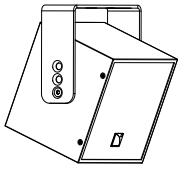
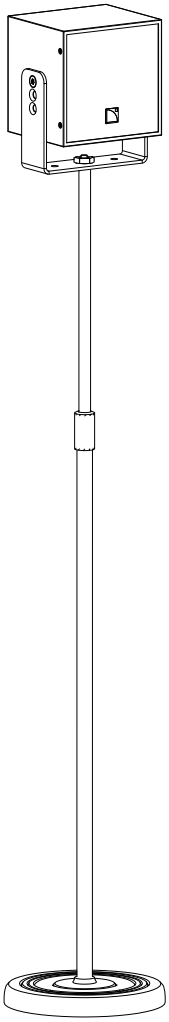
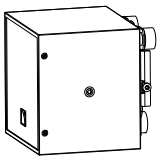
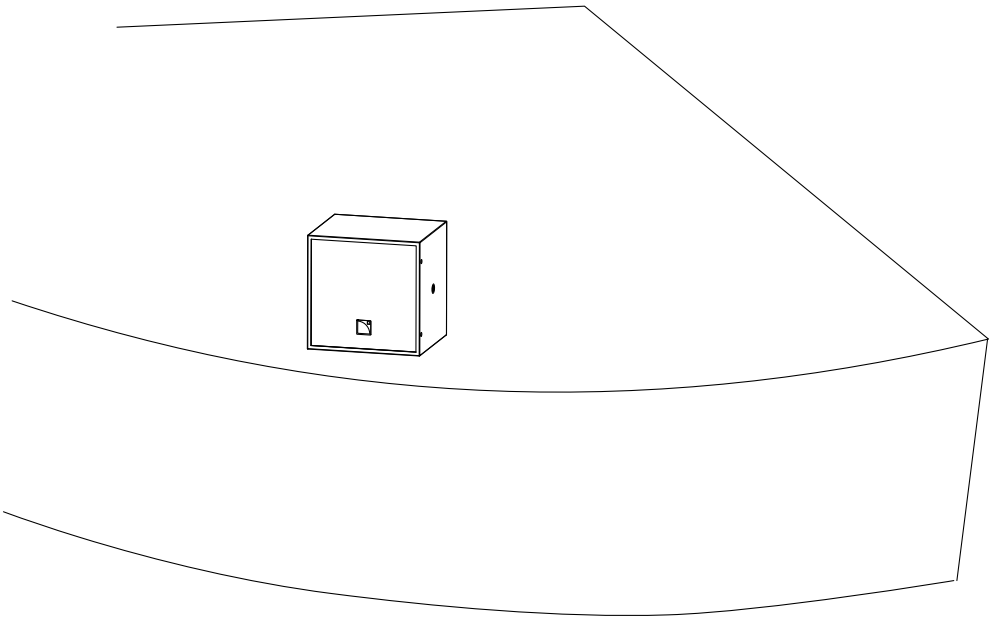
X4i

owner's manual (EN)









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Safety

Instructions

Inspect the system before any deployment.

Perform safety related checks and inspections before any deployment.

Perform preventive maintenance at least once a year.

Refer to the preventive maintenance section for a list of actions and their periodicity.

Insufficient upkeep of the product can void the warranty.

If any safety issue is detected during inspection, do not use the product before performing corrective maintenance.

Check for issues. A rigging system part or fastener is missing or loose. A rigging system part exhibits: bends, breaks, broken parts, corrosion, cracks, cracks in welded joints, deformation, denting, wear, holes. A safety cue or label is missing.

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.

Work with qualified personnel for rigging the system.

Installation should only be carried out by qualified personnel that are familiar with the rigging techniques and safety recommendations outlined in this manual.

Ensure personnel health and safety.

During installation and set-up personnel must wear protective headgear and footwear at all times. Under no circumstances is personnel allowed to climb on a loudspeaker assembly.

Respect the Working Load Limit (WLL) of third party equipment.

L-Acoustics is not responsible for any rigging equipment and accessories provided by third party manufacturers.

Verify that the Working Load Limit (WLL) of the suspension points, chain hoists and all additional hardware rigging accessories is respected.

Respect the maximum configurations and the recommended safety precautions.

For safety issue, respect the maximum configurations outlined in this manual. To check the conformity of any configuration in regards with the safety precautions recommended by L-Acoustics, model the system in Soundvision and refer to the warnings in Mechanical Data section.

Be cautious when flying a loudspeaker configuration.

Before installing/raising the product, check each individual element to make sure that it is securely fastened to the adjacent element. Always verify that no one is standing underneath the product when it is being installed/raised. Never leave the product unattended during the installation process.

As a general rule, L-Acoustics recommends the use of secondary safety at all times.

Be cautious when ground-stacking a loudspeaker array.

Do not stack the loudspeaker array on unstable ground or surface. If the array is stacked on a structure, platform, or stage, always check that the latter can support the total weight of the array.

As a general rule, L-Acoustics recommends the use of safety straps at all times.

Risk of falling objects

Verify that no unattached items remain on the product or assembly.

Risk of tipping

Remove all rigging accessories before transporting a product or an assembly.

Take into account the wind effects on dynamic load.

When a loudspeaker assembly is deployed in an open air environment, wind can produce dynamic stress to the rigging components and suspension points.

If the wind force exceeds 6 bft (Beaufort scale), lower down and/or secure the product or the assembly.

Intended use

This system is intended for use by trained personnel for professional applications.

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.

Check www.l-acoustics.com on a regular basis to download the latest document and software updates.

Long term exposure to extreme conditions may damage the product.

For more information, refer to the **Products weather protection** document, available on the website.

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

Contact L-Acoustics for advanced maintenance.

Any unauthorized maintenance operation will void the product warranty.

This marking indicates that this product should not be disposed of with other household waste throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmentally safe recycling.

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.

Introduction

How to use this manual

The X4i owner's manual is intended for all actors involved in the system design, implementation, preventive and corrective maintenance of the X4i system. It must be used as follows:

1. Read the technical description for an overview of all system elements, their features, and their compatibilities.
   - Electro-acoustical description (p.11)
   - Rigging system description (p.13)
2. Prepare the system configuration. Consider the mechanical limits and the available acoustical configurations.
   - Mechanical safety (p.19)
   - Loudspeaker configurations (p.20)
3. Before rigging the system, perform mandatory inspections and functional checks.
   - Inspection and preventive maintenance (p.28)
4. To deploy the system, follow the step-by-step rigging instructions and refer to the cabling schemes.
   - Rigging procedures (p.36)
   - Connection to LA amplified controllers (p.43)

The Corrective maintenance (p.47) section contains the operations authorized for the end user.
Performing another operation exposes to hazardous situations.
For advanced maintenance, contact your L-Acoustics representative.

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.

Contact information

For information on advanced corrective maintenance:
- contact your Certified Provider or your L-Acoustics representative
- for Certified Providers, contact the L-Acoustics customer service: customer.service@l-acoustics.com (EMEA/APAC), laus.service@l-acoustics.com (Americas).

X4i miniature enclosure

X4i is an installation-specific miniature coaxial system designed for short throw applications requiring seamless integration in the smallest spaces.

X4i features a 1.4" diaphragm compression driver coaxially loaded by a 4" neodymium low-mid frequency transducer mounted in a closed cabinet. X4i operates from 120 Hz to 20 kHz and delivers a peak SPL of 116 dB. The coaxial transducer arrangement produces a 110° axisymmetric directivity with a smooth tonal response free of secondary lobes over the entire frequency range.

The internal passive crossover network uses custom filters. The L-Acoustics amplified controllers L-Drive parameters ensure the linearization and protection of the transducers.

Revision history

version number	publication date	modification
1.0	Mar. 2019	Initial version.
1.1	Jun. 2019	Added Corrective maintenance (p.47) section.
2.0	Sep. 2019	Removed instructions for HF diaphragm.
3.0	Aug. 2020	• Added LA2Xi and removed LA4. • Updated cabling schemes in Connection to LA amplified controllers (p.43).
4.0	May 2022	• Added new SB10i subwoofer. • Added new X-B4i (p.15) rigging accessory. • Added preset [X4_MO] for stage monitor configurations. See X4i stage monitor (p.27). • Added instructions D/R - HF Diaphragm (p.51). • Added new washers for mounting the loudspeaker. Refer to D/R - Coaxial loudspeaker (p.49).
5.0	Feb. 2023	• Added new SB6i subwoofer. • Added new X4i-onCW (p.18) rigging accessory. • Added Cabling X4i (p.45) procedure. • Added APPENDIX B: Specifications for custom rigging (p.61). • Added preset [SB10_60]. • Removed Syva Sub. • Removed stage monitor configurations with low-frequency element.

System components

Loudspeaker enclosures

X4i	2-way passive coaxial enclosure: 4" LF + 1.4" HF diaphragm
SB6i	Ultra-shallow subwoofer: 2 × 6.5"
SB10i	Ultra-compact subwoofer: 1 × 10" (installation version)

Powering and driving system

LA2Xi / LA4X / LA7.16i / LA12X	Amplified controller with DSP, preset library and networking capabilities

Refer to the LA2Xi / LA4X / LA7.16i / LA12X owner's manual for operating instructions.

Cables

2 × 2.5 mm² cable	speaker cable with bare wire endings Adapt the cable length to the installation.
custom 2-point speakON cable	2-point speakON cable (2.5 mm² gauge) to bare wire cable This cable needs to be custom made.

Information about the connection of the enclosures to the LA amplified controllers is given in this document.
Refer to the LA2Xi / LA4X / LA7.16i / LA12X owner's manual for detailed instructions about the whole cabling scheme, including modulation cables and network.

Rigging elements

X-U4i	Adjustable U-bracket for X4i
X-B4i	Base plate and bracket for X4i
X4i-onCW	On-wall or on-ceiling mounting accessory with silent blocks for X4i

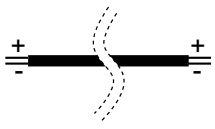
Software applications

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

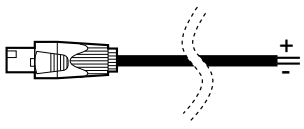
Refer to the **Soundvision** help.
Refer to the **LA Network Manager** help.

System component illustrations

Cables

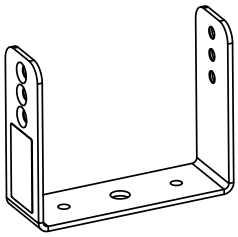


2 × 2.5 mm² cable

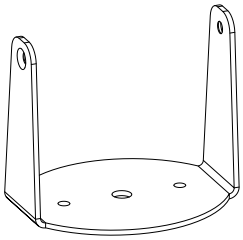


custom 2-point speakON cable

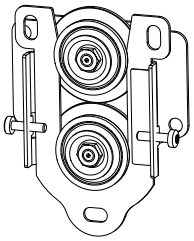
Rigging accessories



X-U4i



X-B4i

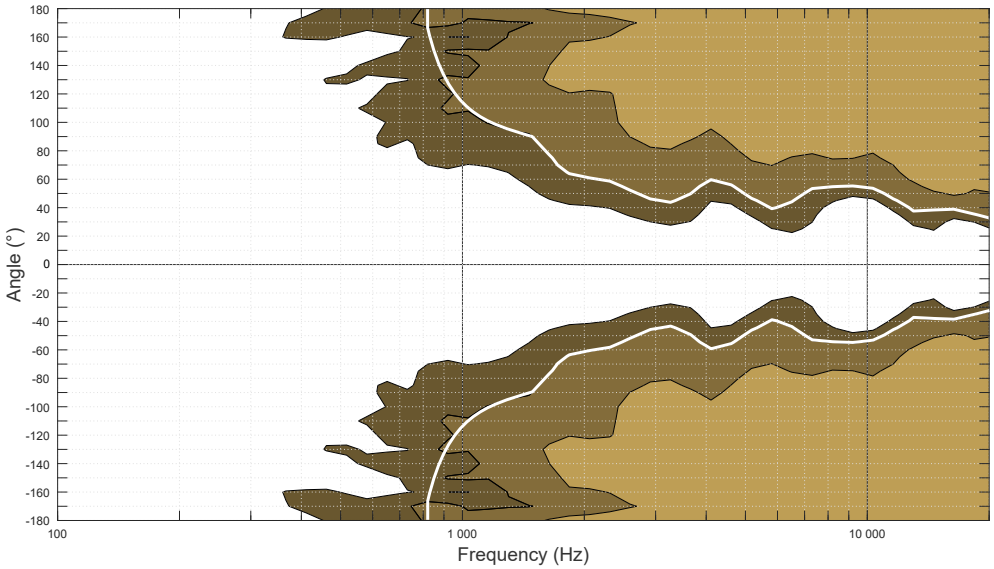


X4i-onCW

Electro-acoustical description

Directivity

X4i generates an axisymmetrical directivity pattern of 110°.



Dispersion angle diagram of a single enclosure, using lines of equal sound pressure at -3 dB, -6 dB, -12 dB.

Preset description

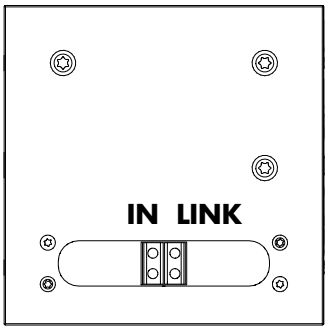
[X4] [X4_60] [X4_MO]

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

[SB10_60] [SB10_100] [SB10_200] [SB6_60] [SB6_100] [SB6_200]

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

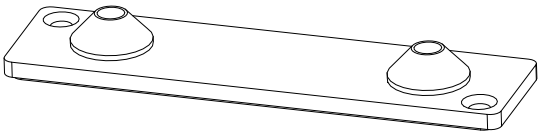
Connectors



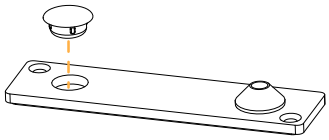
X4i

2 × 2-point screw terminal

X4i is provided with a connector sealing plate with two cable glands for 2.5 mm^2 cables.



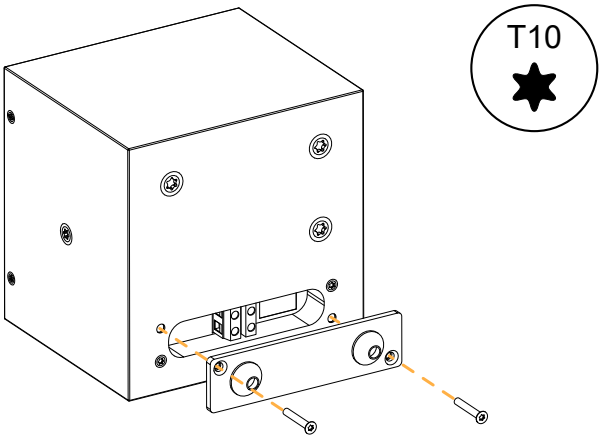
If only one connector is used, replace one cable gland with the protective plug.



Pass the cables through the cable glands before connecting them to the screw terminals.

Refer to Cabling X4i (p.45).

Secure the connector sealing plate to protect the connectors.



Internal pinout for L-Acoustics 2-way passive enclosures

Screw terminal points	IN +	IN -
Transducer connectors	+	-

Rigging system description

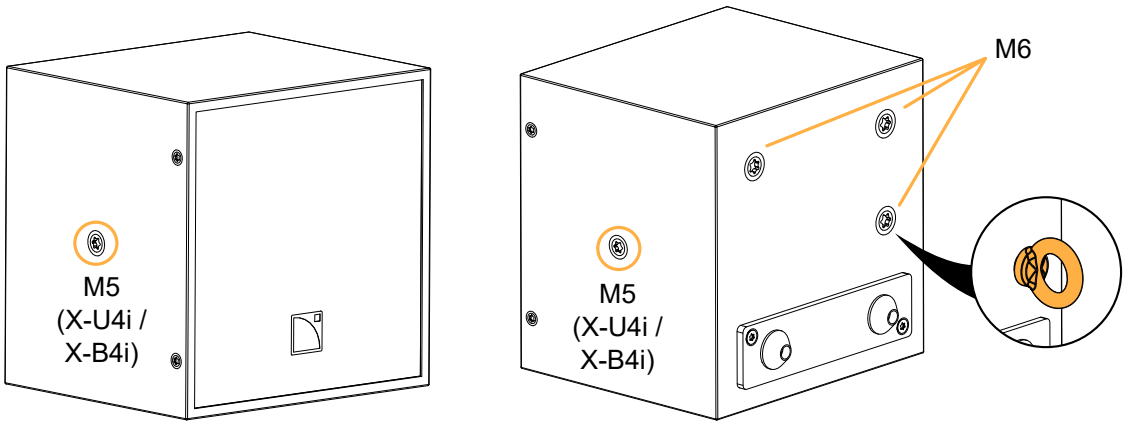
X4i

X4i features one M5 insert and screw on each side to secure X-U4i or X-B4i.

Three M6 inserts and screws at the back of X4i are available for X4i-onCW or compatible rigging accessories.

Secondary safety for flown enclosures

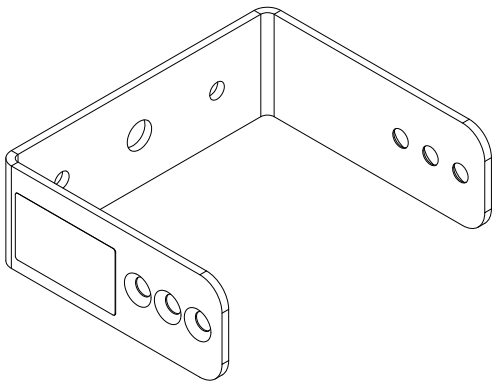
Use one insert at the back of the enclosure to implement a secondary safety.



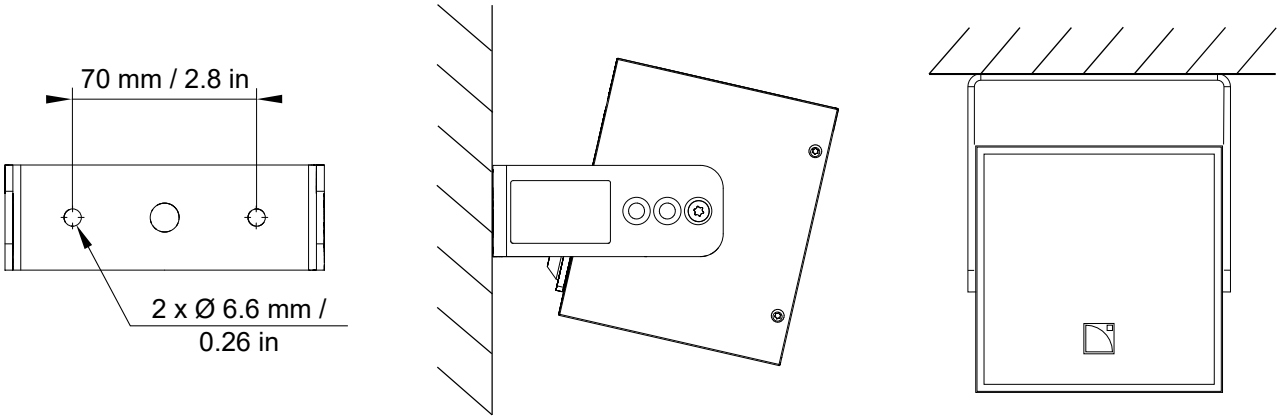
Always put the placeholder screws back in place to avoid leaks.

X-U4i

X-U4i is an adjustable U-bracket compatible with X4i.



It can be used to mount one X4i on the wall or under the ceiling, with tilt adjustment.

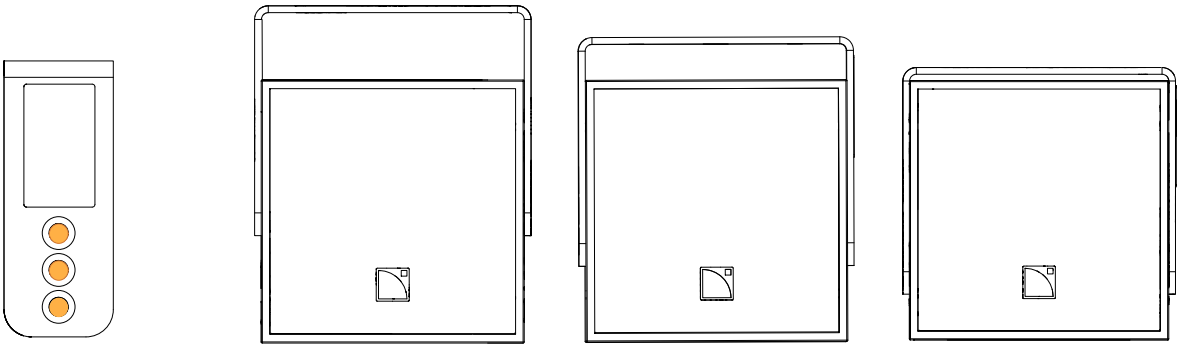


Fasteners for wall-mounting or ceiling-mounting

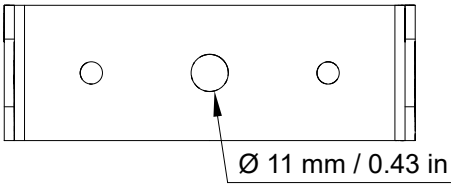
Secure the bracket with two M6 screws.

Select screw length and anchors applicable to the wall or ceiling properties.

X-U4i features three holes on both sides to closely fit the enclosure and to optimize visual impact.



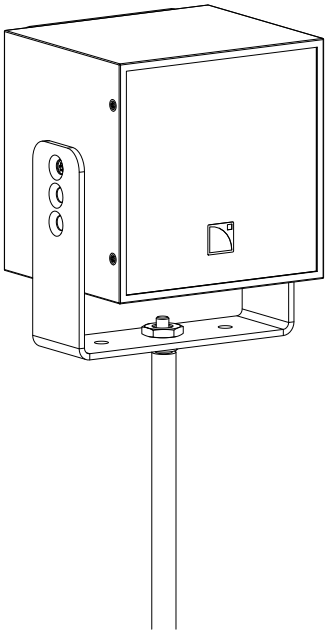
X-U4i features a Ø 11 mm / Ø 0.43 in hole dedicated to pole-mounting.



The U-bracket can be fitted to a microphone stand with a Ø 10 mm threaded axis (European standard) and the matching locking ring.

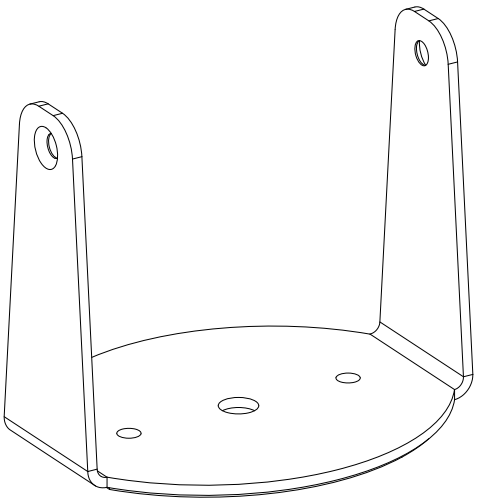
Adapter for US microphone stand

Use a 3/8"-16 male to 5/8"-27 female microphone screw adapter and a locking ring to mount X4i on a US standard microphone stand.

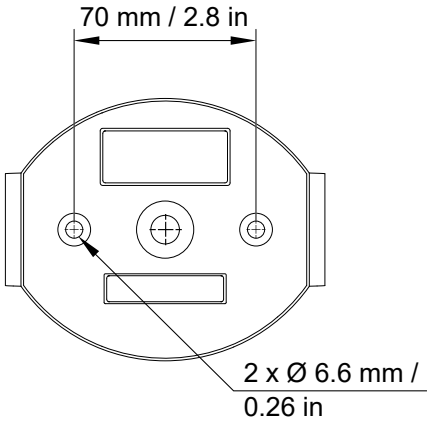


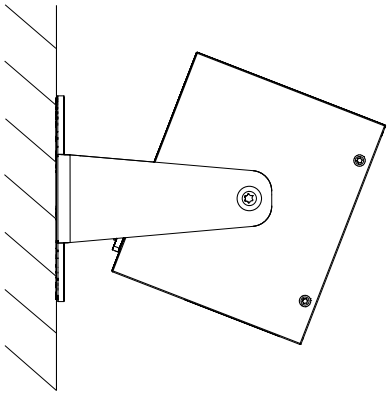
X-B4i

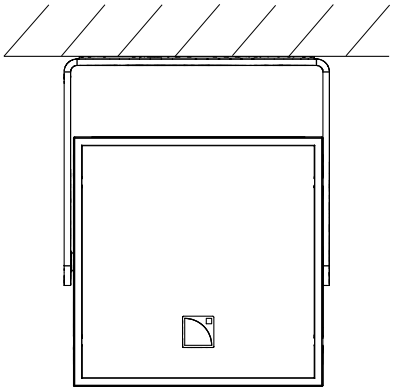
X-B4i is bracket compatible with X4i.



It can be used to mount one X4i on the wall or under the ceiling, with tilt adjustment.



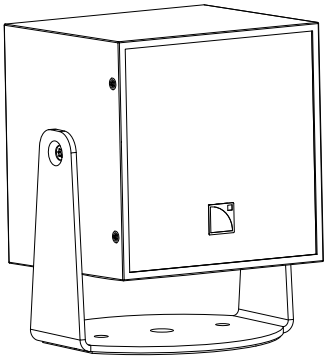




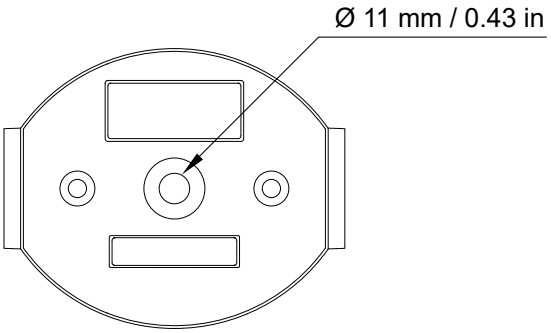
Fasteners for wall-mounting or ceiling-mounting
Secure the bracket with two M6 screws.
Select screw length and anchors applicable to the wall or ceiling properties.

X-B4i can also be used as a base to put X4i on an horizontal plane with site angle adjustment.

Always put the product on a stable, flat, and even surface.



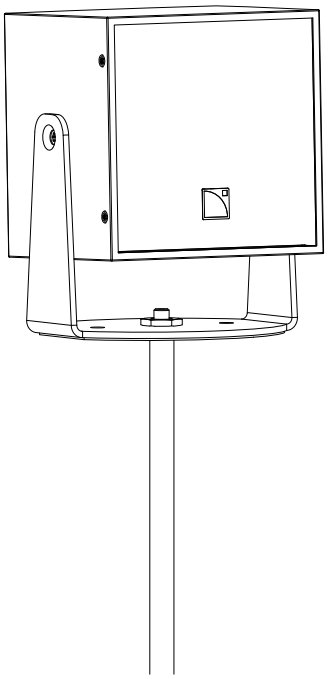
X-B4i features a Ø 11 mm / Ø 0.43 in hole dedicated to pole-mounting.



The bracket can be fitted to a microphone stand with a Ø 10 mm threaded axis (European standard) and the matching locking ring.

Adapter for US microphone stand

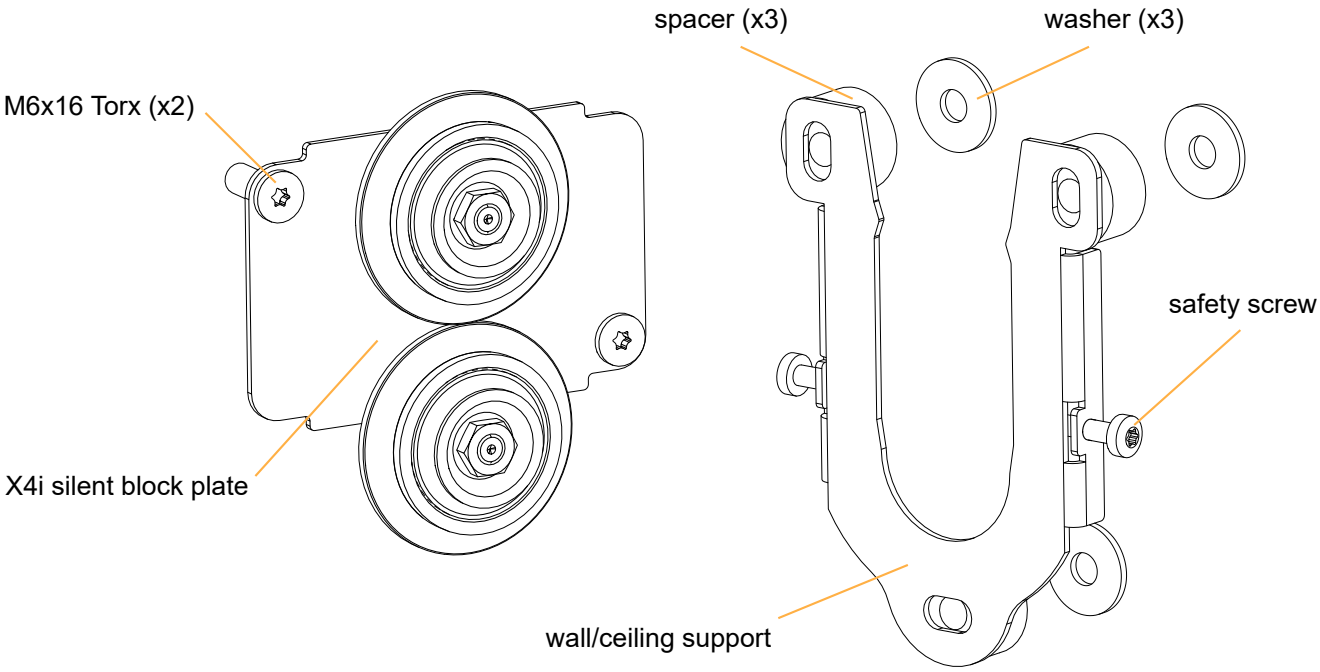
Use a 3/8"-16 male to 5/8"-27 female microphone screw adapter and a locking ring to mount X4i on a US standard microphone stand.



X4i-onCW

X4i-onCW is a wall- or ceiling-mounting kit for one X4i. It is composed of:

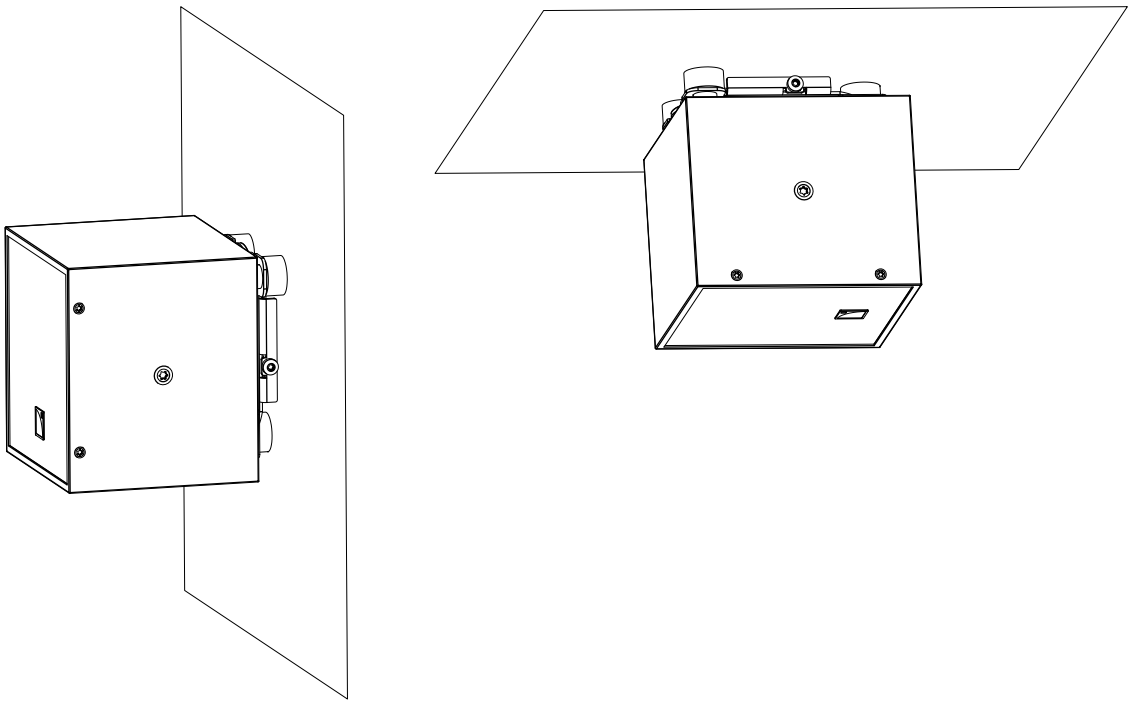
- a wall or ceiling support
- a silent block plate for X4i
- fasteners for assembly and safety



Fasteners for wall-mounting or ceiling-mounting

Secure the bracket with two M6 screws.

Select screw length and anchors applicable to the wall or ceiling properties.



Mechanical safety

The X4i rigging system complies with EN 62368-1: 2014 Audio/video, information and communication technology equipment — Part 1: Safety requirements.

The deployments described in this manual achieve a safety factor of **5**.

X4i

configuration	rigging accessory	maximum / safe limit
wall-mounted / ceiling-mounted	X-U4i or X-B4i or X4i-onCW	1
pole-mounted	X-U4i or X-B4i + microphone stand (European standard)	1
ground-stacked	X-B4i (optional)	1

Secondary safety for flown enclosures
Use one insert at the back of the enclosure to implement a secondary safety.

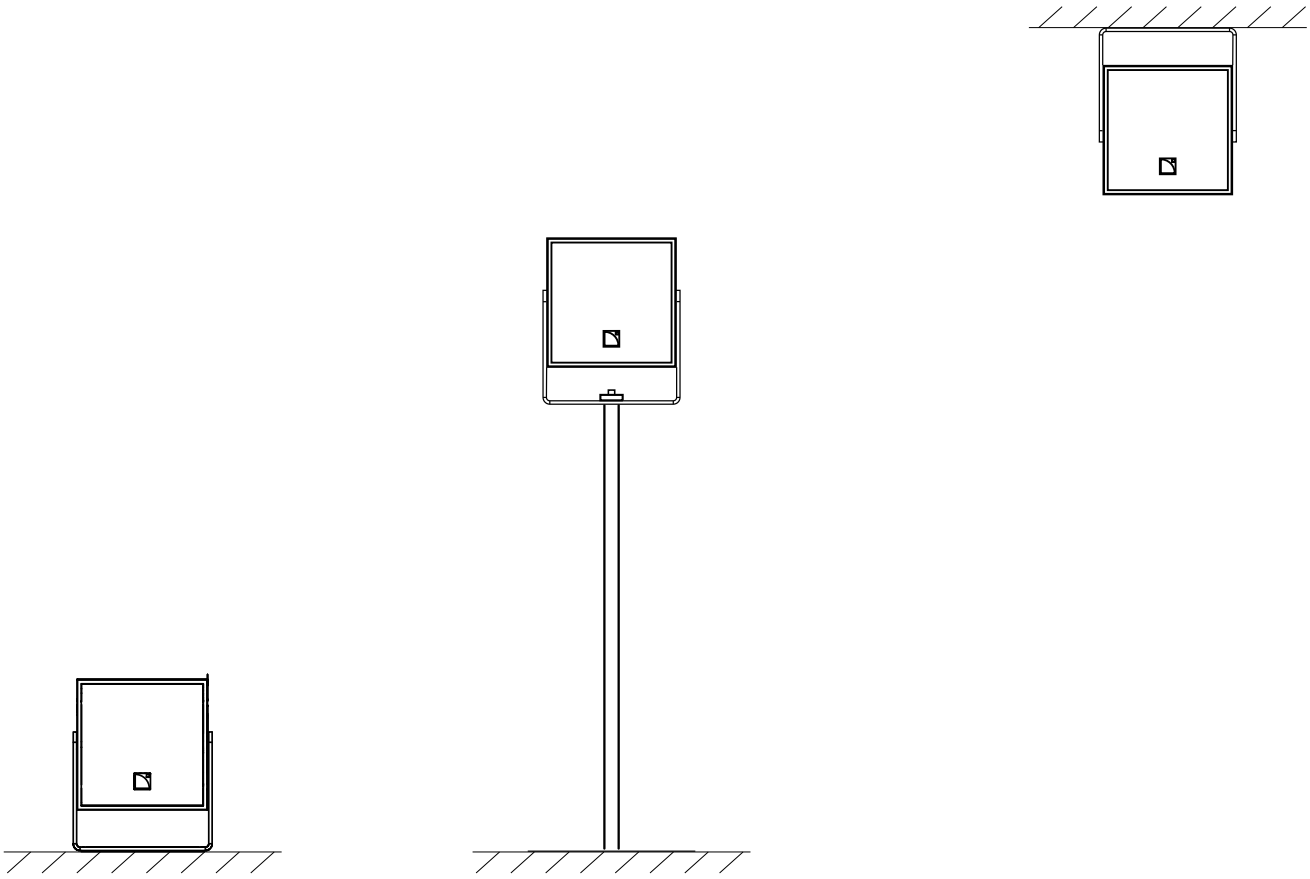
Loudspeaker configurations

X4i point source

In this configuration, the X4i system operates over the nominal frequency range of the enclosure.

The [X4] preset delivers a reference frequency response in short throw applications.

X4i is driven by the LA2Xi / LA4X / LA7.16i / LA12X amplified controllers.



Enclosure	X4i
Preset	[X4]
Frequency range (-10 dB)	120 Hz - 20 kHz

X4i point source with low-frequency element

Deployed as a point source with SB6i or SB10i subwoofers, an X4i system operates with augmented LF resources.

For closely coupled configurations, the [X4] preset delivers a reference frequency response in short throw applications, and the [SB6_200] and [SB10_200] presets provide SB6i and SB10i with an upper frequency limit at 200 Hz.

For coupled configurations, the [X4] preset delivers a reference frequency response in short throw applications, and the [SB6_100] and [SB10_100] presets provide SB6i and SB10i with an upper frequency limit at 100 Hz.

For separated configurations, the [X4_60] preset provides X4i with a lower frequency limit at 60 Hz, and the [SB6_60] and [SB10_60] presets provide SB6i and SB10i with an upper frequency limit at 60 Hz.

X4i, SB6i, and SB10i are driven by the LA2Xi / LA4X / LA7.16i / LA12X amplified controllers.

X4i point source with SB6i

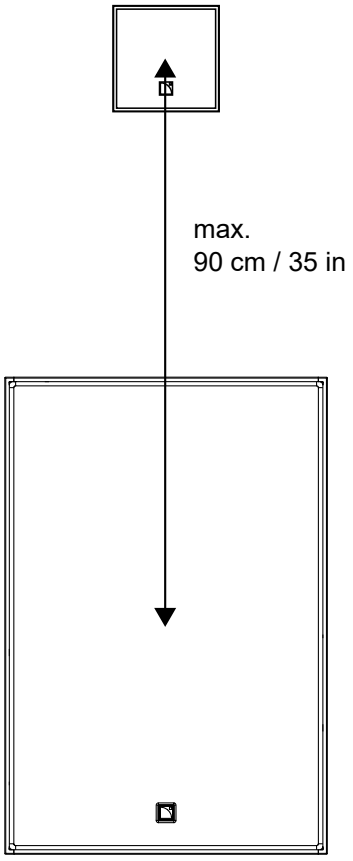
Closely coupled

With SB6i and the preset [SB6_200], the bandwidth of the X4i system is extended down to 32 Hz and the system contour is reinforced by 9 dB at 50 Hz (peak low-end SPL) for a configuration on a wall or ceiling.

on-ceiling/wall

reinforced contour

+ 9 dB at 50 Hz



Enclosure	X4i	SB6i
Preset	[X4]	[SB6_200]
Ratio	1 X4i : 1 SB6i	
Frequency range (-10 dB)	32 Hz - 20 kHz	

Delay values

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

Pre-alignement delays

presets	pre-alignment delay values and polarity settings			
[X4] or [X4_MO] + [SB6_200]	X4i = 0.6 ms	+	SB6i = 0 ms	-

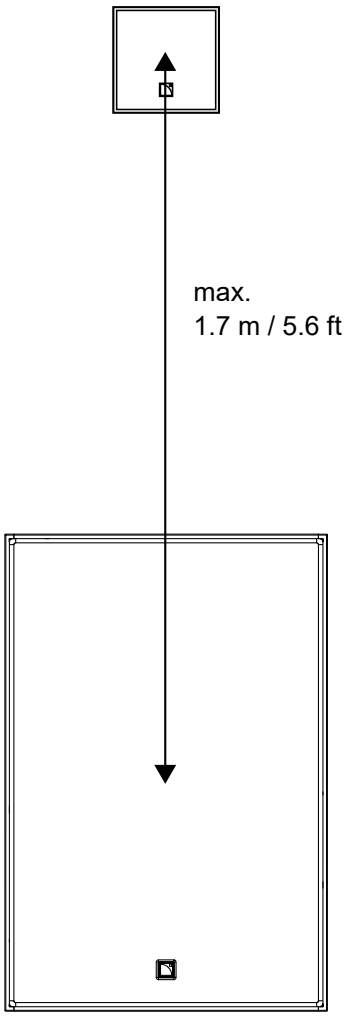
Coupled

With SB6i and the preset [SB6_100], the bandwidth of the X4i system is extended down to 29 Hz and the system contour is reinforced by 7 dB at 50 Hz (peak low-end SPL).

on-ceiling/wall

reinforced contour

+ 7 dB at 50 Hz



Enclosure	X4i	SB6i
Preset	[X4]	[SB6_100]
Ratio	1 X4i : 1 SB6i	
Frequency range (-10 dB)	29 Hz - 20 kHz	

Delay values

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

Pre-alignement delays

presets	pre-alignment delay values and polarity settings			
[X4] or [X4_MO] + [SB6_100]	X4i = 0 ms	+	SB6i = 0.4 ms	+

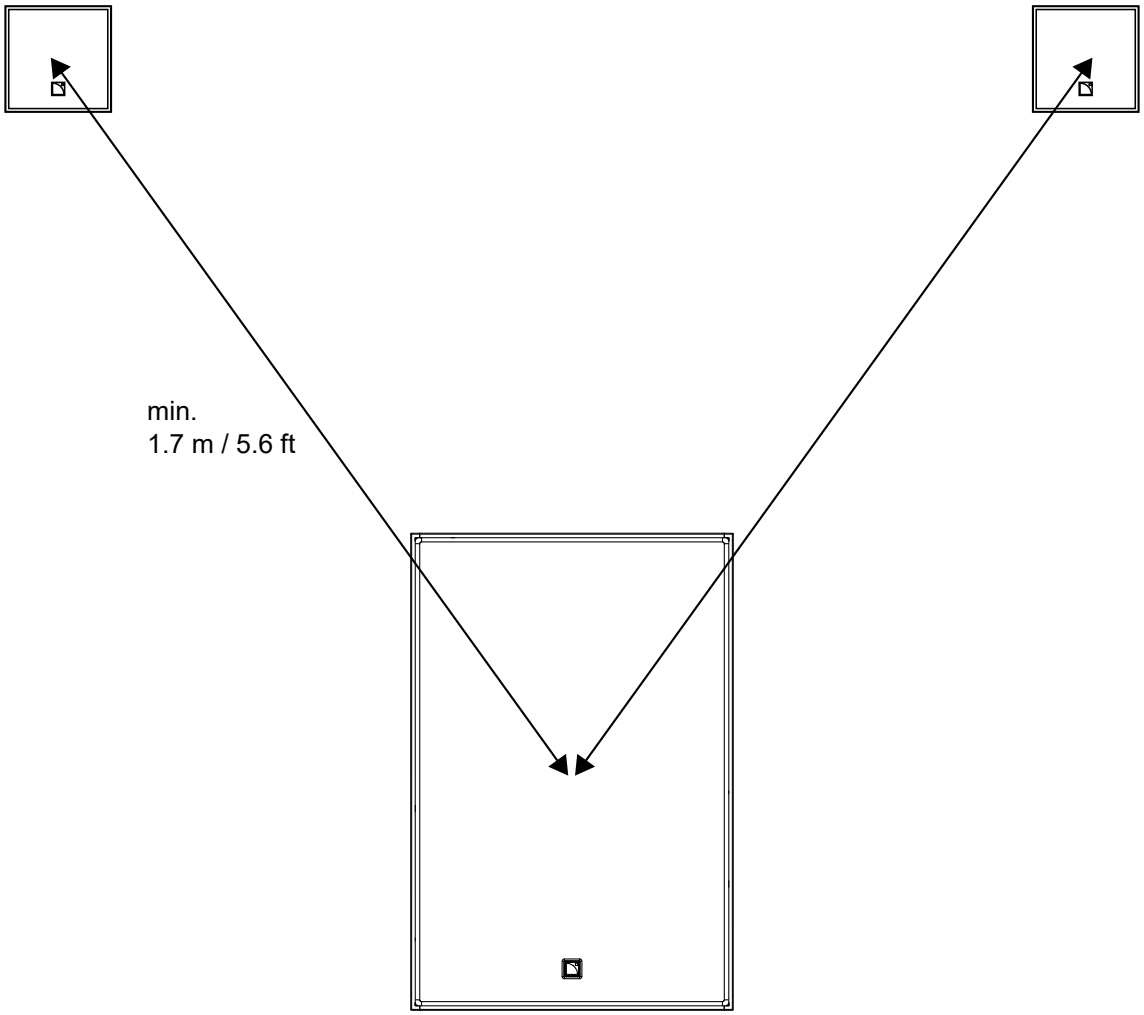
Separated

With SB6i and the preset [SB6_60], the bandwidth of the X4i system is extended down to 29 Hz and the system contour is reinforced by 9 dB at 50 Hz (peak low-end SPL). The preset [X4_60] provides optimal frequency coupling with the low-frequency element.

on-ceiling/wall

reinforced contour

+ 9 dB at 50 Hz



Enclosure	X4i	SB6i
Preset	[X4_60]	[SB6_60]
Ratio	2 X4i : 1 SB6i	
Frequency range (-10 dB)	29 Hz - 20 kHz	

Delay values

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

Pre-alignement delays

presets	**pre-alignment delay values and polarity settings**			
[X4_60] + [SB6_60]	X4i = 1.8 ms	+	SB6i = 0 ms	-

X4i point source with SB10i

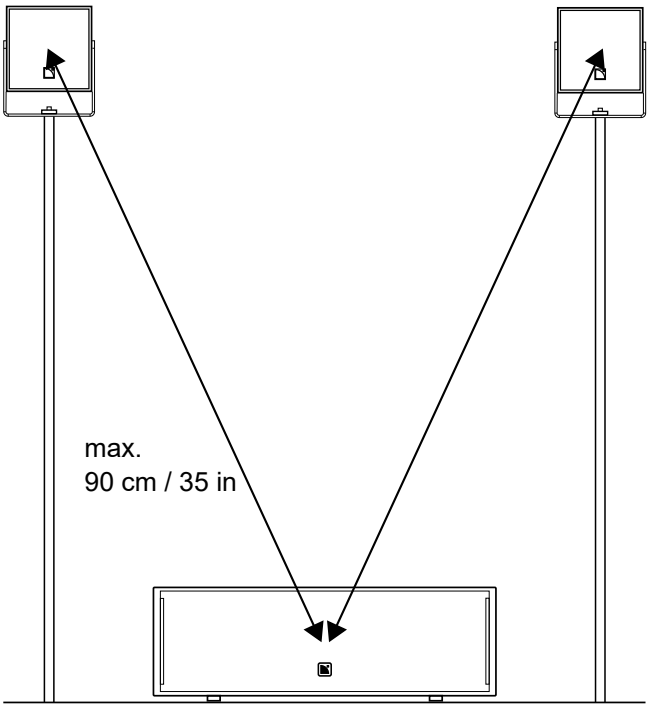
Closely coupled

With SB10i and the preset [SB10_200], the bandwidth of the X4i system is extended down to 29 Hz and the system contour is reinforced (peak low-end SPL).

free field

reinforced contour

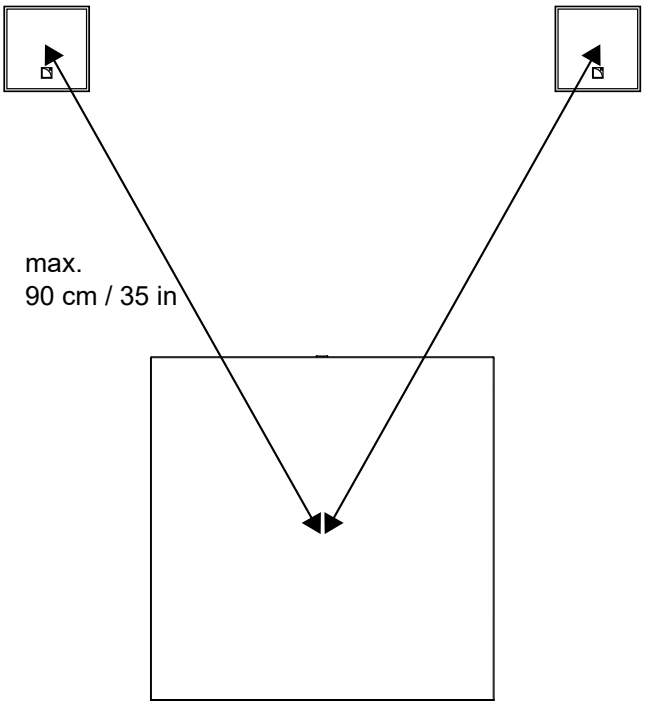
+ 4 dB at 50 Hz



on-ceiling/wall

reinforced contour

+ 10 dB at 50 Hz



Enclosure	X4i	SB10i
Preset	[X4]	[SB10_200]
Ratio	2 X4i : 1 SB10i	
Frequency range (-10 dB)	29 Hz - 20 kHz	

Delay values

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

Pre-alignement delays

presets	**pre-alignment delay values and polarity settings**			
[X4] + [SB10_200]	X4i = 1.9 ms	+	SB10i = 0 ms	-
[X4_MO] + [SB10_200]	X4i = 0 ms	+	SB10i = 0 ms	+

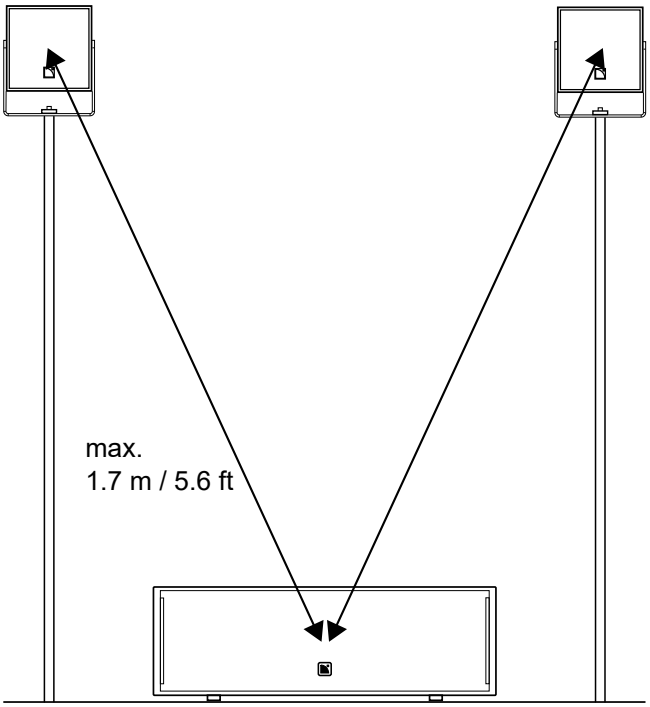
Coupled

With SB10i and the preset [SB10_100], the bandwidth of the X4i system is extended down to 27 Hz and the system contour is reinforced (peak low-end SPL).

free field

reinforced contour

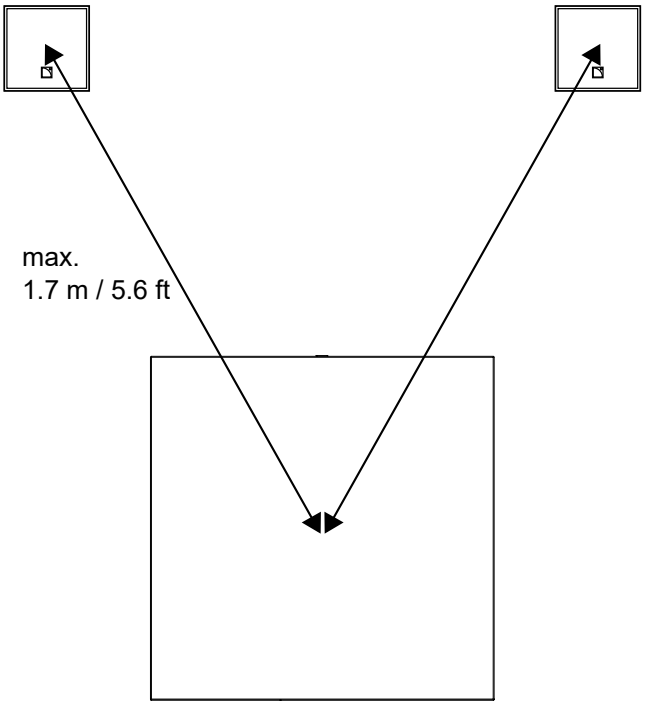
+ 2 dB at 50 Hz



on-ceiling/wall

reinforced contour

+ 8 dB at 50 Hz



Enclosure	X4i	SB10i
Preset	[X4]	[SB10_100]
Ratio	2 X4i : 1 SB10i	
Frequency range (-10 dB)	27 Hz - 20 kHz	

Delay values

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

Pre-alignement delays

presets	**pre-alignment delay values and polarity settings**	
[X4] or [X4_MO] + [SB10_100]	X4i = 0.8 ms +	SB10i = 0 ms +

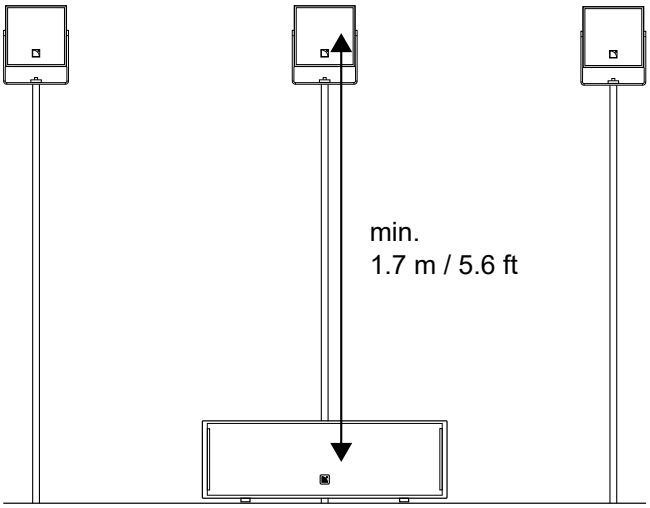
Separated

With SB10i and the preset [SB10_60], the bandwidth of the X4i system is extended down to 25 Hz and the system contour is reinforced (peak low-end SPL). The preset [X4_60] provides optimal frequency coupling with the low-frequency element.

free field

reinforced contour

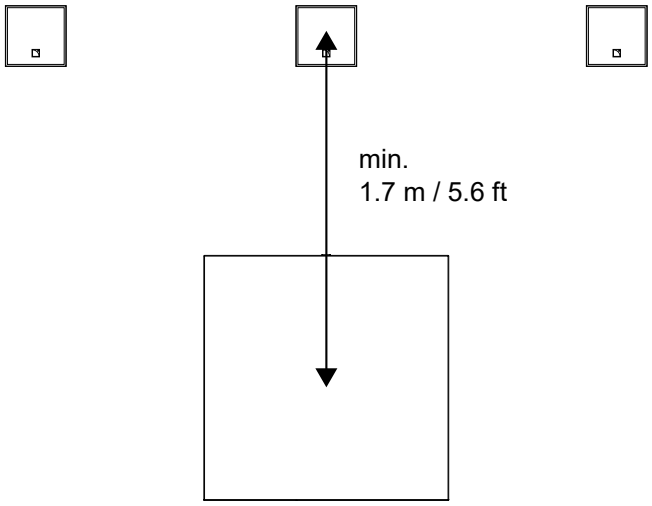
+ 6 dB at 50 Hz



on-ceiling/wall

reinforced contour

+ 12 dB at 50 Hz



Enclosure	X4i	SB10i
Preset	[X4_60]	[SB10_60]
Ratio	3 X4i : 1 SB10i	
Frequency range (-10 dB)	25 Hz - 20 kHz	

Delay values

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

Pre-alignement delays

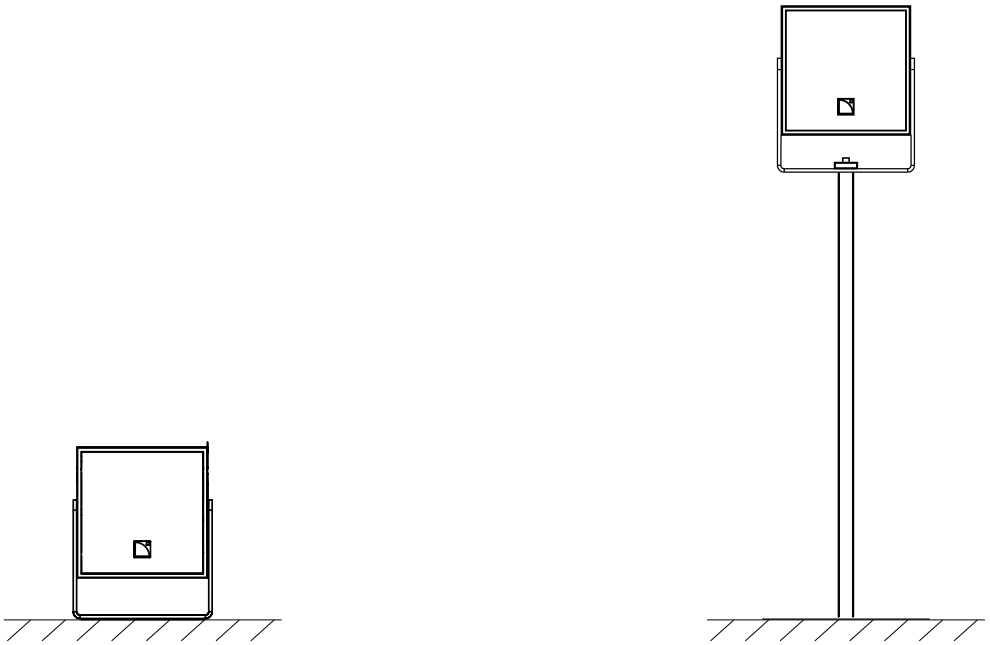
presets	**pre-alignment delay values and polarity settings**	
[X4_60] + [SB10_60]	X4i = 7.2 ms +	SB10i = 0 ms -

X4i stage monitor

Deployed as a stage monitor, the X4i system operates over the nominal bandwidth of the enclosure.

The [X4_MO] preset delivers a reference frequency response in stage monitoring applications.

X4i is driven by the LA2Xi / LA4X / LA7.16i / LA12X amplified controllers.



Enclosure	X4i
Preset	[X4_MO]
Frequency range (-10 dB)	120 Hz - 20 kHz

Low-latency preset

A low-latency preset is available for the X4i enclosure used as a monitor ([X4_MO]). It reduces latency from 3.84 ms down to 1.18 ms (LA8 / LA7.16i) and 0.84 ms (LA2Xi / LA4X / LA12X). If the monitor is combined with a subwoofer, a custom preset must be used.

Inspection and preventive maintenance

How to do preventive maintenance

Inspect the system after any corrective maintenance operation.

Perform preventive maintenance at least once a year.

Rigging and hardware

Perform the Rigging part inspection (p.29) on each rigging part.

Use the Mechanical system overview (p.29) to identify critical parts of the system.

If any parts are damaged, contact your L-Acoustics representative for further instructions.

Acoustics

Perform the Enclosure check (p.32).

Perform the Listening test (p.34) to detect any degradation in sound quality.

If necessary, refer to the Corrective maintenance (p.47) section for speaker repair kits and maintenance instructions.

Rigging part inspection

About this task

The term "rigging part" comprises:

- lifting accessories such as clamps and shackles
- rigging accessories such as rigging frames, rigging interfaces, and brackets
- fasteners used for assembling two products together such as ball-locking pins, rigging axes, and safety pins
- rigging plates mounted on enclosures and their rigging screws
- screens mounted on enclosures

This inspection procedure covers only L-Acoustics products. To inspect other products that are part of the lifting chain, refer to the manufacturer's instructions.

Prerequisite

Perform the inspection in a well-lit environment.

Procedure

1. Check that the rigging part is present.
2. Check for:
   - corrosion
   - wear and cracks
   - bends and dents
   - holes
   - missing safety cues
   - missing identification labels
   - missing or loose fasteners

   Replacing screws
   If a screw is loose, remove and replace it.
   Always use the new screws provided in the repair kit.
   If no new screw is available, add blue threadlocker before reusing the screw.
   Do not apply more than the indicated torque.
3. Check the geometry of the part to identify critical deformations.

What to do next

If a problem is detected, perform the authorized maintenance operations or contact your L-Acoustics representative.

Mechanical system overview

Critical parts of the lifting chains are highlighted.

The indicates a visual inspection.

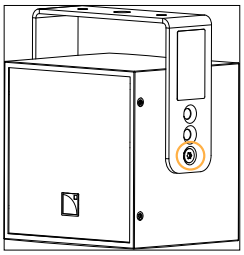
Perform the Rigging part inspection (p.29) on critical parts.

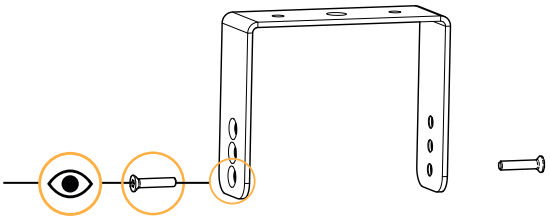
Replacing screws
If a screw is loose, remove and replace it.
Always use the new screws provided in the repair kit.
If no new screw is available, add blue threadlocker before reusing the screw.
Do not apply more than the indicated torque.

X4i flown with X-U4i / X-B4i

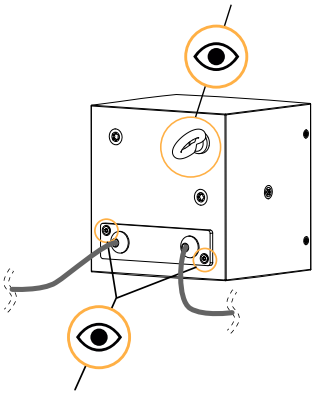
Inspect X-B4i in the same way as X-U4i.

screws are not loose

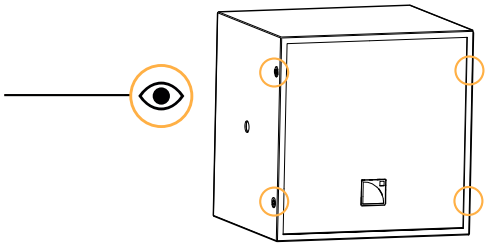




secondary safety is present



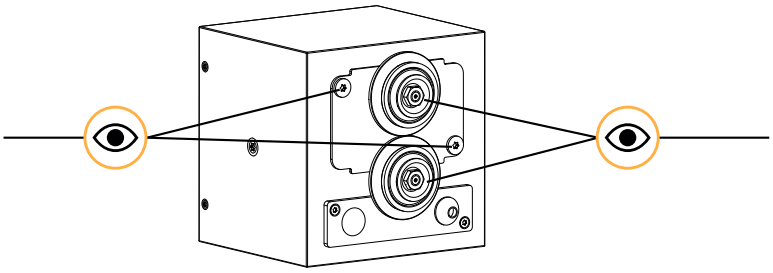
grill screws are tightened



connector sealing plate is secured

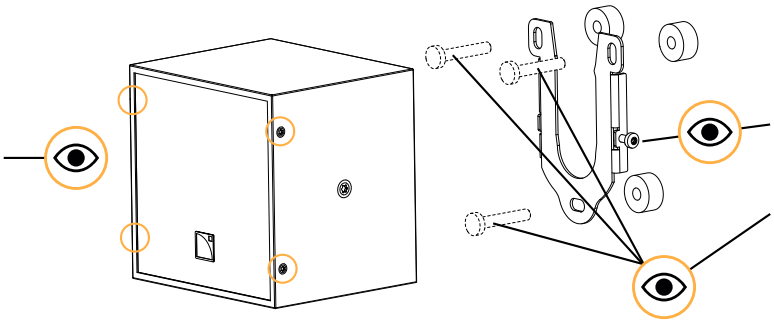
X4i mounted on a wall or ceiling with X4i-onCW

screws are not loose



silent blocks are not loose

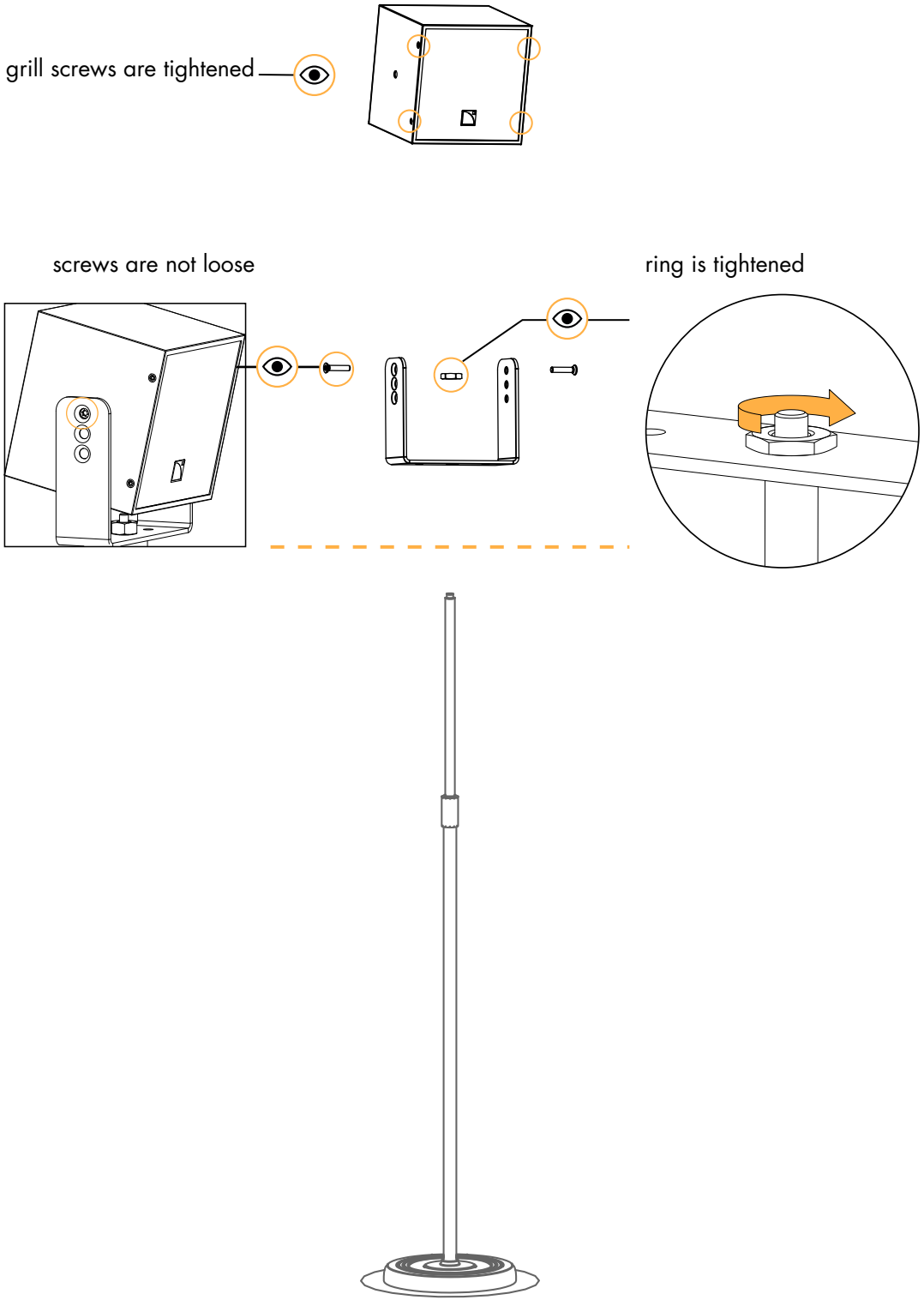
grill screws are tightened



safety screw is tightened

mounting screws are not loose

X4i pole-mounted with X-U4i



Acoustical check

Enclosure check

This feature is available on:
LA4X
LA12X

ENCLOSURE CHECK measures impedance at the reference frequencies for the connected loudspeaker family. The measured impedance is compared to the expected range allowing for fast detection of loudspeakers presenting circuit continuity issues.

The results can be used for preliminary diagnosis but cannot replace a comprehensive quality control.

Prerequisite

ENCLOSURE CHECK measurements can only be reliable if the following requirements are met:

Environment and temperature:
- Ambient temperature must be comprised between 0 °C / 32 °F and 40 °C / 104 °F. Ideal temperature is 20 °C / 68 °F.
- Enclosures must be at room temperature. If warm from a recent high level use or recently moved from a cold environment, let the loudspeakers reach room temperature before starting.

Enclosures:
- Enclosures must be included in the embedded factory preset library.
- Enclosures must be in nominal operating conditions:
  - Remove covers or dollies obstructing the loudspeakers or the vents.
  - Check for obvious physical damage or air leak: visually inspect the grill, gasket, cabinet, and connector plate for loose, missing or damaged parts.

Connection:
- Use only 10 m / 30 ft 4 mm^2 / AWG 11 speaker cables.
- Do not connect enclosures in parallel.

Amplified controllers:
- LA4X must run at least firmware version 1.1.0.
- LA4X load sensors must be calibrated. Refer to the **Load Sensor Calibration Tool** technical bulletin for more information.
- LA4X must warm up for at least 10 minutes after power up. Do not power off, reboot or switch to standby mode to avoid resetting the countdown.
- Load a preset corresponding to the connected loudspeaker's family. Presets from the user memories may be used on condition they are made of presets supported in the embedded factory preset library.

Procedure

1. Power up the amplified controller. Let LA4X warm up for at least 10 minutes.
2. Connect the loudspeaker enclosures to the amplified controller.
3. Load a preset from or built from the embedded library corresponding to the connected loudspeaker family.
4. On the amplified controller, use the encoder wheel to select **MONITORING & INFO**. Press the OK key or the encoder wheel to validate.
5. Use the encoder wheel to select **ENCLOSURE CHECK**.

   Beware of sound levels.
   Although the sound pressure levels generated for the ENCLOSURE CHECK are moderate, do not stay within close proximity of the loudspeakers and consider wearing ear protection.
6. Press the OK key or the encoder wheel to launch the ENCLOSURE CHECK.

   The amplified controller generates short sinusoidal signals simultaneously for each connected output.

   The amplified controller displays the results for each output.

7. Depending on the displayed results, follow the instructions in the table.

result	interpretation	instructions
OK	measured impedance is within expected range	enclosure is in working order electrically
?	unsupported preset family	only supported enclosures should be tested
NC	Not Connected	if cables are connected: **a.** inspect the cables and connections **b.** go to step 8 (p.33)
NOK	measured impedance is not within expected range	**a.** check that all the prerequisites are met, in particular that the loaded preset corresponds to the connected speaker's family **b.** inspect the cables and connections **c.** go to step 8 (p.33)
UNDEF	measured impedance is undefined	

8. Under NC, NOK and UNDEF results, press and hold the corresponding OUT key.

The amplified controller displays:

- the tested frequencies,
- information on the measured impedance:
  - OPEN for open circuit (found in NC results),
  - SHORT for short circuit (found in NOK results), or
  - a percentage of variation from the expected range (found in NOK and UNDEF results)
- the number of operational transducers out of the total

i Low variations from the expected range are acceptable: displayed percentage can be different from 0 and all transducers considered operational.

Listening test

enclosure	preset	usable bandwidth
X4i	[X4]	120 Hz - 20 kHz

Procedure

1. Load the preset on an LA2Xi / LA4X / LA7.16i / LA12X amplified controller.
2. Connect a sinus generator to the amplified controller.

   Risk of hearing damage
   Set a low sound level to start and use ear protection to adjust before testing.
3. Scan the bandwidth focusing on the usable range.
   The sound should remain pure and free of unwanted noise.
4. Focus on the 35 Hz frequency.
   The sound should remain pure and free of unwanted noise.

Troubleshooting for LF speakers

One or more LF speaker produces distorted, buzzing, rubbing, clicking, muffled or weak sound.

Possible causes

- The screws are not tightened with the appropriate torque.
- There is an air leak in the gasket.
- There is dust on the cone.
- The cone is damaged.
- The surround is torn or delaminated.
- The voice coil or the spider is damaged.

Procedure

1. Perform the speaker disassembly procedure.
2. Visually inspect the cables and the connectors.
3. Visually inspect the speaker cone, the voice coil and the spider.

   If any damage is visible, replace the speaker.
4. Carefully clean the speaker with a dry cloth.
5. Perform the reassembly procedure.
   Replace the speaker gasket and the screws.
   Apply the recommended torque.
6. Repeat the listening test.

   If the problem persists, replace the speaker.

Troubleshooting for HF drivers

One or more HF driver produces high-frequency harmonic distortions, strange vibrations or weak sound.

Possible causes

- There are foreign particles on the air gap.
- The diaphragm is not centered correctly.
- The screws used for reassembly are too loose.
- The diaphragm is damaged.

Procedure

1. Perform the diaphragm disassembly procedure.
2. Visually inspect the diaphragm and the voice coil.

   If any damage is visible, replace the diaphragm.
3. Clean the air gap thoroughly.

   Use double-face adhesive tape to remove any particles.
4. Perform the diaphragm reassembly procedure.

   Apply the recommended torque.
5. Repeat the listening test.

   If the problem persists, replace the driver.

Rigging procedures

Wall- or ceiling-mounting X4i with a bracket

type of deployment	wall-mounting
	ceiling-mounting
rigging accessories	X-U4i or X-B4i
additional material	2 x ∅6 mm / M6 screws and anchors (depending on the support material)
	blue threadlocker
tools	torque screwdriver
	T25 Torx bit

Secondary safety for flown enclosures
Use one insert at the back of the enclosure to implement a secondary safety.

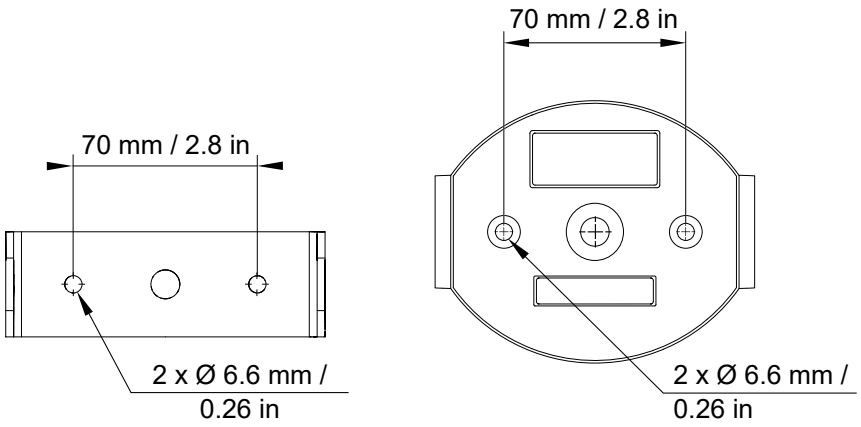
Fasteners for wall-mounting or ceiling-mounting
Secure the bracket with two M6 screws.
Select screw length and anchors applicable to the wall or ceiling properties.

The procedure is shown with X-U4i.
The same procedure applies for X-B4i.

Assembly

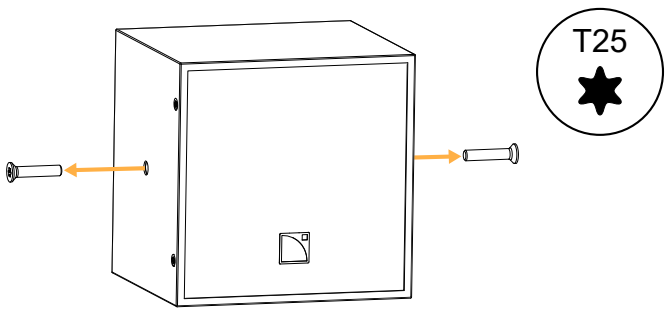
Procedure

1. Secure X-U4i or X-B4i to the wall or to the ceiling using two M6 screws.

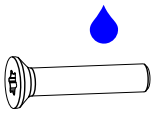


X-U4i X-B4i

2. On both sides of the enclosure, remove the screws.



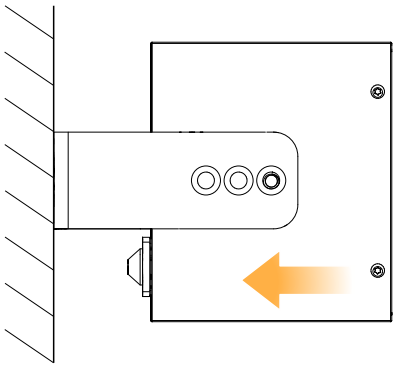
3. Apply blue threadlocker on the screws.



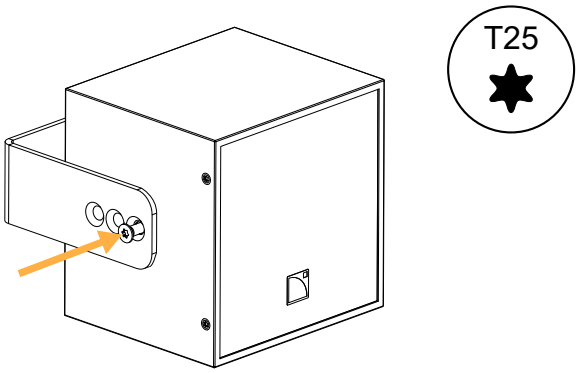
Risk of injury
Keep fingers away from the contact area between the bracket and the enclosure.

Site angle with X-U4i
Depending on the site angle, choose the appropriate hole on X-U4i to adjust the gap between the enclosure and the bracket and to optimize visual impact.

4. Position the enclosure inside the bracket.

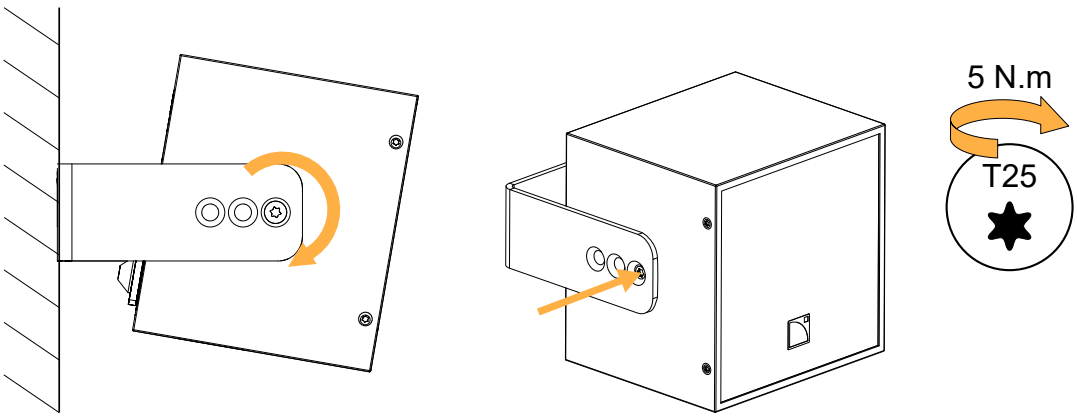


5. Partially drive the screws.



Risk of damaging the insert
Do not overtighten the screw.

6. Adjust the angle and tighten the screws.
Make sure the enclosure is steady.



Wall- or ceiling-mounting X4i with X4i-onCW

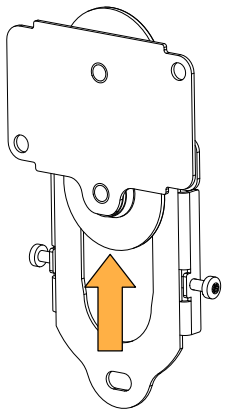
type of deployment	wall-mounting
	ceiling-mounting
rigging accessories	X4i-onCW, including: • 2 M6×16 Torx screws • 3 spacers • 3 washers • wall/ceiling support • silent blocks plate
additional material	2 compatible screws and anchors
tools	torque screwdriver
	T30 Torx bit
	T20 Torx bit
min. number of operators	1

Fasteners for wall-mounting or ceiling-mounting
Secure the rigging element with two round or pan head M6 screws.
Select screw length and anchors applicable to the wall or ceiling properties.

Assembly

Procedure

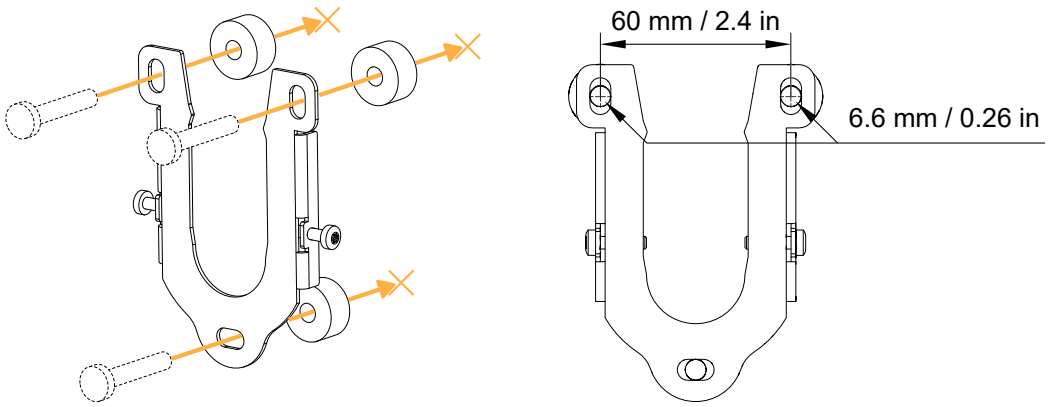
1. Remove the silent blocks plate from the wall/ceiling support.



2. Secure the wall/ceiling support on the wall or on the ceiling, using the three spacers.

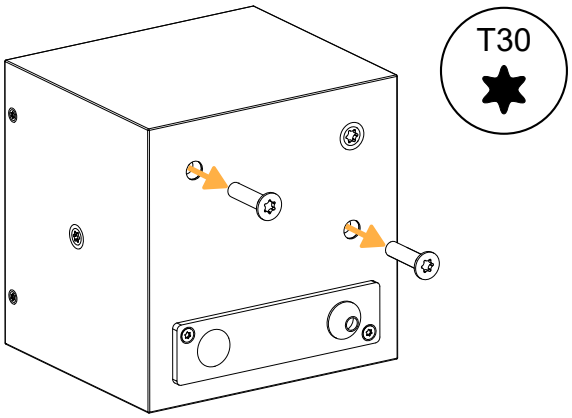
The washers can be added behind the spacers if the wall or ceiling is not perfectly flat.

Make sure to leave enough space around the wall/ceiling support to mount the enclosure assembly and to tighten the safety screws.

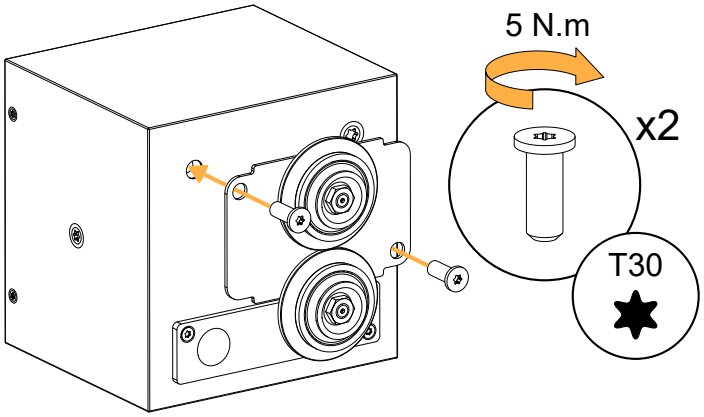


3. Prepare the cabling. Refer to Cabling X4i (p.45).

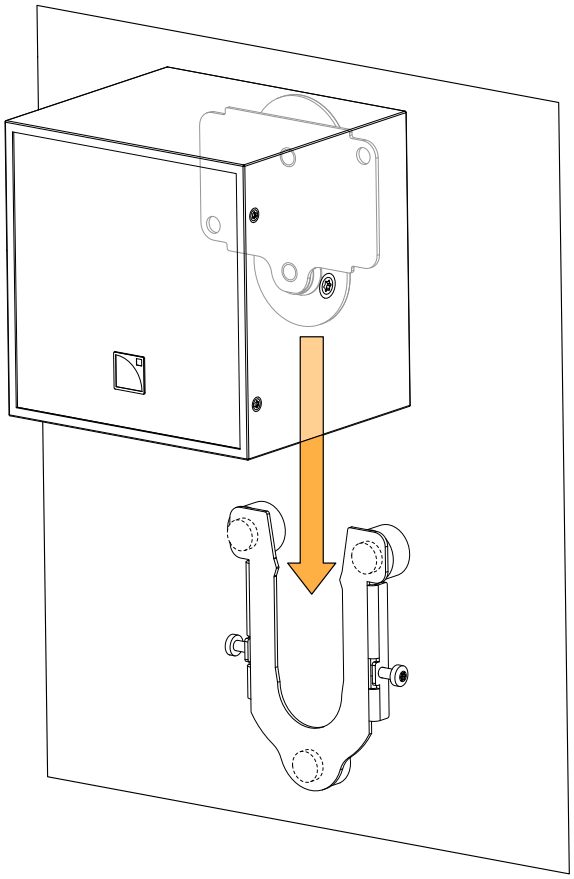
4. Remove the top left and bottom right placeholder screw from the rear of X4i.



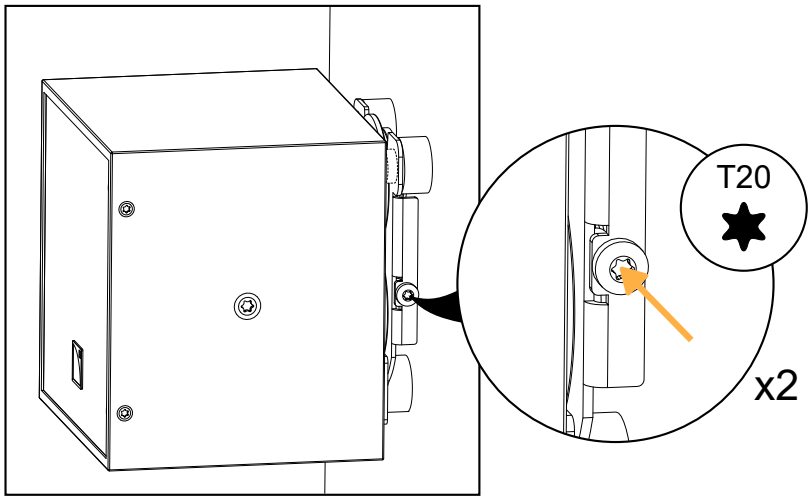
5. Mount the silent blocks plate to X4i with the two M6×16 Torx screws.



6. Mount the assembly on the wall/ceiling support.



7. Tighten the safety screws on both sides and make sure the assembly is stable.



Pole-mounting X4i

type of development	pole-mounting
rigging accessory	X-U4i or X-B4i
	microphone stand
tools	torque screwdriver
	T25 Torx bit

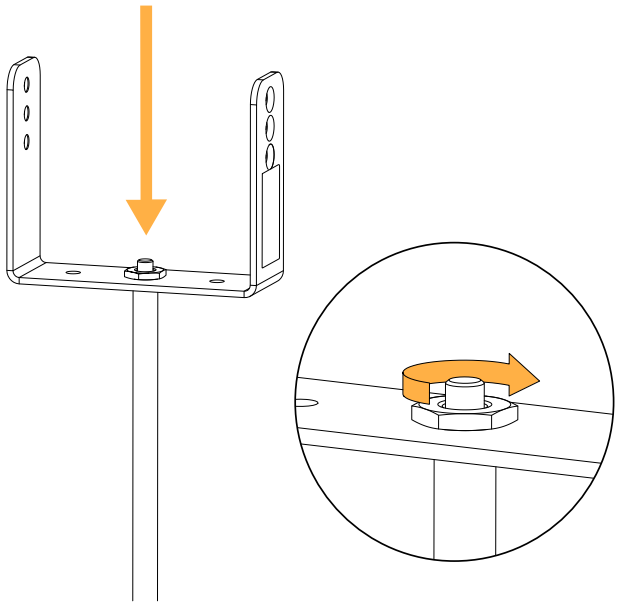
Adapter for US microphone stand
Use a 3/8"-16 male to 5/8"-27 female microphone screw adapter and a locking ring to mount X4i on a US standard microphone stand.

The procedure is shown with X-U4i.
The same procedure applies for X-B4i.

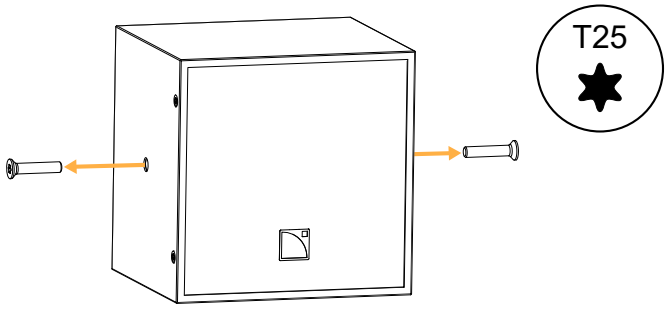
Assembly

Procedure

1. Secure the microphone stand to X-U4i or X-B4i with the locking ring.



2. On both sides of the enclosure, remove the screws.



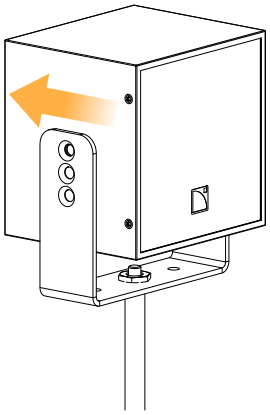
Risk of injury
Keep fingers away from the contact area between the bracket and the enclosure.

3. Position the enclosure inside X-U4i or X-B4i.

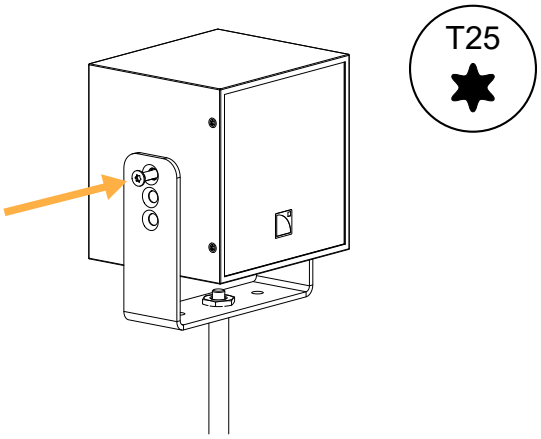
   With X-U4i, select the holes on the bracket to adjust the distance between X4i and the microphone stand.

Limited rotation capabilities in pole-mount configuration

Choose the appropriate hole to adjust the gap between the enclosure and the bracket and to optimize visual impact.



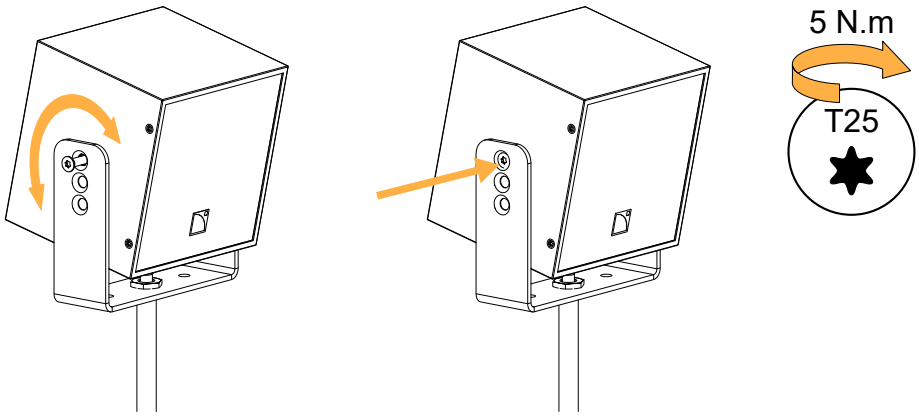
4. Partially drive the screws.



Risk of damaging the insert

Do not overtighten the screw.

5. Adjust the angle and tighten the M5 screws.
   Make sure the enclosure is steady.



Connection to LA amplified controllers

Refer to the **Amplification reference** technical bulletin for the latest information on compatibility with amplified controllers and cabling schemes for all enclosure types.

Enclosure drive capacity per amplified controller

Make sure the total number of connected enclosures does not exceed the maximum number of enclosures per controller (refer to the footnotes).

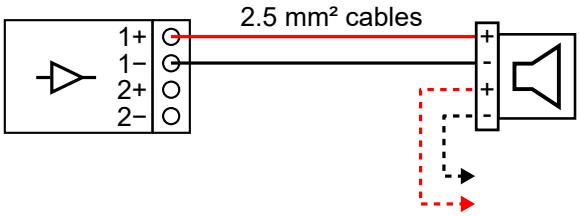
	LA2Xi	LA4X	LA7.16i	LA12X
	per output * / total	per output * / total	per output * / total	per output * / total
X4i	4 / 16	4 / 16	4 / 64	6 / 24

Cabling schemes for X4i

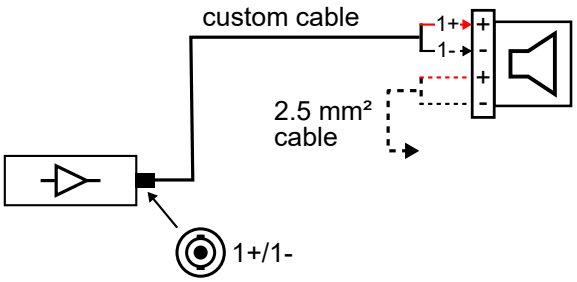
Refer to the cabling schemes to connect the enclosures to different types of output configurations.

Refer to the cable manufacturer documentation for the wire color code.

Terminal block output (LA2Xi SE / LA7.16i)

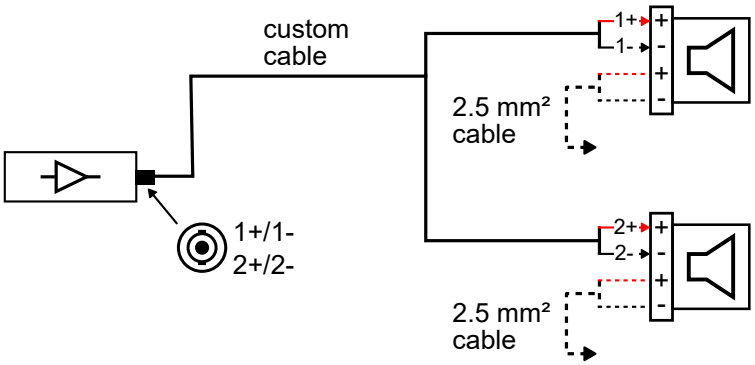


One-channel speakON output



* 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.

Two-channel speakON output



Cabling X4i

Accessory	connector sealing plate (provided)
Screws and fasteners	2 M3×20 screws (mounted on enclosure)
Tools	torque screwdriver
	T10 Torx bit
	flat screwdriver (3 mm or less)
Min number of operators	1

Assembly

Prerequisite

The cable glands on the connector sealing plate are compatible with cables up to 2 × 2.5 mm^2 gauge.

Refer to:

- APPENDIX A: Recommendation for speaker cables (p.60)
- Cabling schemes for X4i (p.43)

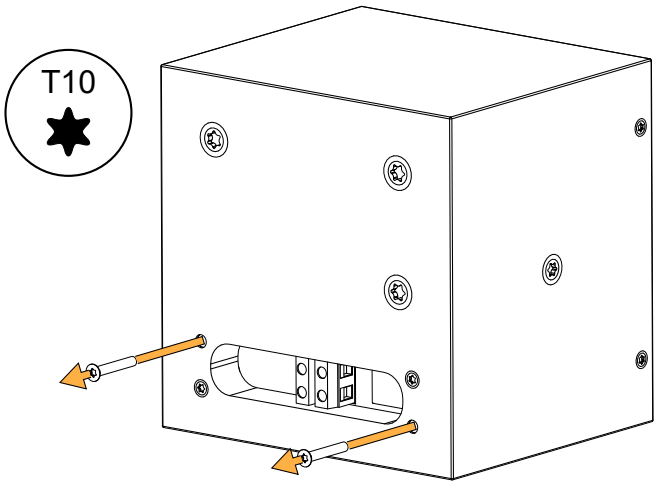
About this task

The connector sealing plate has two holes: one for the input cable and one for the cable connecting to the next enclosure in parallel. By default, the first hole is fitted with a cable gland and the second one with a protective plug. An extra cable gland is provided with each enclosure.

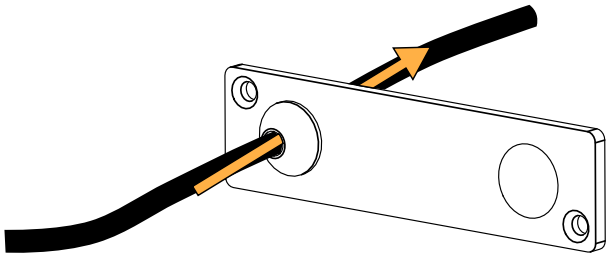
This procedure describes how to connect the input cable to the enclosure. If the enclosure must be connected in parallel, replace the protective plug with the extra cable gland and proceed identically for both cables.

Procedure

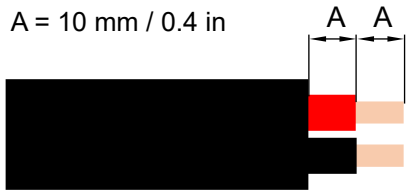
1. Remove the two screws from the back of X4i.



2. Insert the cable through the cable gland.



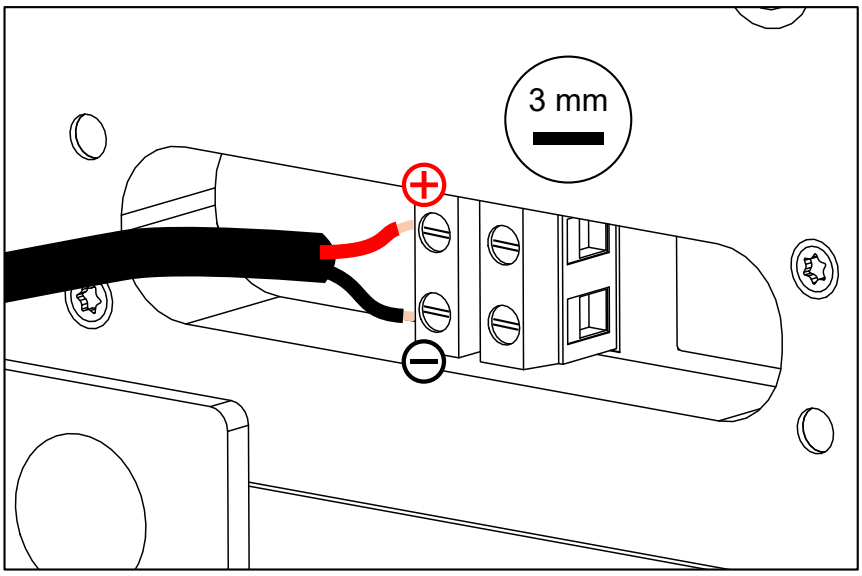
3. Strip the wires of the cable.



2 × 2.5 mm² cable

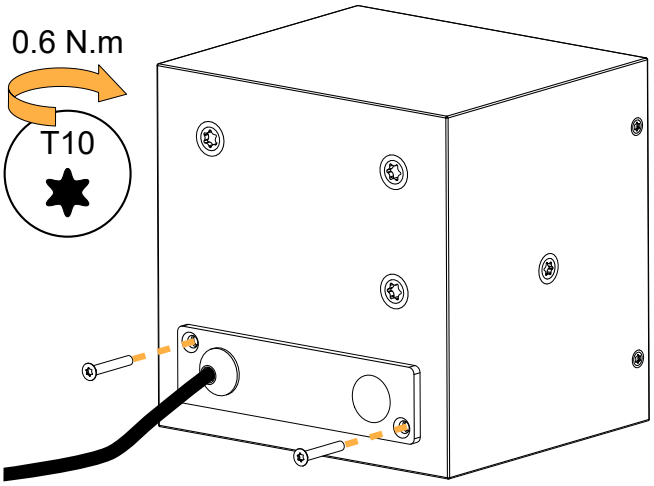
Refer to the cable manufacturer documentation for the wire color code.

4. Insert the wires into the terminals and tighten the screws on the terminals with a flat screwdriver.



5. Secure the connector sealing plate to the enclosure.

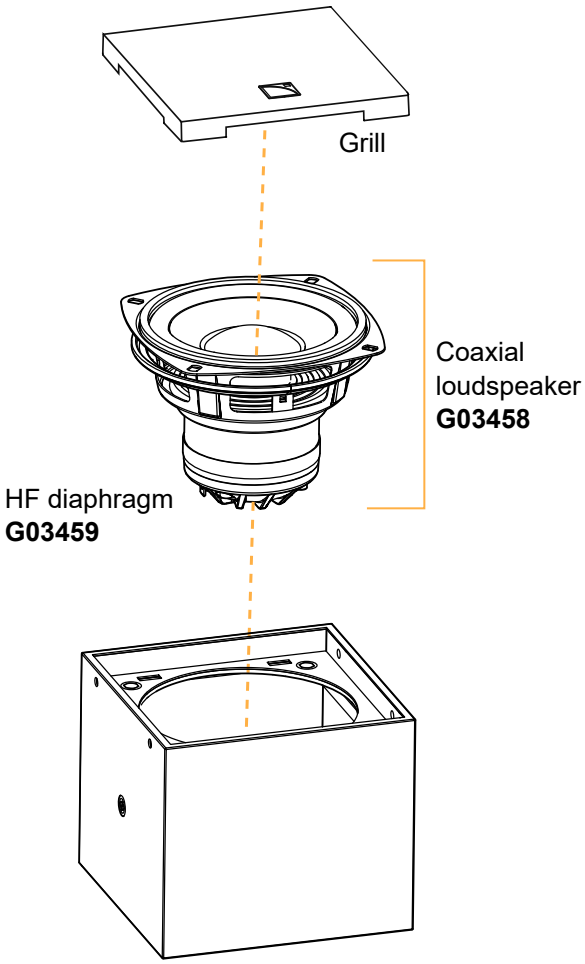
Apply a torque of 0.6 N.m.



Corrective maintenance

Exploded view

In order to operate, follow the order outlined here. Each assembly refers to the corresponding Disassembly/Reassembly (D/R) procedure and the necessary repair kit.



Disassembly and reassembly procedures

D/R - Grill

Tools

- torque screwdriver
- T10 Torx bit

Consumables

- blue threadlocker

Repair kits

G03458

KR coaxial speaker X4i

×4

S240

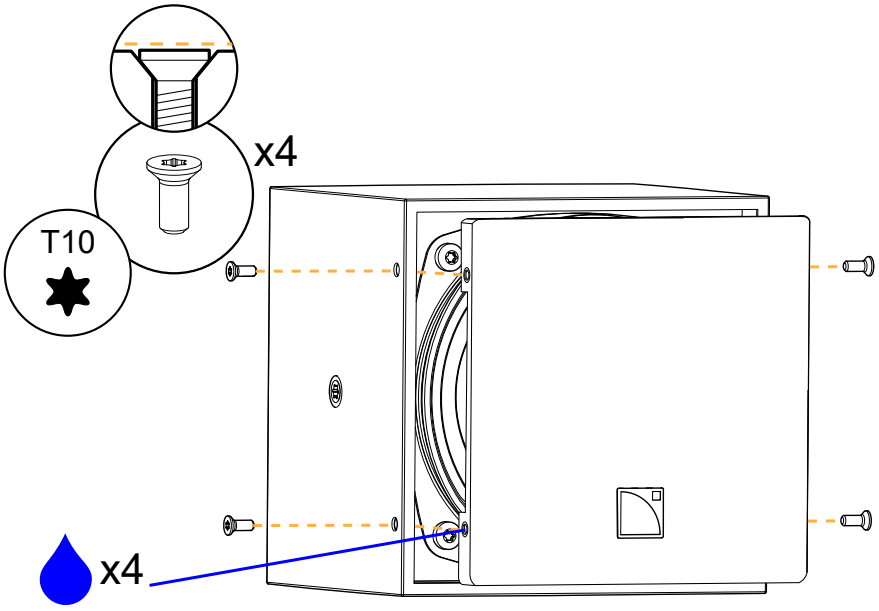
M3×8 Torx

Exploded view

Gradually tighten the screws following a star pattern.

Position the grill with the logo at the bottom.

Put blue threadlocker in the grill inserts before reassembly.



D/R - Coaxial loudspeaker

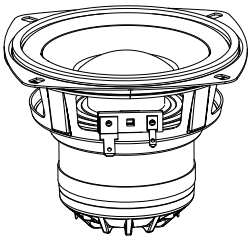
Tools

- torque screwdriver
- T20 Torx bit

Repair kit

G03458*

KR coaxial speaker X4i



×1

FT03351

4" coaxial driver - 16 ohms

×4

S100025

M4×16 Torx

×4

S157

plain washer Ø4 mm

×4

FT010913

retaining washer Ø4 mm

×2

102259

4" speaker gasket

* The screws and fasteners are also provided in the G03459 (KR diaphragm 1.4'' X4i).

Prerequisite

Grill removed.

See D/R - Grill (p.48).

Exploded view

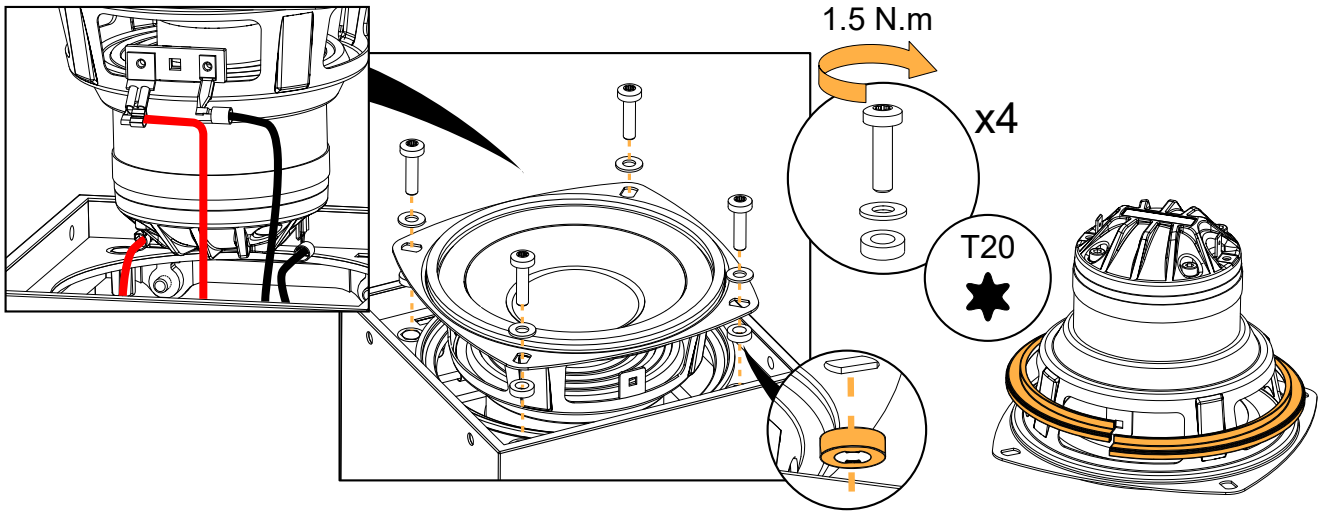
For safety reasons, always use the new screws and spare parts provided in the KR.
If no new screws are available, use blue threadlocker.

Gradually tighten the screws following a star pattern.

If the speaker gasket is damaged, remove and replace it.

Place the loudspeaker with the connectors towards the top of the enclosure.

Position the FT010913 washers with the grips against the cabinet.



What to do next

Perform the Acoustical check (p.32) procedures.

D/R - HF Diaphragm

Tools

- torque screwdriver
- T10 Torx bit
- compressed air blower

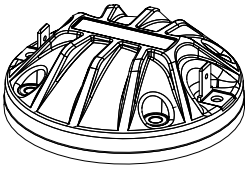
Consumables

- double face adhesive tape

Repair kit

G03459

KR diaphragm 1.4'' X4i



×1

18071

diaphragm kit for 1.4" driver - 16 Ω

×4

S18071

M3×8 Torx

Prerequisite

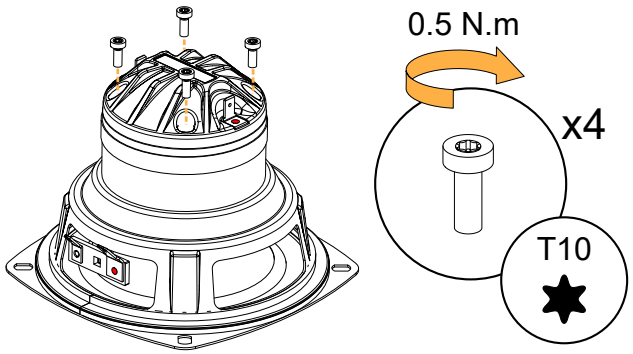
Grill removed.	See D/R - Grill (p.48).
Coaxial speaker removed.	See D/R - Coaxial loudspeaker (p.49).

The speaker is placed on a flat surface in a dust-free environment.

Exploded view

For safety reasons, always use the new screws and spare parts provided in the KR.

Make sure the air gap is perfectly clean before reassembly.
Use a blower or double face adhesive to remove any particle.
Position the diaphragm assembly with the positive HF connector (red) on the same side as the positive LF connector.
Gradually tighten the screws following a star pattern.



What to do next

Perform the Acoustical check (p.32) procedures.

Specifications

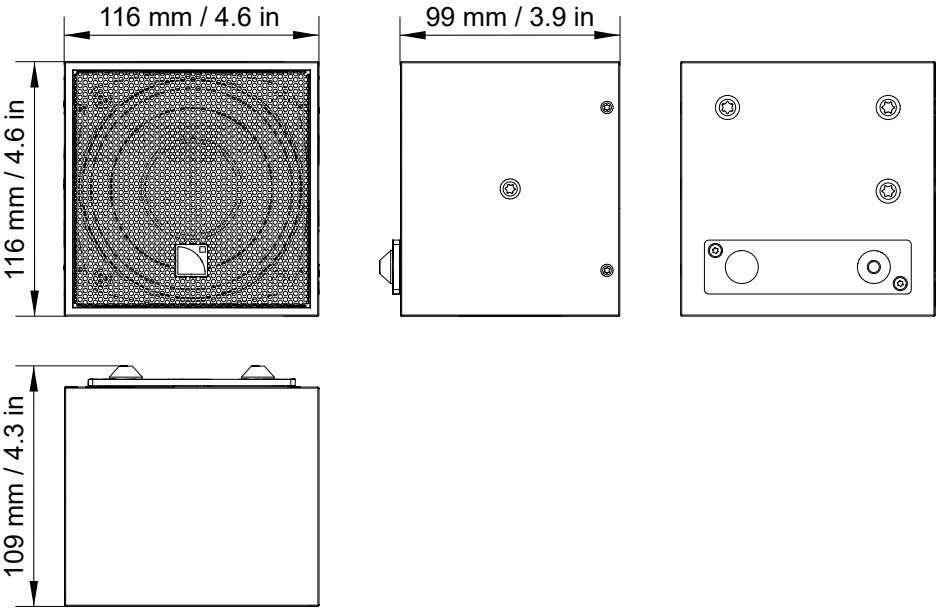
X4i specifications

Description	2-way passive coaxial enclosure: 4" LF + 1.4" HF diaphragm, amplified by LA2Xi / LA4X / LA7.16i / LA12X	
	with preset [X4]	with preset [X4_60]
Low frequency limit (-10 dB)	120 Hz	65 Hz
Maximum SPL[1]	116 dB	110 dB
Nominal directivity (-6 dB)	110° axisymmetric	
Transducers	LF: 1 × 4" neodymium	
	LINK: 1 × 2-point screw terminal	
Acoustical load	closed enclosure	
Nominal impedance	16 Ω	
Connectors	IN: 1 × 2-point screw terminal	
	LINK: 1 × 2-point screw terminal	
Rigging and handling	2 M5 inserts for X-U4i	
	2 M6 inserts for rigging accessory	
Safety	1 M6 insert for secondary safety	
Weight (net)	1 kg / 2.2 lb	
Cabinet	premium grade Baltic birch plywood	
Front	coated steel grill	
	acoustically neutral 3D fabric	
Finish	dark grey brown Pantone 426 C	
	pure white RAL 9010	
	custom RAL code on special order	
IP	IP55[2]	

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

[2] With connector sealing plate.

X4i dimensions

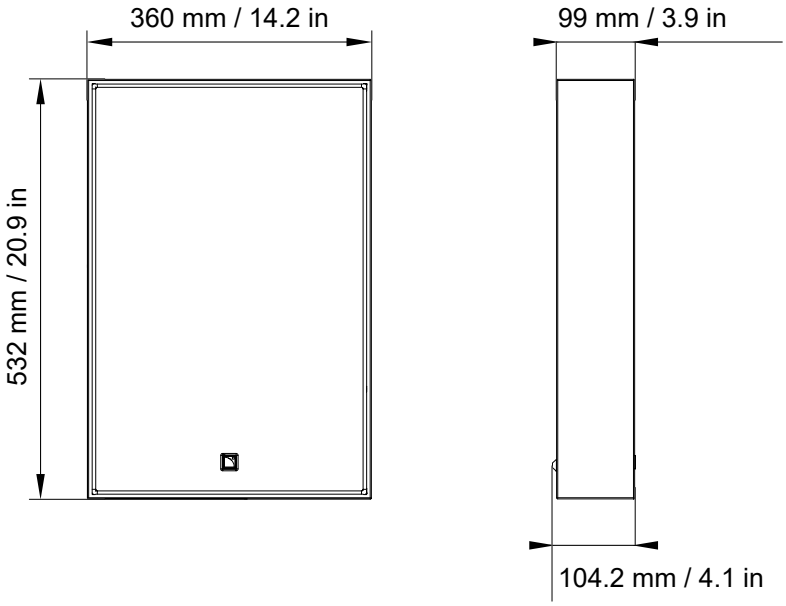


SB6i specifications

Description	Ultra-shallow subwoofer: 2 × 6.5", amplified by LA2Xi / LA4X / LA7.16i / LA12X		
	with preset [SB6_60]	with preset [SB6_100]	with preset [SB6_200]
Low frequency limit (-10 dB)	29 Hz	29 Hz	32 Hz
Maximum SPL[1]	110 dB	111 dB	115 dB
Nominal directivity (-6 dB)	standard configuration		
Transducers	2 × 6.5" cone driver		
Acoustical load	bass-reflex, L-Vents		
Nominal impedance	4 Ω		
Connectors	1 × 4-point terminal block with push-in connection		
Rigging and handling	8 M6 inserts for rigging accessories		
Weight (net)	8.6 kg / 18 lb		
Cabinet	premium grade Baltic beech and birch plywood		
Front	coated steel grill		
	acoustically neutral 3D fabric		
Finish	dark grey brown Pantone 426 C		
	pure white RAL 9010		
	custom RAL code on special order		
IP	IP55		

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

SB6i dimensions

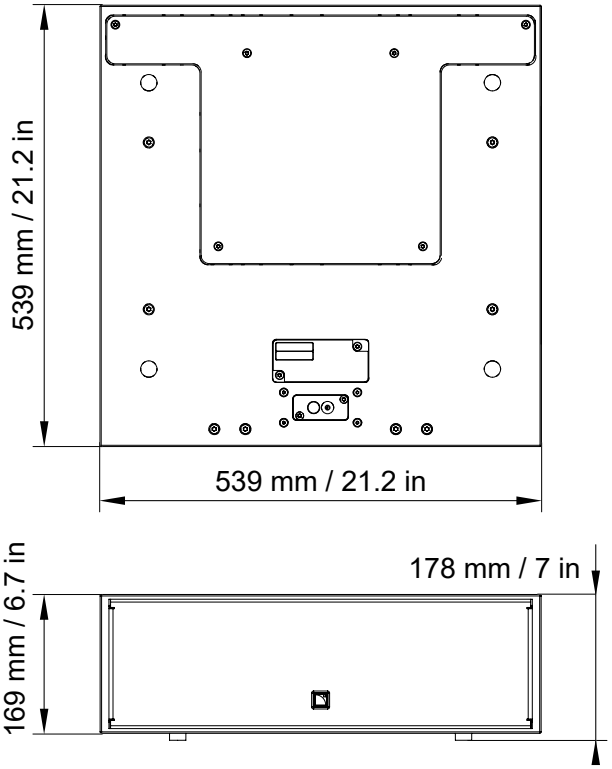


SB10i specifications

Description		Ultra-compact subwoofer: 1 × 10" (installation version), amplified by LA2Xi / LA4X / LA7.16i / LA12X		
		with [SB10_60]	with [SB10_100]	with [SB10_200]
Low frequency limit (-10 dB)		25 Hz	27 Hz	29 Hz
Maximum SPL[1]	with LA2Xi (bridge mode) / LA4X / LA7.16i / LA12X	119 dB	122 dB	124 dB
	with LA2Xi	119 dB	120 dB	122 dB
Nominal directivity (-6 dB)		standard configuration		
Transducers		1 × 10" cone driver		
Acoustical load		bass-reflex, L-Vents		
Nominal impedance		8 Ω		
Connectors		1 × 4-point terminal block with push-in connection		
Rigging and handling		12 M6 inserts for rigging accessories		
Weight (net)		14 kg / 31 lb		
Cabinet		premium grade Baltic birch plywood		
Front		coated steel grill		
		acoustically neutral 3D fabric		
Finish		dark grey brown Pantone 426 C		
		pure white RAL 9010		
		custom RAL code on special order		
IP		IP55		

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

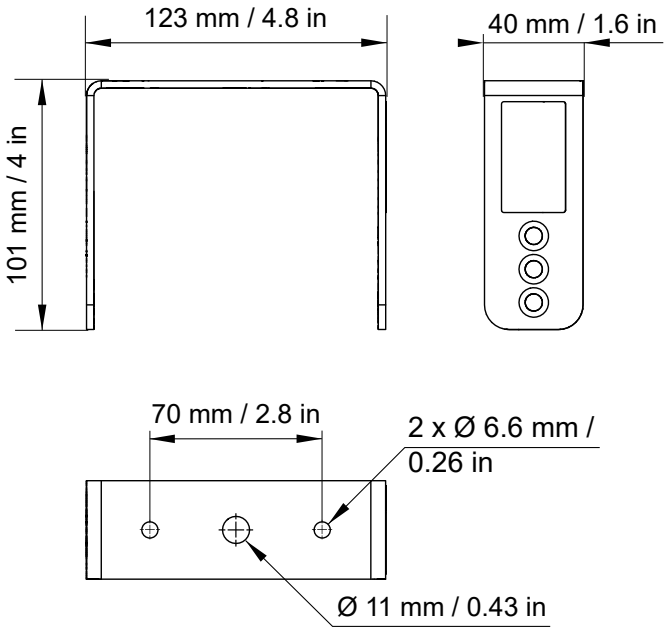
SB10i dimensions



X-U4i specifications

Description	Adjustable U-bracket for X4i
Weight (net)	0.3 kg / 0.7 lb
Material	steel with anti-corrosion coating

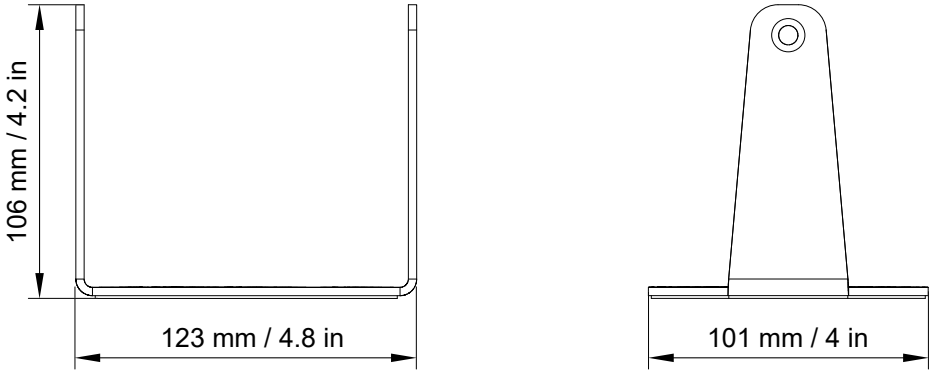
X-U4i dimensions

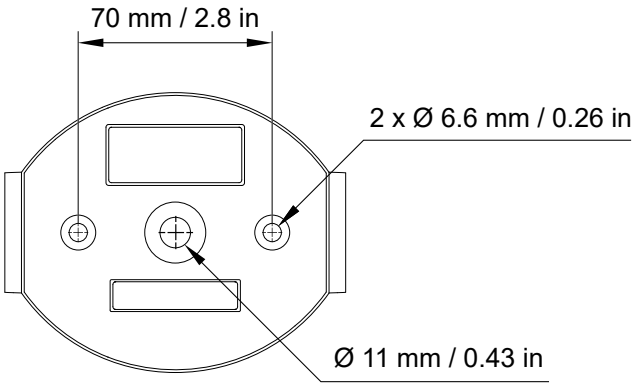


X-B4i specifications

Description	Base plate and bracket for X4i
Weight (net)	0.4 kg / 0.9 lb
Material	high grade steel with anti-corrosion coating

X-B4i dimensions

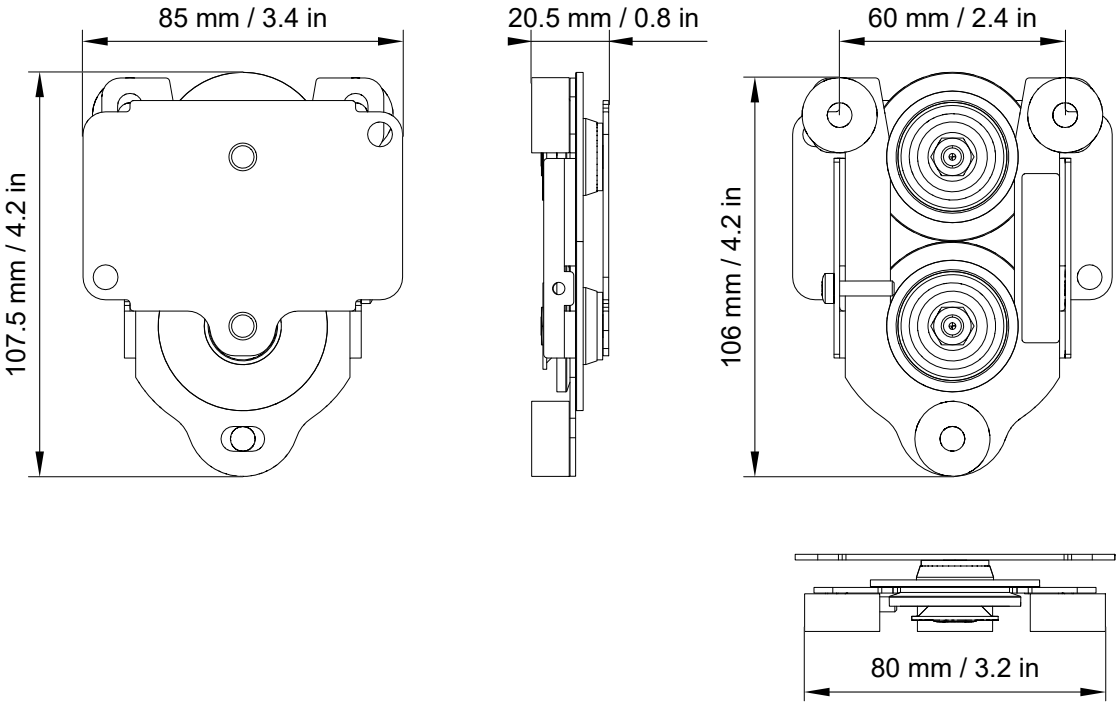




X4i-onCW specifications

Description	On-wall or on-ceiling mounting accessory with silent blocks for X4i
Weight (net)	0.2 kg / 0.44 lb
Material	high grade steel with anti-corrosion coating

X4i-onCW dimensions



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

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:

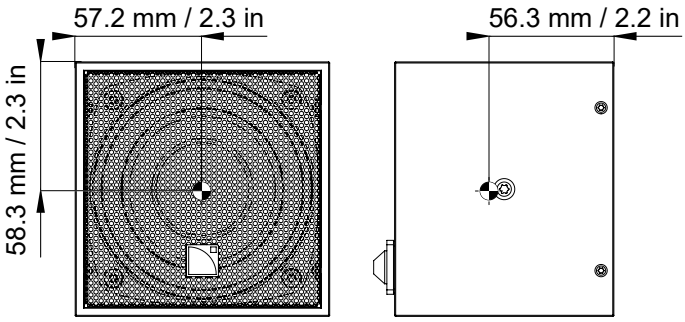
https://www.l-acoustics.com/installation-tools/

Specifications for custom rigging

Dimensions

Refer to X4i dimensions (p.53).

Center of gravity



Weight

X4i: 1 kg / 2.2 lb

Threaded inserts and screws

Use only rigging inserts to implement a custom rigging

Inserts marked with ○ can be used for rigging.

Inserts marked with ✕ must not be used for custom rigging (reserved for screen mounting, maintenance purposes, L-Acoustics accessories, etc.).

Grade of screws must be defined by a qualified person

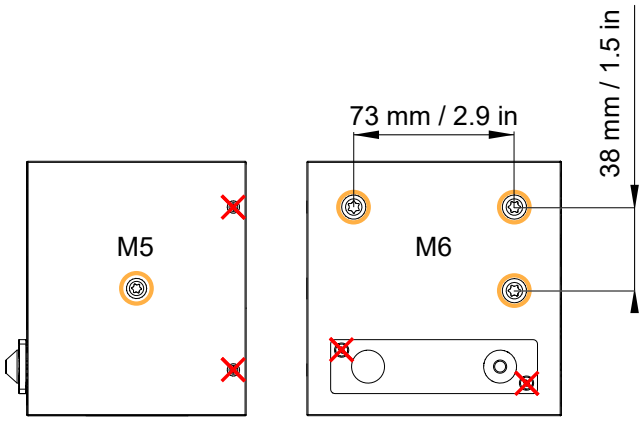
Take into consideration the number of inserts used, weight and center of gravity of enclosure(s), and resulting action forces.

Prevent screws from loosening (threadlocker, spring washer...).

SB6i has **2 threaded M5 inserts** and **3 threaded M6 inserts** available for rigging.

	M5 inserts	**M6 inserts**
Ultimate Tensile Strength	280 N	
Ultimate Shear Strength	280 N	
Recommended screw length *	min. 15 mm / 0.6 in	min. 20 mm / 0.8 in
Recommended torque	5 N.m	

* Recommended screw length for a metal sheet with a thickness of 3 mm / 0.1 in. Adapt the length to the custom rigging design.



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