K&F NOMOS XLT

User's Manual

Version 1.2
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Important Information, Please Read Before Use!

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KLING & FREITAG
SOUND SYSTEMS

Table of contents

1. Introduction

Thank you for your decision to buy a KLING & FREITAG product. To guarantee a trouble-free operating of the equipment and to allow your KLING & FREITAG NOMOS XLT system to achieve its full potential please read the operating instructions carefully before use. With the purchase of a NOMOS XLT, you have acquired a large sound system with the highest possible quality and performance capabilities. As the owner of a NOMOS XLT loudspeaker, you now have a versatile and highly professional tool which, when operated properly, is a true pleasure to use.

1.1 Symbols in User's Manual

Warning

This symbol indicates the possibility of life-threatening danger and a health risk for persons. Not following these instructions may result in serious health problems including potentially fatal injuries.

Caution

This symbol indicates a possibly dangerous situation. Not following these instructions may cause minor injuries or cause property damage.

This symbol gives instructions for the proper use of the described products. Not following these instructions may cause malfunctions or property damage.

Tip

This symbol indicates notes that help you to handle the described products easier.

1.2 Information about this User's Manual

All specifications in this manual are based on information available at the time of publishing for the features and safety guidelines of the described products.

Technical specifications, measurements, weights and properties are not guaranteed.

The manufacturer reserves the right to make product alterations within legal provisions as well as changes to improve product quality.

All persons who use the speaker system must have this guide and all further information for safe operations available to them during assembly, disassembly, and use. The speaker system may neither be set up nor used until this manual has been read, understood and kept readily available in site.

We appreciate any input with suggestions and improvements for this manual. Please send this to us at the following address:

info@kling-freitag.de or to:

KLING & FREITAG GMBH Junkersstr.14 D-30179 Hannover.

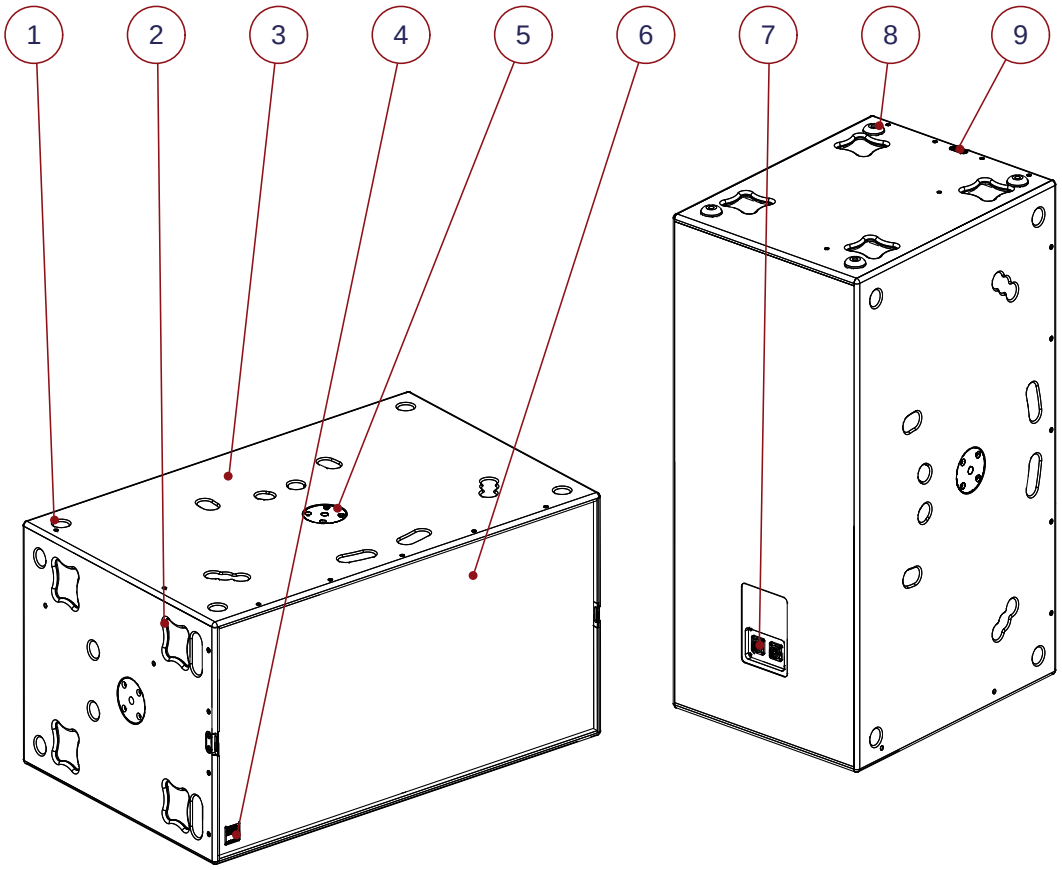
Phone +49 (0) 511 96 99 70, Fax +49 (0) 511 67 37 94.

2. Product Description

2.1 Scope of Delivery

- Subwoofer NOMOS XLT
- User's Manual

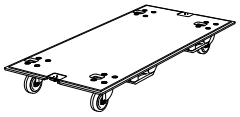
2.2 Overview of components



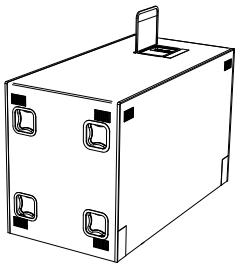
1. Stacking grooves (8x) , adjacent: plastic glider
2. Butterfly handles (8x)
3. speaker enclosure
4. Speakon connector, front (behind company logo)
5. Threaded stand flange
6. Front grille with acoustic foam
7. Speakon connector
8. Plastic glider (8x) , adjacent: stacking grooves
9. locking profiles for transport cover (2x)

2.3 Accessories

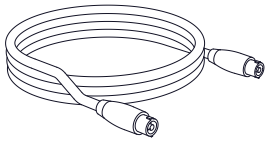
Transport Cover NOMOS XLT



Protective Cover NOMOS XLT



Loudspeaker patch cable NLT-425, 5 m



3. Safety Instructions

Warning

The speaker is solely for professional use in the manner described here.

To prevent damage to persons and property, you must set up the speaker in compliance with the specifications of applicable national standards.

The information described here does not relieve the user of the duty to follow the given safety requirements and legal regulations.

The technicians responsible for assembling are responsible for the safe setup and use of the speaker and guarantee this.

For mobile and fixed installations, use only assembly equipment from KLING & FREITAG.

If not otherwise stated in this manual, only original KLING & FREITAG parts may be used. The use of other parts - in particular parts by other manufacturers - is not permitted.

As a basic principle, you must visually inspect all safety-relevant components of the speaker and the accessory before every use. For fixed installations, you must inspect the speaker for signs of wear at regular intervals. If there are signs of wear, cracks, or deformation, etc. then you must replace the parts immediately.

Caution

When laying out the connecting cables, make sure that nobody can trip.

At least 2 people are necessary to carry the speaker.

Preventing hearing damage

Avoid beeing too close to operating speakers. Even loudness levels of approx. 90 dB - that you subjectively judge as being low - can lead to hearing damage.

3.1 Notes for Mounting the Speakers

Warning

Mount the speakers securely. To avoid injury or damage, always be sure to mount the speakers securely so that they do not fall.

Please note that speakers can move as a result of vibrations. To prevent them from falling from their mounted position, they must be secured properly.

When laying out the connecting cables, make sure that nobody can trip.

3.2 Instructions for Speaker Stacking

Warning

Falling speakers pose the threat of fatal injuries to people near them!

Be sure to follow the relevant national specifications, norms, and safety regulations.

Always make sure that a sufficient safety level is still given, even when outside forces have an additional impact on the stacked speakers. Before setup, carefully ascertain if there are any possible outside forces that could result in the array falling over. (Slant of the ground / the bearing capacity of the ground / wind / person or vehicle impact, etc.). A technical expert who is responsible for the setup must evaluate and determine necessary measures (including calculating the statics). If necessary, obtain expert proof of stability.

Stacked systems may not fall over even if they are inclined by 15° in each direction. If this requirement is not fulfilled, then it is necessary to take steps to achieve compliance. Possible measures include strapping it to an appropriate base structure or fastening it using safety straps. A planned tilt of the loudspeakers ist not permissible. In calculations, the tilted setup serves the purpose of levelling out unevenness.

With the set-up systems for which you cannot verify the structural safety without safeguards, you must secure them to prevent sliding or tipping in order to provide proof of this safety. To secure the system from tipping over, use water tanks or floor bolts. Other possible measures include strapping it to a suitable substructure or tying it using safety straps.

For outdoor and trade fair venues in which wind loads must be considered, additional proof of stability is necessary.

Make sure that the stacking feet of subwoofers stacked on top of one another are securely positioned in the grooves of the lower speaker.

If you place a top speaker on a NOMOS XLT you must always strap the speakers to one another and secure them from falling over.

3.3 Protecting the Speakers / Operating Safety

Notice

NOMOS XLT speakers may only be used in combination with a K&F SystemRack.

In general, audio signals must not be overdriven. This may be caused by mixing consoles, equalizers, effect equipment, etc. and should be indicated on this equipment. When a power amplifier is overloaded at the output (clipping), then the amplifier activates a clipping warning signal. In any case, the signal must be reduced as soon as it sounds unnaturally distorted.

For damage caused by

- overloading the speakers
- using the speakers without K&F SystemRack

we do not assume warranty and excludes liability for possible consequential damage.

The following signals may damage the speakers:

- permanent high-level signals with high frequency and continuous noise from feedback.
- permanently distorted high-level signals.
- noises, which occur when the amplifier is on while equipment is being connected, disconnected or switched on.

Do not install devices in any of the following places:

- where the devices are permanently exposed to direct sunlight.
- where the devices are exposed to high moisture or rain.
- where the devices are exposed to strong vibrations and dust.

Damage caused by the speakers' magnetic fields

Speakers are permanently surrounded by a magnetic field, even when they are not connected. Therefore, during transport and placement of the speakers, it is important to ensure that there is always approx. 1 m between the speakers and magnetic data media and computer/video monitors.

4. Setup

4.1 Removing the Transport Covers

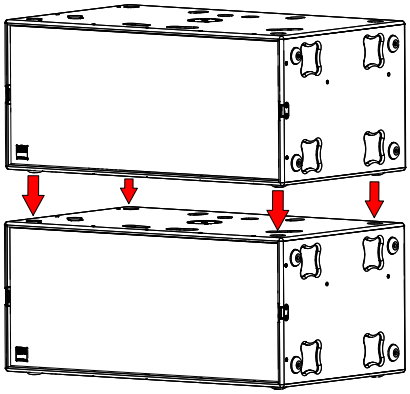
To remove the transport lid, turn the appropriate catches 180° to completely release the latch.

Lift the lid from the speaker.

4.2 Stacked Setup

1. Securely place the bottom subwoofer onto a level surface.

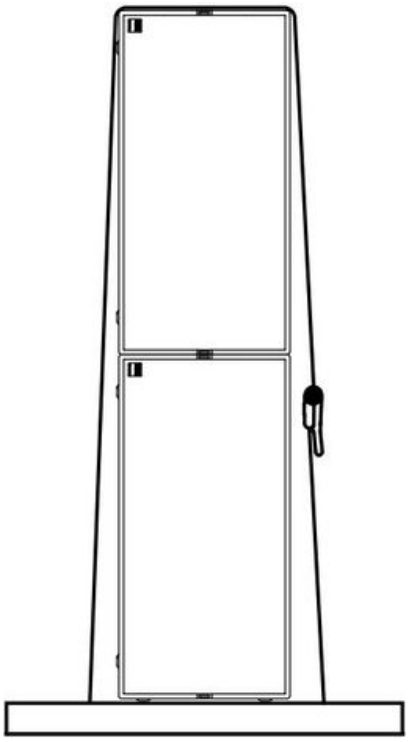
2. Stack the subwoofers on top of one another. Make sure that the stacking feet of subwoofers stacked on top of one another are securely positioned in the grooves of the lower speaker.



3. Stacked systems must be stable even if they are inclined by 15 degrees without additional additional securing.

   If this is not the case the systems have to be secured against falling over in order to guarantee the stability of the stack.

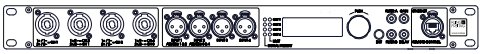
Example:



5. Configuration and Connecting Diagram

5.1 System Requirements for Use

K&F CD 44 Digital System Controller



LAB.GRUPPEN FP 10000Q:

or

LAB.GRUPPEN FP 14000:
for high power configurations with NOMOS subwoofer

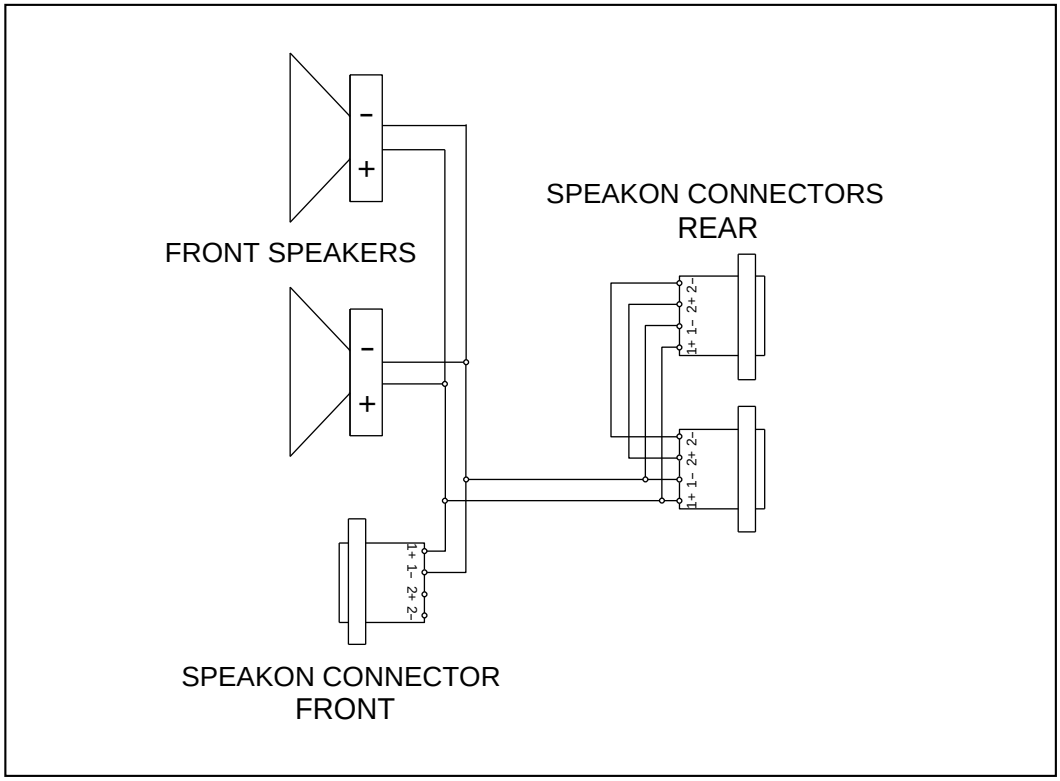
Connector Panel CP 4:

These components will be referred to as 'K&F SystemRack' in this manual.

Notice

Please make sure to update your K&F SystemRack with the required LS Blocks, starting with "NomXLT".

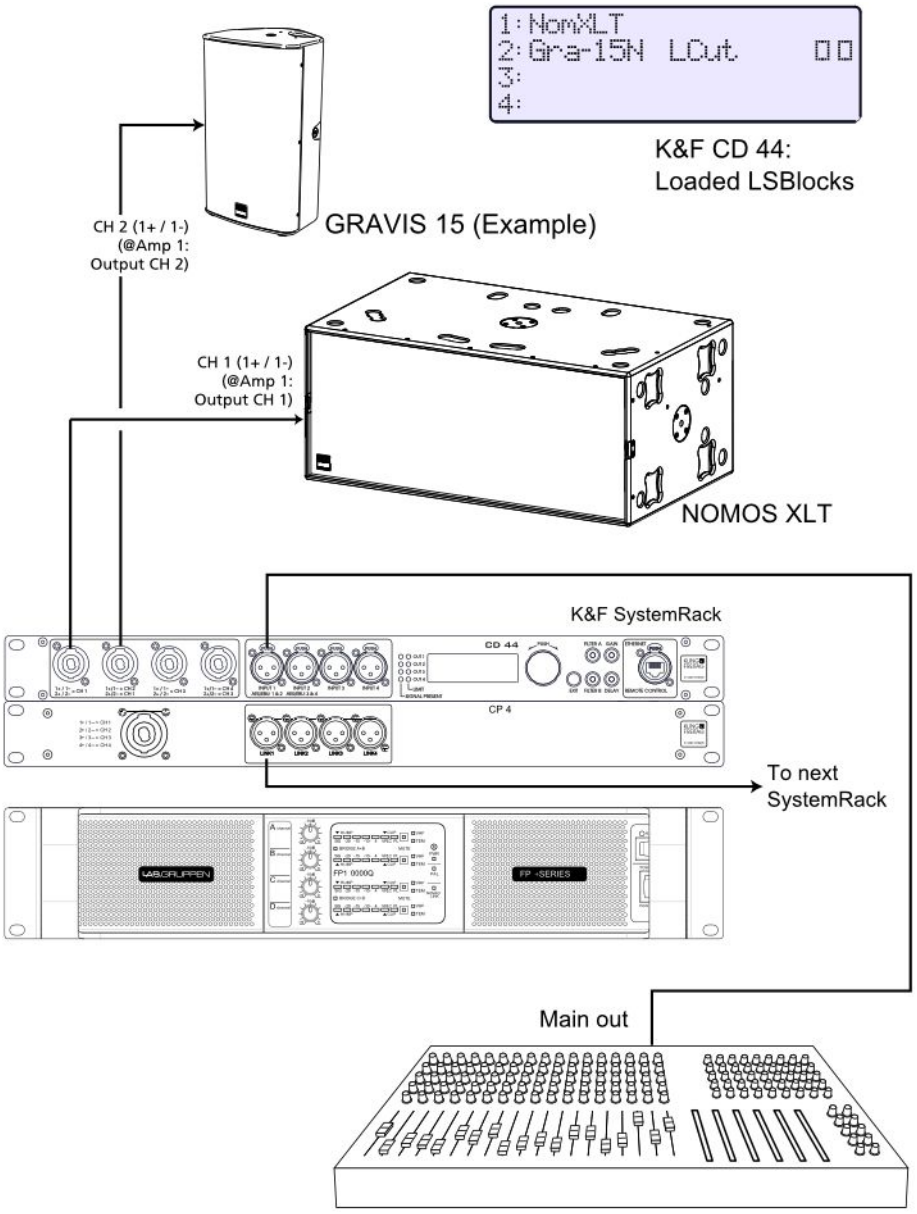
5.2 Terminal assignment



5.3 NOMOS XLT combined with other K&F tops.

The NOMOS XLT can only be combined in 2 channel mode with all K&F top speakers when using the Controller CD 44.

To do so, select the desired LS blocks for the top speaker in the Controller CD 44, and combine these with the LS block for the NOMOS XLT subwoofer.



If you need a higher bass level, activate the filter 'BassBoost' via Filter B for the subwoofers.

If you need an higher level at the overlab range betwenn subwoofer and top activate the filter 'LoMidBoost' via Filter B.

5.4 Cardioid Arrays with NOMOS XLT

The subwoofer NOMOS XLT is designed so that it can be used as a cardioid and hypercardioid system in an array of three subwoofers, or in multiples of three.

A cardioid array results in an increase of sound pressure towards the front because of the rear-facing subwoofer. In the rear area **(cardioid)** or in the lateral side area **(hypercardioid)**, on the other hand, the sound pressure is clearly reduced.

With this, you achieve

- less unwanted sound on the stage
- low feedback
- simplified miking
- improved room acoustics with fewer reflections from the rear and side walls, or – when flown – from the ceiling
- simplified adherence of sound emission limits and therefore less noise disturbance for nearby residential areas during open air events.

5.4.1 Setup instructions for a cardioid array

To achieve a cardioid or hypercardioid pattern, you must always have an array with 3 subwoofers - or a multiple of 3 subwoofers - setup next to one another (3, 6, 9, etc.). In this set of three, the middle one must be stacked or flown rear-facing while both other subwoofers are front-facing.

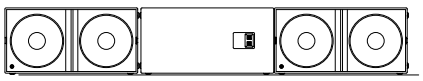
You can stack the subwoofers even when they are facing opposite directions, and you can connect them to front-facing systems.

There is an additional Speakon connector on the front grille so that you can connect the cables to the rear-facing side of all subwoofers in a cardioid array.

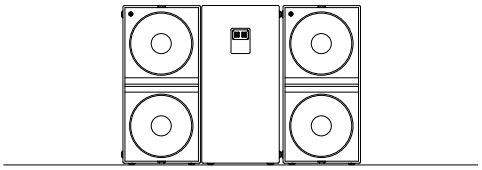
You can choose from the following options for cardioid and hypercardioid setups:

Unifilar drawing:

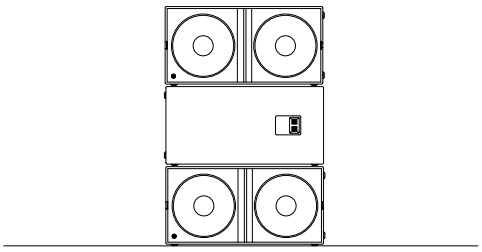
3 x NOMOS XLT horizontal



3 x NOMOS XLT vertical

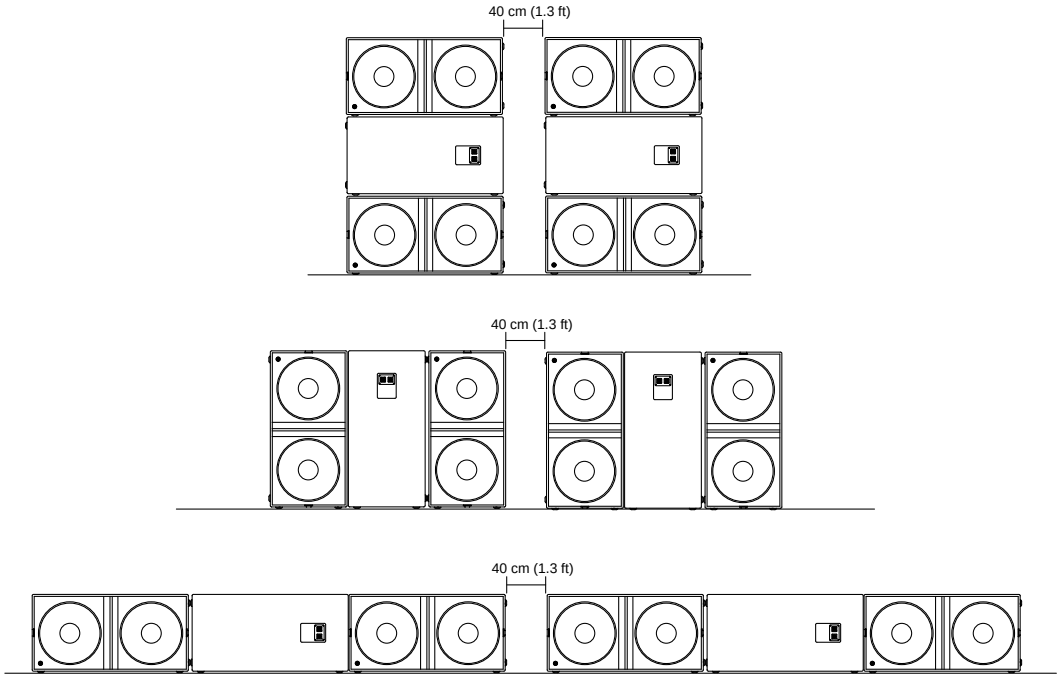


3 x NOMOS XLT stacked



When cardioid arrays are stacked on the floor, ensure that there is always a distance of at least 40 cm between each unit of 3.

Unifilar drawing:



5.4.2 LSBlocks for cardioid use

The rear-facing subwoofer is controlled using the Controller CD 44 via LSBlock for cardioid / hypercardioid arrays for rear-emitting subwoofers. The front-facing subwoofers are controlled via LSBlock for cardioid / hypercardioid arrays for front-emitting subwoofers. The following cardioid or hypercardioid setups are available in the CD 44:

Operation Mode of the NOMOS XLT	**LSBlocks**
'Cardioid Front', front-facing	NomXLT C-F
'Cardioid Rear', rear-facing	NomXLT C-R
'Hypercardioid-Front', front-facing	NomXLT HC-F
'Hypercardioid-Rear', rear-facing	NomXLT HC-R
'Infrabass Cardioid Front', front-facing	NomXLT C-F60Hz
'Infrabass Cardioid Rear', rear-facing	NomXLT C-R60Hz
'Infrabass Hypercardioid Front', front-facing	NomXLT HC-F60Hz
'Infrabass Hypercardioid Rear', rear-facing	NomXLT HC-R60Hz

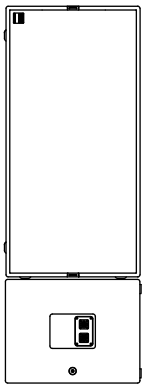
5.5 Cardioid Configurations with different Speakers

NOMOS XLT are suitable for cardioid configurations with certain K&F speakers. A chassis ratio of 1 to 2 should be maintained within these configurations.

Notice

The speaker with one chassis should be standing on the floor and directed to the rear while the speaker with two chassis directs to the front.

1 x NOMOS XLS under NOMOS XLT standing



6. Fuse in the NOMOS XLT

To increase the operating safety of the NOMOS XLT, the subwoofers are equipped with fuses at the signal input. These fuses reduce the risk of consequential damage resulting from a short circuit (i.e. charred cables / connectors / fire damage).

Notice

When the fuse is burned out, then the chassis is most likely already ruined, as the fuse just prevents consequential damage resulting from a short circuit of the chassis. A replacement of the chassis is, therefore, unavoidable.

6.1 Replacing the Fuses

The fuse holder is behind the terminal.

Warning

Replace the fuse with the following original fuse only:
Bussmann S 506-8A, T 250V

Required tools:

- 2.5 mm Allen key for loosening the terminals

Instructions:

1. Loosen the four screws on the terminal.
2. Carefully pull the cables out of the speaker enclosure.
3. Open the fuse holder.
4. Replace the blown fuse.
5. Push the cables carefully back into the enclosure.
6. Pay attention to the correct alignment of the terminal.

   Screw the terminal back on.

6.2 Replacing the Chassis

Required tools:

- 3 mm Allen key for loosening the front grille

- 3 mm Allen key for loosening the chassis

Instructions:

1. Remove the front grille.
2. Remove the speaker chassis.
3. Pay attention to the correct polarity of the chassis.

   Connect the new chassis.
4. Check the polarity of all mounted chassis.
5. By tightening the screws diagonally in two steps, a deformation of the chassis and thus a possible deentring of the voice coil can be avoided. First loosely fasten the screws for the chassis diagonal from one another, then tighten them.
6. Mount the front grille.

7. Transport and Storage

The NOMOS XLT is protected against short-term moisture. The accessories has to be stored, transported and used in a dry enviroment. The NOMOS XLT System is not designed for long-term use in a corrosive environment.

Make sure that the system is adequately ventilated during longer storage periods so that possible residual moisture can escape from the equipment.

Furthermore, you should ensure that the NOMOS XLT System is protected from mechanical strain to prevent possible damage.

We recommend using suitable transport and storage cases and the optional soft cover that protects from the above-mentioned influences.

8. Maintenance and Care

Warning

For the owner and user, it is mandatory to be aware of the safety relevance of speakers that can be flown.

The NOMOS XLT system can exhibit signs of wear over the years, i.e. from mechanical strain, transport damage, corrosion, or improper handling. If speakers are to be flown, this always means there is a high safety hazard.

As a basic principle, you must visually inspect the accessory every time you suspend it and take it down. NOMOS XLTFor fixed installations, you must inspect the speaker for signs of wear at regular intervals.

During these inspections, you must especially look out for deformations, cracks, dents, damage to threads, and corrosion. Mounting devices such as shackles, chains and wire ropes also have to be checked for signs of wear or deformation carefully.

If as a result of these checks any uncertainty should arise with regard to safety or if specific faults are found, the accessory may no longer be used and you must send in the product to KLING & FREITAG GmbH for inspection and repairs, if necessary. If defects are ascertained, then you must send in the product to KLING & FREITAG GmbH for inspection and repairs, if necessary.

The inspection requirements vary depending on application and country of use. Observe the requirements that are relevant for you. If in doubt, contact local authorities.

In many countries, regular inspection of mounting components and accessories is required. In most cases (e.g. german BGV C1), an additional annual inspection is required that must be done by a technical expert. Additionally, a detailed inspection carried through by a legally certified or official authority is required every four years.

In this context, it is very important to keep an inspection log book. In this inspection log book, the data for every used accessory is entered at the periodic inspections, making the data available at all times for possible inspections. This book should document maintenance measures and inspection intervals and contain parts lists.

The Polyurea synthetic coating used by KLING & FREITAG is impact proof and highly resistant. We recommend using protective coverings or cases to help avoid damaging the paint during i.e. continuous mobile use

To replace the filter foam, send the front grille incl. foam to KLING & FREITAG GmbH. Upon payment for expenses, the grille with the new covering will be returned.

9. Technical Specifications

Design	Bass reflex system (Operations via K&F SystemRack)
Crossover frequencies	100 Hz
Lower cut-off frequency (-3 dB / -10 dB)	27 HZ / 24 HZ
Coverage	Omnidirectional (optionally controllable in a cluster of three or in combination with the NOMOS XLS cardioid)
Power handling	3000 watts nominal (IEC 268-5) 6000 watts program [1)]
Max. SPL (1m)	135 dB full-space / 141 dB half-space (25 Hz - 100 Hz) Alternative: 135 dB / 141 dB
Components	2 x 18" subwoofer chassis, 100mm voice coil with double centering and up to 57 mm peak-to-peak excursion, neodymium magnet with internal and external ventilation for low power compression, aluminium demodulation ring for minimal distortions
Speakers / channel	max. 1 / channel
Connections	(+1/-1) 2 x Speakon 4-pol NLT4MP IN parallel with OUT
Enclosure Design	Frame-reinforced 15mm Multiplex enclosure with highly resistable Polyurea synthetic coating in black, 8 ergonomic handles on the sides, 8 plastic glider, 8 stacking grooves for save stackings of NOMOS LS II, NOMOS LT und Line 212, 2 locking profiles for optional transport cover with 100 mm transport castors, ball proof steel grille with black exchangeable acoustic foam behind the grille, additional speakon® connector behind the company logo.
Dimensions (W x H x D)	591 x 740 x 1191 mm
Weight loudspeaker / transport cover	80.5 kg / 12.3 kg
Accessories	see catalogue or visit www.kling-freitag.de

1) Pink Noise 40 - 250 Hz, 2 h

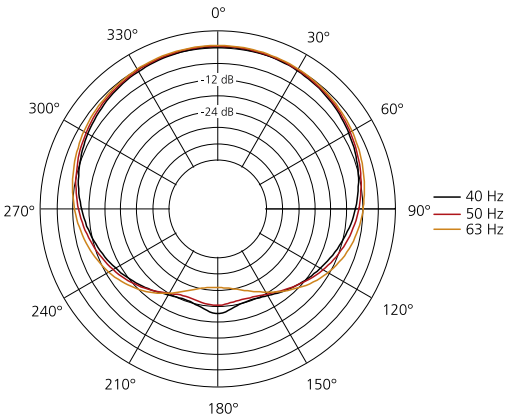
2) as 1) with 50% pulse/pause ratio

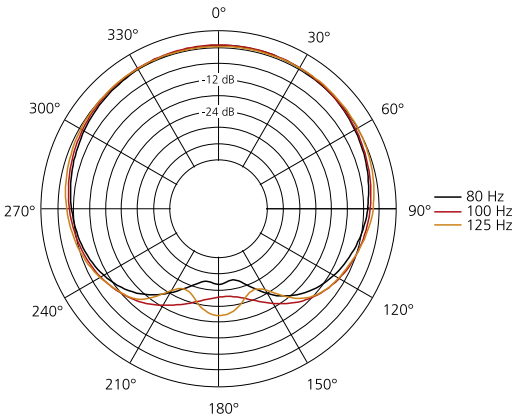
Measurings taken with the K&F SystemRack. The K&F SystemRack is required for operation of the K&F NOMOS XLT.

10. Measuring Diagrams

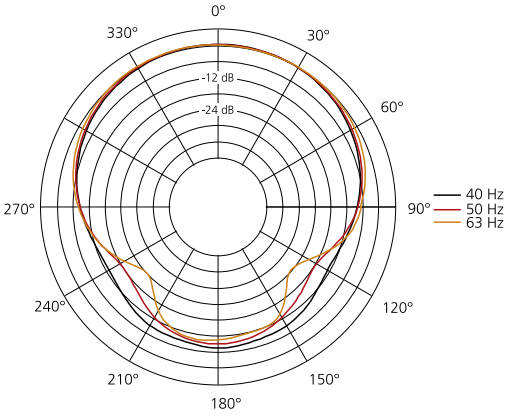
Polar Patterns

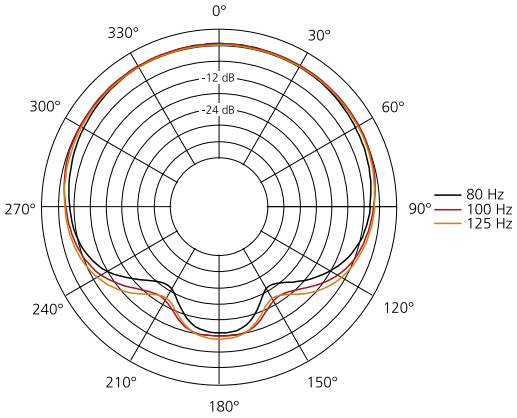
Cardioid





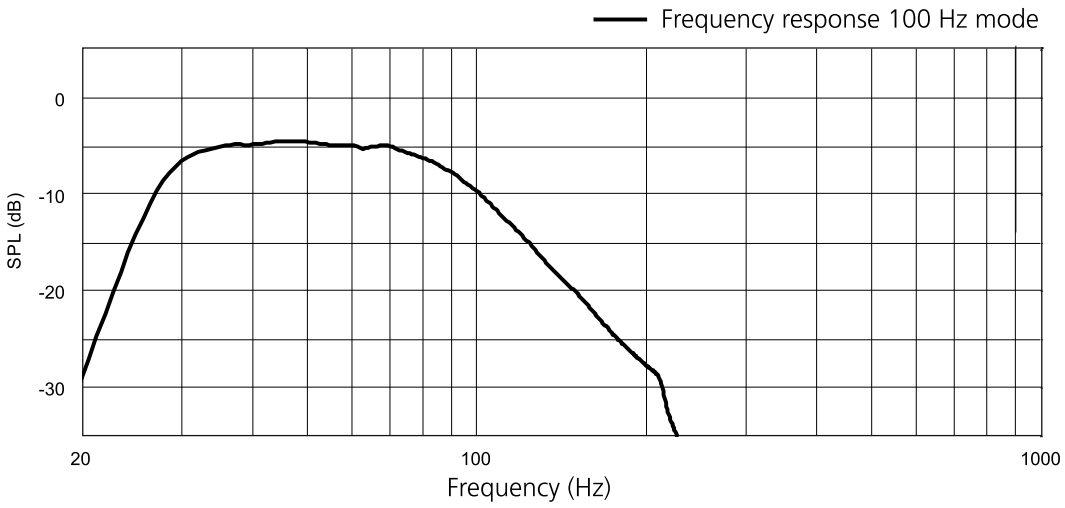
Hypercardioid





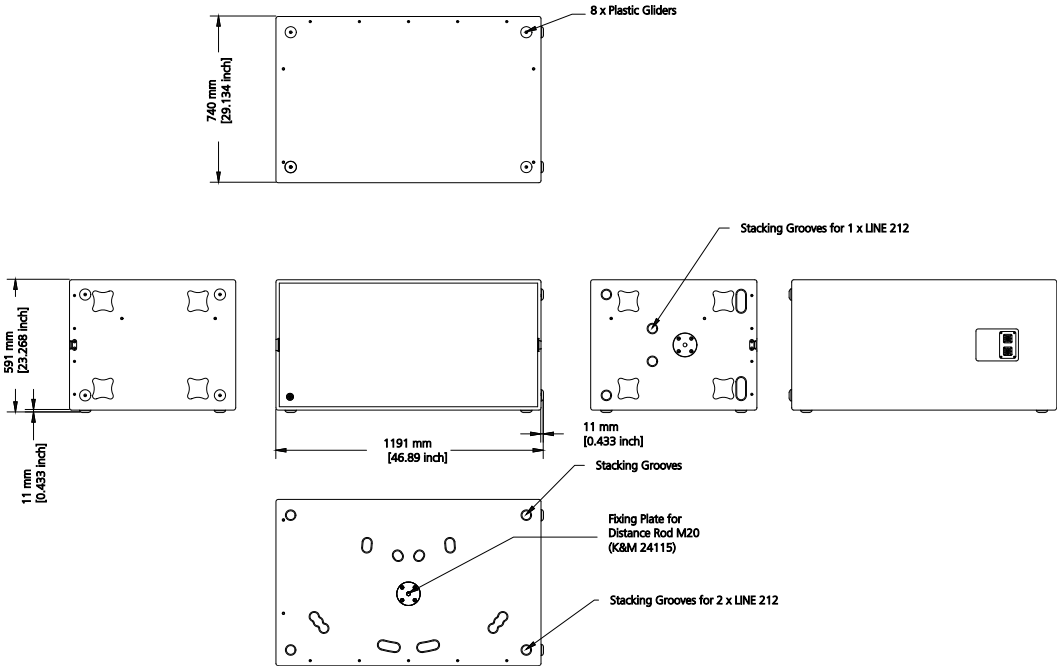
Note: Attenuation factor depends on setting and configuration (s. p. 10).

Frequency response



11. Dimensions NOMOS XLT

Weight: 80.5 kg



12. Disposal

12.1 Regulations for Disposal

12.1.1 Germany

It is not allowed to dispose of used electrical equipment as domestic waste.

But please do not dispose of them at official collecting points for recycling either!

All KLING & FREITAG products are plain business-to-business (B2B) products. KLING & FREITAG products labelled with a waste bin sign have thus to be disposed of by KLING & FREITAG GmbH alone. Please call KLING & FREITAG at the number stated below if you have a KLING & FREITAG product to be disposed of. We will offer you a straightforward and professional disposal with no costs involved.

If there is no waste bin sign on one of your KLING & FREITAG products, because it has been sold before 24 March 2006, then by law the owner is in charge of the disposal. In this case we will be happy to assist and offer you proper ways of disposal.

Telephone number to call about the disposal of used KLING & FREITAG products: +49 (0) 511-96 99 7-0

Explanation: With the ElektroG (law relating to electrical and electronic equipment and appliances) we have complied with the EU-directive on waste electrical and electronic equipment (WEEE, 2002/96/EC).

From 03/24/2006 onwards KLING & FREITAG GMBH has thus labelled all products mentioned in the WEEE with a sign with a crossed out waste bin and a white bar below. This sign indicates that the disposal as domestic waste is prohibited and that the product has been put into circulation on 03/24/2006 at the earliest.

KLING & FREITAG GMBH has been legally registered as a manufacturer with the German registration office EAR. Our WEEE registration number is: DE64110372.

For the German Registration office EAR we have accredited that our products are soleB2B products.

12.1.2 EU, Norway, Iceland, and Liechtenstein

It is not allowed to dispose of used electrical equipment as domestic waste.

From 08/13/2005 onwards KLING & FREITAG GMBH has thus labelled all products for EU-Member countries as well as Norway, Iceland and Liechtenstein (except Germany) mentioned in the WEEE with a sign with a crossed out waste bin and a white bar below. This sign indicates that the disposal on domestic waste is prohibited and that the product has been put into circulation on 08/13/2005 at the earliest.

Unfortunately the European directive WEEE has been complied with implementing different national provisions of law throughout all member countries, which makes it impossible for us to offer consistent solutions for the disposal throughout Europe.

Responsible for complying with these provisions of law is the local distributor (importer) of each country.

For proper disposal of used products in accordance with these local provisions in the mentioned countries of the European Union (except Germany) please ask your local dealer or the local authorities.

12.1.3 All other Countries

For proper disposal of used products in accordance with local provisions in other than the above mentioned countries please ask your local dealer or the local authorities.