 4-point speakON connectors and a female 8-point PA-COM connector (no cable clamp).

Connecting 2-way active enclosures

SP on speakON output
**Connection to LA12X**

**Maximum number of enclosures per LA12X**

<table>
<thead>
<tr>
<th>enclosure</th>
<th>max enclosures in parallel *</th>
<th>max enclosures per controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>K2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Kara</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>K1-SB</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>KS28</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

*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**

**K2**

1 enclosure: LF 8 Ω / MF 8 Ω / HF 16 Ω  
2 enclosures in parallel: LF 4 Ω / MF 4 Ω / HF 8 Ω  
3 enclosures in parallel: LF 2.7 Ω / MF 2.7 Ω / HF 5.2 Ω  

**Kara**

1 enclosure: LF 8 Ω / HF 8 Ω  
2 enclosures in parallel: LF 4 Ω / HF 4 Ω  
3 enclosures in parallel: LF 2.7 Ω / HF 2.7 Ω  

**KS28 K1-SB**

1 enclosure: 4 Ω  

**Connecting 3-way active enclosures**

DO on CA-COM output

[Diagram of connecting 3-way active enclosures]

**Connecting 2-way active enclosures**

SP on speakON output

[Diagram of connecting 2-way active enclosures]
DO and DOFILL-LA8 on CA-COM output

Connecting a 2-way active enclosure with subwoofers
DO and DO3WFILL on CA-COM output

Connecting subwoofers
SP and SP-Y1 on speakON output
DO and DOSUB-LA8 on CA-COM output

CA-COM

DO

DOSUB-LA8

SPK1 (OUT1)

SPK2 (OUT2)

SPK3 (OUT3)

SPK4 (OUT4)
## Preset description

### [K2 70] [K2 90] [K2 110]

<table>
<thead>
<tr>
<th>loudspeaker elements</th>
<th>outputs</th>
<th>channels</th>
<th>routing</th>
<th>gain</th>
<th>delay</th>
<th>polarity</th>
<th>mute</th>
</tr>
</thead>
<tbody>
<tr>
<td>left LF</td>
<td>OUT 1</td>
<td>LF</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
<tr>
<td>right LF</td>
<td>OUT 2</td>
<td>LF</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
<tr>
<td>MF</td>
<td>OUT 3</td>
<td>MF</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
<tr>
<td>HF</td>
<td>OUT 4</td>
<td>HF</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
</tbody>
</table>

### [KARADOWNK2]

<table>
<thead>
<tr>
<th>loudspeaker elements</th>
<th>outputs</th>
<th>channels</th>
<th>routing</th>
<th>gain</th>
<th>delay</th>
<th>polarity</th>
<th>mute</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF</td>
<td>OUT 1</td>
<td>LF</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
<tr>
<td>HF</td>
<td>OUT 2</td>
<td>HF</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
<tr>
<td>LF</td>
<td>OUT 3</td>
<td>LF</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
<tr>
<td>HF</td>
<td>OUT 4</td>
<td>HF</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
</tbody>
</table>

### [K1SB_60] [K1SB_X K2] [KS28_60]

<table>
<thead>
<tr>
<th>outputs</th>
<th>channels</th>
<th>routing</th>
<th>gain</th>
<th>delay</th>
<th>polarity</th>
<th>mute</th>
</tr>
</thead>
<tbody>
<tr>
<td>OUT 1</td>
<td>SB</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
<tr>
<td>OUT 2</td>
<td>SB</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
<tr>
<td>OUT 3</td>
<td>SB</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
<tr>
<td>OUT 4</td>
<td>SB</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
</tbody>
</table>

### [KS28_60_C]

<table>
<thead>
<tr>
<th>loudspeaker elements</th>
<th>outputs</th>
<th>channels</th>
<th>routing</th>
<th>gain</th>
<th>delay</th>
<th>polarity</th>
<th>mute</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR</td>
<td>OUT 1</td>
<td>SR</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
<tr>
<td>SB</td>
<td>OUT 2</td>
<td>SB</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
<tr>
<td>SB</td>
<td>OUT 3</td>
<td>SB</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
<tr>
<td>SB</td>
<td>OUT 4</td>
<td>SB</td>
<td>IN A</td>
<td>0 dB</td>
<td>0 ms</td>
<td>+</td>
<td>ON</td>
</tr>
</tbody>
</table>
 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.

<table>
<thead>
<tr>
<th>cable gauge</th>
<th>recommended maximum length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8 Ω load</td>
</tr>
<tr>
<td>mm²</td>
<td>SWG</td>
</tr>
<tr>
<td>2.5</td>
<td>15</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>11</td>
</tr>
</tbody>
</table>

For your installation projects, you can use the more detailed LACOUSTICS 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.lacoustics.com/installation-outils-de-calcul-137.html
### Specifications

#### K2 specifications

| Description | 3-way full-range active WST enclosure, quad-amplified by LA4X / LA12X |
| Usable bandwidth (-10 dB) | 35 Hz - 20 kHz ([K2 70]) |
| Maximum SPL<sup>1</sup> | 147 dB ([K2 70]) |
| Nominal directivity | horizontal: 110°/70° symmetric or 90° asymmetric (35°/55° or 55°/35°)  
vertical: dependent upon the number of elements and the line source curvature |
| Transducers | LF: 2 × 12" cone drivers  
MF: 4 × 6.5" cone drivers  
HF: 2 × 3" diaphragm compression drivers |
| Acoustical load | LF: bass-reflex, L-Vents  
MF: bass-reflex  
HF: DOSC waveguides |
| Nominal impedance | LF: 2 × 8 Ω  
MF: 8 Ω  
HF: 16 Ω |
| Connectors | IN: 1 × 8-point PA-COM  
LINK: 1 × 8-point PA-COM |
| Rigging and handling | captive 4-point rigging system  
inter-enclosure angles: 0.25°, 1°, 2°, 3°, 4°, 5°, 7.5° or 10° |
| Weight (net) | 56 kg / 123.2 lb |
| Cabinet | first grade Baltic birch plywood |
| Front | steel grill with anti-corrosion coating  
acoustically neutral 3D fabric |
| Rigging components | high grade steel with anti-corrosion coating |
| Finish | dark grey brown Pantone 426C |
| IP | IP45 |

<sup>1</sup> Peak level measured at 1 m under free field conditions using pink noise with crest factor 4 (preset specified in brackets).
K2 dimensions

354 mm / 13.9 in

1338 mm / 52.7 in

400 mm / 15.8 in

286 mm / 11.3 in
Kara specifications

Description
2-way modular WST enclosure, bi-amplified by LA4X / LA12X

Usable bandwidth (-10 dB)
55 Hz - 20 kHz ([KARA])

Maximum SPL
141 dB ([KARA])

Nominal directivity
horizontal: 110° symmetric
vertical: dependent upon the number of elements and the line source curvature

Transducers
LF: 2 × 8" neodymium cone drivers
HF: 1 × 3" neodymium diaphragm compression driver

Acoustical load
LF: bass-reflex
HF: DOSC waveguides

Nominal impedance
LF: 8 Ω
HF: 8 Ω

Connectors
IN: 1 × 4-point speakON
LINK: 1 × 4-point speakON

Rigging and handling
captive rigging system
handles integrated into the cabinet
inter-enclosure angles: 0°, 1°, 2°, 3°, 4°, 5°, 7.5° or 10°

Weight (net)
26 kg / 57 lb

Cabinet
first grade Baltic birch plywood

Front
steel grill with anti-corrosion coating
acoustically neutral 3D fabric

Rigging components
high grade steel with anti-corrosion coating

Finish
dark grey brown Pantone 426C

IP
IP45

1 Peak level measured at 1 m under free field conditions using pink noise with crest factor 4 (preset specified in brackets).
Kara dimensions

- 730 mm / 28.7 in
- 250 mm / 9.8 in
- 482 mm / 19 in
- 383 mm / 15.1 in
## K1-SB specifications

<table>
<thead>
<tr>
<th><strong>Description</strong></th>
<th>K1 system subwoofer 2×15&quot;, amplified by LA12X</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low frequency limit (-10 dB)</strong></td>
<td>30 Hz ([K1SB_60])</td>
</tr>
<tr>
<td><strong>Maximum SPL</strong></td>
<td>145 dB ([K1SB_X])</td>
</tr>
<tr>
<td><strong>Transducers</strong></td>
<td>2 × 15&quot; cone drivers</td>
</tr>
<tr>
<td><strong>Acoustical load</strong></td>
<td>bass-reflex, L-Vents</td>
</tr>
<tr>
<td><strong>Nominal impedance</strong></td>
<td>4 Ω</td>
</tr>
<tr>
<td><strong>Connectors</strong></td>
<td>IN: 1 × 4-point speakON</td>
</tr>
<tr>
<td><strong>Rigging and handling</strong></td>
<td>captive 4-point rigging system</td>
</tr>
<tr>
<td></td>
<td>inter-enclosure angles: 0°, 0.5°, 1°, 1.5°, 2°, 2.5°, 3°, 4° or 5°</td>
</tr>
<tr>
<td></td>
<td>handles integrated into the cabinet</td>
</tr>
<tr>
<td><strong>Weight (net)</strong></td>
<td>83 kg / 183 lb</td>
</tr>
<tr>
<td><strong>Cabinet</strong></td>
<td>first grade Baltic birch plywood</td>
</tr>
<tr>
<td><strong>Front</strong></td>
<td>steel grill with anti-corrosion coating</td>
</tr>
<tr>
<td></td>
<td>acoustically neutral 3D fabric</td>
</tr>
<tr>
<td><strong>Rigging components</strong></td>
<td>high grade steel with anti-corrosion coating</td>
</tr>
<tr>
<td><strong>Finish</strong></td>
<td>dark grey brown Pantone 426C</td>
</tr>
<tr>
<td><strong>IP</strong></td>
<td>IP45</td>
</tr>
</tbody>
</table>

1 Peak level at 1 m under half space conditions using pink noise with crest factor 4 (preset specified in brackets).
K1-SB dimensions

- K1-SB dimensions:
  - 438 mm / 17.1 in
  - 505 mm / 19.9 in
  - 1342 mm / 52.8 in

- K1-SB user manual (EN) version 4.0
KS28 specifications

Description  flyable subwoofer 2 x 18", amplified by LA12X
Low frequency limit (-10 dB)  25 Hz ([KS28_100])
Maximum SPL 1  143 dB ([KS28_100])
Directivity  standard or cardioid
Transducers  2 x 18" neodymium cone drivers
Acoustical load  bass-reflex, L-Vents
Nominal impedance  4 Ω
Connectors  IN: 1 x 4-point speakON
Rigging and handling  flush-fitting 2-point rigging system
6 ergonomic handles
2 ground runners
8 side runners
Weight (net)  79 kg / 174 lb
Cabinet  first grade Baltic beech and birch plywood
Front  steel grill with anti-corrosion coating
  acoustically neutral 3D fabric
Rigging components  high grade steel
Finish  dark grey brown Pantone 426C

1 Peak level at 1 m under half space conditions using pink noise with crest factor 4 (preset specified in brackets).

KS28 dimensions

![KS28 Dimensions Diagram](image-url)